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About this Guide

Note The ASR 5000 hardware platform has reached end of life and is not supported in this release. Any references to the ASR 5000 (specific or implied) or its components in this document are coincidental. Full details on the ASR 5000 hardware platform end of life are available at: https://www.cisco.com/c/en/us/products/collateral/wireless/asr-5000-series/eos-eol-notice-c51-735573.html.

This preface describes the *Command Line Interface Reference* and its document conventions.

This reference describes how to use the command line interface (CLI) to interact with the products supported by the StarOS™. The CLI commands are organized by command modes in the code and in this reference. The command modes are presented alphabetically. The description of each command states the command's function, describes its syntax, presents limitations when applicable, and offers an example of its usage.

- CLI Command Sections, on page xxxvii
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CLI Command Sections

The following table describes the individual sections in the command descriptions presented in this reference.

Section	Description
Product	The product(s) supporting the CLI command.
Privilege	The user privilege levels having access to the CLI command. For more information on user types and user privileges, refer to the *CLI Administrative Users* section in the *Command Line Interface Overview* chapter.
Mode	The command and configuration mode sequences to the CLI configuration mode for the CLI command. For more information on command modes, refer to the *CLI Command Modes* section in the *Command Line Interface Overview* chapter.

Section	Description
Syntax	The command's syntax. For more information on CLI command syntax, refer to the *CLI Command Syntax* section in the *Command Line Interface Overview* chapter.
	Description of the keyword(s) and variable(s) in the command.
Usage	Information about the command's usage including dependencies and limitations, if any.
Example	Example(s) of the command.

Conventions Used

The following tables describe the conventions used throughout this documentation.

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

Typeface Conventions	Description
Text represented as a `screen display`	This typeface represents displays that appear on your terminal screen, for example: `Login:`
Text represented as **commands**	This typeface represents commands that you enter, for example: **show ip access-list** This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a **command** *variable*	This typeface represents a variable that is part of a command, for example: **show card** *slot_number* *slot_number* is a variable representing the desired chassis slot number.

Typeface Conventions	Description
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the **File** menu, then click **New**

Command Syntax Conventions	Description
{ keyword or *variable* **}**	Required keyword options and variables are those components that are required to be entered as part of the command syntax. Required keyword options and variables are surrounded by grouped braces { }. For example: **sctp-max-data-chunks { limit** *max_chunks* **| mtu-limit }** If a keyword or variable is not enclosed in braces or brackets, it is mandatory. For example: **snmp trap link-status**
[keyword or *variable* **]**	Optional keywords or variables, or those that a user may or may not choose to use, are surrounded by brackets.
|	Some commands support multiple options. These are documented within braces or brackets by separating each option with a vertical bar. These options can be used in conjunction with required or optional keywords or variables. For example: **action activate-flow-detection { intitiation | termination }** or **ip address [count** *number_of_packets* **| size** *number_of_bytes* **]**

Supported Documents and Resources

Related Documentation

The most up-to-date information for this product is available in the product *Release Notes* provided with each software release.

The following related product documents are also available:

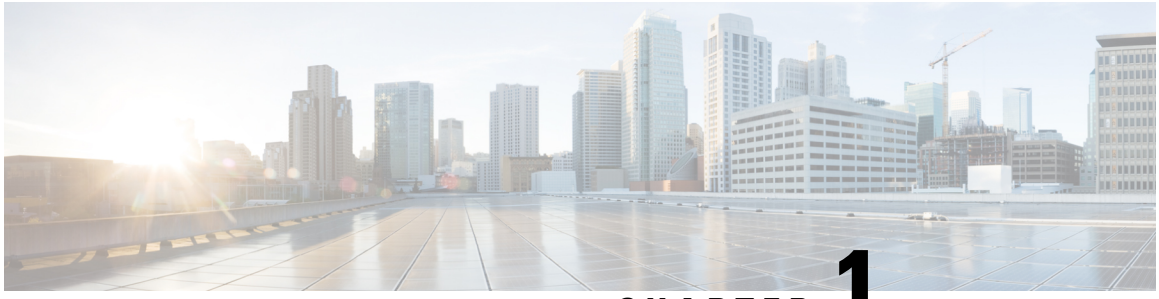
- *AAA Interface Administration and Reference*

- *GTPP Interface Administration and Reference*
- *IPSec Reference*
- Platform-specific System Administration Guides
- Product-specific Administration Guides
- *Release Change Reference*
- *SNMP MIB Reference*
- *Statistics and Counters Reference*
- *Statistics and Counters Reference - Bulk Statistics Descriptions*
- *Thresholding Configuration Guide*

Contacting Customer Support

Use the information in this section to contact customer support.

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



CHAPTER 1

Gateway Selection Profile Configuration Mode Commands

Command Modes

Exec > Global Configuration > Gateway Selection Profile Configuration

configure > gateway-selection-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(gw-profile-profile_name)#`

Important

Available commands or keywords/variables vary based on platform type, product version, and installed license(s).

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- do show, on page 2
- end, on page 2
- exit, on page 3
- zone, on page 3

description

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Gateway Selection Profile Configuration

configure > gateway-selection-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(gw-profile-profile_name)#`

Syntax Description

`description` *`descriptive_string`*

`remove description`

remove

descriptive_string

descriptive_string must be an alphanumeric string from 1 to 100 characters.

Usage Guidelines

Use this command to

Example

Use the following command to

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution

There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

zone

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Gateway Selection Profile Configuration

configure > gateway-selection-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(gw-profile-profile_name)#`

Syntax Description

zone *zone_fqdn* **action { ignore | mandatory }**

remove zone *zone_fqdn*

remove

zone_fqdn

zone_fqdn must be an alphanumeric string from 1 to 255 characters.

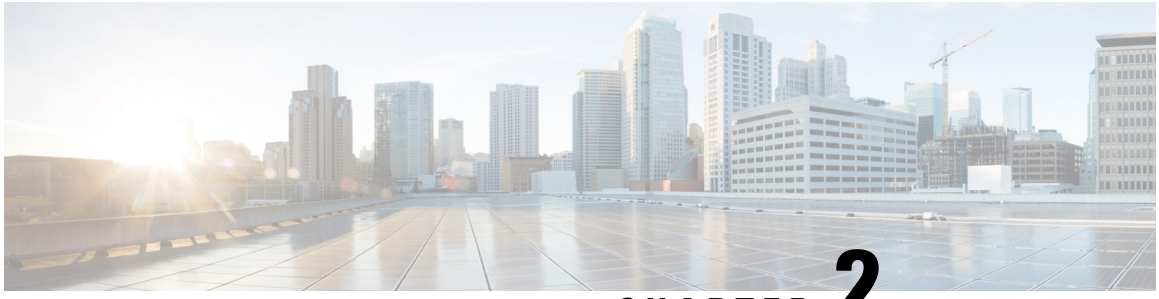
action { ignore | mandatory }

Usage Guidelines

Use this command to

Example

Use the following command to



CHAPTER 2

GGSN Service Configuration Mode Commands

The Gateway GPRS Support Node (GGSN) Configuration Mode is used to create and manage GGSN services within the current context.

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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- sgsn multiple-address-group, on page 57
- sgsn mcc-mnc, on page 59
- trace-collection-entity, on page 59

accounting

Configures the name of the context configured on the system that processes accounting for PDP contexts handled by this GGSN service.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
accounting context context_name
no accounting context
```

no

Removes a previously configured accounting context.

context_name

Specifies the name of the context to be used for accounting. *context_name* must be an alphanumeric string of 1 through 79 characters that is case sensitive.

Usage Guidelines

By default, the system attempts to use the same context as the one in which the GGSN service is configured for accounting purposes. This command can be used to either change the system's default behavior, or allow GPRS Tunneling Protocol Prime (GTPP) accounting to a charging gateway (CG).

By default when GTPP accounting is used, accounting records will be sent to the accounting servers configured in whichever context the GGSN service is configured. This command may be used to override that default.

Example

The following command configures the GGSN service's accounting context to be plmn1:

```
accounting context plmn1
```

associate gtpu-service

This command associates a previously configured GTP-U service to bind the GGSN service with a peer. A GTP-U service must be configured in Context Configuration mode before using this configuration.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
associate gtpu-service svc_name
no associate gtpu-service
```

no

Removes the associated GTP-U service from this GGSN service configuration.

svc_name

Identifies the name of the GTP-U service preconfigured in Context Configuration mode to associate with a GGSN service. *svc_name* is an alphanumeric string from 1 through 63 characters.

Usage Guidelines

Use this command to configure GTP-U data plan between GGSN service and peer node. The service defined for GTP-U can be configured in Context configuration mode.

Example

Following command associates GTP-U service named *gtpu-hnb1* with specific GGSN service.

```
associate gtpu-service gtpu-hnb1
```

associate peer-map

This command associates a previously configured GGSN peer-map in LTE Policy Configuration mode with GGSN service. A peer-map must be configured before using this configuration.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
associate peer-map peer_map_name
no associate peer-map
```

no

Removes the associated Peer-Map from this GGSN service configuration.

peer_map_name

Identifies the name of the Peer Map preconfigured in LTE-Policy Configuration mode to associate with a GGSN service. *peer_map_name* is an alphanumeric string from 1 through 63 characters.

Usage Guidelines

Use this command to associate Peer Map with GGSN service. The peer-profile associated with peer map can be configured in GGSN Peer-Profile configuration mode.

Important

When there is no association of peer-map in any of the service, then "default" peer profile of the corresponding service-interface type shall be applied except for GTP-C parameters. Also GTP-C parameters configuration shall be applied from GG service level configuration for GGSN.

A maximum of 1024 peer map rules can be configured on one system.

Example

Following command associates Peer Map named *ggsn_peer_map1* with specific GGSN service.

```
associate peer-map ggsn_peer_map1
```

associate pgw-service

This command enables a previously configured P-GW service to which handover will be done by the GGSN service. The P-GW service must be configured in Context Configuration mode before using this configuration.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`associate pgw-service` *`svc_name`*
`no associate pgw-service`

no

Removes the associated P-GW service from this GGSN service configuration.

svc_name

Identifies the name of the P-GW service preconfigured in Context Configuration mode to which handover will be done.

The *svc_name* must be an alphanumeric string from 1 through 63 characters.

Usage Guidelines

Use this command to allow enabling/disabling bearer handover from GGSN to a P-GW service. The service defined for P-GW can be configured in Context configuration mode.

The P-GW's eGTP service should have the same bind address as GGSN service and P-GW and GGSN should share same GTP-U, otherwise handover will fail.

Example

Following command enables P-GW service named *pgw-test* handover with specific GGSN service.

`associate pgw-service pgw-test`

authorize-with-hss

This command enables or disables subscriber session authorization via a Home Subscriber Server (HSS) over an S6b Diameter interface. This feature is required to support the interworking of GGSN with P-GW and HA.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
authorize-with-hss [ report-ipv6-addr ]
{ default | no } authorize-with-hss
```

default

Disables the default authorization of subscriber over S6b interface. Resets the command to the default setting of "authorize locally" from an internal APN authorization configuration.

no

Disables the default authorization of subscriber over S6b interface. Resets the command to the default setting of "authorize locally" from an internal APN authorization configuration.

report-ipv6-addr

Enables IPv6 address reporting through Authorization-Authentication-Request (AAR) towards the S6b interface.

Usage Guidelines

Use this command to enable/disable the authorization support for subscriber over S6b interface, which is used between GGSN and the 3GPP AAA to exchange the information related to charging, P-CSCF discovery, etc.

Use of this feature allows the GGSN service to interact with HSS over S6b interface through Diameter configuration which is already configured on the system.

Important Diameter configuration must be available before enabling this command. For more information regarding Diameter interface configuration, refer *Diameter Endpoint Configuration Mode Commands* chapter.

Important This command is a license-enabled feature.

Example

The following command enables subscriber authorization via an HSS over an S6b Diameter interface to provide session interoperability between GGSN and P-GW and HA in this GGSN service:

```
authorize-with-hss
```

bind

Binds the GGSN service to a logical IP interface serving as the Gn interface. Specifies the maximum number of subscribers that can access this service over the interface.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

[no] bind { address *ipv4_address* **[ipv6-address** *ipv6_address* **] | ipv4-address** *ipv4_address* **[ipv6-address** *ipv6_address* **] | ipv6-address** *ipv6_address* **[ipv4-address** *ipv4_address* **] }**

no

Removes a previously configured binding for the GGSN service.

address *ipv4_address*

Specifies the IP address (address) of the interface configured as the Gn interface. *ipv4_address* is specified in IPv4 dotted-decimal notation.

ipv4-address *ipv4_address*

Specifies the IP address (address) of the interface configured as the Gn interface. *ipv4_address* is specified in IPv4 dotted-decimal notation.

ipv6-address *ipv6_address*

Specifies the IP address (address) of the interface configured as the Gn interface. *ipv6_address* is specified in IPv6 colon-separated hexadecimal notation.

Usage Guidelines

Used to associate or tie the GGSN service to a specific logical IP address. The logical IP address or interface takes on the characteristics of a Gn interface. Only one interface can be bound to a service. The interface should be configured prior to issuing this command.

Example

The following command would bind the logical IP interface with the IPv4 address of *209.165.200.224* to the GGSN service:

```
bind ipv4-address 209.165.200.224
```

The following command disables a binding that was previously configured:

```
no bind ipv4-address 209.165.200.224
```

cc behavior

Configures the 3GPP behavior bits associated with the GGSN's charging characteristics (CC).

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
cc behavior no-records nr_value
default cc behavior
no cc behavior no-records
```

default

Restores behavior parameters to default value of 0 (disabled).

no

Removes the previously configured behavior bit.

no-records *nr_value*

Default: 0 (disabled)

Specifies the behavior bit upon which the GGSN ceases sending accounting records to a server.

nr_value can be configured to an integer from 1 through 12 corresponding to the 12 behavior bits – B1 through B12.

Usage Guidelines

3GPP standards after 3GPP R98 included 12 behavior bits as part of GGSN charging characteristics. Like the charging characteristics profile index, the behavior bits are sent by the SGSN to the GGSN in the Create PDP Context request message.

This command configures the behavior bits for each of the conditions described.

Example

The following command configures a behavior bit of 10 for no-records:

```
cc behavior no-records 10
```

cc profile

Configures the charging characteristic (CC) profile index properties.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
cc profile index [ buckets number | interval time [ downlink down_octets uplink
  up_octets | total total_octets ] | prepaid { prohibited |
use-rulebase-configuration } | sgsns num_changes | tariff time1 mins hours [
 time2 mins hours ] [ time3 mins hours ] [ time4 mins hours ] [ time5 mins hours
 ] [ time6 mins hours ] | volume { downlink vol_down_octets uplink vol_up_octets
 | total total_octets } ]
default cc profile index
no cc profile index { buckets | interval | prepaid | sgsns | tariff | volume
 }
```

default

Returns the specified cc profile to the original default system settings. The following defaults are applied:

- buckets: 4
- interval: Disabled
- volume: Disabled
- sgsns: 4
- tariff-time: Disabled

no

Removes a previously configured profile index.

index

Configures a profile index for the parameter to be specified. index can be configured to an integer from 0 through 15.

Important 3GPP standards suggest that profile index values of 1, 2, 4, and 8 be used for hot billing, flat rate billing, prepaid billing and normal billing, respectively. A single charging characteristics profile can contain multiple behavior settings.

buckets *number*

Default: 4

Specifies the number of statistics container changes due to QoS changes or tariff time that can occur before an accounting record should be closed.

number can be configured to an integer from 1 through 4.

interval *time* [downlink *down_octets* uplink *up_octets* | total *total_octets*]

Specifies the normal time duration that must elapse before closing an accounting record provided that any or all of the following conditions occur:

- Downlink traffic volume is reached within the time interval
- Uplink traffic volume is reached within the time interval
- Total traffic volume (up and downlink) is reached within the time interval

time is measured in seconds and can be configured to an integer from 60 through 40000000.

down_octets is the downlink traffic volume measured in octets and can be configured to an integer from 0 through 1000000.

up_octets is the uplink traffic volume measured in octets and can be configured to an integer from 0 through 1000000.

total_octets is the total traffic volume measured in octets and can be configured to an integer from 0 through 1000000.

prepaid { prohibited | use-rulebase-configuration }

This command enables or disables prepaid for the specified profile index.

Default: N/A

prohibited: Disable prepaid for the specified profile index.

use-rulebase-configuration: Use the prepaid configuration in the rulebase.

sgsns *num_changes*

Default: 4

Specifies the number of SGSN changes (such as, inter-SGSN switchovers) resulting in a new RAI (Routing Area Identity) that can occur before closing an accounting record.

num_changes can be configured to an integer from 1 through 15.

tariff time1 *mins hours* time2 *mins hours* time3 *mins hours* time4 *mins hours* time5 *mins hours* time6 *mins hours*

Specifies time-of-day time values to close the current statistics container (but not necessarily the accounting record). Six different tariff times may be specified. If less than six times are required, the same time can be specified multiple times.

Important The system assumes that the billing system uses the day/date to determine if the statistics container represents an actual tariff period.

For each of the different tariff times, the following parameters must be configured:

- *mins*: The minutes of the hour, an integer value from 0 to 59.
- *hours*: The hour of the day, an integer value from 0 to 23.

volume {downlink *vol_down_octets* uplink *vol_up_octets* | total *total_octets* }

Specifies the downlink, uplink, and total volumes that must be met before closing an accounting record.

vol_down_octets is measured in octets and can be configured to an integer from 100000 to 4000000000.

vol_up_octets is measured in octets and can be configured to an integer from 100000 to 4000000000.

total_octets is the total traffic volume (up and downlink) measured in octets and can be configured to an integer from 100000 to 4000000000.

Usage Guidelines

Charging characteristics consist of a profile index and behavior settings. This command configures profile indexes for the GGSN's charging characteristics. The GGSN supports up to 16 profile indexes.

This command works in conjunction with the **cc-sgsn** command located in the APN Configuration Mode that dictates which CCs should be used for subscriber PDP contexts.

Example

The following command configures a profile index of *10* for tariff times of 7:00 AM and 7:30 PM:

```
cc profile 10 tariff time1 0 7 time2 30 19 time3 0 7 time4 30 19
```

default

Sets/restores the default value assigned for the specified parameter.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
[ default ] { cc { behavior | profile index } | echo-interval | gtpu
echo-interval | gtpu reorder { context | sequence-numbers | timeout } |
guard-interval | ip { local-port gtpc-v1 | qos-dscp } | max-retransmissions
 | plmn { unlisted-sgsn } | setup-timeout | timeout }
```

cc { behavior | profile *index* }

Restores the GGSN's charging characteristics parameters to the following default settings:

- **behavior**: Restores all behavior parameters to their default values of 0 (disabled).
- **profile:** For the specified index, the following defaults are applied:
  - buckets: 4
  - interval: Disabled

- volume: Disabled
- sgsns: 4
- tariff-time: Disabled

echo-interval

Restores the GTP echo-interval parameter to its default setting of 60.

gtpu echo-interval

Restores the GTPU echo-interval parameter to its default setting of 60.

gtpu reorder { context | sequence-numbers | timeout }

Restores the gtpu reordering parameters to the following default settings:

- gtpu reorder context: Disabled
- gtpu reorder sequence-numbers: Disabled
- gtpu reorder timeout: 100 milliseconds

gtpu udp-checksum insert

Restores the GGSN gtpu udp-checksum parameter to its default setting of enabled.

guard-interval

Restores the GGSN guard-interval parameter to its default setting of 100.

ip {local-port gtpc-v1 | qos-dscp }

Restores the GGSN ip parameters to the following default setting:

- **local-port gtpc-v1**: 2123
- **qos-dscp**: conversational ef streaming af11 interactive af21 background be

max-retransmissions

Restores the GGSN max-retransmissions parameter to its default setting of 4.

plmn { unlisted-sgsn }

Restores the GGSN plmn unlisted-ggsn parameter to its default setting of reject.

setup-timeout

Restores the GGSN setup-timeout parameter to its default setting of 60.

timeout

Restores the GGSN timeout parameter to its default setting of 5.

Usage Guidelines

After the system has been modified from its default values, this command is used to set/restore specific parameters to their default values.

Example

The following command restores the GGSN service's guard interval parameter to its default setting:

```
default guard-interval
```

dns-client

This command defines the context name where a DNS client is configured. It associates an existing DNS client configuration with the GGSN to perform a DNS query for P-CSCF, if a P-CSCF query request in an AAA message is received from the Diameter node.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
dns-client context dns_ctxt_name
{ no | default } dns-client context
```

no

Removes the association of DNS context which was configured to perform DSN query in this GGSN service.

default

Sets the default context for the DNS client.

dns_ctxt_name

Specifies the name of the context in which a DNS client configuration is present. Typically this should be the same context in which this GGSN service is configured.

dns_ctxt_name is a context name and must be alphanumeric string of 1 through 79 characters.

Usage Guidelines

Use this command to associate a DNS client configuration to perform DNS query used for the resolution of P-CSCF query received in AAA message from Diameter peer, on the basis of DNS client parameters configured in a context.

A DNS client configuration must be present in the same context as GGSN service before enabling this command to perform DNS query for P-CSCF.

Important This command is a license-enabled feature.

Example

The following command associates a DNS client configuration to perform DNS query for P-CSCF with this GGSN service which is configured in same context as GGSN service:

```
default dns-client context
```

echo-interval

Configures the rate at which GPRS Tunneling Protocol (GTP) v1-C Echo packets are sent from the GGSN service to the SGSN.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
echo-interval seconds [ dynamic [ smooth-factor multiplier ] ]
{ default | no } echo-interval
```

default

Configures the default value (60 seconds) for echo interval.

no

Disables the sending of GTPv1-C Echo packets.

seconds

Default: 60

Specifies the frequency at which the GGSN service sends GTPv1-C Echo packets to the SGSN(s) it is configured to communicate with.

seconds is measured in seconds and can be configured to an integer from 60 through 3600.

dynamic [smooth-factor *multiplier*]

Enables the dynamic echo timer for the GTP-U service.

smooth-factor *multiplier*: Introduces a muliplier into the dynamic echo timer as an integer from 1 through 5. Default: 2

Usage Guidelines

Use this command to adjust the rate at which the GGSN sends these packets. GTPv1-C Echo packets are used to detect whether SGSNs that the GGSN service is communicating with, has become unresponsive or has rebooted.

The system initiates this protocol for each of the following scenarios:

- Upon system boot
- Upon the configuration of a new SGSN on the system using the **sgsn address** command as described in this chapter
- Upon the execution of the path failure detection policy as described in **path-failure** command of this chapter

The echo-interval command is used in conjunction with the **max-retransmissions** and **retransmission-timeout** commands as described in this chapter.

In addition to receiving an echo response for this echo protocol, if GGSN receives a Node Alive Request message or a Echo Request message from a presumed dead SGSN, it will immediately assume the SGSN is active again.

If the GGSN discovers that an SGSN has become unresponsive, it will terminate all PDP contexts that had been established with the SGSN.

Example

The following command configures the GGSN service to send GTP Echo packets every 120 seconds:

```
echo-interval 120
```

echo-retransmission-timeout

Configures the timeout for GTPv1 echo message retransmissions for this service.

Product

GGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

echo-retransmission-timeout *seconds*
default echo-retransmission-timeout

default

Returns the command to its default setting of 3.

seconds

Default: 5

Configures the echo retransmission timeout, in seconds, for the GTPv1 service as an integer ranging from 1 to 20.

Usage Guidelines

Use this command to configure the amount of time, in seconds, before the GTPv1 service transmits another echo request message. The value set in this command is used, as is, for the default echo. If dynamic echo is enabled (**echo-interval dynamic**) the value set in this command serves as the dynamic minimum (if the RTT multiplied by the smooth factor is less than the value set in this command, the service uses this value).

Example

The following command sets the retransmission timeout for echo messages to 2 seconds:

```
echo-retransmission-timeout 2
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

fqdn

This command defines Fully Qualified Domain Name (FQDN) which would be used for authorization over S6b interface between GGSN and 3GPP AAA/HSS.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
fqdn host host_name realm realm_id
{ no | default } fqdn
```

no

Removes the configured FQDN host name and realm ID from the GGSN service.

default

Sets the system to default mode for this command and configures the host and realm ID value to NULL.

host *host_name*

Specifies the name of the host to be used for authorization over an S6b interface to a 3GPP AAA server/HSS from the GGSN service.

host_name is a unique node name for authorization over the S6b interface from this GGSN service.

host_name must be an alphanumeric string of 1 through 127 characters. Punctuation marks are allowed.

realm *realm_id*

Specifies the realm as an FQDN to be used for authorization over S6b interface with 3GPP AAA server/HSS from GGSN service. The realm may typically be a company or service name.

realm_id is a unique identifier configured for the authorization over S6b interface from this GGSN service, expressed as an alphanumeric string of 1 through 127 characters. Punctuation marks are allowed.

host_name

Usage Guidelines

Use this command to define host and realm as the FQDN for a 3GPP AAA server/HSS that would be used for authorization over an S6b interface with the GGSN. The realm specified as an FQDN may typically be a company or service name.

By default the FQDN host and realm will be NULL

Important This command is a license-enabled feature.

Example

The following configures the *hss1* as host name and *xyz.com* as realm to support authorization over an S6b from this GGSN service:

```
fqdn host hss1 realm xyz.com
```

gtpc allow-on-congestion

This command enables the prioritized handling for VoLTE/Emergency calls for the current GGSN service. This is a license-controlled feature under the license introduced for VoLTE.

Product

GGSN

Privilege

Administrator, Config Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
[ no ] gtpc allow-on-congestion { apn-name [ apn_name ] | arp [ priority ]
 | rel99arp [ priority ]  }
```

no

Removes the default configuration.

apn-name

Configures the GW to allow calls for this APN even under congestion. *apn_name* is the access point name to be prioritized. It is a string of size 1 to 64.

arp *priority*

Configures the GW to allow calls for this ARP even under congestion. *priority* is the ARP Priority Level, ranging integer 1..15

rel99arp *priority*

Configures the GW to allow calls for the Rel99 ARP under congestion. Rel99arp is ignored in case EARP is received. *priority* is the REL99ARP priority, ranging from integer 1..3

Usage Guidelines

For VoLTE and Emergency calls there are certain scenarios where-in prioritized handling is needed as compared to non-VoLTE calls

When CLI is enabled:

- Under congestion scenarios, emergency calls are given priority and are accepted as much as possible
- Only 3 or less APN and ARP values can be configured for prioritized handling in congestion situation.
- Gn CPCReq calls having the Release 99 bearer parameter ARP(not EARP) are allowed under congestion.

Example

The following command ignores the congestion situation for apn name "intershat":

```
gtpc allow-on-congestion apn intershat
```

gtpc decode-as-hex

This command configures the GGSN to decode the MCC-MNC parameters from the User Location Information (ULI) to hexadecimal digits.

Product

GGSN

Privilege

Administrator, Config Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
[ default | no ] gtpc decode-as-hex
```

default

This CLI is disabled by default. The received MCC-MNC parameters of ULI are decoded assuming that, it contains decimal digits only.

no

Removes the default configuration .

Usage Guidelines

The GTP parameter ULI contains encoded MCC-MNC digits. This new CLI configures GGSN to decode this MCC-MNC into hexadecimal digits. When CLI is disabled, current behavior is in effect - The received MCC-MNC is decoded assuming that, it contains decimal digits only.

When CLI is enabled and if the received MCC-MNC is valid, it is decoded into decimal digits. If the received MCC-MNC is invalid, all digits are decoded into hexadecimal digits, including filler digits, if any. Hexadecimal digits are represented using Upper Case ASCII characters (A, B, C, D, E, F).

Example

The following command decodes MCC-MNC as hexadecimal:

```
gtpc decode-as-hex
```

gtpc handle-collision upc nrupc

This command helps in enabling or disabling collision handling between SGSN initiated UPC and NRUPC request.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
[ no | default ] gtpc handle-collision upc nrupc
```

no

Disables collision handling between SGSN initiated UPC and NRUPC request.

default

Sets default collision handling behavior between SGSN initiated UPC and NRUPC request. By default, collision handling is enabled.

handle-collision upc nrupc

Enables/Disables collision handling between SGSN initiated UPC and network requested UPC. By default, collision handling is enabled.

Usage Guidelines

This command is used to enable or disable collision handling between SGSN initiated UPC and NRUPC request.

Example

The following example disables collision handling between SGSN initiated UPC and NRUPC request.

```
no gtpc handle-collision upc nrupc
```

gtpc map-mbr-ambr

This command maps the Maximum Bit Rate AVP received in Update PDP Context QoS message from SGSN to Aggregate Maximum Bit Rate attribute value (AMBR), if AMBR is not received in Update PDP Context QoS message from SGSN. This command is applicable for Gn-Gp GGSN mode only and not applicable to standalone GGSN. By default this command is disabled.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

[default | no] gtpc map-mbr-ambr

default

Sets the default mode to map the Maximum Bit Rate AVP received in Update PDP Context QoS message from SGSN to Aggregate Maximum Bit Rate attribute value (AMBR), if AMBR is not received in Update PDP Context QoS message from SGSN.

no

Removes the configured mapping of the MBR AVP received in Update PDP Context message from SGSN to AMBR attribute value.

Usage Guidelines

Use this command to map the Maximum Bit Rate AVP received in Update PDP Context QoS message from SGSN to Aggregate Maximum Bit Rate attribute value (AMBR), if AMBR is not received in Update PDP Context QoS message from SGSN.

Important To use this command event trigger for QoS-Change for session must be provisioned on PCRF.

Example

The following command configures the GGSN service to map the MBR received in Update PDP Context QoS message from SGSN to Aggregate Maximum Bit Rate attribute value (AMBR):

gtpc map-mbr-ambr

gtpc nsapi-in-create-pdp-response

This command excludes or includes the optional information element (IE) Network Service Access Point Identifier (NSAPI) within "Create PDP Context Response" messages in GTP-C.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`[ default | no ] gtpc nsapi-in-create-pdp-response`

default

Sets the default mode for GTP-C messages not to include the NSAPI IE in "Create PDP Context Response" messages.

no

Removes the preconfigured mode for GTP-C messages; the GTP-C message will not include the NSAPI IE in "Create PDP Context Response" messages. By default it is disabled.

Usage Guidelines

Use this command to exclude or include the NSAPI IE in "Create PDP Context Response" GTP-C messages received from the SGSN.

Example

The following command configures the GGSN service to include the optional NSAPI IE in "Create PDP Context Response" messages:

`gtpc nsapi-in-create-pdp-response`

operator-del-cause

Enables or disables the Cause-IE feature for Delete PDP Context Request in GGSN. This CLI is disabled by default.

Important This command is license dependent. For more information please contact your Cisco account representative.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`[ default | no ] gtpc operator-del-cause`

default

Sets the default mode for Operator Cause-IE behavior feature. By default, it is disabled.

no

Disables Operator Cause-IE behavior feature.

operator-del-cause

Enables Operator Cause-IE behavior feature for Delete PDP Context Request sent to delete the last PDP Context of the PDN connection.

Usage Guidelines

This command enables or disables the Cause-IE feature for Delete PDP Context Request in GGSN.

The Cause-IE configuration for Delete PDP Context Request is given in the APN configuration and is also available in the **clear subscribers** CLI command. When this command is enabled, the feature will be applied to GGSN based on the APN configuration or the **clear subscribers** command. This command is disabled by default.

Example

The following command enables the Cause-IE feature.

`gtpc operator-del-cause`

gtpc private-extension

This command includes customer-specific private extensions in GTP-C messages.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
gtpc private-extension { { focs | odb } access-list acl_name in
disconnect-on-violation | ggsn-preservation-mode | loss-of-radio-coverage
 | none }
default gtpc private-extension
no gtpc private-extension [ focs | ggsn-preservation-mode |
loss-of-radio-coverage ]
```

default

Sets the default mode for GTP-C messages. By default it is disabled.

no

Disables the configured private extensions for GTP-C messages.

{ focs | odb } access-list *acl_name* in disconnect-on-violation

Configures the Free-Of-Charge-Service (FOCS) and Operator Determined Barring (ODB) extensions for all packet-oriented services as defined by operators.

focs: Enables or disables Free of Charge Services for the subscriber who has no credit, and also takes the access-list *acl_name* to be applied for FOCS.

odb: Enables or disables "all packet oriented service barred" for the subscriber, and also takes the access-list *acl_name* to be applied for ODB.

acl_name is the name of a configured access control list (ACL) for this service.

Important These are the customer-specific keywords and need customer-specific license to use them.

ggsn-preservation-mode

Enables the processing of customer-specific private extension in Update PDP Context requests. This extension indicates whether the subscriber is active or idle, and whether RAN resources have been released. It also indicates the desired "type" of preservation mode behavior.

When **ggsn-preservation-mode** is configured, different types of accounting records are generated based on the "type" of mode. To enable the generation of different accounting records, the trigger for preservation mode must be configured for RADIUS or GTPP for that accounting protocol. If that trigger is not configured, there will be no change in the generation of accounting records.

Important This is a customer-specific keyword and needs customer-specific license to use this feature.

loss-of-radio-coverage

Enables the protection against overcharging a subscriber due to loss of radio coverage (LORC) in a GGSN service. It also enables the system to understand the private extension for LORC) in GTP-C Update PDP Context messages from the SGSN.

Important This is a license enabled keyword and need feature-specific license to use it.

none

Removes the private extensions from record which are from GTP-C messages received from the SGSN.

Usage Guidelines

Use this command to configure the processing of private extensions within GTP-C messages received from the SGSN. It also configures the customer specific features, such as preservation mode for GGSN service.

Overcharging protection (LORC) is a solution which provides the ability to accurately bill customers.

This implementation is based on Cisco-specific private extension to GTP messages and/or any co-relation of G-CDRs and S-CDRs. It also does not modify any RANAP messages.

Important This is a license enabled command that requires installation of feature-specific licenses to use this command.

Example

The following command configures the GGSN service to record the private extension for protecting the subscribers from overcharging during loss of radio coverage:

```
gtpc private-extension loss-of-radio-coverage
```

gtpc ran-procedure-ready-delay

This command configures the GGSN to enable the RAN Procedure Ready feature for the particular GGSN service and specify the timeout period for the RAN procedure timer in the GGSN. This timer starts on arrival of every secondary Create PDP Context request.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
gtpc ran-procedure-ready-delay [ timeout dur ]
{ default | no } gtpc ran-procedure-ready-delay
```

default

Sets the default mode of RAN Procedure Ready feature for this GGSN service. By default it is disabled.

no

Disables the RAN Procedure Ready feature for this GGSN service. By default it is disabled.

timeout *dur*

Default: 10

Specifies the timeout duration (in seconds) for the RAN procedure timer. This timer starts on the arrival of every secondary "Create PDP Context Request" message.

This is an optional keyword. If no timeout period is specified, the default value is 10 seconds.

dur must be an integer from 1 through 40.

Usage Guidelines

Use this command to enable the RAN Procedure Ready feature for this GGSN service and specify the timeout period for the RAN procedure timer. This timer starts on the arrival of every secondary "Create PDP Context Request" message.

The GGSN waits until the Radio Access Bearer setup is completed and "Update PDP Context Request" is sent by the SGSN. If any downlink data is received before arrival of the "Update PDP Context Request" or before timer expiry, the downlink packets will be queued or buffered.

If the buffer becomes full (total buffer limit is of 1024 packets), all newly arriving packets are dropped.

The RAN Procedure Ready feature supports the following scenarios when RAB setup timer starts at the GGSN:

- If the GGSN receives the "Update PDP Context Request" before timer expiry, the GGSN stops the timer, sends all the queued/buffered packets in 'first-in first-out' manner and disables buffering of subsequent downlink data.
- If the GGSN receives the "Update PDP Context Request" before the timer expires, it processes the "Update PDP Context Request" as usual, but does not disable the buffering of downlink data. It then waits for another "Update PDP Context Request" to come with the RAN Procedure Ready set, or waits for timer to expire.
- If the GGSN does not receive the "Update PDP Context Request" with RAN Procedure Ready set before timer expiry, the timer is fired and the GGSN starts sending all queued packets and disables buffering of subsequent downlink data (assuming that the corresponding SGSN does not support this feature).
- If the timer has expired and the GGSN receives an "Update PDP Context Request" for a secondary PDP context with or without RAN Procedure Ready bit set, the UPC will be processed normally without buffering the packets.

Important This feature does not affect the Enhanced Charging Service or deep packet inspection (DPI) since the buffering of downlink data is done before sending it to an ACSMgr.

Important During an SGSN handoff scenario all packets are processed normally and the downlink packets are buffered until the timer expires.

Example

The following command configures the GGSN service to enable the RAN Procedure Ready feature and specify the timeout period as *20* seconds for the RAN Procedure timer in GGSN:

```
gtpc ran-procedure-ready-delay timeout 20
```

gtpc support-access-side

This command allows MS to change QoS parameters when Bearer Control Mode (BCM) is set as mixed for Gn-Gp GGSN.

Important This is a customer-specific implementation to meet the 3GPP TS 23.060 (Rel 11) Section 9.2 compliance requirements. For more information please contact your Cisco account representative.

Product

GGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

Syntax Description

```
[ default | no ] gtpc support-access-side { traffic-class { downgrade }
}
```

default

Restores the default setting. That is, for Gn-Gp GGSN, the MS will not be allowed to change the QCI when BCM is set as mixed.

no

Disables the configuration.

support-access-side

Allows the MS to change the QoS for Gn-Gp GGSN when BCM is mixed. This functionality is disabled by default.

traffic-class

Allows Traffic Class to be changed by the MS for Gn-Gp GGSN when BCM is set as mixed. This functionality is disabled by default.

downgrade

Allows Traffic Class to be downgraded by the MS for Gn-Gp GGSN when BCM is set as mixed. This functionality is disabled by default.

Usage Guidelines

Use this command to allow MS to change QoS parameters when BCM is set as mixed for Gn-Gp GGSN.

Example

The following example disables the configuration:

```
no gtpc support-access-side traffic-class downgrade
```

gtpc support-earp

Enables Evolved ARP (e-ARP) support for GGSN service on Gn-Gp interface.

Product

GGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

Syntax Description

```
[ default | no ] gtpc support-earp
```

no

Ignores E-ARP IE received in CPC/UPC Messages.

default

Sets the E-ARP support behavior to default, or disables the support.

Usage Guidelines

This command enables Evolved ARP support for GGSN service on Gn-Gp interface. Changing E-ARP support for GGSN service can impact existing bearers. By default E-ARP support is disabled.

Caution Changing the E-ARP support status from "disable" (default) to "enable" will have less or no impact on existing calls; whereas, changing the E-ARP support status from "enable" to "disable" will have more impact on existing calls.

Example

The following example disables the e-ARP support:

```
default gtpc support-earp
```

gtpc suppress-framed-route-timer

This command helps the framed route added in add routing list to be removed when user gets detached from the network.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`[ no | default ] gtpc suppress-framed-route-timer`

no

Disables the route timer suppression.

suppress-framed-route-timer

Enables quick removal of framed route on receiving delete PDP request.

Usage Guidelines

When this command is enabled, the framed route added in add routing list will be removed once user gets detached from the network to suppress-framed-route-timer. By default, this command is disabled.

Example

The following example disables quick removal of framed route on receiving delete PDP request:

`no gtpc suppress-framed-route-timer`

gtpc suppress-nrupc

This command helps enabling as well as disabling the NRUPC suppression.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`[ no ] gtpc suppress-nrupc { cpc | upc } { qos-change }`

no

Disables the NRUPC suppression.

Usage Guidelines

This command is used to enable or disable the NRUPC suppression caused by QoS change. NRUPC initiated by GGSN/P-GW is not responded to by the SGSNs of some vendors where behavior of SGSN is not compliant to standards. To accommodate SGSN non-compliance, the GGSN/P-GW software has been enhanced with CLI-controlled behavior to suppress sending of the GGSN/P-GW-initiated UPC only if SGSN requested values are less than PCRF authorized bit rates and if the values of the "No QoS Negotiation" and "Upgrade QoS Supported" flags received in the SGSN-initiated Update Request does not allow change/upgrade in QoS values in Update Response. By default, this behavior is disabled and it should be enabled if interoperability issues are seen with the SGSN.

When SGSN informs GGSN that, for a transaction either for Create PDP context Request or Update PDP Context Request. it(SGSN) does not support QoS-Upgrade and/or QoS-Negotiation, and if GGSN has to modify(either upgrade or degrade), QoS, then GGSN sends SGSN a response with unchanged QoS. Followed by the response, GGSN initiates a NRUPC with modified QoS. This is NRUPC for QoS-Change. To honor common flags suppress NRUPC CLIs are introduced.

This command suppress NRUPC (for qos-change) sent from GGSN to SGSN under following condition:

- When SGSN sends Create PDP Context Request with UQS=0. If Upgrade QoS Supported bit of the Common Flags IE is set to 0 or the Common Flags IE is absent then the SGSN does not support QoS upgrade in Response message functionality.
- When SGSN sends Update PDP Context Request with NQN flag = 1.
- When SGSN sends Update PDP Context Request QoS Update Support flag = 0

This suppression feature works with a limited functionality as follows:

- It works only on MBR and def-eps-qos.
- It holds if MBR in CPC/ UPC Request < AMBR authorized by (PCRF/MME).
- AMBR is not related to common flags hence no suppression on modification of AMBR.
- It doesn't hold if MBR in CPC/ UPC Request > AMBR authorized by (PCRF/MME).NRUPC will be generated to equalize the value of MBR to AMBR.

Example

The following example disables the NRUPC suppression using "upc" as GTP procedure:

```
no gtpc suppress-nrupc upc qos-change
```

gtpc update-pdp-resp

This command helps to update PDP Response options.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
[ default | no ] gtpc update-pdp-resp reject { imsi-mismatch | uli-mismatch
 }
```

default

Configures PDP Response option to the default value.

no

Disables the GTPC parameters.

update-pdp-resp reject

Updates the PDP Response reject options.

imsi-mismatch

Sends the Update PDP Response with NON_EXISTENT (CC 192) cause code if IMSI that is received in Update PDP Request does not match with the IMSI of the existing session.

uli-mismatch

Important This keyword is introduced in Release 21.6.13.

Rejects the update PDP request message if the ULI is not part of the home PLMN session.

Usage Guidelines

Use this command to update PDP Response reject options for mismatch in IMSI or ULI. In case of IMSI mismatch, the Update PDP Response appears with NON_EXISTENT (CC 192) cause code. In case of ULI mismatch, the update pdp request message is rejected if the ULI is not part of the home PLMN session.

Example

The following example shows that the PDP request is rejected in case of ULI mismatch:

```
[ default | no ] gtpc update-pdp-resp reject uli-mismatch
```

gtpu echo-interval

This command is obsolete and now available for configuration in GTP-U service configuration mode.

guard-interval

Configures the time period after which a redundant PDP context request received from an SGSN is treated as a new request rather than a re-send of a previous request.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
guard-interval guard_time
{ default | no } guard-interval
```

default

Restores the GGSN guard-interval parameter to its default setting of 100.

no

Disables the guard-interval function for the GGSN service.

guard_time

Default: 100

Specifies the amount of time that must pass before a GGSN service treats a redundant PDP context request as a new request instead of a re-send of a previous request.

guard_time is measured in seconds and can be configured to an integer from 10 through 3600.

Usage Guidelines

The guard interval is used to protect against replay attacks. Without a guard interval configured, information from a valid PDP context request could be used to gain un-authorized network access.

If the GGSN service receives a PDP context request in which the International Mobile Subscriber Identity (IMSI), the Network Service Access Point Identifier (NSAPI), the end user IP address, and the GTP sequence number are identical to those received in a previous request, the GGSN treats the new request as a re-send of the original. Therefore, information from a valid PDP context request could be collected and re-sent at a later time by an un-authorized user to gain network access.

Configuring a guard interval limits the amount of time that the information contained within a PDP context request remains valid.

Example

The following command configures the GGSN service with a guard interval of *60* seconds:

```
guard-interval 60
```

internal-qos data

This command configures internal priority in the QCI-mapping table for the GGSN, GTPv1 P-GW, and SAEGW calls. This command in the GGSN service configuration overrides the behavior of QCI-QOS-mapping for data packets only.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

`internal-qos data { dscp-derived | none | qci-derived }`

`{ no | default } internal-qos data { dscp-derived | none | qci-derived }`

no

Disables the specified internal priority in the QCI-mapping table for the GGSN, GTPv1 P-GW, and SAEGW calls.

default

Disables the internal priority in the QCI-mapping table for the GGSN, GTPv1 P-GW, and SAEGW calls.

dscp-derived

Data packets are marked at Layer 2 based on DSCP configured in qci-qos mapping table, then if DSCP is not configured in the qci-qos mapping table then data packets are not marked.

none

Data packets are not marked with Layer 2 (MPLS EXP/802.1P) marking.

qci-derived

Data packets are marked at Layer 2 based on internal-qos-priority configured in qci-qos mapping table. If internal-qos priority is not configured in the qci-qos mapping table, then the data packets are not marked.

Usage Guidelines

This command configures internal priority in the QCI-mapping table for the GGSN, GTPv1 P-GW, and SAEGW calls. It marks the traffic as QCI-derived, DSCP-derived, and None. If the no or default option of the CLI command is used, then the traffic is not marked. When the feature is not enabled, traffic is not marked.

This command overrides the behavior of QCI-QOS-mapping for data packets only.

Example

The following example marks the internal priority in the QCI-mapping table as DSCP-derived.

`internal-qos data dscp-derived`

ip local-port

Configures the local User Datagram Protocol (UDP) port for the Gn interfaces' GTP-C socket for GTPv1.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

ip local-port gtpc-v1 *port_number*
default ip local-port gtpc-v1

default

Configures the default value for the local UDP port for GTP Version 1 control messaging for this GGSN service.

gtpc-v1 *port_number*

Default: 2123

Specifies the UDP port number for GTPv1 GTPC sockets.

port_number can be configured to an integer from 1 through 65535.

Usage Guidelines

By default, the GGSN service attempts to use GTPv1 when communicating with SGSNs. This parameter configures the UDP port over which the GTP control (GTP-C) sockets are sent.

If an SGSN only supports GTPv0, the GGSN service automatically switches to GTPv0 when communicating with this SGSN. In the scenario, the GGSN service communicates with the SGSN on UDP port 3386 and does not have a GTP-C socket.

Important The UDP port setting on the SGSN must match the local-port setting for the GGSN service on the system in order for the two devices to communicate.

Example

The following command configures the GGSN service to use UDP port *2500* for exchanging GTPC sockets with SGSNs when using GTPv1:

```
ip local-port gtpc-v1 2500
```

ip qos-dscp

Configures the quality of service (QoS) differentiated service code point (DSCP) used when sending data packets over the Gn interface.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
ip qos-dscp { gtpc dscp | qci { 1 | 2 | 3 | 4 | 9 dscp } | qci { 5 | 6 | 7
 | 8 { dscp | allocation-retention-priority { 1 | 2 | 3 } dscp } } } +
default ip qos-dscp
no ip qos-dscp { gtpc | qci { 1 | 2 | 3 | 4 | 9  } | qci { 5 | 6 | 7 | 8
 [ allocation-retention-priority { 1 | 2 | 3 } ] } } +
```

default

Restores the GGSN IP parameters to the default settings.

Default GTP-C DSCP: **be**

Default QCI/DSCP:

- 1: ef
- 2: ef
- 3: af11
- 4: af11
- 5: ef
- 6: ef
- 7: af21
- 8: af21
- 9: be

no

Removes a specified QoS setting and returns it to its default setting.

gtpc

Configures the DSCP marking to be used for GTP-C messages. Must be followed by a DSCP marking.

Default GTP-C DSCP: **be**

dscp

Specifies the DSCP for the specified traffic pattern. *dscp* can be configured to any one of the following:

- **af11:** Assured Forwarding 11 per-hop-behavior (PHB)
- **af12:** Assured Forwarding 12 PHB
- **af13:** Assured Forwarding 13 PHB
- **af21:** Assured Forwarding 21 PHB
- **af22:** Assured Forwarding 22 PHB
- **af23:** Assured Forwarding 23 PHB
- **af31:** Assured Forwarding 31 PHB
- **af32:** Assured Forwarding 32 PHB
- **af33:** Assured Forwarding 33 PHB
- **af41:** Assured Forwarding 41 PHB
- **af42:** Assured Forwarding 42 PHB
- **af43:** Assured Forwarding 43 PHB
- **be:** Best effort forwarding PHB
- **cs5:** Class Selector 5 PHB
- **ef:** Expedited forwarding PHB

qci { 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 }

Configures the QoS Class Identifier (QCI) attribute of QoS. Here the QCI value is the QCI for which the negotiate limit is being set; it ranges from 1 to 9.

allocation-retention-priority { 1 | 2 | 3 }

Specifies the DSCP for interactive class if the allocation priority is present in the QoS profile. Priority can be the integer 1, 2, or 3.

DSCP values use the following matrix to map based on traffic handling priority and allocation retention priority if the allocation priority is present in the QoS profile.

The following table shows the DSCP value matrix for **allocation-retention-priority**.

Table 1: Default DSCP Value Matrix

Allocation Priority	1	2	3
Traffic Handling Priority			
1	ef	ef	ef
2	ef	ef	ef

Allocation Priority	1	2	3
3	af21	af21	af21
	af21	af21	af21

+

Indicates that more than one of the keywords can be entered in a single command.

Usage Guidelines

DSCP levels can be assigned to specific traffic patterns in order to ensure that data packets are delivered according to the precedence with which they are tagged. The diffserv markings are applied to the outer IP header of every GTP data packet. The diffserv marking of the inner IP header is not modified.

The traffic patterns are defined by QCI (1 to 9). Data packets falling under the category of each of the traffic patterns are tagged with a DSCP that further indicate their precedence as shown in the following tables:

Table 2: Class structure for assured forwarding (af) levels

Drop Precedence	Class			
	Class 1	Class 2	Class 3	Class 4
Low	af11	af21	af31	af41
Medium	af12	af22	af32	af41
High	af13	af23	af33	af43

Table 3: DSCP Precedence

Precedence (low to high)	DSCP
0	Best Effort (be)
1	Class 1
2	Class 2
3	Class 3
4	Class 4
5	Express Forwarding (ef)

The DSCP level can be configured for multiple traffic patterns within a single instance of this command.

The **no ip qos-dscp** command can be issued to remove a QoS setting and return it to its default setting.

Example

The following command configures the DSCP level for QCI to be Expedited Forwarding, **ef**:

```
ip qos-dscp qci 1 ef
```

max-contexts

Configures the maximum Primary, Secondary per Primary, and PPP context limits for the GGSN service.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
max-contexts { max-primary max_pri_number  | max-sec-per-primary max_sec_number
  | ppp-pdp-contexts context_number } +
default max-contexts
```

default

Configures the default value for maximum contexts for the GGSN service.

max-primary *max_pri_number*

Configures maximum primary PDP context allowed for this service. This includes PPP contexts also.

max_pri_number can be configured to an integer from 0 through 120000.

max-sec-per-primary *max_sec_number*

Default: 10

Indicates the maximum number of times that GTP control packets are retransmitted.

max_sec_number can be configured to an integer from 0 through 10.

ppp-pdp-contexts *context_number*

Configures maximum PPP pdp context allowed for this service.

context_number can be configured to an integer from 0 through 120000.

+

Indicates that more than one of the keywords can be entered in a single command.

Usage Guidelines

This command is used to limit the number of primary contexts including PPP contexts, number of secondary contexts per primary context, and PPP contexts per GGSN service.

Example

The following command configures the limits for primary, secondary contexts per primary, as well as the PPP contexts for a GGSN service:

```
max-contexts max-primary 40000 max-sec-per-primary 10 ppp-pdp-contexts
50000
```

max-retransmissions

Configures the maximum number of times that GTP control packets are retransmitted to an SGSN before it marks it unreachable.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
max-retransmissions max_number
default max-retransmissions
```

default

Restores the GGSN max-retransmissions parameter to its default setting of 4.

max_number

Default: 4

Indicates the maximum number of times that GTP control packets are retransmitted.

max_number can be configured to an integer from 0 through 15.

Usage Guidelines

This command is used in conjunction with the **timeout** command to control the retransmission of GTP control packets when no response is received from an SGSN. It is equivalent to the N3-REQUESTS parameter discussed in 3GPP TS 29.060.

If no response is received from the SGSN prior to the expiration of the timeout value, the GTP control packets are re-sent by the GGSN. This process occurs as many times as allowed by the configuration of this command.

If the max-retransmissions value is exceeded, the GGSN records a "Path Failure" for that SGSN and releases all PDP contexts associated with it.

Example

The following command configures the maximum number of retransmissions to *8*:

```
max-retransmissions 8
```

mbms policy

This command enables/disables the Multimedia Broadcast Multicast Services (MBMS) user service support for multicast and/or broadcast mode. It also specifies the policy for MBMS user service mode.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
mbms policy { multicst broadcast | none }
{ default | no } mbms policy
```

default

Restores the default mode of MBMS support in this GGSN service.

no

Removes or disables the configured MBMS support for multicast and/or broadcast mode in this GGSN service.

multicst broadcast

Enables the MBMS support and configures the policy for multicast and broadcast of user service.

none

Disables MBMS user service support.

Usage Guidelines

Use this command to enable/disable the MBMS user service support for Multicast and/or Broadcast mode. It also specifies the policy for MBMS user service mode.

Example

The following command enables MBMS support in this GGSN service:

```
mbms policy multicast broadcast
```

newcall

This command enables or disables the new call related behavior of this GGSN service when duplicate sessions with the same IP address request are received. This feature is required to support interworking with P-GW and HA.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
newcall [ duplicate-subscriber-requested-address { accept | reject }  |
duplicate-subscriber-requested-v6-address { accept | reject } ]
default newcall [ duplicate-subscriber-requested-address |
duplicate-subscriber-requested-v6-address { accept | reject } ]
```

default

Restores the default mode for new call session with the same address request received in this GGSN service. It rejects calls with duplicate address requests.

duplicate-subscriber-requested-address

Configures how duplicate sessions with same IP address request are handled.

duplicate-subscriber-requested-v6-address

Configures how duplicate sessions with same IPv6 address request are handled.

accept

Sets the system to "accept" another session using the same IP address for a new call. The new session will be created and the old session will be torn down.

Default: Disabled

reject

Rejects new calls with duplicate address requests. This is the default behavior.

Default: Enabled

Usage Guidelines

Use this command to enable or disable new call connections when the UE is not able to gracefully disconnect from the Enterprise PDN before attempting to reconnect via another access method. When enabled this command tears down the old session in order to accept the new connection with the same IP or IPv6 address assignment.

This feature also allows the GGSN to accept a request for a static subscriber address, even if the address is already used by another session. If this feature is not enabled, a new request with the same IP address for another session will be rejected.

Important This command is a license-enabled feature.

Example

The following command allows the GGSN to accept the duplicate call session request with the same IP address:

```
newcall duplicate-subscriber-requested-address accept
```

path-failure

Determines the GTP path-failure behavior on echo/non-echo messages.

Product GGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
path-failure detection-policy gtp { echo [ non-echo ] | non-echo [ echo
] }
{ no | default } path-failure detection-policy
```

no

No defined detection policy means path-failures are not detected.

default

Sets the path-failure detection-policy to GTP in echo mode.

detection-policy gtp {echo [non-echo] | non-echo [echo] }

Detection-policy is the policy to be used when path-failure is in active state. GTP messages are either gtp(u) (user) or gtp(c) (control) type, and the gtp keyword takes either echo or non-echo as message type.

echo: gtp(u) or gtp(c) message.

non-echo: a message type other than gtp(u) or gtp(c).

Usage Guidelines

Under current circumstances, a GGSN shuts down the GTP tunnel if the associated SGSN does not respond to multiple retries of an echo or non-echo message from the GGSN. In this way, a single call failure could be responsible for the loss of all active calls in the tunnel.

This is also an issue when echo is disabled, or when there is very little traffic on the SGSN and the GGSN is configured with large echo intervals.

This behavior adversely impacts the user experience because the customer has to reconnect every time this happens with their SGSN.

Example

The following example detects path failures when the SGSN fails to respond to multiple echo message retries:

```
path-failure detection-policy gtp echo
```

The following example turns off path-failure detection. On timeout of gtp(c) message retries, the particular context will be purged:

```
no path-failure detection-policy
```

plmn id

Configures the GGSN's Public Land Mobile Network (PLMN) identifiers used to determine if a mobile station is visiting, roaming, or belongs to a network. Up to 512 PLMN IDs can be configured for each GGSN service.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
plmn id mcc mcc_value [ mnc mnc_value ] [ primary ]
no plmn id mcc mcc_value [ mnc mnc_value ]
```

no

Removes a previously configured PLMN identifier for the GGSN service.

mcc *mcc_value*

Specifies the mobile country code (MCC) portion of the PLMN's identifier.

mcc_value is the PLMN MCC identifier and can be configured to an integer between 100 and 999.

mnc *mnc_value*

Specifies the mobile network code (MNC) portion of the PLMN's identifier. This option is optional.

mnc_value is the PLMN MNC identifier and can be configured to any 2- or 3-digit integer from 00 through 999.

primary

When multiple PLMN IDs are configured, the **primary** keyword can be used to designate one of the PLMN IDs to be used for the AAA attribute (3GPP-GGSN-MCC-MNC).

Usage Guidelines

The PLMN identifier is used by the GGSN service to determine whether or not a mobile station is visiting, roaming, or home. Multiple GGSN services can be configured with the same PLMN identifier. Up to 512 PLMN IDs can be configured for each GGSN Service.

Important The number of supported PLMN IDs was increased from 5 to 512 in StarOS Release 17.1. In addition, the MNC portion of the PLMN ID became optional.

If the MNC portion of a PLMN ID is not specified, home PLMN qualification will be done based solely on the MCC value and the MNC portion will be ignored for these particular MCCs.

Example

The following command configures the PLMN identifier with an MCC of *462* and MNC of *2*:

```
plmn id mcc 462 mnc 02
```

plmn unlisted-sgsn

Configures the GGSN's policy for handling communications from SGSNs with which it is not configured to communicate.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
plmn unlisted-sgsn [ foreign [ disable-gtpc-echo | rat-type { GAN | GERAN
 | HSPA | UTRAN | WLAN } | reject-foreign-subscriber ] | home [
disable-gtpc-echo | rat-type { GAN | GERAN | HSPA | UTRAN | WLAN }  ] |
mcc mcc_value mnc mnc_value [ disable-gtpc-echo | rat-type { GAN | GERAN |
HSPA | UTRAN | WLAN } | reject-foreign-subscriber ] | reject ]
default plmn unlisted-sgsn
```

default

Resets configured parameters to their default settings.

foreign

Default: Disabled

Specifies that the GGSN service accepts messages from SGSNs that are not configured within the service using the **sgsn address** command.

This keyword also dictates that unlisted SGSNs are treated as if they belong to a foreign PLMN. Therefore, PDP contexts originating from them are treated as visiting or roaming.

home

Default: Disabled

Specifies that the GGSN service accepts messages from SGSNs that are not configured within the service using the **sgsn address** command.

This keyword also dictates that unlisted SGSNs are treated as if they belong to the GGSN service's home PLMN.

mcc *mcc_value*

Specifies the mobile country code (MCC) portion of the PLMN's identifier.

mcc_value is the PLMN MCC identifier and can be configured to an integer from 100 through 999.

mnc *mnc_value*

Specifies the mobile network code (MNC) portion of the PLMN's identifier.

mnc_value is the PLMN MNC identifier and can be configured to a 2- or 3-digit integer from 00 through 999.

reject

Default: Enabled

Specifies that the GGSN service rejects messages from SGSNs that are not configured within the service using the **sgsn address** command.

When the GGSN service rejects the message(s), it returns a cause code of No Resources 199 (C7H, No resources available).

disable-gtpc-echo

Default: Send GTPC Echo messages to unlisted SGSNs.

When this keyword is specified, GTPC echo messages are not sent to unlisted SGSNs.

rat-type { GAN | GERAN | HSPA | UTRAN | WLAN }

This keyword configures the type of radio access technology.

GAN: Specifies the Generic Access Network type of Radio Access Technology (RAT).

GERAN: Specifies the GSM EDGE Radio Access Network type of RAT.

HSPA: Specifies the High Speed Packet Access type of RAT.

UTRAN: Specifies the UMTS Terrestrial Radio Access Network type of RAT.

WLAN: Specifies the Wireless Local Access Network type of RAT.

reject-foreign-subscriber

Default: Disabled

Specifies that incoming calls from foreign subscribers are rejected.

Usage Guidelines

This command works in conjunction with the **sgsn** command that configures the GGSN service to communicate with specific SGSNs. Any messages received from SGSNs not configured in that list are subject to the rules dictated by the **unlisted-sgsn** policy.

Example

The following command configures the GGSN service to accept messages from unlisted SGSNs and treat the SGSN as if it is on the GGSN's home network:

```
plmn unlisted-sgsn home
```

policy

Specifies the reject code to be used in the "Create PDP Context" response message when a RADIUS server timeouts.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
policy { accounting-server-timeout use-reject-code { system-failure |
no-resources } | authentication-server-timeout use-reject-code {
system-failure | user-authentication-failure } }
default policy { authentication-server-timeout | accounting-server-timeout
 }
```

default

Restores the specified parameter to its default setting.

accounting-server-timeout use-reject-code { system-failure | no-resources }

Default: **no-resources**

Specifies the reject code used by the GGSN if communication with an accounting server times out. The possible reject codes are:

- system-failure (204 (CCH))
- no-resources (199 (C7H))

authentication-server-timeout use-reject-code {system-failure | user-authentication-failure }

Default: user-authentication-failure

Specifies the reject code used by the GGSN if communication with an authentication server times out. The possible reject codes are:

- system-failure (204 (CCH))
- user-authentication-failure (209 (D1H))

Usage Guidelines

This command is used to configure the cause code used by the GGSN if communication with either a RADIUS authentication or accounting server times out.

When this parameter is used in conjunction with Radius accounting servers, the response is only set if a flag is configured in the APN Delay GTP Response, only after getting a response to the Accounting Start.

Example

The following command configures the GGSN response to a RADIUS authentication server timeout to be *system-failure*:

```
policy authentication-server-timeout use-reject-code system-failure
```

retransmission-timeout

Configures the timeout period in between retransmissions of GTP control packets. This timeout configuration is not applicable on Echo Request retransmission.

Important In 17.3 and later releases, this command has been deprecated.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
retransmission-timeout retransmit_time
default retransmission-timeout
```

default

Configures the default time interval that must pass without an SGSN response before the GGSN service retransmits GTP control packets.

retransmit_time

Default: 5

Specifies the amount of time that must pass without an SGSN response before the GGSN service retransmits GTP control packets.

retransmit_time is measured in seconds and can be configured to an integer from 1 through 20.

Usage Guidelines

This command is used in conjunction with the **max-retransmissions** command to control the retransmission of GTP control packets when no response is received from an SGSN.

If no response is received from the SGSN prior to the expiration of the timeout value, the GTP control packets are re-sent by the GGSN. This process occurs as many times as allowed by the configuration of the max-retransmissions command.

If the max-retransmissions value is exceeded within the retransmission-timeout period, the GGSN records a "Path Failure" for that SGSN and releases all PDP contexts associated with it.

Important This retransmission timeout configuration in not applicable for Echo Requests message retransmission. Echo are sent/retransmitted every echo interval, which can be configured separately.

Example

The following command configures a timeout value of *20* seconds:

```
retransmission-timeout 20
```

retransmission-timeout-ms

Configures the timeout period in between retransmissions of GTP control packets. This timeout configuration is not applicable on Echo Request retransmission.

Product

GGSN

Privilege

privilege

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

retransmission-timeout-ms *retransmit_time*
default retransmission-timeout-ms

default

Configures the default time interval that must pass without an SGSN response before the GGSN service retransmits GTP control packets.

retransmit_time

Default: 5000

Specifies the amount of time that must pass without an SGSN response before the GGSN service retransmits GTP control packets.

retransmit_time is measured in milliseconds and can be configured to an integer from 1000 through 20000, with a granularity of 100 milliseconds.

Usage Guidelines

This command is used in conjunction with the **max-retransmissions** command to control the retransmission of GTP control packets when no response is received from an SGSN.

If no response is received from the SGSN prior to the expiration of the timeout value, the GTP control packets are re-sent by the GGSN. This process occurs as many times as allowed by the configuration of the max-retransmissions command.

If the max-retransmissions value is exceeded within the retransmission-timeout period, the GGSN records a "Path Failure" for that SGSN and releases all PDP contexts associated with it.

Important This retransmission timeout configuration in not applicable for Echo Requests message retransmission. Echo are sent/retransmitted every echo interval, which can be configured separately.

Example

The following command configures a timeout value of *2000* milliseconds:

```
retransmission-timeout-ms 2000
```

setup-timeout

Configures the maximum amount of time the GGSN service allows for the setting up of PDP contexts.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

setup-timeout *setup_time*
default setup-timeout

default

Restores the command to its default setting of 60.

setup_time

Default: 60

Specifies the maximum amount of time the GGSN service allows for the setting up of PDP contexts.

setup_time is measured in seconds and can be configured to an integer from 1 through 6000.

Usage Guidelines

Use this command to limit the amount of time allowed for setting up PDP contexts. If the PDP context is not setup within the configured time frame, the GGSN service rejects the PDP context with a cause code of 199 (C7H, No resources available).

Example

The following command allows a maximum of *120* seconds for the setting up of PDP contexts:

setup-timeout 120

sgsn address

Configures the SGSNs that this GGSN service is allowed to communicate with.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

sgsn address { { *ipv4/ipv6_address* **|** *ipv4/ipv6_address/netmask* **} [plmn-foreign [reject-foreign-subscriber] | mcc** *mcc_code* **mnc** *mnc_code* **[reject-foreign-subscriber]] [rat-type { GAN | GERAN | HSPA | UTRAN | WLAN }] [description** *description* **] [disable-gtpc-echo**]
no sgsn address { *ipv4/ipv6_address* **|** *ipv4/ipv6_address/netmask* **}**

no

Removes a specific SGSN from the list or all configured SGSNs.

address

Configures the IP address of the SGSN.

ipv4/ipv6_address must be specified in IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation and can be followed by the subnetmask of the address.

plmn-foreign

Indicates whether or not the SGSN belongs to a foreign public land mobile network (PLMN).

reject-foreign-subscriber

Default: Disabled

Specifies that incoming calls from foreign subscribers are rejected.

mcc *mcc_code*

Specifies the mobile country code (MCC) portion of the PLMN's identifier.

mcc_code is the PLMN MCC identifier and configured as an integer from 100 through 999.

mnc *mnc_code*

Specifies the mobile network code (MNC) portion of the PLMN's identifier.

mnc_code is the PLMN MNC identifier and configured as a 2- or 3-digit integer from 00 through 999.

rat-type {GAN | GERAN | HSPA | UTRAN | WLAN }

This keyword configures the type of radio access technology.

GAN: Specifies the Generic Access Network type of Radio Access Technology (RAT).

GERAN: Specifies the GSM EDGE Radio Access Network type of RAT.

HSPA: Specifies the High Speed Packet Access type of RAT.

UTRAN: Specifies the UMTS Terrestrial Radio Access Network type of RAT.

WLAN: Specifies the Wireless Local Access Network type of RAT.

description *description*

Add description field to the SGSN entry in GGSN service.

description is an alphanumeric string of 1 through 63 characters.

disable-gtpc-echo

Default: Send GTPC Echo messages to unlisted SGSNs.

When this keyword is specified, GTPC echo messages are not sent to unlisted SGSNs.

Usage Guidelines

Use this command to configure a list of SGSNs that the GGSN service is to communicate with. This command can be entered multiple times to configure multiple SGSNs.

Important The GGSN only communicates with the SGSNs configured using this command unless a plmn-policy is enabled to allow communication with unconfigured SGSNs. PLMN policies are configured using the **plmn unlisted-sgsn** command.

Example

The following command configures the GGSN to communicate with an SGSN on a foreign PLMN with an IP address of *209.165.200.224*:

```
sgsn address 209.165.200.224 plmn-foreign
```

sgsn define-multiple-address-group

This command defines an SGSN Multiple Address Group and enters SGSN Multiple Address Group Configuration mode. Whenever there is a change in the control address in a GTPC UPC message, it is treated as an inter-SGSN handoff because an SGSN is usually identified uniquely by a single IP-address. This command supports a multiple address group feature which allows you to specify a set of addresses that specify a single SGSN. When a UPC handoff is received from any address in the group, it is treated as an intra-SGSN handoff.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
sgsn define-multiple-address-group grp_name [ -noconfirm ]
no sgsn define-multiple-address-group grp_name
```

no

Removes a specific SGSN Multiple Address Group from the list GGSN service configuration.

grp_name

Specifies the name of an SGSN multiple address group to create or configure.

*grp_name*is an alphanumeric string from 1 through 63 characters.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create or configure an SGSN Multiple Address Group that the GGSN service is to communicate with. This command can be entered multiple times to configure multiple SGSN Multiple Address Groups.

Example

The following command creates an SGSN Multiple Address Group named *sgsngrp1* and enters SGSN Multiple Address Group Configuration mode:

```
sgsn define-multiple-address-group sgsngrp1
```

sgsn multiple-address-group

Configures the SGSN multiple address groups that this GGSN service is allowed to communicate with.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

```
sgsn multiple-address-group grp_name [ disable-gtpc-echo ] [ mcc mcc_code
mnc mnc_code [ reject-foreign-subscriber ] ] [ plmn-foreign [
reject-foreign-subscriber ] [ rat-type { GAN | GERAN | HSPA | UTRAN |
WLAN } ] [ description description ]
no sgsn multiple-address-group grp_name
```

no

Removes a specific SGSN multiple address group from the list of configured SGSN multiple address groups.

grp_name

Specifies the name of a configured SGSN multiple address group to use.

disable-gtpc-echo

Default: Send GTPC Echo messages to unlisted SGSNs.

When this keyword is specified, GTPC echo messages are not sent to unlisted SGSNs.

plmn-foreign

Indicates whether or not the SGSN multiple address group belongs to a foreign public land mobile network (PLMN).

reject-foreign-subscriber

Default: Disabled

Specifies that incoming calls from foreign subscribers are rejected.

mcc *mcc_code*

Specifies the mobile country code (MCC) portion of the PLMN's identifier.

mcc_code is the PLMN MCC identifier and can be configured to an integer from 100 through 999.

mnc *mnc_code*

Specifies the mobile network code (MNC) portion of the PLMN's identifier.

mnc_code is the PLMN MNC identifier configured as a 2- or 3-digit integer from 00 through 999.

rat-type { GAN | GERAN | HSPA | UTRAN | WLAN }

This keyword configures the type of radio access technology.

GAN: Specifies the Generic Access Network type of Radio Access Technology (RAT).

GERAN: Specifies the GSM EDGE Radio Access Network type of RAT.

HSPA: Specifies the High Speed Packet Access type of RAT.

UTRAN: Specifies the UMTS Terrestrial Radio Access Network type of RAT.

WLAN: Specifies the Wireless Local Access Network type of RAT.

description *description*

Add a description field to the SGSN multiple address group entry in the GGSN service configuration.

description must be an alphameric string of 1 through 63 characters.

Usage Guidelines

Use this command to configure a list of SGSN multiple address groups with which the GGSN service is to communicate. This command can be entered multiple times to configure multiple SGSN multiple address groups.

Important The GGSN only communicates with the SGSN multiple address groups configured using this command unless a plmn-policy is enabled to allow communication with unconfigured SGSNs. PLMN policies are configured using the **plmn unlisted-sgsn** command.

Example

The following command configures the GGSN to communicate with an SGSN with multiple address that is defined by an SGSN multiple address group named *sgsngrp1* that is on a foreign PLMN:

```
sgsn multiple-address-group sgsngrp1 plmn-foreign
```

sgsn mcc-mnc

This command configures sgsn mcc-mnc for this GGSN service.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ggsn-service)#`

Syntax Description

```
sgsn mcc-mnc { prefer-rai | prefer-uli }
default sgsn mcc-mnc
```

default

Configures the default option for sgsn mcc-mnc. Default is 'prefer-uli'.

prefer-rai

Configures sgsn mcc-mnc using rai.

prefer-uli

Configures sgsn mcc-mnc using uli.

Usage Guidelines

Use this command to configure the sgsn mcc-mnc.

Example

The following command configures the sgsn mcc-mnc to 'prefer-rai':

```
sgsn mcc-mnc prefer-rai
```

trace-collection-entity

This command configures the trace collection entity IP address. Trace collection entity is the destination node to which trace files are transferred and stored.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GGSN Service Configuration

configure > **context** *context_name* > **ggsn-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ggsn-service)#
```

Syntax Description

trace-collection-entity *ipv4_addr*
no trace-collection-entity

no

Removes the configured IPv4 address for trace collection in this GGSN service.

ipv4_addr

Specifies the IP address in IPv4 dotted-decimal notation.

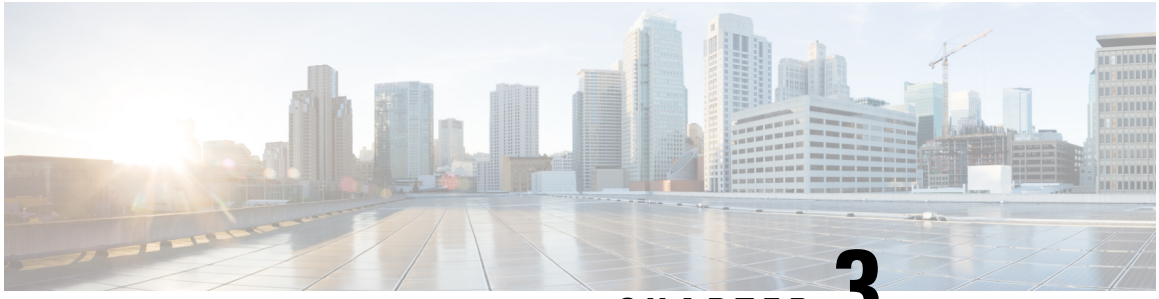
Usage Guidelines

Use this command to configure the trace collection entity IP address. This configuration is required because during signaling session trace activation, CPC REQ and UPC REQ do not provide the IP address for the trace collection entity.

Example

The following command configures the trace collection entity IP address with this GGSN service:

```
trace-collection-entity 209.165.200.230
```



CHAPTER 3

Global Configuration Mode Commands (A-K)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **aaa accounting-overload-protection** through **imei-profile**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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aaa accounting-overload-protection

This command configures Overload Protection Policy for accounting requests.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

aaa accounting-overload-protection prioritize-gtpp
{ default | no } aaa accounting-overload-protection

default

Configures the default setting.

Default: no priority assigned

no

Disables the Overload Protection configuration.

prioritize-gtpp

Gives higher priority to GTPP requests among the other outstanding requests. So while purging the lower priority requests will be selected first.

Usage Guidelines

Use this command to configure Overload Protection Policy for accounting requests.

Example

The following command prioritizes GTPP requests among the other outstanding requests:

aaa accounting-overload-protection prioritize-gtpp

aaa default-domain

Configure global accounting and authentication default domain for subscriber and context-level administrative user sessions.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
aaa default-domain { administrator | subscriber } domain_name
no aaa default-domain { administrator | subscriber }
```

no

Removes all or only the specified configured domain.

administrator | subscriber

administrator: Configures the default domain for context-level administrative users.

subscriber: Configures the default domain for subscribers.

domain_name

Sets the default context.

domain_name must be an alphanumeric string of 1 through 79 characters.

Usage Guidelines

This command configures the default domain which is used when accounting and authentication services are required for context-level administrative user and subscriber sessions whose user name does not include a domain.

Example

The following commands configure the default domains for context-level administrative users and subscribers, respectively:

```
aaa default-domain administrator sampleAdministratorDomain
aaa default-domain subscriber sampleSubscriberDomain
```

aaa domain-matching ignore-case

This command disables case sensitivity when performing domain matching. When this command is enabled, the system disregard case when matching domains.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] aaa domain-matching ignore-case`
`default aaa domain-matching`

default

Configures ignore-case as the domain matching method.

no

Specifies that the system consider case when domain matching.

Usage Guidelines

Use this command to configure the system to ignore case when matching domains.

Example

The following command configures the system to ignore case when matching domains:

`aaa domain-matching ignore-case`

aaa domain-matching imsi-prefix

Enables domain lookup for session based on the International Mobile Subscriber Identity (IMSI) prefix length. Default: Disabled

Important This command is only available in 8.3 and later releases.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
aaa domain-matching imsi-prefix prefix-length prefix_length
no aaa domain-matching imsi-prefix
default aaa domain-matching
```

no

Specifies the system must not consider imsi-prefix domain matching method.

prefix-length

Specifies the IMSI length to be matched with the domain.

prefix_length must be an integer from 1 through 15.

Usage Guidelines

Use this command to configure the IMSI-prefix method of domain matching. This command enables domain lookup for the session based on the IMSI prefix length. If there is a domain configured with the matching IMSI prefix, the associated configuration is used.

This feature does not support partial matches.

Example

The following command configures the IMSI prefix method for domain matching setting the prefix length to *10*.

```
aaa domain-matching imsi-prefix prefix-length 10
```

aaa large-configuration

This command enables or disables the system to accept a large number of RADIUS configurations to be defined and stored.

When aaa large-configuration is disabled, the following restrictions are in place:

- Only one (1) NAS IP address can be defined per context with the **radius attribute** command.
- The RADIUS attribute **nas-ip-address** can only be configured if the RADIUS group is **default**.
- Only 320 RADIUS servers can be configured system-wide.
- Only 64 RADIUS groups can be configured system-wide.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] aaa large-configuration

no

Disables AAA large configuration support.

Usage Guidelines

When aaa large-configuration is enabled, the system provides the ability to configure multiple NAS IP addresses in a single context to used with different radius groups. As well, the command allows support for up to 1,600 RADIUS server configurations and for a PDSN a maximum of 400 or for a GGSN a maximum of 800 RADIUS server group configurations system-wide.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

To enable the definition of a large number of RADIUS configurations, enter the following commands in the following order:

In APN Configuration mode, enter:

default aaa group

In Global Configuration mode, enter:

aaa large-configuration

In Exec mode, use the **save configuration** command and then the **reload** command.

aaa last-resort

Configure global accounting and authentication last resort domain for subscriber and context-level administrative user sessions.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
aaa last-resort context { administrator | subscriber context_name }
no aaa last-resort context { administrator | subscriber }
```

no

Removes all or only the specified previously configured authentication last resort domain name.

administrator | subscriber

administrator: Configures the last resort domain for context-level administrative.

subscriber: Configures the last resort domain for the subscribers.

context_name

Specifies the context which is to be set as the last resort. *context_name* must be an alphanumeric string of 1 to 79 characters.

Usage Guidelines

Set the last resort context which is used when there is no applicable default domain (context) and there is no domain provided with the subscriber's or context-level administrative user's name for use in the AAA functions.

Example

The following commands configure the last resort domains for context-level administrative user and subscribers, respectively:

```
aaa last-resort administrator sampleAdministratorDomain
aaa last-resort subscriber sampleSubscriberDomain
```

The following command removes the previously configured domain called *sampleAdministratorDomain*:

```
no aaa last-resort administrator sampleAdministratorDomain
```

access-link

This command allows you to create access-link to the Mobile Node. PPP and GTP.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
access-link fastpath apn-ppp-mtu-enforce[ -noconfirm ]
no access-link
```

no

Deletes the configured access-link.

access-link

Configures the access-link to the Mobile Node. PPP and GTP.

fastpath

Enables the fastpath option for apn mtu enforce.

apn-ppp-mtu-enforce

Enforces APN MTU to VPP based fastpath IPv4 data streams.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create/configure/delete an access-link in the system.

Example

The following command creates an access-link named :

`access-link`

aaa tacacs+

Enables or disables system-wide TACACS+ AAA (authentication, authorization and accounting) services for administrative users. This command is valid only if TACACS+ servers and related services have been configured in TACACS Configuration Mode.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config)#`

Syntax Description

`[ no ] aaa tacacs+ [ noconsole ]`

no

Disables TACACS+ AAA authentication.

noconsole

Disables TACACS+ authentication on the Console line only. By default this option is disabled; TACACS+ server authentication is performed for login via SSH or telnet (vty line) and a connection to the Console port.

With **noconsole** enabled, TACACS+ authentication is bypassed; the authentication request goes directly to the local database. Effectively TACACS+ authentication on the Console port is disabled. However, TACACS+ authentication remains enabled via vty lines.

Important When **aaa tacacs+ noconsole** is configured, a local user with valid credentials can log into a Console port even if **on-authen-fail stop** and **on-unknown-user stop** are enabled via the TACACS+ Configuration mode. If the user is not a TACACS+ user, he/she cannot login on a vty line.

Usage Guidelines

Enables or disables the use of TACACS+ AAA services for administrative users.

Example

```
aaa tacacs+
no aaa tacacs+
```

aaa username-format

Configure global accounting and authentication user name formats for AAA (authentication, authorization and accounting) functions. Up to six formats may be configured.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
[ no ] aaa username-format { domain | username } separator
default aaa username-format
```

no

Removes the specified user name format from the configuration.

domain | username

Default: username @

domain: indicates the left side of the string from the separator character is a domain name and the right side is the user name.

username: indicates the left side of the string from the separator character is a user name and the right side is the domain name.

Important The user name string is always searched from right to left for the first occurrence of the separator character.

separator

Specifies the character to use to delimit the domain from the user name for global AAA functions.Permitted characters include: @, %, -, \, #, or /. To specify a back slash ('\') as the separator, you must enter a double back slash ('\\') on the command line.

Usage Guidelines

Define the formats for user name delimiting if certain domains or groups of users are to be authenticated based upon their user name versus domain name.

Example

```
aaa username-format domain @
aaa username-format username %
no aaa username-format username %
```

access-policy

This command allows you to create/configure/delete the access-policy.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
access-policy policy_name [ -noconfirm ]
no access-policy policy_name
```

no

Deletes the configured access-policy.

access-policy *policy_name*

Specifies the name of the access-policy.

policy_name must be an alphanumeric string of 1 through 64 characters.

If the named access-policy does not exist, it is created, and the CLI mode changes to the Access Policy Configuration Mode. If the named access-policy already exists, the CLI mode changes to the Access Policy Configuration Mode.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create/configure/delete an access-policy in the system.

A maximum of four access-policies can be configured. One access-policy can contain upto 16 entries of precedence pointing to 16 different access-profiles.

On entering this command, the CLI prompt changes to:

[*context_name*]*host_name*(access-policy-*policy_name*)#

Example

The following command creates an access-policy named *ap1*:

```
access-policy ap1
```

access-profile

This command allows you to create/configure/delete the access-profile.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
access-profile profile_name [ -noconfirm ]
no access-profile profile_name
```

no

Deletes the configured access-profile.

access-profile *profile_name*

Specifies the name of the access-profile.

profile_name must be an alphanumeric string of 1 through 64 characters.

If the named access-profile does not exist, it is created, and the CLI mode changes to the Access Profile Configuration Mode. If the named access-profile already exists, the CLI mode changes to the Access Profile Configuration Mode.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create/configure/delete an access-profile in the system.

A maximum number of 16 access-profiles can be configured in the system.

To use the access-profiles, the access-policies must be created under the Global Configuration mode and associated under mme-service or call-control-profile.

One access-policy can contain upto 16 entries of precedence along with access-profile, device type, and RAT type. When the precedence is lower, the priority is higher.

On entering this command, the CLI prompt changes to:

[*context_name*]*host_name*(access-profile-*profile_name*)#

Example

The following command creates an access-profile named *apr3*:

```
access-profile apr3
```

active-charging service

This command allows you to create/configure/delete the Active Charging Service (ACS)/Enhanced Charging Service (ECS).

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
active-charging service acs_service_name [ -noconfirm ]
no active-charging service acs_service_name
```

no

Deletes the specified Active Charging Service.

acs_service_name

Specifies name of the Active Charging Service.

acs_service_name must be the name of an Active Charging Service, and must be an alphanumeric string of 1 through 15 characters.

If the named Active Charging Service does not exist, it is created, and the CLI mode changes to the ACS Configuration Mode wherein the service can be configured. If the named Active Charging Service already exists, the CLI mode changes to the ACS Configuration Mode.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create/configure/delete an Active Charging Service in the system. Note that, in this release, only one Active Charging Service can be created in the system.

Use this command after enabling ACS using the **require active-charging** command. This command allows administrative users to configure the ACS functionality.

On entering this command, the CLI prompt changes to:

[*context_name*]*hostname*(config-acs)#

Example

The following command creates an ACS service named *test*:

```
active-charging service test
```

alarm

Enables or disables alarming options for the SSC internal alarm and the central-office external alarms. To verify the state of the alarms, refer to the **show alarm** command.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] alarm { audible | central-office }
```

no

Disables the option specified.

audible

Enables the internal audible alarm on ASR 5500 SSCs.

central-office

Enables the central office (external relay) alarms.

Usage Guidelines

Use this command to enable or disable audible and external relay alarms on ASR 5500 SSCs.

Example

The following command enables the internal audible alarm:

```
alarm audible
```

apn-profile

Creates an instance of an Access Point Name (APN) profile.

Product

MME

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] apn-profile *apn_profile_name*

no

Deletes the APN profile instance from the configuration.

apn_profile_name

Specifies the name of the APN profile. Enter an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to create an instance of an APN profile and to enter the APN profile configuration mode. An APN profile is a template which groups a set of APN-specific commands that may be applicable to one or more APNs. See the *APN Profile Configuration Mode Commands* chapter for information regarding the definition of the rules contained within the profile and the use of the profile.

Important An APN profile is a key element of the Operator Policy feature and is only valid when associated with at least one operator policy.

To see what APN profiles have already been created, return to the Exec mode and enter the **show apn-profile all** command.

Example

The following command creates a configuration instance of an APN profile:

```
apn-profile apnprof27
```

apn-remap-table

Creates an instance of an Access Point Name (APN) remap table.

Product

MME

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] apn-remap-table *apn_remap_table_name*

no

Deletes the APN remap table instance from the configuration.

apn_remap_table_name

Specifies the name of the APN remap table. Enter an alphanumeric string of 1 through 65 characters.

Usage Guidelines

Use this command to create an instance of an APN remap table and to enter the APN remap table configuration mode. An APN remap table includes entries that define how an incoming APN, or the lack on one, will be handled. See the *APN Remap Table Configuration Mode Commands* chapter for information regarding the definition of the entries contained within the table and the use of the table.

Important An APN remap table is a key element of the Operator Policy feature and is only valid when associated with at least one operator policy.

To see what APN remap tables have already been created, return to the Exec mode and enter the **show apn-remap-table all** command.

Example

The following command creates a configuration instance of an APN remap table:

```
apn-remap-table pnremap-USorigins-table1
```

arp

Configures a system-wide time interval for performing Address Resolution Protocol (ARP) refresh.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
arp base-reachable-time time
default arp base-reachable-time
```

default

Restores the parameter to its default setting.

time

Default: 30

Specifies the ARP refresh interval (in seconds) as an integer from 30 through 86400.

Usage Guidelines

Use this command to configure a system-wide ARP refresh interval. Once a neighbor is found, the entry is considered valid for at least a random value between the *time*/2 and the *time**1.5.

Example

The following command configures an ARP refresh interval of 1 hour:

```
arp base-reachable-time 3600
```

autoconfirm

This command disables or enables confirmation for certain commands. This command affects all future CLI sessions and users.

Important To change the behavior for the current CLI session only, use the **autoconfirm** command in the Exec Mode.

Product

All

Privilege

Security Administrator, Administrator, Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] autoconfirm`

no

Disables the autoconfirm feature.

Usage Guidelines

When autoconfirm is enabled, certain commands ask you to answer yes or no to confirm that you want to execute the command. When autoconfirm is disabled the confirmation prompts never appear. Disabling autoconfirm disables command confirmation for all future CLI sessions.

By default **autoconfirm** is enabled.

Important If autoconfirm is enabled, commandguard will not take effect until autoconfirm is disabled in both Exec and Global Configuration modes.

Example

The following command enables command confirmation for all future CLI sessions and users:

`autoconfirm`

autoless

This command is obsolete. It is included in the CLI for backward compatibility with older configuration files. When executed, this command issues a warning and performs no function.

banner

Configures the CLI banner which is displayed upon the start of a CLI session.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
banner { charging-service | lawful-intercept | motd | pre-login } string
no banner { charging-service | lawful-intercept | motd | pre-login }
```

no

Removes the banner message by setting it to be a string of zero length.

charging-service

Specifies the Active Charging Service banner message. The banner is displayed upon initialization of an SSH CLI session with ACS-admin privileges (whenever anyone with the CLI privilege bit for ACS logs on).

lawful-intercept

Refer to the *Lawful Intercept Configuration Guide* for a description of this parameter.

motd

Configures the CLI banner message of the day which is displayed upon the initialization of any CLI session.

pre-login

Configures the CLI banner displayed before a CLI user logs in.

Important This banner is displayed only for serial port and telnet log ins. It is not supported in ssh and, therefore, will not be displayed before ssh log ins.

string

Specifies the banner or message to be displayed at session initialization. *string* may be an alphanumeric string of 0 through 2048 characters. The string must be enclosed in double quotation marks if the banner or message is to include spaces.

Usage Guidelines

Set the message of the day banner when an important system wide message is needed. For example, in preparation for removing a chassis from service, set the banner 1 or more days in advance to notify administrative users of the pending maintenance.

Example

The following command creates a message of the day with the text *Have a nice day.*

```
banner motd "Have a nice day."
```

bearer-control-profile

This command creates an instance of a Bearer Control profile, a key element of the MME QoS Profile feature.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] bearer-control-profile` *`bcprofile_name`*

no

Including this command prefix causes the MME to delete the named instance of the bearer control profile from the MME's configuration.

bcprofile_name

Enter an alphanumeric string of 1 through 64 characters to identify a specific bearer control profile.

Usage Guidelines

Entering this command provides access to the configuration commands of the Bearer Control Profile Configuration Mode to configure QoS parameters for dedicated-bearers and for default-bearers. Bearer level parameters such as ARP-PL, ARP-PVI, ARP-PCI, MBR, GBR, remap QCI value can be configured here independently for default/dedicated bearer along with the action to be taken, such as prefer-as-cap or pgw-upgrade. Bearer Control profile can be applied for specific QCIs or range of QCIs.

Example

The following sample command creates an instance of a bearer control profile named *BCProf*:

```
bearer-control-profile BCProf
```

boot delay

Configures the delay period, in seconds, before attempting to boot the system from a software image file residing on an external network server.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
boot delay time
no boot delay
```

no

Deletes the setting for the boot delay. The boot process executes immediately.

time

Specifies the amount of time (in seconds) to delay prior to requesting the software image from the external network server as an integer from 1 through 300.

Usage Guidelines

Useful when booting from the network when connection delays may cause timeouts. Such as when the Spanning Tree Protocol is used on network equipment.

Important The settings for this command are stored immediately in the boot.sys file. No changes are made to the system configuration file.

Example

The following sets the boot delay to *10* seconds:

```
boot delay 10
```

boot interface

Configures Ethernet network interfaces for obtaining a system software image during the system boot process.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
boot interface { local-eth1 | local-eth2 } [ medium { auto | speed
medium_speed duplex medium_duplex } [ media medium_media ] ]
no boot interface
```

no

Removes the boot interface configuration from the boot.sys file. Only files from the local file system can be loaded.

local-eth1 | local-eth2

Specifies the network interface to be configured where **local-eth1** is the primary ethernet interface and **local-eth2** is the secondary ethernet interface.

For the ASR 5500, the primary interface is port 1 (1000Base-T) on the MIO and the secondary interface is port 2 (1000Base-T) on the MIO.

medium { auto | speed *medium_speed* duplex *medium_duplex* }

Default: auto

auto: Configures the interface to auto-negotiate the interface speed. and duplex.

speed *medium_speed* **duplex** *medium_duplex*: Specifies the speed to use at all times where *medium_speed* must be one of:

- 10
- 100
- 1000

The keyword **duplex** is used to set the communication mode of the interface where *medium_duplex* must be one of:

- full
- half

media *medium_media*

Default: rj45

Optionally sets the physical interface where *medium_media* must be either **rj45** or **sfp**.

Usage Guidelines

Modify the boot interface settings to ensure that the system is able to obtain a software image from an external network server.

Important The settings for this command are stored immediately in the boot.sys file. No changes are made to the system configuration file.

Example

The following command configures the primary interface to auto-negotiate the speed:

```
boot interface local-eth1 medium auto
```

The following command configures the secondary interface to a fixed gigabit speed at full duplex using RJ45 connectors for the physical interface:

```
boot interface local-eth2 medium speed 1000 duplex full media rj45
```

The following command restores the defaults for the boot interface:

```
no boot interface
```

boot nameserver

Configures the IP address of the DNS (Domain Name Service) server to use when looking up hostnames in URLs for network booting.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
boot nameserver ip_address
no boot nameserver
```

no

Removes the network boot nameserver information from the boot.sys file.

ip_address

IPv4 dotted-decimal address of the DNS server the system uses to lookup hostnames in URLs for a software image from the network during the system boot process.

Usage Guidelines

Use this command to identify the DNS server to use to lookup hostnames in a software image URL.

Important The settings for this command are stored immediately in the boot.sys file. No changes are made to the system configuration file.

Example

The following configures the system to communicate with a DNS nameserver with the IP address of 209.165.200.229:

```
boot nameserver 209.165.200.229
```

boot networkconfig

Configures the networking parameters for the Switch Processor I/O card network interfaces to use when obtaining a software image from an external network server during the system boot process.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
boot networkconfig { dhcp | { { dhcp-static-fallback | static } ip address
 spio24 ip_address [ spio25 ip_address ] netmask ip_mask [ gateway gw_address ]
 } }
no boot networkconfig
```

no

Removes the network configuration information from the boot.sys file.

dhcp

Indicates that a Dynamic Host Control Protocol (DHCP) server is used for communicating with the external network server.

dhcp-static-fallback | static

dhcp-static-fallback: provides static IP address fallback network option when a DHCP server is unavailable.

static: specifies a fixed network IP address for the external network server that hosts the software image.

spio24 *ip_address* [spio25 *ip_address*] netmask *ip_mask* [gateway *gw_address*]

spio24 *ip_address* [**spio25** *ip_address*]: the IP address to use for the SPIO in slot 24 and optionally the SPIO in slot 25 for network booting. *ip_address* must be specified using IPv4 dotted-decimal notation.

netmask *ip_mask*: the network mask to use in conjunction with the IP address(es) specified for network booting. *ip_mask* must be specified using IPv4 dotted-decimal notation.

gateway *gw_address*: the IP address of a network gateway to use in conjunction with the IP address(es) specified for network booting. *gw_address* must be entered using IPv4 dotted-decimal notation.

Important

If *gw_address* is not specified, the network server must be on the same LAN as the system. Since both SPIOs must be in the same network, the netmask and gateway settings are shared.

Usage Guidelines

Configure the network parameters for the ports on the SPIO cards to use to communicate with an external network server that hosts software images.

Important The settings for this command are stored immediately in the boot.sys file. No changes are made to the system configuration file.

Important When configuring static addresses both SPIOs must have different IP addresses. Neither address can be the same as the local context IP address.

Example

The following configures the system to communicate with the external network server via DHCP with a fallback to IP address *209.165.200.234*, respectively.

```
boot networkconfig dhcp-static-fallback ip address spio24 209.165.200.234
 netmask 255.255.255.0
```

The following command configures the system to communicate with an external network server using the fixed (static) IP address *209.165.200.234* with a network mask of *255.255.255.224*.

```
boot networkconfig static ip address spio24 209.165.200.234 netmask
255.255.255.224
```

The following restores the system default for the network boot configuration options.

```
no boot networkconfig
```

boot system priority

Specifies the priority of a boot stack entry to use when the system first initializes or restarts. Up to 10 boot system priorities (entries in the boot.sys file located in the /flash device in the SPC, SMC or MIO) can be configured.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

boot system priority *number* **image** *image_url* **config** *config_path*
no boot system priority *number*

no

Remove a boot stack entry at the priority specified from the boot stack when it is no longer used.

priority *number*

Specifies the priority for the file group (consisting of an image (.bin) and its corresponding configuration (.cfg) file) specified in the boot stack. The value must be in the range from 1 through 100 where a priority of 1 is the highest. Up to 10 boot system priorities (boot stack entries) can be configured.

Important When performing a software upgrade it is important that the new file group have the highest priority (lowest number) configured.

Important To ensure that higher priority numbers remain open, use an "N-1" priority numbering methodology, where "N" is the first priority in the current boot stack.

image *image_url*

Specifies the location of a image file to use for system startup. The URL may refer to a local or a remote file. The URL must be formatted according to the following format:

For the ASR 5000:

- **[file:]{ /flash | /pcmcia1 | /hd }[** */directory* **]**/*filename*
- **[http: | tftp:]**//*host***[:***port* **][** */directory* **]**/*filename*

Important Use of the SMC hard drive is not supported in this release.

For the ASR 5500:

- **[file:]{ /flash | /usb1 | /hd }[** */directory* **]**/*filename*
- **[http: | tftp:]**//*host***[:***port* **][**/*directory* **]**/*filename*

Important Do not use the following characters when entering a string for the field names below: "/" (forward slash), ":" (colon) or "@" (at sign).

directory is the directory name.

filename is the actual file of interest.

host is the IP address or host name of the server.

port# is the logical port number that the communication protocol is to use.

Important A file intended for use on an ASR 5000 uses the convention xxxxx.asr5000.bin, where xxxxx is the software build number.

Important A file intended for use on an ASR 5500 uses the convention xxxxx.asr5500.bin, where xxxxx is the software build number.

Important When using the TFTP, it is advisable to use a server that supports large blocks, per RFC 2348. This can be implemented by using the "block size option" to ensure that the TFTP service does not restrict the file size of the transfer to 32MB.

config *config_path*

Specifies the location of a configuration file to use for system startup. This must be formatted according to the following format:

For the ASR 5000:

- **[file:]{ /flash | /pcmcia1 | /hd }[** */path* **]**/*filename*

Important Use of the SMC hard drive is not supported in this release.

For the ASR 5500:

- **[file:]{ /flash | /usb1 | /hd }[** */path* **]**/*filename*

Where *path* is the directory structure to the file of interest, and *filename* is the name of the configuration file. This file typically has a **.cfg** extension.

Usage Guidelines

This command is useful in prioritizing boot stack entries in the boot.sys file, typically located on the /flash device of the Active SPC, SMC, or MIO, for automatic recovery in case of a failure of a primary boot file group.

Important For ASR5500 nodes, the configuration file must reside on the MIO's local filesystem, stored on one of its local devices (/flash, or /pcmcia1, or /hd-raid/pcmcia1, or /pcmcia2, or /usb1, or /hd-raid). Attempts to load the configuration file from an external network server will result in a failure to load that image and configuration file group, causing the system to load the image and configuration file group with the next highest priority in the boot stack.

Important Configuration changes do not take effect until the system is reloaded.

Important The settings for this command are stored immediately in the boot.sys file. No changes are made to the system configuration file.

Example

The following commands set up two locations from which to obtain a boot file group.

```
boot system priority 1 image tftp: //remoteABC/pub/2012jan.bin config
/flash/pub/data/2012feb.cfg
boot system priority 2 image /flash /pub/data/2002jun.bin config
/pcmcia1/pub/data/2012feb.cfg
```

The following removes the current priority **1** boot entry from the boot.sys file.

```
no boot system priority 1
```

bulkstats

Enables the collection of bulk statistics and/or enters the bulk statistics configuration mode.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
bulkstats { collection | config [ schema | supplement ] | historical
collection | mode | ssd-samples { 1 | 2 } }
no bulkstats { collection | historical | ssd-samples }
default bulkstats { historical collection | ssd-samples }
```

no

Disables the collection of bulk statistics.

default

Restores the bulkstats configuration to its default value.

ssd-samples: Disabled

collection

Enables the statistics collection process. Collects a periodic snapshot of activity and performance data as configured via the Bulk Statistics Configuration mode.

config [schema | supplement] *url*

Enables bulkstats configuration replacement with contents of file if present. If no file is present, bulkstats mode configuration will be saved in the file of the given name when issuing a **save configuration** *url* command.

schema: This keyword takes a local URL keyword as a parameter. It performs a full bulkstats schema configuration replacement with the contents of the file provided. If the file exists, no schema will be saved when issuing a **save configuration** *url* command.

supplemental: This keyword takes a local URL keyword as a parameter. It supplements running bulkstats configuration with the contents of the configuration file provided.

url: Specifices the URL where the **[file:]{/flash | /hd-raid | /usb1 | /usb2 | /usb3 | /rmm1 | /cdrom1 | /sftp}[/directory]/***filename*

The system allows configuration of only 1 of these options. They are mutually exclusive.

Note The **bulkstats config schema** *url* takes precedence over manual configuration. With respect to schema, adding, modifying, or deleting any configurations manually through CLI, the changes will not be applied.

historical collection

Enables the collection of historical bulk statistics.

If enabled, StarOS tracks activities that require the storing of more data, such as "the highest value that's been seen over the last 24 hours".

mode

Enters the Bulk Statistics Configuration mode. The resulting command-line prompt will look similar to:

```
[<context-name>]host_name(config-bulkstats)#
```

ssd-samples { 1 | 2 }

Enables the collection of bulk statistics samples in the SSD archive. In the current release, a maximum of two bulkstats samples can be collected in the SSD archive. Each sample contains all the bulkstats collected during the configured transfer interval.

Also see the **show support details** command under the *Exec Mode Commands* for more information on excluding the bulkstats samples from the SSD archive.

Usage Guidelines

The Bulk Statistics Configuration mode consists of commands for configuring bulk statistic properties, such as the periodicity of collection. Detailed command descriptions appear in the *Bulk Statistics Configuration Mode Commands* chapter.

The collected bulk statistics are sent to a collection server (called a receiver). Bulk statistics are statistics that are collected in a group or schema, for example, system statistics, port statistics, RADIUS statistics.

Once the receiver, schema, and collection properties are configured, the **bulkstats collection** command enables or disables the collection of the data.

To collect a sample that provides an average, for example, an average of CPU counters, the "historical" features must be enabled with the **bulkstats historical collection** command.

Since bulk statistics are collected at regular, user-defined intervals, the Exec mode **bulkstats force** command can be used to manually initiate the immediate collection of statistics.

Example

The following command enables the collection of bulk statistics:

```
bulkstats collection
```

The following command performs a full bulkstats schema configuration replacement with the contents of the file provided:

```
bulkstats config schema /tmp/bsutscm2.cfg
```

ca-certificate-list

Product

ePDG

Privilege

Administrator, Security Administrator, Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

ca-certificate-list *ca_certificate_list_name* [**ca-cert-name** *ca-cert-name_1*] [**ca-cert-name** *ca-cert-name_2*] [**ca-cert-name** *ca-cert-name_3*] [**ca-cert-name** *ca-cert-name_4*]

no ca-certificate-list name *ca_certificate_list_name*

name *ca_certificate_list_name*

Specifies the CA certificate list as an alphanumeric string of 1 through 128 characters.

ca-cert-name *ca-cert-name_1* to *ca-cert-name_4*

Specifies the the CA certificate name as an string of size 1 through 128.

Configuring atleat one ca-cert-name is mandatory.

Usage Guidelines

Use this command to configure CA certificate list name 10 and four certificates ca-cert-name_1, ca-cert-name_2, ca-cert-name_3, ca-cert-name_4:

ca-certificate-list name *10* **ca-cert-name** *ca-cert-name_1* **ca-cert-name** *ca-cert-name_2* **ca-cert-name** *ca-cert-name_3* **ca-cert-name** *ca-cert-name_4*

ca-certificate

Configures and selects an X.509 CA certificate to enable a security gateway to perform certificate-based peer (client) authentication. StarOS supports a maximum of 16 certificates and 16 CA (Certificate Authrority) root certificates. A maximum of four CA root certificates can be bound to a crypto or SSL (Secure Sockets Layer) template.

Product

All IPSec-related products

Privilege

Administrator, Security Administrator, Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ca-certificate name name { der url url_format | pem { data pemdata | url url_format
 [ cert-enc ] [ cert-hash-url  url url_format ] } }
no ca-certificate name name
```

no

Disables ca-certificate.

Note If the CA-CERT is mandatory for the service to be up and running, then the removal of that CA-CERT is not allowed.

name *name*

Specifies the name the CA certificate as an alphanumeric string of 1 through 128 characters.

der url

Specifies the use of the Distinguished Encoding Rules (DER) binary format.

url is the Universal Reosurce Locator of the file containing certificate in der format.

pem

Specifies that the Privacy-enhanced Electronic Mail (PEM) format is to be used.

data *pemdata*

ndicates that the CA certificate data will be in PEM format. *pemdata* must be an alphanumeric string of 1 through 4095 characters.

cert-enc

Specifiesa certificate encoding type other than default encoding type.

cert-hash-url

Specifies a hash of X.509 Certificate.

url

Specifes the Universal Resource Locator of the file containing the CA certificate.

url_format

Specifies an existing URL expressed in one of the following formats:

- [file:]{/flash | /pcmcia1 | /hd-raid}[/directory]/<filename
- tftp://<host>[:<port>][/<directory>]/<filename
- ftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- sftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- http://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename

When read via a file, note that **show configuration** will not contain the URL reference, but will instead output the data via **data pemdata**, such that the configuration file is self-contained.

Usage Guidelines

Use this command to configure and select an X.509 CA certificate to enable a security gateway or SCM to perform certificate-based peer (client) authentication.

Example

Use the following command to remove a certificate named *fap1*:

```
no ca-certificate fap1
```

ca-crl

Configures the name and URL path of a Certificate Authority-Certificate Revocation List (CA-CRL).

Product

All IPSec-related products

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ca-crl name name { der | pem } { url url }
no ca-crl name name
```

no

Removes the named CA-CRL.

name

Provides a name of the CA-CRL. *name* must be an alphanumeric string of 1 through 128 characters.

der

Specifies that Distinguished Encoding Rules (DER) format is to be used for the source format.

pem

Specifies that Privacy-enhanced Electronic Mail (PEM) format is to be used for the source format.

url *url*

Specifies the URL where the CA-CRL is to be fetched. *url* must be an existing URL expressed as an alphanumeric string of 1 through 1023 characters in one of the following formats:

- [file:]{/flash | /pcmcia1 | /hd-raid}[/directory]/<filename
- tftp://<host>[:<port>][/<directory>]/<filename
- ftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- sftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- http://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- ldap://<host>[:<port>][/<dn>][?<attributes>][?<scope>][?<filter>][?<extensions>]

Usage Guidelines

Use this command to name and fetch a CA-CRL from a specified location.

Without additional information from the CA, an issued certificate remains valid to any verifier until it expires. To revoke certificates, the CA publishes a CRL periodically to provide an updated list of certificates revoked, but not yet expired. Like a certificate, a CRL is a digital document signed by the CA. In addition to a list of serial numbers of revoked certificates, the CRL includes attributes such as issuer name (same as the issuer name in the certificate), signature (signed by the issuer using the same key that signs certificates), last update (the time this CRL was issued), and next update (the time next CRL will be available).

Example

The following command fetches a CA-CRL named *list1.pem* from a *host.com/CRLs* location and names the list *CRL5*:

```
ca-crl name CRL5 pem url http://host.com/CRLs/list1.pem
```

call-control-profile

Creates an instance of a call-control profile.

Product

MME

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] call-control-profile` *`cc_profile_name`*

no

Deletes the Call-Control Profile instance from the configuration.

cc_profile_name

Specifies the name of the call-control profile. Enter an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to create an instance of a call-control profile and to enter the call-control profile configuration mode. A call-control profile is a template which groups a set of call-handling instructions that may be applicable to one or more incoming calls. See the *Call-Control Profile Configuration Mode Commands* chapter for information regarding the definition of the rules contained within the profile and the use of the profile.

Important A call-control profile is a key element of the Operator Policy feature and is only valid when associated with at least one operator policy.

To see what call-control profiles have already been created, return to the Exec mode and enter the **show call-control-profile all** command.

Example

The following command creates a configuration instance of an call-control profile:

```
call-control-profile ccprof1
```

card

Enters the Card Configuration mode for the specified card.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

card *slot_number*

slot_number

Specifies the slot number of the card for which the card configuration mode is to be entered. *slot_number* must be an integer from 1 to 20.

Usage Guidelines

Enter the configuration mode for a specific card when changes are required.

Important This command is not supported on virtual platforms.

Example

The following command enters Card Configuration mode for the card in slot *8* of the chassis:

card 8

card-standby-priority

Configures the redundancy priorities for packet processing cards by specifying the slot number search order for a standby card when needed.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

card-standby-priority *slot_num* **+**

slot_num

Specifies the slot of the card for the order of the standby cards. *slot_num* must be in the range from 1 through 10 excluding slots 5 and 6 (on the ASR 5500).

+

Indicates that you may enter as many slot numbers (separated by a space) as necessary to indicate the complete search order.

Usage Guidelines

Set the standby order of the redundant cards when multiple standby cards are available.

Questionable hardware should be placed lower in the priority list.

Important This command replaces the **pac-standby-priority** command.

Important This command is not supported on all platforms.

Example

The following command configures the redundancy priority to use the standby cards in slots 2, 4, and 7 in that order:

```
card-standby-priority 2 4 7
```

cdr-multi-mode

This command enables multiple instances of CDRMOD, one per packet processing card.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] cdr-multi-mode
```

default

Configures this command with its default setting.

Default: Single-CDRMOD mode

Usage Guidelines

Use this command to enable the multi-CDRMOD mode, wherein there will be one instance of CDRMOD per packet processing card. All the SessMgr instances that are running on a packet processing card will send the records to the CDRMOD instance running on that card.

By default, CDRMOD runs in single mode, wherein there will be only one instance of CDRMOD running for the entire chassis. All the SessMgr instances that are running on a packet processing card will send the records to the CDRMOD instance.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important In multi-CDRMOD mode, you should enable hard-disk usage.

certificate

Configures and selects an X.509 Trusted Author certificate.

Product

All IPSec-related products

Privilege

Administrator, Security Administrator, Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
certificate name name { der url url  | pem { data pemdata | url url }
private-key pem { [ encrypted ] data pemdata | url url [cert-enc]
[cert-hash-url url  url ] } }
no certificate name name
```

no

Disables certificate.

name *name*

Names the certificate. *name* must be from 1 to 128 alphanumeric characters.

der url

Specifies that the Distinguished Encoding Rules (DER) binary format is to be used.

pem

Specifies that the Privacy-enhanced Electronic Mail (PEM) format is to be used.

data *pemdata*

Certificate/private key data in PEM format. *pemdata* must be an alphanumeric string of 1 through 4095 (if private key is not implmented) or 1 through 8191 (if private key is implemented) characters.

cert-enc

Specifies a certificate encoding type other than default encoding type.

cert-hash-url

Specifes a hash and URL of the X.509 Certificate.

url *url*

Specifies the Universal Resource Locator (URL) of the file containing certificate/private key.

url_format

Sepcifies an existing URL expressed in one of the following formats:

- [file:]{/flash | /pcmcia1 | /hd-raid}[/directory]/<filename
- tftp://<host>[:<port>][/<directory>]/<filename
- ftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- sftp://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename
- http://[<username>[:<password>]@]<host>[:<port>][/<directory>]/<filename

When read via a file, **show configuration** will not contain the URL reference, but instead outputs the data via **data** *pemdata*, such that the configuration file is self-contained.

private-key pem

Specifies use of private key PEM data.

encrypted

Specifs the use of encrypted private key data.

Usage Guidelines

Use this command to Configures and selects an X.509 Trusted Author certificate.

Example

Use the following command to remove a certificate named *box1*:

```
no certificate data box1
```

cli

Configures global Command Line Interface (CLI) parameters.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
cli { access { monitor-protocol | monitor-subscriber | show-configuration
 } { administrator | operator } } | configuration-monitor | hidden |
login-failure-delay number | max-sessions number | operator
clear-subscriber-one-only | test-commands [encrypted] password password |
trap config-mode }
no cli { configuration-monitor | hidden | login-failure-delay number |
max-sessions | operator clear-subscriber-one-only | trap config-mode }
default cli { access { monitor-protocol | monitor-subscriber |
show-configuration } | configuration-monitor | login-failure-delay |
max-sessions | operator clear-subscriber-one-only | trap config-mode }
```

no

Removes the specified option.

default

Resets the keywords to their default values.

access { monitor-protocol | monitor-subscriber | show-configuration }{ operator | administrator }

Sets access privileges on the **monitor protocol** and **monitor subscriber** commands:

monitor-protocol: Selects privileges for the **monitor protocol** command.

monitor-subscriber: Selects privileges for the **monitor subscriber** command.

show-configuration: Selects privileges for the **show-configuration**command. However the default access level for this command is the user with operator privileges.

operator: Sets the privileges for the selected command to allow use by users with operator privileges.

administrator: Restricts use of the selected command to administrators only.

configuration-monitor

When this keyword is enabled, the system executes a **show configuration checksum** command every 15-minutes. The resulting checksum is compared with the previous checksum.

When a configuration change is detected, a log message and SNMP notification are generated. The SNMP notification only indicates that a change has occurred without identifying what change had been made.

The 15-minute interval is fixed and cannot be configured. By default configuration monitoring is disabled.

Note When enabled, the system's Shared Configuration Task (SCT) process may experience CPU spikes when the underlying **show configuration checksum** command is executed. This is most noticable with large StarOS configurations.

hidden

Allows a Security Administrator to enable access to hidden cli test-commands command.

The **no cli hidden** command disables access to the **cli test-commands** command. This is the default mode. Refer to the description of the **test-commands** keyword below for additional information.

login-failure-delay *number*

Specifies the time to wait before a login failure is returned and another login may be attempted. Default is five seconds.

max-sessions *number*

Sets the number of allowed simultaneous CLI sessions on the system. If this value is set to a number below the current number of open CLI sessions, the open sessions will continue until closed. *number* must be an integer from 2 through 100.

Caution Use caution when setting this command. Limiting simultaneous CLI sessions prevents authorized users from accessing the system if the maximum number allowed has been reached. The system already limits CLI sessions based on available resources. Additional limitation could have adverse effects.

operator clear-subscriber-one-only

Restricts Operator to clearing only one subscriber session at a time.

test-commands [encrypted] password *password_string*

Enables access to the CLI test-commands. The commands and keywords made available under this mode are for internal testing and debugging.

Caution CLI test-commands are intended for diagnostic use only. Access to these commands is not required during normal system operation. These command are intended for use only by Cisco TAC personnel. Some of these commands can slow system performance, drop subscribers, and/or render the system inoperable

Important An SNMP trap is generated when a user enables **cli test-commands** (starTestModeEntered). Refer to the *SNMP MIB Reference* for additional information.

encrypted: Specifies that the system will save the password in an encrypted format in the configuration file. The system displays the encrypted keyword in the configuration file as a flag indicating that the variable following the **password** keyword is the encrypted version of the plain text password. Only the encrypted password is saved as part of the configuration file.

password *password_string*: Prompts for the password required to access CLI test-commands. This password must have been previously configured by a Security Administrator via the **tech-suport test-commands password** command. The password is an alphanumeric string of 1 through 64 characters (plain text password) or 1 through 524 characters (encrypted password).

If the **password** keyword is not entered, the user is prompted (no-echo) to enter the password. If **tech-support test-commands password** has not been enabled, you will be unable to execute **cli test-commands**.

Once this test mode is entered under Global Configuration mode, CLI test-commands become part of the current configuration. Therefore, any generated configuration file will contain the **cli test-commands** command as the first configuration command.

Caution Use of CLI test-commands may cause significant service interruption. Contact Cisco TAC before executing any commands while in this mode.

The **no cli test-commands** command disables access to the CLI test-commands mode.

trap config-mode

Enables sending an SNMP trap (starCLIConfigMode) when a CLI user enters the configuration mode.

Usage Guidelines

This command sets access parameters and enables several operational parameters for the system's command line interface.

Important The maximum number of multiple CLI sessions that can be supported is based on the amount of available memory. A minimum of 15 CLI sessions are supported on the ASR 5500. One of the CLI sessions is reserved for use exclusively by a CLI session on a serial console interface. Additional CLI sessions beyond the pre-reserved set are permitted if sufficient management card resources are available. If the Resource Manager is unable to reserve resources for a CLI session beyond those that are pre-reserved, administrative users are prompted as to whether or not the system should attempt to create the new CLI session even without reserved resources.

Example

The following command sets the number of allowed simultaneous CLI sessions to *5*:

```
cli max-sessions 5
```

The following command sets the command **monitor protocol** to administrator-only:

```
cli access monitor-protocol administrator
```

cli-encrypt-algorithm

Specifies the type of encryption algorithm to be used for passwords and secrets.

Product

All

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
cli-encrypt-algorithm { A | B | C }
default cli-encrypt-algorithm
```

default

Resets the encryption algorithm to "A" (prior to release 21.0) or "B" (release 21.0 and higher).

A

Specifies MD5-based cipher encryption algorithm. This is the default for StarOS releases prior to 21.0. Passwords encrypted with this key will have "+A" prefixes in the configuration file.

B

Specifies the AES-CTR-128 cipher algorithm for encryption and the HMAC-SHA1 cipher algorithm for authentication. Passwords encrypted with this key will have "+B" prefixes in the configuration file. Algorithm B is the default for release 21.0 and higher.

C

Specifies HMAC-SHA512 cipher algorithm for encryption and authentication. Passwords encrypted with this key will have "+C" prefixes in the configuration file.

Usage Guidelines

Use this command to specify the types of cipher algorithm(s) to be used as encryption and authentication keys for passwords.

The encryption key protects the confidentiality of passwords, while the authentication key protects their integrity.

Important For release 20.0 and higher Trusted builds, option **A** is not available.

Example

The following command sets the encryption key to **C**:

```
cli-encrypt-algorithm C
```

client ssh

Enters the SSH Client Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] client ssh
```

no

Removes the SSH client key pair configuration.

Usage Guidelines

Use this command to enter the SSH Client Configuration mode. The CLI commands in that mode allow you to create an SSH key pair and push the private key to external servers for SSH access between the StarOS gateway and external servers.

Example

The following command moves you to the SSH Client Configuration mode:

```
client ssh
```

clock

Configures system clock timezone and what local time zone to use.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
clock timezone tz [ local ]
no clock timezone
```

no

Resets the system timezone to the system default UTC.

tz

Specifies the system time zone to use as one of:

- america-buenos-aires (GMT-3:00; Buenos Aires)
- america-caracas (GMT-4:00) Caracas
- america-guatemala (GMT-6:00; Guatemala, Guatemala)
- america-la_paz (GMT-4:00; La Paz)
- america-lima (GMT-5:00; Lima, Peru)
- america-puerto-rico (GMT-4:00; Puerto Rico)
- america-sao-paulo (GMT -3:00; Brazil)
- america-tijuana (GMT-8:00; Tijuana)
- asia-almaty (GMT+6.00; Almaty, Kazakhstan)
- asia-baghdad (GMT+3:00; Baghdad, Russia Zone 2, Kuwait, Nairobi, Riyadh, Moscow, Tehran)
- asia-bangkok (GMT+7:00; Bangkok)
- asia-calcutta (GMT+5:30; Calcutta, Mumbai, New Delhi)
- asia-dhaka (GMT+6:00; Dhaka)
- asia-hong-kong (GMT+8:00; Hong_Kong)
- asia-irkutsk (GMT+9:30; Irkutsk)
- asia-kabul (GMT+4:30; Kabul)
- asia-karachi (GMT+5:00; Karachi)
- asia-katmandu (GMT+5:45; Kathmandu)
- asia-magadan (GMT+11:00; Magadan)
- asia-muscat (GMT+4:00; Abu Dhabi, UAE, Muscat, Tblisi, Volgograd, Kabul)
- asia-rangoon (GMT+6:30; Rangoon)
- asia-seoul (GMT+9:00) Seoul
- asia-tehran (GMT+3:30; Tehran)
- asia-tokyo (GMT+9:00; Tokyo, Russia Zone 8)

- atlantic-azores (GMT-2:00; Azores)
- atlantic-cape-verde (GMT-1:00; Cape Verde Islands)
- australia-perth (GMT+8:00) Perth
- australia-darwin (GMT+9:30) Northern Territory - Alice Springs, Darwin, Uluru
- australia-adelaide (GMT+9:30) Southern Territory - Adelaide
- australia-melbourne (GMT+10:00) Victoria - Ballarat, Melbourne
- australia-sydney (GMT+10:00) New South Wales - Newcastle, Sydney, Wollongong
- australia-hobart (GMT+10:00) Tasmania - Hobart, Launceston
- australia-brisbane (GMT+10:00) Queensland - Brisbane, Cairns, Toowoomba, Townsville
- australia-lordhowe (GMT+10:30) Lord Howe Island
- canada-newfoundland (GMT-3:30; Newfoundland)
- canada-saskatchewan (GMT-6:00; Saskatchewan)
- europe-central (GMT+1:00; Paris, Berlin, Amsterdam, Brussels, Vienna, Madrid, Rome, Bern, Stockholm, Oslo)
- europe-dublin (GMT+0:00) Dublin, Ireland
- europe-eastern (GMT+2:00; Russia Zone 1, Athens, Helsinki, Istanbul, Jerusalem, Harare)
- newzealand-auckland (GMT +12:00; Auckland, Willington)
- newzealand-chatham (GMT +12:45; Chatham)
- nuku (GMT-13:00; Nuku'alofa)
- pacific-fiji (GMT+12:00; Wellington, Fiji, Marshall Islands)
- pacific-guam (GMT+10:00; Brisbane, Cairns, Sydney, Guam)
- pacific-kwajalein (GMT-12:00; Kwajalein)
- pacific-norfolk - (GMT+11:30) Norfolk Island
- pacific-samoa (GMT-11:00; Samoa)
- us-alaska (GMT-9:00; Alaska)
- us-arizona (GMT-7:00; Arizona)
- us-central (GMT-6:00; Chicago, Mexico City, Saint Louis)
- us-eastern (GMT-5:00; Bogota, Lima, New York City)
- us-hawaii (GMT-10:00; Hawaii)
- us-indiana (GMT-6:00; Indiana)
- us-mountain (GMT-7:00; Cheyenne, Denver, Las Vegas)
- us-pacific (GMT-8:00) San Francisco, LA, Seattle

- utc (GMT; Universal Time Coordinated: London, Dublin, Edinburgh, Lisbon, Reykjavik, Casablanca)

local

Indicates the timezone specified by *tz* is to be considered the local time zone for local time display and conversion.

Usage Guidelines

Clock and timezone management is necessary for proper accounting records. The chassis may be set to display a different local time than that of the system clock which allows accounting records to use the system time but to display the proper local time for users.

Example

The following command sets the clock time zone to UTC (Universal Time Coordinated):

```
clock timezone utc
```

cmp auto-fetch

Use this command to add a fetch configuration for each certificate for which automatic update is required. This is a Certificate Management Protocol v2 command.

Product

All products supporting IPSec CMPv2 features

Important

This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
cmp auto-fetch current-name cert_name ca-root ca_name time days
no auto-fetch current-name cert_name
```

no

Removes auto-fetch configuration for a certificate.

current-name *cert-name*

Specifies a valid security gateway certificate as an alphanumeric string of 1 through 129 characters.

ca-root *ca_name*

Specifies the filename of the root certificate of the CA server. *ca_name* is an alphanumeric string of 1 through 129 characters.

time *days*

Specifies the number of days before the certificate expires as the time when the auto fetch should be triggered. *days* is specified as an integer from 1 through 256.

Usage Guidelines

Use this command to specify when a current certificate should be automatically fetched.

Example

The following command automatically fetches the current certificate (*aqaw12345*) 10 days before it is to expire:

```
cmp fetch current-name aqaw12345 ca-root ca001 time 10
```

cmp cert-store location

Use this command to add a file location on /flash disk where the certificates and private keys will be stored. This is a Certificate Management Protocol v2 command.

Product

All products supporting IPSec CMPv2 features

Important

This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
cmp cert-store location pathname [ key reuse ]
no cmp cert-store
```

no

Removes the certificate storage location configuration.

pathname

Specifies the storage location of the certificates and key files in the following formats:

- **[file:]{ /flash | /usb1 | /hd-raid }[**/<*directory*>**]**/<*filename*>

- **tftp:**//<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>
- **ftp:**//**[**<*username*>**[:**<*password*>]**@]**<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>
- **sftp:**//**[**<*username*>**[:**<*password*>**]@]**<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>
- **http:**//**[**<*username*>**[:**<*password*>**]@]**<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>

Usage Guidelines

Use this command to specify where certificates and key files should be stored.

Example

The following command stores certificates and key files in a location different from the default location:

```
cmp  cert-store location file://certificates
```

cmp cert-trap time

Defines when an SNMP MIB certificate expiry trap should be sent as the number of hours before expiration.

Product

All products supporting IPSec CMPv2 features

Important This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
cmp cert-trap time hours
no cmp cert-trap time
```

no

Removes the certificate expiry MIB trap notification.

time *hours*

Specifies the number of hours before certificate expiry when a MIB trap should be sent. *hours* is an integer from 1 through 1024.

Usage Guidelines

Use this command to set when an SNMP MIB certificate expiry trap should be sent.

Example

The following command specifies that an SNMP MIB certificate expiry trap should be sent 48 hours prior to expiration:

```
cmp  cert-trap time 48
```

commandguard

Forces mandatory confirmation prompting for the **autoconfirm** (Exec mode and Global Configuration mode) and **configure** (Exec mode).

Product

All products

Privilege

Security Administrator, Administrator, Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] commandguard [exec-command *exec_mode_category* **]**

no

Disables commandguard functionality if enabled.

exec-command *exec_mode_category*

Applies mandatory prompting for specified categories of Exec mode configuration commands, even when **autoconfirm** is enabled.

exec_mode_category specifies one of the following categories of Exec mode configuration commands.

- card
- clear
- copy
- debug
- delete
- filesystem
- hd
- reload
- rename
- shutdown
- task
- upgrade

You can enter multiple **commandguard exec-command** *exec_mode_category* commands.

Usage Guidelines

Use this command to force mandatory confirmation prompting for the **autoconfirm** (Exec mode and Global Configuration mode) and **configure** (Exec mode). This command prevents users from accidentally entering Global Configuration mode, or to prevent file replay (most commonly caused by a cut and paste error in the configuration file). By default this command is disabled.

The status of **commandguard** is output in **show configuration** commands.

Important If autoconfirm is enabled, commandguard will not take effect until autoconfirm is disabled in both Exec and Global Configuration modes.

Use the **commandguard** command to apply mandatory prompting for specified categories of Exec mode configuration commands, even when autoconfirm is enabled.

- All Exec mode commands beginning with the specified category word will prompt for confirmation, regardless if **autoconfirm** is enabled.
- You can turn off confirmation prompting for a specific category using **no commandguard exec-command** *exec_mode_category*.
- If autoconfirm is overridden by **commandguard exec-command** for an Exec mode command, StarOS displays an informational message indicating why autoconfirm is being overridden when you attempt to execute the command.
- Users may selectively override confirmation prompting for any Exec mode configuration command that supports the **-noconfirm** keyword.

Example

The following command enables confirmation prompting for all configuration commands:

commandguard

congestion-control

This command enables and disables the congestion control functionality on the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default | no ] congestion-control
```

default

Sets the congestion control to its default value.

no

Disables the congestion control functionality. This is the default behavior.

Usage Guidelines

Congestion control on the system is used to monitor the system for conditions that could potentially degrade performance when the system is under heavy load. Typically, these conditions are temporary (i.e high CPU or memory utilization) and are quickly resolved. However, continuous or large numbers of these conditions within a specific time interval may impact the system's ability to service subscriber sessions. The purpose of congestion control is to aid in the identification of such conditions and invoke policies for addressing the situation.

Congestion control operation is based on the configuration of the following:

- **Call disconnections on overload**: With this functionality, the system enables and disables the policy for disconnecting passive calls (chassis-wide) during an overload situation. It also configures and fine-tunes the overload-disconnect congestion control policy for an entire chassis.
- **Congestion condition thresholds**: Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). These thresholds function in a similar fashion to the operation thresholds that can be configured for the system (as described in later in this chapter). The primary difference is that when these thresholds are reached, not only is an SNMP trap generated (starCongestion), but a service congestion policy is invoked as well.

  A threshold tolerance is configured to dictate the percentage under the configured threshold that must be reached in order for the condition to be considered "cleared". An SNMP trap (starCongestionClear) is then triggered.

- **Service congestion policies**: Congestion policies are configurable for each service (e.g., PDSN, GGSN, P-GW, SGSN, etc.). These policies dictate how services respond should the system detect that a congestion condition threshold has been crossed.

Since the congestion control functionality on the system is disabled by default, this command should be executed once congestion-control thresholds and policies have been configured. (Refer to the other congestion-control related commands for more information.)

Example

The following command enables the congestion control functionality on the system.

```
congestion-control
```

congestion-control overload-disconnect

This command enables and disables the policy for disconnecting passive calls (chassis-wide) during an overload situation. It also configures and fine-tunes the overload-disconnect congestion control policy for an entire chassis.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control overload-disconnect [ iterations-per-stage integer |
percent percentage_value | threshold { license-utilization percentage_value |
max-sessions-per-service-utilization percentage_value | tolerance number } ]
default congestion-control overload-disconnect [ iterations-per-stage |
percent | threshold { license-utilization |
max-sessions-per-service-utilization | tolerance } ]
no congestion-control overload-disconnect
```

default

When "default" and one of the keywords is added to the command, the policy remains in its current state and the value for the specified keyword is reset to its default value.

When "default" and the command are entered without keywords, the overload-disconnect policy for congestion control is disabled.

no

Disables the overload-disconnect policy for congestion control.

iterations-per-stage *integer*

Specifies the number of calls to be disconnected during the defined number of seconds. *integer* is a value from 2 through 8. The default value is 8.

percent *percentage_value*

Specifies the percentage of calls to be disconnected, in stages, during an overload situation. *percentage_value* is an integer from 1 through 100. The default value is 5.

threshold

license-utilization: Specifies the license-utilization percentage threshold for overload situations. If candidates are available, passive calls are disconnected when this threshold is exceeded. *percentage_value* is an integer from 1 through 100. The default value is 80.

max-sessions-per-service-utilization: Specifies a percentage of the maximum sessions per service. If candidates are available, passive calls are disconnected when this threshold is exceeded. *percentage_value* is an integer from 1 through 100. The default value is 80.

tolerance: Specifies the percentage of calls the system disconnects below the values set for the other two thresholds. In either case, a Clear Traps message is sent after the number of calls goes below the corresponding threshold value. *number* is an integer from 1 through 25. The default value is 10.

Usage Guidelines

Use this command to set the policy for call disconnects when the chassis experiences call overload.

To verify the congestion-control configuration use **show congestion-control configuration** from the Exec mode.

To set overload-disconnect policies for individual subscribers., see **overload-disconnect** in Subscriber Configuration Mode Commands.

Example

The following command sets an overload-disconnect policy for the chassis in which 5 calls would be disconnected very 5 seconds during an overload situation.

```
congestion-control overload-disconnect interations-per-stage 5
```

Both of the following commands disable the overload-disconnect policy without changing the policy configuration.

```
default congestion-control overload-disconnect
```

or

```
no congestion-control overload-disconnect
```

To instruct the system to stop call disconnects when the number of calls goes down 85% of the total allowed calls for that service, enter both of the following commands to set the max-sessions-per-service-utilization value to 90% and the tolerance value to 5%:

```
congestion-control overload-disconnect threshold
max-sessions-per-service-utilization 90
congestion-control overload-disconnect threshold tolerance 5
```

congestion-control policy

Configures congestion control policies.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control policy { asngw-service | asnpc-service | epdg-service
 fng-service | ggsn-service | ha-service | hnbgw-service | hsgw-service
| ipsg-service | lma-service | lns-service | mipv6ha-service |
pcc-af-service | pcc-policy-service | pdg-service | pdif-service |
pdsn-service | pdsnclosedrp-service | pgw-service | phsgw-service |
phspc-service | saegw-service  | samog-service | sgsn-service | sgw-service
 | wsg-service } action { drop | none | redirect | reject }
congestion-control policy mme-service action { drop | none | reject |
report-overload { permit-emergency-sessions | reject-new-sessions |
reject-non-emergency-sessions } enodeb-percentage percentage }
congestion-control policy { critical mme-service action-profile
action_profile_name | major mme-service action-profile action_profile_name | minor
 mme-service action-profile action_profile_name }
    congestion-control policy { critical | major | minor } sgsn-service
```

```
action-profile action_profile_name
   no congestion-control policy { critical | major | minor } sgsn-service
default congestion-control policy { asngw-service | asnpc-service |
epdg-service | fng-service | ggsn-service | ha-service | hnbgw-service |
 hsgw-service | ipsg-service | lma-service | lns-service | mipv6ha-service
 | mme-service | pcc-af-service | pcc-policy-service | pdg-service |
pdif-service | pdsn-service | pdsnclosedrp-service | pgw-service |
phsgw-service | phspc-service | saegw-service samog-service | |
sgsn-service | sgw-service | wsg-service }
```

default

Specifies the Congestion Control policy action for the selected service to its default value.

asngw-service

Specifies the Congestion Control policy action for the ASN-GW service.

asnpc-service

Specifies the Congestion Control policy action for the ASN PC-LR service.

critical

For MME (starting with Release 14.0), or ePDG (starting with Release 14.1), or for SGSN (starting with Release 17.0), this keyword associates the action-profile to be used for critical congestion thresholds for the MME or SGSN's service.

epdg-service action

Specifies the Congestion Control policy action for the ePDG service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

For ePDG type of session/calls, **redirect** action is not supported.

fng-service

Specifies the Congestion Control policy action for the FNG service.

ggsn-service

Specifies the Congestion Control policy action for the GGSN service.

ha-service

Specifies the Congestion Control policy action for the HA service.

hnbgw-service

Important In Release 20 and later, HNBGW is not supported. This keyword must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Specifies the Congestion Control policy action for the HNB-GW service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

hsgw-service

Specifies the Congestion Control policy action for the HSGW service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **redirect**: Specifies that the system should redirect new session requests to an alternate device.

Important If this option is used, the IP address of the alternate device must be configured using the **policy overload redirect** command that is part of the HSGW service configuration.

- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

ipsg-service

Specifies the Congestion Control Policy action for the IPSG service. The policy specifies how the IPSG service will respond when the system detects that a congestion condition threshold has been crossed.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.

Default: **none**

lma-service

Specifies the Congestion Control policy action for the LMA service

lns-service

Specifies the Congestion Control policy action for the LNS service.

mipv6ha-service

Specifies the Congestion Control policy action for the MIPv6-HA service.

major

For MME (starting with Release 14.0), or ePDG (starting with Release 14.1), or for SGSN (starting with Release 17.0), this keyword associates the action-profile to be used for major congestion thresholds for the MME or SGSN's service.

minor

For MME (starting with Release 14.0), or ePDG (starting with Release 14.1), or for SGSN (starting with Release 17.0), this keyword associates the action-profile to be used for minor congestion thresholds for the MME or SGSN's service.

mme-service

Sets the congestion control policy for action to take when subscriber sessions exceeds the defined threshold limit.

For MME type of session/calls, **redirect** action is not supported.

Important The **mme-service** keyword option is available only in releases prior to 14.0. In 14.0 and higher, you must first select either the critical, major or minor policy level first. Refer to the **congestion-action-profile** command in the LTE Policy Configuration mode to create action-profiles which in turn define the actions to be taken when thresholds are exceeded in Release 14.0 and higher for MME.

pcc-af-service

Specifies the Congestion Control policy action for the PCC Application Function (AF) service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

pcc-policy-service

Specifies the Congestion Control policy action for the PCC Policy service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.

- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

pcc-quota-service

Specifies the Congestion Control policy action for the PCC Quota service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

pdg-service

Specifies the Congestion Control policy action for the PDG service.

pdif-service

Specifies the Congestion Control policy action for the PDIF service.

pdsn-service

Specifies the Congestion Control policy action for the PDSN service.

pdsnclosedrp-service

Specifies the Congestion Control policy action for the PDSN Closed R-P service.

pgw-service

Specifies the Congestion Control policy action for the P-GW service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

  For P-GW sessions/calls, **redirect** action is not supported.

saegw-service

Specifies the Congestion Control policy action for the SAEGW service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.

- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

  For SAEGW sessions/calls, **redirect** action is not supported.

samog-service

Specifies the Congestion Control policy action for the SaMOG service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

sgsn-service

Specifies the Congestion Control policy - the congestion response actions for the SGSN service.

Prior to Release 17.0, the supported policy actions in this command are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

With Release 17.0 and higher, to define a policy you must first select one of the three congestion levels: critical, major or minor. Next select the service with the **sgsn-service** keyword and then associate a congestion-action-profile. Refer to the **congestion-action-profile** command in the SGSN-Global Configuration mode to create the congestion-action-profiles which define the congestion response actions to be taken when thresholds are exceeded for the SGSN.

sgw-service

Specifies the Congestion Control policy action for the S-GW service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.
- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

  For S-GW sessions/calls, **redirect** action is not supported.

wsg-service

Specifies the Congestion Control policy action for the WSG service.

Supported policy actions are:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action.

- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

action { drop | none | redirect | reject }

Specifies the policy action:

- **drop**: Specifies that the system should drop incoming packets containing new session requests.
- **none**: Specifies that the system should take no action. This is the default for PDIF-service.
- **redirect**: Specifies that the system should redirect new session requests to an alternate device. (HA, HSGW, and PDSN only)

Important If this option is used, the IP address of the alternate device must be configured using the **policy overload redirect** command that is part of the service configuration. Note that this option can not be used in conjunction with GGSN, MME, P-GW, SAEGW, or S-GW services.

- **reject**: Specifies that the system processes new session request messages and responds with a reject message.

  (For PDSN and HA, the reply code is 130, "insufficient resources". For the GGSN, the reply code is 199, "no resources available".)

report-overload { permit-emergency-sessions | reject-new-sessions | reject-non-emergency-sessions } enodeb-percentage *percentage*

Important This set of keywords is supported only by the MME.

Enables the MME to report overload conditions to eNodeBs and take additional action to alleviate congestion situations.

permit-emergency-sessions: Specifies that only emergency sessions are allowed to access the MME during the overload period.

reject-new-sessions: Specifies that all new sessions destined for the MME will be rejected during the overload period.

reject-non-emergency-sessions: Specifies that all non-emergency sessions will be rejected during the overload period.

enodeb-percentage *percentage*: Configures the percentage of known eNodeBs that will receive the overload report. *percentage* must be an integer from 1 to 100.

Usage Guidelines

Congestion policies can be configured for each service. When congestion control functionality is enabled, these policies dictate how services respond should the system detect that a congestion condition threshold has been crossed.

Example

The following command configures a congestion control policy of reject for PDSN services:

```
congestion-control policy pdsn-service action reject
```

The following command configures a congestion control policy of reject for MME services:

```
congestion-control policy mme-service action reject
```

congestion-control threshold

Configures the congestion control threshold values that are to be monitored.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold { license-utilization percent |
max-sessions-per-service-utilization percent | message-queue-utilization
percent | message-queue-wait-time time | port-rx-utilization percent |
port-specific { slot/port | all } [ tx-utilization percent ] [ rx-utilization
 percent ] port-specific-rx-utilization critical |
port-specific-tx-utilization critical | port-tx-utilization percent |
service-control-cpu-utilization percent | system-cpu-utilization percent |
system-memory-utilization percent | tolerance percent }
default congestion-control threshold { license-utilization |
max-sessions-per-service-utilization | message-queue-utilization |
message-queue-wait-time | port-rx-utilization | port-specific |
tx-utilization | rx-utilization | port-tx-utilization |
service-control-cpu-utilization | system-cpu-utilization |
system-memory-utilization | tolerance }
no congestion-control threshold port-specific { slot/port | all }
no congestion-control threshold port-specific { slot/port | all } [
rx-utilization percent ] [ tx-utilization percent ]
no congestion-control threshold port-specific-rx-utilization critical
no congestion-control threshold port-specific-tx-utilization critical
no congestion-control threshold { message-queue-utilization |
message-queue-wait-time | port-rx-utilization percent | port-tx-utilization
 percent | service-control-cpu-utilization | system-cpu-utilization |
system-memory-utilization }
```

default congestion-control threshold *keyword*

Sets the threshold keyword to its default value.

no congestion-control threshold port-specific { slot/port | all }

This command disables port specific threshold monitoring on the specified port or on all ports.

slot/port: Specifies the port for which port specific threshold monitoring is being configured. The slot and port must refer to an installed card and port.

all: Set port specific threshold monitoring for all ports on all cards.

no congestion-control threshold port-specific-rx-utilization critical

This command disables specific receive port utilization.

no congestion-control threshold port-specific-tx-utilization critical

This command disables specific transmit port utilization.

license-utilization *percent*

Default: 100

The percent utilization of licensed session capacity as measured in 10 second intervals.

percent can be configured to any integer value from 0 to 100.

max-sessions-per-service-utilization *percent*

Default: 80

The percent utilization of the maximum sessions allowed per service as measured in real-time. This threshold is based on the maximum number of sessions or PDP contexts configured for the a particular service. (Refer to the **bind** command for the PDSN, GGSN, SGSN, or HA services.)

percent can be an integer from 0 through 100.

message-queue-utilization *percent*

Default: 80

The percent utilization of the Demux Manager software task's message queue as measured in 10 second intervals. The queue is capable of storing a maximum of 10000 messages.

percent can be an integer from 0 through 100.

message-queue-wait-time *time*

Default: 5

The maximum time (in seconds) messages can be held in queue as measured by packet time stamps.

time is measured in seconds and can be an integer from 1 through 30.

Important In the event that this threshold is crossed, an SNMP trap is not triggered. The service congestion policy invocation resulting from the crossing of this threshold is enforced only for the packet that triggered the action.

[no] port-rx-utilization *percent*

Default: 80

The average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be an integer from 0 through 100.

[no] port-specific { *slot/port* | all } [rx-utilization *percent*] [tx-utilization *percent*]

Default: Disabled

Sets port-specific thresholds. If you set port-specific thresholds, when any individual port-specific threshold is reached, congestion control is applied system-wide.

slot/port: Specifies the port for which port-specific threshold monitoring is being configured. The slot and port must refer to an installed card and port.

all: Set port specific threshold monitoring for all ports on all cards.

rx-utilization *percent*: Default 80%. The average percent utilization of port resources for the specified port by received data as measured in 5-minute intervals. *percent* must an integer from 0 through 100.

tx-utilization *percent*: Default 80%. The average percent utilization of port resources for the specified port by transmitted data as measured in 5-minute intervals. *percent* must be an integer from 0 through 100.

[no] port-tx-utilization *percent*

Default: 80

The average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

percent can be an integer from 0 through 100.

service-control-cpu-utilization *percent*

Default: 80

The average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

percent can be an integer from 0 through 100.

system-cpu-utilization *percent*

Default: 80

The average percent utilization for all PAC/PSC/PSC2 CPUs available to the system as measured in 10-second intervals.

percent can be an integer from 0 through 100.

This threshold setting can be disabled with **no congestion-control threshold system-cpu-utilization** command. In case later you want to enable the same threshold setting **congestion-control threshold system-cpu-utilization** command will enable the CPU utilization threshold to preconfigured level.

system-memory-utilization *percent*

Default: 80

The average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

percent can be an integer from 0 through 100.

tolerance *percent*

Default: 10

The percentage under a configured threshold that dictates the point at which the condition is cleared.

percent can be an integer from 0 through 100.

Usage Guidelines

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). These thresholds function in a similar fashion to the operation thresholds that can be configured for the system (as described in later in this chapter). The primary difference is that when these thresholds are reached, not only is an SNMP trap generated (starCongestion), but a service congestion policy is invoked as well.

The tolerance parameter establishes the threshold at which the condition is cleared. An SNMP trap (starCongestionClear) is generated for the clear condition, as well.

Important The MME (version 14.0 and higher) supports three levels of thresholds – critical, major and minor – for each condition. Refer to the **congestion-control threshold** commands immediately following this command for information specific to the MME.

Example

The following command configures a system CPU utilization threshold of 75%.

```
congestion-control threshold system-cpu-utilization 75
```

This setting will remain in configuration unless you specify another threshold value in place of 75. This threshold setting can be disabled with **no congestion-control threshold system-cpu-utilization** command but cannot be removed from configuration. Later if you want to enable the previously configured threshold value of *75* percent, you only need to enter the **congestion-control threshold system-cpu-utilization** command without specifying any threshold value. It will enable the CPU utilization threshold to preconfigured level of *75* percent.

For example, **no congestion-control threshold system-cpu-utilization** disables the configured threshold setting and **congestion-control threshold system-cpu-utilization** again enables the threshold setting of 75%.

The following command configures a threshold tolerance of 5%:

```
congestion-control threshold license-utilization tolerance 5
```

In the above examples, the starCongestion trap gets triggered if the license utilization goes above 75% and the starCongestionClear trap gets triggered if it reaches or goes below 70%.

congestion-control threshold connected-sessions-utilization

Supports congestion based on the total number of utilized connected sessions.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
   congestion-control threshold connected-sessions-utilization{ critical
 percent | major percent | minor }
   [ default | no ] congestion-control threshold
connected-sessions-utilization { critical | major
| minor }
```

default congestion-control threshold connected-sessions-utilization

Sets all connected-sessions-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value of utilized connected sessions.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value of utilized connected sessions.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value of utilized connected sessions.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of utilized connected sessions.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Important The **major** and **minor** keywords in this command are product dependent. PGW, SGW and SAE-GW products only allow critical configuration threshold levels.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold connected-sessions-utilitization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

congestion-control threshold demuxmgr-cpu-utilization

Configures a demux manager facility type to be monitored for an average CPU utilization along with the threshold values.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold demuxmgr-cpu utilization facility {
egtpegmgr { critical percent | major percent | minor percent } | egtpinmgr {
critical percent | major percent | minor percent } | gtpumgr { critical percent
| major percent | minor percent }}
[ default | no ] congestion-control threshold demuxmgr-cpu utilization
{ facility egtpegmgr { critical | major | minor } | egtpinmgr { critical |
major | minor } | gtpumgr { critical | major | minor }}
```

default congestion-control threshold demuxmgr-cpu-utilization

Sets all demuxmgr-cpu-utilization thresholds to the default values.

facility

Specifies the specific facility.

egtpegmgr

Specifies the EGTP egress demux manager.

egtpinmgr

Specifies the EGTP ingress demux manager.

gtpumgr

Specifies the GTPUMGR demux manager.

critical *percent*

Default: 0

The critical threshold value for average percent CPU utilization to trigger the congestion control based on the configured congestion control policy.

percent can be configured to any integer value from 0 to 100.

Important The recommended critical threshold value *percent* is 80.

major *percent*

Default: 0

The major threshold value for average percent CPU utilization to trigger the congestion control based on the configured congestion control policy.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent CPU utilization to trigger the congestion control based on the configured congestion control policy.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent CPU utilization to trigger the congestion control based on the configured congestion control policy.

The demux manager facility average cpu utilization is the average of all the demux manager instances cpu utilization of same facility type that are currently running in the chassis. If the demux manager facility average cpu utilization exceeds the configuration threshold value, then congestion is notified to all services and the appropriate action begins based on the congestion policy configured.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Important **congestion-control threshold demuxmgr-cpu-utilization** is visible for all products but configuration is only applicable for PGW, SGW and SAE-GW.

The **major** and **minor** keywords in this command are product dependent. PGW, SGW and SAE-GW products only allow critical configuration threshold levels.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold demuxmgr-cpu-utilitization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold demuxmgr-cpu-utilization
```

congestion-control threshold license-utilization

Configures the congestion threshold levels for license utilization on the system.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold license-utilization { critical percent | major
 percent | minor percent }
default congestion-control threshold license-utilization
```

default congestion-control threshold license-utilization

Sets all license-utilization thresholds to the default values.

critical *percent*

Default: 100

The critical threshold value for percent utilization of licensed session capacity, measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for percent utilization of licensed session capacity, measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for percent utilization of licensed session capacity, measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of licensed session capacity as a percentage as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level for license utilization of 25%.

```
congestion-control threshold license-utilization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold license-utilization
```

congestion-control threshold max-sessions-per-service-utilization

Configures the congestion thresholds for the maximum sessions allowed per service.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
congestion-control threshold max-sessions-per-service-utilization {
critical percent | major percent | minor percent }
default congestion-control threshold max-sessions-per-service-utilization
```

default congestion-control threshold max-sessions-per-service-utilization

Sets all max-sessions-per-service-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for percent utilization of the maximum sessions allowed per service.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for percent utilization of the maximum sessions allowed per service.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for percent utilization of the maximum sessions allowed per service.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of maximum sessions per service as a percentage measured in real-time. This threshold is based on the maximum number of sessions or PDP contexts configured for the a particular service. (Refer to the **bind** command for the PDSN, GGSN, SGSN, or HA services.)

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold max-sessions-per-service-utilization minor
25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold max-sessions-per-service-utilization
```

congestion-control threshold message-queue-utilization

Configures the congestion thresholds for the percent utilization of the Demux Manager software task's message queue.

Important This command applies to ePDG (version 14.1 and higher).

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold message-queue-utilization { critical percent
 | major percent | minor percent }
default congestion-control threshold message-queue-utilization
```

default congestion-control threshold message-queue-utilization

Sets all max-sessions-per-service-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for percent utilization of the Demux Manager software task's message queue as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for percent utilization of the Demux Manager software task's message queue as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for percent utilization of the Demux Manager software task's message queue as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of percent utilization of the Demux Manager software task's message queue as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold message-queue-utilization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold message-queue-utilization
```

congestion-control threshold message-queue-wait-time

Configures the congestion thresholds for the maximum time (in seconds) messages can be held in queue as measured by packet time stamps.

Important This command applies to ePDG (version 14.1 and higher).

Product ePDG

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold message-queue-wait-time { critical time |
major time | minor time }
default congestion-control threshold message-queue-wait-time
```

default congestion-control threshold message-queue-wait-time

Sets all max-queue-wait-time thresholds to the default values.

critical *time*

Default: 5

The critical threshold value for the maximum time (in seconds) that messages can be held in queue as measured by packet time stamps.

time is measured in seconds and can be an integer from 1 through 30.

major *time*

Default: 0

The major threshold value for the maximum time (in seconds) that messages can be held in queue as measured by packet time stamps.

time is measured in seconds and can be an integer from 1 through 30.

minor *time*

Default: 0

The minor threshold value for the maximum time (in seconds) that messages can be held in queue as measured by packet time stamps.

time is measured in seconds and can be an integer from 1 through 30.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels for the maximum time (in seconds) messages can be held in queue.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed a congestion action-profile is invoked, if configured.

This command requires a valid product license.

Example

The following command configures a major threshold level of 4 seconds.

```
congestion-control threshold message-queue-wait-time major 4
```

This setting will remain in configuration unless you specify another minor threshold level in place of 4.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold message-queue-wait-time
```

congestion-control threshold mmemgr-average-cpu-utilization

Configures MMEMgr-specific thresholds to monitor the MMEMgrs' average CPU utilization.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold mmemgr-average-cpu-utilization { critical
percent | major percent | minor percent }
[ default | no ] congestion-control threshold
mmemgr-average-cpu-utilization { critical | major |  minor }
```

default

Resets the configured thresholds to the system defaults.

no

Disables the configured thresholds and removes them from the MME's configuration.

critical *percent*

Default: 80

The critical threshold value for the average percent utilization of all the CPU memory available to the MMEMgr measured in 10-second intervals.

percent can be configured to any integer value from 1 to 100.

major *percent*

Default: 0

The major threshold value for the average percent utilization of all the CPU memory available to the MMEMgr measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for the average percent utilization of the all the CPU memory available to the MMEMgr measured in 10-second intervals.

percent can be configured to any integer value from 1 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of all CPU memory available to the MMEMgrs as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked.

The most commonly recommended threshold for the MMEMgr is the service CPU utilization. This is reflective of the MMEMgr's CPU usage since all MMEmgrs are located on demux cards.

Example

Use a command similar to the following to set a critical threshold of 89% for MMEMgr CPU usage:

```
congestion-control threshold mmemgr-average-cpu-utilization critical 89
```

congestion-control threshold port-rx-utilization

Configures the congestion thresholds for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

Important This command applies to ePDG (version 14.1 and higher).

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold port-rx-utilization { critical percent | major
 percent | minor percent }
default congestion-control threshold port-rx-utilization
```

default congestion-control threshold port-rx-utilization

Sets all port-rx-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold port-rx-utilization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold port-rx-utilization
```

congestion-control threshold port-specific

Configures the congestion thresholds for specific port utilization.

Important This command applies to ePDG (version 14.1 and higher).

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

congestion-control threshold port-specific { *slot/port* [tx-utilization { critical *percent* | major *percent* | minor *percent*] [rx-utilization { critical *percent* | major *percent* | minor *percent* } | all { critical *percent* | major *percent* | minor *percent* } }
no congestion-control threshold port-specific { *slot/port* { critical | major | minor } | all { critical | major | minor } }

no congestion-control threshold port-specific { *slot/port*{ critical | major | minor } | all { critical | major | minor } }

Sets all port-specific utilization thresholds to the default values.

slot/port

Default: Disabled

Specifies the port for which port specific threshold monitoring is being configured. The slot and port must refer to an installed card and port. If you set port-specific thresholds, when any individual port-specific threshold is reached, congestion control is applied system-wide.

all

Set threshold monitoring for all ports on all cards.

rx-utilization

Set threshold monitoring for received data only.

tx-utilization

Set threshold monitoring for transmitted data only.

critical *percent*

Default: 80

The critical threshold value for average percent utilization of the specified port resources as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent utilization of the specified port resources as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent utilization of the specified port resources as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of specified resources for all ports by transmitted data as measured in 5-minute intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 5% for received data on port 1 of the card in slot 17.

```
congestion-control threshold port-specific 17/1 rx-utilization minor 5
```

This setting will remain in configuration unless you specify another minor threshold level in place of 5.

congestion-control threshold port-rx-utilization

Configures the congestion thresholds for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

Important This command applies to ePDG (version 14.1 and higher).

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold port-rx-utilization { critical percent | major
 percent | minor percent }
default congestion-control threshold port-rx-utilization
```

default congestion-control threshold port-rx-utilization

Sets all port-rx-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of port resources for all ports by received data as measured in 5-minute intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold port-rx-utilization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold port-rx-utilization
```

congestion-control threshold port-tx-utilization

Configures the congestion thresholds for average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

Important This command applies to ePDG (version 14.1 and higher).

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

congestion-control threshold port-tx-utilization { critical *percent* **| major** *percent* **| minor** *percent* **}**
default congestion-control threshold port-tx-utilization

default congestion-control threshold port-tx-utilization

Sets all port-tx-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of port resources for all ports by transmitted data as measured in 5-minute intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold port-tx-utilization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold port-tx-utilization
```

congestion-control threshold service-control-cpu-utilization

Configures the congestion thresholds for average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold service-control-cpu-utilization { critical
percent | major percent | minor percent }
default congestion-control threshold service-control-cpu-utilization
```

default congestion-control threshold service-control-cpu-utilization

Sets all service-control-cpu-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of CPUs on which a Demux Manager software task instance is running as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

When the service-control-cpu-utilization critical threshold setting is exceeded, ipsecmgrs running in the congested CPU are notified of the congestion. The ipsecmgrs raise traps for service-congestion exceeded and update the NPU so that no new calls are sent to those ipsecmgrs. The NPU does not send any new calls to the congested ipsecmgrs. However, if all ipsecmgrs are congested the action is always drop regardless of the setting for congestion policy action. The packet drops are silently done by the NPU.

When ipsecmgrs are congested and an NPU receives a packet whose Security Parameter Index, Initiator (SPIi) in IKE_SA_INIT matches that of a currently established session, the packet is classified as belonging to the existing session. Since congestion action is applied only on new sessions, such IKE_SA_INIT packets are allowed to create sessions. If the IKE_SA_INIT uses an SPIi which does not match any of the existing sessions, it is processed according to the congestion policy action.

This command requires a valid product license.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold service-control-cpu-utilitization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold service-control-cpu-utilization
```

congestion-control threshold system-cpu-utilization

Configures the congestion thresholds for average percent CPU utilization of all packet processing cards available to the system as measured in 10-second intervals.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold system-cpu-utilization { critical percent |
major percent | minor percent | exclude demux }
default congestion-control threshold system-cpu-utilization
```

default congestion-control threshold system-cpu-utilization

Sets all system-cpu-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for average percent CPU utilization of all packet processing cards available to the system.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for average percent CPU utilization of all packet processing cards available to the system.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for average percent CPU utilization of all packet processing cards available to the system.

percent can be configured to any integer value from 0 to 100.

exclude *demux*

Configures exclusion from the system CPU utilization calculation.

If **exclude** *demux* is not configured, then the demux CPU will be included while calculating the system CPU utilization. It is recommended to use this keyword to ensure accurate values of system CPU utilization.

demux Removes the demux DPC from the system CPU utilization calculation.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent CPU utilization of all packet processing cards available to the system as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Important The **major** and **minor** keywords in this command are product dependent. PGW, SGW and SAE-GW products only allow critical configuration threshold levels.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold system-cpu-utilitization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold system-cpu-utilization
```

congestion-control threshold system-memory-utilization

Configures the congestion thresholds for the average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`congestion-control threshold system-memory-utilization { critical` *`percent`* `| major` *`percent`* `| minor` *`percent`* `| exclude` *`demux`* `}`
`default congestion-control threshold system-memory-utilization`

default congestion-control threshold system-memory-utilization

Sets all system-memory-utilization thresholds to the default values.

critical *percent*

Default: 80

The critical threshold value for the average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The major threshold value for the average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The minor threshold value for the average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

percent can be configured to any integer value from 0 to 100.

exclude *demux*

Configures exclusion from the system CPU utilization calculation.

If **exclude** *demux* is not configured, then the demux CPU will be included while calculating the system CPU utilization. It is recommend to use this keyword to ensure accurate values of system memory utilization.

demux Removes the demux DPC from the system CPU utilization calculation.

Usage Guidelines

Use this command to set the critical, major and minor threshold levels of average percent utilization of all CPU memory available to the system as measured in 10-second intervals.

Thresholds dictate the conditions for which congestion control is to be enabled and establish limits for defining the state of the system (congested or clear). When these thresholds are crossed, an SNMP trap is generated (starCongestion) and, if configured, a congestion action-profile is invoked as well.

This command requires a valid product license.

Important The **major** and **minor** keywords in this command are product dependent. PGW, SGW and SAE-GW products only allow critical configuration threshold levels.

Example

The following command configures a minor threshold level of 25%.

```
congestion-control threshold system-memory-utilitization minor 25
```

This setting will remain in configuration unless you specify another minor threshold level in place of 25.

The following command returns the critical, major, and minor thresholds levels to their default values:

```
default congestion-control threshold system-memory-utilization
```

congestion-control threshold tolerance

Configures the percentage under a configured threshold value that dictates the point at which the condition is cleared.

Important This command applies to MME (version 14.0 and higher) and ePDG (version 14.1 and higher).

Product

MME

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
congestion-control threshold tolerance { critical percent | major percent |
 minor percent }
default congestion-control threshold system-cpu-utilization
```

default congestion-control threshold tolerance

Sets all threshold tolerances to the default values.

critical *percent*

Default: 10

The tolerance percentage for critical thresholds. When a critical threshold drops below this level, the condition is cleared.

percent can be configured to any integer value from 0 to 100.

major *percent*

Default: 0

The tolerance percentage for major thresholds. When a major threshold drops below this level, the condition is cleared.

percent can be configured to any integer value from 0 to 100.

minor *percent*

Default: 0

The tolerance percentage for minor thresholds. When a minor threshold drops below this level, the condition is cleared.

percent can be configured to any integer value from 0 to 100.

Usage Guidelines

Use this command to set the tolerance limits for critical, major and minor thresholds.

The tolerance parameter establishes the threshold at which the condition is cleared. An SNMP trap (starCongestionClear) is generated for the clear condition.

This command requires a valid product license.

Example

The following command configures the tolerance level of 5% for minor thresholds.

```
congestion-control threshold tolerance minor 5
```

This setting will remain in configuration unless you specify another tolerance for minor thresholds in place of 5.

The following command returns the critical, major, and minor threshold tolerance levels to their default values:

```
default congestion-control threshold tolerance
```

connectedapps

Enables the configuration of Connected Apps (CA) client communication with the IOS-XR CA server on an ASR 9000. This command sends you to the Connected Apps Configuration mode.

Product

SecGW (WSG)

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`connectedapps`

Usage Guidelines

Use this command to go to the Connected Apps Configuration mode. In this mode you can set CA client session parameters and ASR 9000 VSM High Availability (HA) chassis and network modes.

Example

The following command sends you to the Connected Apps Configuration mode:

`connnectedapps`

content-filtering category database directory

This command configures the base directory to be used for storing all content-rating databases that are required for Category-based Content Filtering application.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`content-filtering category database directory path` *`directory_path`*
`default content-filtering category database directory path`

default

Specifies the default base directory and directory path for Category-based Content Filtering application.

directory_path

Default: /pcmcia1/cf

Specifies the base directory and its path to store all of the full or incremental content rating databases for the Category-based Content Filtering application.

directory_path must be an alphanumeric string of 1 through 255 characters.

Usage Guidelines

Use this command to specify the directory and its path to download all full or incremental category-rating databases to be used for the Category-based Content Filtering application.

Merging of incremental database can be done as part of the database upgrade process preformed with **upgrade content-filtering category database** command in the Executive Mode.

Example

The following command configures the */flash/cf_temp/DB* as the base directory to download all full and incremental content-rating databases for content filtering application.

```
content-filtering category database directory path /flash/cf_temp/DB
```

content-filtering category database max-versions

This command configures the number of full content-rating databases to maintain/archive in the base directory for category-based content filtering application.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
content-filtering category database max-versions num_archive
default content-filtering category database max-versions
```

default

Sets the default number of full databases for specified directory path/location.

num_archive

Default: 2

Specifies the maximum number of database to be archived or maintained in the specific location.

num_archive must be an integer from 1 through 3.

Usage Guidelines

Use this command to set the number of full content-rating database to be maintained in the specified directory path with the base file name specified using the **content-filtering database override file** command. The specified directory path is the location specified using the **content-filtering category database directory path** command.

Example

The following command configures the system to maintain *3* full content-rating databases for category-based content filtering application.

```
content-filtering category database max-versions 3
```

content-filtering category database override

This command specifies the name of a file to be used by the category-rating database load process for category-based content filtering application.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`content-filtering category database override file` *`file_name.extension`*
`default content-filtering category database override file`

default

Sets the default content rating database file name; for example, optcmd.bin.

file *file_name.extension*

Specifies the header of the file in the database directory path location to determine the newest full database.

file_name must be an alphanumeric string of up to 10 characters with an extension of 3 characters after a period (.) as *extension*.

Usage Guidelines

Use this command to configure the category-rating database file name to determine the newest version of full database. A process called "**LOAD_DATABASE**" invokes during the system startup or the database upgrade process by **upgrade content-filtering category database** command in Executive Mode. This process examines the header of each of the files in the database folder specified by **content-filtering category directory path** command in this mode.

Note that by default system examines the header of those files only which begins with the string "OPTCMDB" and having extension ".bin".

Example

The following command configures the system to examine the header of files that begins with *CF_sta.DB* only for content filtering application.

```
content-filtering category database override file CF_sta.DB
```

context

Creates or specifies an existing StarOS context and enters the Context Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
context context_name [ -noconfirm ]
no context context_name
```

no

Removes the specified context from the configuration.

name

Specifies the name of a context to enter, add, or remove. When creating a new context, the context name must be unique.

Important When creating a new context, the *context_name* specified must not conflict with the name of any existing context or domain names.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create or remove a specified context and enter the COntext configuration mode.

Important You can create a maximum of 64 contexts.

Example

The following command creates a context named *sampleContext*:

```
context sampleContext
```

crash enable

Enables or disables the copying of crash data to a specified location.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`crash enable { async-core-transfer | critical-task-core | [ encrypted ] url crash_url [ filename-pattern pattern ] [ restrict mbyte ] [ rotate num_cores ][ vpp-core-transfer ] }`

`no crash enable { async-core-transfer | critical-task-core | url }`

no

Disables the specified option.

Important System crash information is generated and stored in the crash list even when the **no** keyword is specified. The information maintained in the crash lists is minimal crash information when the **no** keyword has been specified.

async-core-transfer

Maintains the transfer of the core dump to the management card while asynchronously beginning proclet recovery which can reduce the total outage. This feature is enabled by default.

Important When a proclet crashes, a minimum 10% of the available total memory must be free in the CPU to start a new or rename the standby proclet.

critical-task-core

Limits core collections from critical task on the active management card. This feature is enabled by default.

encrypted

Indicates that the URL is encrypted for security reasons.

filename-pattern *pattern*

Specifies an alphanumeric string containing any or all of the following variables:

- *%hostname%* - The system hostname
- *%ip%* - A SPIO IP address
- *%cpu%* - CPU number
- *%card%* - Card number
- *%time%* - POSIX timestamp in hexadecimal notation

- *%filename%* - Alias for *crash-%card%-%cpu%-%time-core%*
- *%%* - A single % sign

If no pattern is specified, the result is the same as the pattern *filename*.

Use '/' characters in the filename pattern part to store crashes in per-system subdirectories.

url *crash_url*

Specifies the location to store crash files. *crash_url* may refer to a local or a remote file. *crash_url* must be entered using the following format:

For the ASR 5500:

- **[file:]{/flash|/usb1|/hd}[**/*directory*]/
- **tftp:**//{*host*[**:***port#*]}[/*directory*]/
- **[ftp:| sftp:]**//[*username*[**:***password*]**@] {***host***}[***:port#***][**/*directory*]/

Important Do not use the following characters when entering a string for the field names below: "/" (forward slash), ":" (colon) or "@" (at sign).

Important Support for FTP is disabled in release 20 and higher Trusted builds.

directory is the directory name.

filename is the actual file of interest.

username is the user to be authenticated.

password is the password to use for authentication.

host is the IP address or host name of the server.

port# is the logical port number that the communication protocol is to use.

restrict *mbyte*

Specifies a maximum amount of memory (in megabytes) to use for storing crash files as an integer from 1 to 128.

The **restrict** keyword is only applicable to local URLs.

Default: 128

rotate *num_cores*

Specifies the number of core dumps to retain on the local storage. *num_cores* must be an integer from 1 to 256.

Default: 15

vpp-core-transfer

Specifies to enable or disable mandating VPP core transfer along with non-VPP.

Default: Enabled

Usage Guidelines

Enable crashes if there are systems that are not stable and the crash information will be useful for trouble shooting. The remote storage of the crash file reduces the memory utilized on the chassis.

Example

The following command saves a maximum of 64 megabytes of crash data to the /flash drive:

```
crash enable url /flash/pub/data/crash.dmp restrict 64
```

crypto blockedlist file

Configures a blockedlist(access denied) file to be used by a Wireless Security Gateway (WSG).

Product

All products supporting IPSec blockedlisting

Important

This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

In releases prior to StarOS 21.26:

```
crypto blacklist file pathname
no crypto blackilist file
```

From StarOS 21.26 and later releases:

```
crypto blockedlist file pathname
no crypto blockedlist file
```

no

Removes the blacklist file from the system.

pathname

Specifies the location of the blockedlist file as:

- **[file:]{/flash|/usb1|/hd-raid}[**/*directory***]**/<*filename*>
- **tftp:**//**{***host***[:***port#***]}[**/*directory***]**/<*filename*>
- **[ftp: | sftp:]**//**[***username***[:***password***]@] {***host***}[:***port#***][**/*directory***]**/<*filename*>
- **http:**//**[**<*username*>**[:**<*password*>**]@]**<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>

Usage Guidelines

Use this command to configure the location of the blockedlistfile to be used by a WSG.

A blockedlist is a list or register of entities that are being denied a particular privilege, service, mobility, access or recognition. With blockedlisting, any peer is allowed to connect as long as it does not appear in the list.

Each entry in the blockedlist file should contain the ID type so that the validation is performed for that ID type. In every entry, the ID type and ID value should be separated by a space. Only DOS and UNIX file formatting are supported. For additional information, refer to the *System Administration Guide*.

Important

In releases prior to StarOS 21.26:

Either a blacklist, a whitelist or none is configured. Both listing techniques cannot be used simultaneously on the system.

Example

The following command specifies the use of a crypto blacklist file on the /flash drive:

```
crypto blacklist file /flash/pub/data/blacklist.txt
```

crypto peer-list

Enables an SecGW to initiate an IKEv2 session setup request when the peer does not initiate a setup request within a specified time interval. Executing this command moves you to the Peer List Configuration mode. This functionality is only applicable for site-to-site (S2S) based tunnels within a WSG service. For remote access tunnels the peer is always the initiator. (VPC-VSM only)

Product

SecGW (WSG)

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] crypto peer-list { ipv4 | ipv6 } peer_list_name
```

no

Disables the specified crypto peer list.

peer_list_name

Specifies the name of the peer list as an alphanumeric string of one through 32 characters.

Usage Guidelines

Use this command to enable an SecGW to initiate an IKEv2 session setup request when the peer does not initiate a setup request within a specified time interval. Executing this command moves you to the Peer List Configuration mode. This functionality is only applicable for site-to-site (S2S) based tunnels within a WSG service. For remote access tunnels the peer is always the initiator. (VPC-VSM only)

The following restrictions apply when configuring an SecGW as an Initiator:

- The **peer-list** *peer_list_name* command is only executed if the deployment mode for WSG service is **site-to-site**, and the bind address type matches with the peer list address type (IPv4 or IPv6).
- You cannot change the WSG service deployment-mode if **peer-list** *peer_list_name* is enabled under the service. You will be prompted to remove the peer list before changing the mode.
- A maximum of 1,000 peer IP addresses can be added to the peer list via the Peer List Configuration mode **address** command.
- WSG service address binding is not allowed if a peer list is configured and both address types do not match. An error message is generated if they do not match.
- An IPv4 or IPv6 peer list cannot be modified if **peer-list** *peer_list_name* is enabled under the WSG service.

When a peer list has been configured in the WSG service, the initiator and responder mode timer intervals each default to 10 seconds. The SecGW will wait for 10 seconds in the responder mode for a peer session initiation request before switching to the initiator mode and waiting 10 seconds for a peer response.

You can change the default settings for the initiator and/or responder mode intervals using the WSG Service Configuration mode **initiator-mode-duration** and **responder-mode-duration** commands.

For additional information, refer to the *Peer List Configuration Mode Commands* and *WSG Service Configuration Mode Commands* chapters of this guide. Also see the *Security Gateway as Initiator* chapter in the *IPSec Reference*.

Example

The following command enables SecGW as an Initiator functionality and creates an IPv4 peer list named *peer1*.

```
crypto peer-list ipv4 peer1
```

crypto remote-secret-list

Specifies the remote secret list for storing remote secrets based on the ID type. This command sends you to the Remote Secret List Configuration mode. Only one active remote-secret-list is supported per system.

Product

All products supporting IPSec remote secrets

Important This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] crypto remote-secret-list *listname*

no

Deletes the remote-secret-list file from the system.

Important You must unbind the remote-secret-list from any crypto maps or templates before it can be deleted.

listname

Specifies the name of the remote secret list as an alphanumeric string from 1 to 127 characters.

Usage Guidelines

Use this command to specify the remote secret list for storing remote secrets based on the ID type. Only one remote-secret-list can be configured per system. Executing this command places you in the Remote Secret List Configuration mode.

This list of remote pre-shared keys is based on the remote ID type. The remote secret list can contain up to 1000 entries.

For additional information, refer to the *Remote Secret List Configuration Commands* chapter and the *System Administration Guide*.

Example

The following command creates a remote-secret-list named *rs-list*:

```
crypto remote-secret-list rs-list
```

crypto permitlist file

Configures a permitlist (access permitted) file to be used by a Wireless Security Gateway (WSG).

Product

All products supporting IPSec permitlisting

Important This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.

Privilege

Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

In releases prior to StarOS 21.26:

crypto whitelist file *pathname* **[-noconfirm]**
no crypto whitelist file

From StarOS 21.26 and later releases:

crypto permitlist file *pathname* **[-noconfirm]**
no crypto permitlist file

no

Removes the blacklist file from the system.

pathname

Specifies the location of the whitelist file as:

- **[file:]{/flash|/usb1|/hd-raid}[**/*directory***]**/<*filename*>
- **tftp://{***host***[:***port#***]}[**/*directory***]**/<*filename*>
- **[ftp: | sftp:]//[***username***[:***password***]@] {***host***}[:***port#***][**/*directory***]**/<*filename*>
- **http://[**<*username*>**[:**<*password*>**]@]**<*host*>**[:**<*port*>**][**/<*directory*>**]**/<*filename*>

Usage Guidelines

Use this command to configure the location of the permitlist file to be used by a WSG.

A permitlist is a list or register of entities that are being provided a particular privilege, service, mobility, access or recognition. With permitlisting, no peer is allowed to connect unless it appears in the list.

Each entry in the permitlist file should contain the ID type so that the validation is performed for that ID type. In every entry, the ID type and ID value should be separated by a space. Only DOS and UNIX file formatting are supported. For additional information, refer to the *System Administration Guide*.

Important Usually either a blacklist, a whitelist or none is configured. Both listing techniques cannot be used simultaneously on the system.

Example

In releases prior to StarOS 21.26:

The following command specifies the use of a crypto whitelist stored on the /flash drive.

```
crypto whitelist file /flash/pub/data/whitelist.txt
```

cs-network

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

This command creates/removes an HNB-CS network configuration instance for Famed UMTS access over Iu-CS/Iu-Flex interface between Home NodeB Gateway (HNB-GW) service and CS networks elements; i.e. MSC/VLR. This command also configures an existing HNB-CS network instance and enters the HNB-CS Network Configuration mode on a system.

Product

HNBGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
cs-network cs_instance [ -noconfirm ]
no cs-network cs_instance
```

no

Removes the specified HNB-CS network instance from the system.

Caution Removing the HNB-CS network instance is a disruptive operation and it will affect all UEs accessing MSC(s) configured in specific CS core network through the HNB-GW service.

Caution If any HNB-CS Network instance is removed from system all parameters configured in that mode will be deleted and Iu-CS/Iu-Flex interface will be disabled.

cs_instance

Specifies the name of the Circuit Switched Core Networks instance which needs to be associated with the HNB Radio Network PLMN via the HNB RN-PLMN Configuration mode. If *cs_instance* does not refer to an existing HNB-PS network instance, the new HNB-CS network instance is created.

cs_instance must be an alphanumeric string of 1 through 63 characters.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to enter the HNB-CS Network Configuration mode for an existing CS network instance or for a newly defined HNB-CS network instance. This command is also used to remove an existing HNB-CS network instance.

This configuration enables/disables the Iu-CS/Iu-Flex interface on HNB-GW service with CS core network elements; i.e. MSC/VLR.

A maximum of one HNB-CS network instance per HNB-GW service instance which is further limited to a maximum of 256 services (regardless of type) can be configured per system.

Caution This is a critical configuration. The HNBs cannot access MSC(s) in CS core network without this configuration. Any change to this configuration would lead to disruption in HNB access to CS core network.

Entering this command results in the following prompt:

```
[context_name]hostname(config-cs-network)#
```

The various parameters available for configuration of an HNB-CS network instance are defined in the *HNB-CS Network Configuration Mode Commands* chapter.

Example

The following command enters the existing HNB-CS Network configuration mode (or creates it if it does not already exist) for the instance named *hnb-cs1*:

```
cs-network hnb-cs1
```

The following command will remove HNB-CS network instance *hnb-cs1* from the system without any warning to operator:

```
no cs-network hnb-cs1
```

css acsmgr-selection-attempts

This is a restricted command. In 9.0 and later releases this command is obsolete.

css delivery-sequence

This is a restricted command. In 9.0 and later releases this command is obsolete.

css service

This is a restricted command. In 9.0 and later releases this command is obsolete.

decor-profile

This command allows you to create a DECOR profile, which represents a Dedicated Core Network (DCN) deployed by the operator.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] decor-profile *profile_name* **[-noconfirm]**

no

Removes the specified DECOR profile from the Global Configuration.

decor-profile *profile_name*

decor-profile *profile_name*: Configures the Dedicated Core Network as deployed by operator. *profile_name* must be an alphanumeric string of 1 through 63 characters.

If the named decor-profile does not exist, it is created, and the CLI mode changes to the Decor Profile Configuration Mode. If the named decor-profile already exists, the CLI mode changes to the Decor Profile Configuration Mode.

-noconfirm

Specifies that the command must execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this configuration to configure a DECOR profile. A decor-profile without any ue-usage-types configuration is treated as a Common Core Network.

On entering the **decor-profile** *profile_name* command, the CLI prompt changes to:

[*context_name*]*host_name*(config-decor-profile-*profile_name*)#

Example

The following command creates a DECOR profile named *dp1*:

```
decor-profile dp1
```

dedicated-li context

Refer to the *Lawful Intercept Configuration Guide* for a description of this command.

default transaction-rate

Sets the **transaction-rate bucket-interval** and **nw-initiated-setup-teardown-events qci** commands to their default settings.

Product

ePDG

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
default transaction-rate
```

default transaction-rate

Sets the transaction rate key performance indicator (KPI) settings to their default settings. These settings include **transaction-rate bucket-interval** and **nw-initiated-setup-teardown-events qci**.

The default setting for **transaction-rate bucket-interval** is 2 minutes.

The default setting for **nw-initiated-setup-teardown-events qci** specifies that all qci values are to be tracked for network initiated setup/tear down events.

Usage Guidelines

Use this command to return transaction rate KPI settings to their default value.

The **transaction-rate bucket-interval** setting configures the transaction rate KPI session events per second value. These KPIs have been implemented to assist operators in measuring the signaling load on the P-GW. These KPIs include total session events per second, successful session events per second, and unsuccessful session events per second.

The **nw-initiated-setup-teardown-events qci** setting assists operators in measuring the Voice-over-LTE (VoLTE) call setup and tear down events rate at the P-GW/ePDG. Both Create Bearer Requests (CBReqs) and Delete Bearer Requests (DBReqs) originally initiated by the P-GW and CBReqs and DBReqs initiated by the P-GW as a result of Home Subscriber Server (HSS)- and User Equipment (UE)- initiated events are accounted for in these KPIs.

For more information, refer to the descriptions for the **transaction-rate bucket-interval** and **nw-initiated-setup-teardown-events qci** commands in the *Global Configuration Mode Commands* section of this CLI Reference.

Example

The following command returns the transaction rate KPI settings to their default values.

```
default transaction-rate
```

diameter dynamic-dictionary

This command allows configuring a Diameter dictionary dynamically at run time, and then loading the dynamic dictionary in to the system.

Important The maximum number of dynamic dictionaries that can be loaded in to the system is 10.

Product

GGSN

HA

HSGW

IPSG

PDSN

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
diameter dynamic-dictionary name url
no diameter dynamic-dictionary name
```

no

Unloads the specified dynamic Diameter dictionary from the system.

name

Specifies the name of the dynamic Diameter dictionary as an alphanumeric string of 1 through 15 characters.

url

Specifies the URL of the Diameter dictionary to be loaded in to the system. The input must be an alphanumeric string of 1 through 127 characters.

Usage Guidelines

This command is used to define a new Diameter dictionary on the fly, and load the dynamic dictionary in to the system.

To perform this configuration, you should first create a text file in ABNF format and configure all the required Diameter AVPs and command codes in the file. Then, save the file in flash or some URL that will be accessible by the system.

Now, configure a dynamic dictionary with an unique name and map it to the URL of the file to be loaded dynamically in to the system at the global configuration level.

When the names of the dynamic dictionaries and their URLs are configured, the corresponding files at the respective URLs are parsed and populated in all SessMgr and AAAmgr facilities as new dictionaries and kept available to be used when these dictionary names are configured under any Diameter application level or AAA group.

When a dynamic dictionary name is configured under an application such as IMS authorization service or in a AAA group, the corresponding dictionary (which is already loaded in SessMgrs and AAAMgrs) entry will be used.

There will be only one instance of a dynamic dictionary loaded in to a task for one dynamic dictionary name even if the same dictionary name is configured in multiple AAA groups or multiple application configurations. That is, even if the same dictionary name is configured in several applications or several AAA groups, all these applications and AAA groups will refer to the same dynamic dictionary instance.

Example

The following command configures a Diameter dictionary named *dyn1* and loads this dictionary to */flash/diameter_custom1.sndd* path:

```
diameter dynamic-dictionary dyn1 /flash/diameter_custom1.sndd
```

diameter-host-template

Specifies the name of a Diameter host template and enters the Diameter Host Select mode. A Diameter host template is a table of peer servers that can be shared by multiple services.

Product

GGSN

HA

HSGW

IPSG

PDSN

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
diameter-host-template name [ -noconfirm ]
no diameter-host-template name
```

no

Removes the specified Diameter host template from the Global Configuration.

name

Specifies the name of the template as an alphanumeric string of 1 through 63 characters.

[-noconfirm]

Executes the command without prompting for further input from the user.

Usage Guidelines

Specifies the name of a new or existing Diameter host template and opens the Diameter Host Select mode. You can configure up to 256 templates on the system.

To use the template, Diameter applications must be associated with the template. When an association is made to the template, the system selects the Diameter peer to be contacted based on rows configured in the table and the algorithm configured for selecting rows in the table.

Important Currently, only Gx service can be associated with the template.

If more than one service is using the same set of **peer-select** commands, then it is better to define all the peer selection CLIs in the template and associate the services to the template.

Entering this command results in the following prompt:

```
[context_name]hostname(config-host-template)#
```

Diameter host select configuration commands are defined in the *Diameter Host Select Configuration Mode Commands* chapter.

Example

The following command specifies a Diameter host template named *diamtemplate*:

```
diameter-host-template diamtemplate
```

diameter-proxy conn-audit

This command enables the Diameter proxy Peer Connection Status Audit with Diabase clients.

Product

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

diameter-proxy conn-audit interval *1-10*
default diameter-proxy conn-audit

default

Configures the default setting.

By default, Diameter proxy Peer Connection Status Audit with Diabase clients is disabled.

diameter-proxy

Specifies the Diameter proxy related configurations.

conn-audit

Specifies the periodic connection status audit processes. Disabled by default.

interval *1-10*

Specifies the connection status audit interval in minutes, in the range of 1 through 10. Recommended value is 2 minutes.

Usage Guidelines

Enabling Diamproxy Peer Connection Status Audit with Diabase clients might affect performance of the services using Diameter interface. Service is impacted only when auto-correction happens (due to mismatch) and the cases are:

1. When Diabase state is IDLE and Diameter proxy is OPEN.
2. When Diabase state is OPEN and Diameter proxy is IDLE.

In both these cases, Diabase corrects the connection status based on information received in audit message. Diameter messaging failures is avoided once Diabase corrects the connection status.

Example

The following command specifies that the connection status audit interval is *2*minutes:

diameter-proxy conn-audit interval 2

diameter-proxy ram-disk

This command configures the amount of extra RAM disk space in MB to be allocated to Diamproxy task when local storage (hard disk) is enabled.

Product

HSGW

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

diameter-proxy ram-disk mb *space_mb*
default diameter-proxy ram-disk mb

default

Configures the default setting.

Default: 32 MB

mb space_mb

Specifies the storage space in MB.

space_mb must be an integer from 10 through 256.

Usage Guidelines

Specifies the additional storage space to be allocated to Diamproxy for file write, in MB. The specified memory in MB is added to the existing memory allocated to Diamproxy only if HDD storage is enabled. By default, 32 MB is additionally allocated.

Example

The following command specifies that *100* MB of additional storage space be allocated to the Diamproxy task:

diameter-proxy ram-disk mb 100

do show

Executes all **show** commands while in Configuration mode.

Product All

Privilege Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

ecmp-lag hash

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

This command provides the configuration to select source Boxer Internal Address (SBIA) as the input to the hashing function for ECMP-LAG distribution.

Product HNBGW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[no] ecmp-lag hash use-sbia-only
```

no

Disables the hashing function selection and sets the system to use IP Source Address, IP Destination Address, IP Protocol and Source BIA as inputs to the hashing algorithm for ECMP-LAG distribution.

Usage Guidelines Use this command to allow the operator to change the way hashing works in deciding which link to use for ECMP and Link Aggregation. In the default hashing algorithm the IP Source Address, IP Destination Address, IP Protocol and Source BIA are used in the hashing function. When "use-sbia-only" option is selected, only the Source BIA is used in the hashing function.

Caution When using ECMP-LAG on a HNB-GW, this configuration is **mandatory** for standalone HNB-GW deployment and highly recommended in other deployment scenarios where HNB-GW is used in combination with other services.

Example

The following command enables the SBIA as input to hash function for ECMP-LAG on the HNB-GW:

```
ecmp-lag hash use-sbia-only
```

The following commands sets the hashing function to use standard inputs for ECMP-LAG on HNB-GW:

```
no ecmp-lag hash use-sbia-only
```

end

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

Product All

Privilege Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines Use this command to return to the Exec mode.

enforce imsi-min equivalence

Enables the PDSN/HA to treat IMSI and MIN as the same for identifying the PDSN/HA session.

Product PDSN

HA

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no | default ] enforce imsi-min equivalence
```

default

Returns the command to its default setting of disabled.

no

Disables the PDSN/HA from treating IMSI and MIN as the same for identifying the PDSN/HA session.

Usage Guidelines

Generally on an HA, the IMSI and MIN are treated as different and hence the RRQs with 1x and DO PDSNs are processed as different sessions. You can use this feature to treat the IMSI and MIN with the matching lower 10-digit as the same for identifying a session. The 10-digit MIN and the 15-digit IMSI are treated as equivalent for the purpose of matching sessions if the lower 10 digits are the same. Any handoff from 1x to DO or vice-versa is treated as the same session if the NAI and HoA also match. If the NAI and/or HoA do not match, then the duplicate IMSI session detect and terminate feature is applicable.

Generally on a PDSN, the IMSI and MIN are treated as different and hence RP messages from 1x and DO PDSNs are processed as different sessions. You can use this feature to treat the IMSI and MIN with the matching lower 10-digit as the same for identifying a session. The 10-digit MIN and the 15-digit IMSI are treated as equivalent for the purpose of matching PDSN sessions if the lower 10 digits are the same. Any handoff from 1x to DO or vice-versa is treated as the same session.

Example

To monitor or clear subscriber session information filtered by on IMSI/MIN refer to the **show subscribers msid** command.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command enables the treatment of the IMSI and MIN as the same for identifying the session:

```
enforce imsi-min equivalence
```

Either of the following commands disables the treatment of the IMSI and MIN as the same for identifying sessions:

```
no enforce imsi-min equivalence
default enforce imsi-min equivalence
```

enforce spof

Disables XGLC SPOF alarms when port redundancy is supported at Layer 2 via a Link Aggregation Group (LAG) on an ASR 5000.

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] enforce spof suppress-xglc-lag`

no

Enables XGLC SPOF alarms if they have previously been disabled.

suppress-xglc-lag

Disables XGLC SPOF alarms if redundancy is configured via LAG.

Usage Guidelines

An XGLC that has not been configured for horizontal port redundancy with an adjacent XGLC constitutes a Single Point of Failure (SPOF). If the card or a port fails, service is disrupted and data is lost until the card is replaced.

Link-aggregation can be configured to support port redundancy across non-redundant XGLCs by combining multiple physical ports together to create a single high-bandwidth data path. Sharing load across the member ports enhances connection reliability.

When XGLC ports are part of a LAG group, failure of a single port in the group will not result in data outage; the data will be rerouted through other available links. An individual port that is part of a LAG group does not constitute a SPOF.

enforce spof suppress-xglc-lag disables XGLC SPOF alarms if redundancy is configured via LAG.

no enforce spof suppress-xglc-lag enables XGLC SPOF alarms if they have been previously suppressed.

Important With SPOF alarming suppressed, a port in a LAG group will trigger a SPOF alarm if it is the only available distributing port in the LAG group.

Example

To disable XGLC SPOF alarming for Layer 2 LAG redundancy enter the following command:

`enforce spof suppress-xglc-lag`

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

fa-spi-list

Replaces a duplicate Foreign Agent- Security Parameter Index (FA-SPI) remote address list applied to multiple FA services with a list name.

Product

PDSN

FA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] fa-spi-list *fa_spi_list*

no

Disables this feature.

fa_spi_list

Remote address list name expressed as an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to Replace duplicate FA-SPI remote address list applied to multiple FA or HA services with a list name.

Example

The following command configures the list FA SPI list to *fa-list2*:

fa-spi-list fa-list2

fabric egress drop-threshold

Enables or disables the generation of a syslog event message when the number of egress Fabric Access Processor (FAP) packet drops exceeds a set threshold within a window of time on an ASR 5500.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`fabric egress drop-threshold { disable | enable count` *`number`* `interval-secs` *`seconds`* `}`

disable

Disables the egress dropped-packet threshold settings. Settings are disabled by default.

enable

Enables the specified egress dropped-packet threshold settings. Settings are disabled by default.

count *number*

Specifies the maximum number of egress traffic packets that can be dropped before a syslog event message is generated. The count is specified as an integer from 10 to 5000.

interval-secs *seconds*

Specifies the time interval (window) within which the maximum egress packet drop count can be exceeded. The interval is specified in seconds as an integer from 30 to 600.

Usage Guidelines

Use this command to enable or disable the generation of a syslog event message when the number of egress FAP packet drops exceeds a set threshold within a window of time on an ASR 5500.

When the threshold is exceed, the syslog event message is generated once, until the condition clears. Only then will it be generated again.

By default this feature is disabled.

Example

The following command sets the egress FAP dropped-packet threshold at 2000 packets within a 60-second window:

```
fabric egress drop-threshold enable count 2000 interval-secs 60
```

fabric fsc-auto-recovery

Enables or disables Fabric Storage Card (FSC) fabric recovery via automatic resets on the ASR 5500.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
fabric fsc-auto-recovery { disable | enable } [ max-attempts [ number_attempts
 | unlimited ] ]
```

{ disable | enable }

Disable turns off the automatic FSC recovery feature.

Enable turns on the automatic FSC recovery feature. When enabled the FSC will initiate auto recovery/reset upon detecting an excessive number of discarded fabric egress (EGQ) packets.

[max-attempts [*number_attempts* | unlimited]

Specifies how many times StarOS will attempt to reset each FSC as an integer from 1 to 99 or unlimited (will not stop until FSC is reset). Default is 1.

Usage Guidelines

Use this command to enable or disable automatic FSC auto recovery/reset in the ASR 5500 upon detecting an excessive number of discarded egress packets. You can optionally specify the maximum number of reset attempts; the default is 1.

Important To enable this feature, you must first configure the Fabric Egress Drop Threshold via the Global Configuration mode **fabric egress drop-threshold** command.

Example

The following command enables FSC automatic recovery with a maximum of 50 attempts.

```
fabric fsc-auto-recovery enable max-attempts 50
```

failure-handling-template

This command allows the user to create/modify/delete a Diameter failure handling template at the global configuration level. This command specifies the name of failure handling template and enters the Failure Handling Template mode. The users can define the failure handling configurations within this template.

Important A maximum of 64 templates can be configured on the system.

Product

GGSN

HA

HSGW

IPSG

PDSN

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

failure-handling-template *name* **[-noconfirm]**
no failure-handling-template *name*

no

Removes the specified failure handling template from the Global Configuration.

name

Specifies the name of the failure handling template as an alphanumeric string of 1 through 63 characters.

[-noconfirm]

Executes the command without prompting for further input from the user.

Usage Guidelines

Specifies the name of a new or existing failure handling template and opens the Failure Handling Template mode. Depending on which application is using the failure handling template, some of the syntactically possible configurations within the template are not applicable.

To use the template, Diameter applications must be associated with the template. When an association is made to the template, in the event of a failure, the system takes the action as defined in the failure handling template. Both IMS Authorization (Gx) and Diameter Credit Control Application (DCCA) (Gy) services can be associated with the template.

Entering this command results in the following prompt:

```
[context_name]hostname(config-fh-template)#
```

Failure handling template configuration commands are defined in the *Diameter Failure Handling Template Configuration Mode Commands* chapter.

Example

The following command specifies a failure handling template named *FHtemplate*:

failure-handling-template FHtemplate

fast-data-plane-convergence

Enables and disables fast MIO failure detection and switchover for existing sessions.

Product

All (ASR 5500 only)

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] fast-data-plane-convergence`

no

Disables this feature.

Usage Guidelines

You can enable this feature to minimize traffic disruption for existing sessions during MIO/UMIO/MIO2 failover.

For maximum benefit, this feature assumes deployment of an Active-Active LAG configuration with aggressive MicroBFD timers. This feature can be enabled with an Active-Standby LAG configuration, however, reduced switchover time cannot be guaranteed.

Important Active-Active LAG groups must be configured, along with aggressive microBFD timers (such as 150*3). During MIO card recovery BGP Sessions might flap based on the configuration. To avoid traffic loss during these events, BGP graceful restart must be configured with proper hold/keepalive and restart timers. See the description of the **bgp graceful-restart** command in the *BGP Configuration Mode Commands* chapter of the *Command Line Interface Reference*.

Example

The following command enables faster recovery of existing sessions during MIO/UMIO/MIO2 failover:

`fast-data-plane-convergence`

global-title-translation address-map

Creates an instance of a Global Title Translation (GTT) address-map, a database, for global titles (ISDN-type address) used for SCCP routing. Upon creating the instance, the system enters global title translation address-map configuration mode. For the commands to configure the database, go to the *Global Title Translation Address-Map Configuration Mode Commands* chapter.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] global-title-translation address-map instance` *`instance`*

no

Removes the specified GTT address-map database from the SCCP portion of the configuration.

instance

This value uniquely identifies a specific instance of a GTT address-map.

instance must be an integer from 1 through 4096.

Usage Guidelines

Create a GTT address map with a unique identifier and enter the GTT address-map configuration mode.

Example

The following command creates a GTT address map identified as *324*:

`global-title-translation address-map instance 324`

global-title-translation association

Creates an instance of a Global Title Translation (GTT) association which defines the rules for handling global title translation. Upon creating the instance, the system enters global title translation association configuration mode. For the commands to configure the rules, go to the *Global Title Translation Association Configuration Mode Commands* chapter.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`global-title-translation association instance` *`instance`*
`no global-title-translation association instance` *`instance`*

no

Removes the specified instance of a GTT association from the SCCP portion of the configuration.

instance

This value uniquely identifies a specific instance of a GTT association.

instance must be an integer from 1 through 16.

Usage Guidelines

Create a GTT association with a unique identifier and enter the GTT association configuration mode.

Example

The following command creates a GTT association identified as *2*:

```
global-title-translation association instance 2
```

gtpc-load-control-profile

Creates a GTP-C Load Control Profile and enters GTP-C Load Control Configuration Mode.

Product

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] gtpc-load-control-profile  profile_name
```

no

Removes specified GTP-C Load Control Profile.

gtpc-load-control-profile

Creates a GTP-C Load Control Profile and enters GTP-C Load Control Profile Configuration Mode.

profile_name

Must be an alphanumeric string from 1 to 64 characters in length.

Usage Guidelines

Use this command to create a GTP-C Load Control Profile and enter GTP-C Load Control Profile Configuration Mode

Example

The following example creates a GTP-C Load Control Profile named LOADCTRL.

```
gtpc-load-control-profile  LOADCTRL
```

gtpc-overload-control-profile

Creates a GTP-C Overload Control Profile and enters GTP-C Overload Control Profile Configuration Mode.

Product

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] gtpc-overload-control-profile *profile_name*

no

Removes specified GTP-C Overload Control Profile.

gtpc-overload-control-profile

Creates a GTP-C Overload Control Profile with the specified profile name.

profile_name

Must be an alphanumeric string from 1 to 64 characters in length.

Usage Guidelines

Use this command to create a GTP-C Overload Control Profile and enter GTP-C Overload Control Profile Configuration Mode.

Example

This example creates a GTP-C Overload Control Profile named OVERLOADCTRL

```
gtpc-overload-control-profile  OVERLOADCTRL
```

gtpp compression-process

This command configures the maximum number of child compression processes that AAA proxy can have.

Product

GGSN

SAEGW

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
gtpp compression-process max_number
default gtpp compression-process
```

default

Restores the system to the default settings for the number of child compression processes allowed.

max_number

Specifies the maximum number of child processes. The default is 1

max_number: must be an integer from 1 through 4.

Usage Guidelines

This command configures the maximum number of child compression processes that AAA proxy can have only if hard disk storage is enabled.

Example

```
gtpp compression-process 3
```

gtpp push-to-active

This command enables/disables Push-To-Active feature to automatically transfer CDR files from new standby chassis to new active chassis when the ICSR switchover occurs.

Product

Important This CLI command is applicable only to GTPP groups having streaming mode.

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

gtpp push-to-active [encrypted] url *url* **via-context** *context_name*
no gtpp push-to-active

no

Disables Push-To-Active feature to automatically transfer CDR files from new standby chassis to new active chassis.

[encrypted] url *url*

Specifies the peer chassis URL where the CDR files are to be transferred when the chassis becomes standby.

This keyword denotes the peer chassis URL in this format: sftp://user:password@host:[port]/hd-raid/records/cdr/. It accepts a string of size 1 through 1024.

[encrypted] - Indicates that the URL is encrypted for security reasons.

via-context *context_name*

Specifies the name of the context through which the active chassis is reachable. *context name* must be an alphanumeric string of 1 through 79 characters.

Usage Guidelines

During an ICSR switchover, the GTPP charging interface between the active chassis and CGF server goes down and all pending CDRs are written to internal hard disk. Once the chassis becomes standby, the CDRs will remain on HDD until the chassis becomes active.

This feature provides a way to move the stranded CDRs from the new standby chassis to the new active chassis and stream them to the OCG. This CLI command enables/disables the Push-To-Active feature to automatically transfer CDR files from new standby chassis to new active chassis.

Releases prior to 16.0, CDRs from current standby chassis were manually transferred to current active chassis using the CLI command "**gtpp storage-server streaming start**". Once the transfer is complete, a CLI command in the Exec mode is configured to stream the CDRs to CGF.

In 16.0 and later releases, the stranded CDRs in the standby ICSR node (moved from active to standby) are automatically transferred to the newly active ICSR node. This automation process is achieved through the use of "**gtpp push-to-active**" CLI command in the global configuration mode.

This feature could lead to duplicate CDRs. When streaming is in progress and ICSR switchover happens, the current file being streamed, will not complete the streaming as interface with CGF went down. This file will be transferred to new active chassis and streamed from beginning from new chassis.

In case AAAProxy restarts during file transfer, the file transfer statistics will not be accurate. The accounting contexts should be in same order in both the chassis. The directory names are created using vpn-id. If the accounting contexts are in different order, vpn-id will be different and the sub-directories in HDD will be different in both the chassis for same GTPP group.

Example

The following command enables the Push-To-Active feature to automatically transfer CDR files from new standby chassis to new active chassis.:

```
gtpp push-to-active url sftp://user:password@host:5000 via-context aaa
```

gtpp ram-disk-limit

This command configures additional storage space to be allocated for writing files.

Product

GGSN

SAEGW

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
gtpp ram-disk-limit mb mega_bytes
default gtpp ram-disk-limit
```

default

Restores the system to the default settings of 32 MB of storage.

mb *mega_bytes*

Specifies the number of megabytes of storage allocated for files.

mega_bytes: must be an integer from 10 through 256. The default is 32 MB.

Usage Guidelines

The memory specified with this command would be added to the existing memory allocated to the AAA proxy only if hard disk storage is enabled.

Example

```
gtpp ram-disk-limit mb 256
```

gtpp single-source

Configures the system to reserve a CPU for performing a proxy function for accounting.

Product

ePDG

GGSN

SGSN

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
gtpp single-source [ centralized-lrsn-creation | private-extensions ]
no gtpp single-source
```

centralized-lrsn-creation

Defines Log Record Sequence Number (LRSN) generation at proxy. The AAA proxy will generate the LRSN for all CDR types generated by either the GGSN or the SGSN.

Default: disabled

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

private-extensions

This optional keyword enables the proprietary use of customer-specific GTPP extensions.

If **private-extensions** is not configured, all customer specific private extensions related to GTPP message transfer with CGF and recovery through GSS are disabled.

Important In order for the customer-specific extensions to work properly, the **gtpp max-pdu-size** command in the Context Configuration Mode should be set to 65400 and the **gtpp server** command's **max** value should be set to "1".

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

no

Disables GTPP single-sourcing. This is the default setting.

Caution Entering this command while PDP contexts are in process could cause the loss of pending CDRs. The configuration must be saved and the chassis reloaded for this option to take effect.

Usage Guidelines

When GTPP single-sourcing is enabled, the system's AAA proxy function generates requests to the accounting server using a single UDP source port number, instead of having each AAA Manager generate independent requests with unique UDP source port numbers. This is accomplished by the AAA Managers forwarding their GTPP PDUs to the AAA Proxy function that runs on a reserved packet processing card CPU. Since a packet processing card CPU is being reserved, fewer Session Managers and AAA Managers will be started on that card.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Caution This command must be entered prior to the configuration of other services. Specifying it later may return an error due to a lack of CPU availability.

Example

The following command enables GTPP single-sourcing with the use of private GTPP extensions:

```
gtpp single-source private-extensions
```

The following command disables GTPP single-sourcing:

```
no gtpp single-source
```

ha-spi-list

Replaces a duplicate Home Agent-Security Parameters Index (HA-SPI) remote address list applied to multiple HA services with a list name.

Product

PDSN

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

ha-spi-list *ha_spi_list*

ha_spi_list

Remote address list name expressed as an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to Replace duplicate HA-SPI remote address list applied to multiple HA services with a list name.

Example

The following command configures the list HA SPI list to *ha-list2*:

ha-spi-list ha-list2

hd raid

Enters the HD RAID configuration mode, and performs RAID management operations on the platform's hard disk drives.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

hd raid

Usage Guidelines

Use this command to configure RAID parameters. All HD RAID commands need confirmation unless the **-noconfirm** is included in the command.

RAID commands are needed to intervene in the following situations:

- The hard disk controller task cannot determine the correct operation.
- Administrative action is required by policy.
- The administrator wants to wipe an unused disk.

In an automated system, the policies created with this CLI address the possibility of a manually partitioned disk, a disk resulting from a different version of software, a partially constructed disk, or the case of two unrelated disks in the system.

To reduce administrator intervention, a set of policies can be configured to set the default action using the commands in the HD RAID configuration mode. These commands are described in the *HD Storage Policy Configuration Mode Commands* chapter of this guide.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

Entering this command results in the following prompt:

```
[context_name]hostname(config-hd-raid)#
```

HD RAID Configuration Mode commands are defined in the HD RAID Configuration Mode Commands chapter.

hd storage-policy

Provides access to the local hard drive configuration mode in order to manage parameters supporting local storage of records.

Product

GGSN

SGSN

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] hd storage-policy *name*

no

Removes a configured HD storage policy from the system.

storage-policy *name*

Specifies a name for an HD storage policy and then enters the HD Storage Policy Configuration Mode. *name* must be an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Creates a new policy or specifies an existing policy and enters the HD Storage Policy Configuration Mode.

Entering this command results in the following prompt:

[*context_name*]*hostname*(config-hd-storage-policy)#

HD Storage Policy Configuration Mode commands are defined in the HD Storage Policy Configuration Mode Commands chapter.

Example

The following command creates an HD storage policy named *policy3* and enters the HD Storage Policy Configuration Mode:

hd storage-policy policy3

health-monitoring

Configures Health Monitoring of Crypto Chip.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

[local]*host_name*(config)#

Syntax

health-monitoring crypto-chip failure-threshold *failure_threshold*

nohealth-monitoring crypto-chip

failure_threshold

Configures the failure threshold of health-monitoring crypto-chip. This is failure packet threshold count between 100 and 4294967295. Default is 10000.

high-availability

Configures the speed for detection of packet processing card task failures before switchover occurs.

Product

PDSN

GGSN

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

Releases prior to 21.8

```
high-availability fault-detection speed { aggressive | normal }
default high-availability fault-detection speed
```

Syntax Description

Release 21.8 and higher

```
high-availability fault-detection [ speed { aggressive | normal } ] | [
card { dp-outage seconds | hb-loss value} ]
default high-availability fault-detection [ speed ] | [ card [ dp-outage
 |  hb-loss ] ]
```

default

- **speed**: Resets fault detection speed to normal.
- **card dp-outage**: Restores the default dp-outage value. The default value is 2 seconds.
- **card hb-loss**: Restores the heartbeat value only between the management and packet processing cards to the default value. The default value is 2 heartbeats.

speed aggressive

Specifies packet processing card failover should occur without performing additional checks.

speed normal

Specifies that packet processing card failover will only occur after additional checks have been performed performed. This is the default setting.

card

Specifies the packet processing card.

dp-outage *seconds*

Configures the secondary card fault detection criteria in "seconds". The value of this parameter can range from 0 to 20 seconds. The default value is 2 seconds.

hb-loss *value*

Configures the consecutive heartbeat loss threshold at which the non-responsive card (packet processing card) may be declared as failed. The supported value ranges from 2 to 20. The default value is 2 heartbeats.

Usage Guidelines

Use the **high-availability fault-detection speed { aggressive | normal }** command to increase the fault detection speed for faster switchovers after a packet processing card task failure.

Setting fault detection speed to aggressive will trigger packet processing card failover as soon as possible if a potential failure is detected. Aggressive mode will reduce the duration of subscriber outages caused by a failed packet processing card if session recovery is enabled.

Aggressive mode also bypasses most information gathering steps and logs that can be used to determine the root cause of the failure.

In normal mode, additional checks are performed before triggering a packet processing card failover to ensure that the card has actually failed. In aggressive mode these checks are bypassed so that session recovery can start as soon as possible. These additional checks reduce the likelihood of a false positive failure.

Use the **high-availability fault-detection dp-outage** *seconds* command to configure configure a secondary fault detection criteria to be used with hb-loss. If Data Plane monitor packets from the packet processing card have arrived at the managment card within the most recent dp-outage seconds when the hb-loss threshold has been met, then card failure is deferred. This criteria is used to defer card failure for up to 5 additonal heartbeat losses. This command parameter is restricted to the Administrator access on the VPC- DI platform.

Use the **high-availability fault-detection card hb-loss** *value* command to define the number of consecutive one second heartbeat losses between the management card and a packet processing card at which the packet processing card is assumed to have failed. If not configured, the default for this parameter is 2. This command is supported for all products.

Examples

The following command sets the fault detection speed for packet processing card tasks to **aggressive**:

```
high-availability fault-detection speed aggressive
```

The following command sets the secondary card fault detection criteria at 2 seconds:

```
high-availability fault-detection card dp-outage 2
```

The following command sets the fault detection for packet processing card tasks to 3 seconds:

```
high-availability fault-detection card hb-loss 3
```

iftask boot-options

Enables or disables iftask boot-options configuration.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] iftask boot-options`

no

If previously configured, disables the iftask boot-options configuration.

Usage Guidelines

Use this commnad to enable or disable iftask boot-options configuration.

Entering this command results in the following prompt:

[local]hostname(config-iftask-boot-options)#

Refer to the *IFTask Boot-Options Configuration Mode Commands* chapter for additional information.

Example

The following command enables iftask boot-options configuration:

`iftask boot-options`

iftask di-net-encrypt-rss

Configures Receive Side Scaling (RSS) for Distributed Instance Network (DI-net) encrypted traffic. This command applies only to VPC-DI.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] iftask di-net-encrypt-rss`

no

Disables RSS for DI network encrypted traffic, which is the default setting.

Usage Guidelines

In releases prior to 21.7, RSS was enabled by default and could not be disabled. In 21.7 and later releases, this command can be used to enable RSS for DI network encrypted traffic. In 21.7 and later releases, RSS is disabled by default for DI network encrypted traffic.

The following example enabled RSS for DI network encrypted traffic:

```
iftask di-net-encrypt-rss
```

iftask fullcore-enable

Configures iftask to collect full core dump with huge pages in the event of an iftask process failure. This command applies only to StarOS on virtualized platforms.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] iftask fullcore-enable
```

no

Disables collection of huge pages upon iftask process failure. When disabled, only the core dump is collected.

Usage Guidelines

In the event of an iftask process fault, the system dumps its core to /var/crash. The core file is then compressed and transferred to to the configured location [/flash/fullcores].

When this command is enabled, the core dump will include the huge pages.

This functionality is disabled by default.

Note When this option is enabled, faulted iftask processes take approximately 2 minutes to dump the core. This will affect back-to-back iftask restart.

iftask mcdmatxbatch

Configures multi-channel direct memory access (MCDMA) transmit batching. The MCDMA is the path from the IFTASK to the SESSMGR. This command applies only to StarOS on virtualized platforms.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] iftask mcdmatxbatch { burstsize` *`number_of_packets`* **`| latency` *`milliseconds`* **`}`**

no

Deletes the setting for iftask mcdmatxbatch.

burstsize *number_of_packets*

Maximum packets per burst from 1 through 1024.

latency *milliseconds*

Not currently supported.

Usage Guidelines

The following example sets the maximum number of packets per burst for MCDMA to 512:

`iftask mcdmatxbatch burstsize 512`

iftask restart-enable

Configures iftask to restart automatically in case of iftask process failure. This command applies only to StarOS on virtualized platforms.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] iftask restart-enable`

no

Disables automatic iftask restart

Usage Guidelines

This functionality is enabled by default (iftask will restart automatically if a failure occurs). It should only be disabled if iftask restart behavior is not operating as expected.

Refer to the **iftask fullcore-enable** command for more information about the steps taken in the event that the iftask process fails.

The following example disabled automatic iftask restart

```
no iftask restart-enable
```

iftask sw-rss

Configures receive side scaling (RSS) so that the VPC distributes traffic flows across the available vCPU cores. This command applies only to StarOS on virtualized platforms.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
iftask sw-rss { comprehensive | supplemental }
```

no

Deletes the setting for iftask sw-rss. All traffic is routed to a single core, unless HW RSS is available on the hardware device.

comprehensive

Distributes all traffic received by the DPDK in the VPC. Use this option where the hardware does not support RSS.

In Release 21.6 and higher, L4 information is added to hash inputs for packet filtering (PF) with the following limitations:

For IPv4:

- TCP: IP source/destination and TCP ports source/destination are supported.
- TCP/UDP fragmented: only IP source/destination are supported.
- UDP non-fragmented and not GTPU (any port which does not equal 2152): IP source/destination and UDP port source/destination.
- UDP non-fragmented and GTPU (port 2152): IP source/destination and UDP port source/destination and GTP tunnel ID.
- Any other protocol: Default back to IP source/destination.

For IPv6, only L3 (IP source and destination) based hashing is supported.

Note The system automatically detects if packets belong to GTPU (port 2152) and hashes on the GTP tunnel ID.

supplemental

Distributes the traffic flow for protocols not supported by the hardware RSS. The traffic distribution is performed in addition to the distribution performed by the hardware device.

Usage Guidelines

The Cisco USC NIC supports hardware-based RSS; however RSS is only supported on IP traffic. For other network protocols, such as MPLS, GTP, L2TP, GRE and IPv6, all the traffic is routed into a single queue. The **iftask sw-rss** command enables the software to distribute the traffic to the available vCPU cores for processing, thus increasing resource utilization and providing improved throughput.

By default, RSS is disabled.

The following example enables RSS in addition to the supported hardware RSS functionality on the device:

```
iftask sw-rss supplemental
```

iftask txbatch

Configures transmit batching. This command applies only to StarOS on virtualized platforms.

Product

All

Privilege

Operator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] iftask txbatch { burstsize *number_of_packets* **| flush_latency | latency** *milliseconds* **}**

no

Deletes the setting for iftask txbatch.

burstsize *number_of_packets*

Specifies the maximum number of packets from 1 through 1024 to accumulate in a vector before sending to the ethernet interface.

latency *milliseconds*

Not currently supported.

Usage Guidelines

Use this command to configure the transmit batching parameters for system-wide IFTASK operation.

The following example sets the maximum number of packets per burst for MCDMA to *512*:

```
iftask txbatch burstsize 512
```

The following example sets the maximum wait time to *1000* milliseconds to flush the bytes on the control port:

```
iftask txbatch flush_latency 1000
```

ikesa delete on-mismatch

Enables IPSec to automatically remove existing IKEv1 and IKEv2 ACL tunnels when critical parameters are changed in the crypto map.

Product

All products that support IPSec

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ikesa delete on-mismatch
```

Usage Guidelines

Use this command to enable IPSec to automatically remove existing IKEv1 and IKEv2 ACL tunnels when critical parameters are changed in the crypto map. For more information, see the *IPSec Reference* guide.

Important As per ANSSI standards, this command cannot be removed once enabled. The configuration can be removed only by rebooting.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important Use this configuration only on Trusted builds.

Example

The following command enables automatic removal of existing IKEv1 and IKEv2 ACL modes:

```
ikesa delete on-mismatch
```

imei-profile

Creates an instance of an International Mobile Equipment Identity (IMEI) profile.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] imei-profile *imei_profile_name*

no

Deletes the IMEI profile instance from the configuration.

imei_profile_name

Specifies the name of the IMEI profile as an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to create an instance of an IMEI profile and to enter the IMEI Profile Configuration mode. An IMEI profile is a template which groups a set of device instructions, such as blacklisting, that may be applicable to one or more calling devices. See the *IMEI Profile Configuration Mode Commands* chapter for information regarding the definition of the rules contained within the profile and the use of the profile.

Important An IMEI profile is a key element of the Operator Policy feature and is only valid when associated with at least one operator policy.

To see what IMEI profiles have already been created, return to the Exec mode and enter the **show imei-profile all** command.

Example

The following command creates a configuration instance of an IMEI profile:

```
imei-profile imeiprof1
```

imsi-group

This command configures the International Mobile Subscriber Identity (IMSI) group.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`imsi-group` *`group_name`*

imsi-group *group_name*

Specifies the IMSI group name. *group_name* must be an alphanumeric string of 1 through 64 characters. It can have a maximum of 50 groups.

Usage Guidelines

Use this command to create the IMSI group. An IMSI group can contain up to 500 elements of either individual IMSI or range of IMSI numbers. Once an IMSI group is created, each group can be configured with up to 500 unique IMSI values. Multiple lines of IMSI and IMSI-range can be up to 20 lines per group.

This command allows you to enter the IMSI Group Configuration Mode.

Entering this command results in the following prompt:

[*context_name*]*hostname*(config-imsi-group)#

IMSI Group Configuration Mode commands are defined in the *IMSI Group Configuration Mode Commands* chapter.

ip-pool-mgmt-policy

This command configures the IP Pool Management Policy.

Product

CUPS

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`ip-pool-mgmt-policy` *`policy_name`*

ip-pool-mgmt-policy *policy_name*

Specifies the IP Pool Management Policy. *policy_name* must be an alphanumeric string of 1 through 31 characters.

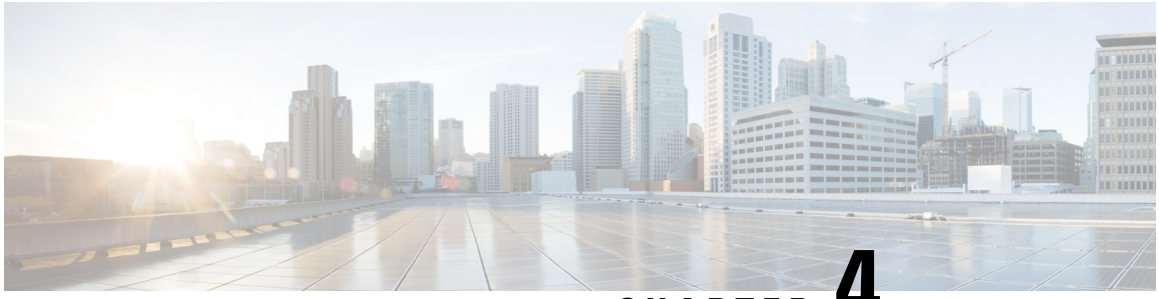
Usage Guidelines

This command allows you to enter the IP Pool Management Policy Cofiguration Mode. For more information, see the *DNS Based UP Selection* chapter.

Entering this command results in the following prompt:

[*context_name*]*hostname*(config-ip-pool-mgmt-policy)#

IP Pool Management Policy Cofiguration Mode commands are defined in the *IP Pool Management Policy Cofiguration Mode Commands* chapter.



CHAPTER 4

Global Configuration Mode Commands (L-S)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **license** through **system**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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license

Configures the license keys on the system.

In Release 21.3 and higher, this command also enables or disables Cisco Smart Licensing on this system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] license { key *key_value* **[-force] session-limit | smart { enable | call-home destination url** *https link* **}**

no

Removes the license key(s) installed.

no smart license enable disables smart licensing on this system.

no smart license call-home destination url removes the configured URL where Cisco Smart Software Manager (CSSM) can be reached.

key *key_value*

Installs the license key specified by *key_value*. *key_value* is enclosed with double quotation marks (" "). The license is provided by the Cisco operations staff.

-force

Sets the license key even if resources are not available. The system supports the dynamic resizing of demultiplexor software tasks based on the licensed session capacity and feature type. When installing a license, the system automatically attempts to resize currently functioning tasks. Warning messages are displayed if there is an issue. Though its use is not recommended, the **-force** keyword can be used to suppress these warning messages.

Using the **-force** keyword to install an invalid license key automatically places the license in a 30-day grace period.

Caution Use of this option is not recommended.

session-limit

Use this keyword to suppress fail-over calls from being rejected if the licensed threshold is crossed.

Important This is a customer-specific command that is available for HA, PDSN, EHA, and PDIF. Please contact your local Cisco sales representative for more information.

smart { enable | call-home destination url *https link* }

- **enable:** Enables Cisco Smart Licensing on this system. By default this feature is disabled. No communication with Cisco is triggered when this command is issued.

  For more information, refer to the **license smart register** Exec mode command, as well as the *Licensing* chapter in the *System Administration Guide*.

- **call-home destination url *https link* :** This optional keyword configures the destination URL where Cisco Smart Software Manager (CSSM) can be reached. By default, this is set to the public CSSM URL and does not need to be updated unless a Smart Software Manager satellite is installed on premise.

Usage Guidelines

Install or update system session keys when necessary due to expiration and/or capacity needs.

In Release 21.3 and higher, this command also enables or disables Cisco Smart Licensing on this system and configures the optional CSSM Call-Home destination URL.

Example

The following command installs the license key that appears within double quotation marks:

```
license key
"\VER=1|C1M=StarentSimCF|C1S=10000020|DOI=1339011659|DOE=1354866669|ISS=3
|NUM=52612|CMT=BxB_HSGW|LEC=1000|FIS=Y|FR4=Y|FTC=Y|FSR=Y|FI6=Y|FLI=Y
|FCA=Y|FTM=Y|FTP=Y|FDC=Y|FGR=Y|FAA=Y|FDQ=Y|BEP=Y|FAI=Y|FLS=Y|LGW=1000|FVN=Y|
FRE=Y|FUR=Y|FAL=Y|FST=Y|FLP=Y|FSE=Y|FIT=Y|LSE=2000|FUZ=Y|SIG=MC0CFAZdtHcnRL/
SN4hXY3CJFQy/e/JXAhUA3JWMbauC7RMF7hVJxzS0fCSXCMQ"
```

line

Enters the terminal display Line Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

line

Usage Guidelines

Change the terminal display configuration based upon the users own terminal characteristics.

The following command enters the Line Configuration mode.

line

link-aggregation

Configures system MAC address and priority for Link Aggregation. These parameters are usually changed to match the feature requirements of the remote Ethernet switch.

Product

WiMAX

PDSN

HA

FA

GGSN

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
link-aggregation { system-mac { mac_address | auto } | system-priority priority
 } [-noconfirm ]
{ default | no } link-aggregation { system-mac | system-priority }
[-noconfirm ]
```

default

Resets the configuration to the default.

system-mac { *mac_address* | auto }

Sets the system MAC address used along with the system priority to form the system ID.

mac_address is manually entered as six groups of two hexadecimal digits separated by hyphens (for example, 01-23-45-67-89-ab).

Auto is the default and is the MAC address of the LAG master port.

system-priority *priority*

This command sets the system priority used by Link Aggregation Control Protocol (LACP) to form the system ID.

priority is a hexadecimal value from 0x0000 through 0xFFFF. Default is 0x8000 (32768).

-noconfirm

Executes the command without additional prompting for command confirmation.

Usage Guidelines

The system MAC address (6 bytes) and system priority (2 bytes) combine to form the system ID. A system consists of a packet processing card and its associated QGLC or XGLC traffic ports. The highest system ID priority (the lowest number) handles dynamic changes.

For additional usage and configuration information for the link aggregation feature, refer to the *System Administration Guide*.

Important Not supported on all platforms

Example

The following command configures the link aggregation system-priority to 10640 (0x2990):

```
link-aggregation system-priority 0x2990
```

local-policy-service

This command enables creating, configuring, or deleting a local QoS policy.

Product

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
local-policy-service name [ -noconfirm ]
no local-policy-service name
```

no

Deletes the specified local QoS policy service from the system.

name

Specifies name of the local QoS policy service as an alphanumeric string of 1 through 63 characters.

Important The *name* must be unique across all contexts.

If the named local QoS policy service does not exist, it is created, and the CLI mode changes to the Local Policy Service Configuration Mode wherein the local QoS policy service can be configured.

If the named local QoS policy service already exists, the CLI mode changes to the Local Policy Service Configuration Mode for that local QoS policy service.

-noconfirm

Specifies that the command must execute without prompting for confirmation.

Usage Guidelines

Use this command to specify a local QoS policy service name to allow configuration of a local QoS policy service.

Important This feature is license dependent. Please contact your local sales representative for more information.

A local QoS policy service can be used to control different aspects of a session, such as QoS, data usage, subscription profiles, or server usage, by means of locally defined policies.

Local QoS policies are triggered when certain events occur and the associated conditions are satisfied. For example, when a new call is initiated, the QoS to be applied for the call could be decided based on the IMSI, MSISDN, and APN.

Important A maximum of 16 local QoS policy services are supported.

Entering this command results in the following prompt:

```
[context_name]hostname(config-local-policy-service)#
```

Local Policy Service Configuration Mode commands are defined in the *Local Policy Service Configuration Mode Commands* chapter.

Example

The following command creates a local QoS policy service named *lctest* and enters the Local Policy Service Configuration Mode:

```
local-policy-service lctest
```

local-user allow-aaa-authentication

Enables or disables the use of administrative accounts other than local-user administrative accounts.

Important In a release 20.0 or higher Trusted build, this command is not available.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default | no ] local-user allow-aaa-authentication [ noconsole ]
```

default

Returns this parameter to its default setting of enabled.

no

Disables administrative user accounts other than local-user accounts.

noconsole

Prevents authentication via non-local-user mechanisms when logging into a Console port.

Since local user authentication is always performed before AAA-based authentication, if **local-user allow-aaa-authentication noconsole** is configured, the behavior is the same as if **no local-user allow-aaa-authentication** is configured. However, there is no impact on SSH or tenet logins (vty lines).

Usage Guidelines

Local-user administrative accounts are separate from other administrative user accounts configured at the context level (Security Administrator, Administrator, Operator, and Inspector).

Context-level administrative users rely on the system's AAA subsystems for validating user names and passwords during login. This is true for both administrative user accounts configured locally through a configuration file or on an external RADIUS server.

Since the T1.276-2003 password security mechanisms are supported only for local-user administrative accounts and not for the AAA-based administrative accounts, this command provides a mechanism for disabling AAA-based administrative accounts.

By default, AAA-based administrative accounts are allowed.

Example

The following command forces the system to authenticate local-user accounts based only on the information in the security account file on its CompactFlash:

```
no local-user allow-aaa-authentication
```

local-user lockout-time

Configures the lockout period for local-user administrative accounts.

Important In a release 20.0 or higher Trusted build, this command is not available.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

local-user lockout-time *time*
default local-user lockout-time

default

Restores the parameter to its default setting.

time

Default: 60

Specifies the amount of time (in minutes) that must elapse before a previously locked-out local-user account can attempt to login again. *time* is an integer from 1 through 10080.

Usage Guidelines

Local-user administrative accounts can become locked for reasons such as exceeding the configured maximum number of login failures.

Once an account is locked, this parameter specifies the lockout duration. Once the amount of time configured by this parameter has elapsed, the local-user can once again attempt to login.

Example

The following command configures a lockout time of *120* minutes (2 hours):

local-user lockout-time 120

local-user max-failed-logins

Configures the maximum number of failed login attempts a local-user can have before their account is locked out.

Important In a release 20.0 or higher Trusted build, this command is not available.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

local-user max-failed-logins *number*
[default | no] local-user max-failed-logins

no

Disables this functionality.

default

Restores this parameter to its default setting of 5.

number

Specifies the maximum number of times a local-user could experience a login failure before their account is locked out. *number* is an integer from 2 through 100. Default: 5

Usage Guidelines

This command configures the maximum number of failed login attempts a local-user can have before their account is locked out. For example if, this parameter is configured to "3" then after the third failed login attempt, the account would be locked.

Important Local-user accounts can be configured to either enforce or reject a lockout due to the maximum number of failed login being reached. Refer to the **local-user username** command for more information.

Refer to the **local-user lockout-time** command for more information.

Example

The following command configures a maximum of three login attempts:

```
local-user max-failed-logins 3
```

local-user password

Configures local-user administrative account password properties.

Important In a release 20.0 or higher Trusted build, this command is not available.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

local-user password { [complexity { ansi-t1.276-2003 | none }] [history length *number* **[duration** *days* **]] [max-age** *days* **] [min-change-char** *number*

```
 ] [ min-change-interval days ] [ min-length number ][ lockout-password-aging
  days ] [ exp-warn-interval days ] [ exp-grace-interval days ] [
security-admin | administrator | inspector | operator ] [ auto-generate
[ none | length password-length] }
no local-user password { [ history ] [ max-age ] [ min-change-interval ]
  [ lockout-password-aging  days ] [ exp-warn-interval  ] [
exp-grace-interval ] }
default local-user password { [ complexity ] [ history ] [ max-age ] [
min-change-char ] [ min-change-interval ] [ min-length ][
lockout-password-aging  days ] [ exp-warn-interval  ]  [ auto-generate ]
[ exp-grace-interval ] }
```

no

Disables the specified parameter.

default

Restores the specified parameter to its default setting.

[complexity { ansi-t1.276-2003 | none }]

Default: ansi-t1.276-2003

Specifies the password strength as one of the following:

- **ansi-t1.276-2003:** If this option is selected, the following rules are enforced:
- Passwords may not contain the username or the reverse of the username
- Passwords may contain no more than three of the same characters used consecutively
- Passwords must contain at least three of the following:
  - uppercase alpha character (A, B, C, D ... Z)
  - lowercase alpha character (a, b, c, d ... z)
  - numeric character (0, 1, 2, 3 ...)
  - special character (see the *Alphanumeric Strings* section of the *Command Line Interface Overview* chapter)
- **none:** Only the password length is checked. No additional password checks are performed.

[history length *number* [duration *days*]]

Default: length is 5

Specifies the number of previous password entries kept in the history list maintained by the system. A password cannot be reused if it is one of the entries kept in the history list unless the time it was last used was more than the number of days specified by the **duration** keyword.

If the duration keyword is not used, the only check performed by the system is that it is not in the history list.

number is the number of entries for each account stored in the history list entered as an integer from 1 through 100. *days* is the number of days during which a password can not be reused entered an integer from 1 through 365.

[max-age *days*]

Specifies the maximum age for a password. Users logging in with a password older than the specified limit are locked out. Once the lockout period expires, at their next login attempt, they are prompted to change their password before accessing the CLI. Default: 90

Important Local-user accounts can be configured to either enforce or reject a lockout due to a password's maximum age being reached. Refer to the **local-user username** command for more information.

days is the number of days that passwords remain valid entered as an integer from 1 through 365.

[min-change-char *number*]

Specifies the minimum number of characters that must be changed (in comparison to the current password) when a user changes their password. Default: 2

Important Changes in password length are counted as "character" changes. For example: changing a password from "password" to "passwo" is a 2-character change, changing a password from "password" to "password2" is a 1-character change, and changing a password from "password" to "apassword" is a 9-character change.

number is the number of characters entered as an integer from 0 through 16.

[min-change-interval *days*]

Specifies the frequency that passwords can be changed (other than first login).

days is the minimum number of days that must pass before a user can change their password. It is an integer from 1 through 365. Default: 1

Important If the **no local-user password min-change-interval** command is used, users may change their password as often as desired which could allow them to circumvent the password history function.

[min-length *number*]

Specifies the minimum length allowed for user-defined password.

number is the minimum number of alphanumeric characters that the password must contain, entered as an integer from 3 through 32. Default: 8

[exp-warn-interval *days*]

Specifies the password expiry warning interval in days.

days is the number of days before which password expiry warning is issued. The default is 30 days.

[exp-grace-interval *days*]

Specifies the password expiry grace interval in days. The default is 3 days after expiry.

days is the number of days beyond password expiry date at which the account is locked. The valid values range from 1 to 7 days. The default is 3 days.

[lockout-password-aging *days*]

Specifies that the user account gets locked after passoword expiration

[no-lockout-password-aging *days*]

Specifies that the user account doest not get locked out after password expiration

[security-admin | administrator | inspector | operator]

Configures as follows:

security-admin: Configures all local users with security administrator rights.

administrator: Configures all local users with administrator rights.

inspector: Configures all local users with inspector rights.

operator: Configures all local users with operator rights.

[auto-generate [none | length *password-length*]

Presents an automatically generated password to the user at login when password is expired or found weak.

The auto-generate option is enabled by default with the password length of 8.

none : Specifies that the user must not be presented with the option to automatically generate a password.

length *password-length* : Specifies the length of the automatically-generated password for the user. The length of the automatically-generated password is an integer between 6 to 127.

Usage Guidelines

This command is used to set the property requirements for user-defined passwords and system behavior in relation to those passwords.

Information pertaining to user passwords, login failures, and password history are stored on the packet processing cards and in the software's Shared Configuration Task (SCT).

The system uses the information in the SCT for runtime operations such as determining password ages and determining if new passwords meet the criteria specified by this command.

Example

The following command configures a minimum password length requirement of *6* characters:

```
local-user password min-length 6
```

The following command configures the system to store the *4* most recently used passwords per user-account in the history list:

```
local-user password history length 4
```

The following command configures the password expiry warning interval.

local-user password exp-warn-interval 15

The following command configures the auto-generated password with the specified length.

```
local-user password auto-generate length 10
```

local-user username

Adds or removes local-user administrative accounts.

Important In a release 20.0 or higher Trusted build, this command is not available.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

local-user username *name* **[authorization-level { administrator | inspector | operator | security-admin }] [ecs | noecs] [ftp [sftp-server]** *sftp-name* **] | noftp] [timeout-min-absolute** *time* **] [max sessions** *number* **] [no-lockout-login-failure] [no-lockout-password-aging] [noconsole | novty][suspend-date** *YYYY:MM:DD:HH:MM:SS* **[no warn-date | warn-date** *YYYY:MM:DD:HH:MM:SS* **]] [max-age** *days* **[no exp-warn-interval | exp-warn-interval** *days* **] | [no-exp-grace-interval | exp-grace-interval** *days* **]] [password** *password* **| nopassword] [timeoute-min-idle** *time* **]**
no local-user username *name*

no

Removes a previously configured user.

name

Specifies the name of the user as an alphanumeric string of 3 through 16 characters that is case sensitive.

[ecs | noecs]

Specifies whether or not the user has access to Active Charging Service configuration parameters.

- **ecs**: The user has access.
- **noecs**: The user does not have access.

Default: **ecs**

[ftp | noftp]

Default: ftp

Specifies whether or not the user is allowed to access the system via the File Transfer Protocol (FTP) and/or the Secure File Transfer Protocol (SFTP).

- **ftp**: The user has access.
- **noftp**: The user does not have access.

[sftp-server *sftp_name*]

Assigns an optional root directory and access privilege to this user. *sftp_name* must have been previously created via the SSH Server Configuration mode **subsystem sftp** command.

[max-sessions number

Default: Disabled

max-sessions *number*: Configures the maximum number of simultaneous CLI sessions for one user. *number* must be an alphanumeric integer from 1 to 100. **Default:** No limit.

Important The only way to change the configured max-sessions number is to delete the user and then re-configure user with a different max-sessions number.

Important The user is requested to change their password upon their first login.

[no-lockout-login-failure]

Default: Disabled

Specifies that this user will never be locked out due to login attempt failures.

[no-lockout-password-aging]

Default: Disabled

Specifies that this user will never be locked out due to the age of their password.

[noconsole | novty]

Specifies whether or not a user can login through a Console port or SSH/telnet (vty line).

- **noconsole** denies login via a Console port
- **novty** denies login via SSH or telnet

By default logins to Console and vty lines are allowed.

[suspend-date *YYYY:MM:DD:HH:MM:SS* [no warn-date | warn-date *YYYY:MM:DD:HH:MM:SS*]]

Specifies the date and time when the local-user account should be suspended.

YYYY:MM:DD:HH:MM:SS is the clock in format YYYY:MM:DD:HH:mm or YYYY:MM:DD:HH:mm:ss.

no warn-date : Disables impending password expiry warnings.

warn-date *YYYY:MM:DD:HH:MM:SS*: Specifies the date and time when the local-user account suspension warning notification starts.

YYYY:MM:DD:HH:MM:SS is the clock in format YYYY:MM:DD:HH:mm or YYYY:MM:DD:HH:mm:ss.

[max-age *days* [no exp-warn-interval | exp-warn-interval *days*]]

max-age *days*: Specifies the maximum age for a password. Users logging in with a password older than the specified limit are locked out. After the lockout period expires, at their next login attempt, they are prompted to change their password before accessing the CLI.

Important Local-user accounts can be configured to either enforce or reject a lockout due to a password's maximum age being reached. Refer to the **local-user username** command for more information.

days is the number of days that passwords remain valid entered as an integer from 1 to 365. The global or user group value is considered as the default value.

no exp-warn-interval: Disables impending password expiry warnings.

exp-warn-interval *days*: Specifies the password expiry warning interval in days.

days is the number of days before which password expiry warning is issued. The valid values range from 7 to 90 days. The global or user group value is considered as the default value.

[no-exp-grace-interval | exp-grace-interval *days*]

no exp-grace-interval : Disables grace period of expired password.

exp-grace-interval *days*: Specifies the password expiry grace interval in days.

days is the number of days beyond password expiry date at which the account is locked. The valid values range from 1 to 7 days. The global or user group value is considered as the default value.

[password *password* | nopassword]

Specifies the initial password for this user. *password* must an alphanumeric string of 6 through 32 characters that is case sensitive.

Important The user is requested to change their password upon their first login.

[timeout-min-absolute *time*]

Default: 0

Specifics the maximum session time (in minutes) for this user. *time* is an integer from 0 through 525600. A value of "0" indicates no limit.

Important This limit applies only to the user's CLI sessions.

[timeout-min-idle *time*]

Default: 0

Specifics the maximum idle time (in minutes) for this user. *time* is an integer from 0 through 525600. A value of "0" indicates no limit.

Important This limit applies only to the user's CLI sessions.

Usage Guidelines

The ability to configure administrative local-users is provided in support of the login security mechanisms specified in ANSI T1.276-2003.

Like administrative users configured at the context level, local-users can be assigned one of 4 security levels:

Local-User Level User	Context Level User
Security Administrator	Administrator
Administrator	Config-Administrator
Operator	Operator
Inspector	Inspector

Local-user configuration support is handled differently from that provided for administrative users configured at the context level.

Context-level administrative users rely on the system's AAA subsystems for validating user names and passwords during login. This is true for both administrative user accounts configured locally through a configuration file or on an external RADIUS server. Passwords for these user types are assigned once and are accessible in the configuration file.

Local-user account information (passwords, password history, lockout states, etc.) is maintained in non-volatile memory and in the software's Shared Configuration Task (SCT). This information is maintained in a separate file – not in configuration files used by the system. As such, the configured local-user accounts are not visible with the rest of the system configuration.

Local-user and context-level administrative accounts can be used in parallel.

Example

The following command configures a security-administrator level local-user administrative account for a user named *User672* that has FTP privileges, a temporary password of *abc123*, and that does not lockout due to either login attempt failures or password aging:

```
local-user username User672 authorization-level security-admin ftp
no-lockout-login-failure no-lockout-password-aging password abc123
```

The following command deletes a previously configured local-user administrative account called admin32:

```
no local-user username admin32
```

logging console

Enables the output of logged events to be displayed on the console terminal.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] logging console
```

no

Disables the output of events to the console port.

Usage Guidelines

Log console output to allow for offline review during system monitoring and/or trouble shooting.

logging disable

Enables/disables the logging of the specified event ID or range of IDs.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] logging disable eventid id [ to to_id ]
```

no

Indicates the event IDs specified are to be enabled for logging.

eventid *id*

Specifies the event for which no logging is to occur.

In 14.1 and earlier releases, *id* is an integer from 1 through 202699.

In 15.0, *id* is an integer from 1 through 204999.

In 17.0 and later releases, *id* is an integer from 1 through 215999.

to *to_id*

Specifies the end ID of the events when a range of event ID is to be disabled from being logged. *to_id* must be an integer from 1 through 204999. The *to_id* must be equal to or larger than the *id* specified.

Usage Guidelines

Disable common events which may occur with a normal frequency are not of interest in monitoring the system for troubles.

Example

The following command disables the logging the range of events from 4500 through 4599, respectively.

```
logging disable eventid 4500 to 4599
```

logging display

Configures the level of detail for information to be logged.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
logging display ( event-verbosity ( min | concise | full } | pdu-data {
none | hex | hex-ascii } | pdu-verbosity pdu_level }
```

event-verbosity (min | concise | full }

Specifies the level of verboseness to use in logging of events as one of:

- **min**: displays minimal detail.
- **concise**: displays summary detail.
- **full**: dislays all details.

pdu-data { none | hex | hex-ascii }

Specifies output format for packet data units when logged as one of:

- **none**: output in raw format.
- **hex**: displays output in hexadecimal format.
- **hex-ascii**: displays output in hexadecimal and ASCII similar to a main-frame dump.

pdu-verbosity *pdu_level*

Specifies the level of verboseness to use in logging of packet data units as an integer from 1 through 5, where 5 is the most detailed.

Usage Guidelines

Tune the level of information to be logged so as to avoid flooding a log file with information which is not useful or critical.

Example

The following sets event logging to display the maximum amount of detail.

```
logging display event-verbosity full
```

logging filter

Configures the logging of events to be performed in real time for the specified facility.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
logging filter runtime facility facility level report_level [ critical-info
| no-critical-info ]
```

facility *facility*

Specifies the facility to modify the filtering of logged information. The following list displays the valid facilities for this command:

- **a10**: A10 interface facility
- **a11**: A11 interface facility
- **a11mgr**: A11 Manager facility
- **aaa-client**: Authentication, Authorization and Accounting (AAA) client facility

- **aaamgr**: AAA manager logging facility
- **aaaproxy**: AAA Proxy facility
- **aal2**: ATM Adaptation Layer 2 (AAL2) protocol logging facility
- **acl-log**: Access Control List (ACL) logging facility
- **acsctrl**: Active Charging Service (ACS) Controller facility
- **acsmgr**: ACS Manager facility
- **afctrl**: Fabric Controller facility [ASR 5500 only]
- **afmgr**: Fabric Manager logging facility [ASR 5500 only]
- **alarmctrl**: Alarm Controller facility
- **alcap**: Access Link Control Application Part (ALCAP) protocol logging facility
- **alcapmgr**: ALCAP manager logging facility
- **all**: All facilities
- **asngwmgr**: Access Service Network (ASN) Gateway Manager facility
- **asnpcmgr**: ASN Paging Controller Manager facility
- **bfd**: Bidirectional Forwarding Detection (BFD) protocol logging facility
- **bgp**: Border Gateway Protocol (BGP) facility
- **bindmux**: IPCF BindMux-Demux Manager logging facility
- **bngmgr**: Broadband Network Gateway (BNG) Demux Manager logging facility
- **bssap+**: Base Station Sub-system Application Part+ protocol facility for the login interface between the SGSN and the MSC/VLR (2.5G and 3G)
- **bssgp**: Base Station Sub-system GPRS Protocol logging facility handles exchange information between the SGSN and the BSS (2.5G only)
- **callhome**: Call Home application logging facility
- **cap**: CAMEL Application Part (CAP) logging facility for protocol used in prepaid applications (2.5G and 3G)
- **cbsmgr**: Cell Broadcasting Service (CBS) logging facility [HNBGW]
- **cdf**: Charging Data Function (CDF) logging facility
- **cgw**: Converged Access Gateway (CGW) logging facility
- **cli**: Command Line Interface (CLI) logging facility
- **cmp**: Certificate Management Protocol (IPSec) logging facility
- **connectedapps**: SecGW ASR 9000 oneP communication procotol
- **connproxy**: Controller Proxy logging facility
- **credit-control**: Credit Control (CC) facility

- **csp**: Card/Slot/Port controller facility
- **css**: Content Service Selection (CSS) facility
- **css-sig**: CSS RADIUS Signaling facility
- **cx-diameter**: Cx Diameter Messages facility [CSCF <--> HSS]
- **data-mgr**: Data Manager Framework logging facility
- **dcardctrl**: IPSec Daughter Card Controller logging facility
- **dcardmgr**: IPSec Daughter Card Manager logging facility
- **demuxmgr**: Demux Manager API facility
- **dgmbmgr**: Diameter Gmb Application Manager logging facility
- **dhcp**: Dynamic Host Configuration Protocol (DHCP) logging facility
- **dhcpv6**: DHCPv6
- **dhost**: Distributed Host logging facility
- **diabase**: Diabase messages facility
- **diactrl**: Diameter Controller proclet logging facility
- **diameter**: Diameter endpoint logging facility
- **diameter-acct**: Diameter Accounting
- **diameter-auth**: Diameter Authentication
- **diameter-dns**: Diameter DNS subsystem
- **diameter-ecs**: ACS Diameter signaling facility
- **diameter-engine**: Diameter version2 engine logging facility
- **diameter-hdd**: Diameter Horizontal Directional Drilling (HDD) Interface facility
- **diameter-svc**: Diameter Service
- **diamproxy**: DiamProxy logging facility
- **dpath**: IPSec Data Path facility
- **drvctrl**: Driver Controller facility
- **dpath**: IPSec Data Path logging facility
- **drvctrl**: Driver Controller logging facility
- **doulosuemgr**: Doulos (IMS-IPSec-Tool) user equipment manager
- **eap-diameter**: Extensible Authentication Protocol (EAP) IP Sec urity facility
- **eap-ipsec**: Extensible Authentication Protocol (EAP) IPSec facility
- **eap-sta-s6a-s13-s6b-diameter**: EAP/STA/S6A/S13/S6B Diameter messages facility
- **ecs-css**: ACSMGR <-> Session Manager Signalling Interface facility

- **egtpc**: eGTP-C logging facility
- **egtpmgr**: enhanced GPRS Tunneling Protocol (eGTP) manager logging facility
- **egtpu**: eGTP-U logging facility
- **embms**: evolved Multimedia Broadcast Multicast Service Gateway facility
- **embms**: eMBMS Gateway Demux facility
- **epdg**: evolved Packet Data (ePDG) gateway logging facility
- **event-notif**: Event Notification Interface logging facility
- **evlog**: Event log facility
- **famgr**: Foreign Agent manager logging facility
- **firewall**: Firewall logging facility
- **fng**: Femto Network Gateway (FNG) logging facility
- **gbmgr**: SGSN Gb Interface Manager facility
- **gmm**:
  - For 2.5G: Logs the GPRS Mobility Management (GMM) layer (above LLC layer)
  - For 3G: Logs the access application layer (above the RANAP layer)
- **gprs-app**: GPRS Application logging facility
- **gprs-ns**: GPRS Network Service Protocol (layer between SGSN and the BSS) logging facility
- **gq-rx-tx-diameter**: Gq/Rx/Tx Diameter messages facility
- **gss-gcdr**: GTPP Storage Server GCDR facility
- **gtpc**: GTP-C protocol logging facility
- **gtpcmgr**: GTP-C protocol manager logging facility
- **gtpp**: GTP-prime protocol logging facility
- **gtpu**: GTP-U protocol logging facility
- **gtpumgr**: GTP-U Demux manager
- **gx-ty-diameter**: Gx/Ty Diameter messages facility
- **gy-diameter**: Gy Diameter messages facility
- **h248prt**: H.248 port manager facility
- **hamgr**: Home Agent manager logging facility
- **hat**: High Availability Task (HAT) process facility
- **hdctrl**: HD Controller logging facility
- **henbapp**: Home Evolved NodeB (HENB) App facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgw**: HENB-GW facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgw-pws**: HENB-GW Public Warning System logging facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgw-sctp-acs**: HENB-GW access Stream Control Transmission Protocol (SCTP) facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgw-sctp-nw**: HENBGW network SCTP facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgwdemux**: HENB-GW Demux facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **henbgwmgr**: HENB-GW Manager facility

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This keyword must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

- **hnb-gw**: HNB-GW (3G Femto GW) logging facility

Important In Release 20 and later, HNBGW is not supported. This keyword must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

- **hnbmgr**: HNB-GW Demux Manager logging facility

Important In Release 20 and later, HNBGW is not supported. This keyword must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

- **hss-peer-service**: Home Subscriber Server (HSS) Peer Service facility
- **igmp**: Internet Group Management Protocol (IGMP)
- **ikev2**: Internet Key Exchange version 2 (IKEv2)
- **ims-authorizatn**: IP Multimedia Subsystem (IMS) Authorization Service facility
- **ims-sh**: HSS Diameter Sh Interface Service facility
- **imsimgr**: SGSN IMSI Manager facility
- **imsue**: IMS User Equipment (IMSUE) facility
- **ip-arp**: IP Address Resolution Protocol facility
- **ip-interface**: IP interface facility
- **ip-route**: IP route facility
- **ipms**: Intelligent Packet Monitoring System (IPMS) logging facility
- **ipne**: IP Network Enabler (IPNE) facility
- **ipsec**: IP Security logging facility
- **ipsecdemux**: IPSec demux logging facility
- **ipsg**: IP Service Gateway interface logging facility
- **ipsgmgr**: IP Services Gateway facility
- **ipsp**: IP Pool Sharing Protocol logging facility
- **kvstore**: Key/Value Store (KVSTORE) Store facility

- **l2tp-control**: Layer 2 Tunneling Protocol (L2TP) control logging facility
- **l2tp-data**: L2TP data logging facility
- **l2tpdemux**: L2TP Demux Manager logging facility
- **l2tpmgr**: L2TP Manager logging facility
- **lagmgr**: Link Aggregation Group (LAG) manager logging facility
- **lcs**: Location Services (LCS) logging facility
- **ldap**: Lightweight Directory Access Protocol (LDAP) messages logging facility
- **li**: Refer to the *Lawful Intercept Configuration Guide* for a description of this command.
- **linkmgr**: SGSN/BSS SS7 Link Manager logging facility (2.5G only)
- **llc**: Logical Link Control (LLC) Protocol logging facility; for SGSN: logs the LLC layer between the GMM and the BSSGP layers for logical links between the MS and the SGSN
- **local-policy**: Local Policy Service facility
- **location-service**: Location Services facility
- **m3ap**: M3 Application Protocol facility
- **m3ua**: M3UA Protocol logging facility
- **magmgr**: Mobile Access Gateway manager logging facility
- **map**: Mobile Application Part (MAP) protocol logging facility
- **megadiammgr**: MegaDiameter Manager (SLF Service) logging facility
- **mme-app**: Mobility Management Entity (MME) Application logging facility
- **mme-embms**: MME evolved Multimedia Broadcast Multicast Service facility
- **mme-misc**: MME miscellaneous logging facility
- **mmedemux**: MME Demux Manager logging facility
- **mmemgr**: MME Manager facility
- **mmgr**: Master Manager logging facility
- **mobile-ip**: Mobile IP processes
- **mobile-ip-data**: Mobile IP data facility
- **mobile-ipv6**: Mobile IPv6 logging facility
- **mpls**: Multiprotocol Label Switching (MPLS) protocol logging facility
- **mrme**: Multi Radio Mobility Entity (MRME) logging facility
- **mseg-app**: Mobile Services Edge Gateway (MSEG) application logging facility (This option is not supported in this release.)
- **mseg-gtpc**: MSEG GTP-C application logging facility (This option is not supported in this release.)

- **mseg-gtpu**: MSEG GTP-U application logging facility (This option is not supported in this release.)
- **msegmgr**: MSEG Demux Manager logging facility (This option is not supported in this release.)
- **mtp2**: Message Transfer Part 2 (MTP2) Service logging facility
- **mtp3**: Message Transfer Part 3 (MTP3) Protocol logging facility
- **multicast-proxy**: Multicast Proxy logging facility
- **nas**: Non-Access Stratum (NAS) protocol logging facility [MME 4G]
- **netwstrg**: Network Storage facility
- **npuctrl**: Network Processor Unit Control facility
- **npudrv**: Network Processor Unit Driver facility [ASR 5500 only]
- **npumgr**: Network Processor Unit Manager facility
- **npumgr-acl**: NPUMGR ACL logging facility
- **npumgr-drv**: NPUMGR DRV logging facility
- **npumgr-flow**: NPUMGR FLOW logging facility
- **npumgr-fwd**: NPUMGR FWD logging facility
- **npumgr-init**: NPUMGR INIT logging facility
- **npumgr-lc**: NPUMGR LC logging facility
- **npumgr-port**: NPUMGR PORT logging facility
- **npumgr-recovery**: NPUMGR RECOVERY logging facility
- **npumgr-rri**: NPUMGR RRI (Reverse Route Injection) logging facility
- **npumgr-vpn**: NPUMGR VPN logging facility
- **npusim**: NPUSIM logging facility [ASR 5500 only]
- **ntfy-intf**: Notification Interface logging facility [Release 12.0 and earlier versions only]
- **ocsp**: Online Certificate Status Protocol logging facility.
- **orbs**: Object Request Broker System logging facility
- **ospf**: OSPF protocol logging facility
- **ospfv3**: OSPFv3 protocol logging facility
- **p2p**: Peer-to-Peer Detection logging facility
- **pagingmgr**: PAGINGMGR logging facility
- **pccmgr**: Intelligent Policy Control Function (IPCF) Policy Charging and Control (PCC) Manager library
- **pdg**: Packet Data Gateway (PDG) logging facility
- **pdgdmgr**: PDG Demux Manager logging facility
- **pdif**: Packet Data Interworking Function (PDIF) logging facility
- **pgw**: Packet Data Network Gateway (PGW) logging facility

- **pmm-app**: Packet Mobility Management (PMM) application logging facility
- **ppp**: Point-To-Point Protocol (PPP) link and packet facilities
- **pppoe**: PPP over Ethernet logging facility
- **proclet-map-frwk**: Proclet mapping framework logging facility
- **push**: VPNMGR CDR push logging facility
- **radius-acct**: RADIUS accounting logging facility
- **radius-auth**: RADIUS authentication logging facility
- **radius-coa**: RADIUS change of authorization and radius disconnect
- **ranap**: Radio Access Network Application Part (RANAP) Protocol facility logging info flow between SGSN and RNS (3G)
- **rct**: Recovery Control Task logging facility
- **rdt**: Redirect Task logging facility
- **resmgr**: Resource Manager logging facility
- **rf-diameter**: Diameter Rf interface messages facility
- **rip**: Routing Information Protocol (RIP) logging facility [RIP is not supported at this time.]
- **rlf**: Rate Limiting Function (RLF) logging facility
- **rohc**: Robust Header Compression (RoHC) facility
- **rsvp**: Reservation Protocol logging facility
- **rua**: RANAP User Adaptation (RUA) [3G Femto GW - RUA messages] logging facility
- **s102**: S102 protocol logging facility
- **s102mgr**: S102Mgr logging facility
- **s1ap**: S1 Application Protocol (S1AP) Protocol logging facility
- **sabp**: Service Area Broadcast Protocol (SABP) logging facility
- **saegw**: System Architecture Evolution (SAE) Gateway facility
- **sbc**: SBc protocol logging facility
- **sccp:** Signalling Connection Control Part (SCCP) Protocol logging (connection-oriented messages between RANAP and TCAP layers).
- **sct**: Shared Configuration Task logging facility
- **sctp**: Stream Control Transmission Protocol (SCTP) Protocol logging facility
- **sef_ecs**: Severely Errored Frames (SEF) APIs printing facility
- **sess-gr**: SM GR facility
- **sessctrl**: Session Controller logging facility

- **sessmgr**: Session Manager logging facility
- **sesstrc**: session trace logging facility
- **sft**: Switch Fabric Task logging facility
- **sgs**: SGs interface protocol logging facility
- **sgsn-app**: SGSN-APP logging various SGSN "glue" interfaces (for example, between PMM, MAP, GPRS-FSM, SMS).
- **sgsn-failures**: SGSN call failures (attach/activate rejects) logging facility (2.5G)
- **sgsn-gtpc**: SGSN GTP-C Protocol logging control messages between the SGSN and the GGSN
- **sgsn-gtpu**: SGSN GTP-U Protocol logging user data messages between the SGSN and GGSN
- **sgsn-mbms-bearer**: SGSN Multimedia Broadcast/Multicast Service (MBMS) Bearer app (SMGR) logging facility
- **sgsn-misc**: Used by stack manager to log binding and removing between layers
- **sgsn-system**: SGSN System Components logging facility (used infrequently)
- **sgsn-test**: SGSN Tests logging facility; used infrequently
- **sgtpcmgr**: SGSN GTP-C Manager logging information exchange through SGTPC and the GGSN
- **sgw**: Serving Gateway facility
- **sh-diameter**: Sh Diameter messages facility
- **sitmain**: System Initialization Task main logging facility
- **sls**: Service Level Specification (SLS) protocol logging facility
- **sm-app**: SM Protocol logging facility
- **sms**: Short Message Service (SMS) logging messages between the MS and the SMSC
- **sndcp**: Sub Network Dependent Convergence Protocol (SNDCP) logging facility
- **snmp**: SNMP logging facility
- **sprmgr**: IPCF Subscriber Policy Register (SPR) manager logging facility
- **srdb**: Static Rating Database
- **srp**: Service Redundancy Protocol (SRP) logging facility
- **sscfnni**: Service-Specific Coordination Function for Signaling at the Network Node Interface (SSCF-NNI) logging facility
- **sscop**: Service-Specific Connection-Oriented Protocol (SSCOP) logging facility
- **ssh-ipsec**: Secure Shell (SSH) IP Security logging facility
- **ssl**: Secure Socket Layer (SSL) message logging facility
- **stat**: Statistics logging facility
- **supserv**: Supplementary Services logging facility [H.323]

- **system**: System logging facility
- **tacacsplus**: TACACS+ Protocol logging facility
- **tcap**: TCAP Protocol logging facility
- **testctrl**: Test Controller logging facility
- **testmgr**: Test Manager logging facility
- **threshold**: threshold logging facility
- **ttg**: Tunnel Termination Gateway (TTG) logging facility
- **tucl**: TCP/UDP Convergence Layer (TUCL) logging facility
- **udr**: User Data Record (UDR) facility (used with the Charging Service)
- **user-data**: User data logging facility
- **user-l3tunnel**: User Layer 3 tunnel logging facility
- **usertcp-stack**: User TCP Stack
- **vim**: Voice Instant Messaging (VIM) logging facility
- **vinfo**: VINFO logging facility
- **vmgctrl**: Virtual Media Gateway (VMG) controller facility
- **vmgctrl**: VMG Content Manager facility
- **vpn**: Virtual Private Network logging facility
- **wimax-data**: WiMAX DATA
- **wimax-r6**: WiMAX R6
- **wsg**: Wireless Security Gateway (ASR 9000 Security Gateway)
- **x2gw-app**: X2GW (X2 proxy Gateway, eNodeB) application logging facility
- **x2gw-demux**: X2GW demux task logging facility

level *report_level* [critical-info | no-critical-info]

level *report_level*: specifies the level of information to be logged, *report_level*, as one of:

- critical
- debug
- error
- info
- trace
- unusual
- warning

critical-info | **no-critical-info**: indicates if critical information is to be displayed or not. The keyword **critical-info** specifies that events with a category attribute of critical information are to be displayed. Examples

of these types of events can be seen at bootup when system processes and tasks are being initiated. The **no-critical-info** keyword specifies that events with a category attribute of critical information are not to be displayed.

Usage Guidelines

This command is useful when it is necessary to get real time output of events. Event output may be cached otherwise which may make it difficult to trouble shoot problems which do not allow the last cache of events to be output prior to system problems.

Caution Issuing this command could negatively impact system performance depending on system loading, the log level, and/or the type of facility(ies) being logged.

Example

Set real time output for the point-to-point protocol facility and all facilities, respectively, to avoid logging of excessive information.

```
logging filter runtime facility ppp
logging filter runtime facility all level warning
```

logging include-ueid

Enables the sending of the International Mobile Station Identifier (IMSI) and International Mobile Equipment Identifier (IMEI) in logging details of event log types error and critical.

Product

P-GW

SAEGW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] logging include-ueid

no

Disables the sending of the IMSI/IMEI in logging details of event log types error and critical.

include-ueid

Enables the sending of the IMSI/IMEI in logging details of event log types error and critical. When enables, the following event logs of type error and critical will contain the IMSI/IMEI in the logging details.

Table 4: System Event Logs of Type Error and Critical with IMSI/IMEI in System Event Log Details

Event Log #	Description
12225	Represents misc_error3 in format "[IMSI <IMSI>] Misc Error3: %s, error code %d"
12226	Represents recover_call_from_crr_failed1 error in format "[IMSI <IMSI>]Sessmgr-%d Recover call from CRR failed for callid:0x%x reason=%s"
12227	Represents aaa_create_session_failed_no_more_sessions1 error in format "[IMSI <IMSI>] Sessmgr-%d Ran out of session handles"
140075	Represents error_log1 in format "[IMSI <IMSI>]%s"
139001	To print miscellaneous PGW error log.
191006	To print miscellaneous SAEGW error log.
10034	Represents FSM error in format "[IMSI <IMSI>] default call fsm error: ostate=%s(%d) state=%s(%d) event=%s(%d)"
10035	Represents FSM INVALID event in format "[IMSI <IMSI>] default call fsm invalid event: state=%s(%d) event=%s(%d)"
12382	Represents SN_LE_SESSMGR_PGW_REJECT_BEARER_OP in format "[IMSI <IMSI>] Sessmgr-%d: Request to %s bearer rejected. Reason: %s". For example "[IMSI 112233445566778 Sessmgr-1: Request to Create bearer rejected. Reason: Create Bearer Request denied as session recovery is in progress"
12668	Represents fsm_event_error in format "[IMSI <IMSI>] Misc Error: Bad event in sessmgr fsm, event code %d"
12774	Represents pgw_purge_invalid_crr in format "[IMSI <IMSI>] Local %s TEID [%lu] Collision: Clp Connect Time: %lu, Old Clp Callid: %d, Old Clp Connect Time: %lu %s"
12855	Represents ncqos_nrspca_trig_err in format "[IMSI <IMSI>] NCQOS NRSPCA trig rcvd in invalid bcm mode."
12857	Represents ncqos_nrupc_tft_err in format "[IMSI <IMSI>] NCQOS NRUPC Trig : TFT validation failed for nsapi <%u>."
12858	Represnts ncqos_nrxx_trig_already in format "[IMSI <IMSI>] NCQOS NRSPCA/NRUPC is already triggered on sess with nsapi <%u>."
12859	Represents ncqos_nrxx_tft_check_fail in format "[IMSI <IMSI>] NCQOS TFT check failed as TFT has invalid opcode for nsapi <%u>:pf_id_bitmap 0x%x and tft_opcode: %d"
12860	Represents ncqos_sec_rej in format "[IMSI <IMSI>] NCQOS Secondary ctxt with nsapi <%u> rejected, due to <%s>."
12861	Represents ncqos_upc_rej in format "[IMSI <IMSI>] UPC Rejected for ctxt with nsapi <%u>, due to <%s>."

Event Log #	Description
12862	Represents ggsn_subsession_invalid_state in format "[IMSI <IMSI>] GGSN subsession invalid state state:<%s>,[event:<%s>]"
11830	Represents gngp_handoff_rejected_for_pdn_ipv4v6 in format "[IMSI <IMSI>] Sessmgr-%d Handoff from PGW-to-GGSN rejected, as GGSN doesnt support Deffered allocation for IPv4v6, dropping the call."
11832	Represents gngp_handoff_rejected_no_non_gbr_bearer_for_def_bearer_selection in format "[IMSI <IMSI>] Sessmgr-%d Handoff from PGW-to-GGSN rejected, as GGSN Callline has no non-GBR bearer to be selected as Default bearer."
11834	Represents gngp_handoff_from_ggsn_rejected_no_ggsn_call in format "[IMSI <IMSI>] Sessmgr-%d Handoff from GGSN-to-PGW rejected, as GGSN call with TEIDC <0x%x> not found."
12960	Represents gtp_pdp_type_mismatch in format "[IMSI <IMSI>] Mismatch between PDP type of APN %s and in create req. Rejecting call"
11282	Represents pcc_intf_error_info in format "[IMSI <IMSI>] %s"
11293	Represents collision_error in format "[IMSI <IMSI>] Collision Error: Temp Failure Handling Delayed Pending Active Transaction: , error code %d"
11917	Represents rcvd_invalid_bearer_binding_req_from_acs in format "[IMSI <IMSI>] Sessmgr %d: Received invalid bearer binding request from ACS."
11978	Represents saegw_uid_error in format "[IMSI <IMSI>] %s"
11994	Represents unwanted_pcc_intf_setup_req error in format "[IMSI <IMSI>] GGSN_INITIATE_SESS_SETUP_REQ is already fwded to PCC interface "
140005	Represents ue_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled UE event <%s> in state <%s>"
140006	Represents pdn_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled PDN event <%s> in state <%s>"
140007	Represents epsb_fsm_illegal_event in format "[IMSI <IMSI>] Invalid/unhandled EPSB event <%s> in state <%s>"
10726	Represents saegwdrv_generic_error "[IMSI <IMSI>] %s"

Usage Guidelines

Use this command to enable the logging of the UE's IMSI/IMEI in event log types of error and critical. This is useful in identifying the specific UE affected by events that can potentially affect service.

Example

The following command enables the sending of the IMSI/IMEI in the logging details of event logs of type error and critical.

```
logging include-ueid
```

logging monitor

Enables or disables the monitoring of a specified user.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

[no] logging monitor { ipaddr *ip_address* **| ipv6addr** *ipv6_address* **| msid** *ms_id* **| username** *user_name* **}**

no

Disables the monitoring of the user specified by the options given.

ipaddr *ip_address*

Specifies the IP address of the user for which the monitoring filter is to be set. *ip_address* must entered using IPv4 dotted-decimal notation.

ipv6addr *ipv6_address*

Specifies the IPv6 address of the user for which the monitoring filter is to be set. *ipv6_address* must be followed by IPv6 address in a xx:yy::zz format .

msid *ms_id*

msid *ms_id*: specifies the mobile subscriber ID for which the monitoring filter is to be set. *ms_id* must be from 7 to 16 digits.

This keyword/option can be used to specify the International Mobile Subscriber Identity (IMSI) which enables logging based on IMSI.

username *user_name*

username *user_name*: specifies a user for which the monitoring filter is to be set. *user_name* must refer to a previously configured user.

Usage Guidelines

Monitor subscribers which have complaints of service availability or to monitor a test user for system verification.

Caution Issuing this command could negatively impact system performance depending on the number of subscribers for which monitoring is performed and/or the amount of data they're passing.

Example

The following command enables the monitoring of user *user1* and mobile subscriber ID 4441235555, respectively.

```
logging monitor username user1
logging monitor msid 44441235555
```

The following disables the monitoring of user *user1*.

```
no logging monitor username user1
```

logging runtime

Enables events to be filtered and logged in real time.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
logging runtime buffer store { all-events | filtered-events-only }
```

all-events

Logging daemon runtime buffer stores all logs that come to it.

filtered-events-only

Logging daemon runtime buffer stores only logs that pass the runtime filter.

Usage Guidelines

Sets the filtering of logged information to log in real time.

Example

The following command enables storage of logs that pass the runtime filter:

```
logging runtime buffer store filtered-events-only
```

logging syslog

Enables or disables syslog configuration.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] logging syslog hostname`

no

Disables syslog configuration.

hostname

Enables the hostname to appear in the syslog messages after the time stamp.

Usage Guidelines

The hostname keyword enables or disables the hostname to appear in the syslog messages after the time stamp. This feature is disabled by default.

lte-policy

This command enters the LTE Policy Configuration Mode where LTE policy parameters can be configured.

Product

MME

SAEGW

S-GW

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`lte-policy`

Usage Guidelines

Enters the LTE Policy Configuration Mode.

Entering this command results in the following prompt:

[*context_name*]*hostname*(lte-policy)#

LTE Policy Configuration Mode commands are defined in the *LTE Policy Configuration Mode Commands* chapter.

mediation-device

Important This command is obsolete. Even though the CLI accepts the command no function is performed.

mme-manager

This command configures MME Manager(s) and enters the MME Manager Configuration mode.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

mme-manager

Usage Guidelines

Enters the LTE Policy Configuration Mode.

Entering this command results in the following prompt:

```
[context_name]host_name(mme-manager)#
```

The related commands are defined in the *MME Manager Configuration Mode Commands* chapter.

msisdn-group

This command configures the Mobile Subscriber Integrated Services Digital Network (MSISDN) group.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

msisdn-group *group_name*
no msisdn-group *group_name*

no

Deletes the configured MSISDN group.

msisdn-group *group_name*

Specifies the MSISDN group name. *group_name* must be an alphanumeric string of 1 through 64 characters. It can have a maximum of 50 groups.

Usage Guidelines

Use this command to create a new MSISDN group. the MSISDN is used to decide whether to allow or block the subscribers.

An MSISDN group can contain up to 500 elements of either individual MSISDN or range of MSISDNs. Once an MSISDN group is created, each group can be configured with up to 500 unique MSISDN values. Multiple lines of MSISDN and MSISDN-range can be up to 20 lines per group.

This command allows you to enter the MSISDN Group Configuration Mode.

Entering this command results in the following prompt:

[*context_name*]*hostname*(msisdn-group)#

MSISDN Group Configuration Mode commands are defined in the *MSISDN Group Configuration Mode Commands* chapter.

network-overload-protection mme-new-connections-per-second

This command configures an attach rate throttle mechanism to control the number of new connections allowed on a per second basis.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
network-overload-protection mme-new-connections-per-second #_new_connections
 action attach { drop | reject-with-emm-cause { congestion |
network-failure | no-suitable-cell-in-tracking-area } } tau { drop |
reject-with-emm-cause { congestion | network-failure | no-sec-ctxt-in-nw
 | no-suitable-cell-in-tracking-area } } fwd-reloc { drop | reject } [
ddn { drop | reject-with-cause { unable-to-page-ue | context-not-found }
 } ] [ queue-size queue_size ] [ wait-time wait_time ]
default network-overload-protection mme-new-connections-per-second
```

default

Disables the MME attach rate throttle feature.

mme-new-connections-per-second *#_new_connections*

Define the number of new connections to be accepted per second.

#_new_connections: Must be an integer from 50 to 5000.

action

Specifies the action to be taken by the MME when the new connection queue is full. Specific actions can be defined for each of the following connection types:

- UE-initated attaches (see **attach** keyword).
- UE-initatied inter-CN node TAU requests (see **tau** keyword).
- Peer SGSN/MME intiated forward relocation requests (see **fwd-reloc** keyword).

attach { drop | reject-with-emm-cause { congestion | network-failure | no-suitable-cell-in-tracking-area } }

Specifies the action to be taken for all types of UE-initiated initial attaches (IMSI, local GUTI, foreign GUTI, mapped GUTI, etc.). Select one of the following actions:

- **drop:** Drop the new connection request.
- **reject-with-cause:** Reject the new connection request. Include one of the following as the cause in the reject message:
  - **congestion**
  - **network-failure**
  - **no-suitable-cell-in-tracking-area**

tau { drop | reject-with-emm-cause { congestion | network-failure | no-sec-ctxt-in-nw | no-suitable-cell-in-tracking-area } }

Specifies the action to be taken for UE-initiated inter-CN TAU requests requiring context transfer from old MME/SGSN, including TAU requests with foreign GUTI or mapped GUTI. Select one of the following actions:

- **drop:** Drop the new connection request.
- **reject-with-cause:** Reject the new connection request. Include one of the following as the cause in the reject message:
  - **congestion**
  - **network-failure**
  - **no-sec-ctxt-in-nw**
  - **no-suitable-cell-in-tracking-area**

fwd-reloc { drop | reject }

Specifies the action to be taken for peer SGSN/MME initiated forward relocation requests via Gn/S10/S3. Select one of the following actions:

- **drop:** Drop the new connection request.

- **reject:** Reject the new connection request. If the inbound forward-relocation requests are rejected, the following cause codes shall be used:
  - GTPv1 - No resources available (199)
  - GTPv2 - No resources available (73)

ddn { drop | reject-with-cause { unable-to-page-ue | context-not-found } }

In the event of an MME failure, the surviving MME in the pool may receive a very large number of IMSI requests, which may overwhelm the IMSI Manager. To avoid congestion, the MME can be configured using this keyword to throttle the IMSI-based DDN requests it receives if the configured *#_new_connections* rate is exceeded. Select one of the following actions:

- **drop**: Drop new IMSI-based DDN requests.
- **reject**: Reject the IMSI-based DDN request. Include one of the following as the cause in the reject message:
  - **unable-to-page-ue**
  - **context-not-found**
- **ddn**: Actions taken for all DDN indications with TEID 0.
- **queue-size**: The maximum number of packets that are queued.
- **wait-time**: The maximum waiting time of the packets in the queue.

Important Beginning with Release 19.4, the **dnn** keyword behavior changes from mandatory to optional. If the **dnn** option is not configured, then the default action is to drop the Downlink Data Notification.

queue-size *queue_size*

Defines the maximum size of the pacing queue used for buffering the packets. If configured, the queue-size should be greater than or equal to the *#_new_connections* value and less than or equal to the optimal value (the *wait_time* * *#_new_connections*). This validation is done in the CLI.

queue_size Must be an integer from 250 to 25000.

Default: unconfigured. The default value is the *#_new_connections* * *wait-time*. This will be the optimal value.

wait-time *wait_time*

Defines the maximum life-time (number of seconds) of the packets in the queue beyond which the packets are considered to be "stale" and are dropped.

wait_time Must be an integer from 1 to 15

Default: 5

Usage Guidelines

Use this command to configure attach rate throttling on the MME.

When enabled, new connections (except emergency requests) are buffered and paced through the queue. Messages in the queue are processed (FIFO) until they age-out when the queued message's lifetime crosses

the configured wait-time. The wait-time and the attach rate decide the optimal size of the queue. If the queue is full, packets are rejected or dropped based on the configured action.

This feature functions at a system (chassis) level for all MME services. All MME services on the system are controlled by a single pacing queue. For a combo MME-SGSN node, each type of service shall be controlled by its own queue and its own configuration.

Emergency attaches are not be throttled when this feature is enabled.

Important This command is available only if a valid license (MME Resiliency) is installed. Contact your Cisco account representative for more information.

Example

Configure the new connections per second rate at 2500, reject all (non-emergency) attaches and TAU requests, and drop forward relocation requests if the new connection rate is exceeded. Rejects will return emm cause code "Congestion".

```
network-overload-protection mme-new-connections-per-second 2500 action
attach reject-with-emm-cause congestion tau reject-with-emm-cause
congestion fwd-reloc drop ddn drop wait-time 5
```

Set the attach rate to 500 per second, the same actions as the previous example, but set the wait time to 5 seconds, and the queue size to be calculated (as follows: *wait_time * #_new_connections* - i.e., 2500)

```
 network-overload-protection
mme-new-connections-per-second
500 action attach reject-with-emm-cause
congestion tau reject-with-emm-cause
congestion fwd-reloc drop ddn drop wait-time 5 5
```

network-overload-protection mme-tx-msg-rate-control

Enables and configures the S1 Paging Rate Limit feature as well as UE Deactivation Rates upon EGTPC path failure feature.

Product MME

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
network-overload-protection  mme-tx-msg-rate-control { egtp-pathfail
ecm-idle rate ecm-connected rate | enb s1-paging rate }
[  default ] network-overload-protection  mme-tx-msg-rate-control
```

default

Applies the default MME message rate control configuration; S1 paging rate limit is disabled and a path failure processing rate of 1000 per second per session manager without distinguishing between ECM idle/connected sessions.

egtp-pathfail ecm-idle *rate* ecm-connected *rate*

Configures the UE deactivation pacing rate for MME S11/S10/S3 interfaces (any EGTPC service with interface type "interface-mme").

ecm-idle *rate*: This keyword defines the deactivation rate for UEs in ECM Idle mode.

ecm-connected *rate*: This keyword defines the deactivation rate for UEs in ECM Connected mode.

rate specifies a rate threshold in sessions per second per session manager (SessMgr) as an integer from 1 through 5000.

Note: Configuring a high deactivation rate can have a negative effect on performance. Appropriate dimensioning exercises should be performed to arrive at the optimum rate.

enb s1-paging *rate*

Configures an S1 paging rate limit applicable to all eNodeBs connected all MME services. S1 Paging requests to an eNodeB will be rate limited at this threshold value. S1 Paging requests to an eNodeB exceeding this threshold will be dropped.

rate specifies the rate threshold in messages per second per eNodeB as an integer from 1 through 65535.

Usage Guidelines

Use this command to enable and configure the S1 Paging Rate Limit feature as well as UE Deactivation Rates upon EGTPC path failure feature.

Example

The following command configures S1 Paging rate limit of 150 messages per second per eNodeB.

```
network-overload-protection mme-tx-msg-rate-control enb s1-paging 150
```

The following command configures EGTP path failure processing rate limit for UE sessions in ECM-Idle mode to 10 sessions per second per session manager and for UE sessions in ECM-Connected mode to 20 sessions per second per session manager.

```
network-overload-protection mme-tx-msg-rate-control egtp-pathfail ecm-idle
 10 ecm-connected 20
```

network-overload-protection sgsn-new-connections-per-second

This command configures an attach rate throttle mechanism to control the number of new connections (attaches or inter-SGSN RAUs), through the SGSN, on a per second basis.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
network-overload-protection sgsn-new-connections-per-second #_new_connections
 action { drop | reject with cause { congestion | network failure } } [
queue-size queue_size ] [ wait-time wait_time ]
default network-overload-protection sgsn-new-connections-per-second
```

default

Using **default** in the command, disables this attach rate throttle feature that provides network overload protection.

sgsn-new-connections-per-second *#_new_connections*

Define the number of new connections to be accepted per second.

#_new_connections: Must be an integer from 50 to 5000.

action

Specifies the action to be taken by the SGSN when the attach rate exceeds the configured limit on the number of attaches. Select one of the following actions:

- **drop:** Drop the new connection request.
- **reject-with-cause:** Reject the new connection request. Include one of the following as the cause in the reject message:
- **congestion**
- **network failure**

queue-size *queue_size*

Defines the maximum size of the pacing queue used for buffering the packets. If configured, the queue-size should be greater than or equal to the *#_new_connections* value and less than or equal to the optimal value (the *wait_time* * *#_new_connections*). This validation is done in the CLI.

queue_size Must be an integer from 250 to 25000.

Default: unconfigured. The default value is the *#_new_connections* * *wait-time*. This will be the optimal value.

wait-time *wait_time*

Defines the maximum life-time (number of seconds) of the packets in the queue beyond which the packets are considered to be "stale".

wait_time Must be an integer from 1 to 15

Default: 5

Usage Guidelines

Use this command to configure the rate at which the SGSN must process new connection requests. The rate is the number of new connections to be accepted per second.

With basic network overload protection, the incoming new connection rate is higher than this configured rate. When this occurs, all of the new connection requests cannot be processed. This command can also be used to configure the action to be taken when the rate limit is exceeded. The new connection requests, which cannot be processed, can be either dropped or rejected with a specific reject cause.

The SGSN's *optimized* network overload protection performs attach-rate throttling to avoid overloading Gr, Gn and Gf interfaces. This is enabled with **queue-size** and **wait-time** keywords so that the IMSIMgr throttles the attach rate to values configured with these keywords.

If the SGSN receives more than the configured number of attaches in a second, then the attaches are buffered in the pacing queue and requests are only dropped when the buffer overflows due to high incoming attach rate. Messages in the queue are processed (FIFO) until they age-out when the queued message's lifetime crosses the configured wait-time. The wait-time and the attach rate decide the optimal size of the queue.

Counters for this feature are available in the **show gmm-sm statistics** command display in the Network Overload Protection portion of the table.

Example

Configure the throttle rate or limit to 2500 attaches per second and to drop all requests if the limit is exceeded.

```
network-overload-protection sgsn-new-connections-per-second 2500 action
drop
```

Disables the network-overload protection feature and set the default queue size to 1000 and the wait time to 5 seconds:

```
default network-overload-protection
sgsn-new-connections-per-second
```

Set the attach rate to 500 per second, the action to drop, the wait time to 5 seconds, and the queue size to be calculated (as follows: *wait_time* * *#_new_connections* - i.e., 2500)

```
network-overload-protection
sgsn-new-connections-per-second
500 action drop wait-time 5
```

network-service-entity

This command creates a new instance of an SGSN network service entity (NSE) for either the IP environment or the Frame Relay environment.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] network-service-entity (ip-local | peer-nsei *peer_nsei_number* **frame-relay)**

no

Deletes the network service entity definition from the system configuration.

ip-local

Configures the local endpoint for NS/IP and enters the NSE-IP configuration mode. The prompt will change to:

```
[local]<hostname>(nse-ip-local)#
```

peer-nsei *peer_nsei_number* frame-relay

Configures a peer NSE with frame relay connectivity. This set of keywords also provides access to the NSE-FR Configuration mode. The prompt will change to:

```
[local]<hostname>(nse-fr-peer-nsei-<peer_nsei_number>)#
```

Usage Guidelines

Use this command to access the configuration modes for either the IP or Frame Relay network service entities.

Example

Enter the NSE for a Frame Relay configuration instance identified as 4554:

```
network-service-entity peer-nsei 4554 frame-relay
```

nsh

This command enters the NSH Configuration Mode. It enables you to encode or decode Network Services Headers (NSH).

Product

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

nsh

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-nsh)#
```

Syntax Description

[no] nsh { nsh-field *<nsh_field_name>* **| nsh format** *<nsh_format_name>* **}**

no

Disables the NSH options.

nsh-field

This command defines NSH fields tag value. Entering the above command sequence results in the following prompt:

```
[local]<hostname>(nsh-nshfields)#
```

nsh-format

This command define NSH format for encoding and decoding NSH header. Entering the above command sequence results in the following prompt:

```
[local]<hostname>(nsh-nshformat)#
```

Usage Guidelines

Use this command to encode or decode Network Services Headers or associate tag values with NSH headers.

Example

The following command enters the NSH configuration mode: :

```
nsh
```

The following command helps you come out of the NSH configuration mode: :

```
no nsh
```

ntp

Enters the Network Time Protocol (NTP) configuration mode or disables the use of NTP on the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] ntp

no

Disables the use of NTP for clock synchronization. When omitted, NTP client support is enabled on the chassis. By default NTP synchronization to external servers is disabled.

Important If the use of NTP is disabled the system clock may drift over a period of time. This may require manual updates to the system clock to synchronize the clock with other network elements.

Usage Guidelines

Used when it is necessary to enable or configure NTP settings. For additional information refer to the *NTP Configuration Mode Commands* chapter and the *System Administration Guide*.

Example

The following command enters the NTP configuration mode:

```
ntp
```

The following disables the use of the network timing protocol for system clock synchronization.

```
no ntp
```

ntsr pool-id

Configures a pool ID and pool type (either MME or S4-SGSN) for Network Triggered Service Restoration (NTSR). Once executed, the user is placed in NTSR Pool Configuration Mode.

Product

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ntsr pool-id  number  pool-type [ mme | s4-sgsn ]
no ntsr pool-id
```

ntsr pool-id *number*

Specifies an ID number for this NTSR pool. Valid entries are from 1 to 65535.

pool-type

Specifies the type of pool for the pool-id. Options are MME or S4-SGSN.

Usage Guidelines

This command is used to configure a pool ID and pool type (either MME or S4-SGSN) for NTSR. Once executed, the operator must configure a peer IP address in NTSR Pool Configuration mode using the **peer-ip-address** command.

Example

This example configures an NTSR pool ID of 1 and a pool type of mme.

```
ntsr pool-id 1 pool-type mme
```

operator-policy

This command creates an operator policy and enters the operator policy configuration mode. Commands for configuration of the policies are available in the *Operator Policy Configuration Mode Commands* chapter.

Product

MME

SGSN

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
operator-policy ( default | name policy_name } [ -noconfirm ]
no operator-policy ( default | name policy_name }
```

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

no

Removes the specified operator policy from the system configuration.

default

default, in this case, is the *name* of a specific operator policy. This default policy is used when no other operator policy matches the incoming IMSI.

Important

You should configure this default operator policy to make it available to handle IMSIs that are not matched with other policies.

name *policy_name*

Specifies the unique name of an operator policy. *policy_name* is entered as an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Use this command to create an operator policy and to enter the operator policy configuration mode to define or modify policies.

An operator policy associates APNs, APN profiles, IMEI ranges, IMEI profiles, an APN remap table and a call-control profile to ranges of IMSIs. These profiles and tables are created and defined within their own configuration modes to generate sets of rules and instructions that can be reused and assigned to multiple policies. In this manner, an operator policy manages the application of rules governing the services, facilities and privileges available to subscribers. These policies can override standard behaviors and provide mechanisms for an operator to get around the limitations of other infrastructure elements such as DNS servers and HLRs.

The system supports up to 1,000 operator policies, including the *default* operator policy.

Important An operator policy is ***the*** key element of the Operator Policy feature. After defining an instance of an operator policy, you must go to the SGSN Global Configuration Mode (from the Global Configuration mode) to define the IMSI range(s). This requirement does not hold if you are using a *default* operator policy.

To see what operator policies have already been created, return to the Exec mode and enter the **show operator-policy all** command.

Example

The following command accesses the default operator policy and enters the operator policy configuration mode to view or modify the specified policy:

```
operator-policy default
```

orbem force

Attention

- With Release 21.16 onwards, the **force** keyword has to be appended to the **orbem** CLI command to enter the ORBEM mode and enable the feature. The **orbem** keyword is now hidden.
- Support for the end-of-life ORBEM/WEM feature will be fully discontinued in future releases.

Enters the Object Request Broker Element Manager (ORBEM) Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

orbem force

Usage Guidelines

Set the configuration mode to allow modification of the ORBEM configuration data.

Example

The following command enters the Object Request Broker Element Manager (ORBEM) Configuration mode:

orbem force

pac-standby-priority

This command has been renamed to **card-standby-priority**. Please refer to that command for details. Note that for backwards compatibility, the system accepts this command as valid.

pco-options

The following commands are explained below:

- pco-options custom2
- pco-options custom3
- pco-options custom4
- pco-options custom5

Note custom1 container ID is not configurable at Global configuration mode using CLI as its container value is fixed to FF00.

pco-options custom2

This command controls the sending of customized PCO (Protocol Configuration Options) options in the network to MS GTP messages at Global configuration mode..

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] pco-options { custom2 } container-id *container_id_value*

no

Removes PCO configuration at Global configuration mode

custom2

Enable sending of customized PCO options in the network to MS messages.

container-id

Configures the operator defined container ID. The value ranges from FF03 to FFFF.

Usage Guidelines

Use this command to enable or disable sending of customized PCO options in the network to MS GTP messages and configure link MTU size PCO value.

Example

The following command enables sending customized PCO options:

pco-options custom2

pco-options custom3

This command controls the sending of customized PCO (Protocol Configuration Options) options in the network to MS GTP messages at Global configuration mode..

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] pco-options { custom3 } container-id *container_id_value*

no

Removes PCO configuration at Global configuration mode

custom3

Enable sending of customized PCO options in the network to MS messages.

container-id

Configures the operator defined container ID. The value ranges from FF03 to FFFF.

Usage Guidelines

Use this command to enable or disable sending of customized PCO options in the network to MS GTP messages and configure link MTU size PCO value.

Example

The following command enables sending customized PCO options:

```
pco-options custom3
```

pco-options custom4

This command controls the sending of customized PCO (Protocol Configuration Options) options in the network to MS GTP messages at Global configuration mode..

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] pco-options { custom4 } container-id *container_id_value*

no

Removes PCO configuration at Global configuration mode

custom4

Enable sending of customized PCO options in the network to MS messages.

container-id

Configures the operator defined container ID. The value ranges from FF03 to FFFF.

Usage Guidelines

Use this command to enable or disable sending of customized PCO options in the network to MS GTP messages and configure link MTU size PCO value.

Example

The following command enables sending customized PCO options:

```
pco-options custom4
```

pco-options custom5

This command controls the sending of customized PCO (Protocol Configuration Options) options in the network to MS GTP messages at Global configuration mode..

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] pco-options { custom5 } container-id` *`container_id_value`*

no

Removes PCO configuration at Global configuration mode

custom5

Enable sending of customized PCO options in the network to MS messages.

container-id

Configures the operator defined container ID. The value ranges from FF03 to FFFF.

Usage Guidelines

Use this command to enable or disable sending of customized PCO options in the network to MS GTP messages and configure link MTU size PCO value.

Example

The following command enables sending customized PCO options:

```
pco-options custom5
```

pdu-session-recovery

Enables or disables support for early PDU recovery of VoLTE calls during Transaction Protocol Data Unit. (TPDU) based session recovery. When this CLI is enabled, data is allowed for VoLTE-only calls when Session Manager is recovering.

Product

GGSN

P-GW

S-GW

SAE-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
pdu-session-recovery call-type ims-media services { ggsn [pgw] [sgw] |
pgw [ggsn] [sgw] | sgw [ggsn] [pgw] }
no pdu-session-recovery call-type ims-media
```

no

Disables early PDU recovery of VoLTE calls during session recovery.

{ ggsn [pgw] [sgw] | pgw [ggsn] [sgw] | sgw [ggsn] [pgw] }

Specifies one or more services for which this feature can be enabled.

Usage Guidelines

usage

Use this command to enable or disable support for early PDU recovery of VoLTE calls during TPDU based session recovery. When this CLI is enabled, data is allowed for VoLTE-only calls when Session Manager is recovering.

Even with GnGp association, the **pgw** option needs to be explicitly configured for PGW calls.

Example

The following command enables early PDU recovery for P-GW services:

```
pdu-session-recovery call-type ims-media services pgw
```

peer-profile

This command creates a peer profile based on service type and interface and enters the Peer-Profile Configuration mode. Commands for configuration of the policies are available in the *Peer Profile Configuration Mode Commands* chapter.

Product

GGSN

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
peer-profile service-type { ggsn-access | pgw-access | sgw-access |
sgw-network } { default | name  peer_profile_name } [ -noconfirm ]
no peer-profile service-type { ggsn-access | pgw-access | sgw-access |
sgw-network } name  peer_profile_name
```

[-noconfirm]

Indicates that the command is to execute without any additional prompt and confirmation from the user.

no

Removes the specified peer profile for specific service type from the system configuration.

service-type

Specifies service type for which peer profile is being configured.

ggsn-access configure profile for peer nodes of GGSN.

pgw-access configures profile for peer nodes of P-GW.

sgw-access configures profile for peer nodes of S-GW toward S4/S11 interfaces.

sgw-network configures profile for peer nodes of S-GW toward S5/S8 interfaces.

name *peer_profile_name*

Specifies the unique name of a peer profile for specific service type.

peer_profile_name is entered as an alphanumeric string of 1 through 64 characters.

default

default, in this case, is the *name* of a specific peer profile. This default profile is used when no other defined peer profile matches.

Important When there is no association of peer-map in any of the services, then "default" peer profile of the corresponding service-interface type shall be applied, except for GTP-C parameters. In addition, GTP-C parameter configuration shall be applied from eGTP service-level configuration for P-GW/S-GW service and GGSN service-level configuration for GGSN.

Usage Guidelines

Use this command to create a peer profile for specific service type and to enter the service specific Peer Profile configuration mode to define or modify the peer profile parameters.

The peer profile feature allows flexible profile-based configuration to accommodate growing requirements of customizable parameters with default values and actions for peer nodes of GGSN/P-GW/S-GW. With this feature, configuration of GTP-C echo parameters and disabling/enabling of Lawful intercept per MCC/MNC or IP address based on rules can be managed.

Before StarOS Release 15.0, the GGSN service allowed operator to configure list of SGSNs. Using this configuration, operator can also control some parameters associated with the configured SGSN, such as RAT type. This would be taken from configuration if CPC request does not have RAT type.

Important The system supports up to 64 peer profiles configured for each of the peer profile types; there can be up to 1024 peer map rules configured, including all the peer maps.

Example

The following command accesses the default peer profile for GGSN service and enters the GGSN Peer Profile configuration mode to view or modify the specified profile:

```
peer-profile service-type ggsn-access default
```

plugin

Specifies a previously installed software plugin module and enters the Plugin Configuration Mode. This function is associated with the patch process for dynamic software upgrades. A plugin module is a loadable dynamic link library (DLL) of shared objects.

Product

ADC

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

plugin *module_name*

module_name

Specifies the name of an existing plugin module that you want to downgrade as an alphanumeric string of 1 through 16 characters. If the named module is not known to the sytem, an error message is displayed.

Usage Guidelines

Specify a previously loaded software plugin module that you wish to configure. The specified module must have been previously copied onto the system and unpacked/verified via the **patch plugin** and **install patch plugin** commands.

For additional information, refer to the *Plugin Configuration Mode Commands* chapter.

Example

To specify the plugin module named *p2p_odyssey* enter the following command:

```
plugin p2p_odyssey
```

port ethernet

Enters the Ethernet Port Configuration mode for the identified port.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`port ethernet` *`slot/port`*

ethernet

Indicates the port identified is an Ethernet interface port.

slot/port

Specifies the slot and port for which Ethernet Port Configuration mode is being entered. The slot and port must refer to an installed card and port.

Important The range of slot and port numbers varies by platform type – ASR 5500 versus VPC.

Usage Guidelines

Change the current configuration mode to Ethernet Port Configuration mode.

Example

The following command enters the Ethernet Port Configuration mode for ethernet port 11 in slot 5 (ASR 5500):

```
port ethernet 5/11
```

port rs232

Enters the RS-232 Port Configuration mode for the RS-232 console port on the specified SPIO card. Not available on the XT2 platform.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

port rs232 *slot* **3**

rs232

Indicates the port identified is an RS-232 port on a SPIO card.

***slot* 3**

Specifies the slot of the SPIO for which RS-232 Port Configuration mode is being entered. The slot must refer to an installed SPIO card. The specified port must always be 3 for an RS-232 port.

The value for *slot* must be either 24 or 25.

Usage Guidelines

Change the current configuration mode to RS-232 Port Configuration mode.

Example

The following command enters the RS-232 Port Configuration mode for the SPIO in slot 24;

```
port rs232 24 3
```

profile-id-qci-mapping

Creates a Qos Class-Identifier-Radio Access Network (QCI-RAN) ID mapping table or specifies an existing table and enters the QCI Mapping Configuration mode for the system.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] profile-id-qci-mapping *name* **[-noconfrm]**

no

Removes the specified mapping table from the system

name

Creates a new or enters an existing mapping table configuration. *name* must be an alphanumeric string of 1 through 63 alphanumeric.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Enters the QCI-RAN ID mapping configuration mode for an existing table or for a newly defined table. This command is also used to remove an existing table.

Entering this command results in the following prompt:

```
[context_name]hostname(config-hsgw-association-table)#
```

QCI Mapping Configuration Mode commands are defined in the *QCI Mapping Configuration Mode Commands* chapter.

Use this command when configuring the HSGW eHRPD component.

Important This command creates a mapping table available to any HSGW context configured on the system.

Example

The following command enters the existing QCI mapping configuration mode (or creates it if it doesn't already exist) for a mapping table named *qci_table1*:

`profile-id-qci-mapping qci_table1`

The following command will remove *qci_table1* from the system:

`no profile-id-qci-mapping qci_table1`

ps-network

This command creates/removes an HNB-PS network configuration instance for Femto UMTS access over Iu-PS/Iu-Flex interface between Home NodeB Gateway (HNB-GW) service and PS networks elements; i.e. SGSN. This command also configures an existing HNB-CS network instance and enters the HNB-CS Network Configuration mode on a system.

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Product

HNBGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] ps-network ps_instance [ -noconfirm ]
no ps-network ps_instance
```

no

Removes the specified HNB-PS network instance from the system.

Caution Removing the HNB-PS network instance is a disruptive operation and it will affect all UEs accessing SGSN(s) in specific PS core network through the HNB-GW service.

Caution If any HNB-PS Network instance is removed from the system, all parameters configured in that mode will be deleted and Iu-PS/Iu-Flex interface will be disabled.

ps_instance

Specifies the name of the Packet Switched Core Networks instance which needs to be associated with HNB Radio Network PLMN in HNB RN-PLMN configuration mode. If *ps_instance* does not refer to an existing HNB-PS instance, the new HNB-PS network instance is created.

ps_instance must be an alphanumeric string of 1 through 63 characters.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to enter the HNB-PS Network Configuration mode for an existing PS network instance or for a newly defined HNB-PS network instance. This command is also used to remove an existing HNB-PS network instance.

This configuration enables the Iu-PS/Iu-Flex interface on HNB-GW service with CS core network elements; i.e. MSC/VLR.

A maximum of 1 HNB-PS networks instance which is further limited to a maximum of 256 services (regardless of type) can be configured per system.

Caution This is a critical configuration. The HNBs can not access SGSNs in PS core network without this configuration. Any change to this configuration would lead to disruption in HNB access to PS core network.

Entering this command results in the following prompt:

```
[context_name]hostname(config-ps-network)#
```

The various parameters available for configuration of an HNB-PS network instance are defined in the *HNB-PS Network Configuration Mode Commands* chapter.

Example

The following command enters the existing HNB-PS Network configuration mode (or creates it if it doesn't already exist) for the instance named *hnb-ps1*:

ps-network hnb-ps1

The following command will remove HNB-PS network instance *hnb-ps1* from the system without any prompt to user:

no ps-network hnb-ps1

qci

Defines QCI value.

Product

ePDG

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > qci-qos-mapping

configure > **qci-qos-mapping** *mapping_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpu-service)#`

Syntax Description

qci *num* **[delay-class** *delay-class-value* **[precedence-class** *precedence-class-value* **[reliability-class** *reliability-class-value* **]]] [downlink [802.1p-value** *value* **] [encaps-header { copy-inner | dscp-marking** *dscp-marking-value* **| copy-outer}] [gbr] [max-packet-delay** *max-packet-delay-value* **max-error-rate** *max-error-rate* **] [non-gbr] [traffic-policing interval** *value* **] [uplink [802.1p-value** *value* **] [encaps-header { copy-inner | dscp-marking** *dscp-marking-value* **| copy-outer }] [mpls-exp-value** *value* **] [user-datagram dscp-marking** *dscp-marking-value* **]]**
no | default qci *num*

no

Removes the specified QCI value.

default

Sets the default QCI value.

qci *num*

num must be an integer from 1 through 256.

delay-class *delay-class-value*

Defines Pre Release 8 value for configuring packet delay.

delay-class *delay-class-value*: Defines Pre Release 8 value for configuring packet delay as an integer from 1 through 9.

precedence-class *precedence-class-value*

Defines Pre Release 8 value for configuring packet precedence.

precedence-class *precedence-class-value*: Defines Pre Release 8 value for configuring packet precedence as an integer from 1 through 32.

reliability-class *reliability-class-value*

Defines Pre Release 8 value for configuring packet reliability.

reliability-class *reliability-class-value*: Defines Pre Release 8 value for configuring packet reliability as an integer from 1 through 32.

downlink

Configures for downlink traffic.

802.1p-value*value*

802.1p-value*value*: Configures for downlink traffic 802.1p-value as an integer from 1 through 7.

encaps-header { copy-inner | dscp-marking *dscp-marking-value* | copy-outer}

encaps-header: Defines the DSCP value to be applied to encaps header.

copy-inner: Copy inner DSCP to outer.

dscp-marking *dscp-marking-value*: Defines the DSCP value to be applied to packets with this QCI.

dscp-marking-value: A Hexadecimal number between 0x0 and 0x3F.

copy-outer Copies the DSCP value coming in an encapsulation header from the S1u interface to the encapsulation header sent on the S5 interface and vice-versa.

gbr

Sets the type of the QCI to GBR.

max-packet-delay *max-packet-delay-value*

Defines the maximum packet delay in ms for the data with the QCI as an integer from 10 through 1000.

max-error-rate *max-error-rate*

Defines the maximum error rate that the data stream can handle in power of 10 as an integer from 1 through 6.

non-gbr

Sets the type of the QCI to non GBR.

traffic-policing interval *value*

Sets the parameters for traffic policing interval in seconds as an integer from 1 through 100.

uplink

Configures for uplink traffic.

mpls-exp-value *value*

Configures for uplink traffic mpls-exp-value as an integer from 1 through 7.

user-datagram

Defines DSCP value to be applied to user data gram.

Usage Guidelines

Use this command to define QCI value in qci-qos-mapping.

Example

The following command defines QCI value as *56*:

```
qci 56
```

qci-qos-mapping

Global QCI-QoS mapping tables are used to map QoS Class Identifier (QCI) values to appropriate Quality of Service (QoS) parameters.

Product

ePDG

GGSN

HSGW

P-GW

SAEGW

S-GW

SaMOG

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
qci-qos-mapping name [ -noconfirm ]
no qci-qos-mapping name
```

no

Removes the specified mapping configuration from the system

name

Creates a new or enters an existing mapping configuration. *name* must be an alphanumeric string of 1 through 63 characters.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Enter the QCI-QoS mapping configuration mode for an existing table or for a newly defined table. This command is also used to remove an existing table.

Entering this command results in the following prompt:

```
[context_name]hostname(config-qci-qos-mapping)#
```

QCI - QoS Mapping Configuration Mode commands are defined in the *QCI - QoS Mapping Configuration Mode Commands* chapter.

Use this command when configuring the following eHRPD component: HSGW, P-GW, SAEGW, S-GW.

Important This command creates a mapping configuration available to any GGSN,HSGW, P-GW, SAEGW, S-GW context configured on the system.

Example

The following command enters the existing QCI - QoS mapping configuration mode (or creates it if it doesn't already exist) for a mapping configuration named *qci-qos3*:

```
qci-qos-mapping qci-qos3
```

qos ip-dscp-iphb-mapping

Manages internal QoS (Internal-Per-Hop-Behavior/IPHB).

Product

ePDG

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

qos ip-dscp-iphb-mapping dscp *dscp_value* **internal-priority cos** *class_of_service_value*
default qos ip-dscp-iphb-mapping dscp *dscp_value*

default

Map any IP Differentiated Services Code Point (DSCP) to an IPHB value of 0.

dscp *dscp_value*

Map IP DSCP values into internal QoS.

dscp_value must be a Hexadecimal number between 0x0 and 0x3F.

internal-priority cos *class_of_service_value*

Maps to the internal QoS priority/class of service.

class_of_service_value must be a Hexadecimal number between 0x0 and 0x7.

Usage Guidelines

Use this command to manage internal QoS.

Example

The following command maps DSCP values in a packet to internal-QoS COS marking values:

```
qos ip-dscp-iphb-mapping dscp 0x3 internal-priority cos 0x5
```

qos l2-mapping-table

Creates or modifies a Level 2 mapping table and enters the QoS L2 Mapping Configuration Mode to map internal QoS priority.

Product

ePDG

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local] host_name (config)#
```

Syntax Description

qos l2-mapping-table { name *map_table_name* **| system-default }**
no qos l2-mapping-table name *map_table_name*

no

Deletes the specified L2 mapping table.

Important The system-default table ca not be deleted. Only named tables that were previously created using this CLI command can be deleted.

name *map_table_name*

Specifies the name of an internal table from which to map QoS to L2 values.

map_table_name must be an alphanumeric string of 0 through 80 characters.

system-default

Configure the system default mapping.

Usage Guidelines

Use this command to create or modify an L2 mapping table and enter the QoS L2 Mapping Configuration Mode, which is used to map internal QoS values to L2 values.

Entering this command results in the following prompt:

```
[context_name]host(config-qos-l2-mapping)#
```

QoS L2 Mapping Configuration Mode commands are defined in the QoS L2 Mapping Configuration Mode Commands chapter.

Example

The following command creates an L2 mapping table and enters the QoS L2 Mapping Configuration Mode:

qos l2-mapping-table name qostable1

qos npu inter-subscriber traffic bandwidth

Configures NPU QoS bandwidth allocations for the system.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

qos npu inter-subscriber traffic bandwidth gold *percent* **silver** *percent* **bronze** *percent* **best-effort** *percent*
no qos npu inter-subscriber traffic bandwidth

no

Removes a previous bandwidth allocation.

gold *percent*

Default: 10%

Specifies the maximum percentage of bandwidth to be allocated to the gold queue priority.

percent can be configured to an integer from 0 through 100.

silver *percent*

Default: 20%

Specifies the maximum percentage of bandwidth to be allocated to the silver queue priority.

percent can be configured to an integer from 0 through 100.

bronze *percent*

Default: 30%

Specifies the maximum percentage of bandwidth to be allocated to the bronze queue priority.

percent can be configured to an integer from 0 through 100.

best-effort *percent*

Default: 40%

Specifies the maximum percentage of bandwidth to be allocated to the best-effort queue priority.

percent can be configured to an integer from 0 through 100.

Usage Guidelines

The bandwidth of a subscriber queue is maintained by rate limiting functions which implement packet-rate limiting at the first level and bit-rate limiting at the next level.

The packet-rate limit of a queue is defined by the number of packets-per-second (PPS) permitted for queuing. Before queuing a packet on a subscriber queue, the NPU ensures that the packet falls within the limit. If the packet to be queued exceeds the packet rate limit, it is dropped.

Each subscriber queue is configured with a bit rate limit, measured in megabits-per-second (Mbps), referred to as CP-BPS (bit-per-second to CP). The CP-BPS is available as the total bandwidth for the subscriber traffic that a CP can sustain. Each subscriber queue receives an allocation of a certain percentage of the CP-BPS. The following maximum CP-BPS values are supported:

- Lead CP (CP0) = 128 Mbps
- Remaining CPs (CP1, CP2, CP3) = 256 Mbps

For additional information on the NPU QoS functionality, refer to the System Administration and Configuration Guide.

Example

The following command configures bandwidth allocations of 20, 30, 40, and 50% for the gold, silver, bronze, and best-effort queues respectively:

```
qos npu inter-subscriber traffic bandwidth gold 20 silver 30 bronze 40
best-effort 50
```

Upon executing this command, the priority queues will have the following packet processing card CP bandwidth allocations based on the maximum CP bandwidth specifications:

Priority	Lead CP (CP 0) Bandwidth (Mbps)	CP 1 through CP 3 Bandwidth (Mbps)
Gold	25.6	51.2
Silver	38.4	76.8
Bronze	51.2	102.4
Best-effort	64	128

qos npu inter-subscriber traffic bandwidth-sharing

Configures NPU QoS bandwidth sharing properties for the system.

Product

GGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

qos npu inter-subscriber traffic bandwidth-sharing { { enable | disable } { all | slot *slot_num* **cpu** *cpu_num* **} }**

enable

Enables bandwidth sharing for the specified criteria.

disable

Disables bandwidth sharing for the specified criteria.

all

Specifies that the bandwidth action is to be applied to all packet processing cards and every CPU on each packet processing card.

slot *slot_num*

Specifies that the bandwidth action is to be applied to a packet processing card in a specific chassis slot number.

slot_num is the slot in which a packet processing card is installed. These cards can be installed in slots 1 through 4 and 7 through 10 on the ASR 5500.

cpu *cpu_num*

Specifies a specific control processor (CP) on a packet processing card for which to perform the bandwidth action.

cpu_num is an integer value from 0 to 3. 0 represents the lead CP.

Usage Guidelines

The available bandwidth of a subscriber queue can be shared equally among the other subscriber queues. Any unutilized bandwidth of a queue can be shared with the other queues equally. For example, if only one DSCP is configured and it is mapped to best-effort, that DSCP would get the bandwidth allocated to the best-effort in addition to the rest of the bandwidth allocated to the gold, silver, and bronze.

By default, the system enables sharing for all packet processing cards and their CPs.

For additional information on the NPU QoS functionality, refer to the *System Administration Guide*.

Example

The following command disables bandwidth sharing for the fourth CP (CP 3) on a packet processing card installed in chassis slot 3:

```
qos npu inter-subscriber traffic bandwidth-sharing disable slot 4 cpu 3
```

qos npu inter-subscriber traffic priority

Configures the DSCP-to-Priority assignments for the system.

Product

PDSN

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
qos npu inter-subscriber traffic priority { best-effort | bronze | gold
| silver } assigned-to dscp { af11 | af12 | af13 | af21 | af22 | af23 |
```

```
af31 | af32 | af33 | af41 | af42 | af43 | be | ef | dscp_num } }
no qos npu inter-subscriber traffic priority [ assigned-to dscp { af11 |
 af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 |
af43 | be | ef } ]
```

best-effort

Specifies the best-effort queue priority.

bronze

Specifies the bronze queue priority.

gold

Specifies the gold queue priority.

silver

Specifies the silver queue priority.

af*XX*

Assigns the Assured Forwarding *XX* PHB (per-hop behavior) DSCP.

Each Assured Forwarding PHB has a corresponding DSCP value as follows:

- af11 through af13: DSCP values 5 through 7 respectively
- af21 through af23: DSCP values 9 through 11 respectively
- af31 through af33: DSCP values 13 through 15 respectively
- af41 through af43: DSCP values 17 through 19 respectively

be

Assigns the Best Effort forwarding PHB which has a corresponding DSCP value of 0.

ef

Assigns the Expedited Forwarding PHB which has a corresponding DSCP value of 23.

dscp_num

Specifies a specific DSCP value as an integer from 0 through 31.

Usage Guidelines

The differentiated services (DS) field of a packet contains six bits (0-5) that represent the differentiated service code point (DSCP) value.

Five of the bits (1-5) represent the DSCP. Therefore, up to 32 (25) DSCPs can be assigned to the various priorities. By default, they're all assigned to the lowest priority (best-effort).

For additional information on the NPU QoS functionality, refer to the *System Administration Guide*.

Important This functionality is not supported for use with the PDSN at this time.

Example

The following command maps the ef DSCP to the gold priority queue:

```
qos npu inter-subscriber traffic priority gold assigned-to dscp ef
```

quality-of-service-profile

This command creates an instance of a quality of service QoS profile and causes the system to enter the QoS Profile Configuration Mode for commands to configure the QoS parameters.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] quality-of-service-profile *qos_profile_name* **[-noconfirm]**

no

Including the **no** command filter causes the system to delete the QoS profile instance from the system configuration.

noconfirm

Do not prompt for additional verification when executing this command.

qos_profile_name

Enter 1 to 64 alphanumeric characters to uniquely name a quality of service (QoS) profile.

Usage Guidelines

This command creates a quality of service profile and provides access to the QoS profile configuration mode to use the commands to configure the QoS parameters, refer to the *QoS Profile* section of the *Command Line Interface Reference* for command information. The parameters configured in the QoS profile will override the QoS parameters configured using the APN profile configuration commands if configured for the APN profile.

Important The MME's QoS profile does not become valid until it is associated with an APN profile with access type "eps". For more information, refer to the *APN Profile Configuration Mode* section in the *Command Line Interface Reference*

Example

Create a QoS profile named *QoStest*:

```
quality-of-service-profile QoStest
```

ran-peer-map

Creates a Radio Access Network (RAN) Peer Map and enters the RAN Peer Map Configuration Mode.

Product

ASN-GW

PHSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] ran-peer-map *name* **[-noconfirm]**

no

Removes the RAN Peer Map from the system.

name

Specifies the name of the RAN Peer Map. *name* must be an alphanumeric string of 1 through 31 characters.

Usage Guidelines

Use this command to create a new RAN Peer Map or edit an existing one. RAN peer maps reconcile base station MAC addresses received in R6 protocol messages to the base station's IP address.

Entering this command results in the following prompt:

```
[context_name]hostname(config-ran-peer-map)#
```

See the *RAN Peer Map Configuration Mode* chapter for descriptions of the commands supported in this mode.

Example

The following command creates a RAN peer map named *ran12*:

```
ran-peer-map ran12
```

require active-charging

This command enables/disables Active Charging Service (ACS) with or without the Category-based Content Filtering application.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
require active-charging [ content-filtering category [ static-and-dynamic
 ] ]  [ traffic-optimization ]
no require active-charging
```

no

Disables ACS on the system.

content-filtering category [static-and-dynamic]

Enables the Category-based Content Filtering application with ACS support and creates the necessary Static Rating Database (SRDB) tasks to utilize the internal database of static/dynamic URLs.

For Dynamic Content Filtering support, the **static-and-dynamic** keyword must be configured to specify that the Dynamic Rater Package (model and feature files) must be distributed to rating modules on startup, recovery, etc. If not configured, by default, the static-only mode is enabled.

traffic-optimization

Enables loading of Cisco Ultra Traffic Optimization solution.

Important Enabling or disabling the Traffic Optimization can be done through Service-scheme framework.

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important In 21.5 and later releases, the **require active-charging traffic-optimization** CLI command has been deprecated as dependency on the chassis reboot is not valid anymore. The Cisco Ultra Traffic Optimization engine is loaded by default. The Cisco Ultra Traffic Optimization configuration CLIs are available when the license is enabled.

Usage Guidelines

Use this command to enable/disable ACS with or without Category-based Content Filtering application on the chassis.

Important This command triggers the resource subsystem to switch to ACS-enabled mode and start ACS-related tasks. This CLI command must be configured before any services are configured, so that the resource subsystem can appropriately reserve adequate memory for the ACS-related tasks. After configuring this command, the configuration must be saved and the system rebooted in order to allocate the resources for ACS upon system startup.

require aes-ni

Enables or disables a aes-ni related Requirements.

Product

ePDG

PDIF

SecGw

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no | default ] require aes-ni { capability | transform-set }`

default

Sets / Restores default value assigned for aes-ni requirement.

no

Disables aes-ni requirement.

capability

Enables AES NI capability.

transform-set

Enables AES NI Restricted Transform Set Mode.

Usage Guidelines

Enabling this command allows the resource manager (RM) task to enables or disables a aes-ni related Requirements.

Important

After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command enables AES NI capability:

```
require aes-ni capability
```

require apimgr

This command enables API manager task which supports API Request and Response integration.

Note

This CLI command is used as a prerequisite for the Secure Group Tag-based Access Control List (SGACL) with Security Group Tag (SGT) integration feature.

Product

UPF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
require apimgr
```

require apimgr

This command enables the API manager task, which supports API Request and Response integration.

Usage Guidelines

Enabling this command allows the API Request and Response integration for REST APIs.

require crypto

This command enables IPSec Software Data Path for IKEv1/IKEv2 Maps.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
[ no ] require crypto [ ikev1-acl software | ikev2-acl software ]
```

no

- **require crypto** : Enables Crypto related parameters.
- **ikev1-acl**: Configures IKEv1-ACL IPSec sessions.
- **ikev2-acl**: Configures IKEv2-ACL IPSec sessions.
- **software**: IPSec Manager performs encryption, decryption and DH calculations.
- **no**: Disables IPSec Manager from encryption, decryption and DH calculations.
- By default this command is disabled.

Usage Guidelines

When enabled, this command configures IPSec Software Data Path for IKEv1/IKEv2 Maps.

Important This command must be enabled for IPSec encryption.

Example

The following command enables IPSec Software Data Path for IKEv1 Maps:

```
require crypto ikev1-acl software
```

require demux

Enables or disables demux capabilities on an ASR 5500. When demux tasks are enabled on a management card, the Active and Standby MIOs will host and migrate all demux tasks.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default | no] require demux { management-card | processing-card | smgr-suspension interval *seconds* **}**

default

Demux functions will be run on a processing card.

no

Disables the demux capabilities except when session recovery is enabled.

Important On a system with session recovery licensed and enabled, a processing or management card must be designated to run demux functions.

management-card

Enables demux functionality on a management (ASR 5500 MIO) card.

Note After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

processing-card

Enables demux functionality on a processing card (default).

smgr-suspension interval *seconds*

Used to address some specific failure scenarios, where either the sessmgr or the corresponding aaa manager restarts, and the PGW service/sessmgr is unable to bring new calls up or establish a connection with all other dependent services. In these failure scenarios if a call landed on this particular P-GW service/sessmgr, the call establishment is significantly delayed and would fail until all the dependent services come up. This resulted in the possibility that the S-GW might time out and report that the peer P-GW is not responding to the Create Session Request (CSReq) message. Although the issue is usually self-correcting and takes between 10 to 25 seconds, if operators see too many call rejects due to a peer not responding to the Create Session Response (CSResp) message, and this is happening after a aaa manager restart or a sessmgr restart, this feature can be configured to temporarily stop seeing the peer not responding error.

The variable seconds must be an integer from 5 to 30 seconds.

There is no default setting.

Usage Guidelines

Use this command to configure the system to direct demux task placement.

The following restrictions apply when enabling an MIO/UMIO as a demux card:

- The require **demux management-card** command must be configured before any service or contexts have been created on the system. The command will not execute after a mode of operation has been selected for the chassis.
- Only the following services currently support the designation of an MIO/UMIO card for demux functions: GGSN, S-GW, P-GW, HA and SAEGW.
- Ex-GW, L2TP, MME, NEMO and SGSN are not supported.
- After the ASR 5500 has booted with demux functions running on an MIO/UMIO, you cannot configure non-supported services. A maximum of eight Demux Managers are supported. Any attempt to add more than eight Demux Managers will be blocked.
- Service/products requiring a large number of VPN Managers, VRFs and/or Demux Managers must not enable demux functions on an MIO.
- With demux functions running on an MIO, the ASR 5500 supports a maximum of 10 contexts, 64 interfaces per context and 250 VRFs per system.

Implementation of this feature assumes that CEPS (Call Events Per Second) and the number of subscribers will remain constant, and only the data rate will increase. This ensures that the CPU demand will not increase on the MIO/UMIO.

Caution Enabling the Demux on MIO/UMIO feature changes resource allocations within the system. This directly impacts an upgrade or downgrade between StarOS versions in ICSR configurations. Contact Cisco TAC for procedural assistance prior to upgrading or downgrading your ICSR deployment.

Important Contact Cisco TAC for additional assistance when assessing the impact to system configurations when enabling the Demux on MIO/UMIO feature.

Example

The following command configures a DPC/UDPC as a demux card:

```
require demux processing-card
```

The following command configures an MIO/UMIO as a demux card:

```
require demux management-card
```

require detailed-rohc-stats

Enables or disables context-specific Robust Header Compression (RoHC) statistics.

Product

HSGW

PDSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] require detailed-rohc-stats`

no

Disables statistics for RoHC calls. This is the default condition.

Usage Guidelines

Enables context-specific statistics for RoHC calls.

Example

Enter the following command to enable context specific statistics for RoHC calls:

`require detailed-rohc-stats`

require diameter origin-host-abbreviation

This command controls the truncation of Diameter origin-host name used in the system.

Product

HA

HSGW

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
require diameter origin-host-abbreviation
no require diameter origin-host-abbreviation
```

no

This keyword does not allow truncation of the origin-host name but enables to construct the origin-host name with the full proclet name. This is the default configuration.

diameter origin-host-abbreviation

Truncates the Diameter origin-host name to a single character prefix according to the proclet name.

Usage Guidelines

Typically, Diameter host name is too long for the customer network to handle and process. The host name cannot be changed as it remains constant throughout the lifecycle of client application. So, this CLI command is used to control the truncation of Diameter origin-host name.

Important This CLI configuration is applicable only at the time of system boot. If the CLI command is configured during run time, the following warning message is displayed "Warning: System already has running services, save config and reboot to take effect".

The Diameter origin-host name is represented as *<instance-number>-<procletname>.<name>*, where the proclet name can be sessmgr, diamproxy or aaamgr.

The **require diameter origin-host-abbreviation** CLI command aids in reducing the length of Diameter origin-host names by using "d" instead of "diamproxy", "s" instead of "sessmgr", and "a" instead of "aaamgr". If this CLI command is configured then the Diameter origin-host name value is constructed with the corresponding proclet name abbreviations.

For example, if a Diameter proxy is used to connect to a peer then the origin host will be *0001-diamproxy.endpoint* without the CLI configuration. When the **require diameter origin-host-abbreviation** CLI is enabled, the origin host will be *0001-d.endpoint*.

Important This CLI option does not take effect during ICSR upgrade and downgrade. When this CLI command is configured and **require diameter-proxy single** is used there will not be any changes in host name.

Example

The following command configures origin host name with "a" as the prefix when AAA manager communicates with the peer:

```
require diameter origin-host-abbreviation
```

require diameter-proxy

This command enables or disables Diameter Proxy mode.

Product

IPCF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

In releases prior to StarOS 21.26:

```
require diameter-proxy { master-slave |max count| multiple | single } [
diamproxy-per-card 2 ] [ algorithm { facility | round-robin } ]
no require diameter-proxy
```

From StarOS 21.26 and later releases:

```
require diameter-proxy { primary-secondary |max count| multiple | single
} [ diamproxy-per-card 2 ] [ algorithm { facility | round-robin } ]
no require diameter-proxy
```

no

Disables Diameter Proxy mode. This is the default configuration.

master-slave

Note The term “master-slave” is replaced with “primary-secondary” in the CLI from StarOS 21.26 and later releases.

Sets the Diameter-Proxy to Primary-Secondarymode.

In Primary-Secondary mode, multiple Diameter proxies are running, one on each packet processing card. One proxy serves as the Primary and the other proxies are Secondary. The Primary proxy relays the traffic across multiple Secondary Diameter proxies.

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

max *count*

This keyword configures the maximum number of Diameter proxies to be spawned in the system. *count* specifies the number Diameter proxies to be spawned in the system. The range of allowed Diameter proxies in the system is an integer from 1 to 48.

If the *count* values is specified as 1, only one Diameter proxy is spawned in the VPC-DI/SCALE environment for all SF cards. A single Diameter proxy is started on the active non-DEMUX card. Spawning of one Diameter proxy in this configuration is different than the **require diameter-proxy single** configuration, which spawns a Diameter proxy on a DEMUX card.

The variable *count* with value as 48 is similar to the **require diameter-proxy multiple** configuration.

multiple [diamproxy-per-card 2] [algorithm { facility | round-robin }]

Configures one Diameter proxy for each active packet processing card.

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important The **[diamproxy-per-card 2] [algorithm { facility | round-robin }]** options are primarily applicable for ASR 5500 DPC2 hardware. Multiple Diamproxies per card is the default behavior for the DPC2. This functionality can be extended to the DPC with a maximum of 2 instances of Diamproxies.

- **diamproxy-per-card**: Configure the number of Diameter proxies per card. By default, two Diamproxies are spawned for each DPC2. This allows the DPC2 to handle more transactions per proxy.
- **algorithm**: Configures the algorithm to be used to distribute the load to Diamproxies. The algorithm determines how the endpoints are distributed. Whenever an endpoint is associated with a service, the session controller sends an Allocate-Request message specifying the endpoint name with the facility type. The framework allocates a CPU based on the algorithm that has been configured.
  - **facility**: This algorithm specifies that the Diameter proxy (endpoint) will be selected based on the facility type. This is the default option. In this algorithm, all AAA endpoints will be present in CPU 0 and all session manager endpoints will be present in CPU 1.
  - **round-robin**: This algorithm specifies that the Diameter proxy selection will be in Round Robin fashion. For example, if the number of proclets running per card is 2, the first endpoint configured is associated with CPU 0 (proxy running in CPU 0 of the same card) and the next endpoint configured will be associated with CPU 1, the third one with CPU 0 and fourth one with CPU1.

single [diamproxy-per-card 2] [algorithm { facility | round-robin }]

Configures one Diameter proxy for the entire chassis.

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important The **[diamproxy-per-card 2] [algorithm { facility | round-robin }]** options are primarily applicable for ASR 5500 DPC2 hardware. Multiple Diamproxies per card is the default behavior for the DPC2. This functionality can be extended to the DPC with a maximum of 2 instances of Diamproxies.

- **diamproxy-per-card**: Configures the number of Diameter proxies per card. By default, two Diamproxies are spawned for each DPC2. This allows the DPC2 to handle more transactions per proxy.
- **algorithm**: Configures the algorithm to be used to distribute the load to Diamproxies. The algorithm determines how the endpoints are distributed. Whenever an endpoint is associated with a service, the session controller sends an Allocate-Request message specifying the endpoint name with the facility type. The framework allocates a CPU based on the algorithm that has been configured.

- **facility**: This algorithm specifies that the Diameter proxy (endpoint) will be selected based on the facility type. This is the default option. In this algorithm, all AAA endpoints will be present in CPU 0 and all session manager endpoints will be present in CPU 1.
- **round-robin**: This algorithm specifies that the Diameter proxy selection will be in Round Robin fashion. For example, if the number of proclets running per card is 2, the first endpoint configured is associated with CPU 0 (proxy running in CPU 0 of the same card) and the next endpoint configured will be associated with CPU 1, the third one with CPU 0 and fourth one with CPU1.

Usage Guidelines

When the Diameter Proxy mode is enabled, each proxy process is a Diameter host, instead of requiring every Diameter application user (such as, every ACSMgr and/or every SessMgr, depending on the application) to be a host.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

In Master-Slave mode, multiple Diameter proxies are running, one on each packet processing card. One proxy serves as the Master and the other proxies are Slaves. The Master relays the traffic from an incoming connection to a specific Slave Diameter proxy.

In releases prior to 18, when the chassis is in standby state, all the Diameter proxies are stopped. In 18 and later releases, all the Diameter proxies will be running even when the chassis is in standby mode. Any change in ICSR grouping mask will lead to stopping and restarting of all the diamproxies on the standby chassis.

Example

The following command configures a Diameter proxy for each active packet processing card:

```
require diameter-proxy multiple
```

The following command configures a single Diameter proxy for the entire chassis:

```
require diameter-proxy single
```

The following command configures a maximum of 20 diameter proxies that can be spawned in the system:

```
require diameter-proxy max 20
```

require ecs credit-control

This command configures the Diameter Credit-Control Application (DCCA) to work in per subscriber-PDN level Gy mode.

Product

GGSN

HA

IPSG

PDSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

In 14.0 and earlier releases:

[no] require ecs credit-control subscriber-mode

In 14.1 and later releases:

[no] require ecs credit-control session-mode per-subscriber

no

Creates DCCA/Gy sessions per bearer/PDP-context.

Usage Guidelines

In 14.0 and earlier releases:

This command is applicable to all products using the Gy interface. Use this command to configure DCCA/Gy to work in per subscriber-PDN level Gy mode, wherein one Diameter session is created per subscriber PDN rather than per bearer, and only one DCCA/Gy session is created for multi-bearer PDNs.

If this command is not configured, or the **no require ecs credit-control subscriber-mode** command is configured, DCCA/Gy sessions are created per bearer/PDP-context, and as a result when there are multiple PDP contexts or multiple bearers in a PDN as many DCCA/Gy sessions are created.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Important This command is independent of the **require active-charging** command. The **ecs** keyword in this command is license dependent.

In 14.1 and later releases:

This CLI command is made configurable on the fly, that means, the credit control mode can be seamlessly changed from subscriber (PDN) to sub-session and vice-versa without requiring a system reboot.

This change is done to align with the new CLI commands "**credit-control-client override session-mode { per-sub-session | per-subscriber }**" introduced in APN and Subscriber Group configuration modes.

This will be the default mode for all subscribers unless overwritten by APN/Subscriber configuration mode CLI commands.

Releases prior to 14.1, subscriber mode Gy and bearer mode Gy were implemented based on the configuration of CLI command **require ecs credit-control subscriber-mode**. This CLI is used as a chassis level configuration which mandates that all subscribers anchored to this chassis should always be running in only one of these two modes. Enabling and disabling the CLI requires system reboot. ICSR switchover between two chassis running in two different modes will not work.

Release 14.1 and later, the Subscriber/Bearer mode Gy is selected based on APN/Subscriber mode instead of chassis wide configuration. This will provide the following:

- Flexibility to configure different modes for different subscriber.
- Flexibility to switch between modes without system reboot.
- Flexibility to switchover between two chassis working in different modes.

require graceful-cleanup-during-audit-failure

Enables or disables graceful cleanup of dropped calls during ICSR audit failures.

Product

ICSR

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
require graceful-cleanup-during-audit-failure [ del-cause non-ims-apn {
none | system-failure } ]
[ default | no ] graceful-cleanup-during-audit-failure
```

default

By default, the Cause IE will be omitted from the Delete Bearer Request for Non-IMS/Custom1 APNs.

no

The Cause IE will be omitted from the Delete Bearer Request for Non-IMS/Custom1 APNs.

del-cause

For P-GW, specifies the Cause Code to be sent in the Delete Bearer Request resulting from the graceful cleanup for Audit Failure.

non-ims-apn { none | system-failure }]

For Non IMS/Custom1 APNs, specifies the Cause Code to be sent in Delete Bearer Request from the P-GW resulting from the graceful cleanup for Audit Failure. By default the Cause IE will be omitted from the Delete Bearer Request for Non-IMS/Custom1 APNs.

- **none**: Omits the GTP Cause IE from the Delete Bearer Request resulting from the graceful cleanup for Audit Failure.
- **system-failure**: Sends the GTP Cause Code SYSTEM FAILURE.

Usage Guidelines

Use this command to enable or disable graceful cleanup of dropped calls during ICSR audit failures.

During an audit on the gateways (P-GW/S-GW/GGSN/SAEGW) after Session Recovery or an ICSR event, if any critical information, internally or externally related to a subscriber session seems inconsistent, ICSR will locally purge the associated session information.

Since external gateways (peer nodes) are unaware of the purging of this session, the UE session may be maintained at other nodes. This leads to unnecessary hogging of resources external to the gateway and an unreachable UE for VoLTE calls.

When this feature is enabled, graceful cleanup for an ICSR audit of failed calls occurs. External signaling notifies peers of session termination before purging the session. The gateway will attempt to notify external peers of the removal of the session. External nodes to the local gateway include: S-GW, P-GW, SGSN, MME, AAA, PCRF, and IMSA.

Audit failure can occur because of missing or incomplete session information. Therefore, only the peers for which the information is available will be notified.

Example

The following command sequence enables graceful cleanup and sends a Cause IE for non-IMS/Custom1 APNs of SYSTEM FAILURE.

```
require graceful-cleanup-during-audit-failure del-caus non-ims-apn
system-failure
```

require ipsec-large

Enables or disables a boost in IPSec crypto processing performance.

Product

ePDG

PDIF

SecGw

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] require ipsec-large

no

Disables this feature.

Usage Guidelines

Enabling this command allows the resource manager (RM) task to assign additional IPSec managers to packet processing cards with sufficient processing capacity.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command assigns additional IPSec managers to packet processing:

require ipsec-large

require power-saving vpp

This command enables the VRCC (Variable Relinquishing of CPU Cycles) feature in UPF to engage the CPU in power savings mode.

Important You require a valid license to enable the VRCC feature.

Product

UPF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] require power-saving vpp

no

Use this option to disable the power savings mode.

Usage Guidelines

Use this command to enable or disable the VRCC feature. This command is enforced during runtime and does not require reload.

require segregated li-configuration

Refer to the *Lawful Intercept Configuration Guide* for a description of this command.

require session ipsecmgr-per-vcpu

Configures the number of IP Security Manager (ipsecmgr) processes per vCPU.

Product

ePDG (VPC-DI platform only)

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ default ] require session ipsecmgr-per-vcpu` *`count`* **`}`**

default

Returns the number of ipsecmgrs per vCPU to the default of 1.

Note The default value can be adjusted as needed per your call model deployment requirements. Please contact your Sales or Support representative for more information.

count

Sets the number from 1 through 2 of the ipsecmgr processes to be created for each vCPU. Default: 1.

Usage Guidelines

Enables multiple IP Security Manager (ipsecmgr) processes per vCPU.

Example

The following command configures the system to create 2 ipsecmgrs per vCPU:

```
require session ipsecmgr-per-vcpu 2
```

require session recovery

Enables session recovery when hardware or software fault occurs within system.

Product

ePDG

GGSN

ASN-GW

HA

HSGW

MME

PDG/TTG

PDIF

PDSN

P-GW

SAEGW

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default | no ] require session recovery [ optimized-checkpointing ]
```

default

Disables session recovery if enabled; requires a system restart via the **reload** command.

no

Disables session recovery feature after the configuration file is saved and the system is restarted via a **reload** command.

optimized-checkpointing

Disables variable time interval full checkpoints on an Active chassis based on the number of sessions in a sessmgr. Enabling or disabling this option takes effect immediately, even for existing connected calls. By default optimized checkpointing is disabled.

Important *For release 20.0 and higher*, periodic full checkpointing is performed for AAA manager every 12 minutes. The setting is fixed and cannot be disabled by the new keyword.

Usage Guidelines

When this feature is enabled, the system attempts to recover any home agent-based Mobile IP sessions that would normally be lost due to a hardware or software fault within the system.

This functionality is available for the following call types:

- ASN-GW services supporting simple IP, Mobile IP, and Proxy Mobile IP
- PDSN services supporting simple IP, Mobile IP, and Proxy Mobile IP
- Closed RP PDSN services supporting simple IP, Mobile IP, and Proxy Mobile IP
- HA services supporting Mobile IP and/or Proxy Mobile IP session types with or without per-user Layer 3 tunnels
- GGSN services for IPv4 and PPP PDP contexts
- SGSN services for all attached and/or activated subscribers
- LNS session types
- PDIF services supporting Simple-IP, Mobile-IP and Proxy Mobile-P
- MME services

The default setting for this command is disabled.

The **no** option of this command disables this feature.

This command only works when the Session Recovery feature is enabled through a valid Session and Feature Use License Key.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command enables session recovery:

```
require session recovery
```

require session sessmgr-per-vcpu

Configures the number of Session Manager (sessmgr) processes per vCPU.

Product

All (VPC-DI platform only)

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ default ] require session sessmgr-per-vcpu` *`count`* **`}`**

default

Returns the number of sessmgrs per vCPU to the default of 1.

Caution The default value can be adjusted as needed per your call model deployment requirements. However, the recommendation is to use the default value. To change or adjust the default value, contact your Sales or Support representative.

count

Sets the number the sessmgr processes to be created for each vCPU. The valid values are 1 and 2 . The default value is 1.

Only for MME/SGSN, the count can go up to 2 for the number of sessmgrs per vCPU.

All other values are reserved.

Usage Guidelines

For applications that are light on CPU usage but heavy on RAM usage, such as Internet of Things (IoT) Gateway, it is more efficient to have multiple session manager (sessmgr) processes per vCPU.

Table 5: vCPU Support per Platform

Platform	vCPU Support
Gateway	• For 1 sessmgr process per vCPU, 16 sessmgr processes per Service Function (SF) VM are supported. • For 2 sessmgr processes per vCPU, 32 sessmgr processes per SF VM are supported.
MME/SGSN	For 2 sessmgr processes per vCPU, 56 sessmgr processes per SF VM are supported.

Example

The following command configures the system to create 2 sessmgrs per vCPU:

```
require session sessmgr-per-vcpu 2
```

reveal disabled commands

Enables the input of commands for features that do not have license keys installed. The output of the command **show cli** indicates when this is enabled. This command effects all future CLI sessions. This is disabled by default.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

`[ no ] reveal disabled commands`

no

Do not show disabled commands.

Usage Guidelines

When this is enabled and a disabled command is entered, a message is displayed that informs you that the required feature is not enabled and also lists the name of the feature that you need to support the command.

When this is disabled and a disabled command is entered, the CLI does not acknowledge the existence of the command and displays a message that the keyword is unrecognized.

Example

Set the CLI to accept disabled commands and display the required feature for all future CLI sessions with the following command:

`reveal disabled commands`

Set the CLI to reject disabled commands and return an error message for all future CLI sessions:

`no reveal disabled commands`

rlf-template

This command enters the Rate Limiting Function (RLF) Template Configuration Mode. This mode is used to configure the RLF template to control the throttling parameters.

Important

RLF template cannot be deleted if it is bound to any application (peers/endpoints).

Product

GGSN

P-GW

SaMOG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] rlf-template *rlf_template_name*

no

Remove the specified RLF template from global configuration.

rlf_template_name

The name of the RLF template to create or remove. *rlf_template_name* must be an alphanumeric string of 1 through 127 characters.

Usage Guidelines

Use this command to enter the RLF Template Configuration mode. The users can define the rate limiting configurations within this template.

Important Rate Limiting Function (RLF) is a license-controlled feature. A valid feature license must be installed prior to configuring this feature. Contact your Cisco account representative for more information.

This feature implements a generic framework that can be used by multiple interfaces and products for rate-limiting/throttling outgoing messages like Diameter messages on Gx, Gy interface towards PCRF.

When applications send messages to peers at a high rate, (e.g. when a large number of sessions goes down at the same time, accounting stop messages for all the sessions are generated at the same time) the peer may not be able to handle the messages at such high rates. To overcome this situation, the Rate Limiting Function (RLF) framework is developed so that the application sends messages at an optimal rate such that peer is capable of receiving all the messages and does not enter an overload condition.

When RLF feature is enabled, all the messages from the application are pushed to the RLF module for throttling and rate control, and depending on the message-rate configured the RLF module sends the messages to the peer. Once the rate or a threshold value is reached, the RLF module notifies the application to slow down or stop sending messages. RLF module also notifies the application when it is capable of accepting more messages to be sent to the peer. RLF module typically uses a Token Bucket Algorithm to achieve rate limiting.

Currently in the deployment of the Diameter applications (Gx, Gy, etc.), many operators make use of "**max-outstanding** <*number*>" as a means of achieving some rate-limiting on the outgoing control traffic. With RLF in place, this is no longer required since RLF takes care of rate-limiting in all cases. If RLF is used and **max-outstanding** is also used, there might be undesirable results.

Important If RLF is being used with an "**diameter endpoint**", then set the **max-outstanding** value of the peer to be 255.

To use the template, Diameter or any other applications must be associated with the template. The RLF provides only the framework to perform the rate limiting at the configured Transactions Per Second (TPS). The applications (like Diameter) should perform the configuration specific to each application.

Entering this command results in the following prompt:

```
[context_name]host_name(cfg-rlf-template)#
```

RLF Template Configuration Mode commands are defined in the *RLF Template Configuration Mode Commands* chapter.

Example

The following command creates an RLF template named *rlf_1* and enters the RLF Template Configuration mode:

rlf-template rlf_1

rohc-profile

This command allows you to create an RoHC (Robust Header Compression) profile and enter the RoHC Profile Configuration Mode. This mode is used to configure RoHC Compressor and Decompressor parameters. RoHC profiles can then be assigned to specific subscriber sessions when RoHC header compression is configured.

Product

HSGW

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

rohc-profile profile-name *name* **[-noconfirm] [common-options | compression-options | decompression-options]**
no rohc-profile profile-name *name*

common-options

Configures common parameters for compressor and decompressor.

compression-options

Configures ROHC compression options.

decompression-options

Configures ROHC decompression options.

no

Remove the specified RoHC profile.

name

The name of the RoHC profile to create or remove. *name* must be an alphanumeric string of 1 through 63 characters.

-noconfirm

Do not prompt for additional verification when executing this command.

Usage Guidelines

Use this command to enter the RoHC Profile Configuration mode.

Entering this command results in the following prompt:

```
[context_name]host(config-rohcprofile-<profile_name>)#
```

RoHC Profile Configuration Mode commands are defined in the *RoHC Profile Configuration Mode Commands* chapter.

Example

Enter the following command to create an RoHC profile named *HomeUsers* and enter the RoHC Configuration mode without prompting for verification:

```
rohc-profile profile-name HomeUsers
```

The following command removes the RoHC profile named *HomeUsers*:

```
no rohc-profile profile-name HomeUsers
```

sccp-network

This command creates or removes a Signaling Connection Control Part (SCCP) network instance which is used to define the SS7 end-to-end routing in a UMTS network. As well, this command enters the SCCP network configuration mode. The SGSN supports up to 12 SCCP network instances at one time.

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Product

SGSN

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

sccp-network *sccp_net_id* **[-noconfirm]**
no sccp-network *sccp_net_id*

no

Remove the SCCP network configuration with the specified index number from the system configuration.

sccp_net_id

This number identifies a specific SCCP network configuration.

sccp_net_id: must be an integer from 1 through 12.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create or modify an SCCP network and enter the SCCP network configuration mode.

The SCCP network is not a standard SS7 or UMTS concept - this concept is specific to this platform.

For details about the commands and parameters needed to create and edit the SCCP Network configuration, check the *SCCP Network Configuration Mode* chapter.

Example

The following command creates an SCCP network with the index number of *1*:

sccp-network 1

The following command creates an SCCP network with the index number of *2* to associate with HNB-GW service for HNB access network users without any prompt.:

sccp-network 2 -noconfirm

sctp-param-template

This command allows you to create an SCTP parameter template and enter the SCTP Parameter Template Configuration Mode. This mode is used to configure parameters for SCTP associations.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

`[ no ] sctp-param-template name`

no

Removes the specified SCTP parameter template from the system.

name

Specifies the name of the SCTP parameter template being created or accessed. *name* must be an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to enter the SCTP Parameter Template Configuration mode.

Entering this command results in the following prompt:

```
[context_name]host(sctp-param-template)#
```

SCTP Parameter Template Configuration Mode commands are defined in the *SCTP Parameter Template Configuration Mode Commands* chapter.

Important The SCTP parameters will be activated in a service only if the corresponding service restarts or if the SCTP parameter template is re-associated with its corresponding service. The SCTP parameters will not be active if the SCTP template is changed.

Example

The following command creates a new SCTP parameter template or enters an existing template named *sctp-tmpl2*:

```
sctp-param-template sctp-tmpl2
```

security

Enters the Security configuration mode. Commands for configuration of security features are available in the *Security Configuration Mode Commands* chapter.

Important This is a license-controlled feature. For more information, contact your Cisco account or support representative.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
security
no security
```

no

Removes all configuration within the Security configuration mode.

Usage Guidelines

Use this command to enter the Security configuration mode to define or modify the connection with the Talos content-filtering server and configure URL categorization parameters.

service-chain

This command enters the Service Chain Configuration Mode. This command gives service-chain definition.

Product

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

service-chain *<service_chain_name>*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-service-chain)#`

service-chain

Defines service chain association.

service_chain_name

Specifies name of the service chain. This is entered as an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to give service-chain definition.

Example

The following command associates nsh-format with service-chain:

```
service-chain SC1
```

session disconnect-reasons bucket-interval

Configures an interval in minutes for displaying disconnect reasons.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`session disconnect-reasons bucket-interval` *`interval_minutes`*
`no session disconnect-reasons bucket-interval` *`interval_minutes`*

no

Removes the specified bucket-interval.

interval_minutes

Configures interval "x" in minutes to display disconnect reasons for additional historical time intervals. The interval is specified as an integer from 1 through 20.

Usage Guidelines

Use this command to configure an interval in minutes for displaying historical disconnect reasons.

Example

The following command specifies a bucket-interval of 5 minutes.

```
session disconnect-reasons bucket-interval 5
```

session-priority-profile

This command creates an instance for session priority profile and enters the session priority profile configuration mode. The commands for configuration of session priority profile are available in the *Session Priority Profile Configuration Mode Commands* chapter.

Product

UPF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

session-priority-profile *spp_name*

session-priority-profile *spp_name*

Specify the session priority profile name to be configured.

Must be a string.

Usage Guidelines

Use this command to create a session priority profile instance.

session trace

This command configures the type of network elements, file transfer protocol, and Trace collection entity mode to be used for the transportation of trace files collected for the subscriber session tracing on the UMTS/EPC network element(s) along with network connection parameters and timers.

Product

GGSN

MME

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

session trace network-element { all | enb | mme | pgw | sgw | ggsn | saegw } [collection-timer *sec* **] [file-type { a-type | b-type }] [tce-mode { none | push transport sftp path** *string* **username** *name* **{ encrypted password** *enc_pw* **| password** *password* **} }]**
no session trace network-element { all | enb | mme | pgw | sgw | ggsn saegw }

no

Removes the entire session trace configuration from the system or a specific network element trace configuration.

Important

To modify the session trace network-element configuration, you must first enter the **no session trace network-element** form of the command to remove the session trace configuration and then entire an entirely new configuration.

network-element { all | enb | mme | pgw | sgw | ggsn saegw }

Identifies the type of service to the session trace application in order to determine the applicable interfaces.

all: Specifies that all network elements and their associated interfaces are to be made available to the session trace application.

enb: Specifies that the eNodeB and its associated interfaces is to be made available to the session trace application. With this option, the allocated Trace Recording Session Reference and the Trace Reference is sent to MME over S1AP, which looks up the IMSI/IMEI associated with the corresponding S1 session and forwards the two references and UE ID to the TCE.

ggsn: Specifies that the GGSN and its associated interfaces is to be made available to the session trace application.

mme: Specifies that the MME and its associated interfaces is to be made available to the session trace application.

pgw: Specifies that the P-GW and its associated interfaces is to be made available to the session trace application.

sgw: Specifies that the S-GW and its associated interfaces is to be made available to the session trace application.

saegw: Specifies that the SAEGW and its associated interfaces is to be made available to the session trace application.

collection-timer *sec*

Specifies the amount of time (in seconds) to wait from initial activation/data collection before data is reported to the Trace Collection Entity (TCE). *sec* must be an integer from 0 through 255.

file-type { a-type | b-type }

Specifies which type of XML file is generated by the session trace. Options include an A-type file and B-type file. When B-type XML files are used, multiple trace recording session elements will be encoded in a single XML file. It should be noted that different trace recording sessions may be associated with different TCEs, according to the TCE IP address specified during activation. As expected, each Type-B XML file will contain traceRecSession elements that pertain only to the same target TCE. There will be different XML Type-B files created for different TCEs and they will be placed in different tce_x directories for transmission to the target TCEs.

Default: a-type

Important If using the file-type keyword, it must be entered in the command before entering either of the other optional keywords.

tce-mode none

Specifies that session trace files are to be stored locally and must be pulled by the TCE.

tce-mode push transport sftp path *string* username *name* { encrypted password *enc_pw* | password *password* }

Specifies that session trace files are to be pushed to the Trace Collection Entity (TCE).

sftp: Specifies that Secure FTP is used to push session trace files to the TCE.

path *string*: Specifies the directory path on the TCE where files will be placed.

username *name*: Specifies the username to be used when pushing files to the TCE.

encrypted password *enc_pw*: Specifies the encrypted password to be used when pushing files to the TCE.

password *password*: Specifies the password to be used when pushing files to the TCE.

Usage Guidelines

Use this command to configure the file transfer methods and modes for subscriber session trace functionality and to how and where session trace files are sent after collection.

This configuration contains collection timer, UMTS/EPC network element, type of file transfer, and user credentials setting to send the collected trace files to the TCE.

Example

The following command configures the collection time for session traces to *30* seconds, identifies the network element as all elements (GGSN, MME, S-GW, SAEGW, and P-GW), and pushes session trace files to a TCE via SFTP into a directory named */trace/agw* using a username *admin* and a password of *pw123*:

```
session trace network-element all collection-timer 30 tce-mode push
transport sftp path /trace/agw username admin password pw123
```

The following command configures the collection time for session traces to *30* seconds, identifies the network element as an MME, and pushes session trace files to a TCE via SFTP into a directory named */trace/sgw* using a username *admin* and a password of *pw123*:

```
session trace network-element mme collection-timer 30 tce-mode push
transport sftp path /trace/mme username admin password pw123
```

The following command configures the collection time for session traces to *30* seconds, identifies the network element as GGSN, and pushes session trace files to a TCE via SFTP into a directory named */trace/ggsn* using a username *admin* and a password of *pw123*:

```
session trace network-element ggsn collection-timer 30 tce-mode push
transport sftp path /trace/ggsn username admin password pw123
```

sgsn-global

This command gives access to the SGSN Global configuration mode to set parameters relevant to the SGSN and HNB-GW as a whole.

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Product

SGSN

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

sgsn-global

Usage Guidelines

Using this command moves into SGSN Global Configuration mode. In this mode, you can set system-wide parameters on SGSN and HNB-GW to perform the following tasks:

On SGSN:

- monitoring and managing TLLIs in the BSSGP layer.
- defining IMSI ranges used as filters in the operator policy selection process.

On HNB-GW:

- setting system-wide IPC message aggregation parameters

Example

Enter the SGSN Global configuration mode with the following:

sgsn-global

sgsn-operator-policy

This command creates an SGSN Operator Policy and enters the SGSN operator policy configuration mode. Commands for configuration of the policies are available in the SGSN Operator Policy Configuration Mode chapter elsewhere in this Command Line Interface Reference.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

sgsn-operator-policy (default | name *name* **} [-noconfirm]**
no sgsn-operator-policy (default | name *name* **}**

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

no

Removes the specified SGSN operator policy from the system configuration.

default

In this case, default is the name of a specific operator policy. This default policy is used when no other defined operator policy matches the incoming IMSI.

Important You should configure this default operator policy so that is it available to handle IMSIs that are not matched with other defined policies.

name *name*

Usage Guidelines

Use this command to create an SGSN operator policy and to enter the SGSN operator policy configuration mode to define or modify policies.

The SGSN Operator Policy specifies rules governing the services, facilities and privileges available to subscribers. These policies can override standard behaviors and provide mechanisms for an operator to get around the limitations of other infrastructure elements such as DNS servers and HLRs.

The system supports up to 1000 operator policies, including the default operator policy.

Important Once the instance of an operator policy is defined, to use the policy it is necessary to go into the SGSN Operator Policy Configuration Mode to define the IMSI range with the MCC command - this requirement does not hold if you are using a default operator policy.

Example

The following command accesses the default SGSN operator policy and enters the SGSN operator policy configuration mode to view or modify the specified policy:

```
sgsn-operator-policy default
```

snmp authentication-failure-trap

Enables or disables the SNMP traps for authentication failures.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] snmp authentication-failure-trap

no

Disables SNMP traps for authentication failures. When omitted, SNMP traps for authentication failures will be generated.

Usage Guidelines

Disables authentication failure traps if they are not of interest. At this time the option may be changed to support trouble shooting.

By default SNMP authentication failure traps are disabled.

Example

The following command enables SNMP authentication failure traps:

snmp authentication-failure-trap

snmp community

Configures the SNMP v1 and v2 community strings.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

In StarOS 12.3 and later releases:

snmp community [encrypted] name *string* **[context** *context_name* **| read-only | read-write | view** *view_name* **]**
no snmp community [encrypted] name *string*

In StarOS 12.2:

snmp community [encrypted] name *string* **[read-only | read-write]**
no snmp community [encrypted] name *string*

In StarOS 12.1 and earlier releases:

snmp community *string* **[read-only | read-write]**
no snmp community *string*

no

The specified community string is removed from the configuration.

encrypted

Specifies the use of an encrypted string when entering the community name. Without the encrypted option, the plain-text community name must be provided.

name *string*

Specifies a community string whose options are to be modified. An unencrytpted string must be an alphanumeric string of 1 through 31 characters. An encrypted string is an alphanumeric string of 1 through 80 characters.

context *context_name*

Default: community string applies to all contexts.

Specifies a the context to which the community string shall be applied. *context_name* must be an alphanumeric string of 1 through 31 characters.

read-only | read-write

Default: read-only

Specifies if access rights for the community string.

read-only: the configuration may only be viewed.

read-write: the configuration may be viewed and edited.

view *view_name*

Default: community string applies to all views.

Specifies the view to which the community string shall be applied. *view_name* must be an alphanumeric string of 1 through 31 characters.

Usage Guidelines

The community strings define the privileges of SNMP users. It may be desirable to give read-only access to front line operators.

Example

The following command configures an SNMP community name of *BxB102*:

```
snmp community name BxB102
```

snmp discard-snmpv3-pdu

Configures the system to discard all SNMPv3 protocol data units (PDUs) received.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] snmp discard-snmpv3-pdu

no

Returns the command to the default setting, where SNMPv3 messages are processed.

discard-snmpv3-pdu

Configures the system to discard all SNMPv3 PDUs received.

Usage Guidelines

Use this command to configure the system to discard all SNMPv3 messages received. By default, the system processes SNMPv3 PDUs.

Example

The following command configures the system to discard all SNMPv3 messages received.

snmp discard-snmpv3-pdu

snmp engine-id

Configures the SNMP engine to use for SNMP requests when SNMPv3 agents are utilized.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

snmp engine-id local *id*

id

Specifies the SNMPv3 engine to employ. *id* must be an alphanumeric string of 1 through 31 characters.

Usage Guidelines

When SNMPv3 is used for SNMP access to the chassis the engine ID can be used to quickly change which schema is used for SNMP access.

Important The system can send either SNMPv1, SNMPv2c, or SNMPv3 traps to numerous target devices. However, the Web Element Manager can only process SNMP version 1 (SNMPv1) and SNMP version 2c (SNMPv2c) traps. If the SNMP target being configured is Web Element Manager application, then you must not configure this command to use.

Example

The following command configures an SNMP engine ID of *secure23*.

```
snmp engine-id local secure23
```

snmp heartbeat

Enables the sending of periodic "heartbeat" notifications (traps).

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
snmp heartbeat { interval minutes | second-interval seconds }
[ default | no ] snmp heartbeat
```

default

Resets the SNMP heartbeat to 60 minutes.

no

Disables the feature.

interval *minutes*

Specifies the interval time in minutes between notificationsas an integer from 1 through 1440. Default: 60

second-interval *seconds*

Default: 30

Specifies the interval time in seconds between notificationsas an integer from 10 through 50.

Usage Guidelines

Use this command to enable the sending of a heartbeat notification periodically to confirm a system is up and communicating.

Example

The following command sets the SNMP heartbeat notification interval to 2 hours, 15 minutes.

```
snmp heartbeat interval 135
```

snmp history heartbeat

Enables the recording of heartbeat notifications in SNMP history.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default | no ] snmp history heartbeat
```

default

Returns the command to the default setting of enabled.

no

Disables the history recording feature.

Usage Guidelines

Use this command to enable the recording of SNMP heartbeat notifications in SNMP history files.

Example

The following command enables the recording of heartbeat notifications in SNMP history:

```
snmp history heartbeat
```

snmp mib

Enables or disables a specified SNMP Management Information Base (MIB).

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] snmp mib *mib_name*

no

Disables the specified MIB.

mib_name

Specifies a MIB by its name. You can find the currently supported MIBs by running the Exec mode **show snmp server** command. Enter the MIB name as a text string exactly as displayed under "SNMP Agent Mib Configuration",

By default the STARENT-MIB is enabled.

Usage Guidelines

Use this command to enable or disable system support for an SNMP MIB.

Example

The following command enables the SNMP MIB entitled "CISCO-MOBILE-WIRELESS-SERVICE-MIB".

snmp mib CISCO-MOBILE-WIRELESS-SERVICE-MIB

snmp notif-threshold

Configures the number of SNMP notification that need to be generated for a given event before it is propagated to the SNMP users.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

snmp notif-threshold *count* **[low** *low_count* **] [period** *seconds* **]**
[default | no] snmp notif-threshold

default

Resets the threshold to 100.

no

Removes all SNMP notification thresholds. All notifications will be broadcast to SNMP users.

count

The traps creation rate will be monitored periodically (as configured by the **period** field). If the number of traps created over one period cycle exceeds the count value configured, then the trap creation will be disabled. *count* must be an integer from 1 through 10000. Default: 100 for release 18.0 and earlier Default: 300 for release 19.0 and forward

low *low_count*

The traps creation rate will be monitored periodically (as configured by the **period** field). The trap creation will be enabled again only if the number of trap creation drops below the *low_count* value configured. Otherwise, trap creation remains disabled. *low_count* must be an integer from 1 through 10000. Default: 20

period *seconds*

Specifies the number of seconds of the monitoring window size before any subsequent notification may be broadcast to users. *seconds* must be an integer from 10 through 3600. Default: 300

Usage Guidelines

Set the notification threshold to avoid a flood of events which may be the result of a single failure or maintenance activity.

Example

The following command sets the SNMP notification threshold to 100 traps:

```
snmp notif-threshold 100
```

snmp runtime-debug

Enables or disables runtime SNMP debugging. When enabled (the default), this feature consumes CPU time with event logging. Disabling runtime debugging controls CPU usage and mitigates potential security threats when external bogus packets keep hitting SNMP.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
snmp runtime-debug [ debug-tokens token_id +
no snmp runtime-debug
```

no

Disables SNMP runtime debugging.

debug-tokens *token_id* +

Enables DEBUGMSG tokens from the list of supported tokens appearing below. + indicates that multiple token IDs can be specified separated by spaces.

- **agentx** – agentx(12) token
- **disman** – disman(11) token
- **dumph** – dumph(13) token
- **dumpv** – dumpv token
- **init_mib** – init_mib(14) token
- **mib_init** – mib_init(1) token
- **parse-file** – parse-file(2) token
- **parse-mibs** – parse-mibs(3) token
- **read_config** – read_config(4) token
- **snmp** – snmp(5) token
- **snmpd** – snmpd(6) token
- **snmptrapd** – snmptrapd(7) token
- **transport** – transport(9) token
- **trap** – trap(8) token
- **usm** – usm(10) token

The numbers appearing in parentheses above will appear in the output of the **show snmp server** command for "Runtime Debug Token."

Usage Guidelines

Use this command to enable and disable SNMP runtime debugging. When enabled (the default), this feature consumes CPU time with event logging. Disabling runtime debugging controls CPU usage and mitigates potential security threats when external bogus packets keep hitting SNMP.

This command also supports optional DEBUGMSG MIB tokens that represent textual MIB files that are to be found and parsed. The list of supported tokens is limited to those that appear in the CLI.

Example

The following command disables SNMP runtime debugging:

```
no snmp runtime-debug
```

snmp server

Enables the SNMP server as well the configuration of the SNMP server port.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
snmp server [ port number ]
no snmp server
```

no

Restores the default SNMP port assignment of 161.

port *number*

Specifies the port number to use for SNMP communications. *number* must be an integer from 1 to 65535. Default: 161

Usage Guidelines

Set the SNMP port for communications when SNMP is enabled.

Important This will result in restarting the SNMP agent when the **no** keyword is omitted. SNMP queries as well as notifications/traps will be blocked until the agent has restarted.

Example

The following command sets the SNMP server to communicate on port 100:

```
snmp server port 100
```

snmp target

Configures remote receivers for SNMP notifications.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
snmp target name ip_address [ port number ] [ non-default ] [ security-name
string ] [ version { 1 | 2c | 3 | view ] [ security-level { noauth | { auth
 | priv-auth privacy [ encrypted ] des privpassword } authentication [
encrypted ] { md5 | sha } authpassword } } [ informs | traps ]
no snmp target name
```

no

Removes the specified target as a receiver of unsolicited SNMP messages (traps).

authentication { md5 | sha } *authpassword*

Reads the authentication type and password if the security level of the SNMP messages is set to **auth** or **priv-auth**. Authentication types are:

- **md5**: Configures the hash-algorithm to implement MD5 per RFC 1321.
- **sha**: Specifies that the hash protocol is Secure Hash Algorithm.

***security-level* { noauth | { auth | priv-auth privacy [encrypted] des *privpassword* }**

Sets the security level of the SNMPv3 messages, as follows:

- **noauth**: No authentication and encryption is used.
- **auth**: Only authentication will be used.
- **priv-auth**: Both authentication and encryption will be used.
- **privacy des** *privpassword*: Reads the privacy type and password.

name

Specifies a logical name to use to refer to the remote receiver. *name* must be an alphanumeric string of 1 through 31 characters.

ip_address

Specifies the IP address of the receiver. *ip_address* must be specified using IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation.

non-default

Specifies that this destination is only used for SNMP traps which have been specifically identified.

port *number*

Default: 162

Specifies the port which is to be used in communicating with the remote receivers. *number* must be an integer from 0 through 65535.

security-name *string*

Default: no community string included

Specifies the community string to use in the unsolicited messages. *string* must be an alphanumeric string of 1 through 31 characters.

version { 1 | 2c | 3 } | view

Default: 1

Specifies the SNMP version the target supports and consequently the version of the SNMP protocol to use for communications.

Important The system can send either SNMPv1, SNMPv2c, or SNMPv3 traps to numerous target devices.However, the Web Element Manager can only process SNMP version 1 (SNMPv1) and SNMP version 2c (SNMPv2c) traps. If the SNMP target being configured is Web Element Manager application, then you must configure this command to use version 1 or version 2c.

informs | traps

Default: traps

Specifies the type of SNMP event to use to send notifications to SNPM targets. **traps** are unacknowledged (fire and forget) whereas **informs** require a response from the SNMP target.

If the notification type is set to **informs**, the notification is resent if no response is received within 5 seconds. The notification is resent at most two times.

Usage Guidelines

The target manages the list of remote receivers to which unsolicited messages are sent. Use this command to add /remove a monitoring system to/from a network.

Example

The following command configuures a target named *rcvr021* at IP address 209.165.201.1 to accept version 2c traps

```
snmp target rcvr021 209.165.201.1 version 2c traps
```

snmp trap

This command enables or disables generation of specific or all SNMP traps.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

Releases prior to Release 21.9

```
snmp trap { enable | suppress } {trap_name + | all | target target_name }{
sessionUnevenDistribution| sessionUnevenDistributionclear } }
```

From Release 21.9

```
snmp trap { { enable | suppress } { trap_name + | MMEManagerBusy |
MMEManagerNormal| all | target target_name } ] | { { snmp trap
chassis-throughput-warn-threshold percentage trap-interval time_in_seconds  }
}
```

enable

Enables or allows the generation of one or more SNMP traps by the system.

suppress

Disables the generation of one or more SNMP traps by the system.

sessionUnevenDistribution

Configures threshold for detection of uneven call distribution on sessmgr.

sessionUnevenDistributionclear

Clears the threshold detection of uneven call distribution on sessmgr.

trap_name +

The name of the specific SNMP trap to enable or disable. + indicates that multiple traps separated by a space can be listed for a single instance of this command.

Important The system disregards character case (case insensitive) when entering trap names.

MMEManagerBusy

Trap Number 1405.

MMEManagerNormal

Trap Number 1406.

all

Specifies that all SNMP traps will be affected by the specified operation (enable or suppress). Default: Enable All

target *target_name*

Specifies that these SNMP traps should be sent to the specified target name. *target_name* is the name of an eisitng SNMP target specified as an alphanumeric string of 1 through 31 characters.

chassis-throughput-warn-threshold*percentage*

Sets the chassis-throughput percentage at which a trap is raised to indicate that warning level is reached. The default value is 70%.

trap-interval*time_in_seconds*

Specifies the interval (in seconds) between the warn traps. The default value is 3600 seconds.

Usage Guidelines

SNMP traps are used by the system to indicate that certain events have occurred. A complete listing of the traps supported by the system and their descriptions can be found in the *SNMP MIB Reference*. Additionally, a trap listing can be viewed using the following command:

snmp trap { enable | suppress } ?

By default, the system enables the generation of all traps. However, individual traps can be disabled allowing only traps of a certain type or alarm level to be generated. This command can be used to disable un-desired traps and/or re-enable previously suppressed traps.

The **snmp trap chassis-throughput-warn-threshold** *percentage* **trap-interval***time in seconds* keywords are added to the **snmp trap** command to configure the following:

- Raise SNMP traps when the served throughput crosses the warning threshold levels (70%, 80%, and so on) of the committed throughput and the frequency.
- Specify the trap interval (in seconds) between each successive warn traps such that the second warn trap is raised only after the trap interval has lapsed.

A license is required to enable the Rate Limiting System Throughput Support feature. If the license for rate-limiting-throughput is not present, chassis-throughput cannot be calculated, rate limiting cannot be enforced, and SNMP traps cannot be raised.

When the rate-limiting-throughput per chassis license is applied but this CLI is not configured, it assumes the default values for the chassis throughput warn threshold trap interval.

Example

The following command suppresses the LogMessage trap:

```
snmp trap suppress logmessage
```

Example

The following command configures the warn level threshold and trap interval:

```
snmp trap chassis-throughput-warn-level 90 trap-interval 3000
```

snmp trap-pdu-v1tov2

Converts responses received from a SNMPv1 entity acting in an agent role into responses sent to a SNMPv2 entity acting in a manager role. This command inserts an extra zero in the outgoing trap PDU as required by RFC 1908 section 3.1.2.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] snmp trap-pdu-v1tov2

no

Disables the adding of the extra zero in the outgoing trap PDU.

Usage Guidelines

Use this command to enable SNMPv2 support as defined in RFC 1908, section 3.1.2. By default, StarOS does not add the extra zero because Cisco Prime Network does not support the extra zero.

Example

The following command adds the extra zero to support of SNMPv2:

snmp trap-pdu-v1tov2

snmp trap-timestamps

Adds an additional system-time varbind to generated traps.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] snmp trap-timestamps

no

Disables the adding of timestamps to generated traps.

Usage Guidelines

The timestamp added to the generated trap reflects the current system time. The timestamp is proprietary. This functionality is disabled by default.

Important

If the Web Element Manager application is used as your alarm server, the application relies on the timestamp provided by enabling this command to identify duplicate traps. As a result, it is recommended that this parameter be enabled for this case.

Example

The following command enables the inclusion of a timestamp with each generated trap:

```
snmp trap-timestamps
```

snmp user

Configures an SNMPv3 user for secure SNMP access.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
snmp user user_name [ [ encrypted ] password password | engine id | group
grp_name | security-model model  auth authentication { md5 [ [ encrypted ]
password password ] | sha [ [ encrypted ] password password  ] } | no auth |
 priv-auth privacy des [ [ encrypted ] password password ] | [ [ encrypted
 ] password password ] ]
no snmp user user_name
```

no

Removes the specified user from the list of valid SNMPv3 users.

user_name

Specifies the user which is to use SNMPv3 interfaces to the system. *user_name* must be an alphanumeric string of 1 through 31 characters.

engine *id*

The SNMP engine ID. **id** must be an alphanumeric string of 1 through 31characters.

group *grp_name*

Default: undefined (not a member of any group)

Specifies the user SNMPv3 group the into which user will be added. *grp_name* must be an alphanumeric string of 1 to 1023 characters.

security-model *model* auth

Default: USM

Specifies the security model used to authenticate the user. *model* must be configured to the following:

- **usm**: Designates the use of the User-based Security Model [RFC 2574].
- **auth**: Only authentication will be used.
- **authentication**: Specifies the SNMP authentication type of the target/user.
- **noauth**: No authentication or encryption is used.
- **priv-auth**: Both authentication and encryption will be used.
- **md5**: Specifies the authentication type as MD5.
- **sha**: Specifies the authentication type as SHA.
- **des**: Specifies the privacy type as DES.
- The **encrypted** keyword indicates the password will be received in an encrypted form. *password* must be an alphanumeric string of 16 through 368 characters.
- *password* must be a case-sensitive alphanumeric string of 8 through 127 characters.

[encrypted] password *password*

Default: undefined

Specifies the password for authenticating the user when the security model is set to User-based Security Model (USM).

The **encrypted** keyword indicates the password will be received in an encrypted form. *password* must be an alphanumeric string of 8 through 31 characters.

In StarOS 21.0 and later, *password* must be an alphanumeric string of 8 through 368 characters.

The **encrypted** keyword is intended only for use by the chassis while saving configuration scripts. The system displays the **encrypted** keyword in the configuration file as a flag that the variable following the **password** keyword is the encrypted version of the plain text password. Only the encrypted password is saved as part of the configuration file.

Usage Guidelines

Add and remove SNMPv3 users as operations staff or automated systems are updated. The security model will be user dependant based upon the support the users system provides.

Important The system can send either SNMPv1, SNMPv2c, or SNMPv3 traps to numerous target devices. However prior to StarOS 21.0, the Web Element Manager can only process SNMP version 1 (SNMPv1) and SNMP version 2c (SNMPv2c) traps. If the SNMP target being configured is Web Element Manager application, then you must not configure this command to use.

Example

The following command configures SNMP user *user1*.

```
snmp user user1
```

ss7-routing-domain

This command creates an SS7 routing domain instance and enters the SS7 Routing Domain Configuration mode.

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Product

SGSN

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ss7-routing-domain rd_id variant v_type [ -noconfirm ]
no ss7-routing-domain rd_id
```

no

Removes the specified SS7 routing domain from the system configuration.

rd_id

Identifies a specific SS7 routing domain. Once it has been created, it can be accessed for further configuration and modification by entering the *rd_id* without entering the variant.

rd_id must be an integer from 1 through 12.

variant *v_type*

Identifies the national standard to be used for call setup, routing and control, signaling. Select one of the following:

- **ansi:** American National Standards Institute (U.S.A.)
- **bici:** Broadband Intercarrier Interface standard
- **china:** Chinese standard
- **itu:** International Telecommunication Union (ITU-T) Telecommunication Standardization Sector
- **ntt:** Japanese standard
- **ttc:** Japanese standard

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create an SS7 routing domain configuration instance or to enter the SS7 routing domain configuration mode to edit the configuration.

A routing domain groups configuration items to facilitate the management of the SS7 connection resources for an SGSN service. An Access Gateway supports up to 12 configured SS7 routing domains at one time.

After entering this command, the prompt appears as:

[*context_name*]<hostname>(config-ss7-routing-domain-*routing_domain_id*)#

For details about the commands and parameters used to define or edit an SS7 routing domain, refer *SS7 Routing Domain Configuration Mode* chapter.

Example

The following creates an SS7 routing domain with an index of *1* and the variant selection of Broadcast Intercarrier Interface (*bici*):

```
ss7-routing-domain 1 variant bici
```

The following command creates an SS7 routing domain instance with an index of *2* and the variant selection of Broadcast Intercarrier Interface (*bici*) to be associated with HNB RN-PLMN in an HNB access network:

```
ss7-routing-domain 1 variant bici
```

ssh key-gen wait-time

Specifies the wait time in seconds between the last key generation and when another key generation can be initiated. The default interval is 5 minutes.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

ssh key-gen wait-time *seconds*

seconds

Specifies the wait interval in seconds as an integer from 0 to 86400. Default = 300.

Usage Guidelines

Specifies the wait time in seconds between the last key generation and when another **ssh generate key** command can be initiated. The default interval is 5 minutes.

Example

The following command sets the SSH key generation wait interval as 6 minutes:

```
ssh key-gen wait-time 360
```

ssh key-size

Configures the key size in bits for SSH RSA key generation for all contexts.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
ssh key-size { 2048 | 3072 | 4096 | 5120 | 6144 | 7168 | 9216 }
```

Usage Guidelines

Configures the SSH key size in bits used to generate RSA key pairs for all contexts.

Example

The following command sets the SSH key size as 4096 bits:

```
ssh key-size 4096
```

statistics-backup

Enables the *Backup and Recovery of Key KPI Statistics* functionality.

Product

GGSN

MME

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] statistics-backup { ggsn | mme | pgw | saegw | sgsn | sgw }
```

no

Disables the backup/recovery of key KPI counters.

ggsn

Enables the backup and recovery of the GGSN's key KPI counters, including session disconnect reason and node-level statistics. If GGSN node is configured to back up, the following dependent services will be considered:

- GGSN service
- eGTP-C ingress
- GTP-U ingress

Important Checkpointing is done at the AAAMgr; therefore, there is a dependency of 1MB memory on AAAMgr for each corresponding SessMgr.

mme

Enables the backup and recovery of the MME's key KPI counters, which are identified in the MME-BK schema.

pgw

Enables the backup and recovery of the P-GW's key KPI counters, including session disconnect reason and node-level statistics. If P-GW node is configured to back up, the following dependent services will be considered:

- P-GW service
- eGTP-C ingress
- GTP-U ingress

s2a, s2b, and s5s8 interfaces are also considered.

Important Checkpointing is done at the AAAMgr; therefore, there is a dependency of 1MB memory on AAAMgr for each corresponding SessMgr.

saegw

Enables the backup and recovery of the SAEGW's key KPI counters, including session disconnect reason and node-level statistics. If SAEGW node is configured to back up, the following dependent services will be considered:

- P-GW service
- S-GW service
- SAEGW service
- P-GW eGTP-C ingress
- P-GW GTP-U ingress
- S-GW eGTP-C ingress/egress
- S-GW GTP-U ingress/egress

Important Checkpointing is done at the AAAMgr; therefore, there is a dependency of 1MB memory on AAAMgr for each corresponding SessMgr.

sgsn

Enables the backup and recoveru of the SGSN's key KPI counters, which are identified in the IuPS-BK schema, the GPRS-BK schema, MAP-BK schema, and the SGTP-BK schema.

sgw

Enables the backup and recovery of the S-GW's key KPI counters, including session disconnect reason and node-level statistics. If S-GW node is configured to back up, the following dependent services will be considered:

- S-GW service
- eGTP-C ingress/egress
- GTP-U ingress/egress

Important Checkpointing is done at the AAAMgr; therefore, there is a dependency of 1MB memory on AAAMgr for each corresponding SessMgr.

backup-interval

Important This keyword has been deprecated in Release 17.1 and replaced by the **statistics-backup-interval** command, also in this Global Configuration mode.

Usage Guidelines

This command enables the backup and recovery of key KPI counters after a crash. The counter values that are backed up and recovered are a subsets of the counters of the GGSN, MME, P-GW, SAEGW, S-GW, or SGSN and SGTP schemas. For additional information about this functionality, we recommend that you check the schema listed above in the *Statistics and Counters Reference* or the *Backup and Recovery of Key KPI Statistics* feature chapters in the associated product *Administration Guide* .

Example

Use a command similar to the following to enable backup of the SGSN or MME's key KPI statistics:

```
statistics-backup mme
```

Use a command similar to the following to disable backup of key KPI statistics for the MME or SGSN:

```
no statistics-backup sgsn
```

stats-profile

Creates a statistics profile and accesses *Stats Profile Configuration Mode*. In *Stats Profile Configuration Mode*, operators can configure per QCI packet drop counters and ARP granularity for QCI level counters.

Important ARP Granularity for QCI Level Counters is a license-controlled feature. Per QCI Packet Drop Counters functionality does not require a license. Contact your Cisco account or support representative for licensing details.

Product

GGSN

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ no ] stats-profile name
```

no

Disables the specified statistics profile.

stats-profile *name*

Specifies the name for the statistics profile.

The name must be an alphanumeric string from 1 to 64 characters in length.

Usage Guidelines

Use this command to create a statistics profile and enter *Stats Profile Configuration Mode*.

Statistics profiles enable operators to monitor QoS statistics that identify multiple services running with the Statistics profiles enable operators to monitor QoS statistics that identify multiple services running with the same QCI value. In addition, packet drop counters have been introduced to provide the specific reason the Enhanced Charging Service (ECS) dropped a packet. The packet drop counters provide output on a per ARP basis. This provides additional information that operators can use to troubleshoot and identify network issues that may be affecting service

For detailed information on this feature, refer to the *Per QCI Packet Drop Counters and ARP Granularity for QCI Level Counters* chapter in the *P-GW Administration Guide* or the *SAEGW Administration Guide*.

Example

The following command creates a Stats Profile named STATS:

stats-profile *STATS*

statistics-backup-interval

This command defines the time between backups of the service's key KPI statistics.

Product

GGSN

MME

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

statistics-backup-interval *minutes*
no statistics-backup-interval

no

Disables the interval configuration.

minutes

Enter an integer from 1 to 60 to define the number of minutes for the interval between each backup.

Usage Guidelines

This interval should only be defined after the **statistics-backup** command has been entered to configure the GGSN, MME, P-GW, SAEGW, S-GW, or SGSN to enable backup of statistics. For details on the feature, refer to the *Backup and Recovery of Key KPI Statistics* feature chapter in the associated product *Administration Guide*.

Example

Set the interval between backups to 30 minutes with the following command:

```
statistics-backup-interval 30
```

support collection

Modifies and/or enables the Support Data Collector (SDC) process. If record collection has been previously disabled, this command enables the collection activity. If the record collection is currently enabled, this command may be used to modify the sleep-duration interval and/or the maximum number of Support Data Records (SDRs) that can be collected and stored.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

support collection sleep-duration { hours | minutes }*value* **max-records** *number_records*
[default | no] support collection

default

Resets the sleep duration and maximum number of records to their default values.

no

Removes the settings for support collection and effectively disables the SDC.

support collection

Enables the SDC.

sleep-duration { hours | minutes }*value*

Specifies the hours and/or minutes between record collection activity. *value* must be an integer from 1 through 1000. The default setting is one hour (60 minutes).

Important The period between SDRs is equal to the configured sleep-duration interval + the time taken to collect the previous record.

max-records *number_records*

Specifies the maximum number of records to maintain within the record collection. *number_records* must be an integer from 1 through 1000. When this value is exceeded, a new SDR overwrites the oldest SDR. Default is 168.

Usage Guidelines

Use this command to control the amount of support information that is collected by the Support Data Collector. Increasing the sleep interval for data collection and reducing the number of records to be collected frees system resources for processing calls and storing other data records.

For additional information, refer to the *System Administration Guide*.

Example

The following command sets the collection sleep interval to *30* minutes with a maximum of *100* records being stored:

```
support collection sleep-duration minutes 30 max-records 100
```

support record

Specifies the **show** commands that will be collected and output by the Support Data Collector (SDC) process in the specified record section(s). The order in which the record section commands are specified defines the order in which the collected support data record sections are saved.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
support record sectionsection_name command "command_string" [ section section_name
 command "command_string" ] +
no support record { all | section section_name }
default support record section { all | section section_name }
```

no support record { all | section *section_name*

Removes the specified record section or all sections from the output of the SDC. This effectively disables the support data collector mechanism.

default support record section { all | section *section_name* }

Resets all support record sections or the specified section to the default command listing.

section *section_name*

Identifies the record section as an alphanumeric string of 1 through 64 characters.

command "*command_string*"

Identifies a CLI **show** command to be included in the record section as an alphanumeric string of 1 through 256 characters enclosed in double quotation marks.

Important Refer to the *System Administration Guide* for a comprehensive list of command strings that can be entered via this keyword.

+ indicates that you can add command strings to the record section by repeating the **section** *section_name* **command** "*command_string*" keywords.

Usage Guidelines

Use this command to tune the output of the Support Data Collector to meet specific site requirements. Refer to the *System Administration Guide* for a complete description of the SDC feature

Important If the **support record section** command is not explicitly configured by the user, a default set of record section commands are used. These default record section commands are displayed when you run the **show configuration verbose** command. If support record section commands are explicitly configured, they replace the default commands.

Example

The following command creates a record section named *show_ip_ vrf* containing the CLI command **show ip vrf**:

```
support record section vrf command "show ip vrf"
```

suspend local-user

Suspends a local-user administrative account.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ no ] suspend local-user` *`name`*

no

Removes the suspended status for the specified local-user account.

name

The name of the local-user account expressed as an alphanumeric string of 3 through 16 characters that is case sensitive.

Usage Guidelines

This command allows a security administrator to suspend local-user administrative accounts.

A "suspended" user cannot login to the system. The user's account information (passwords, password history, etc.), however, is preserved.

Example

The following command suspends a local-user account called *Inspector1*:

```
suspend local-user Inspector1
```

The following command removes the suspension from a local-user account called *Admin300*:

```
no suspend local-user Admin300
```

system

Configures system information which is accessible via SNMP.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`system { carrier-id mcc` *`mcc_id`* **`mnc`** *`mnc_id`* **`| contact`** *`who`* **`| description`** *`string`* **`| hostname`** *`host_name`* **`| location`** *`text`* **`| serial-number`** *`ser_number`* **`| sysdesc-sysoid-style [ default | new ] }`**
`default system { contact | location }`

default

Removes the configured **system contact** and **system location** form the system.

carrier-id mcc *mcc_id* mnc *mnc_id*

Important This carrier ID is not used by the GGSN.

Specifies a carrier-id that is a unique identifier for the carrier that has installed the system. When the carrier ID values are set, the carrier-id and gmt_offset attributes are included in access-request and accounting packets when using the following RADIUS dictionaries:

- 3gpp2
- 3gpp2-835
- starent
- starent-835
- starent-vsa1
- starent-vsa1-835
- custom9

mcc *mcc_id*: The mobile country code. This must be specified as a 3-digit string from 001 through 999.

mnc *mnc_id*: The mobile network code. This must be specified as a 2- or 3-digit string from 01 through 999.

contact *who*

Specifies the contact information for the chassis. *who* must be an alphanumeric string of 0 through 255 characters. The string must be embedded in double quotes (") if spaces and special punctuation is to be used.

Default: No contact specified.

description *string*

Allows a user to describe the system for identification purposes. The system description can be comprised of a mix of alphanumeric characters, as follows:

- **%version%** - software version
- **%build%** - software build number
- **%chassis%** - chassis type
- **%staros%** - OS type
- **%hostname%** - system name
- **%release%** - release number
- **%kerver%** - kernel version
- **%machine%** - machine hardware name

- *string* - an alphanumeric string of 1 through 255 characters

hostname *host_name*

Configures the chassis host name where *host_name* must be an alphanumeric string of 1 through 63 characters.

Important Please note that changing the chassis host name results in the command prompt changing as well to reflect the new name. This may affect any previously scripted interfaces from an OSS or maintenance facility.

location *text*

Specifies the system location expressed as an alphanumeric string of 0 through 255 characters. The text specified must be embedded in double quotes (") if spaces are to be used.

Default: No location specified.

serial-number *ser_number*

Specifies a system identifier as an alphanumeric string of 1 through 11 characters.

Default: None.

sysdesc-sysoid-style [default | new]

Allows the user to select the SNMP return for the objects sysDescr and sysOId.

- **default** - SNMP returns old style system description and old style system OID string.
- **new** - SNMP returns Cisco style system description and Cisco style OID string.

Usage Guidelines

Specify system basic information which is useful back at a network operations center which uses the SNMP interfaces for management.

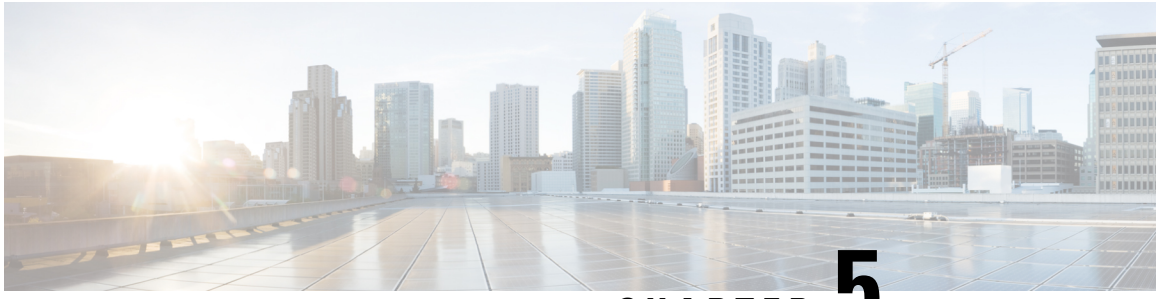
Example

The following commands configure the contact information, system host name, and location text, or remove configured location and system respectively.

```
system contact user1@company.com
system hostname system16
system location "Clark Street Closet\nBasement Rack 4"
```

The following commands remove the configured contact and location from system respectively

```
default system contact
default system location
```



CHAPTER 5

Global Configuration Mode Commands (T-Z)

Command Modes

This section includes the commands **inclusion-frequency** and **overload-threshold** through **upf-load-control-profile** and **upf-overload-control-profile** profiles.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]UPlane (config)#
```

Note The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

The Global Configuration Mode is used to configure basic system-wide parameters.

- upf-load-control-profile, on page 333
- upf-overload-control-profile, on page 334

upf-load-control-profile

Creates a UPF Load Control Profile and enters UPF Load Control Configuration Mode.

Product

UPF

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering this command sequence results in the following prompt:

```
[local]UPlane (config)#
```

Syntax Description

[no] upf-load-control-profile *profile_name*

no

Removes the specified UPF Load Control Profile.

upf-load-control-profile

Creates a UPF Load Control Profile and enters UPF Load Control Profile Configuration Mode.

profile_name

Must be an alphanumeric string 1–64 characters in length.

Usage Guidelines

Use this command to create a UPF Load Control Profile and enter UPF Load Control Profile Configuration Mode.

Example

The following example creates a UPF Load Control Profile named loadcontrolprof:

```
upf-load-control-profile loadcontrolprof
```

upf-overload-control-profile

Creates a UPF Overload Control Profile and enters UPF Overload Control Configuration Mode.

Product

UPF

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering this command sequence results in the following prompt:

```
[local]UPlane (config)#
```

Syntax Description

[no] upf-overload-control-profile *profile_name*

no

Removes the specified UPF Overload Control Profile.

upf-overload-control-profile

Creates a UPF Overload Control Profile and enters UPF Overload Control Profile Configuration Mode.

profile_name

Must be an alphanumeric string 1–64 characters in length.

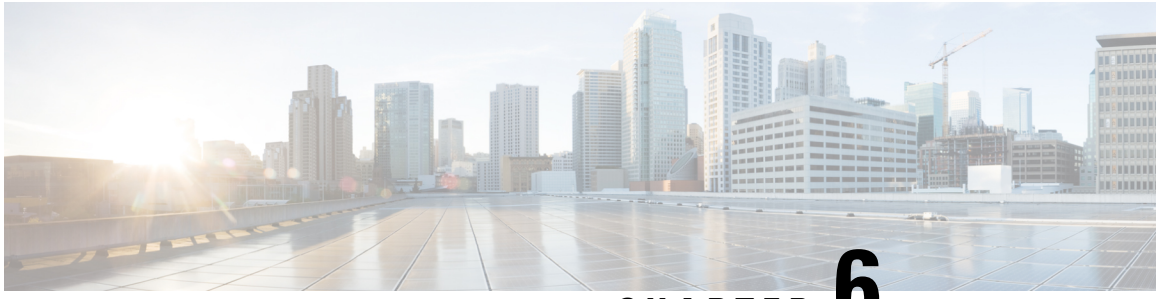
Usage Guidelines

Use this command to create a UPF Overload Control Profile and enter UPF Overload Control Profile Configuration Mode.

Example

The following example creates a UPF Load Control Profile named ovrloadcontrolprof:

```
upf-overload-control-profile ovrloadcontrolprof
```



CHAPTER 6

Global Configuration Mode Commands (T-threshold phspc)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **tacacs mode** through **threshold phspc-sm-entry-denial**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- tacacs mode, on page 340
- task facility acsmgr, on page 340
- task facility imsimgr, on page 341
- task facility ipsecmgr, on page 344
- task facility linkmgr, on page 345
- task facility mmedemux, on page 347
- task facility mmemgr, on page 348
- task facility mmemgr max, on page 349
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- threshold aaa-acct-failure, on page 361
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- threshold aaa-auth-failure, on page 364
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- threshold aaa-retry-rate, on page 366
- threshold aaamgr-request-queue, on page 368
- threshold asngw-auth-failure, on page 369
- threshold asngw-handoff-denial, on page 370
- threshold asngw-max-eap-retry, on page 372
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- threshold asngw-r6-invalid-nai, on page 374
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- threshold cpu-available-memory, on page 391
- threshold cpu-crypto-cores-utilization, on page 393
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- threshold cpu-memory-usage, on page 395
- threshold cpu-orbs-crit, on page 396
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- threshold edr-file-space, on page 415
- threshold edr-udr-dropped flow control, on page 417
- threshold egtpc-s2b-setup-fail-rate, on page 418

- threshold egtpc-s5-setup-fail-rate, on page 419
- threshold epdg-current-sessions, on page 421
- threshold fng-current-active-sessions, on page 422
- threshold fng-current-sessions, on page 423
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- threshold mme-attach-failure, on page 436
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- threshold model, on page 439
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- threshold phspc-session-setup-timeout, on page 480
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- threshold phspc-sm-entry-denial, on page 482
- threshold monitoring cp-monitor-loss, on page 483
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tacacs mode

Enters the TACACS+ (Terminal Access Controller Access Control System+) configuration mode. Use this mode to configure up to three TACACS+ servers for use in authenticating administrative users via the TACACS+ protocol.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

tacacs mode

Usage Guidelines

Enter TACACS Configuration Mode to configure up to three TACACS+ servers for use in authenticating administrative users via the TACACS+ protocol. For additional information, see the *TACACS+ Configuration Mode Commands* chapter.

Example

Use the following command to enter TACACS mode:

tacacs mode

task facility acsmgr

This command configures ACSMgr task settings.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility acsmgr start [ aggressive | normal ]
no task facility acsmgr start
```

no

Disables the configured ACSMgr setting.

aggressive

Specifies to start the maximum possible ACSMgr tasks.

normal

Configures the resource subsystem to start/stop ACSMgr tasks on an as-needed basis.

Usage Guidelines

This command provides option for the resource subsystem to start maximum possible ACSMgr tasks based on the license configured and the available system configuration.

Example

The following command starts the maximum possible ACSMgr tasks:

```
task facility acsmgr start aggressive
```

task facility imsimgr

This command is used to configure the IMSI Manager parameters.

Product

SGSN

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility imsimgr { avoid-sessmgr-broadcast  { cpu_threshold
percentage_value }| max <integer_value> | required-sessmgr  no_sess_mgrs |
sessmgr-sessions-threshold high-watermark <high_value> low-watermark <low_value>
 }
no task facility imsimgr [ avoid-sessmgr-broadcast | required-sessmgr ]
default task facility imsimgr sessmgr-sessions-threshold
```

no

Disables the selected parameter's functionality in the configuration.

default

This prefix is only used with the **sessmgr-sessions-threshold** parameter. By default, the threshold levels are set to the maximum allowed sessions per Session Manager based on the card type. Both high and low watermarks are set to "100"% by default to ensure backward compatibility.

avoid-sessmgr-broadcast

This keyword configures the IMSIMgr to avoid or disable broadcast requests to all SessMgrs when the IMSIMgr finds a particular IMSI is unknown. With this keyword, broadcasting can be disabled 'on the fly' if CPU usage is too high due to a large number of broadcast messages.

By default, broadcasting is enabled.

max *integer_value*

This keyword defines the number of IMSI managers spawned for the system. This keyword is supported only on ASR 5500 and VPC-DI platforms. A maximum of "4" IMSI Managers can be configured for release prior to 21.0.

From release 21.0 onwards the maximum value is increased to "8". The configuration is platform specific, the table below lists the default and maximum number of IMSI Managers that can be configured on each platform:

Platform/VM and card type	Default number of IMSI managers per chassis	Maximum number of IMSI managers per chassis
ASR 5500 DPC	4	4
ASR 5500 DPC2	8	8
SSI MEDIUM/LARGE	1	1
SSI FORGE/SMALL	1	1
VPC-DI or SCALE LARGE/MEDIUM	4	4
ASR 5700	4	4

Important **max** is a boot-time configuration setting. It should be added in the configuration file before any SGSN/MME related configuration is created or any IMSI Manager is started. Run-time (dynamic) configuration of this parameter is stored but not effective until after the next reboot. Any attempt at dynamic configuration of this parameter results in a display of the following error message:

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

New configuration requires system restart to be effective. Please save the configuration and restart.

cpu_threshold *percentage_value*

The keyword "cpu_threshold" specifies the CPU value of the IMSI Manager in percentage. The "percentage_value" is a percentage integer from 50 up to 70%. The default value is 50%.

required-sessmgr

SGSN only.

This keyword configures the required number of Session Manager instances at the IMSI Manager. By default, this parameter is disabled to ensure backward compatibility.

no_sess_mgrs: The number of required Session Managers can be an integer value from "1" through "384".

sessmgr-sessions-threshold

This option is used to configure the threshold high and low watermarks, in terms of percentage, for the sessions per Session Manager. The actual session limits are derived based on the card type.

high-watermark *high_value*: The high-watermark value can be a percentage value from "70" through "100". The default percentage value is "100".

low-watermark *low_value*: The low-watermark value can be a percentage value from "50" through "100". The default percentage value is "100".

Usage Guidelines

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

For the MME:

Typically, the **avoid-sessmgr-broadcast** and **sessmgr-sessions-threshold** keywords are available for configuration but not used.

For the SGSN:

This command configures the number of Session Manager instances required at the IMSI Manager before forwarding any calls from the Gb Manager or Link Manager, as well, it configures the high watermark and low watermark threshold levels per Session Manager.

If the required number of Session Managers are configured through this command, once the Link Manager or Gb Manager comes up, it sends a query to the IMSI Manager to verify if the IMSI Manager has learnt the configured number of Session Manager instances. IMSI Manager readiness status is determined based on the number of Session Manager instances present in the list maintained. Once the IMSI Manager has completed

learning about all the required number Session Manager instances, it informs the Link Manager and Gb Manager. Runtime enabling and modification of Session Manager instance is disabled except disabling this configuration. Disabling of this configuration does not affect the call forwarding to the IMSI Manager as the default behavior is to always forward the calls to the IMSI Manager. This configuration is used to avoid the session imbalance across Session Manager instances due to call forwarding to the same Session Manager instance during or after re-load, if the IMSI Manager has learnt only few Session Manager instances. By default, this feature is disabled and Gb Manager or Link Manager start forwarding calls immediately during or after re-load to the IMSI Manager which in turn forwards the request to the available Session Manager instances. It is recommended to have this configuration before re-load. This option is available only under a SGSN license.

The high and low watermark limits allow the IMSI Manager to decide and select the Session Manager for processing new calls and eliminate the chances of it receiving a "call reject" in instances where the Session Manager has reached its maximum allowed session limits and the IMSI Manager is not aware of the same. The IMSI Manager converts the high and low watermark percentage to the maximum session allowed for the configured percentage based on the card type. It uses the calculated session values for both high and low watermark to decide and select the Session Manager for processing new calls. Once the Session Manager active session count reaches the calculated high watermark sessions the IMSI Manager stops forwarding the new calls to the Session Manager until the active session count becomes less than the calculated low watermark value. This option is available only under SGSN and MME licenses.

Example

Use the following command to configure the required session manager count to be learnt by IMSI Manager for processing new calls to "28":

```
task facility imsimgr required-sessmgr 28
```

Use the following command to configure the threshold for the sessions per Session Manager:

```
task facility imsimgr avoid-sessmgr-broadcast95 low-watermark 85
```

The following command is used to disable all IMSI Manager Broadcasts:

```
task facility imsimgr avoid-sessmgr-broadcast
```

The following command is used to disable broadcast after the IMSI Manager CPU reaches 60%:

```
task facility imsimgr avoid-sessmgr-broadcast cpu_threshold 60
```

The following command enables broadcasting by default but once the CPU reaches a threshold of 50% the broadcast is disabled:

```
no task facility imsimgr avoid-sessmgr-broadcast
```

task facility ipsecmgr

Configures IPSec manager settings.

Product	All
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility ipsecmgr { ikev1 { task-count { increased | normal } } |
task-count { increased | normal } }
```

ikev1 { task-count { increased | normal } }

Default: **normal**

Adjusts the IPSec manager task count to support EHA for IKEv1. See **task-count** below.

task-count { increased | normal }

Default: **normal**

Adjusts the IPSec manager task count to support EHA.

increased: Starts additional IPSec manager tasks operating on the packet processing cards. In increased mode, they run on all but demux packet processing cards. Also, all the IPSec managers start at the same time when an active non-demux card is detected and IPSec is configured.

normal: Uses the standard algorithm for allocating memory for IPSec manager tasks. In normal mode, IPSec managers do not run on session packet processing cards.

Caution If **task-count** is set to **normal** and session recovery is enabled, IPSec manager tasks are not allowed to start on most packet processing cards. Because the resources are not reserved, IPSec managers in normal mode only run on demux packet processing cards.

Usage Guidelines

Sets IPSec manager parameters for all IPSec managers in the system.

Example

Use the following command to set the IPSec manager task count to **increased** mode:

```
task facility ipsecmgr task-count increased
```

task facility linkmgr

This command controls the maximum number of Link Managers that can be configured for an SGSN.

Product

SGSN

Privilege

Security Administrator, Administrator.

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

task facility linkmgr max*max_linkmgrs*
default task facility linkmgr max

default

Resets the value to 4.

max *max_linkmgrs*

Sets the maximum number of LinkMgrs configurable for the SGSN.

max_linkmgrs is an integer from 1 to 4. With Release 15.0, the range is from 1 to 12.

Note It is recommended to restrict the number of Link Managers for PSC2 to a maximum of "4" due to memory constraints. Similarly the number of Link Managers for PSC3 can be limited to "4" when the minimal hardware configuration of "4" PSC cards is used. If the Link Managers are overloaded, then the number of Link Managers can be increased based on the number of cards available and associated ASP links needs to be updated.

Usage Guidelines

By default, 4 LinkMgrs will be started in the system when an SGSN service configuration is present. Use this command to change the maximum number of LinkMgrs to be started in the system.

Important If a change to the default is needed, this command must be used before configuring any SGSN service-related configuration, including SS7 Routing Domain and SCCP Network configurations.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

The number of LinkMgrs configurable impacts the following SS7 routing domain components:

- The number of Application Server Process (ASP) instances that can be configured (maximum of 12).
- The number of peer-servers that can be configured across all SS7RDs (maximum of 512).
- The number of peer-servers that can be configured per SS7RD (maximum of 256).
- The number of Peer-Server Process (PSP) instances that can be configured per SS7 Peer (maximum of 12).

Important This command cannot be set dynamically. If the LinkMgr count is modified dynamically, the system must be rebooted for the change to take effect.

Example

Change the maximum number of LinkMgrs that can be configured for an SGSN from 4 to 8:**task facility linkmgr max** *8*

task facility mmedemux

Configures wait-time and percentage parameters related to the MMEDEMUX. The MMEDEMUX distributes the incoming traffic to the associated MMEMGRs based on the percentage value and wait-time configured in this command. The command has an option to configure a rate limit for incoming S1 SCTP connections in MME per chassis.

Product

MME.

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility mmedemux { mmemgr-startup-percentage  percent_value [
mmemgr-startup-wait-time wait_time ] | s1-sctp rate-limit value }
default task facility mmedemux mmemgr-startup-percentage
mmemgr-startup-wait-time
no task facility mmedemux { mmemgr-startup-percentage
mmemgr-startup-wait-time | s1-sctp rate-limit}
```

[default | no]

Either of these command filters disables the operator defined configuration and replaces the configuration with default values.

mmemgr-startup-percentage *percent_value*

The percentage parameter allows the operator to configure the percentage of MMEMGRs to be associated with the MMEDEMUX.

percent_value must be an integer from 1 to 100. Default is 90%.

mmemgr-startup-wait-time *wait_time*

This parameter enables the operator to configure the time (in seconds) that the MMEDEMUX waits for MMEMGRs to start before processing incoming traffic.

wait_time must be an integer from 300 to 3600. Default is 600 (10 minutes).

s1-sctp rate-limit *value*

The keyword **s1-sctp** identifies the MME SCTP interface type.The keyword **rate-limit** is used to configure the rate limit for incoming S1 SCTP connections from eNodeB. The value of the rate limit that can be configured is an integer from 1 up to 65535. Once the rate of incoming S1 SCTP connections exceed the configured value, the SCTP cookie echo packets are dropped by the MME. The SCTP connection with eNodeB is eventually be established after retries/retransmission by the eNodeB. The statistics of the dropped S1 SCTP packets are collected and displayed as part of MME Demux subsystem statistics. By default rate limiting is not imposed on incoming SCTP connections at the MME. Configuring the rate limit is an optional configuration, to prevent overload of MME from surge/burst of S1 SCTP connections from eNodeBs.

Usage Guidelines

This command gives operators some control over the MMEDEMUX system. It allows operators to configure the percentage of MMEMGRs to be associated with the MMEDEMUX. It also assigns the waiting time before processing the incoming traffic. Incoming traffic is distributed to the MMEMGRs based on a combination of the configured values of the two parameters.

By default, the MME waits for ten minutes to check if 90% of the MMEMGRs have started.

Example

The following configures the MMEDEMUX to distribute incoming traffic after a minimum of 5 minutes after the MME starts and as soon as 75% of the MMEMGRs are up and running:

```
task facility mmedemux mmemgr-startup-percentage  75
mmemgr-startup-wait-time 5
```

The following CLI configures rate-limit of 100 S1 SCTP connections per second for a chassis:

```
task facility mmedemux s1-sctp rate-limit 100
```

task facility mmemgr

This command scales up or down the number of MMEMgrs per PSC3/DPC/SF-VM.

Product

Important This command is deprecated from release 19.2 onwards. It was introduced in release 18.0 and is valid until release 19.0. When an operator using this configuration command upgrades to release 19.2, this CLI is mapped to a new CLI command task facility mmemgr per-sesscard-count count.

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility mmemgr per-sesscard-density { high | normal }
default task facility mmemgr per-sesscard-density
```

default

Resets the task facility mmegr to normal density per session card/VM.

per-sesscard-density { high | normal }

Important This is a boot-time configuration and should be added in the configuration file before any MME service releated configuration is created or any MME Manager is started. Run-time (dynamic) configuration should be saved and will take effect only after reboot.

This keyword sets the maximum number (density) of MMEmgrs per session card. The two options are:

- **high** for High Density, which allows for eNB scaling and provides for a lower number of session cards. Currently, a maximum of 2 MMEMgrs per active session card.
- **normal** for Normal Density, the default model, which supports a max of 1 MMEMgr per active session card.

This CLI command is deprecated as it does not allow the operator to configure the required number of MME managers per session card. This command only allows two predefined modes of either "high" or "normal" density.

New commands are introduced to provide more flexibility to the operator to configure required number of MME managers per session card and to configure the desired number of MME managers per chassis.

Usage Guidelines

It is expected that this command will develop further to take advantage of higher capacity (e.g., ASR 5500) and next generation (e.g., VPC-DI) platforms.

Example

Use a command similar to the following to set a maximum of 2 MMEMgrs :

```
task facility mmemgr per-sesscard-density high
```

task facility mmemgr max

This command is used to configure the desired number of MME managers per chassis.

Product

SGSN

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility mmemgr max value
default task facility mmemgr max
```

default

This keyword resets the number of MME managers per chassis to the default values.

The default values are listed below:

Platform/VM and card type	Default number of MME managers per chassis
ASR 5500 DPC	24
ASR 5500 DPC2	48 For release prior to 21.0: 36
SSI MEDIUM/LARGE	1
SSI FORGE/SMALL	1
VPC-DI or SCALE LARGE/MEDIUM ASR 5700	24 24

max *value*

This keyword is used to set the maximum number of MME managers per chassis. *value* is an integer ranging from 1 to 36 for releases up to 21.0.

From release 21.0 onwards, *value* is an integer ranging from 1 to 48.

From release 21.9 onwards, *value* is an integer ranging from 1 to 64. It is recommended to configure a maximum of 48 MME managers per chassis for VPC-DI/UGP platforms.

The maximum number of MME managers allowed per chassis based on the platform/VM and card type is listed below:

Platform/VM and card type	Maximum number of MME managers per chassis
ASR 5500 DPC	24
ASR 5500 DPC2	48 For releases prior to 21.0: 36
SSI MEDIUM/LARGE	2
SSI FORGE/SMALL	1
SCALE LARGE/MEDIUM ASR 5700	48 For releases prior to 20.0: 24 24

Platform/VM and card type	Maximum number of MME managers per chassis
VPC-DI/USP	48

Usage Guidelines

This configuration change will be effective only after a chassis reload. The operator must save the configuration changes prior to a reload. The system issues appropriate warnings to the operator to indicate that configuration changes must be saved and the changes will be effective only after a chassis reload.

The maximum number of MME managers that can be configured per chassis varies based on the platform. However, the upper limit of MME managers per chassis is set to 36 for releases up to 21.0. From release 21.0 onwards, the maximum value supported is 48.

For VPC-DI/USP platforms, the maximum number of MME managers supported per chassis is 48.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command configures 5 MME managers per chassis on an ASR 5500 platform with DPC2 card:

```
task facility mmemgr max 5
```

The following command configures default number of MME managers per chassis on an ASR 5500 platform with DPC card:

```
default task facility mmemgr max
```

task facility mmemgr per-sesscard-count

This command is used to configure the desired number of MME managers per session card.

Product

SGSN

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task facility mmemgr per-sesscard-count count
default task facility mmemgr per-sesscard-count
```

default

This keyword resets the number of MME managers per session card to the default number of MME managers per session card/VM. By default this CLI is not configured. When this CLI is not configured, the default number of MME managers per session card will be selected based on platform and card type. The default values are listed below:

Platform/VM and card type	Default number of MME managers per session card
ASR 5500 DPC	4
ASR 5500 DPC2	8 For releases prior to 21.0: 6
SSI MEDIUM/LARGE	2
SSI FORGE/SMALL	1
SCALE LARGE/MEDIUM ASR 5700	1 1

per-sesscard-count *count*

This keyword is used to configure the desired number of MME managers to be started on each session card. *count* must be an integer from 1 to 6 for releases up to 21.0. From release 21.0, this value has been increased from to 1 to 8.

For VPC-DI/UGP platforms, it is recommended to configure a maximum of 4 MME managers per session card.

The maximum number of MME managers allowed per session card based on the platform/VM and card type is listed below:

Platform/VM and card type	Maximum number of MME managers per session card
ASR 5500 DPC	6
ASR 5500 DPC2	8 For releases prior to 21.0: 6
SSI MEDIUM/LARGE	2
SSI FORGE/SMALL	1
SCALE LARGE/MEDIUM ASR 5700 VPC-DI/USP	2 1 4 For releases prior to 21.9: 2

Usage Guidelines

The maximum number of MME managers that can be configured per session card varies based on the platform/VM and card type. However, the upper limit of MME managers that can be configured per session card is set to 6 for releases up to 21.0. From release 21.0, this value has been increased to 8.

This configuration change will be effective only after a chassis reload. The operator must save the configuration changes prior to a reload. The system issues appropriate warnings to the operator to indicate that configuration changes must be saved and the changes will be effective only after a chassis reload. This command is not specific to any platform or card type. It is applicable and available to all platforms and card types.

Important After you configure this command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Example

The following command configures 3 MME managers per session card on an ASR 5500 platform with DPC2 card:

```
task facility mmemgr per-sesscard-count 3
```

The following command configures default number of MME managers per session card on an ASR 5500 platform with DPC card:

```
default task facility mmemgr per-sesscard-count
```

task facility sessmgr

Configures system information which is accessible via SNMP.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
task { facility sessmgr start { aggressive | normal }
```

facility sessmgr start { aggressive | normal }

Default: Normal

Specifies the facility options for the session manager.

aggressive: specifies the maximum number of session manager processes are started immediately.

Caution The **task facility sessmgr start aggressive** command should only be used if the system will reach capacity (for the existing configuration) during the first few minutes of service.

Caution This command must only be executed last during configuration (or appended to the end of the configuration file) to ensure the availability of memory resources to contexts and services.

normal: indicates the session manager processes are started as needed.

Usage Guidelines

Set the session manager start policy to aggressive on heavily utilized systems to avoid undue delays in processing subscriber sessions.

Example

```
task facility sessmgr start aggressive
task facility sessmgr start normal
```

task resource cpu-memory-low

Configures the system action for SNMP trap generation and logging whenever CPU memory.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
task resource cpu-memory-low { kill | warn } }
```

{ kill | warn }

Default: kill

Sets the action for the Resource Manager to take when the amount of free memory on a CPU falls below 12MB. An SNMP TRAP and CORBA notification are generated and the event is logged.

Once the free memory threshold is crossed, The Resource Manager examines all tasks on that cpu and finds the most over limit task and kills it. If there are no over limit tasks nothing happens. Resource Manager takes preference on killing a non-sessmgr task over a sessmgr task.

kill: The task most over memory limit (if any) is killed and recovered.

warn: The event is logged and no tasks are killed.

Usage Guidelines

Set the CPU memory low action to only log CPU low memory events.

Example

```
task resource cpu-memory-low warn
```

tech-support test-commands password

Configures the password that protects access to the **cli test-commands** mode in the Exec mode and Global Configuration mode. This command is only visible to a user logged in as a Security Administrator.

Product

All

Privilege

Security Administrator

Caution The cli test-commands are for use by or under the supervision of Cisco TAC.

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

tech-support test-commands [encrypted] password *new_password* **[old-password** *old_password* **]**
no tech-support test-commands password [old-password *old_password* **]**

no

Disables the use of a test-commands password. All subsequent attempts to execute **cli test-commands** in Exec or Global Configuration modes will fail.

Default: no password, access disabled

[encrypted]

If this optional keyword is specified, the *new_password* is interpreted as an encrypted string containing the password value. If the encrypted keyword is not specified, then *new_password* is interpreted as the actual plain text value. In the output of **show configuration** and **save configuration** commands, only the encrypted option of this command syntax appears.

new_password

Specifies the password to be used when executing the **cli test-commands** command in Exec or Global Configuration modes. For a plain text password, *new_password* is an alphanumeric string of 1 through 64 characters. For an encrypted password, *new_password* is an alphanumeric string of 1 through 524 characters.

If a password is not entered via this command, the **cli test-commands** command remains disabled in the Exec and Global Configuration modes.

Default: no password, access disabled

Important An SNMP trap is generated when an administrator enters or edits a password via this command (starTechSupportPasswordChanged). Refer to the *SNMP MIB Reference* for additional information.

old-password *old_password*

If the *new_password* replaces an existing password, you must enter the old password for the change to be accepted.

Entering **old-password** *old_password* allows you to replace the existing password without being prompted to enter the old password. If you incorrectly enter the old password or do not enter the old password, an error message appears: "Failure: Must enter matching old tech-support password to replace existing password".

Usage Guidelines

Sets the password required to execute the **cli test-commands** command in the Exec and Global Configuration mode.

The **show configuration** and **save configuration** commands will never output this value in plain text.

new_password is the password you wish to configure. It has either never been previously set or is different from a previously configured password. It is an alphanumeric string of 1 to 64 characters.

If the new password replaces an existing password, you must enter the old password for the change to be accepted.

If the old password is not entered or does not match the existing configured value, the following error message appears: "tech-support password is already configured". A prompt then appears to accept entry of the old password: "Enter old tech-support password:".

If **tech-support test-commands password** *new_password* **old-password** *old_password* is included in a script, the password will be changed as long as *old_password* is valid.

Important Access to the **cli test-commands** command also requires that an administrator enables the Global Configuration mode **cli hidden** command.

Example

The following command sets the password for **cli test-commands** to *testCommander*.

```
tech-support test-commands password testCommander
```

template-session-trace

This command configures a template used for Session Tracing and Cell Traffic Tracing.

Product

GGSN

HNBGW

MME

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

template-session-trace network-element { ggsn | hnbgw | mme | pgw | saegw | sgw } template-name *template_name*

template_name

Specifies the name of the template used for tracing as an alphanumeric string of 1 through 64 characters.

Usage Guidelines

Operators have the option of creating a template using the **template-session-trace** command for Session Tracing and Cell Traffic Tracing in the configuration mode for the MME.

Session traces executed in the Exec mode will use this template. Once created, the template can be associated with different subscribers to trace the interfaces configured in the template.

Example

The following configuration shows a template configuration for the Home NodeB network element:

```
template-session-trace network-element hnbgw template-name cell-trace
```

threshold 10sec-cpu-utilization

Configures alarm or alert thresholds that measure a 10-second average of CPU utilization. Its polling interval can be set down to 30 seconds.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold 10sec-cpu-utilization *percent* **[clear** *percent* **]**

percent

Default: 0

Configures Specifies the high threshold for 10-second average cpu-utilization. If the monitored CPU utilization is greater than or equal to the specified percentage an alert is sent. Regardless of the length of the polling interval, only one sample at the end of the polling interval is tested.

clear *percent*

Default: 0:

This is a low watermark value that sets the alarm clearing threshold value. If not specified it is taken from the first value.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set a threshold that sends an alert when CPU utilization over a 10-second average exceeds the limit set.

Alerts or alarms are triggered for 10-second sample of CPU utilization based on the following rules:

- **Enter condition:** 10-second average percentage of CPU utilization is greater than or equal to the high threshold.
- **Clear condition:** 10-second average percentage of CPU utilization is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command generates an alert when the 10-second average CPU utilization reaches *45* percent:

```
threshold 10sec-cpu-utilization 45
```

threshold aaa-acct-archive-queue-size

Configures AAA accounting archive, alarm or alert thresholds based on the maximum values of session manager and ACS manager archive queue size.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaa-acct-archive-queue-size1 percent [ clear percent ]
default threshold aaa-acct-archive-queue-size1 percent [ clear percent ]
threshold aaa-acct-archive-queue-size2 percent [ clear percent ]
default threshold aaa-acct-archive-queue-size2 percent [ clear percent ]
threshold aaa-acct-archive-queue-size3 percent [ clear percent ]
default threshold aaa-acct-archive-queue-size3 percent [ clear percent ]
```

percent

Configures Specifies the high threshold for monitoring the accounting message archive queue length. If the queue length is greater than or equal to the specified percentage an alarm is sent.

Default value for **aaa-acct-archive-queue-size1**: 25%

Default value for **aaa-acct-archive-queue-size2**: 50%

Default value for **aaa-acct-archive-queue-size3**: 90%

clear *percent*

This is a low watermark value that sets the alarm clearing threshold value. If not specified it is taken from the first value.

Default value for **aaa-acct-archive-queue-size1**: 25%

Default value for **aaa-acct-archive-queue-size2**: 50%

Default value for **aaa-acct-archive-queue-size3**: 90%

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the system cannot communicate with configured AAA accounting servers (RADIUS or CGFs), either due to the server being busy or loss of network connectivity, the system buffers, or archives, the accounting messages.

Accounting message archive queue size thresholds generate alerts or alarms based on the queue length of AAA accounting messages buffered in the archive during the specified polling interval. Accounting requests are counted for all AAA accounting servers that the system is configured to communicate with.

Alerts or alarms are triggered for accounting message archive queue size thresholds based on the following rules:

- **Enter condition:** Actual number of archived messages is greater than or equal to the high threshold.
- **Clear condition:** Actual number of archived messages less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command generates an alarm when *70*% of the AAA accounting message archive buffer is filled, and clears the alarm when the buffer size is reduced to *30*%:

```
threshold aaa-acct-archive-queue-size1 70 clear 30
```

threshold aaa-acct-archive-size

Configures accounting message archive size, alarm or alert thresholds.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaa-acct-archive-size high_thresh [ clear low_thresh ]
default threshold aaa-acct-archive-size
```

high_thresh

Default: 1

Specifies the high threshold number of archived accounting messages that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 1044000.

clear *low_thresh*

Default: 1

Specifies the low threshold number of archived accounting messages that maintains a previously generated alarm condition. If the number of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 1044000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the system cannot communicate with configured AAA accounting servers (RADIUS or CGFs), either due to the server being busy or loss of network connectivity, the system buffers, or archives, the accounting messages.

Accounting message archive size thresholds generate alerts or alarms based on the number of AAA accounting messages buffered in the archive during the specified polling interval. Accounting requests are counted for all AAA accounting servers that the system is configured to communicate with.

Alerts or alarms are triggered for accounting failures based on the following rules:

- **Enter condition:** Actual number of archived messages that is greater than or equal to the high threshold.
- **Clear condition:** Actual number of archived messages that is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *250* AAA accounting archived messages and low threshold of *100* for a system using the Alarm thresholding model:

```
threshold aaa-acct-archive-size 250 clear 100
```

threshold aaa-acct-failure

Configures accounting failure, alarm or alert thresholds for the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold aaa-acct-failure *high_thresh* **[clear** *low_thresh* **]**
default threshold aaa-acct-failure

high_thresh

Default: 0

Specifies the high threshold number of accounting failures that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of accounting failures that maintains a previously generated alarm condition. If the number of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Accounting failure thresholds generate alerts or alarms based on the number of failed AAA accounting message requests that occur during the specified polling interval. Accounting requests are counted for all AAA accounting servers that the system is configured to communicate with.

Alerts or alarms are triggered for accounting failures based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* AAA accounting failures and low threshold of *25* for a system using the Alarm thresholding model:

```
threshold aaa-acct-failure 100 clear 25
```

threshold aaa-acct-failure-rate

Configures accounting failure rate, alarm or alert thresholds for the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold aaa-acct-failure-rate` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold aaa-acct-failure-rate`

high_thresh

Default: 1

Specifies the high threshold percent of accounting failures that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 and 100.

clear *low_thresh*

Default: 1

Specifies the low threshold percent of accounting failures that maintains a previously generated alarm condition. If the percentage of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Accounting failure rate thresholds generate alerts or alarms based on the percentage of AAA accounting message requests that failed during the specified polling interval. Accounting requests are counted for all AAA accounting servers that the system is configured to communicate with.

Alerts or alarms are triggered for accounting failure rates based on the following rules:

- **Enter condition:** Actual failure percentage is greater than or equal to the high threshold.
- **Clear condition:** Actual failure percentage is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a AAA accounting failure rate high threshold percentage of *30* and a low threshold percentage of *10* for a system using the Alarm thresholding model:

```
threshold aaa-acct-failure-rate 30 clear 10
```

threshold aaa-auth-failure

Configures authentication failure, alarm or alert thresholds for the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaa-auth-failure high_thresh [ clear low_thresh ]
default threshold aaa-auth-failure
```

high_thresh

Default: 0

Specifies the high threshold number of authentication failures that must be met or exceeded within the polling interval to generate an alert or alarm.*high_thresh* is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of authentication failures that maintains a previously generated alarm condition. If the number of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Authentication failure thresholds generate alerts or alarms based on the number of failed AAA authentication message requests that occur during the specified polling interval. Authentication requests are counted for all AAA authentication servers that the system is configured to communicate with.

Alerts or alarms are triggered for authentication failures based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* AAA authentication failures for a system using the Alert thresholding model:

```
threshold aaa-auth-failure 100
```

threshold aaa-auth-failure-rate

Configures authentication failure rate, alarm or alert thresholds for the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaa-auth-failure-rate high_thresh [ clear low_thresh ]
default threshold aaa-auth-failure-rate
```

high_thresh

Default: 5

Specifies the high threshold percent of authentication failures that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100.

clear

Allows the configuration of Specifies the low threshold.

low_thresh

Default: 5

Specifies the low threshold percent of authentication failures that maintains a previously generated alarm condition. If the percentage of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Authentication failure rate thresholds generate alerts or alarms based on the percentage of AAA authentication message requests that failed during the specified polling interval. Authentication requests are counted for all AAA authentication servers that the system is configured to communicate with.

Alerts or alarms are triggered for authentication failures based on the following rules:

- **Enter condition:** Actual failure percentage is greater than or equal to the high threshold.
- **Clear condition:** Actual failure percentage is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a AAA authentication failure rate high threshold percentage of *30* for a system using the Alert thresholding model:

```
threshold aaa-auth-failure-rate 30
```

threshold aaa-retry-rate

Configures AAA retry rate, alarm or alert thresholds for the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaa-retry-rate high_thresh [ clear low_thresh ]
default threshold aaa-retry-rate
```

high_thresh

Default: 5

Specifies the high threshold percent of AAA request message retries that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100.

clear *low_thresh*

Default: 5

Specifies the low threshold percent of AAA request message retries that maintains a previously generated alarm condition. If the percentage of retries falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

AAA request message retry rate thresholds generate alerts or alarms based on the percentage of request messages (both authentication and accounting) that were retried during the specified polling interval. The percentage is based on a message count taken for all AAA authentication and accounting servers that the system is configured to communicate with.

Alerts or alarms are triggered for request message retries based on the following rules:

- **Enter condition:** Actual retry percentage is greater than or equal to the high threshold.
- **Clear condition:** Actual retry percentage is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a AAA message retry rate high threshold percentage of *25* and a low threshold percentage of *10* for a system using the Alarm thresholding model:

```
threshold aaa-retry-rate 25 clear 10
```

threshold aaamgr-request-queue

Configures the AAA Manager internal request queue, alarm or alert thresholds.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold aaamgr-request-queue high_thresh [ clear low_thresh ]
default threshold aaamgr-request-queue
```

high_thresh

Default: 0

Specifies the high threshold number of AAA Manager Requests that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 1 through 100.

clear

Allows the configuration of Specifies the low threshold.

low_thresh

Default: 5

Specifies the low threshold number of AAA Manager Requests that maintains a previously generated alarm condition. If the percentage of failures falls beneath the low threshold within the polling interval, a clear alarm is generated. *low_thresh* is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

AAA Manager Request thresholds generate alerts or alarms based on the number of AAA Manager Requests for an AAA manager process during the specified polling interval.

Alerts or alarms are triggered for AAA Manager Requests based on the following rules:

- **Enter condition:** Actual number of AAA Manager Requests per AAA manager is greater than or equal to the high threshold.
- **Clear condition:** Actual number of AAA Manager Requests per AAA manager process is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm is not generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a AAA authentication failure rate high threshold percentage of *30* for a system using the Alert thresholding model:

```
threshold aaamgr-request-queue 30
```

threshold asngw-auth-failure

Configures authentication failure, alarm or alert thresholds for the ASN-GW system.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asngw-auth-failure high_thresh [ clear low_thresh ]
default threshold asngw-auth-failure
```

high_thresh

Default: 0

Specifies the high threshold number of authentication failures that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of authentication failures that maintains a previously generated alarm condition. If the number of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to configure threshold limits to generate alerts or alarms based on the number of failed ASN-GW authentication message requests that occur during the specified polling interval. Authentication requests are counted for all ASN Gateway authentication servers with which that the system is configured to communicate.

Alerts or alarms are triggered for authentication failures based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* authentication failures for an ASN-GW using the Alert thresholding model:

```
threshold asngw-auth-failure 100
```

threshold asngw-handoff-denial

Configures alarm or alert thresholds for hand-off denials within the ASN-GW service.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asngw-handoff-denial high_thresh [ clear low_thresh ]
default threshold asngw-handoff-denial
```

high_thresh

Default: 0

Specifies the high threshold number of hand-off denials that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of hand-off denials that maintains a previously generated alarm condition. If the number of hand-off denials falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of denied hand-off that occurred during the specified polling interval. Hand-off denial messages are counted for all ASN Gateways that the system is configured to communicate with.

Alerts or alarms are triggered for hand-off denials based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* hand-off denials using the Alert thresholding model:

```
threshold asngw-handoff-denial 100
```

threshold asngw-max-eap-retry

Configures alarm or alert thresholds for maximum retries for Extensible Authentication Protocol (EAP) authentication within an ASN-GW service.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold asngw-max-eap-retry` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold asngw-max-eap-retry`

high_thresh

Default: 0

Specifies the high threshold number of retries for EAP authentication that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of retries for EAP authentication that maintains a previously generated alarm condition. If the number of retries falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of retries for EAP authentication that occur during the specified polling interval.

Alerts or alarms are triggered for maximum number of retries for EAP authentication based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* alerts or alarms generated on maximum number of retries for EAP authentication for an ASN Gateway using the Alert thresholding model:

```
threshold asngw-max-eap-retry 100
```

threshold asngw-network-entry-denial

Configures alarm or alert thresholds for denials of network entry to an MS within the ASN-GW service.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asngw-network-entry-denial high_thresh [ clear low_thresh ]
default threshold asngw-network-entry-denial
```

high_thresh

Default: 0

Specifies the high threshold number of denial of network entry to an MS that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of denial of network entry to an MS that maintains a previously generated alarm condition. If the number of denials falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of network entry denials that occurred during the specified polling interval. Network denial messages are counted for an MS with which the system is configured to communicate.

Alerts or alarms are triggered for network entry denials based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* network entry denials for an MS using the Alert thresholding model:

```
threshold asngw-network-entry-denial 100
```

threshold asngw-r6-invalid-nai

Configures alarm or alert thresholds for invalid Network Access Identifier (NAI) ocurrences in R6 messages.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asngw-r6-invalid-nai high_thresh [ clear low_thresh ]
default threshold asngw-r6-invalid-nai
```

high_thresh

Default: 0

Specifies the high threshold number of invalid NAIs in R6 messages that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of invalid NAIs in R6 messages that maintains a previously generated alarm condition. If the number of denials falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of invalid NAIs in R6 messages that occurred during the specified polling interval. Invalid NAIs are counted for an MS that the system is configured to communicate with or per system for all R6 messages.

Alerts or alarms are triggered for invalid NAIs based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* invalid NAIs in R6 messages using the Alert thresholding model:

```
threshold asngw-r6-invalid-nai 100
```

threshold asngw-session-setup-timeout

Configures alarm or alert thresholds for session setup timeouts in an ASN-GW service.

Product ASN-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asngw-session-setup-timeout high_thresh [ clear low_thresh ]
default threshold asngw-session-setup-timeout
```

high_thresh

Default: 0

Specifies the high threshold number of timeouts during session setup that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of timeouts during session setup that maintains a previously generated alarm condition. If the number of denials falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of timeouts during session setup that occurred during the specified polling interval.

Alerts or alarms are triggered for session setup timeouts based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* timeouts during session setup using the Alert thresholding model:

```
threshold asngw-session-setup-timeout 100
```

threshold asngw-session-timeout

Configures alarm or alert thresholds for session timeouts in an ASN-GW service.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold asngw-session-timeout *high_thresh* **[clear** *low_thresh* **]**
default threshold asngw-session-timeout

high_thresh

Default: 0

Specifies the high threshold number of timeouts during session that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of timeouts during session that maintains a previously generated alarm condition. If the number of session timeouts falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set threshold limits to generate alerts or alarms based on the number of timeouts during a session that occurred during the specified polling interval.

Alerts or alarms are triggered for session timeouts based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* timeouts during a session using the Alert thresholding model:

```
threshold asngw-session-timeout 100
```

threshold asnpc-idle-mode-timeout

Configures alarm or alert thresholds for ASNPC Instant Messenger idle mode timeouts.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold asnpc-idle-mode-timeout *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of ASNPC idle mode timeouts that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of ASNPC idle mode timeouts during session that maintains a previously generated alarm condition. If the number of session timeouts falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the maximum number of idle mode timeouts allowed in the ASNPC service.

Alerts or alarms are triggered for session timeouts based on the following rules:

- **Enter condition:** Actual number of timeouts is greater than or equal to the high threshold.

- **Clear condition:** Actual number of timeouts is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures the high threshold for ASNPC idle mode timeouts at *10000*:

```
threshold asnpc-idle-mode-timeout 10000
```

threshold asnpc-im-entry-denial

Configures the ASNPC Instant Messenger (IM) entry denial, alarm or alert thresholds.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold asnpc-im-entry-denial *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of IM entry denials during session that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of IM entry denials during session that maintains a previously generated alarm condition. If the number of session timeouts falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the maximum number of IM session denials allowed in the ASNPC service.

Alerts or alarms are triggered for session timeouts based on the following rules:

- **Enter condition:** Actual number of failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures the high threshold for IM session counts at *10000*:

```
threshold asnpc-im-entry-denial 10000
```

threshold asnpc-lu-denial

Configures the alarm or alert thresholds for Location Update (LU) denials.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asnpc-lu-denial high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of LU denials during session that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of LU denials during session that maintains a previously generated alarm condition. If the number of session timeouts falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 10000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines Set the maximum number of Location Update denials allowed in the ASNPC service.

Example

The following command configures high threshold of *10000* LU denials:

```
threshold asnpc-lu-denial 10000
```

threshold asnpc-session-setup-timeout

Configures alarm or alert thresholds for ASNPC session setup timeouts in an ASN-GW service.

Product ASN-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold asnpc-session-setup-timeout value
default threshold asnpc-session-setup-timeout
```

value

value is an integer from 1 through 1000000.

Usage Guidelines Use this command to set threshold limits to generate alerts or alarms based on the number of timeouts during session setup that occurred during the specified polling interval.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* timeouts during session setup using the Alert thresholding model:

```
threshold asnpc-session-setup-timeout 100
```

threshold call-reject-no-resource

Configures alarm or alert thresholds on the system for calls rejected due to insufficient resources.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold call-reject-no-resource *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of no-resource call rejects issued by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

The number is an integer from 0 through 100000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of no-resource call rejects issued by the system that maintains a previously generated alarm condition. If the number of rejections falls beneath the low threshold within the polling interval, a clear alarm will be generated.

The number is an integer from 0 through 100000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

No resource call reject thresholds generate alerts or alarms based on the total number of calls that were rejected by the system due to insufficient or no resources (memory and/or session licenses) during the specified polling interval.

Alerts or alarms are triggered for no-resource-rejected calls based on the following rules:

- **Enter condition:** Actual number of calls rejected due to no resources is greater than or equal to the high threshold.
- **Clear condition:** Actual number of calls rejected due to no resources is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count for the number of calls rejected by the system due to insufficient or no resources to *100* and allow threshold of *40* for a system using the Alarm thresholding model:

```
threshold call-reject-no-resource 100 clear 40
```

threshold call-setup

Configures call setup, alarm or alert thresholds for the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold call-setup *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of calls setup by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of calls setup by the system that maintains a previously generated alarm condition. If the number of setups falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Call setup thresholds generate alerts or alarms based on the total number of calls setup by the system during the specified polling interval.

Alerts or alarms are triggered for call setups based on the following rules:

- **Enter condition:** Actual number of call setups is greater than or equal to the high threshold.
- **Clear condition:** Actual number of call setups is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* calls setup for a system using the Alert thresholding model:

```
threshold call-setup 100
```

threshold call-setup-failure

Configures call setup failure, alarm or alert thresholds for the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold call-setup-failure high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of call setup failures experienced by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of call setup failures experienced by the system that maintains a previously generated alarm condition. If the number of setup failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Call setup failure thresholds generate alerts or alarms based on the total number of call setup failures experienced by the system during the specified polling interval.

Alerts or alarms are triggered for call setup failures based on the following rules:

- **Enter condition:** Actual number of call setup failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of call setup failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *100* call setup failures and a low threshold of *80* for a system using the Alarm thresholding model:

```
threshold call-setup-failure 100 clear 80
```

threshold card-temperature-near-power-off-limit

Configures alarm or alert thresholds for triggering and clearing high card temperature alarms.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold card-temperature-near-power-off-limit*high_temp* **[clear** *low_temp* **]**

high_thresh

Default: 0

Specifies the high card temperature (in degrees Celsius) that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low card temperature (in degrees Celsius) before a high temperature alarm is cleared.

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the high and low temperatures in degrees Celsius that generate and clear alarms.

Example

The following command configures sets the high and low temperatures to *40* and *35* degrees:

```
threshold card-temperature-near-power-off-limit 40 clear 35
```

threshold cdr-file-space

Configures, alarm or alert thresholds for monitoring the percentage of total file space allocated for Charging Data Records (CDRs) used during the polling interval.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cdr-file-space *high_thresh* **[clear** *low_thresh* **]**
default threshold cdr-file-space

default

Configures this command with the default threshold settings.

high_thresh

Specifies the high threshold for percentage of total allocated CDR file space used that must be met or exceeded at the end of the polling interval to generate an alert or alarm.

high_thresh is measured in percentage of total allocated CDR file space used and is an integer from 0 through 100. A value of 0 disables the threshold.

Default: 90

clear *low_thresh*

Specifies the low threshold for percentage of total allocated CDR file space used that maintains a previously generated alarm condition. If the space usage falls below Specifies the low threshold within the polling interval, a clear alarm is generated.

low_thresh is measured in percentage of total allocated CDR file space used and is an integer from 0 through 100. A value of 0 disables the threshold.

Default: 0

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

CDR file space usage generate alerts or alarms based on the percentage of total allocated CDR file space used during the polling interval.

Alerts or alarms are triggered for CDR file space usage session based on the following rules:

- **Enter condition:** Actual percentage of allocated CDR file space usage is greater than or equal to the specified percentage of total CDR file space.
- **Clear condition:** Actual CDR file space used is less than the specified clear percentage of total allocated CDR file space usage.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a threshold of *65* percent of total allocated CDR file space usage and a clear threshold of *35* percent:

```
threshold cdr-file-space 65 clear 35
```

threshold contfilt-block

Configures, alarm or alert thresholds for Content Filtering rating operations blocked during a polling interval at which the threshold are raised or cleared.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold contfilt-block *high_thresh_value* **[clear** *low_thresh_value* **]**
default threshold contfilt-block

default

Configures this command with the default threshold settings.

high_thresh

Specifies the high threshold for number of rating operations blocked for content filtering service that must be met or exceeded at the end of the polling interval to generate an alert or alarm.

high_thresh is measured in numbers of total rating operations blocked and is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Specifies the low threshold for the total number of rating operations blocked for a content filtering service that maintains a previously generated alarm condition. If the threshold falls below Specifies the low threshold within the polling interval, a clear alarm is generated.

low_thresh is measured in numbers of total rating operations blocked and is an integer from 0 through 1000000. A value of 0 disables the threshold.

Default: 0

Usage Guidelines

Use this command to configure the threshold for a content filtering service to generates alerts or alarms based on the number of rating operations blocked for a content filtering service during the polling interval.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll contfilt-block** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a threshold of *65000* rating operations blocked and a clear threshold of *35000* operations:

```
threshold contfilt-block 65000 clear 35000
```

threshold contfilt-rating

Configures, alarm or alert thresholds for Content Filtering rating operations performed during a polling interval at which the threshold are raised or cleared.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold contfilt-rating high_thresh_value [ clear low_thresh_value ]
default threshold contfilt-rating
```

default

Configures this command with the default threshold settings.

high_thresh

Specifies the high threshold for number of rating operations performed for content filtering service that must be met or exceeded at the end of the polling interval to generate an alert or alarm.

high_thresh is measured in numbers of total rating operations performed and is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Specifies the low threshold for the total number of rating operations performed for a content filtering service that maintains a previously generated alarm condition. If the threshold falls below Specifies the low threshold within the polling interval, a clear alarm is generated.

low_thresh is measured in umber of total rating operations performed and is an integer from 0 through 1000000. A value of 0 disables the threshold.

Default: 0

Usage Guidelines

Use this command to configure the threshold for a content filtering service to generates alerts or alarms based on the number of rating operations performed for a content filtering service during the polling interval.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll contfilt-rating** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a threshold of *65000* percent of total rating operations performed and a clear threshold of *35000* percent:

```
threshold contfilt-rating 65000 clear 35000
```

threshold cp-monitor-5min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 5 minutes on the Control Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold cp-monitor-5min-loss pct [ clear pct ]
default threshold cp-monitor-5min-loss
```

default

Disables the configured thresholds for the Control Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshControlPlaneMonitor5MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshControlPlaneMonitor5MinsLoss
- ThreshClearControlPlaneMonitor5MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold cp-monitor-60min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 60 minutes on the Control Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold cp-monitor-60min-loss *pct* **[clear** *pct* **]**
default threshold cp-monitor-60min-loss

default

Disables the configured thresholds for the Control Plane.

clear ***pct***

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshControlPlaneMonitor60MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshControlPlaneMonitor60MinsLoss
- ThreshClearControlPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold cpu-available-memory

Configures alarm or alert thresholds for available CPU memory in the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cpu-available-memory *low_thresh* **[clear** *high_thresh* **]**

low_thresh

Default: 32

Specifies the low threshold amount of CPU memory that must be met or exceeded at the polling time to generate an alert or alarm.

low_thresh is measured in megabytes (MB) and is an integer from 0 through 2048.

clear *high_thresh*

Default: 32

Specifies the high threshold amount of CPU memory that maintains a previously generated alarm condition. If the memory amount rises above the high threshold within the polling interval, a clear alarm will be generated.

high_thresh is measured in megabytes (MB) and is an integer from 0 through 2048.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

CPU available memory thresholds generate alerts or alarms based on the amount of available memory for each packet processing card CPU at the polling time. Although, a single threshold is configured for all CPUs, separate alerts or alarms can be generated for each CPU.

Alerts or alarms are triggered for available CPU memory based on the following rules:

- **Enter condition:** Average measured amount of memory/CPU for the last 5 minutes is less than or equal to the low threshold.
- **Clear condition:** Average measured amount of memory/CPU for the last 5 minutes is greater than the high threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command configures a low threshold count of *50* MB CPU memory available and a high threshold of *112* MB for a system using the Alarm thresholding model:

```
threshold cpu-available-memory 50 clear 112
```

threshold cpu-crypto-cores-utilization

Configures alarm or alert thresholds for crypto core CPU utilization.

Product

ePDG

HeNBGW

SecGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold cpu-crypto-cores-utilization *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Specifies the high threshold crypto core utilization percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100.

clear *low_thresh*

Specifies the low threshold for percentage of total CPU crypto core memory used that maintains a previously generated alarm condition. If the memory usage falls below the low threshold within the polling interval, a clear alarm is generated.

Default: 0

low_thresh is measured as a percentage of total CPU crypto core memory used, and must be an integer from 0 through 100. A value of 0 disables the threshold.

Usage Guidelines

CPU crypto core utilization thresholds generate alerts or alarms based on the utilization percentage of each crypto core CPU during the specified polling interval. The measured value is the sum of the most recent system and IRQ core usage.

Alerts or alarms are triggered for CPU utilization based on the following rules:

- **Enter condition:** Crypto core CPU utilization exceeds the high threshold.
- **Clear condition:** Crypto core CPU utilization is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval command to enable thresholding for this value.

Important This command is supported only on the ASR 5500.

Example

The following command configures a high threshold CPU utilization percentage of *90*:

```
threshold cpu-crypto-core-utilization 90
```

threshold cpu-load

Configures alarm or alert thresholds for monitoring packet processing card CPU loads using a 5-minute average measurement. The threshold is enabled by enabling CPU resource monitoring.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cpu-load *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

If the monitored CPU load is greater than or equal to the specified number an alert is sent. *high_thresh* must be an integer from 0 through 15.

clear *low_thresh*

Default: 0

This is a low watermark value that sets the alarm clearing threshold value. If not present it is taken from the first value. *low_thresh* must be an integer from 0 through 15.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

Use this command to set an alert when the card's CPU load is equal to or greater than the number specified.

Alerts or alarms are triggered for CPU load based on the following rules:

- **Enter condition:** Actual CPU load is greater than or equal to the high threshold.
- **Clear condition:** Actual CPU load is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

To set an alert when the packet processing card CPU load is over *10* and set an alert clear when the CPU load drops down equal or less than *7*, enter the following command;

```
threshold cpu-load 10 clear 7
```

threshold cpu-memory-usage

Configures, alarm or alert thresholds for monitoring the percentage of total CPU memory used during the polling interval.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold cpu-memory-usage high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold for percentage of total memory used that must be met or exceeded at the end of the polling interval to generate an alert or alarm.

high_thresh is measured as a percentage of total CPU memory used and is an integer from 0 and 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold for percentage of total CPU memory used that maintains a previously generated alarm condition. If the memory usage falls below the low threshold within the polling interval, a clear alarm is generated.

low_thresh is measured as a percentage of total CPU memory used and is an integer from 0 and 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

CPU memory usage generate alerts or alarms based on the percentage of total CPU memory used during the polling interval.

Alerts or alarms are triggered for CPU memory usage session based on the following rules:

- **Enter condition:** Actual percentage of CPU memory usage is greater than or equal to the specified percentage of total CPU memory.
- **Clear condition:** Actual CPU memory usage is less than the specified clear percentage of total CPU memory usage.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a threshold of *65* percent of total packet processing card CPU memory usage and a clear threshold of *35* percent:

```
threshold cpu-memory-usage 65 clear 35
```

threshold cpu-orbs-crit

Configures thresholds for generating critical-level alerts or alarms based on the percentage of CPU utilization by the Object Request Broker System (ORBS) software task.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cpu-orbs-crit *high_thresh* **[clear** *low_thresh* **]**
[default] threshold cpu-orbs-crit

default

Restores this parameter to its default setting.

high_thresh

Default: 60

Specifies the high threshold percent of CPU utilization by the ORB software task that must be exceeded as measured at the time of polling to generate a critical-level alert or alarm.

high_thresh is measured in percentage of total CPU utilization and is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 60

Specifies the low threshold percent of CPU utilization by the ORB software task that maintains a previously generated alarm condition. If the percentage is measured as less than or equal to Specifies the low threshold at the time of polling, a clear alarm will be generated.

low_thresh is measured in percentage of total CPU utilization and is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

Object Request Broker (ORB) software task CPU utilization thresholds generate critical-level alerts or alarms based on the percentage of packet processing card CPU resources it is consuming at the time of polling.

Critical-level alerts or alarms are triggered for CPU usage by the ORBs software task based on the following rules:

- **Enter condition:** Actual CPU usage percentage is greater than the high threshold.
- **Clear condition:** Actual CPU usage percentage is less than or equal to the low threshold.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a critical-level alarm threshold of *35* percent of CPU utilization by the ORBS task and a clear threshold of *30* percent:

```
threshold cpu-orbs-crit 35 clear 30
```

threshold cpu-orbs-warn

Configures thresholds for generating warning-level alerts or alarms based on the percentage of CPU utilization by the Object Request Broker System (ORBS) software task.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold cpu-orbs-warn high_thresh [ clear low_thresh ]
[ default ] threshold cpu-orbs-warn
```

default

Restores this parameter to its default setting.

high_thresh

Default: 50

Specifies the high threshold percent of CPU utilization by the ORBS software task that must be exceeded as measured at the time of polling to generate a warning-level alert or alarm.

high_thresh is measured in percentage of total CPU utilization and is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 50

Specifies the low threshold percent of CPU utilization by the ORBS software task that maintains a previously generated alarm condition. If the percentage is measured as less than or equal to Specifies the low threshold at the time of polling, a clear alarm will be generated.

low_thresh is measured in percentage of total CPU utilization and is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

Object Request Broker (ORB) software task CPU utilization thresholds generate warning-level alerts or alarms based on the percentage of packet processing card CPU resources it is consuming at the time of polling.

Warning-level alerts or alarms are triggered for CPU usage by the ORBS software task based on the following rules:

- **Enter condition:** Actual CPU usage percentage is greater than the high threshold.
- **Clear condition:** Actual CPU usage percentage is less than or equal to the low threshold.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a warning-level alarm threshold of *25* percent of CPU utilization by the ORBS task and a clear threshold of *20* percent:

```
threshold cpu-orbs-warn 25 clear 20
```

threshold cpu-session-throughput

Configures alarm or alert thresholds for CPU session throughput within the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cpu-session-throughput *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold session throughput that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is measured in kilobytes per second (Kbps) and is an integer from 0 through 1000000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold session thereabout that maintains a previously generated alarm condition. If the throughput falls below Specifies the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is measured in kilobytes per second (Kbps) and is an integer from 0 through 1000000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

CPU session throughput thresholds generate alerts or alarms based on total throughput for all Session Manager tasks running on each packet processing card CPU during the polling interval. Although, a single threshold is configured for all CPUs, separate alerts or alarms can be generated for each CPU.

Alerts or alarms are triggered for CPU session throughput based on the following rules:

- **Enter condition:** Actual CPU session throughput is greater than or equal to the high threshold.
- **Clear condition:** Actual CPU session throughput is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command configures a high threshold count of *900* Kbps session throughput and a low threshold of *500* KBps for a system using the Alarm thresholding model:

```
threshold cpu-session-throughput 900 clear 500
```

threshold cpu-utilization

Configures alarm or alert thresholds for CPU utilization within the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold cpu-utilization *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 85

Specifies the high threshold CPU utilization percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100.

clear *low_thresh*

Default: 85

Specifies the low threshold CPU utilization percentage that maintains a previously generated alarm condition. If the utilization percentage falls below the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

CPU utilization thresholds generate alerts or alarms based on the utilization percentage of each packet processing card CPU during the specified polling interval. Although, a single threshold is configured for all CPUs, separate alerts or alarms can be generated for each CPU.

Alerts or alarms are triggered for CPU utilization based on the following rules:

- **Enter condition:** Average measured CPU utilization for the last 5 minutes
- **Clear condition:** Average measured CPU utilization for the last 5 minutes is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command configures a high threshold CPU utilization percentage of *90* for a system using the Alert thresholding model:

```
threshold cpu-utilization 90
```

threshold dcca-bad-answers

Configures alarm or alert thresholds for invalid or bad responses to the system from Diameter servers.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold dcca-bad-answers` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold dcca-bad-answers`

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of invalid messages or responses that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of invalid messages/responses that maintains a previously generated alarm condition. If the number of failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the system receives invalid message or response from Diameter server **dcca-bad-answers** is generated.

DCCA bad answer messages size threshold generates alerts or alarms based on the number of invalid response or messages received during the specified polling interval.

Alerts or alarms are triggered for DCCA bad answers based on the following rules:

- **Enter condition:** Actual number of DCCA bad answer messages is greater than or equal to the high threshold.
- **Clear condition:** Actual number of DCCA bad answer messages is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures a high threshold count of *250* DCCA bad answer messages and low threshold of *100* for a system using the Alarm thresholding model:

```
threshold dcca-bad-answers 250 clear 100
```

threshold dcca-protocol-error

Configures alarm or alert thresholds for Diameter Credit Control Application (DCCA) protocol errors from the Diameter server.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dcca-protocol-error high_thresh [ clear low_thresh ]
default threshold dcca-protocol-error
```

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of protocol error received from Diameter server that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of protocol error received from Diameter server that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the system receives the protocol errors from Diameter server, **dcca-protocol-error** is generated.

DCCA protocol error threshold generates alerts or alarms based on the number of protocol error messages received from Diameter server during the specified polling interval.

Alerts or alarms are triggered for DCCA protocol error based on the following rules:

- **Enter condition:** Actual number of DCCA protocol error is greater than or equal to the high threshold.
- **Clear condition:** Actual number of DCCA protocol errors is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures a high threshold count of *250* protocol errors and low threshold of *100* for a system using the Alarm thresholding model:

```
threshold dcca-protocol-error 250 clear 100
```

threshold dcca-rating-failed

Configures Diameter Credit Control Application (DCCA) Rating Group (content-id) request reject, alarm or alert thresholds.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dcca-rating-failed high_thresh [ clear low_thresh ]
default threshold dcca-rating-failed
```

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of requests for a block of credits due to invalid Rating Group (content-id), rejected from the Diameter server that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of requests for a block of credits due to invalid Rating Group (content-id), rejected from the Diameter server that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the Diameter server rejects the system request for a block of credits due to invalid Rating Group, defined as content-id, **dcca-rating-failed** message is generated.

Rating Group failed threshold generates alerts or alarms based on the number of requests rejected from Diameter server during the specified polling interval.

Alerts or alarms are triggered for Rating Group failed based on the following rules:

- **Enter condition:** Actual number of DCCA Rating Group failed is greater than or equal to the high threshold.
- **Clear condition:** Actual number of DCCA Rating Group failed is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures a high threshold count of *250* requests rejected and low threshold of *100* for a system using the Alarm thresholding model:

```
threshold dcca-rating-failed 250 clear 100
```

threshold dcca-unknown-rating-group

Configures alarm or alert thresholds for the unknown Diameter Credit Control Application (DCCA) Rating Group (content-id) messages returned by Diameter servers.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold dcca-unknown-rating-group` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold dcca-unknown-rating-group`

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of unknown Rating Group (content-id) messages sent by the Diameter server that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of unknown Rating Group (content-id) sent by Diameter server and received by system that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

In the event that the Diameter server sends invalid Rating Groups, **content-ids** to the system, **dcca-unk-rating-group** message is generated.

Unknown Rating Group threshold generates alerts or alarms based on the number of unknown Rating Groups received by the system from Diameter server during the specified polling interval.

Alerts or alarms are triggered for unknown rating groups based on the following rules:

- **Enter condition:** Actual number of unknown rating groups is greater than or equal to the high threshold.
- **Clear condition:** Actual number of unknown rating groups is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures a high threshold count of *250* unknown rating groups and low threshold of *100* for a system using the Alarm thresholding model:

```
threshold dcca-unknown-rating-group 250 clear 100
```

threshold diameter diameter-retry-rate

Configures Diameter Retry Rate, alarm or alert thresholds based on the percentage of Diameter requests that were retried during the polling interval.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold diameter diameter-retry-rate high_thresh [ clear low_thresh ]
default threshold diameter diameter-retry-rate
```

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the high threshold. If, within the polling interval, the percentage of Diameter requests retried equals or exceeds *high_thresh* an alert or alarm is generated.

high_thresh is an integer from 0 through 100.

Default: 0

clear *low_thresh*

Specifies the low threshold. If, within the polling interval, the percentage of Diameter requests retried falls below *low_thresh*, a clear alarm is generated.

low_thresh is an integer from 0 through 100.

Default: 0

Important This value is applicable for the Alarm mode, and ignored for the Alert mode. In addition, if this value is not configured for the Alarm mode, the system assumes it is identical to the high threshold.

Usage Guidelines

Diameter Retry Rate threshold generates alerts or alarms based on the percentage of Diameter requests that were retried during the specified polling interval.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Percentage of Diameter requests retried is greater than or equal to the high threshold.
- **Clear condition:** Percentage of Diameter requests retried is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures a high threshold of *75* percent, and a low threshold of *50* percent for a system using the Alarm thresholding model:

```
threshold diameter diameter-retry-rate 75 clear 50
```

threshold dns-learnt-ip-max-entries

Configures alarm or alert thresholds for the percentage of total DNS-learnt IP entries in relation to the ACS DNS Snooping feature.

Product

Important In 16.0 and later releases, this command has been deprecated and replaced by the **threshold dns-learnt-ipv4-max-entries** and **threshold dns-learnt-ipv6-max-entries** commands to configure alarm or alert thresholds for the percentage of total DNS-learnt IPv4 entries and total DNS-learnt IPv6 entries respectively.

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dns-learnt-ip-max-entries high_thresh [ clear low_thresh ]
default threshold dns-learnt-ip-max-entries
```

default

Configures this command with the default threshold setting.

Default: 90 percent. It is the same for both high and low thresholds.

high_thresh

Default: 90 percent

Specifies the high threshold for percentage of total DNS-learnt IP entries. When the percentage of total DNS-learnt IP entries meets or exceeds the high threshold at the end of the polling interval, an alert or alarm is generated.

When the percentage of total DNS-learnt IPv4 entries meets or exceeds the high threshold, the ECSTotalDNSLearntIPv4Threshold trap is generated.

When the percentage of total DNS-learnt IPv6 entries meets or exceeds the high threshold, the ECSTotalDNSLearntIPv6Threshold trap is generated.

high_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

clear *low_thresh*

Default: 90 percent

Specifies the low threshold for percentage of total DNS-learnt IP entries. When the percentage of total DNS-learnt IP entries goes below the low threshold within the polling interval, a clear alarm is generated.

When the percentage of total DNS-learnt IPv4 entries goes below the low threshold, the ECSTotalDNSLearntIPv4ThresholdClear trap is generated.

When the percentage of total DNS-learnt IPv6 entries goes below the low threshold, the ECSTotalDNSLearntIPv6ThresholdClear trap is generated.

low_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

Use this command to configure thresholds for the percentage of total DNS-learnt IP entries in relation to the ACS DNS Snooping feature. Note that this threshold applies to both IPv4 and IPv6 DNS entries.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual percentage of total DNS-learnt IP entries is greater than or equal to the specified percentage of total DNS-learnt IP entries.
- **Clear condition:** Actual of total DNS-learnt IP entries is less than the specified clear percentage of total DNS-learnt IP entries.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval, and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *65* percent and a clear threshold of *35* percent for total DNS-learnt IP entries:

```
threshold dns-learnt-ip-max-entries 65 clear 35
```

threshold dns-learnt-ipv4-max-entries

Configures alarm or alert thresholds for the percentage of total DNS-learnt IPv4 entries in relation to the ACS DNS Snooping feature.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold dns-learnt-ipv4-max-entries *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Specifies the high threshold for percentage of total DNS-learnt IPv4 entries. When the percentage of total DNS-learnt IPv4 entries meets or exceeds the high threshold at the end of the polling interval, an alert or alarm is generated.

When the percentage of total DNS-learnt IPv4 entries meets or exceeds the high threshold, the ECSTotalDNSLearntIPv4Threshold trap is generated.

high_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Default: 90 percent

clear *low_thresh*

Specifies the low threshold for percentage of total DNS-learnt IPv4 entries. When the percentage of total DNS-learnt IPv4 entries goes below the low threshold within the polling interval, a clear alarm is generated.

When the percentage of total DNS-learnt IPv4 entries goes below the low threshold, the ECSTotalDNSLearntIPv4ThresholdClear trap is generated.

low_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Default: 90 percent

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

Use this command to configure thresholds for the percentage of total DNS-learnt IPv4 entries in relation to the ACS DNS Snooping feature.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual percentage of total DNS-learnt IPv4 entries is greater than or equal to the specified percentage of total DNS-learnt IPv4 entries.
- **Clear condition:** Actual percentage of total DNS-learnt IPv4 entries is less than the specified clear percentage of total DNS-learnt IPv4 entries.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval, and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *60* percent and a clear threshold of *30* percent for total DNS-learnt IPv4 entries:

```
threshold dns-learnt-ipv4-max-entries 60 clear 30
```

threshold dns-learnt-ipv6-max-entries

Configures alarm or alert thresholds for the percentage of total DNS-learnt IPv6 entries in relation to the ACS DNS Snooping feature.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dns-learnt-ipv6-max-entries high_thresh [ clear low_thresh ]
```

high_thresh

Specifies the high threshold for percentage of total DNS-learnt IPv6 entries. When the percentage of total DNS-learnt IPv6 entries meets or exceeds the high threshold at the end of the polling interval, an alert or alarm is generated.

When the percentage of total DNS-learnt IPv6 entries meets or exceeds the high threshold, the ECSTotalDNSLearntIPv6Threshold trap is generated.

high_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Default: 90 percent

clear *low_thresh*

Specifies the low threshold for percentage of total DNS-learnt IPv6 entries. When the percentage of total DNS-learnt IPv6 entries goes below the low threshold within the polling interval, a clear alarm is generated.

When the percentage of total DNS-learnt IPv6 entries goes below the low threshold, the ECSTotalDNSLearntIPv6ThresholdClear trap is generated.

low_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Default: 90 percent

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

Use this command to configure thresholds for the percentage of total DNS-learnt IPv6 entries in relation to the ACS DNS Snooping feature.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual percentage of total DNS-learnt IPv6 entries is greater than or equal to the specified percentage of total DNS-learnt IPv6 entries.
- **Clear condition:** Actual percentage of total DNS-learnt IPv6 entries is less than the specified clear percentage of total DNS-learnt IPv6 entries.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval, and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *75* percent and a clear threshold of *45* percent for total DNS-learnt IPv6 entries:

```
threshold dns-learnt-ipv6-max-entries 75 clear 45
```

threshold dns-lookup-failure

Configures alarm or alert thresholds based on the percentage of total DNS lookup failures.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold dns-lookup-failure

default

Configures this command with the default threshold setting.

Default: 90 percent. It is the same for both high and low thresholds.

high_thresh

Default: 90 percent

Specifies the high threshold for percentage of total DNS lookup failures. When the percentage of total failures meets or exceeds the high threshold at the end of the polling interval, an alert or alarm is generated.

high_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

clear *low_thresh*

Default: 90 percent

Specifies the low threshold for percentage of total DNS lookup failures. When the percentage of total failures goes below the low threshold within the polling interval, a clear alarm is generated.

low_thresh is an integer value from 0 through 100. When configured to 0 the threshold is disabled.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

Use this command to configure thresholds for the percentage of total DNS lookup failures. Note that this threshold applies to both IPv4 and IPv6 DNS entries.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual percentage of total DNS lookup failures is greater than or equal to the specified percentage of total DNS lookup failures.
- **Clear condition:** Actual of total DNS lookup failures is less than the specified clear percentage of total DNS lookup failures.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval, and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *65* percent and a clear threshold of *35* percent for total DNS lookup failures:

```
threshold dns-lookup-failure 65 clear 35
```

threshold dp-monitor-5min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 5 minutes on the Data Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dp-monitor-5min-loss pct [ clear pct ]
default threshold dp-monitor-5min-loss
```

default

Disables the configured thresholds for the Data Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshDataPlaneMonitor5MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Data Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshDataPlaneMonitor5MinsLoss / ThreshClearDataPlaneMonitor5MinsLoss
- ThreshDataPlaneMonitor60MinsLoss / ThreshDataPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold dp-monitor-60min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 60 minutes on the Data Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dp-monitor-60min-loss pct [ clear pct ]
default threshold dp-monitor-60min-loss
```

default

Disables the configured thresholds for the Data Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshDataPlaneMonitor60MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshDataPlaneMonitor60MinsLoss
- ThreshClearDataPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold edr-file-space

Configures alarm or alert thresholds for monitoring the percentage of total file space allocated for Event Data Records (EDRs) used during the polling interval.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default] threshold edr-file-space *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 90

Specifies the high threshold for percentage of total allocated EDR file space used that must be met or exceeded at the end of the polling interval to generate an alert or alarm.

high_thresh is measured in percentage of total allocated EDR file space used and is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold for percentage of total allocated EDR file space used that maintains a previously generated alarm condition. If the space usage falls below the low threshold within the polling interval, a clear alarm is generated.

low_thresh is measured in percentage of total allocated EDR file space used and is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

EDR file space usage generate alerts or alarms based on the percentage of total allocated EDR file space used during the polling interval.

Alerts or alarms are triggered for EDR file space usage session based on the following rules:

- **Enter condition:** Actual percentage of allocated EDR file space usage is greater than or equal to the specified percentage of total EDR file space.
- **Clear condition:** Actual EDR file space used is less than the specified clear percentage of total allocated EDR file space usage.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *65* percent and a clear threshold of *35* percent for of total allocated EDR file space usage:

```
threshold edr-file-space 65 clear 35
```

threshold edr-udr-dropped flow control

Configures alarm or alert thresholds to monitor the total number of Event Data Records (EDRs) and Usage Data Records (UDRs) discarded due to flow control.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold edr-udr-dropped-flow-control *high_thresh* **[clear** *low_thresh* **]**
default threshold edr-udr-dropped-flow-control

default

Configures this command with the default threshold settings.

Default: High threshold: 90; Low threshold: 10

high_thresh

Specifies the high threshold for total number of EDRs + UDRs dropped due to flow control, which must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100000.

A value of 0 disables the threshold.

Default: 90

clear *low_thresh*

Specifies the low threshold for total number of EDRs + UDRs dropped that maintains a previously generated alarm condition. If the total number of EDRs + UDRs dropped falls below Specifies the low threshold within the polling interval, a clear alarm is generated.

low_thresh must be an integer from 0 through 100000 that must be lower than *high_thresh*.

A value of 0 disables the threshold.

Default: 10

Usage Guidelines

Use this command to configure thresholds to monitor the total number of EDRs + UDRs discarded due to flow control. Alerts or alarms are generated based on the total number of EDRs + UDRs dropped during polling interval.

Alerts or alarms are triggered for EDR file space usage session based on the following rules:

- **Enter condition:** Actual number of EDRs + UDRs dropped greater than or equal to the specified number of EDRs + UDRs dropped.

- **Clear condition:** Actual number of EDR + UDRs dropped is less than the specified clear number of EDRs + UDRs dropped.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold of *90* and a clear threshold of *45* to monitor EDRs + UDRs dropped due to flow control:

```
threshold edr-udr-dropped-flow-control 90 clear 45
```

threshold egtpc-s2b-setup-fail-rate

Configures the eGTP-C S2b setup fail rate threshold.

Product

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold egtpc-s2b-setup-fail-rate high_thresh [ clear low_thresh ]
default threshold egtpc-s2b-setup-fail-rate
```

default

Configures this command with the default threshold settings and disables the threshold.

high_thresh

Default: 0

Specifies the high threshold number of eGTP-C S2b call setup failures that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of eGTP-C S2b call setup failures that maintain a previously generated alarm condition. If the number of call setup failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh must be an integer from 0 through 100 that must be lower than *high_thresh*. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

P-GW will use the formula below for detecting Create Session Response failure rate. This failure rate is calculated based on statistics collected during a configured polling interval. The calculated failure rate is then validated against the configured threshold. Based on threshold and actual failure rate calculation, alarm will be generated or cleared.

The failure rate is the percentage of failures as determined by this formula: 1 - (Create Session Response Accept / Create Session Request).

Alerts or alarms are triggered for eGTP-C S2b setup fail rates based on the following rules:

- **Enter condition:** Actual number of S2b setup failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of S2b setup failures is less than the low threshold.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll egtpc-s2b-setup-fail-rate interval** command to configure the polling interval and the **threshold monitoring call-setup** command to enable monitoring for this threshold.

Example

The following command configures a high threshold of *10* and a clear threshold of *5* to monitor call setup failure for an S2b interface:

```
threshold egtpc-s2b-setup-fail-rate 10 clear 5
```

threshold egtpc-s5-setup-fail-rate

Configures the eGTP-C S5 setup fail rate threshold.

Product

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold egtpc-s5-setup-fail-rate high_thresh [ clear low_thresh ]
default threshold egtpc-s5-setup-fail-rate
```

default

Configures this command with the default threshold settings and disables the threshold.

high_thresh

Default: 0

Specifies the high threshold number of call setup failures that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of call setup failures that maintains a previously generated alarm condition. If the number of call setup failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh must be an integer from 0 through 100 that must be lower than *high_thresh*. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

P-GW will use the formula below for detecting Create Session Response failure rate. This failure rate is calculated based on statistics collected during a configured polling interval. This calculated failure rate is then validated against the configured threshold. Based on threshold and actual failure rate calculation, alarm will be generated or cleared.

The failure rate is the percentage of failures as determined by this formula: 1 - (Create Session Response Accept / Create Session Request).

Alerts or alarms are triggered for eGTP-C S5 setup fail rates based on the following rules:

- **Enter condition:** Actual number of S5 setup failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of S5 setup failures is less than the low threshold.

If a trigger condition exists at the end of the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll egtpc-s5-setup-fail-rate interval** command to configure the polling interval and the **threshold monitoring call-setup** command to enable monitoring for this threshold.

Example

The following command configures a high threshold of *10* and a clear threshold of *5* to monitor call setup failure for an S5 interface:

```
threshold egtpc-s5-setup-fail-rate 10 clear 5
```

threshold epdg-current-sessions

Configures alarm or alert thresholds for the number of subscribers currently in Evolved Packet Date Gateway (ePDG) sessions.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold epdg-current-sessions
default threshold epdg-current-sessions
```

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of the total number of ePDG subscriber sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of the total number of ePDG subscriber sessions that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Sets the upper and power thresholds for the total number of ePDG subscriber sessions that will generate and clear alerts or alarms.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual number of ePDG subscriber sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual number of ePDG subscriber sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures sets the upper threshold of ePDG subscriber sessions at *100000* and the lower threshold at *90000*:

```
threshold epdg-current-sessions 100000 clear 90000
```

threshold fng-current-active-sessions

Configures alarm or alert thresholds for the number of subscribers currently active Femto Network Gateway (FNG) sessions.

Product

FNG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] threshold fng-current-active-sessions
```

default

Disables the threshold for configured alarm and sets the *high_thresh* and *low_thresh* values to 0.

high_thresh

Default: 0

Specifies the high threshold number of the total number of active FNG subscriber sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of the total number of active FNG subscriber sessions that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Sets the upper and power thresholds for the total number of active FNG subscriber sessions that will generate and clear alerts or alarms.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual number of active FNG subscriber sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual number of active FNG subscriber sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures sets the upper threshold of active FNG subscriber sessions at *100000* and the lower threshold at *90000*:

```
threshold fng-current-active-sessions 100000 clear 90000
```

threshold fng-current-sessions

Configures alarm or alert thresholds for the number of subscribers currently in Femto Network Gateway (FNG) sessions, including inactive sessions.

Product

FNG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold fng-current-sessions
default threshold fng-current-sessions
```

default

Configures this command with the default threshold settings.

Default: High threshold: 90; Low threshold: 10

high_thresh

Default: 0

Specifies the high threshold number of the total number of FNG subscriber sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default: 0

Specifies the low threshold number of the total number of FNG subscriber sessions that maintains a previously generated alarm condition. If the number of errors falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Sets the upper and power thresholds for the total number of FNG subscriber sessions that will generate and clear alerts or alarms.

Alerts or alarms are triggered based on the following rules:

- **Enter condition:** Actual number of FNG subscriber sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual number of FNG subscriber sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Example

The following command configures sets the upper threshold of FNG subscriber sessions at *200000* and the lower threshold at *190000*:

```
threshold fng-current-sessions 200000 clear 190000
```

threshold fw-deny-rule

Configures alarm or alert thresholds for the Stateful Firewall Deny Rule.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold fw-deny-rule high_thresh [ clear low_thresh ]
default threshold fw-deny-rule
```

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the Stateful Firewall Deny-Rule threshold value, which if met or exceeded generates an alert or alarm.

high_thresh must be an integer from 0 through 1000000.

Default: 0

clear *low_thresh*

Specifies the Stateful Firewall Deny-Rule alarm clear threshold value. If, in the same polling interval, the threshold falls below *low_thresh* a clear alarm is generated.

low_thresh must be an integer from 0 through 1000000.

Default: 0

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

When the number of Deny-Rule instances exceeds a given value, a n alarm or alert is raised; it is cleared when the number of Deny-Rule instances falls below a value within the polling interval.

Refer to the **threshold poll** command to configure the polling interval, and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a Stateful Firewall Deny Rule high threshold of *1000* and a low threshold of *900* for a system using the Alarm Thresholding model:

```
threshold fw-deny-rule 1000 clear 900
```

threshold fw-dos-attack

Configures alarm or alert thresholds for Stateful Firewall Denial-of-Service (DoS) attacks.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold fw-dos-attack *high_thresh* **[clear** *low_thresh* **]**
default threshold fw-dos-attack

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the Stateful Firewall DoS attacks threshold value, which if met or exceeded generates an alert or alarm.

high_thresh must be an integer from 0 through 1000000.

Default: 0

clear *low_thresh*

Specifies the Stateful Firewall DoS attacks clear threshold value. If, in the same polling interval, the threshold falls below *low_thresh* a clear alarm is generated.

low_thresh must be an integer from 0 through 1000000.

Default: 0

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

When the number of DoS attacks exceed a given value, a threshold is raised and it is cleared when the number of DoS attacks fall below a value within the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a Stateful Firewall DoS attacks high threshold of *1000* and a low threshold of *100* for a system using the Alarm Thresholding model:

```
threshold fw-dos-attack 1000 clear 100
```

threshold fw-drop-packet

Configures alarm or alert thresholds for Stateful Firewall dropped packets.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold fw-drop-packet` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold fw-drop-packet`

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the Stateful Firewall dropped packets threshold value, which if met or exceeded generates an alert or alarm.

high_thresh must be an integer from 0 through 1000000.

Default: 0

clear *low_thresh*

Specifies the Stateful Firewall dropped packets clear threshold value. If, in the same polling interval, the threshold falls below *low_thresh* a clear alarm is generated.

low_thresh must be an integer from 0 through 1000000.

Default: 0

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

When the number of dropped packets exceed a given value, a threshold is raised and it is cleared when the number of dropped packets fall below a value within the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a Stateful Firewall dropped packets high threshold of *1000* and a low threshold of *900* for a system using the Alarm thresholding model:

```
threshold fw-drop-packet 1000 clear 900
```

threshold fw-no-rule

Configures alarm or alert thresholds for Stateful Firewall no rule occurrences.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold fw-no-rule high_thresh [ clear low_thresh ]
default threshold fw-no-rule
```

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the Stateful Firewall no rules threshold value, which if met or exceeded generates an alert or alarm.

high_thresh must be an integer from 0 through 1000000.

Default: 0

clear *low_thresh*

Specifies the Stateful Firewall no rules clear threshold value. If, in the same polling interval, the threshold falls below *low_thresh* a clear alarm is generated.

low_thresh must be an integer from 0 through 1000000.

Default: 0

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the low threshold.

Usage Guidelines

When the number of no rule occurrences exceeds a given value, a threshold is raised and it is cleared when the number of no rules fall below a value within the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a Stateful Firewall no rule high threshold of *1000* and a low threshold of *900* for a system using the Alarm Thresholding model:

```
threshold fw-no-rule 1000 clear 900
```

threshold hat-hb-5min-loss

Configures the alarm thresholds for High Availability Task (HAT) heartbeat loss rate for the past 5 minutes across any cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold hat-hb-5min-loss high_thresh [ clear low_thresh ]
default threshold hat-hb-5min-loss
```

default

Returns the high threshold percentage to the default value of 5.

high_thresh

Default: 5

Specifies the high threshold percentage that must be met or exceeded within the polling interval to generate an alarm (ThreshHatHb5MinLoss).

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold percentage that maintains a previously generated alarm condition. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshClearHatHb5MinLoss).

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the maximum percentage of heatbeat loss on the DI network allowed over the past 5 minutes.

Refer to the **threshold monitoring hat-hb-5min-loss** Global Configuration mode command to enable this threshold monitoring functionality.

Example

The following command configures a high threshold of *40* percent heartbeat loss over a 5 minute period (when an alarm is generated) and a low threshold of *10* percent (when a clear alarm is generated):

```
threshold hat-hb-5min-loss 40 clear 10
```

threshold hat-hb-60min-loss

Configures the alarm thresholds for High Availability Task (HAT) heartbeat loss rate for the past 60 minutes across any cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold hat-hb-60min-loss high_thresh [ clear low_thresh ]
default threshold hat-hb-60min-loss
```

default

Returns the high threshold percentage to the default value of 5.

high_thresh

Default: 5

Specifies the high threshold percentage that must be met or exceeded within the polling interval to generate an alarm (ThreshHatHb60MinLoss).

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold percentage that maintains a previously generated alarm condition. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshClearHatHb60MinLoss).

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the maximum percentage of heatbeat loss on the DI network allowed per over the past 60 minutes.

Refer to the **threshold monitoring hat-hb-60min-loss** Global Configuration mode command to enable this threshold monitoring functionality.

Example

The following command configures a high threshold of *15* percent heartbeat loss over a 60 minute period (when an alarm is generated) and a low threshold of *5* percent (when a clear alarm is generated):

```
threshold hat-hb-60min-loss 15 clear 5
```

threshold license remaining-sessions

Configures alarm or alert thresholds for the percentage of session license utilization by the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[no] threshold license remaining-sessions *low_thresh* **clear** *high_thresh*

no *low_thresh*

Disables threshold session license utilization alerts or alarms.

remaining-sessions *low_thresh*

Default: 10

Specifies the low threshold session license utilization percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

low_thresh is an integer from 0 through 100.

clear *high_thresh*

Default: 10

Specifies the high threshold session license utilization percentage that maintains a previously generated alarm condition. If the utilization percentage rises above the high threshold within the polling interval, a clear alarm will be generated.

high_thresh is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to Specifies the low threshold.

Usage Guidelines

Session license utilization thresholds generate alerts or alarms based on the utilization percentage of all session capacity licenses during the specified polling interval.

The system uses session capacity license to dictate the maximum number of simultaneous sessions that can be supported. There are multiple session types that require licenses. Although, a single threshold is configured for all session types, alerts or alarms can be generated for each type.

Alerts or alarms are triggered for session license utilization based on the following rules:

- **Enter condition:** Actual session license utilization percentage per session type is greater than or equal to the low threshold.
- **Clear condition:** Actual session license utilization percentage per session type is greater than the high threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a session license low threshold percentage of *10* and a high threshold of *35* for a system using the Alarm thresholding model:

```
threshold license remaining-sessions 10 clear 35
```

threshold ls-logs-volume

Globally specifies threshold monitoring parameters for an acceptable volume (flow rate) of messages for each StarOS facility. When this threshold is exceeded a trap/alarm is generated. It also sets the clear trap/alarm threshold.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default] threshold ls-logs-volume *upper_percent* **[clear** *lower_percent* **]**

default

Sets *upper_percent* and *lower_percent* to 90%.

upper_percent

Specifies the percentage of facility event queue full as an integer from 0 to 100. If this threshold is exceeded, StarOS generates a trap (ThreshLSLogsVolume) or alarm indicating the specified facility that is sending excessive traffic to the event log. Default is 90%.

clear *lower_percent*

Sets the percentage of facility event queue full as an integer from 0 to 100 which if reached sends a trap (ThreshClearLSLogsVolume) or clears an alarm. If no value is entered, the value for *upper_percent* is used.

Usage Guidelines

Event logging (evlogd) is a shared medium that captures event messages sent by StarOS facilities. When one or more facilities continuously and overwhelmingly keeps sending a high volume of event messages, the remaining non-offender facilities are impacted. This scenario degrades system performance, especially as the number of facilities generating logs increases.

Rate-control of event message logging is handled in the log source path. Essentially, every second a counter is set to zero and is incremented for each log event that is sent to evlogd. If the count reaches a threshold before the second is up, the event is sent, queued or dropped (if the evlogd messenger queue is full).

When any facility exceeds the upper threshold set with this command for the rate of message logging and remains in the same state for prolonged interval, StarOS notifies the user via an SNMP trap or alarm.

The formats for the SNMP traps associated with this command are as follows:

```
<timestamp> Internal trap notification <trap_id> (ThreshLSLogsVolume) threshold
<upper_percent>%
measured value <actual_percent>% for facility <facility_name> instance <instance_id>
```

```
<timestamp> Internal trap notification <trap_id> (ThreshClearLSLogsVolume) threshold
<upper_percent>%
measured value <actual_percent>% for facility <facility_name> instance <instance_id>
```

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures an upper threshold of 90% and a lower threshold of 70% for log source flow control:

```
threshold ls-logs-volume 90 clear 70
```

threshold mgmt-cpu-memory-usage

Configures alarm or alert thresholds for the percentage of CPU memory usage on management cards.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold mgmt-cpu-memory-usage *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold percent of CPU memory usage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is measured in percentage of total memory used and can be configured to an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Specifies the low threshold percent of CPU memory usage that maintains a previously generated alarm condition. If the percentage falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is measured in percentage of total memory used and can be configured to an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

CPU memory usage thresholds generate alerts or alarms based on memory usage for the SPC, SMC, or MIO CPU during the polling interval. A single threshold enables CPU monitoring for both the active and standby SPCs, SMCs, or MIOs allowing for alerts or alarms to be generated for each CPU.

Alerts or alarms are triggered for SPC, SMC, or MIO CPU memory usage based on the following rules:

- **Enter condition:** Actual CPU memory usage is greater than or equal to the high threshold
- **Clear condition:** Actual CPU memory usage is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command configures a threshold of *65* percent of total SPC, SMC, or MIO CPU memory usage and a clear threshold of *35* percent:

```
threshold mgmt-cpu-memory-usage 65 clear 35
```

threshold mgmt-cpu-utilization

Configures alarm or alert thresholds for the percentage of CPU utilization on management cards.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold mgmt-cpu-utilization high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold CPU utilization percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100.

clear *low_thresh*

Specifies the low threshold CPU utilization percentage that maintains a previously generated alarm condition. If the utilization percentage falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

CPU utilization thresholds generate alerts or alarms based on the utilization percentage of each SPC, SMC, or MIOCPU during the specified polling interval. Although, a single threshold is configured for both SPC, SMC, or MIO CPUs, separate alerts or alarms can be generated for each CPU.

Alerts or alarms are triggered for SPC, SMC, or MIO CPU utilization based on the following rules:

- **Enter condition:** Average measured CPU utilization for the last 5 minutes is greater than or equal to the high threshold.
- **Clear condition:** Average measured CPU utilization for the last 5 minutes is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Important This command is not supported on all platforms.

Example

The following command configures a high threshold SPC, SMC, or MIO CPU utilization percentage of *90* for a system using the Alert thresholding model:

```
threshold mgmt-cpu-utilization 90
```

threshold mme-attach-failure

Configures alarm or alert thresholds for the total number of MME Attach Failure messages across all the MME services in the system.

Product MME

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-mme-attach-failure *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold number of total MME Attach Failure messages across all services on a system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh can be configured to an integer from 0 through 100000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold number of total MME Attach Failure messages across all services on a system that maintains a previously generated alarm condition. If the number of MME Attach Failure messages across all the services in a system, falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of MME Attach Failure message across all the MME services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of MME Attach Failure message based on the following rules:

- **Enter condition:** Actual total number of MME Attach Failure messages is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of MME Attach Failure messages is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll mme-attach-failure** command to configure the polling interval and the **threshold monitoring mme-service** command to enable thresholding for this value.

Example

The following command configures the limit of MME Attach Failure high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold mme-attach-failure 10000
```

threshold mme-auth-failure

Configures alarm or alert thresholds for the total number of MME Auth Failure messages across all the MME services.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold total-mme-auth-failure` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold number of total MME Auth Failure messages across all MMM services on a system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh can be configured to an integer from 0 through 100000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold number of total MME Auth Failure messages across all services on a system that maintains a previously generated alarm condition. If the number of MME Attach Failure messages across all the services in a system, falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of MME Auth Failure message across all the MME services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of MME Auth Failure message based on the following rules:

- **Enter condition:** Actual total number of MME Auth Failure messages is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of MME Auth Failure messages is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll mme-auth-failure** command to configure the polling interval and the **threshold monitoring mme-service** command to enable thresholding for this value.

Example

The following command configures a total MME Auth Failure high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold mme-auth-failure 10000
```

threshold model

Configures the thresholding model, alarm or alert, for the system to use.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold model { alarm | alert }
```

alarm

Selects the alarm thresholding model as described in the *Usage* section for this command.

alert

Selects the alert thresholding model as described in the *Usage* section for this command.

Usage Guidelines

The system supports the following thresholding models:

- **Alert:** A value is monitored and an alert condition occurs when the value reaches or exceeds the configured high threshold within the specified polling interval. The alert is generated then generated and/or sent at the end of the polling interval.

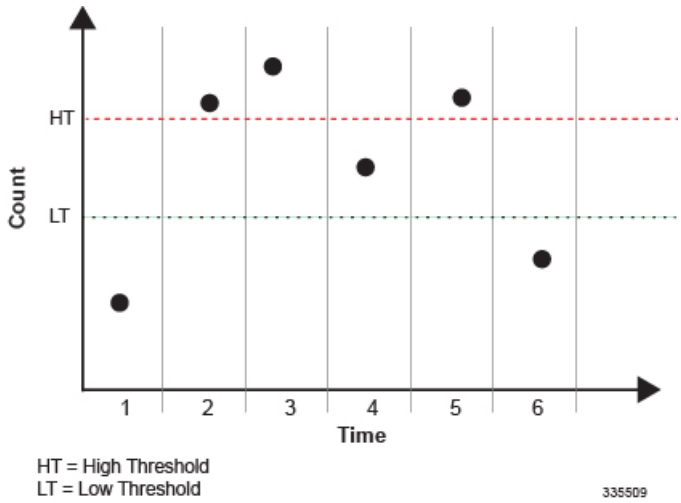
In the example shown in the figure below, this model generates alerts during period 2, 3, and 5 at the point where the count exceeded the high threshold.

- **Alarm:** Both high and low threshold are defined for a value. An alarm condition occurs when the value reaches or exceeds the configured high threshold within the specified polling interval. The alert is generated then generated and/or sent at the end of the polling interval.

The alarm is cleared at the end of the first interval where the measured value is below the low threshold.

In the example shown in the figure below, this model generates an alarm during period 2 when the count exceeds the high threshold. A second alarm is generated in period 6 when the count falls beneath low threshold. The second alarm indicates a "clear" condition.

Figure 1: Thresholding Model Example



Important For certain values the alert or alarm serves to warn of low quantities (such as, memory, session licenses, etc.). In these cases, the low threshold is the condition that must be met or exceeded within the polling interval to generate the alert or alarm. When the high threshold is exceeded during an interval, the low quantity condition is cleared.

Refer to the **threshold monitoring** command for additional information on thresholding.

Example

The following command configures the system to support the Alarm thresholding model:

```
threshold model alarm
```

threshold monitoring

Enables or disables threshold monitoring for the selected value.

Product All

Privilege Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default | no] threshold monitoring { aaa-acct-archive-queue | aaa-acct-archive-size | aaa-acct-failure | aaa-auth-failure | aaa-retry-rate | aaamgr-request-queue | asngw | call-setup | content-filtering | cpu-resource | cpu-session-throughput | diameter | disconnect-reason | ecs | epdg-service | fa-service | firewall | fw-and-nat | ha-service | hat-hb-5min-loss | hat-hb-60min-loss | henbgw-service | hnbgw-service | hsgw-service | ipsec | license | lma-service | ls-logs-volume | mme-service | npu-resource | packets-filtered-dropped | packets-forwarded-to-cpu | pdg-service | pdif-service | pdsn-service | pgw-service | phsgw | phspc | route-service | saegw-service | sess-flow-count | sess-uneven-dist | sgw-service | subscriber | system | tpo }

no

Disables threshold monitoring for the specified value.

default

Sets or restores the default value assigned to the specified parameter.

aaa-acct-archive-queue

Enables threshold monitoring for the AAA accounting archive message queue size.

Refer to the **threshold aaa-acct-archive-queue-size** command for additional information on these values.

aaa-acct-archive-size

Enables threshold monitoring for the size of the AAA accounting record archive.

aaa-acct-failure

Enables threshold monitoring for AAA accounting failures and AAA accounting failure rate values.

Refer to the **threshold aaa-acct-failure** and **threshold aaa-acct-failure-rate** commands for additional information on these values.

aaa-auth-failure

Enables threshold monitoring for AAA authentication failures and AAA authentication failure rate values.

Refer to the **threshold aaa-auth-failure** and **threshold aaa-auth-failure-rate** commands for additional information on these values.

aaa-retry-rate

Enables threshold monitoring for the AAA retry rate value.

Refer to the **threshold aaa-retry-rate** command for additional information on this value.

aaamgr-request-queue

Enables threshold monitoring for AAA Manager Requests for each AAA manager process. Refer to the **threshold aaamgr-request-queue** command for additional information on these values.

asngw

Enables the threshold monitoring for ASN-GW services.

call-setup

Enables threshold monitoring for the call setup, call setup failures, and no-resource rejected call values.

Refer to the **threshold call-setup, threshold call-setup-failure, threshold egtpc-s2b-setup-fail-rate, threshold egtpc-s5-setup-fail-rate, threshold ppp-setup-fail-rate, threshold rp-setup-fail-rate**, and **threshold call-reject-no-resource** commands for additional information on these values.

cpu-resource

Enables threshold monitoring for CPU thresholds.

Refer to the **threshold 10sec-cpu-utilization, threshold cpu-available-memory, threshold cpu-load, threshold cpu-memory-usage, threshold cpu-orbs-crit, threshold cpu-orbs-warn, threshold cpu-session-throughput, threshold cpu-utilization, threshold mgmt-cpu-memory-usage,** and **threshold mgmt-cpu-utilization** commands for additional information on these values.

cpu-session-throughput

Enables threshold monitoring for the CPU session throughput value.

Refer to the **threshold cpu-session-throughput** command for additional information on this value.

content-filtering

Enables threshold monitoring for the Content Filtering in-line service.

diameter

Enables threshold monitoring for Diameter.

disconnect-reason

Enables disconnect-reason related thresholds.

ecs

Enables threshold monitoring for the Active Charging Service (ACS)/Enhanced Charging Service (ECS).

epdg-service

Enables threshold monitoring for Evolved Packet Data Gateway (ePDG) servcice.

Refer to the **threshold epdg-current-sessions** command for additional information on this value.

fa-service

Enables threshold monitoring for Registration Reply errors for each FA service.

Refer to the **threshold reg-reply-error** FA Service Configuration Mode command for additional information on this value.

firewall

Enables threshold monitoring for the Stateful Firewall in-line service.

Default: Disabled

Refer to the **threshold fw-deny-rule, threshold fw-dos-attack, threshold fw-drop-packet**, and **threshold fw-no-rule** commands for additional information on this value.

Important Stateful Firewall thresholds can only be enabled if the Stateful Firewall license is present.

fw-and-nat

Enables threshold monitoring for the Firewall and NAT in-line service.

Default: Disabled

Refer to the **threshold fw-deny-rule, threshold fw-dos-attack, threshold fw-drop-packet, threshold fw-no-rule, threshold nat-pkt-drop**, and **threshold nat-port-chunks-usage** commands for additional information on this value.

ha-service

Enables threshold monitoring for Registration Reply errors, re-registration reply errors, deregistration reply errors, and average calls setup per second for each HA service and average calls setup per second at the context level.

Refer to the **threshold init-rrq-rcvd-rate, threshold reg-reply-error, threshold rereg-reply-error,** and **threshold dereg-reply-error** HA Service Configuration Mode commands and the **threshold ha-service init-rrq-rcvd-rate** Context Configuration mode command for additional information on this value.

hat-hb-5min-loss

Enables threshold monitoring for High Availability Task (HAT) heartbeat loss rate for the past 5 minutes across any cards on a VPC-DI system. This functionality applies only to the VPC-DI platform.

Default: Disabled

Refer to the **threshold hat-hb-5min-loss** Global Configuration mode command to set the high threshold levels where a threshold alarm is generated as well the low threshold level where a clear alarm is generated.

hat-hb-60min-loss

Enables threshold monitoring for High Availability Task (HAT) heartbeat loss rate for the past 60 minutes across any cards on a VPC-DI system. This functionality applies only to the VPC-DI platform.

Default: Disabled

Refer to the **threshold hat-hb-30min-loss** Global Configuration mode command to set the high threshold levels where a threshold alarm is generated as well the low threshold level where a clear alarm is generated.

henbgw-service

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This command must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

Enables threshold monitoring for HeNB-GW service.

Important This keyword is required to activate the threshold alarm/alert for HeNB-GW service to use **thrteshold henbgw-paging-messages**, **threshold total-henbgw-henb-sessions**, and **thresshold total-henbgw-ue-sessions** commands for threshold values.

hnbgw-service

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Enables threshold monitoring for HNBGW sessions including Iu-CS and Iu-PS sessions for HNBGW services on a system at the system level.

Important This keyword is required to activate the threshold alarm/alert for HNBGW service to use **threshold total-hnbgw-hnb-sessions**, **thresshold total-hnbgw-iu-sessions**, and **thresshold total-hnbgw-ue-sessions** command for threshold values.

hsgw-service

Enables threshold monitoring for HSGW services.

Refer to the threshold total-hsgw-sessions for more information on HSGW thresholds.

ipsec

Enables monitoring of IPSec thresholds.

Refer to the *HA-Service Configuration Mode* chapter of the *Command Line Interface Reference* for information on the IPSec thresholds.

license

Enables threshold monitoring for the session license value.

Refer to the **threshold license** command for additional information on this value.

lma-service

Enables threshold monitoring for LMA services.

Refer to the **threshold total-lma-sessions** command for more information on LMA thresholds.

ls-logs-volume

Enables threshold monitoring for Log Source rate control of logging events.

Refer to the **threshold ls-logs-volume** command for more information on Log Source thresholds.

mme-service

Default: Disabled.

Enables threshold monitoring for the MME services.

Refer to the **threshold total-mme-sessions** command for additional information on this value.

npu-resouce

Enables threshold monitoring for the Network Processor Unit (NPU) resources, including NPU utilization.

Refer to the **threshold npu-utilization** command for additional information on this value.

packets-filtered-dropped

Enables threshold monitoring for the filtered/dropped packet value.

Refer to the **threshold packets-filtered-dropped** command for additional information on this value.

packets-forwarded-to-cpu

Enables threshold monitoring for the forwarded packet value.

Refer to the **threshold packets-forwarded-to-cpu** command for additional information on this value.

pdg-service

Enables threshold monitoring for PDG service.

Threshold monitoring for PDG service is disabled by default.

pdif-service

Enables threshold monitoring for PDIF service.

pdsn-service

Enables threshold monitoring for average calls setup per second for contexts and for PDSN services, A11 Request.

Refer to the **threshold packets-forwarded-to-cpu** command for additional information on this value.

pgw-service

Enables threshold monitoring for P-GW services.

Refer to the threshold total-pgw-sessions for more information on P-GW thresholds.

route-service

Enables threshold monitoring for BGP/VRF route services.

Refer to the **ip maximum-routes** command in Context configuration mode and **threshold route-service bgp-routes** in this mode for more information on route thresholds.

saegw-service

Enables threshold monitoring for SAEGW services.

Refer to the **threshold total-saegw-sessions** for more information on SAEGW thresholds.

sess-flow-count

Enables threshold monitoring for Session Flow Count.

Default: 90%

Refer to the **threshold sess-flow-count** for more information on Session Flow Count Thresholds

sess-uneven-dist

The number of threshold indicates the percentage difference of established session between the most loaded session manager and the least loaded session manager.

Default: 50%

sgw-service

Enables threshold monitoring for S-GW services.

Refer to the **threshold total-sgw-sessions** for more information on S-GW thresholds.

subscriber

Enables threshold monitoring for the subscriber and session values.

Refer to the **threshold subscriber active**, **threshold subscriber total, threshold total-ggsn-sessions**, **threshold total-gprs-sessions, threshold total-gprs-pdp-sessions, threshold total-ha-sessions, threshold total-lns-sessions, threshold total-pdsn-sessions, threshold total-pgw-sessions, threshold total-sgw-sessions, threshold total-saegw-sessions, threshold total-sgsn-sessions**, **threshold total-sgsn-pdp-sessions**, **threshold per-service-ggsn-sessions**, **threshold per-service-ha-sessions**, t**hreshold per-service-lns-sessions**, and **threshold per-service-pdsn-sessions** commands for additional information on these values.

system

Enables system (chassis) thresholds monitoring.

tpo

Important The Traffic Performance Optimization (TPO) in-line service is not supported in this release.

Usage Guidelines

Thresholding on the system is used to monitor the system for conditions that could potentially cause errors or outage. Typically, these conditions are temporary (i.e high CPU utilization, or packet collisions on a network) and are quickly resolved. However, continuous or large numbers of these error conditions within a specific time interval may be indicative of larger, more severe issues. The purpose of thresholding is to help identify potentially severe conditions so that immediate action can be taken to minimize and/or avoid system downtime.

Thresholding reports conditions using one of the following mechanisms:

- **SNMP traps:** SNMP traps have been created that indicate the condition (high threshold crossing and/or clear) of each of the monitored values. Complete descriptions and other information pertaining to these traps is located in the starentMIB(8164).starentTraps(2) section of the *SNMP MIB Reference*.

The generation of specific traps can be enabled or disabled on the system allowing you to view only those traps that are most important to you.

- **Logs:** The system provides a facility called threshold for which active and event logs can be generated. As with other system facilities, logs are generated Log messages pertaining to the condition of a monitored value are generated with a severity level of WARNING.
- **Alarm System:** High threshold alarms generated within the specified polling interval are considered "outstanding" until a the condition no longer exists and/or a condition clear alarm is generated.

"Outstanding" alarms are reported to through the system's alarm subsystem and are viewable through the CLI.

The following table indicates the reporting mechanisms supported by model.

Table 6: ASR 5500 Thresholding Reporting Mechanisms by Model

Model	Logs	Alarm System
Alert	X	
Alarm	X	X

In addition to the values that can be enabled by this command, the system supports the enabling of threshold monitoring for IP pool address availability (refer to the **ip pool** and threshold commands in this reference) and port utilization (refer to the threshold commands in this chapter).

Example

The following command enables thresholding for subscriber totals:

```
threshold monitoring subscriber
```

threshold nat-pkt-drop

Configures alarm or alert thresholds for the percentage of Network Address Translation (NAT) packet drops.

Product

NAT

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold nat-pkt-drop` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold nat-pkt-drop`

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the high NAT packet drop percentage threshold that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100. A value of 0 disables the threshold.

Default: 0

clear *low_thresh*

Specifies the low NAT packet drop percentage threshold that must be met within the polling interval for a clear alarm to be generated.

low_thresh must be an integer from 0 through 100. A value of 0 disables the threshold. If not set, the *high_thresh* will be the high and low threshold setting.

Default: 0

Usage Guidelines

Use this command to configure the NAT packet drop threshold settings.

Example

The following command sets the NAT packet drop threshold settings to a high of *55*% and a low of *15*%:

`threshold nat-pkt-drop 55 clear 15`

threshold nat-port-chunks-usage

Configures alarm or alert thresholds for the percentage of Network Address Translation (NAT) port chunk utilization.

Important This command is only available in 8.3 and later releases.

Product

NAT

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold nat-port-chunks-usage` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**
`default threshold nat-port-chunks-usage`

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the high NAT-port-chunks-usage percentage threshold that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100. A value of 0 disables the threshold.

Default: 0

clear *low_thresh*

Specifies the low nat-port-chunks-usage percentage threshold that must be met within the polling interval for a clear alarm to be generated.

low_thresh must be an integer from 0 through 100. A value of 0 disables the threshold. If not set, the *high_thresh* will be the high and low threshold setting.

Default: 0

Usage Guidelines

Use this command to configure the NAT port chunk utilization threshold settings.

Example

The following command sets the NAT port chunk utilization threshold settings to a high of *75*% and a low of *15*%:

```
threshold nat-port-chunks-usage 75 clear 15
```

threshold npu-utilization

Configures alarm or alert thresholds for the percentage of network processing unit (NPU) utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold npu-utilization *high_thresh* **clear** *low_thresh*

default

Configures this command with the default threshold settings.

Default: 0—disabled

high_thresh

Specifies the high percentage threshold for NPU utilization that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh must be an integer from 0 through 100. A value of 0 disables the threshold.

Default: 0

clear *low_thresh*

Specifies the low percentage threshold for NPU utilization that must be met within the polling interval for a clear alarm to be generated.

low_thresh must be an integer from 0 through 100. A value of 0 disables the threshold. If not set, the *high_thresh* will be the high and low threshold setting.

Default: 0

Usage Guidelines

Use this command to configure the NPU utilization threshold settings.

Example

The following command sets the NPU utilization threshold settings to a high of *90%* and a low of *75%*:

```
threshold npu-utilization 90 clear 75
```

threshold packets-filtered-dropped

Configures alarm or alert thresholds for filtered or dropped packets within the system.

Product

PDSN

GGSN

HA

P-GW

SAEGW

SGSN

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold packets-filtered-dropped *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of filtered/dropped packets experienced by the system resulting from access control list (ACL) rules that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of filtered/dropped packets experienced by the system resulting from ACL rules that maintains a previously generated alarm condition. If the number of packets falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Filtered/dropped packet thresholds generate alerts or alarms based on the total number of packets that were filtered or dropped by the system as a result of ACL rules during the specified polling interval.

Alerts or alarms are triggered for filtered/dropped packets based on the following rules:

- **Enter condition:** Actual number of filtered/dropped packets is greater than or equal to the high threshold.
- **Clear condition:** Actual number of filtered/dropped packets is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value. In addition, refer to information on ACLs in this reference.

Example

The following command configures a filtered/dropped packet high threshold count of *150000* for a system using the Alert thresholding model:

```
threshold packets-filtered-dropped 150000
```

threshold packets-forwarded-to-cpu

Configures alarm or alert thresholds for packets forwarded to active system CPUs in the system.

Product

PDSN

GGSN

HA

P-GW

SAEGW

SGSN

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold packets-forwarded-to-cpu *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of packets forwarded to CPUs that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of packets forwarded to CPUs that maintains a previously generated alarm condition. If the number of packets falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Forwarded packet thresholds generate alerts or alarms based on the total number of packets that were forwarded to active system CPU(s) during the specified polling interval. Packets are forwarded to active system CPUs when the NPUs do not have adequate information to properly route them.

Important Ping and/or traceroute packets are intentionally forwarded to system CPUs for processing. These packet types are included in the packet count for this threshold.

Alerts or alarms are triggered for forwarded packets based on the following rules:

- **Enter condition:** Actual number of forwarded packets is greater than or equal to the high threshold
- **Clear condition:** Actual number of forwarded packets is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a forwarded packet high threshold count of *100000* for a system using the Alert thresholding model:

```
threshold packets-forwarded-to-cpu 100000
```

threshold pdg-current-active-sessions

Configures alarm or alert thresholds for monitoring the total number of currently active Packet Data Gateway/Tunnel Termination Gateway (PDG/TTG) sessions.

Product

PDG/TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold pdg-current-active-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Configures the total number of active PDG sessions to be monitored on a chassis. *high_thresh* is an integer from 0 through 1000000.

There is no default, but 0 means that there is no threshold monitoring.

clear *low_thresh*

Clears the number of sessions being monitored using the *high_thresh* variable defined above.

low_thresh is an integer from 0 through 1000000.

Usage Guidelines

Thresholds are provided for monitoring the overall PDG usage on a chassis. This command is used to monitor the total number of active PDG sessions for an entire chassis.

Example

The following command configures a monitoring threshold of *300000* and a clearing threshold of 100000 active PDG sessions on a chassis:

```
threshold pdg-current-active-sessions 300000 clear 100000
```

threshold pdg-current-sessions

Configures alarm or alert thresholds for monitoring the total number of current Packet Data Gateway/Tunnel Termination Gateway (PDG/TTG) sessions, including inactive sessions.

Product

PDG/TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold pdg-current-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Configures the total number of PDG sessions on a chassis, both active and inactive. *high_thresh* is any integer from 0 through 1000000.

There is no default, but 0 means that there is no threshold monitoring.

clear *low_thresh*

Clears any number of sessions being monitored using the *high_thresh* variable defined above.

low_thresh is any integer from 0 through 1000000.

Usage Guidelines

Thresholds are provided for monitoring the overall PDG usage on a chassis. This command is used to monitor the total number of PDG sessions, both active and inactive, for an entire chassis.

Example

The following command configures a monitoring threshold of *300000* and a clearing threshold of *100000* active and inactive PDG sessions on a chassis:

```
threshold pdg-current-sessions 300000 clear 100000
```

threshold pdif-current-active-sessions

Configures alarm or alert thresholds for monitoring the total number of currently active Packet Data Interworking Function (PDIF) sessions.

Product

PDIF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold pdif-current-active sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Configures the total number of active PDIF sessions to be monitored on a chassis. *high_thresh* is any integer from 0 through 1000000.

There is no default, but 0 means that there is no threshold monitoring.

clear *low_thresh*

Clears the specified number of sessions being monitored using the *high_thresh* variable defined above. *low_thresh* is any integer from 0 through 1000000.

Usage Guidelines

Thresholds are provided for monitoring the overall PDIF usage on a chassis. This command is used to monitor the total number of active PDIF sessions for an entire chassis.

Example

The following command configures a monitoring threshold of *300000* and a clearing threshold of *100000* active PDIF sessions on a chassis:

```
threshold pdif-current-active-sessions 300000 clear 100000
```

threshold pdif-current-sessions

Configures alarm or alert thresholds for monitoring the total number of current Packet Data Interworking Function (PDIF) sessions, including inactive sessions.

Product

PDIF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold pdif-current-sessions` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Configures the total number of PDIF sessions on a chassis, both active and inactive. *high_thresh* is an integer from 0 through 1000000.

There is no default, but 0 means that there is no threshold monitoring.

clear *low_thresh*

Clears the specified number of sessions being monitored using the *high_thresh* variable defined above. *low_thresh* is an integer from 0 through 1000000.

Usage Guidelines

Thresholds are provided for monitoring the overall PDIF usage on a chassis. This command is used to monitor the total number of PDIF sessions, both active and inactive, for an entire chassis.

Example

The following command configures a monitoring threshold of *300000* and a clearing threshold of *100000* active and inactive PDIF sessions on a chassis:

```
threshold pdif-current-sessions 300000 clear 100000
```

threshold per-service-asngw-sessions

Configures alarm or alert thresholds for the number of sessions per ASN-GW service in the system.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold per-service-asngw-sessions *high_thresh* **[** *clear low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of PDP contexts for any one ASN-GW service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PDP contexts for any one ASN-GW service that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of PDP contexts for any ASN-GW service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of PDP contexts for any ASN-GW service is greater than or equal to the high threshold
- **Clear condition:** Actual number of PDP contexts is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* subscriber attaches per ANS-GW service for the Alert thresholding model:

```
threshold per-service-asngw-sessions 10000
```

threshold per-service-ggsn-sessions

Configures alarm or alert thresholds for the number of PDP contexts per GGSN service in the system.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold per-service-ggsn-sessions` *`high_thresh`* **`[`** *`clear low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of PDP contexts for any one GGSN service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PDP contexts for any one GGSN service that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of PDP contexts for any GGSN service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of PDP contexts for any GGSN service is greater than or equal to the high threshold
- **Clear condition:** Actual number of PDP contexts is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* subscriber attaches per GGSN service for the Alert thresholding model:

```
threshold per-service-ggsn-sessions 10000
```

threshold per-service-gprs-pdp-sessions

Configures alarm or alert thresholds for the number of 2G-activated PDP contexts per GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold per-service-gprs-pdp-sessions high_thresh  [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of 2G-activated PDP contexts for any one GPRS service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of 2G-activated PDP contexts for any one GPRS service. This number or higher maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, then a clear alarm will be generated.

low_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of 2G-activated PDP contexts for any GPRS service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of PDP contexts for any GPRS service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PDP contexts is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* 2G-activated PDP contexts per GPRS service for the Alert thresholding model:

```
threshold per-service-gprs-sessions 10000
```

threshold per-service-gprs-sessions

Configures alarm or alert thresholds for the number of 2G-attached subscribers per GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold per-service-gprs-sessions high_thresh  [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of 2G-attached subscribers for any one GPRS service. This threshold number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of 2G-attached subscribers for any one GPRS service. The number of subscribers must remain above this threshold in order to maintain a previously generated alarm condition. If the number of 2G subscribers falls beneath the low threshold within the polling interval, then a clear alarm will be generated.

low_thresh is an integer from 0 through 2000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of 2G-attached subscribers for any GPRS service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of 2G-attached subscribers for any GPRS service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of 2G-attached subscribers is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* 2G-attaches per GPRS service for the Alert thresholding model:

```
threshold per-service-gprs-sessions 10000
```

threshold per-service-ha-sessions

Configures alarm or alert thresholds for the number of HA sessions per Home Agent (HA) service in the system.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold per-service-ha-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of HA sessions for any one HA service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of HA sessions for any one HA service that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of HA sessions for any HA service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for HA sessions based on the following rules:

- **Enter condition:** Actual number of HA sessions for any HA service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of HA sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a HA session per service high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold per-service-ha-sessions 10000
```

threshold per-service-lns-sessions

Configures alarm or alert thresholds for the number of L2TP Network Server (LNS) sessions per LNS service in the system.

Product

PDSN

GGSN

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold per-service-lns-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of LNS sessions for any one LNS service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of LNS sessions for any one LNS service that maintains a previously generated alarm condition. If the number of LNS sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of LNS sessions for any LNS service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for LNS sessions based on the following rules:

- **Enter condition:** Actual number of LNS sessions for any LNS service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of LNS sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a LNS session per service high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold per-service-lns-sessions 10000
```

threshold per-service-pdg-sessions

Configures alarm or alert thresholds for the number of Packet Data Gateway (PDG) sessions per PDG service in the system.

Product

PDG/TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold per-service-pdg-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of PDG sessions for any one PDG service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PDG sessions for any one PDG service that maintains a previously generated alarm condition. If the number of PDG sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of PDG sessions for any PDG service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDSN sessions based on the following rules:

- **Enter condition:** Actual number of PDG sessions for any PDG service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PDSN sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a PDG session per service high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold per-service-pdg-sessions 10000
```

threshold per-service-pdsn-sessions

Configures alarm or alert thresholds for the number of Packet Data Serving Node (PDSN) sessions per PDSN service in the system.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold per-service-pdsn-sessions high_thresh  [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of PDSN sessions for any one PDSN service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PDSN sessions for any one PDSN service that maintains a previously generated alarm condition. If the number of PDSN sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of PDSN sessions for any PDSN service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDSN sessions based on the following rules:

- **Enter condition:** Actual number of PDSN sessions for any PDSN service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PDSN sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a PDSN session per service high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold per-service-pdsn-sessions 10000
```

threshold per-service-samog-sessions

Configures alarm or alert thresholds for the number of S2a Mobility over GTP (SaMOG) sessions per SaMOG service in the system.

Product

SaMOG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold per-service-samog-sessions high_thresh  [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of SaMOG sessions for any one SaMOG service that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4,000,000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of SaMOG sessions for any one SaMOG service that maintains a previously generated alarm condition. If the number of SaMOG sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 4,000,000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of SaMOG sessions for any SaMOG service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for SaMOG sessions based on the following rules:

- **Enter condition:** Actual number of SaMOG sessions for any SaMOG service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of SaMOG sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval for this value.

Example

The following command configures a SaMOG session per service high threshold count of *15000* for a system using the Alert thresholding model:

```
threshold per-service-samog-sessions 15000
```

threshold per-service-sgsn-pdp-sessions

Configures alarm or alert thresholds for the number of 3G-activated PDP contexts per SGSN service on the system.

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold per-service-sgsn-pdp-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of 3G-activated PDP contexts for any one SGSN service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of 3G-activated PDP contexts for any one SGSN service. This number or higher maintains a previously generated alarm condition. If the number of 3G-activated PDP contexts falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2400000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of 3G-activated PDP contexts for any SGSN service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of 3G-activated PDP contexts for any SGSN service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of 3G-activated PDP contexts is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* 3G-activated PDP contexts per SGSN service for the system's Alert thresholding model:

```
threshold per-service-sgsn-sessions 10000
```

threshold per-service-sgsn-sessions

Configures alarm or alert thresholds for the number of 3G-attached subscribers per SGSN service in the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold per-service-sgsn-sessions` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of 3G-attached subscribers for any one SGSN service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of 3G-attached subscribers for any one SGSN service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2000000. A value of 0 disables the threshold.

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the number of 3G-attached subscribers for any one SGSN service in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for PDP contexts based on the following rules:

- **Enter condition:** Actual number of 3G-attached subscribers for any single SGSN service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of 3G-attached subscribers for any single SGSN service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold count of *10000* 3G-attached subscribers per SGSN service for a system using the Alert thresholding model:

```
threshold per-service-sgsn-sessions 10000
```

threshold phsgw-auth-failure

Configures alarm or alert thresholds for the number of authentication failures in Personal Handyphone Service Gateway (PHSGW) service.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phsgw-auth-failure *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number for PHSGW authentication failures in any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PHSGW authentication failures in any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW authentication failures.

Alerts or alarms are triggered for authentication failures based on the following rules:

- **Enter condition:** Actual number of PHSGW authentication failures in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW authentication failures in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW au the tic a it on failures:

```
threshold phsgw-auth-failure 100000 clear 50000
```

threshold phsgw-eapol-auth-failure

Configures alarm or alert thresholds for authentication failures for a PHSGW service using Extensible Authentication Protocol Over LAN (EAPOL).

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phsgw-eapol-auth-failure *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number for PHSGW EAPOL failures in any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of PHSGW EAPOL failures in any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW EAPOL failures.

Alerts or alarms are triggered for EAPOL failures based on the following rules:

- **Enter condition:** Actual number of PHSGW EAPOL failures in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW EAPOL failures in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW EAPOL failures:

```
threshold phsgw-eapol-auth-failure 100000 clear 50000
```

threshold phsgw-handoff-denial

Configures alarm or alert thresholds for handoff denials in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phsgw-handoff-denial *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of handoff denials for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of handoff denials for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW handoff denials.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW handoff denials in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW handoff denials in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW handoff denials:

```
threshold phsgw-handoff-denial 100000 clear 50000
```

threshold phsgw-max-eap-retry

Configures alarm or alert thresholds for the maximum number of Extensible Authentication Protocol (EAP) retries in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold phsgww-max-eap-retry` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of EAP retries for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of EAP retries for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW EAP retries.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW EAP retries in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW EAP retries in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW EAP retries:

```
threshold phsgw-max-eap-retry 100000 clear 50000
```

threshold phsgw-max-eapol-retry

Configures alarm or alert thresholds for the maximum number of Extensible Authentication Protocol over LAN (EAPOL) retries in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phsgww-max-eapol-retry *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of EAPOL retries for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of EAPOL retries for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW EAPOL retries.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW EAPOL retries in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW EAPOL retries in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW EAPOL retries:

```
threshold phsgw-max-eapol-retry 100000 clear 50000
```

threshold phsgw-network-entry-denial

Configures, alarm or alert thresholds for the number of network entry denials in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phsgww-max-network-entry-denial *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of network entry denials for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of network entry denials for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW network entry denials.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW network entry denials in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW network entry denials in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW network entry denials:

```
threshold phsgw-network-entry-denial 100000 clear 50000
```

threshold phsgw-session-setup-timeout

Configures alarm or alert thresholds for the number of PHSGW sessions that timed out during setup.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold phsgww-session-setup-timeout high_thresh  [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of session setup timeouts for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of session setup timeouts for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW session setup timeouts.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW session setup timeouts in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW session setup timeouts in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW session setup timeouts:

```
threshold phsgw-session-setup-timeout 100000 clear 50000
```

threshold phsgw-session-timeout

Configures alarm or alert thresholds for the number of PHSGW sessions that timed out.

Product PHSGW

Privilege Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold phsgww-session-timeout*high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of session timeouts for any one PHSGW service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of session timeouts for any one PHSGW service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSGW session timeouts.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSGW session timeouts in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSGW session timeouts in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSGW session timeouts:

```
threshold phsgw-session-timeout 100000 clear 50000
```

threshold phspc-session-setup-timeout

Configures alarm or alert thresholds for the number of Personal Handyphone System - Personal Computer (PHSPC) sessions that timed out during setup.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold phspc-session-setup-timeout`*`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of session setup timeouts for any one PHSPC service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of session setup timeouts for any one PHSPC service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSPC session setup timeouts.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSPC session setup timeouts in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSPC session setup timeouts in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSPC session setup timeouts:

```
threshold phspc-session-setup-timeout 100000 clear 50000
```

threshold phspc-sleep-mode-timeout

Configures alarm or alert thresholds for the number of PHSPC sessions that timed out when the personal computer went into sleep mode.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phspc-sleep-mode-timeout*high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of sleep mode timeouts for any one PHSPC service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of sleep mode timeouts for any one PHSPC service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important

This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSPC sleep mode timeouts.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSPC sleep mode timeouts in any one PHSGW service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSPC sleep mode timeouts in any one PHSGW service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSPC sleep mode timeouts:

```
threshold phspc-sleep-mode-timeout 100000 clear 50000
```

threshold phspc-sm-entry-denial

Configures alarm or alert thresholds for the number of denied PHSPC short message (SM) sessions.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold phspc-sm-entry-denial*high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of SM entry denials for any one PHSPC service. This number must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of SM entry denials for any one PHSPC service. This number must be met or exceeded to maintain a previously generated alarm condition. If the number of subscribers falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Set the monitoring and clearing thresholds for PHSPC SM entry denials.

Alerts or alarms are triggered for handoff denials based on the following rules:

- **Enter condition:** Actual number of PHSPC SM entry denials in any one PHSPC service is greater than or equal to the high threshold.
- **Clear condition:** Actual number of PHSPC SM entry denials in any one PHSPC service is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a monitoring threshold of *100000* and a clearing threshold of *50000* for PHSPC SM entry denials:

```
threshold phsgw-sm-entry-denial 100000 clear 50000
```

threshold monitoring cp-monitor-loss

The new CLI command enables or disables threshold monitoring for the Control Plane.

Product

All (VPC-DI Platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[no] threshold monitoring cp-monitor-loss
```

no

Disables Control Plane related threshold.

threshold monitoring cp-monitor-loss

Enables Control Plane related threshold.

Usage Guidelines

The new CLI command enables or disables the threshold monitoring for the Control Plane. This CLI is disabled by default.

Example

The following command configures threshold monitoring for the Control Plane.

```
threshold monitoring cp-monitor-loss
```

threshold monitoring dp-monitor-loss

The new CLI command enables or disables threshold monitoring for the Data Plane.

Product

All (VPC-DI Platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[no] threshold monitoring dp-monitor-loss
```

no

Disables Data Plane related threshold.

threshold monitoring dp-monitor-loss

Enables Data Plane related threshold.

Usage Guidelines

The new CLI command enables or disables the threshold monitoring for the Data Plane. This CLI is disabled by default.

Example

The following command configures threshold monitoring for the Data Plane.

```
threshold monitoring dp-monitor-loss
```

threshold monitoring total-volume

The new CLI command is added to configure the threshold monitoring for the total volume.

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

`[no] threshold monitoring total-volume`

no

Disables the total-volume related threshold.

threshold monitoring total-volume

Enables the total-volume related threshold.

Usage Guidelines

The new CLI command is added to configure the threshold monitoring for the total volume. This CLI is disabled by default.

Example

The following command configures the threshold monitoring for the total volume.

`threshold monitoring total-volume`

threshold sess-uneven-dist

Indicates the percentage difference of established session between the most loaded session manager and the least loaded session manager.

Product

All

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default | no] threshold sess-uneven-dist *threshold_percentage* **[clear** *clear_threshold_percentage* **[sess-min-sessmgr-cnt** *number_of_sessmgr_with_least_calls***[sess-active***number_of_min_active_session_system_wide***]]]**

no

Disables threshold monitoring for the specified value.

default

Sets or restores the default value assigned to the specified parameter.

sess-uneven-dist

Indicates the percentage difference of established session between the most loaded session manager and the least loaded session manager.

clear

Clears the configured alarm threshold.

sess-min-sessmgr-cnt

Configures the number of counts of session managers with minimum number of calls to be monitored for calculating uneven session distribution.

sess-active

Configures the active session after which uneven call distribution threshold will be monitored.

Example

The following command indicates the number of threshold percentage difference of established session between the most loaded session manager and the least loaded session manager.

```
threshold sess-uneven-dist
```

threshold total-volume rulebase

The new CLI command is added to configure the threshold value of the total volume for rulebase and ruledef.

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default] threshold total-volume rulebase *rulebase-name* { **ruledef** *ruledef-name* | **group-of-ruledef** *gor-name* } **clear**

high_thresh

Deletes the specified threshold value.

total-volume

Configures total volume amount threshold.

rulebase *rulebase-name*

Configures rulebase for which threshold is monitored For rulebase name, enter a string of size 1 to 63.

ruledef *ruledef-name*

Configures ruledef for which threshold is monitored. For ruledef name, enter a string of size 1 to 63.

group-of-ruledef *gor-name*

Configures group-of-ruledef for which threshold is monitored.

threshold value for total-volume

Enter an integer from 1 to 1000000000.

clear

Configures the alarm clear threshold.

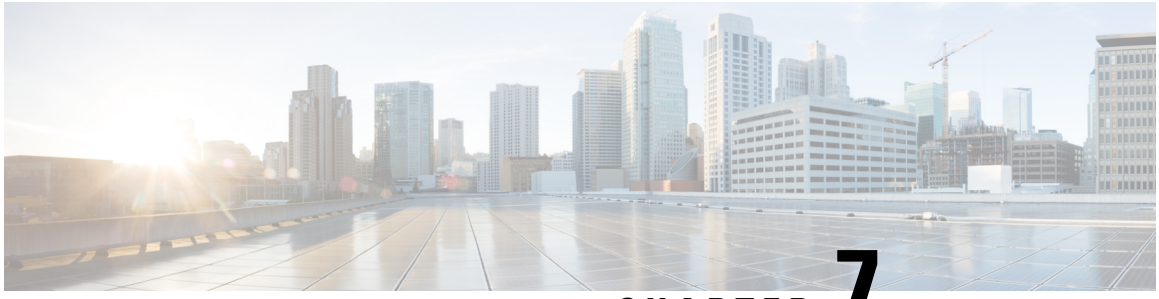
Usage Guidelines

The new CLI command is added to configure the threshold value of the total volume for rulebase and ruledef. This CLI is disabled by default.

Example

The following command configures a total volume for rulebase rbase1 and ruledef rdef1 in 15 mins time. Expectations are not more than 10000; therefore, iraise alarm/trap and clear the trap when total volume goes below 100 in the subsequent polling cycle. Also, if threshold is configured as 10000, then clear should always be less than 10000.

```
threshold total-volume rulebase rbase1 ruledef ruledef1 10000 (threshold
range: 1byte to 1GB) clear 100 (threshold range: 1byte to 1GB)
```



CHAPTER 7

Global Configuration Mode Commands (threshold poll commands A - N)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **threshold poll 10sec-cpu-utilization interval** through **threshold poll npu-utilization interval**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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- threshold poll ipsec-ike-failrate interval, on page 569
- threshold poll ipsec-ike-failures interval, on page 569
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- threshold poll ipsec-tunnels-established interval, on page 571
- threshold poll ipsec-tunnels-setup interval, on page 572
- threshold poll license-remaining-session interval, on page 573
- threshold poll ls-logs-volume interval, on page 574
- threshold poll mgmt-cpu-memory-usage interval, on page 575
- threshold poll mgmt-cpu-utilization interval, on page 576
- threshold poll mme-attach-failure interval, on page 577
- threshold poll mme-auth-failure interval, on page 578
- threshold poll nat-pkt-drop, on page 579
- threshold poll nat-port-chunks-usage interval, on page 580
- threshold poll npu-utilization interval, on page 581

threshold poll 10sec-cpu-utilization interval

Configures the polling interval over which to measure a 10-second average of CPU utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll 10sec-cpu-utilization interval duration
default threshold poll 10sec-cpu-utilization interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUUtilization10Sec** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the 10-second CPU utilization threshold:

```
threshold poll 10sec-cpu-utilization 600
```

threshold poll a11-ppp-send-discard interval

Configures the polling interval for PDSN service over which to count the number of packets that the PPP protocol processing layer internally discarded on transmit for any reason.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll a11-ppp-send-discard interval duration
default threshold poll a11-ppp-send-discard interval
```

default

Restores the specified parameter to its default value 0 seconds.

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 900 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSvcA11PPPSendDiscard** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the A11 PPP send discard threshold:

```
threshold poll a11-ppp-send-discard interval 600
```

threshold poll a11-rac-msg-discard interval

Configures the polling interval for PDSN service over which to count the number of Discarded A11 Registration Acknowledgements.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll a11-rac-msg-discard interval duration
default threshold poll a11-rac-msg-discard interval
```

default

Restores the specified parameter to its default value 0 seconds.

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 900 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSvcA11RACMsgDiscard** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the A11 RAC message discard threshold:

```
threshold poll a11-rac-msg-discard interval 600
```

threshold poll aa11-rrp-failure interval

Configures the polling interval for PDSN service over which to count A11 Registration Response failures.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll a11-rrp-failure interval duration
default threshold poll a11-rrp-failure interval
```

default

Restores the specified parameter to its default value 0 seconds.

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 900 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSvcA11RRPFailure** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the A11 RRP failure threshold:

```
threshold poll a11-rrp-failure interval 600
```

threshold poll a11-rrq-msg-discard interval

Configures the polling interval for PDSN service over which to count how many A11 Registration Request messages are discarded.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll a11-rrq-msg-discard interval duration
default threshold poll a11-rrq-msg-discard interval
```

default

Restores the specified parameter to its default value 0 seconds.

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 900 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSvcA11RRQMsgDiscard** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the A11 RRQ message discard threshold:

```
threshold poll a11-rrq-msg-discard interval 600
```

threshold poll aaa-acct-archive-queue-size interval

Configures the polling interval over which to measure AAA accounting archive message queue size.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-acct-archive-queue-size1 interval duration
default threshold poll aaa-acct-archive-queue-size1 interval
threshold poll aaa-acct-archive-queue-size2 interval duration
default threshold poll aaa-acct-archive-queue-size2 interval
threshold poll aaa-acct-archive-queue-size3 interval duration
default threshold poll aaa-acct-archive-queue-size3 interval
```

default

Restores the specified parameter to its default value 900 seconds.

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAAcctArchiveQueue-**<*1-3*> command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA accounting archive queue size 1 threshold:

```
threshold poll aaa-acct-archive-queue-size1 interval 600
```

threshold poll aaa-acct-archive-size interval

Configures the polling interval over which to count archived AAA accounting messages.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-acct-archive-size interval duration
default threshold poll aaa-acct-archive-size interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds for the AAA accounting archive size threshold:

```
threshold poll aaa-acct-archive-size interval 600
```

threshold poll aaa-acct-failure interval

Configures the polling interval over which to count failed AAA accounting requests.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-acct-failure interval duration
default threshold poll aaa-acct-failure interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAAcctFail** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA accounting failure threshold:

```
threshold poll aaa-acct-failure interval 600
```

threshold poll aaa-acct-failure-rate interval

Configures the polling interval over which to measure the percentage of AAA accounting failures.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-acct-failure-rate interval duration
default threshold poll aaa-acct-failure-rate interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAAcctFailRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA accounting failure rate threshold:

```
threshold poll aaa-acct-failure-rate interval 600
```

threshold poll aaa-auth-failure interval

Configures the polling interval over which to count failed authentication requests.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-auth-failure interval duration
default threshold poll aaa-auth-failure interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAAuthFail** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA authentication failure threshold:

```
threshold poll aaa-auth-failure interval 600
```

threshold poll aaa-auth-failure-rate interval

Configures the polling interval over which to measure the percentage of AAA authentication failures.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-auth-failure-rate interval duration
default threshold poll aaa-auth-failure-rate interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAAuthFailRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA authentication failure rate threshold:

```
threshold poll aaa-auth-failure-rate interval 600
```

threshold poll aaa-retry-rate interval

Configures the polling interval over which to measure the percent of AAA request message retries.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaa-retry-rate interval duration
default threshold poll aaa-retry-rate interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAARetryRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA retry rate threshold:

```
threshold poll aaa-retry-rate interval 600
```

threshold poll aaamgr-request-queue interval

Configures the polling interval over which to count the number of AAA Manager Requests for each AAA manager process.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll aaamgr-request-queue interval duration
default threshold poll aaamgr-request-queue interval
```

default

Restores the specified parameter to its default value 0 seconds.

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshAAAMgrQueue** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the AAA manager request queue threshold:

```
threshold poll aaamgr-request-queue interval 600
```

threshold poll active-subscriber interval

Configures the polling interval over which to count the total number of active subscriber sessions.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll active-subscriber interval  duration
default threshold poll active-subscriber interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSubscriberActive** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the active subscriber threshold:

```
threshold poll active-subscriber interval 600
```

threshold poll asngw-auth-failure interval

Configures the polling interval over which to count or measure the thresholding value for ASN Gateway authentication failure.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-auth-failure interval dur
default threshold poll asngw-auth-failure interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWAuthFail** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the ASN Gateway authentication failure threshold:

```
threshold poll asngw-auth-failure interval 600
```

threshold poll asngw-handoff-denial interval

Configures the polling interval over which to count or measure the thresholding value for ASN Gateway hand-off denial.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-handoff-denial interval dur
default threshold poll asngw-handoff-denial interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the polling interval time in seconds.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWHandoffDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the hand-off denial threshold:

```
threshold poll asngw-handoff-denial interval 600
```

threshold poll asngw-max-eap-retry interval

Configures the polling interval over which to count or measure the thresholding value for maximum Extensible Authentication Protocol (EAP) authentication retries.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-max-eap-retry interval dur
default threshold poll asngw-max-eap-retry interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWMaxEAPRetry** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the maximum EAP authentication retry threshold:

```
threshold poll asngw-max-eap-retry interval 600
```

threshold poll asngw-network-entry-denial interval

Configures the polling interval over which to count or measure the thresholding value for network entry denial to an MS.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-network-entry-denial interval dur
default threshold poll asngw-network-entry-denial interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWNWEntryDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the network entry denial threshold:

```
threshold poll asngw-network-entry-denial interval 600
```

threshold poll asngw-r6-invalid-nai interval

Configures the polling interval over which to count or measure the thresholding value for invalid Network Access Identifiers (NAIs) in R6 messages.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-r6-invalid-nai interval dur
default threshold poll asngw-r6-invalid-nai interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWR6InvNai** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the invalid NAIs in R6 messages threshold:

```
threshold poll asngw-r6-invalid-nai interval 600
```

threshold poll asngw-session-setup-timeout interval

Configures the polling interval over which to count or measure the thresholding value for session setup timeout.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-session-setup-timeout interval dur
default threshold poll asngw-session-setup-timeout interval
```

default

Restores the specified parameter to its default value 300 seconds.

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWSessSetupTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the session setup timeout threshold:

```
threshold poll asngw-session-setup-timeout interval 600
```

threshold poll asngw-session-timeout interval

Configures the polling interval over which to count or measure the thresholding value for session timeout.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asngw-session-timeout interval dur
default threshold poll asngw-session-timeout interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWSessTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the session timeout threshold:

```
threshold poll asngw-session-timeout interval 600
```

threshold poll asnpc-idle-mode-timeout interval

Configures the polling interval over which to count the number of ASNPC Instant Messenger idle mode timeouts.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asnpc-idle-mode-timeout interval dur
default threshold poll asnpc-idle-mode-timeout interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNPCIdleModeTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the idle mode timeout threshold:

```
threshold poll asnpc-idle-mode-timeout interval 600
```

threshold poll asnpc-im-entry-denial interval

Configures the polling interval over which to count the number of ASNPC Instant Messenger entry denials.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asnpc-im-entry-denial interval dur
default threshold poll asnpc-im-entry-denial interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNPCImEntryDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the IM entry denial threshold:

```
threshold poll asnpc-im-entry-denial interval 600
```

threshold poll asnpc-lu-denial interval

Configures the polling interval over which to count the number of ASNPC Location Update (LU) denials.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asnpc-lu-denial interval dur
default threshold poll asnpc-lu-denial interval interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNPCLuDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the LU denial threshold:

```
threshold poll asnpc-lu-denial interval 600
```

threshold poll asnpc-session-setup-timeout interval

Configures the polling interval over which to count the number of times an ASNPC session timed out before setup completion.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll asnpc-session-setup-timeout interval  dur
default threshold poll asnpc-session-setup-timeout interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNPCSessSetupTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the session setup timeout threshold:

```
threshold poll asnpc-session-setup-timeout interval 600
```

threshold poll available-ip-pool-group interval

Configures the polling interval over which to measure IP pool utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll available-ip-pool-group interval dur
default threshold poll available-ip-pool-group interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPPoolAvail** command in this mode.

Example

The following command configures the polling interval to *600* seconds for available IP pool threshold:

```
threshold poll available-ip-pool-group interval 600
```

threshold poll call-reject-no-resource interval

Configures the polling interval over which to measure IP pool utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll call-reject-no-resource interval  dur
default threshold poll call-reject-no-resource interval
```

default

Restores the specified parameter to its default value (900 seconds).

interval *dur*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCallRejectNoResource** command in this mode.

Example

The following command configures the polling interval to *600* seconds for call reject no-resource threshold:

```
threshold poll call-reject-no-resource interval 600
```

threshold poll call-setup interval

Configures the polling interval over which to count the number of calls that were setup.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll call-setup interval  dur
default threshold poll call-setup interval
```

default

Restores the specified parameter to its default value (900 seconds).

interval *dur*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCallSetup** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the call setup threshold:

```
threshold poll call-setup interval 600
```

threshold poll call-setup-failure interval

Configures the polling interval over which to count the number of calls that failed to setup.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll call-setup-failure interval  dur
default threshold poll call-setup-failure interval
```

default

Restores the specified parameter to its default value (900 seconds).

interval *dur*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCallSetupFailure** command in this mode.

Example

The following command configures the polling interval to *600* seconds for call setup failure threshold:

```
threshold poll call-setup-failure interval 600
```

threshold poll call-setup-failures interval

Configures the polling interval over which to count the number of CSCF call setup failures.

Product

SCM

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll call-setup-failures interval  dur
default threshold poll call-setup-failures interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCSCFSvcTotalCallFailure** command in this mode.

Example

The following command configures the polling interval to *600* seconds for CSCF session timeout threshold:

```
threshold poll call-setup-failures interval 600
```

threshold poll call-total-active interval

Configures the polling interval over which to count the total number of CSCF active calls.

Product

SCM

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll call-total-active interval  dur
default threshold poll call-total-active interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCSCFSvcTotalActiveCalls** command in this mode.

Example

The following command configures the polling interval to *600* seconds for session timeout threshold:

```
threshold poll call-total-active interval 600
```

threshold poll card-temperature-near-power-off-limit interval

Configures the polling interval over which to count the number of times card temperatures reached the power-off limit.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll card-temperature-near-power-off-limit interval  dur
default threshold poll card-temperature-near-power-off-limit interval
```

default

Restores the specified parameter to its default value (300 seconds).

interval *dur*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is an integer from 60 through 60000 in multiples of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCardTemperatureNearPowerOffLimit** command in this mode.

Example

The following command configures the polling interval to *600* seconds for session timeout threshold:

```
threshold poll card-temperature-near-power-off-limit interval 600
```

threshold poll cdr-file-space interval

Configures the polling interval for Charging Data Record (CDR) File Space Usage threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll cdr-file-space interval duration
default threshold poll cdr-file-space interval
```

default

Uses the default polling interval.

Default: 300 seconds

interval *duration*

Specifies the polling interval (in seconds) for the CDR File Space Usage threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval for CDR File Space Usage threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCDRFileSpace** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CDR file space usage threshold:

```
threshold poll cdr-file-space interval 600
```

threshold poll contfilt-block interval

Configures the polling interval Content Filtering Block threshold.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll contfilt-block interval duration
default threshold poll contfilt-block interval
```

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *duration*

Specifies the polling interval (in seconds) for the Content Filtering Block threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval Content Filtering Block threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshContFiltBlock** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the content filtering blocking threshold:

```
threshold poll contfilt-block interval 600
```

threshold poll contfilt-rating interval

Configures the polling interval for the Content Filtering Rating threshold.

Product

CF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll contfilt-rating interval duration
default threshold poll contfilt-rating interval
```

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the polling interval (in seconds) for the Content Filtering Rating threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval for the Content Filtering Rating threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshContFiltRating** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the content filtering rating processing threshold:

```
threshold poll contfilt-rating interval 600
```

threshold cp-monitor-5min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 5 minutes on the Control Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold cp-monitor-5min-loss pct [ clear pct ]
default threshold cp-monitor-5min-loss
```

default

Disables the configured thresholds for the Control Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshControlPlaneMonitor5MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshControlPlaneMonitor5MinsLoss
- ThreshClearControlPlaneMonitor5MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold cp-monitor-60min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 60 minutes on the Control Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold cp-monitor-60min-loss pct [ clear pct ]
default threshold cp-monitor-60min-loss
```

default

Disables the configured thresholds for the Control Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshControlPlaneMonitor60MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshControlPlaneMonitor60MinsLoss
- ThreshClearControlPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold poll cpu-available-memory interval

Configures the polling interval over which to measure the percentage of total packet processing card CPU memory used.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll cpu-available-memory interval  duration
default threshold poll cpu-available-memory interval
```

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUMemory** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU available memory threshold:

```
threshold poll cpu-available-memory interval 600
```

threshold poll cpu-crypto-cores-utilization interval

Configures the polling interval over which to measure the percentage of crypto core utilization.

Product

ePDG

HeNBGW

SecGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll crypto-cores-utilization interval duration
default threshold poll crypto-cores-utilization interval
```

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *duration*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Refer to the **threshold cpu-crypto-core-utilization** command for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds for the CPU crypto core utilization threshold:

```
threshold poll cpu-crypto-cores-utilization interval 600
```

threshold poll cpu-load interval

Configures the polling interval over which to monitor packet processing card CPU loads using a 5-minute average measurement.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll cpu-load interval` *`duration`*
`default threshold poll cpu-load interval`

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPULoad** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU load threshold:

```
threshold poll cpu-load interval 600
```

threshold poll cpu-memory-usage interval

Configures the polling interval over which to measure the percentage of total packet processing card CPU memory used.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll cpu-memory-usage interval *duration*
default threshold poll cpu-memory-usage interval

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUMemUsage** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU memory usage threshold:

```
threshold poll cpu-memory-usage interval 600
```

threshold poll cpu-orbs-crit interval

Configures the polling interval over which to measure the percentage of CPU utilization by the ORBS software task for critical-level alerts.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll cpu-orbs-crit interval *duration*
default threshold poll cpu-orbs-crit interval

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUOrbsCritical** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU ORBS critical threshold:

```
threshold poll cpu-orbs-crit interval 600
```

threshold poll cpu-orbs-warn interval

Configures the polling interval over which to measure the percentage of CPU utilization by the ORBS software task for warning-level alerts.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll cpu-orbs-warn interval *duration*
default threshold poll cpu-orbs-warn interval

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUOrbsWarn** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU ORBS warning threshold:

```
threshold poll cpu-orbs-warn interval 600
```

threshold poll cpu-session-throughput interval

Configures the polling interval over which to measure total throughput for all Session Manager tasks running on each packet processing card CPU.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll cpu-session-throughput interval *duration*
default threshold poll cpu-session-throughput interval

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSessCPUThroughput** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU session throughput threshold:

```
threshold poll cpu-session-throughput interval 600
```

threshold poll cpu-utilization interval

Configures the polling interval over which to measure the percentage of CPU utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll cpu-utilization interval` *`duration`*
`default threshold poll cpu-utilization interval`

default

Uses the default threshold polling interval.

Default: 300 seconds

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshCPUUtilization** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the CPU utilization threshold:

```
threshold poll cpu-utilization interval 600
```

threshold poll dcca-bad-answers interval

Configures the polling interval for DCCA Bad Answers threshold—invalid or bad response to the system from the Diameter server.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll dcca-bad-answers interval *duration*
default threshold poll dcca-bad-answers interval

default

Uses the default threshold polling interval.

Default: 900 seconds

interval *duration*

Specifies the polling interval (in seconds) for the DCCA Bad Answers threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the poling interval for DCCA Bad Answers threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholding in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshDCCABadAnswers** command in this mode.

Example

The following command configures the polling interval to *600* seconds for invalid or bad response threshold to the system from Diameter server:

```
threshold poll dcca-rating-failed interval 600
```

threshold poll dcca-protocol-error interval

Configures the polling interval for Diameter Credit-Control Application (DCCA) Protocol Error threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll dcca-protocol-error interval` *`duration`*
`default threshold poll dcca-protocol-error interval`

default

Uses the default threshold polling interval.

Default: 900 seconds

interval *duration*

Specifies the polling interval (in seconds) for the DCCA Protocol Error threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

Use this the polling interval for DCCA Protocol Error threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholding in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshDCCAProtocolError** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the DCCA protocol error threshold:

```
threshold poll dcca-protocol-error interval 600
```

threshold poll dcca-rating-failed interval

Configures the polling interval for Diameter Credit-Control Application (DCCA) Rating Failed threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll dcca-rating-failed interval *duration*
default threshold poll dcca-rating-failed interval

default

Uses the default polling interval.

Default: 900 seconds

interval *duration*

Specifies the polling interval (in seconds) for the DCCA Rating Failed threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval for DCCA Rating Failed threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholding in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshDCCARatingFailed** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the Diameter Credit Control Application (DCCA) Rating Group (content-id) request reject thresholds:

```
threshold poll dcca-rating-failed interval 600
```

threshold poll dcca-unknown-rating-group interval

Configures the polling interval for Diameter Credit-Control Application (DCCA) Unknown Rating Group threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll dcca-unknown-rating-group interval *duration*
default threshold poll dcca-unknown-rating-group interval

default

Uses the default polling interval.

Default: 900 seconds

interval *duration*

Specifies the polling interval (in seconds) for the DCCA Unknown Rating Group threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval for DCCA Unknown Rating Group threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholding in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshDCCAUnknownRatingGroup** command in this mode.

Example

The following command configures the polling interval to *600* seconds to threshold for the unknown DCCA Rating Group (content-id) returned by Diameter to system:

```
threshold poll dcca-unknown-rating-group interval 600
```

threshold poll dereg-reply-error interval

Configures the polling interval to count the number of de-registration reply errors per HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll dereg-reply-error interval *duration*
default threshold poll dereg-reply-error interval

default

Uses the default polling interval.

Default: 300 seconds

interval *duration*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000. The input will be rounded up to the closest multiple of 30.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands in this chapter for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHASvcDeregReplyError** command in this mode.

Example

The following command configures the HA de-registration reply error threshold polling interval to *600* seconds:

```
threshold poll dereg-reply-error interval 600
```

threshold poll diameter-retry-rate interval

Configures the polling interval for the Diameter Credit-Control Application (DCCA) Diameter Retry Rate threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll diameter-retry-rate interval *duration*
default threshold poll diameter-retry-rate interval

default

Uses the default polling interval.

Default: 300 seconds

interval *duration*

Specifies the polling interval (in seconds) for the Diameter Retry Rate threshold.

duration must be an integer from 60 through 60000. The input will be rounded up to the closest multiple of 30.

Usage Guidelines

This command specifies the polling interval for Diameter Retry Rate threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands in this chapter for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshDiameterRetryRate** command in this mode.

Example

The following command configures the Diameter Retry Rate threshold polling interval to *600* seconds:

```
threshold poll diameter-retry-rate interval 600
```

threshold poll disconnect-reason

Configures alarm and clear thresholds based on the number of specified disconnects on a chassis.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ]threshold poll disconnect-reason
disc-reason_namepolling_interval_seconds
```

default

Restores the threshold polling interval to 900 seconds (15 minutes).

disc-reason_name

disc-reason_name must be an alphanumeric string of 1 through 47 characters.

Enter the disc-reason name exactly as shown in the Statistics and Counters Reference or the output of the **show session disconnect-reasons verbose** command. **Do not include the number assigned to the disconnect reason shown in parentheses "(nnn)" at the end of the name.**

polling_interval_seconds

Default: 300 seconds.

*polling_interval_seconds*must be an integer from 300 to 6,000. Configures the threshold polling interval in seconds.

Important The operator can configure a maximum of 30 disconnect reasons for monitoring. When a disconnect reason crosses the threshold, a trap is generated and corrective actions are taken.

Usage Guidelines

Use this command to configure alarm and clear thresholds based on the number of specified disconnects on a chassis.

If a specific disconnect-reason crosses a set limit of threshold, this feature provides the operator the ability to see alarms and react to potential network events in a more timely manner. This feature now allows an operator the ability to configure thresholds (percentage) for all disconnect reasons (600+) using the show disconnect CLI command. This will display the disconnect reason as well as the threshold set for that particular disconnect reason. Once a threshold is exceeded, an alarm is generated. Approximately 30 (maximum) disconnect reasons can be configured at any time.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures threshold polling interval for admin-disconnect to 900:

```
threshold disconnect-reason admin-disconnect interval 900
```

threshold dp-monitor-5min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 5 minutes on the Data Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dp-monitor-5min-loss pct [ clear pct ]
default threshold dp-monitor-5min-loss
```

default

Disables the configured thresholds for the Data Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshDataPlaneMonitor5MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Data Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshDataPlaneMonitor5MinsLoss / ThreshClearDataPlaneMonitor5MinsLoss
- ThreshDataPlaneMonitor60MinsLoss / ThreshDataPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold dp-monitor-60min-loss

Configures the alarm thresholds for the percentage of packet loss for the past 60 minutes on the Data Plane, across any of cards on a VPC-DI system.

Product

All (VPC-DI platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold dp-monitor-60min-loss pct [ clear pct ]
default threshold dp-monitor-60min-loss
```

default

Disables the configured thresholds for the Data Plane.

clear *pct*

Clears the configured percentage of packet loss. If the number falls beneath the low threshold within the polling interval, a clear alarm will be generated (ThreshDataPlaneMonitor60MinsLoss).

Usage Guidelines

Use this command to measure percentage packet loss over the corresponding time interval on the Control Plane. The threshold alarm and SNMP trap are raised for any card to card connection that exceeds the configured loss percentage over the indicated time period.

The following alarms/traps are generated when these thresholds are exceeded:

- ThreshDataPlaneMonitor60MinsLoss
- ThreshClearDataPlaneMonitor60MinsLoss

See the *SNMP MIB Reference* for more details about these alarms/traps.

threshold poll edr-file-space interval

Command configures the polling interval for Event Data Record (EDR) File Space Usage threshold.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll edr-file-space interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the polling interval (in seconds) for the EDR File Space Usage threshold.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command configures the polling interval for EDR File Space Usage threshold.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshEDRFileSpace** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the EDR file space usage threshold:

```
threshold poll edr-file-space interval 600
```

threshold poll edr-udr-dropped-flow-control interval

Configures the polling interval to count the total number of Event Data Records (EDRs) and Usage Data Records (UDRs) discarded due to ACSMGR flow control.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll edr-udr-dropped-flow-control interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds for the EDR/UDR drops due to flow control threshold:

```
threshold poll edr-udr-dropped-flow-control interval 600
```

threshold poll egtpc-s2b-setup-fail-rate interval

Configures the polling interval for eGTP-C S2b setup fail rate.

Product

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll egtpc-s2b-setup-fail-rate interval *duration*
default threshold poll egtpc-s2b-setup-fail-rate interval

interval *duration*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 300 to 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

To enable an SNMP trap for monitoring this threshold, use the **threshold monitoring call-setup** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the S2b call setup failure threshold:

```
threshold poll egtpc-s2b-setup-fail-rate interval 600
```

threshold poll egtpc-s5-setup-fail-rate interval

Configures the polling interval for eGTP-C S5 setup fail rate.

Product

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll egtpc-s5-setup-fail-rate interval duration
default threshold poll egtpc-s5-setup-fail-rate interval
```

interval *duration*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 300 to 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

To enable an SNMP trap for monitoring this threshold, use the **threshold monitoring call-setup** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the S5 call setup failure threshold:

```
threshold poll egtpc-s5-setup-fail-rate interval 600
```

threshold poll epdg-current-sessions interval

Configures the polling interval to count the total number of subscribers currently in Evolved Packet Date Gateway (ePDG) sessions.

Product

ACS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll epdg-current-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshEPDGCurrSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the ePDG sessions threshold:

```
threshold poll epdg-current-sessions interval 600
```

threshold poll epdg-ikev2-authentication-failures

Configures threshold polling interval for IKEv2 Authentication Failures per ePDG service.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default] threshold poll epdg-ikev2-authentication-failures interval *interval*

default

Sets / Restores default value assigned for threshold polling interval for IKEv2 Authentication Failures per ePDG service.

interval *interval*

Configures threshold polling interval in seconds.

interval is an integer from 60 through 60000.

Usage Guidelines

Use this command to configure threshold polling interval for IKEv2 Authentication Failures per ePDG service.

Example

The following command configures threshold polling interval as 75 seconds for IKEv2 Authentication Failures per ePDG service.

```
threshold poll epdg-ikev2-authentication-failures interval 75
```

threshold poll epdg-ikev2-setup-attempts

Configures threshold polling interval for IKEv2 Setup Attempts per ePDG service.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ default ] threshold poll epdg-ikev2-setup-attempts interval` *`interval`*

default

Sets / Restores default value assigned for threshold polling interval for IKEv2 Setup Attempts per ePDG service.

interval *interval*

Configures threshold polling interval in seconds.

interval is an integer from 60 through 60000.

Usage Guidelines

Use this command to configure threshold polling interval for IKEv2 Setup Attempts per ePDG service.

Example

The following command configures threshold polling interval as 65 seconds for IKEv2 Setup Attempts per ePDG service.

```
threshold poll epdg-ikev2-setup-attempts interval 65
```

threshold poll epdg-ikev2-setup-failure

Configures threshold polling interval for IKEv2 Setup Failure per ePDG service.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[ default ] threshold poll epdg-ikev2-setup-failure interval` *`interval`*

default

Sets / Restores default value assigned for threshold polling interval for IKEv2 Setup Failure per ePDG service.

interval *interval*

Configures threshold polling interval in seconds.

interval is an integer from 60 through 60000.

Usage Guidelines

Use this command to configure threshold polling interval for IKEv2 Setup Failure per ePDG service.

Example

The following command configures threshold polling interval as 90 seconds for IKEv2 Setup Failure per ePDG service.

```
threshold poll epdg-ikev2-setup-failure 90
```

threshold poll epdg-ikev2-setup-failure-rate

Configures threshold polling interval for IKEv2 Setup Failure Rate per ePDG service.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

[default]threshold poll epdg-ikev2-setup-failure-rate interval *interval*

default

Sets / Restores default value assigned for threshold polling interval for IKEv2 Setup Failure Rate per ePDG service.

interval *interval*

Configures threshold polling interval in seconds.

interval is the integer between 60 and 60000.

Usage Guidelines

Use this command to configure threshold polling interval for IKEv2 Setup Failure Rate per ePDG service.

Example

The following command configures threshold polling interval as 900 seconds for IKEv2 Setup Failure Rate per ePDG service.

```
threshold poll epdg-ikev2-setup-failure-rate 900
```

threshold poll epdg-ikev2-setup-success

Configures threshold polling interval for IKEv2 Setup Success per ePDG service.

Product

ePDG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] threshold poll epdg-ikev2-setup-success interval interval
```

default

Sets / Restores default value assigned for threshold polling interval for IKEv2 Setup Success per ePDG service.

interval *interval*

Configures threshold polling interval in seconds.

interval is the integer between 60 and 60000.

Usage Guidelines

Use this command to configure threshold polling interval for IKEv2 Setup Success per ePDG service.

Example

The following command configures threshold polling interval as 600 seconds for IKEv2 Setup Success per ePDG service.

```
threshold poll epdg-ikev2-setup-success 600
```

threshold poll fa-reg-reply-error interval

Configures the polling interval over which to measure the number of registration reply errors for Foreign Agent (FA) services.

Product

FA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll fa-reg-reply-error interval` *`duration`*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFASvcRegReplyError** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the FA registration reply errors threshold:

```
threshold poll fa-reg-reply-error interval 600
```

threshold poll fng-current-active-sessions interval

Configures the polling interval in seconds over which to count Femto Network Gateway (FNG) current active sessions.

Product

FNG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll fng-current-active-sessions interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFNGCurrActSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the FNG current active sessions threshold:

```
threshold poll fng-current-active-sessions interval 600
```

threshold poll fng-current-sessions interval

Configures the polling interval in seconds over which to count Femto Network Gateway (FNG) current sessions, including inactive sessions.

Product

FNG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll fng-current-sessions interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFNGCurrSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the FNG current sessions threshold:

```
threshold poll fng-current-sessions interval 600
```

threshold poll fw-deny-rule interval

Configures the Stateful Firewall Deny Rule threshold polling interval.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll fw-deny-rule interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFWDenyRule** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the Stateful Firewall Deny Rule threshold:

```
threshold poll fw-deny-rule interval 600
```

threshold poll fw-dos-attack interval

Configures the Stateful Firewall Denial of Service (DoS) Attacks threshold polling interval.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll fw-dos-attack interval duration
```

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFWDosAttack** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the Stateful Firewall DoS Attacks threshold:

```
threshold poll fw-dos-attack interval 600
```

threshold poll fw-drop-packet interval

Configures the Stateful Firewall Drop-Packet threshold polling interval.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll fw-drop-packet interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFWDropPacket** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the Stateful Firewall Drop-Packet threshold:

```
threshold poll fw-drop-packet interval 600
```

threshold poll fw-no-rule interval

Configures the Stateful Firewall No-Rule threshold polling interval.

Product

PSF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll fw-no-rule interval duration
```

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshFWNoRule** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the Stateful Firewall No-Rule threshold:

```
threshold poll fw-no-rule interval 600
```

threshold poll ha-init-rrq-rcvd-rate interval

Configures the polling interval for Home Agent (HA) service over which to measure the average number of calls setup per minute.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll ha-init-rrq-rcvd-rate interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHACallSetupRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of HA calls setup per minute:

```
threshold poll ha-init-rrq-rcvd-rate interval 600
```

threshold poll ha-svc-init-rrq-rcvd-rate interval

Configures the polling interval over which to measure the average number of calls setup per minute for HA services.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll ha-svc-init-rrq-rcvd-rate interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 900.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHASvcCallSetupRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of calls setup per minute for HA services:

```
threshold poll ha-svc-init-rrq-rcvd-rate interval 600
```

threshold poll hat-hb-5min-loss

Configures the polling interval in seconds over which to count 5 minute heartbeat loss in the VPC-DI internal network.

Product

All (VPC-DI Platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] threshold poll hat-hb-5min-loss interval duration
```

default

Returns *duration* to the default value of 300 seconds.

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring hat-hb-5min-loss** and **threshold hat-hb-5min-loss** commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHatHb5MinsLoss** command in this mode.

Example

The following command configures the polling interval to *900* seconds for evaluating the heartbeat loss rate for the past 5 minutes:

```
threshold poll hat-hb-5min-loss 900
```

threshold poll hat-hb-60min-loss

Configures the polling interval in seconds over which to count a 60 minute heartbeat loss in the VPC-DI internal network.

Product

All (VPC-DI Platform only)

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] threshold poll hat-hb-5min-loss interval duration
```

default

Returns *duration* to the default value of 3600 seconds.

interval *duration*

Default: 3600 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring hat-hb-60min-loss** and **threshold hat-hb-60min-loss** commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHatHb60MinsLoss** command in this mode.

Example

The following command configures the polling interval to *5000* seconds for evaluating the heartbeat loss rate for the past 60 minutes:

```
threshold poll hat-hb-60min-loss 5000
```

threshold poll henbgw-paging-messages interval

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This command must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

Configures how frequently the HeNBGW paging messages are polled.

Product

HeNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll henbgw-paging-messages interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command configures how frequently the HeNB-GW paging messages are polled.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHeNBGWPagingMessages** command in this mode.

Example

The following command configures the polling interval to *6000* seconds for the HeNB-GW service:

```
threshold poll henbgw-paging-messages interval 6000
```

threshold poll ip-pool-free interval

Configures the polling interval over which to measure the percentage of the IP pool addresses that are in the Free state.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll ip-pool-free interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPPoolFree** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of Free IP pools:

```
threshold poll ip-pool-free interval interval 600
```

threshold poll ip-pool-hold interval

Configures the polling interval over which to measure the percentage of the IP pool addresses that are in the Hold state.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll ip-pool-hold interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPPoolHold** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of IP pool addresses in Hold state:

```
threshold poll ip-pool-hold interval 600
```

threshold poll ip-pool-release interval

Configures the polling interval over which to measure the percentage of IP pool addresses that are in the Release state.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll ip-pool-release interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPPoolRelease** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of IP pool addresses in Release state:

```
threshold poll ip-pool-release interval 600
```

threshold poll ip-pool-used interval

Configures the polling interval over which to measure the percentage of the IP pool addresses that are used.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll ip-pool-used interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPPoolUsed** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of used IP pool addresses:

```
threshold poll ip-pool-used interval 600
```

threshold poll ipsec-call-req-rej interval

Configures the polling interval over which to count the IPSec call requests that are rejected.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll ipsec-call-req-rej interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECCallReqRej** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of rejected IPSec IKE calls:

```
threshold poll ipsec-call-req-rej interval 600
```

threshold poll ipsec-ike-failrate interval

Configures the polling interval over which to count the IPSec IKE failure rate.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll ipsec-ike-failrate interval` *`duration`*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECIKEFailRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average rate for IPSec IKE failures:

```
threshold poll ipsec-ike-failrate interval 600
```

threshold poll ipsec-ike-failures interval

Configures the polling interval over which to count the number of IPSec IKE failures.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll ipsec-ike-failures interval` *`duration`*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECIKEFailures** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of IPSec IKE failures:

```
threshold poll ipsec-ike-failures interval 600
```

threshold poll ipsec-ike-requests interval

Configures the polling interval over which to count the number of IPSec IKE requests.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll ipsec-ike-requests interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECIKERequests** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the average number of IPSec call requests:

```
threshold poll ipsec-ike-requests interval 600
```

threshold poll ipsec-tunnels-established interval

Configures the polling interval over which to count the number of IPSec tunnels that have been established.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll ipsec-tunnels-established interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECTunEstabl** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the number of established IPSec tunnels:

```
threshold poll ipsec-tunnels-established interval 600
```

threshold poll ipsec-tunnels-setup interval

Configures the polling interval over which to count the number of IPSec tunnels that have been setup.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll ipsec-tunnels-setup interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshIPSECTunSetup** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the number of IPSec tunnels that have been setup:

```
threshold poll ipsec-tunnels-setup interval 600
```

threshold poll license-remaining-session interval

Configures the polling interval over which to measure session license utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll license-remaining-session interval duration
```

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshLicense** command in this mode.

Example

The following command configures the polling interval to *600* seconds for the utilization of session licenses:

```
threshold poll license-remaining-session interval 600
```

threshold poll ls-logs-volume interval

Configures the polling interval over which to monitor Log Source event messaging volume to evlogd.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
[ default ] threshold ls-logs-volume interval duration
```

default

Sets *duration* to 300 seconds (5 minutes).

interval *duration*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds:

```
threshold poll ls-logs-volume interval 600
```

threshold poll mgmt-cpu-memory-usage interval

Configures the polling interval over which to measure management card CPU memory usage.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll mgmt-cpu-memory-usage interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds for management card CPU memory usage:

```
threshold poll mgmt-cpu-memory-usage interval 600
```

threshold poll mgmt-cpu-utilization interval

Configures the polling interval over which to measure management card CPU utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll mgmt-cpu-utilization interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Example

The following command configures the polling interval to *600* seconds for management card CPU memory usage:

```
threshold poll mgmt-cpu-utilization interval 600
```

threshold poll mme-attach-failure interval

Configures the polling interval to count the MME Attach Failure messages across all MME services in the system.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll mme-attach-failure interval dur
default threshold poll mme-attach-failure interval
```

default

Restores the polling interval value to its default value of 900 seconds.

interval *dur*

Default: 900 seconds.

Specifies the polling interval (in seconds) for counting MME Attach Failure messages across all MME services in the system.

dur must be an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

Use this command to configure the polling interval to count the MME Attach Failure messages across all MME services in the system to generate threshold value.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring mme-service** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshMMEAttachFail** command in this mode.

Example

The following command configures the polling interval of *600* seconds to count the MME Attach Failure messages for threshold limit:

```
threshold poll mme-attach-failure interval 600
```

threshold poll mme-auth-failure interval

Configures the polling interval to count the MME Authentication Failure messages across all MME services in the system.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll mme-auth-failure interval dur
default threshold poll mme-auth-failure interval
```

default

Restores the specified poll interval value to its default value of 900 seconds.

interval *dur*

Default: 900 seconds.

Specifies the polling interval (in seconds) for counting MME Authentication Failure messages across all MME services in the system.

dur must be an integer from 30 through 60000 in multiples of 30.

Usage Guidelines

Use this command to configure the polling interval to count the MME Auth Failure messages across all MME services in the system to generate threshold value.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring mme-service** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshMMEAuthFail** command in this mode.

Example

The following command configures the polling interval of *600* seconds to count the MME Auth Failure messages for threshold limit:

```
threshold poll mme-auth-failure interval 600
```

threshold poll nat-pkt-drop

Configures the polling interval over which to measure the percentage of Network Address Translation (NAT) packet drops.

Product

NAT

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll nat-pkt-drop interval duration
default threshold poll nat-pkt-drop interval
```

default

Restores the specified poll interval value to its default value of 900 seconds.

interval *duration*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Default: 900 seconds.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important The configured polling interval will be rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable [ThreshNATPktDrop | ThreshclearNATPktDrop]** command in this mode.

Example

The following command configures the polling interval to *500* seconds for NAT packet drops:

```
threshold poll nat-pkt-drop interval 500
```

threshold poll nat-port-chunks-usage interval

Configures the polling interval over which to measure the percentage of Network Address Translation (NAT) port chunk utilization.

Product

NAT

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll nat-port-chunks-usage interval duration
default threshold poll nat-port-chunks-usage interval
```

default

Restores the specified poll interval value to its default value of 900 seconds.

interval *duration*

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Default: 900 seconds.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshNATPortChunksUsage** command in this mode.

Example

The following command configures the polling interval to *600* seconds for (NAT) port chunk utilization:

```
threshold poll nat-port-chunks-usage interval 600
```

threshold poll npu-utilization interval

Configures the polling interval over which to measure the percentage of network processing unit (NPU) utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll npu-utilization interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

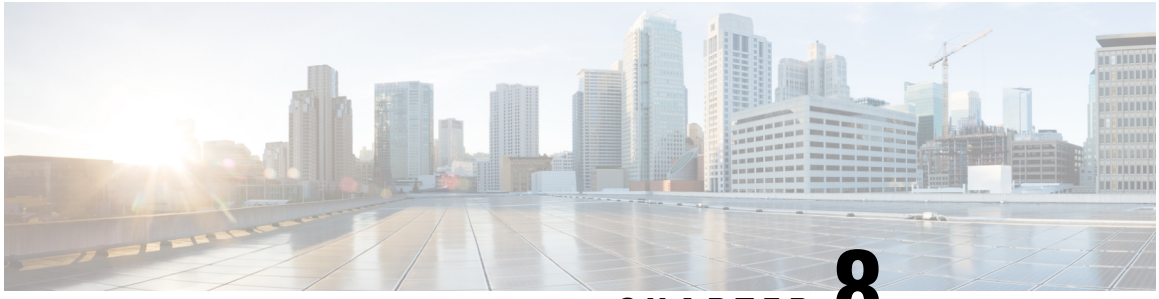
Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshNPUUtilization** command in this mode.

Example

The following command configures the polling interval to *600* seconds for NPU utilization:

```
threshold poll npu-utilization interval 600
```



CHAPTER 8

Global Configuration Mode Commands (threshold poll commands O - Z)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **threshold poll packets-filtered-dropped interval** through **threshold poll tpo-rto-timeout**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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- threshold poll total-volume interval, on page 645

threshold poll packets-filtered-dropped interval

Configures the polling interval over which to count the filtered/dropped packets.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll packets-filtered-dropped interval` *`duration`*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPacketsFilteredDropped** command in this mode.

Example

The following command configures the polling interval to *600* seconds for filtered/dropped packets:

```
threshold poll packets-filtered-dropped interval 600
```

threshold poll packets-forwarded-to-cpu interval

Configures the polling interval over which to count packets forwarded to active system CPUs in the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll packets-forwarded-to-cpu interval` *`duration`*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPacketsForwarded** command in this mode.

Example

The following command configures the polling interval to *600* seconds for packets forwarded to active system CPUs in the system:

```
threshold poll packets-forwarded-to-cpu interval 600
```

threshold poll pdg-current-active-sessions interval

Configures the polling interval over which to count the total number of currently active Packet Data Gateway/Tunnel Termination Gateway (PDG/TTG) sessions.

Product

PDG

TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll pdg-current-active-sessions interval` *`duration`*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDGCurrActSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDG/TTG sessions:

```
threshold poll pdg-current-active-sessions interval 600
```

threshold poll pdg-current-sessions interval

Configures the polling interval over which to count the total number of current Packet Data Gateway/Tunnel Termination Gateway (PDG/TTG) sessions, including inactive sessions.

Product

PDG/TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll pdg-current-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDGCurrSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDG/TTG sessions:

```
threshold poll pdg-current-sessions interval 600
```

threshold poll pdif-current-active-sessions interval

Configures the polling interval over which to count the total number of currently active Packet Data Interworking Function (PDIF) sessions.

Product

PDIF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll pdif-current-active-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDIFCurrActSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDIF sessions:

```
threshold poll pdif-current-active-sessions interval 600
```

threshold poll pdif-current-sessions interval

Configures the polling interval over which to count the total number of current Packet Data Interworking Function (PDIF) sessions, including inactive sessions.

Product

PDIF

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll pdif-current-sessions interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDIFCurrSess** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDIF sessions:

```
threshold poll pdif-current-sessions interval 600
```

threshold poll pdsn-init-rrq-rcvd-rate interval

Configures the polling interval over which to count the total number of current Packet Data Serving Node (PDSN) sessions, including inactive sessions.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll pdsn-init-rrq-rcvd-rate interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 60 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNCallSetupRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDSN sessions:

```
threshold poll pdsn-init-rrq-rcvd-rate interval 600
```

threshold poll pdsn-svc-init-rrq-rcvd-rate interval

Configures the polling interval over which to count the total number of current Packet Data Serving Node (PDSN) sessions, including inactive sessions.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll pdsn-svc-init-rrq-rcvd-rate interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSvcCallSetupRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDSN sessions:

```
threshold poll pdsn-svc-init-rrq-rcvd-rate interval 600
```

threshold poll per-service-asngw-sessions interval

Configures the polling interval in seconds over which to count the number of PDP contexts per ASN-GW service in the system.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll per-service-asngw-sessions interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceASNGWSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for ASN-GW sessions:

```
threshold poll per-service-asngw-sessions interval 600
```

threshold poll per-service-ggsn-sessions interval

Configures the polling interval in seconds over which to count the number of PDP contexts per GGSN service in the system.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll per-service-ggsn-sessions interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceGGSNSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for GGSN sessions:

```
threshold poll per-service-ggsn-sessions interval 600
```

threshold poll per-service-gprs-pdp-sessions interval

Configures the polling interval in seconds over which to count the number of 2G-activated PDP contexts per GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll per-service-gprs-pdp-sessions interval duration
```

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceGPRSPDPSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for 2G PDP contexts:

```
threshold poll per-service-gprs-pdp-sessions interval 600
```

threshold poll per-service-gprs-sessions interval

Configures the polling interval in seconds over which to count the number of 2G-attached subscribers per GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-gprs-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceGPRSSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for 2G GPRS sessions:

```
threshold poll per-service-gprs-sessions interval 600
```

threshold poll per-service-ha-sessions interval

Configures the polling interval in seconds over which to count the number of HA sessions per Home Agent (HA) service in the system.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-ha-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceHASessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for HA sessions:

```
threshold poll per-service-ha-sessions interval 600
```

threshold poll per-service-lns-sessions interval

Configures the polling interval in seconds over which to count the number of L2TP Network Server (LNS) sessions per LNS service in the system.

Product

LNS

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-lns-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceLNSSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for LNS sessions:

```
threshold poll per-service-lns-sessions interval 600
```

threshold poll per-service-pdg-sessions interval

Configures the polling interval in seconds over which to count the number of Packet Data Gateway (PDG) sessions per PDG/TTG service in the system.

Product

PDG/TTG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-pdg-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServicePDGSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDG/TTG sessions:

```
threshold poll per-service-pdg-sessions interval 600
```

threshold poll per-service-pdsn-sessions interval

Configures the polling interval in seconds over which to count the number of Packet Data Serving Node (PDSN) sessions per PDSN service in the system.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-pdsn-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServicePDSNSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PDSN sessions:

```
threshold poll per-service-pdsn-sessions interval 600
```

threshold poll per-service-samog-sessions interval

Configures the polling interval in seconds over which to count the number of S2a Mobility over GTP (SaMOG) contexts per SaMOG service in the system.

Product

SaMOG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-samog-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceSAMOGSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for SaMOG sessions:

```
threshold poll per-service-samog-sessions interval 600
```

threshold poll per-service-sgsn-pdp-sessions interval

Configures the polling interval in seconds over which to count the number of 3G-activated PDP contexts per SGSN service on the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-sgsn-pdp-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceSGSNPDPSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for 3G PDP contexts:

```
threshold poll per-service-sgsn-pdp-sessions interval 600
```

threshold poll per-service-sgsn-sessions interval

Configures the polling interval in seconds over which to count the number of 3G-attached subscribers per SGSN service in the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll per-service-sgsn-sessions interval *duration*

interval *duration*

Default: 300 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPerServiceSGSNSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds for SGSN sessions:

```
threshold poll per-service-sgsn-sessions interval 600
```

threshold poll phsgw-auth-failure interval

Configures the polling interval in seconds over which to count the number of Personal Handyphone System Gateway (PHSGW) authentication failures.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll phsgw-auth-failure interval` *`duration`*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWAuthFail** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW authentication failures:

```
threshold poll phsgw-auth-failure interval 600
```

threshold poll phsgw-eapol-auth-failure interval

Configures the polling interval in seconds over which to count the number of authentication failures for a PHSGW service using Extensible Authentication Protocol Over LAN (EAPOL).

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll phsgw-eapol-auth-failure interval` *`duration`*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWEAPOLAuthFailure** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW EAPOL failures:

```
threshold poll phsgw-eapol-auth-failure interval 600
```

threshold poll phsgw-handoff-denial interval

Configures the polling interval in seconds over which to count the number of handoff denials in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll phsgw-handoff-denial interval` *`duration`*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWMaxEAPOLRetry** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW handoff denials:

```
threshold poll phsgw-handoff-denial interval 600
```

threshold poll phsgw-max-eap-retry interval

Configures the polling interval in seconds over which to count the maximum number of Extensible Authentication Protocol (EAP) retries in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll phsgw-max-eap-retry interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWMaxEAPRetry** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW EAP retries:

```
threshold poll phsgw-max-eap-retry interval 600
```

threshold poll phsgw-max-eapol-retry interval

Configures the polling interval in seconds over which to count the maximum number of Extensible Authentication Protocol Over LAN (EAPOL) retries in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll phsgw-max-eapol-retry interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWMaxEAPOLRetry** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW EAPOL retries:

```
threshold poll phsgw-max-eapol-retry interval 600
```

threshold poll phsgw-network-entry-denial interval

Configures the polling interval in seconds over which to count the number of network entry denials in PHSGW.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold poll phsgw-network-entry-denial interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWNWEntryDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW network entry denials:

```
threshold poll phsgw-network-entry-denial interval 600
```

threshold poll phsgw-session-setup-timeout interval

Configures the polling interval in seconds over which to count the number of PHSGW sessions that timed out during setup.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll phsgw-session-setup-timeout interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWSessSetupTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW session setup timeouts:

```
threshold poll phsgw-session-setup-timeout interval 600
```

threshold poll phsgw-session-timeout interval

Configures the polling interval in seconds over which to count the number of PHSGW sessions that timed out.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll phsgw-session-timeout interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSGWSessTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSGW session timeouts:

```
threshold poll phsgw-session-timeout interval 600
```

threshold poll phspc-session-setup-timeout interval

Configures the polling interval in seconds over which to count the number of Personal Handyphone System - Personal Computer (PHSPC) sessions that timed out during setup.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll phspc-session-setup-timeout interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSPCSessSetupTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSPC session setup timeouts:

```
threshold poll phspc-session-setup-timeout interval 600
```

threshold poll phspc-sleep-mode-timeout interval

Configures the polling interval in seconds over which to count the number of PHSPC sessions that timed out when the personal computer went into sleep mode.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll phspc-sleep-mode-timeout interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSPCSleepModeTimeout** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSPC sleep mode timeouts:

```
threshold poll phspc-sleep-mode-timeout interval 600
```

threshold poll phspc-sm-entry-denial interval

Configures the polling interval in seconds over which to count the number of denied PHSPC short message (SM) sessions.

Product

PHSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll phspc-sm-entry-denial interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPHSPCSmEntryDenial** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PHSPC SM session denials:

```
threshold poll phspc-sm-entry-denial interval 600
```

threshold poll port-high-activity interval

Configures the polling interval in seconds over which to measure the overall percentage of port utilization.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll port-high-activity interval seconds
```

interval *seconds*

Configures the threshold polling interval in multiples of 30 seconds. *seconds* is an integer from 30 through 60000. Default is 300 seconds.

Usage Guidelines

High port activity thresholds generate alerts or alarms based on the peak utilization percentage of each configured port during the specified polling interval. This threshold is configured on a per-port basis. Alerts or alarms are triggered for high port activity based on the following rules:

Enter condition: Actual percent peak utilization of a port is greater than or equal to the high threshold.

Clear condition: Actual percent peak utilization of a port is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.This threshold is configured on a per-port basis configured using the port *port-type slot#/port#* command syntax.

Important This command is not available on all platforms

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPortHighActivity** command in this mode.

Example

Use the following example to configure the polling interval over which to measure for high port activity to *300* seconds:

```
threshold poll port-high-activity interval 300
```

threshold poll port-rx-utilization interval

Configures the polling interval in seconds over which to measure the overall percentage of incoming traffic received over system ports.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll port-rx-utilization interval seconds
```

interval *seconds*

Configures the threshold polling interval in multiples of 30 seconds. *seconds* is an integer from 30 to 60000. Default is 300 seconds.

Usage Guidelines

Receive port utilization thresholds generate alerts or alarms based on the utilization percentage of each configured port in relation to data received during the specified polling interval. This threshold is configured on a per-port basis configured using the port *port-type slot#/port#* command syntax.

Important This command is not available on all platforms

Important Ports configured for half-duplex do not differentiate between data received and data transmitted. (The transmitted and received percentages are combined.) Therefore, to avoid redundant alarms, it is recommended that only the receive **or** transmit utilization threshold be configured.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPortRxUtil** command in this mode.

Example

Use the following example to configure a threshold poll interval of *300* seconds (5 minutes)

```
threshold poll port-rx-utilization interval 300
```

threshold poll port-tx-utilization

Configures the polling interval in seconds over which to measure the overall percentage of outgoing traffic sent over system ports.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll port-tx-utilization interval seconds
```

interval *seconds*

Configures the threshold polling interval in multiples of 30 seconds. *seconds* is an integer from 30 through 60000. Default is 300 seconds.

Usage Guidelines

Transmit port utilization thresholds generate alerts or alarms based on the utilization percentage of each configured port in relation to data transmitted during the specified polling interval. This threshold is configured on a per-port basis configured using the port *port-type slot#/port#* command syntax.

Important This command is not available on all platforms

Important Ports configured for half-duplex do not differentiate between data received and data transmitted. (The transmitted and received percentages are combined.) Therefore, to avoid redundant alarms, it is recommended that only the receive **or** transmit utilization threshold be configured.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPortTxUtil** command in this mode.

Example

Use the following example to configure a threshold poll interval of *300* seconds (5 minutes)

```
threshold poll port-tx-utilization interval 300
```

threshold poll ppp-setup-fail-rate interval

Configures the polling interval in seconds over which to measure for the percentage of point-to-point protocol (PPP) setup failures.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll ppp-setup-fail-rate interval *duration*

interval *duration*

Default: 900 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPPPSetupFailRate** command in this mode.

Example

The following command configures the polling interval to *600* seconds for PPP setup failures:

```
threshold poll ppp-setup-fail-rate interval 600
```

threshold poll reg-reply-error interval

Configures the polling interval over which to measure number of registration reply errors for Home Agent (HA) services.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll reg-reply-error interval duration
```

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHASvcRegReplyError** command in this mode.

Example

The following command configures the polling interval to *600* seconds for HA registration errors:

```
threshold poll reg-reply-error interval 600
```

threshold poll rereg-reply-error interval

Configures the polling interval over which to measure number of re-registration reply errors for HA services.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll rereg-reply-error interval *duration*

interval *duration*

Default: 0 seconds.

Specifies the amount of time (in seconds) that comprises the polling interval.

duration must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold monitoring** and other threshold commands for additional information on the system's support for thresholds in this chapter.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHASvcReregReplyError** command in this mode.

Example

The following command configures the polling interval to *600* seconds for HA re-registration reply errors:

```
threshold poll rereg-reply-error interval 600
```

threshold poll route-service interval

Configures the polling interval over which to count or measure the thresholding value for BGP route services on the system.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll route-service interval dur
default threshold poll route-service interval
```

default

Restores the threshold poll interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is any integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshBGPRoutes** command in this mode.

Example

The following command configures the polling interval for the total BGP routes threshold polling duration value to *600* seconds (10 minutes):

```
threshold poll route-service interval 600
```

threshold poll rp-setup-fail-rate interval

Configures the polling interval over which to measure the percentage of RAN PDSN (RP) setup failures.

Product

PDSN

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll rp-setup-fail-rate interval` *`dur`*
`default threshold poll route-service interval`

default

Restores the threshold poll interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is any integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshRPSetupFailRate** command in this mode.

Example

The following command configures the polling interval for the RP setup fail rate polling duration value to *600* seconds (10 minutes):

```
hreshold poll rp-setup-fail-rate interval 600
```

threshold poll sess-flow-count interval

Configures the polling interval over which to measure the percentage of session manager flow count.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll sess-flow-count interval dur
default threshold poll route-service interval
```

default

Restores the threshold poll interval value to its default value.

interval *dur*

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is any integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Example

The following command configures the polling interval for session manager flow count polling duration value to *600* seconds (10 minutes):

```
threshold poll sess-flow-count interval 600
```

threshold poll storage-utilization interval

Configures the polling interval over which to measure the percentage of management card flash memory utilization.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll storage-utilization interval` *`dur`*
`default threshold poll route-service interval`

default

Restores the threshold poll interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is any integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshStorageUtilization** command in this mode.

Example

The following command configures the polling interval for flash memory utilization polling duration value to *600* seconds (10 minutes):

```
threshold poll storage-utilization interval 600
```

threshold poll system-capacity interval

Configures the polling interval over which to measure the percentage of current system capacity.

Product

All

Privilege

Administrator Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll system-capacity interval` *`dur`*
`default threshold poll route-service interval`

default

Restores the threshold poll interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

dur is any integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSystemCapacity** command in this mode.

Example

The following command configures the polling interval for flash memory utilization polling duration value to *600* seconds (10 minutes):

```
threshold poll system-capacity interval 600
```

threshold poll total-asngw-sessions interval

Configures the polling interval over which to count or measure the thresholding value for the total number of sessions across all the ASN-GW services on a system to trigger an alert or alarm.

Product

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-asngw-sessions interval time
default threshold poll total-asngw-sessions interval
```

default

Restores the threshold polling interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshASNGWSessions** command in this mode.

Example

The following command configures the polling interval for counting the total number of ASN-GW sessions across all the ASN-GW services on a system, to *600* seconds (10 minutes):

```
threshold poll total-asngw-sessions interval 600
```

threshold poll total-ggsn-sessions interval

Configures the polling interval over which to count or measure the thresholding value for the total number of sessions across all the GGSN services on a system to trigger an alert or alarm.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-ggsn-sessions interval time
default threshold poll total-ggsn-sessions interval
```

default

Restores the threshold polling interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshGGSNSessions** command in this mode.

Example

The following command configures the polling interval for counting the total number of GGSN sessions across all the GGSN services on a system, to *600* seconds (10 minutes):

```
threshold poll total-ggsn-sessions interval 600
```

threshold poll total-gprs-pdp-sessions interval

Configures the polling interval over which to count the total number of 2G-activated PDP contexts per GPRS sessions on the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-gprs-pdp-sessions interval time
default threshold poll total-gprs-pdp-sessions interval
```

default

Restores the threshold polling interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshGPRSPDPSessions** command in this mode.

Example

The following command configures the polling interval for counting the total number of 2G-activated PDP contexts per GPRS sessions, to *600* seconds (10 minutes):

```
threshold poll total-gprs-pdp-sessions interval 600
```

threshold poll total-gprs-sessions interval

Configures the polling interval over which to count the total number of 2G-attached subscribers on the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-gprs-sessions interval time
default threshold poll total-gprs-sessions interval
```

default

Restores the threshold polling interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshGPRSSessions** command in this mode.

Example

The following command configures the polling interval for counting the total number of 2G-attached subscribers, to *600* seconds (10 minutes):

```
threshold poll total-gprs-sessions interval 600
```

threshold poll total-ha-sessions interval

Configures the polling interval over which to count the total number of Home Agent (HA) sessions on the system.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-ha-sessions interval time
default threshold poll total-ha-sessions interval
```

default

Restores the threshold polling interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHASessions** command in this mode.

Example

The following command configures the polling interval for counting the total number of HA sessions on the system, to *600* seconds (10 minutes):

```
threshold poll total-ha-sessions interval 600
```

threshold poll total-henbgw-henb-sessions

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This command must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

Configures the polling interval on how frequently the thresholds are polled for total HeNB-GW HeNB sessions.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-henbgw-henb-sessions interval time
default threshold poll total-henbgw-henb-sessions interval
```

default

Restores the threshold polling interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable SNMP trap for threshold monitoring of this threshold use **snmp trap enable ThreshHeNBGWHenbSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds (10 minutes):

```
threshold poll total-henbgw-henb-sessions interval 600
```

threshold poll total-henbgw-ue-sessions

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. This command must not be used for HeNBGW in these releases. For more information, contact your Cisco account representative.

Configures the polling interval on how frequently the thresholds are polled for total HeNB-GW UE sessions.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-henbgw-ue-sessions interval time
default threshold poll total-henbgw-ue-sessions interval
```

default

Restores the threshold polling interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable SNMP trap for threshold monitoring of this threshold use **snmp trap enable ThreshHeNBGWUeSessions** command in this mode.

Example

The following command configures the polling interval to *600* seconds (10 minutes) for HeNB-GW UE sessions:

```
threshold poll total-henbgw-henb-sessions interval 600
```

threshold poll total-hnbgw-hnb-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures the polling interval over which to count or measure the thresholding value for the total number of IuH sessions between the HNB and HNB-GW to count across all the HNB-GW services on a system to trigger an alert or alarm.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-hnbgw-hnb-sessions interval time
default threshold poll total-hnbgw-hnb-sessions interval
```

default

Restores the threshold polling interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable SNMP trap for threshold monitoring of this threshold use **snmp trap enable ThreshTotalHNBGWHnbSess** command in this mode.

Example

The following command configures the polling interval for counting the total number of HNB sessions between HNB and HNB-GW across all the HNB-GW services on a system, to *600* seconds (10 minutes):

```
threshold poll total-hnbgw-hnb-sessions interval 600
```

threshold poll total-hnbgw-iu-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures the polling interval over which to count or measure the thresholding value for the total number of subscriber sessions on HNB-GW service (over Iu-CS/Iu-PS interface) to count across all the HNB-GW services on a system to trigger alert or alarm.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-hnbgw-iu-sessions interval time
default threshold poll total-hnbgw-iu-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an value from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshTotalHNBGWIuSess** command in this mode.

Example

The following command configures the polling interval for counting the total number of subscriber sessions across all the HNB-GW services on a system, to *600* seconds (10 minutes):

```
threshold poll total-hnbgw-iu-sessions interval 600
```

threshold poll total-hnbgw-ue-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures the polling interval over which to count or measure the thresholding value for the total number of UEs connected to HNB-GW service to count across all the HNB-GW services on a system to trigger alert or alarm.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-hnbgw-ue-sessions interval time
default threshold poll total-hnbgw-ue-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshTotalHNBGWUeSess** command in this mode.

Example

The following command configures the polling interval for the total number of UEs connected to an HNB-GW service across all the HNB-GW services on a system, to *600* seconds (10 minutes):

```
threshold poll total-hnbgw-ue-sessions interval 600
```

threshold poll total-hsgw-sessions interval

Configures the polling interval over which to count the total number of HRPD Serving Gateway (HSGW) sessions across all services in the system.

Product

HSGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-hsgw-sessions interval time
default threshold poll total-hsgw-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshHSGWSessions** command in this mode.

Example

The following command configures the polling interval for the total number of HSGW sessions across all the HSGW services on a system, to *600* seconds (10 minutes):

```
threshold poll total-hsgw-sessions interval 600
```

threshold poll total-lma-sessions interval

Configures the polling interval over which to count the total number of Local Mobility Anchor (LMA) sessions across all services in the system.

Product

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-lma-sessions interval time
default threshold poll total-lma-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshLMASessions** command in this mode.

Example

The following command configures the polling interval for the total number of LMA sessions across all the LMA sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-lma-sessions interval 600
```

threshold poll total-lns-sessions interval

Configures the polling interval over which to count the total number of L2TP Network Server (LNS) sessions in the system.

Product

PDSN

GGSN

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-lns-sessions interval time
default threshold poll total-lns-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshLNSSessions** command in this mode.

Example

The following command configures the polling interval for the total number of LNS sessions across all the LNS sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-lns-sessions interval 600
```

threshold poll total-mme-sessions

Configures the polling interval over which to count or measure the thresholding value for MME sessions on the system.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-mme-sessions interval time
default threshold poll total-mme-sessions interval
```

default

Restores the threshold poll interval value to its default value of 900 seconds.

interval *time*

Default: 900 seconds

Specifies the polling interval (in seconds) for counting the total number of MME sessions on the system.

time must be an ny integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshMMESessions** command in this mode.

Example

The following command configures the polling interval for the total MME session threshold polling duration value to *600* seconds (10 minutes):

```
threshold poll total-mme-sessions interval 600
```

threshold poll total-pdsn-sessions interval

Configures the polling interval over which to count the total number of Packet Data Serving Node (PDSN) sessions in the system.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold poll total-pdsn-sessions interval *time*
default threshold poll total-pdsn-sessions interval

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPDSNSessions** command in this mode.

Example

The following command configures the polling interval for the total number of PDSN sessions across all the PDSN sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-pdsn-sessions interval 600
```

threshold poll total-pgw-sessions interval

Configures the polling interval over which to count the total number of Packet Data Network Gateway (P-GW) sessions across all services in the system.

Product

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-pgw-sessions interval time
default threshold poll total-pgw-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshPGWSessions** command in this mode.

Example

The following command configures the polling interval for the total number of P-GW sessions across all the P-GW sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-pgw-sessions interval 600
```

threshold poll total-saegw-sessions interval

Configures the polling interval over which to count the total number of System Architecture Evolution Gateway (SAEGW) sessions across all services in the system.

Product

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-saegw-sessions interval time
default threshold poll total-saegw-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Example

The following command configures the polling interval for the total number of SAEGW sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-saegw-sessions interval 600
```

threshold poll total-sgsn-pdp-sessions interval

Configures the polling interval over which to count the total number of PDP contexts for all Serving GPRS Support Node (SGSN) sessions in the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-sgsn-pdp-sessions interval time
default threshold poll total-sgsn-pdp-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSGSNPDPSessions** command in this mode.

Example

The following command configures the polling interval for the total number of PDP contexts across all the SGSN sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-sgsn-pdp-sessions interval 600
```

threshold poll total-sgsn-sessions interval

Configures the polling interval over which to count the total number of SGSN sessions in the system.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold poll total-sgsn-sessions interval time
default threshold poll total-sgsn-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSGSNSessions** command in this mode.

Example

The following command configures the polling interval for the total number of SGSN sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-sgsn-sessions interval 600
```

threshold poll total-sgw-sessions interval

Configures the polling interval over which to count the total number of Serving Gateway (S-GW) sessions across all services in the system.

Product

S-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

```
threshold poll total-sgw-sessions interval time
default threshold poll total-sgw-sessions interval
```

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSGWSessions** command in this mode.

Example

The following command configures the polling interval for the total number of S-GW sessions on a system, to *600* seconds (10 minutes):

```
threshold poll total-sgw-sessions interval 600
```

threshold poll total-subscriber interval

Configures the polling interval over which to count the total number of subscriber sessions across all services in the system.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold poll total-subscriber interval` *`time`*
`default threshold poll total-subscriber interval`

default

Restores the threshold poll interval value to its default value of 300 seconds.

interval *time*

Default: 300 seconds

Specifies the amount of time (in seconds) that comprises the polling interval.

time must be an integer from 30 through 60000.

Usage Guidelines

This command sets the time period over which to monitor the specified value for threshold crossing.

Important All configured polling intervals are rounded up to the closest multiple of 30. For example, if a polling interval is configured for 130 seconds, the system uses a polling interval of 150 seconds.

Refer to the **threshold model** and **threshold monitoring** commands for additional information on the system's support for thresholding.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshSubscriberTotal**command in this mode.

Example

The following command configures the polling interval for the total number of subscribers on a system, to *600* seconds (10 minutes):

```
threshold poll total-subscriber interval 600
```

threshold poll total-volume interval

The new CLI command is added to configure the volume monitoring window duration during which the threshold is checked.

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`[default] threshold poll total-volume interval`

default

Configures this command with the default threshold setting. The default value is 15 minutes.

total-volume

Configures total-volume threshold interval.

threshold poll total-volume interval

Enter the polling interval in seconds in the range of 300 to 14400 seconds.

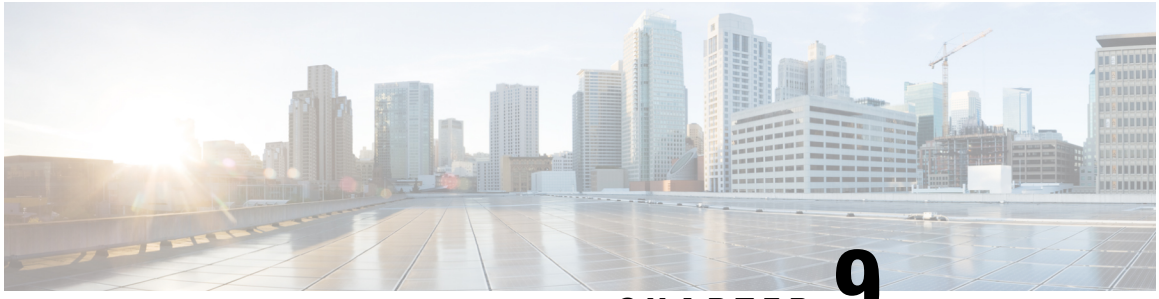
Usage Guidelines

The new CLI command is added to configure the volume monitoring window duration during which the threshold is checked. This CLI is disabled by default.

Example

The following command configures the poll total volume interval to 300 seconds.

`threshold poll total-volume interval 300`



CHAPTER 9

Global Configuration Mode Commands (threshold ppp - wsg-lookup)

The Global Configuration Mode is used to configure basic system-wide parameters.

Command Modes

This section includes the commands **threshold ppp-setup-fail-rate** through **wsg-lookup**.

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- threshold ppp-setup-fail-rate, on page 648
- threshold route-service bgp-routes, on page 649
- threshold route-service vrf-framed-routes , on page 651
- threshold route-service vrf-total-routes, on page 652
- threshold rp-setup-fail-rate, on page 654
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- threshold subscriber total, on page 658
- threshold system-capacity, on page 659
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- transaction-rate bucket-interval, on page 686
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- unexpected-scenario session drop-call, on page 689
- wait cards timeout, on page 690
- wait cards, on page 691
- wsg-lookup, on page 692

threshold ppp-setup-fail-rate

Configures alarm or alert thresholds for the percentage of point-to-point protocol (PPP) setup failures.

Product

PDSN

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold ppp-setup-fail-rate *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold rate percentage for PPP setup failures experienced by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold rate percentage for PPP setup failures experienced by the system that maintains a previously generated alarm condition. If the number of setup failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

PPP setup failure rate thresholds generate alerts or alarms based on the rate of call setup failures experienced by the system during the specified polling interval. The failure rate is the percentage of failures as determined by number of PPP setup failures divided by the total number of PPP sessions initiated.

Alerts or alarms are triggered for PPP setup failure rates based on the following rules:

- **Enter condition:** Actual number of call setup failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of call setup failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a PPP setup failure rate high percentage threshold of *50* percent and a clear threshold of *45* percent:

```
threshold ppp-setup-fail-rate 50 clear 45
```

threshold route-service bgp-routes

Configures alarm or alert thresholds for the percentage of BGP routes.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold route-service bgp-routes *high_thresh* **[clear** *low_thresh* **]**

bgp-routes

Specifies the threshold for percentage of maximum bgp routes per context. It is an integer from 0 through 100.

- *high_thresh*

  Specifies the high threshold rate percentage for maximum BGP routes per context that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100. A value of 0 disables the threshold. The default value is 0.

- **clear** *low_thresh*

  Specifies the low threshold rate percentage for BGP routes per context that maintains a previously generated alarm condition. If the number of BPG routes falls beneath the low threshold within the polling interval, a clear alarm will be generated. *low_thresh* is an integer from 0 through 100. A value of 0 disables the threshold. The default value is 0.

For more information on the maximum route value per context, refer to *Engineering Rules* in the *System Administration Guide*.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to configure a threshold in percentage of maximum BGP routes allowed. If the percentage of the number of BGP routes in a context reaches *high_thresh*, a notification is generated. Optionally, if the threshold subsystem is configured in 'alarm' mode, a **Threshold_Clear** notification is generated when the percentage of the number of BGP routes in a context goes below *low_thresh*. The maximum number of BGP routes is also sent by BGP task when getting the statistics.

Alerts or alarms are triggered for BGP routes based on the following rules:

- **Enter condition:** Actual number of BGP routes is greater than the high threshold.
- **Clear condition:** Actual number BGP routes is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures system for high threshold for **bgp-routes** of *50* percent and a clear threshold of *45* percent:

```
threshold route-service bgp-routes 50 clear 45
```

threshold route-service vrf-framed-routes

Configures alarm or alert thresholds for the percentage of VRF framed routes.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold route-service vrf-framed-routes *high_thresh* **[clear** *low_thresh* **] [context** *context_name* **vrf** *vrf_name* **]**

vrf-framed-routes

Specifies the threshold for percentage of VRF framed routes per VRF. It is an integer from 0 through 100.

- *high_thresh*

  Specifies the high threshold rate percentage for VRF framed routes per VRF that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100. A value of 0 disables the threshold. The default value is 0.

- **clear** *low_thresh*

  Configures the alarm clear threshold. It is an integer from 0 through 100. The default value is 0.

- **context** *context_name*

  Configures the context to apply **vrf-framed-routes** threshold.

- **vrf** *vrf_name*

  Configures the VRF to apply **vrf-framed-routes** threshold.

For more information on the maximum route value per context, refer to *Engineering Rules* in the *System Administration Guide*.

Important

When the root level version of the **threshold route-service** command is issued without **context** and **vrf** information, the framed routes threshold value is configured for every VRF in the system. When the vrf-framed-routes command is issued for a specific context and VRF name, then the threshold value is configured only for that context and VRF. Any previously configured root level or VRF specific threshold value will be overwritten. The threshold values are set as a percentage of the ip maximum routes for the VRF. If ip maximum routes for a VRF is not configured, the default value is the maximum routes per context. If the threshold values in the above CLI command is set to 0, then the respective threshold configuration is removed.

Usage Guidelines

Use this command to configure a threshold in percentage of the maximum VRF framed routes. If the percentage of the number VRF framed routes reaches *high_thresh*, a notification is generated. Optionally, if the threshold subsystem is configured in 'alarm' mode, a **Threshold_Clear** notification is generated when the percentage of the number of VRF framed routes s in a context goes below *low_thresh*.

Alerts or alarms are triggered for VRF framed routes based on the following rules:

- **Enter condition:** Actual number of VRF framed routes is greater than the high threshold.
- **Clear condition:** Actual number of VRF framed routes is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures system for high threshold for **vrf-framed-routes** of *70* percent with a clear threshold of *40* percent for all the VRFs in the system:

```
threshold route-service vrf-framed-routes 70 clear 40
```

The following command configures system for high threshold for **vrf-framed-routes** of *30* percent with a clear threshold of *20* percent for a context *egress1* and vrf *vrf1*:

```
threshold route-service vrf-framed-routes 30 clear 20 context egress1 vrf
 vrf1
```

threshold route-service vrf-total-routes

Configures alarm or alert thresholds for the count of VRF total routes.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold route-service vrf-total-routes *high_thresh* **[clear** *low_thresh* **] [context** *context_name* **vrf** *vrf_name* **]**

vrf-total-routes

Specifies the number of VRF total routes threshold value per VRF. It is an integer from 0 through 65536.

- *high_thresh*

Specifies the high threshold count of total routes per VRF that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 65536. A value of 0 disables the threshold. The default value is 0.

- **clear** *low_thresh*

  Configures the alarms clear threshold. It is an integer from 0 through 65536. The default is 0.

- **context** *context_name*

  Configures the context to apply **vrf-total-routes** threshold.

- **vrf** *vrf_name*

  Configures the VRF to apply **vrf-total-routes** threshold.

For more information on the maximum route value per context, refer to *Engineering Rules* in the *System Administration Guide*.

Important When the root level version of the **threshold-route-service** command is issued without **context** and **vrf** information, the total routes threshold value is configured for every VRF in the system. When the **vrf-total-routes** command is issued for a specific context and VRF name, the threshold value is configured only for that context and VRF. Any previously configured root level or VRF specific threshold value will be overwritten. The threshold values are set as the total count of the routes in the VRF which includes pool routes, interface routes, static routes, dynamic routes and framed routes. If the threshold values in the above CLI command is set to 0, then the respective threshold configuration is removed.

Usage Guidelines

Use this command to configure a threshold in number of the VRF total routes. If the count of VRF total routes in a context reaches *high_thresh*, a notification is generated. Optionally, if the threshold subsystem is configured in 'alarm' mode, a **Threshold_Clear** notification is generated when count of VRF total routes in a context goes below *low_thresh*.

Alerts or alarms are triggered VRF total routes based on the following rules:

- **Enter condition:** Actual number of VRF total routes is greater than the high threshold.
- **Clear condition:** Actual number of VRF total routes is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures system for high threshold for **vrf-total-routes** of *3000* with a clear threshold of *2800* for all the VRFs in the system

```
threshold route-service vrf-total-routes 3000 clear 2800
```

The following command configures system for high threshold for **vrf-total-routes** of *1500* with a clear threshold of *800* for a context *egress1* and vrf *vrf1*:

```
threshold route-service vrf-total-routes 1500 clear 800 context egress1
vrf vrf1
```

threshold rp-setup-fail-rate

Configures alarm or alert thresholds for the percentage of RAN PDSN (RP) setup failures.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold rp-setup-fail-rate *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold rate percentage for RP setup failures experienced by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold rate percentage for RP setup failures experienced by the system that maintains a previously generated alarm condition. If the number of setup failures falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

RP setup failure rate thresholds generate alerts or alarms based on the rate of call setup failures experienced by the system during the specified polling interval. The failure rate is the percentage of failures as determined by number of Registration Request Messages rejected divided by the total number of Registration Request Messages received.

Alerts or alarms are triggered for RP setup failure rates based on the following rules:

- **Enter condition:** Actual number of call setup failures is greater than or equal to the high threshold.
- **Clear condition:** Actual number of call setup failures is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a RP setup failure rate high threshold of *50* percent and a clear threshold of *45* percent:

```
threshold rp-setup-fail-rate 50 clear 45
```

threshold sess-flow-count

Configures alarm or alert thresholds for the percentage of session manager flow count.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold sess-flow-count *flow_count_thresh* **[clear** *clear_thresh* **]**

flow_count_percent

Default: 90

Specifies the high threshold rate percentage for session manager flow count to generate an alert or alarm.

flow_count_thresh is an integer from 1 through 100.

clear *clear_thresh*

Specifies the low threshold rate percentage for session manager flow count. If the number of session manager flow count falls beneath the low threshold, a clear alarm will be generated.

clear_thresh is an integer from 1 through 100. The value chosen for the *clear_thresh* must always be lesser than the *flow_count_thresh*.

Usage Guidelines

Use this command to configure thresholds for monitoring the session flow count.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a session flow count high threshold of *50* percent and a clear threshold of *45* percent:

```
threshold sess-flow-count 50 clear 45
```

threshold storage-utilization

Configures alarm or alert thresholds for the percentage of management card flash memory utilization.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold storage-utilization *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 90

Specifies the high threshold storage utilization percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 90

Specifies the low threshold storage utilization percentage that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Flash memory utilization thresholds generate alerts or alarms based on the utilization percentage of storage available to the system.

Alerts or alarms are triggered for storage utilization based on the following rules:

- **Enter condition:** Actual percentage storage utilization is greater than or equal to the high threshold.
- **Clear condition:** Actual percentage storage utilization is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold for storage utilization percentage of *85* for a system using the Alert thresholding model:

```
threshold storage-utilization 85
```

threshold subscriber active

Configures alarm or alert thresholds for the number of active subscribers in the system.

Product

PDSN

GGSN

SGSN

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold subscriber active *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of active subscriber sessions facilitated by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of active subscriber sessions facilitated by the system that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Active subscriber thresholds generate alerts or alarms based on the total number of active subscriber sessions facilitated by the system during the specified polling interval.

Alerts or alarms are triggered for active subscriber totals based on the following rules:

- **Enter condition:** Actual total number of active subscriber sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of active subscriber sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures an active subscriber high threshold count of *150000* and a low threshold of *100000* for a system using the Alarm thresholding model:

```
threshold subscriber active 150000 clear 100000
```

threshold subscriber total

Configures alarm or alert thresholds for the total number of active and inactive subscribers in the system.

Product

PDSN

GGSN

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold subscriber total *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of subscriber sessions (active and dormant) facilitated by the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of subscriber sessions (active and dormant) facilitated by the system that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Total subscriber thresholds generate alerts or alarms based on the total number of subscriber sessions (active and dormant) facilitated by the system during the specified polling interval.

Alerts or alarms are triggered for subscriber totals based on the following rules:

- **Enter condition:** Actual total number of subscriber sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of subscriber sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures an active subscriber high threshold count of *450000* and a low threshold of *250000* for a system using the Alarm thresholding model:

```
threshold subscriber total 450000 clear 250000
```

threshold system-capacity

Configures alarm or alert thresholds based on the percentage of current system capacity.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold system *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 90

Specifies the high threshold system capacity percentage that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

clear *low_thresh*

Default: 90

Specifies the low threshold system capacity percentage that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 100. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Flash memory utilization thresholds generate alerts or alarms based on the system utilization.

Alerts or alarms are triggered for system capacity based on the following rules:

- **Enter condition:** Actual percentage of system capacity is greater than or equal to the high threshold.
- **Clear condition:** Actual percentage of system capacity is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a high threshold for system capacity percentage of *95* for a system using the Alert thresholding model:

```
threshold system-capacity 95
```

threshold total-asngw-sessions

Configures alarm or alert thresholds for the total number of ASN-GW sessions across all the services in the system.

Product

ANS-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-asngw-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold number of total ASN-GW sessions across all the sessions in the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold number of total ASN-GW sessions that maintains a previously generated alarm condition. If the number of ASN-GW sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of ASN-GW sessions across all the services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of ASN-GW sessions based on the following rules:

- **Enter condition:** Actual total number of ASN-GW sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of ASN-GW sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total ASN-GW session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-asngw-sessions 10000
```

threshold total-ggsn-sessions

Configures alarm or alert thresholds for the total number of GGSN sessions across all the services in the system.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-ggsn-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold number of total GGSN sessions across all the sessions in the system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold number of total GGSN sessions that maintains a previously generated alarm condition. If the number of GGSN sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of GGSN sessions across all the services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of GGSN sessions based on the following rules:

- **Enter condition:** Actual total number of GGSN sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of GGSN sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total GGSN session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-ggsn-sessions 10000
```

threshold total-gprs-pdp-sessions

Configures alarm or alert thresholds for the total number of PDP contexts per GPRS sessions in the system.

Product

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-gprs-pdp-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of total PDP contexts per GPRS session for all GPRS services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 2000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total PDP contexts per GPRS session for all GPRS services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 2000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of GPRS sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for GPRS sessions based on the following rules:

- **Enter condition:** Actual total number of PDP Contexts is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of PDP contexts is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of PDP contexts per GPRS session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-gprs-pdp-sessions 10000
```

threshold total-gprs-sessions

Configures alarm or alert thresholds for the total number of GPRS sessions in the system.

Product SGSN

Privilege Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold total-gprs-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of total GPRS sessions for all GPRS services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 2000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total GPRS sessions for all GPRS services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 2000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of GPRS sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for GPRS sessions based on the following rules:

- **Enter condition:** Actual total number of GPRS sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of GPRS sessions is less than the low threshol.d

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of GPRS sessions high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-gprs-sessions 10000
```

threshold total-ha-sessions

Configures alarm or alert thresholds for the total number of Home Agent (HA) sessions across all services in the system.

Product HA

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-ha-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of HA sessions for all HA services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of HA sessions for all HA services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of HA sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for HA sessions based on the following rules:

- **Enter condition:** Actual total number of HA sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of HA sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of HA sessions high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-ha-sessions 10000
```

threshold total-hnbgw-hnb-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures alarm or alert thresholds for the total number of Home NodeB (HNB) sessions across all the HNB Gateway (HNB-GW) services in the system.

Product

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-hnbgw-hnb-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold for the total number of HNB-HNB-GW sessions on IuH interfaces across all HNB-GW services on a system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold for the total number of HNB-HNB-GW sessions on IuH interfaces across all services on a system that maintains a previously generated alarm condition. If the number of HNB-HNB-GW sessions in a system falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of HNB-HNB-GW sessions on IuH interface across all HNB-GW services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of HNB-HNB-GW sessions on IuH interface based on the following rules:

- **Enter condition:** Actual total number of HNB-HNB-GW sessions on IuH interface is greater than the high threshold.
- **Clear condition:** Actual total number of HNB-HNB-GW sessions on IuH interfaces is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll total-hnbgw-hnb-sessions** command to configure the polling interval and the **threshold monitoring hnbgw-service** command to enable thresholding for this value.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshTotalHNBGWHnbSess** command in this mode.

Example

The following command configures the total number of HNB-GW-HNB sessions on IuH interfaces to a high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-hnbgw-hnb-sessions 10000
```

threshold total-hnbgw-iu-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures alarm or alert thresholds for the total number of subscriber sessions towards the Core Networks (CN) across all HNBGW services over Iu interfaces (Iu-CS/Iu-PS interface) on a system.

Product

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-hnbgw-iu-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold for the total number of subscriber sessions towards CN across all HNB-GW services on a system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 3000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold for the total number of subscriber sessions towards CN across all services on a system that maintains a previously generated alarm condition. If the number of subscriber sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 3000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of subscriber sessions towards CN across all HNB-GW services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of subscriber sessions towards CN across all HNB-GW service on a system based on the following rules:

- **Enter condition:** Actual total number of subscriber sessions across all HNB-GW service on a system is greater than the high threshold.
- **Clear condition:** Actual total number of subscriber sessions across all HNB-GW service on a system is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll total-hnbgw-iu-sessions** command to configure the polling interval and the **threshold monitoring hnbgw-service** command to enable thresholding for this value.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshTotalHNBGWIuSess** command in this mode.

Example

The following command configures the total number of subscriber sessions towards CN across all HNB-GW services to a high threshold count of *30000* for a system using the Alert thresholding model:

```
threshold total-hnbgw-iu-sessions 30000
```

threshold total-hnbgw-ue-sessions

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Configures alarm or alert thresholds for the total number of UEs connected to an HNB-GW service across all the HNB-GW services in the system.

Product

HNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

threshold total-hnbgw-ue-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold for the total number of UEs connected across all HNB-GW services on a system that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold for the total number of UEs connected to HNB-GW service across all HNB-GW services that maintains a previously generated alarm condition. If the number of UE sessions across all the services in a system, falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of UEs connected to HNB-GW service across all HNB-GW services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of UEs connected across all HNB-GW service on a system based on the following rules:

- **Enter condition:** Actual total number of UEs connected to HNB-GW service across all HNB-GW services on a system is greater than the high threshold.
- **Clear condition:** Actual total number of UEs connected to HNB-GW service across all HNB-GW services on a system is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll total-hnbgw-ue-sessions** command to configure the polling interval and the **threshold monitoring hnbgw-service** command to enable thresholding for this value.

Important To enable an SNMP trap for monitoring this threshold use the **snmp trap enable ThreshTotalHNBGWUeSess** command in this mode.

Example

The following command configures the total number of UEs connected to HNB-GW service across all HNB-GW services to a high threshold count of *40000* for a system using the Alert thresholding model:

```
threshold total-hnbgw-ue-sessions 40000
```

threshold total-hsgw-sessions

Configures alarm or alert thresholds for the total number of HRPD Serving Gateway (HSGW) sessions across all services in the system.

Product HSGW

Privilege Administrator

Command Modes Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold total-hsgw-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold for the number of HSGW sessions for all HSGW services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold for the number of HSGW sessions for all HSGW services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 2500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of HSGW sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for HSGW sessions based on the following rules:

- **Enter condition:** Actual total number of HSGW sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of HSGW sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of HSGW sessions high threshold count of *500000* for a system using the Alert thresholding model:

```
threshold total-hsgw-sessions 500000
```

threshold total-lma-sessions

Configures alarm or alert thresholds for the total number of Local Mobility Anchor (LMA) sessions across all services in the system.

Product

P-GW

SAEGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-lma-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of LMA sessions for all LMA services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 1500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of LMA sessions for all LMA services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 1500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of LMA sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for LMA sessions based on the following rules:

- **Enter condition:** Actual total number of LMA sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of LMA sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of LMA sessions high threshold count of *500000* for a system using the Alert thresholding model:

```
threshold total-lma-sessions 500000
```

threshold total-lns-sessions

Configures alarm or alert thresholds for the total number of L2TP Network Server (LNS) sessions in the system.

Product

PDSN

GGSN

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold total-lns-sessions` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of total LNS sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total LNS sessions that maintains a previously generated alarm condition. If the number of LNS sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of LNS sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of LNS sessions based on the following rules:

- **Enter condition:** Actual total number of LNS sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of LNS sessions is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total LNS session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-lns-sessions 10000
```

threshold total-mme-sessions

Configures alarm or alert thresholds for the total number of Mobility Management Entity (MME) sessions across all the MME services in the system.

Product

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-mme-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0 (Disabled)

Specifies the high threshold number of total MME sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0 (Disabled)

Specifies the low threshold number of total MME sessions that maintains a previously generated alarm condition. If the number of MME sessions, across all the services in a system, falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 2500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to monitor and set alarms or alerts when the total number of MME sessions across all the MME services in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of MME sessions based on the following rules:

- **Enter condition:** Actual total number of MME sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of MME sessions is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll total-mme-sessions** command to configure the polling interval and the **threshold monitoring mme-service** command to enable thresholding for this value.

Example

The following command configures a total MME session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-mme-sessions 10000
```

threshold total-pdsn-sessions

Configures alarm or alert thresholds for the total number of Packet Data Serving Node (PDSN) sessions in the system.

Product

PDSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold total-pdsn-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of total PDSN sessions that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 2500000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total PDSN sessions that maintains a previously generated alarm condition. If the number of PDSN sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 and 2500000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of PDSN sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for the total number of PDSN sessions based on the following rules:

- **Enter condition:** Actual total number of PDSN sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of PDSN sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total PDSN session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-pdsn-sessions 10000
```

threshold total-pgw-sessions

Configures alarm or alert thresholds for the total number of Packet Data Network Gateway (P-GW) sessions across all services in the system.

Product

P-GW

SAEGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-pgw-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of P-GW sessions for all P-GW services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 3000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of P-GW sessions for all P-GW services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 3000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of P-GW sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for P-GW sessions based on the following rules:

- **Enter condition:** Actual total number of P-GW sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of P-GW sessions is less than the low threshold

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of P-GW sessions high threshold count of *500000* for a system using the Alert thresholding model:

```
threshold total-pgw-sessions 500000
```

threshold total-saegw-sessions

Configures alarm or alert thresholds for the total number of System Architecture Evolution Gateway (SAEGW) sessions across all services in the system.

Product

SAEGW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

threshold total-saegw-sessions *high_thresh* **[clear** *low_thresh* **]**

high_thresh

Default: 0

Specifies the high threshold number of SAEGW sessions for all SAEGW services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 3000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of SAEGW sessions for all SAEGW services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 3000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of SAEGW sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for SAEGW sessions based on the following rules:

- **Enter condition:** Actual total number of SAEGW sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of SAEGW sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of SAEGW sessions high threshold count of *500000* for a system using the Alert thresholding model:

```
threshold total-saegw-sessions 500000
```

threshold total-sgsn-pdp-sessions

Configures alarm or alert thresholds for the total number of PDP contexts for all Serving GPRS Support Node (SGSN) sessions in the system.

Product

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

`[local]host_name(config)#`

Syntax Description

`threshold total-sgsn-pdp-sessions` *`high_thresh`* **`[ clear`** *`low_thresh`* **`]`**

high_thresh

Default: 0

Specifies the high threshold number of total PDP contexts per SGSN session for all SGSN services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 4000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total PDP contexts per SGSN session for all SGSN services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 4000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of SGSN sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for SGSN sessions based on the following rules:

- **Enter condition:** Actual total number of PDP contexts is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of PDP contexts is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of PDP contexts per SGSN session high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-sgsn-pdp-sessions 10000
```

threshold total-sgsn-sessions

Configures alarm or alert thresholds for the total number of SGSN sessions in the system.

Product

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold total-sgsn-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of total SGSN sessions for all SGSN services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 2000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of total SGSN sessions for all SGSN services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 2000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of SGSN sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for SGSN sessions based on the following rules:

- **Enter condition:** Actual total number of SGSN sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of SGSN sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of SGSN sessions high threshold count of *10000* for a system using the Alert thresholding model:

```
threshold total-sgsn-sessions 10000
```

threshold total-sgw-sessions

Configures alarm or alert thresholds for the total number of Serving Gateway (S-GW) sessions across all services in the system.

Product

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
threshold total-sgw-sessions high_thresh [ clear low_thresh ]
```

high_thresh

Default: 0

Specifies the high threshold number of S-GW sessions for all S-GW services that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 1 through 3000000. A value of 0 disables the threshold.

clear *low_thresh*

Default: 0

Specifies the low threshold number of S-GW sessions for all S-GW services that maintains a previously generated alarm condition. If the number of sessions falls beneath the low threshold within the polling interval, a clear alarm will be generated.

low_thresh is an integer from 0 through 3000000. A value of 0 disables the threshold.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Monitor and set alarms or alerts when the total number of S-GW sessions in the system is equal to or greater than the set limit.

Alerts or alarms are triggered for S-GW sessions based on the following rules:

- **Enter condition:** Actual total number of S-GW sessions is greater than or equal to the high threshold.
- **Clear condition:** Actual total number of S-GW sessions is less than the low threshold.

If a trigger condition occurs within the polling interval, the alert or alarm will not be generated until the end of the polling interval.

Refer to the **threshold poll** command to configure the polling interval and the **threshold monitoring** command to enable thresholding for this value.

Example

The following command configures a total number of S-GW sessions high threshold count of *500000* for a system using the Alert thresholding model:

```
threshold total-sgw-sessions 500000
```

throttling-override-policy

Creates a GTP-C Throttling Override Policy. Entering this command creates a Throttling Override Policy mode. Use this mode to configure the Throttling Override Policy that can be used at the GGSN/P-GW nodes to selectively bypass throttling for a configured message type or for the configured APN.

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

throttling-override-policy *throttling-override-policy_name*

throttling-override-policy

Creates a GTP-C throttling overrride policy.

throttling-override-policy_name is a throttling overrride policy name for the policy that can be used at the GGSN/P-GW nodes.

Usage Guidelines

Enter this command mode to configure the Throttling Override Policy that can be used at the GGSN/P-GW nodes to selectively bypass throttling for a configured message type or for the configured APN.

Example

Use the following command to enter throttling-override-policy mode:

throttling-override-policy *throttling-override-policy_name*

timestamps

Enables or disables the generation of a timestamp in response to each commands entered. The timestamp does not appear in any logs as it is a CLI output only. This command affects all future CLI sessions. Use the **timestamps** command in the Exec Mode to change the behavior for the current CLI session only.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

[local]*host_name*(config)#

Syntax Description

timestamps
no timestamps

no

Disables generation of timestamps for each command entered. When omitted, the output of a timestamp for each entered command is enabled.

Usage Guidelines

Enable the timestamps when logging a CLI session on a remote terminal such that each command will have a line of text indicating the time when the command was entered.

Example

The following commands enable and disable timestamps for each CLI command:

timestamps

no timestamps

traffic shape

Configures the maximum buffer limit for sessmgr and subscribers for use during traffic shaping.

Product

GGSN

P-GW

SAEGW

Important Traffic Shaping is a license-controlled feature. Contact your Cisco account or support representative for detailed licensing information.

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

traffic shape max-buffer-size sessmgr *MBs* **subscriber** *MBs*
default traffic shape max-buffer-size

default

Returns sessmgr and subscriber settings to their default values.

Default setting for the sessmgr is 10MB. Default setting for the subscriber is 1MB.

traffic

Allows configuration for data traffic.

shape

Allows configuration for traffic shaping.

max-buffer-size

Allows configuration of the maximum buffer size for the session manager and subscriber.

sessmgr

Specifies the maximum buffer limit for the session manager for use during traffic shaping.

Valid entries are from 1 to 100 MB.

The default is 10 MB.

The sessmgr value should be greater than the subscriber value.

Caution Standard size buffers (500, 2k, and 10k bytes) are used for buffering packets to avoid memory fragmentation. As a result, there may be additional memory overhead in the memory used for buffering. The buffer limit in the above configuration refers to actual effective bytes used to store packets. Use caution to use appropriate buffer limits, so that the system does not significantly affect the overall Session Manager memory requirement for sessions.

subscriber

Specifies the maximum buffer limit for subscriber use during traffic shaping.

Valid entries are from 1 to 100 MB.

The default is 1 MB.

The **subscriber** value should be less than the **sessmgr** value.

Note

Usage Guidelines

Use this command to set the maximum memory buffer limit for session manager and subscriber use during traffic shaping.

Traffic shaping and policing must first be configured in *APN Configuration Mode* using the **apn-ambr** command before the **traffic shape** command can be used.

Example

The following example configures the maximum buffer size for the sessmgr at 20 MB, and configures the maximum buffer size for subscriber at 2 MB:

```
traffic shape max-buffer-size sessmgr 20 subscriber 2
```

transaction-rate bucket-interval

Enables operators to set the time interval used for gathering transaction rate Session Events per Second and N/w Initiated Setup/Teardown Events per Second key performance indicator (KPI) information.

Product

ePDG

P-GW

SAE-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
transaction-rate bucket-intervaltime-interval
default transaction-rate bucket-interval
```

transaction-rate bucket-interval *time_interval*

Where **bucket-interval** is the time interval, in minutes, used for gathering transaction rate statistics. This setting must be an integer from 1 to 20 minutes. The default value is 2 minutes. If no entry is made for the **bucket-interval**, then the default value of 2 minutes is used.

default

Returns the bucket-interval setting to the default value of 2 minutes.

Usage Guidelines

Session Events Per Second (SEPS) KPIs measure the signaling load on the P-GW/ePDG. Network initiated setup/tear down KPIs are available to measure the event rate for VoLTE call setup and tear down. Together, these measurements assist operators in performing network dimensioning/planning for the P-GW/SAE-GW/ePDG node.

The P-GW/SAE-GW/ePDG contains 8 buckets for transaction rate statistics collection for both session events per second KPIs and N/w Initiated Setup/Tear down Events per Second KPIs. The buckets are based on a configurable bucket interval that is from 1 to 20 minutes in length. During the configured time interval, an average is computed and stored for the entire bucket interval.

After the first 8 bucket intervals have elapsed and statistics collected, the P-GW continues sequentially through the 8 bucket intervals and eventually overwrites the original 8 bucket-intervals with more recent data. In short, the 8 bucket intervals provide a running average for the last eight bucket-intervals for which KPIs have been computed. While the bucket-interval statistics are eventually overwritten with new values, all statistic totals are added to the historical statistics, which are not overwritten.

To keep the number of buckets carrying new data across 2 consecutive bulk statistics sampling intervals as constant, use the following recommended configuration:

- Configure the bucket-interval so that the bulk statistic sampling interval is an integer (from 1 to 8) multiple of the configured bucket-interval. This new integer multiple reflects the number of buckets with new information in a given sampling interval. For example:
  - If the bulk statistic sampling interval is 15, then the configured bucket interval should be 3 so that the bucket interval is an integer multiple (3*5=15) of the sampling interval. In this case, 5 indicates the number of buckets with new information in a given sampling interval.
  - Similarly, when the bulk statistic sampling interval is 16, then the bucket interval could be 2 (so that 2*8=16). In this example 8 is the number of buckets with new information in a given sampling interval.
- The transaction rates statistics are lost if the sessmgr/demuxmgr restarts. Also the cumulative statistics accumulated to that point are also lost.
- If the sessmgr/demuxmgr restarts in the middle of a bucket interval, the transaction rates stats collected to that point are lost.
- For SAE-GW calls, the calls should be a Pure-P call.

To view transaction rate KPI information, use the **show transaction-rate pgw-service** command in *Exec Mode*.

Example

Use the following command to set the bucket-interval for SEPS and network initiated setup/tear down KPIs to 3 minutes:

```
transaction-rate bucket-interval 3
```

transaction-rate nw-initiated-setup-teardown-events qci

Enables operators to set the Quality of Class Identifier (QCI) value for use in tracking Network Initiated Setup/Tear down Events per Second key performance indicator (KPI) information.

Product

ePDG

P-GW

SAE-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
transaction-rate nw-initiated-setup-teardown-events qci [ all | qci_value
]
default transaction-rate nw-initiated-setup-teardown-events qci[ all |
qci_value ]
no transaction-rate nw-initiated-setup-teardown-events qci[ all | qci_value
 ]
```

transaction-rate nw-initiated-setup-teardown-events qci *qci_value*

Specifies the Quality of Service Class Identifier (QCI) value for which nw-initiated-setup-teardown-events will be tracked. QCI values of 1-9, 65, 66, 69, 70, 80, 82, 83 and 128 - 254 are supported. A maximum of 4 unique QCI settings can be configured. The default is for network-initiated setup/teardown events to be supported for all supported QCI values.

QCI values 65 and 66 are available for guaranteed bit rate (GBR) network initiated QCI values only.

QCI values 69 and 70 are available for non-GBR network initiated QCI values only.

all : Specifies all the Quality of Service Class Identifier (QCI) values for which nw-initiated-setup-teardown-events will be tracked.

default

Returns the setting to its default value. The default is for network-initiated setup/teardown events to be tracked for all supported QCI values.

no

Disables the collection of network-initiated setup/teardown events for the specified QCI value.

Usage Guidelines

Network initiated setup/tear down KPIs are available to measure the event rate for VoLTE call setup and tear down. These KPIs assist operators in performing network dimensioning/planning for the P-GW/ePDG node.

The P-GW/ePDG contains 8 buckets for transaction rate statistics collection for N/w Initiated Setup/Tear down Events per Second KPIs. The buckets are based on a configurable bucket interval that is from 1 to 20 minutes in length. During the configured time interval, an average is computed and stored for the entire bucket interval. Refer to the description of the **transaction-rate bucket-interval** command in Global Configuration Mode Commands chapter for details on configuring the bucket interval.

The transaction rates statistics are lost when the sessmgr/demux restarts.

Existing transaction-rate configuration settings can be viewed by using the **show configuration** command in Exec Mode.

To view network-initiated setup/tear down event statistics, use the **show transaction-rate pgw-service** command in Exec Mode.

To clear the transaction-rate statistics, use the **clear transaction-rate pgw-service** command in Exec Mode.

Example

Use the following command to set QCI value for network-initiated setup/tear down event KPIs to 3:

```
transaction-rate nw-initiated-setup-teardown-events qci 3
```

unexpected-scenario session drop-call

Configures behavior when an unexpected call processing scenario is encountered. Enabling this command sets call clearing logic that replaces the automatic generation of asserts and core dumps for an initial assert.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
unexpected-scenario session drop-call [ disable-core ]
default unexpected-scenario session drop-call
```

default

Disables call clearing logic for a graceful assert. This results in automatic core dump generation for unexpected scenarios resulting in control and data outage for the task instance until the core is fully generated.

[disable-core]

This option disables the automatic generation of core dumps when a call is dropped for a specific session.

Usage Guidelines

Use this command to enable call clearing logic that will minimize the automatic generation of asserts and core dumps during a specific call processing session that may lead to data outage and session manager recovery.

The call clearing logic is only applied to the first assert generated during a call processing session. When that assert occurs, a zero-second timer lets the current stack unwind to avoid reentrancy issues. The call is then dropped from all interfaces. This is considered to be a graceful assert.

A core dump is generated along with any application supplied debug info. The line number and file index of the ASSERT appears in the call-line; the current call-line is marked as being in "assert_hit" scenario.

With the **disable-core** option set, a core dump is not generated following a graceful assert.

An assert generated after a graceful assert for the same unexpected scenario will cause the call to be dropped and trigger an automatic core dump. Depending on the length of time required to generate the associated core dump, a session manager recovery may be initiated. This is a highly unlikely possibility.

Important The graceful assert call clearing logic can only be applied to call processing events, such as VoLTE. It cannot be used for ICSR-SRP scenarios.

Example

The following command enables call clearing logic for graceful asserts of initial call processing failures:

```
unexpected-scenario session drop-call disable-core
```

wait cards timeout

Configures the active CF to pause the application of configuration to other cards/VMs during bootup until the specified timeout period expires (VPC-DI only).

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
wait cards timeout seconds
no wait cards timeout
```

no

Removes the timeout (timeout = 0 seconds); SF cards do not wait to apply the configuration to other cards.

timeout *seconds*

timeout

Wait for the specified number of seconds before applying the configuration. The wait is terminated early when/if the cards specified in the **wait cards mask** *cards* **|** **actives** *cards* command become operational. Otherwise the wait is terminated when the timeout period expires.

seconds : An integer from 0 through 3600. Default: 300 seconds.

Usage Guidelines

Use this command to set the time in seconds to pause the application of configuration by the CF to the SFs until all specified cards are operational or the timeout period expires (whichever criteria is met first). The pause occurs immediately following local management context creation and ntp/snmp configuration.

This prevents a scenario where SFs come online late following chassis load/reload and the configuration pertaining to those SFs is not applied (and thereby lost).

During the wait period, information messages are reported on the console every 30 seconds.

Example

The following example command instructs the system to wait up to 120 seconds before applying the configuration to the SF cards:

```
wait cards timeout 120
```

wait cards

Configures the active CF to pause the application of configuration to other cards/VMs during bootup until the specified cards are operational (VPC-DI only).

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

```
wait cards [ mask bitmask-value | actives active-count ]
no wait cards
```

no

Returns this setting to the default behavior where CF does not wait to apply the configuration to other cards.

mask *bitmask-value*

mask

Specifies a bitmask of specific cards to wait to reach terminal operational state before applying the configuration.

bitmask-value : A bitmask value specifying the specific cards; cards 3 through 7 would be entered as **3-7**, cards 4 and 8 is entered as **4,8**, and cards 3 through 10, 12 through 14, 16 and 19 would be entered as **3-10,12-14,16,19**.

actives *active-count*

actives

Specifies the number of cards to wait to become active before applying the configuration.

active-count : An integer value from 3 through 48.

Usage Guidelines

Use this command to define the specific cards, or number of cards, which must become active before the CF applies the configuration to the other cards in the system. The pause occurs immediately following local management context creation and ntp/snmp configuration.

The values for the keywords in this command are automatically generated by the system each time a **save configuration** command is issued.

As a result, the **mask** and **actives** keywords described below are concealed commands. These commands should only be used in specific instances where these settings must be manually applied.

In Release 21.3.3-21.5, the command **wait card active** *active-count* **standby** *standby-count* **timeout** *timeout-value* was used to control this Boot Configuration Pause functionality. In Release 21.6 and higher, this command has been deprecated. If this command exists in the configuration file, the system will honor the **timeout** *timeout-value* command, and **active** *active-count* **standby** *standby-count* keywords of the deprecated command.

Example

The following example command instructs the system to wait for cards 2-10 to become active and at least 12 cards become active overall:

```
wait cards mask 2-10 actives 12
```

The following example command instructs the system to wait for cards 2-10 to become active or at least 8 cards to become active:

```
wait cards mask 2-10 actives 8
```

The following example command instructs the system to wait for at least 8 cards to become active:

```
wait cards actives 8
```

wsg-lookup

Enters the WSG lookup priority list configuration mode for site-to-site tunnels.

Product

WSG

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration

configure

Entering the above command sequence results in the following prompt:

```
[local]host_name(config)#
```

Syntax Description

wsg-lookup

Usage Guidelines

Use this command to enter the WSG lookup priority list configuration mode for site-to-site tunnels.

Examples

The following command enters the SG lookup priority configuration mode:

wsg-lookup

CHAPTER 10

Global Title Translation Address-Map Configuration Mode Commands

The Global Title Translation (GTT) Address Map Configuration is a sub-mode of Global Title Translation Mode. This mode is used to create and configure the GTT database.

Command Modes

This chapter describes the Global Title Translation Address-Map Configuration Mode

Exec > Global Configuration > GTT Address-Map

configure > global-title-translation > address-map instance*instance*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtt-addrmap-instance)#`

Important Available commands or keywords/variables vary based on platform type, product version, and installed license(s).

- associate, on page 695
- description, on page 696
- do, on page 697
- end, on page 697
- exit, on page 698
- gt-address, on page 698
- mode, on page 699
- out-address, on page 699

associate

This command allows the user to configure the gtt-association.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Address-Map Configuration

configure > global-title-translation address-map instance *instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-addrmap-instance)#`

Syntax Description

[no] associate gtt-association *instance* **action id** *action_id*

no

Removes the configured gtt-association.

gtt-association

This keyword is used to specify the gtt-association to be used.

instance

Specifies the gtt-association instance to be used. The instance is an integer value from 1 up to 16.

action

This keyword is used to specify the action for the rule. The actions are configured by the **action** command in the GTT Association Configuration Mode. For more information see the *Global Title Translation Association Configuration Mode* chapter.

id

This keyword is used to specify the action id. The action id's are associated with specific action types in the GTT Association Configuration Mode. For more information see the *Global Title Translation Association Configuration Mode* chapter.

action_id

The *action_id* is an integer value from 1 up to 15.

Usage Guidelines

This command allows the user to configure the gtt-association. The instance and the action can be configured using this command. The Action Id's are configured using the **action** command under the GTT Association Configuration Mode. For more information see *Global Title Translation Association Configuration Mode* chapter.

Example

This command configures gtt-association for **instance** *12* and specifies the **action id** as *10*:

```
associate gtt-association 12 action id 10
```

description

Allows the user to enter a descriptive text for this configuration.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Address-Map Configuration

configure > global-title-translation address-map instance *instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-addrmap-instance)#`

Syntax Description

`description` *`text`*
`no description`

no

Clears the description for this configuration.

text

Enter descriptive text as a string of 1 up to 127 characters.

Usage Guidelines

The description should provide useful information about this configuration.

do

Spawns an Exec mode command which displays information to the administrator.

Product

All

Privilege

Administrator

Syntax Description

`do show` *`show_command_options`*

show *show_command_options*

Executes an exec mode **show** command and immediately returns back to the current configuration mode.

show_command_options lists the various show commands available for the administrator.

Usage Guidelines

Use this command to display show command information to the administrator and immediately return back to the current configuration mode.

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

gt-address

This command allows the user to configure the SCCP short address.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Address-Map Configuration

configure > global-title-translation address-map instance *instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-addrmap-instance)#`

Syntax Description

gt-address *gt_address*
no gt-address

no

Removes the configured SCCP short address.

gt_address

The gt-address is a numerical string of size 1 up to 15. The length of the address should be greater than or equal to the end-digit of the associated action-id.

Example

This command configures the gt-address of the SCCP entity as *101011*:

gt-address *101011*

mode

This command allows the user to configure the mode of operation of SCCP entities.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Address-Map Configuration

configure > global-title-translation address-map instance *instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-addrmap-instance)#`

Syntax Description

`mode { dominant | loadshare }`

dominant

This keyword configures the mode of operation of SCCP entities as dominant. In this mode even if multiple out-addresses are configured the first out-address will be used for handling all the signaling traffic. The next available out-address is chosen for handling all the signaling traffic if any out-address is not available. For example, if the first out-address is not available the second out-address is used for handling all the signaling traffic.

loadshare

This keyword configures the mode of operation of SCCP entities as loadshare. In this mode if multiple out-addresses are configured then the load of signaling traffic is shared among all the out-addresses configured. This is also the default mode.

Example

This command configures the mode of operation of SCCP entities as dominant:

`mode dominant`

out-address

This command allows the user to configure the outgoing address and outbound parameters of the SCCP entity.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Address-Map Configuration

configure > global-title-translation address-map instance *instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-addrmap-instance)#
```

Syntax Description

[no] out-address *address_name*

no

Removes the configured outgoing address and outbound parameters of the SCCP entity.

address_name

The address name is a string of size 1 up to 63.

Usage Guidelines

This command allows the user to configure the outgoing address of the SCCP entity, the user enters the Out-Address Configuration mode where the outbound parameters for the SCCP entities as part of the gtt-address-map configuration can be configured. For more information see *Out-Address Configuration Mode Commands* chapter in the *Command Line Interface Reference, Commands I - Q* document.

Example

This command configures the outgoing address of the SCCP entity as *sccp1*:

out-address *sccp1*

CHAPTER 11

Global Title Translation Association Configuration Mode Commands

The Global Title Translation (GTT) Association Configuration is a sub-mode of Global Title Translation Mode. This mode is used to create and configure the GTT association which defines the rules for handling global title translation.

Command Modes

This chapter describes the Global Title Translation Association Configuration Mode

Exec > Global Configuration > GTT Association

configure > global-title-translation > association instance*instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-asso-instance)#
```

Important Available commands or keywords/variables vary based on platform type, product version, and installed license(s).

- action, on page 701
- description, on page 703
- do, on page 703
- end, on page 704
- exit, on page 704
- gt-format, on page 704
- variant, on page 705

action

This command allows the user to configure the action type for specific action id's .

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Association Configuration

configure > global-title-translation association instance *instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-asso-instance)#
```

Syntax Description

[no] action id *action_id* **type** *action_type* **start-digit** *start_digit_value* **end-digit** *end_digit_value*

no

Removes the action type defined for the action id's.

action

Specifies the action for the rule.

id

This keyword is used to specify the action id.

action_id

The *action_id* is an integer value from 1 up to 15.

type

This keyword is used to specify the action type.

action_type

The supported action types are listed below:

- **constant:** Translate incoming GT to a fixed address.
- **fixed:**Fixed range of digits to perform GTT.
- **gt-to-pc:** Use digits in incoming GT digits as PC for routing.
- **insert-pc:** Insert DPC before incoming GTAI and change TT,ES and NAI.
- **selins:** Selective Insertion type to perform GTT.
- **strip-pc:** Strip first the "6" digits from GTAI if first "6" digits in SPC are in INT format.
- **var-asc:** Variable number of digits in ascending order to perform GTT.
- **var-des:** Variable number of digits in descending order to perform GTT.

start-digit *start_digit_value*

Specifies the ending digit of the range. The *start_digit_value* is an integer value from 0 up to 255. The start digit value must be less than or equal to the end digit value.

end-digit *end_digit_value*

Specifies the starting digit of the range. The *end_digit_value* is an integer value from 0 up to 255.

Usage Guidelines

The action id's can be configured for the GTT address-maps. Each action id is associated with a specific type of action. For more information see the **associate** command in the *Global Title Translation Address-Map Configuration Mode* chapter.

Example

Listed below is an example where the action id "10" is defined with action type "fixed" along with start and end digits as "10" and "23" respectively:

```
action id 10 type fixed start-digit 10 end-digit 23
```

description

Allows the user to enter a descriptive text for this configuration.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Association Configuration

configure > global-title-translation association instance *instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-asso-instance)#
```

Syntax Description

```
description text
no description
```

no

Clears the description for this configuration.

text

Enter descriptive text as a string of 1 up to 127 characters.

Usage Guidelines

The description should provide useful information about this configuration.

do

Spawns an Exec mode command which displays information to the administrator.

Product

All

Privilege

Administrator

Syntax Description

```
do showshow_command_options
```

show ***show_command_options***

Executes an exec mode **show** command and immediately returns back to the current configuration mode.

show_command_options lists the various show commands available for the administrator.

Usage Guidelines

Use this command to display show command information to the administrator and immediately return back to the current configuration mode.

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

gt-format

This command configures Global Title Translation format in the GTT process.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Association Configuration

configure > global-title-translation association instance *instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-asso-instance)#
```

Syntax Description

[no] gt-format *format_number*

no

Removes the configured format.

format_number

The *format_number* is an integer value from 1 up to 4. The format numbers correspond to the following formats:

- **1:** Format 1
- **2:** Format 2
- **3:** Format 3
- **4:** Format 4

Usage Guidelines

On configuring this command, the user enters the specified GT-Format mode. Each format has specific commands to define rules for GTT. For more information see *GT-Format1/GT-Format2/GT-Format3/GT-Format4 Configuration Mode Commands* chapters.

Example

Listed below is an example where the GT-format is chosen as "1" which corresponds to GT-Format1 and enters the GT-Format1 Configuration Mode:

```
gt-format 1
```

variant

This command configures Global Title Translation (GTT) network variant.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Global Title Translation Association Configuration

configure > global-title-translation association instance *instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-asso-instance)#
```

Syntax Description

variant *variant*

variant

The available options of network variant are listed below:

- **ansi**

- **china**
- **itu**
- **japan**

Example

Listed below is an example where the network variant is selected as *ansi*:

```
variant ansi
```

CHAPTER 12

GPRS Service Configuration Mode Commands

Command Modes

The GPRS Service Configuration Mode is used within the context configuration mode to define the criteria the SGSN needs to operate within a GPRS network. The GPRS Service works with other services, such as SGSN GPRS Tunneling Protocol (see SGTP Service Configuration Mode Commands) and Mobile Application Part (see MAP Service Configuration Mode Commands), to handle communication parameters required to work with other network entities such as the base station subsystem (BSS).

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- accounting, on page 708
- admin-disconnect-behavior, on page 709
- associate, on page 711
- associate-dscp-template, on page 714
- associate-service, on page 715
- cc profile, on page 716
- check-imei, on page 718
- check-imei-timeout-action, on page 719
- ciphering-algorithm, on page 719
- dns mcc-mnc-encoding, on page 722
- dns israu-mcc-mnc-encoding, on page 723
- do show, on page 724
- end, on page 725
- exit, on page 725
- gmm, on page 725
- llc, on page 731
- network-sharing , on page 735
- nri , on page 736
- paging-policy, on page 739

- peer-nsei, on page 740
- plmn, on page 742
- rai-skip-validation , on page 743
- reporting-action event-record, on page 744
- s4-overcharge-protection, on page 745
- setup-timout, on page 746
- sgsn-context-request, on page 747
- sgsn-number, on page 747
- sm, on page 748
- sndcp, on page 751

accounting

Defines the accounting context name and enables/disables specific types of CDR generation for the accounting in the GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

```
accounting { cdr-types { mcdr | scdr | sms { mo-cdr | mt-cdr }  | lcs {
mt-cdr  | mo-cdr  } | smbmscdr }+ | context  cntx_name  }
default accounting cdr-types
no accounting ( cdr-types | context }
```

default

Returns the system to default CDR generation which includes:

- M-CDR
- S-CDR
- SMS CDRs
- LCS CDRs
- SMBMS CDR

no

Disables all CDR types.

cdr-types { mcdr | scdr | sms { mo-cdr | mt-cdr } | lcs { mt-cdr | mo-cdr }| smbmscdr }

Default: all types enabled.

Defines the types of CDRs to be generated within the specified GPRS service for accounting:

- **mcdr:** Enables generation of M-CDRs.
- **scdr:** Enables generation of S-CDRs.
- **sms:** Enables generation of SMS-type CDRs based on one of the following:
  - **mo-cdr:** SMS CDRs originates from the mobile.
  - **mt-cdr:** SMS CDRs terminates at the mobile.
- **smbmscdr:** This CDR type is currently under development and should not be included in configuration for this release.
- **lcs:** Enables the generation of LCS CDRs, based on:
  - **mt-cdr:** Mobile terminated location request CDR
  - **mo-cdr:** Mobile originated location request CDR

+

This symbol indicates that more than one keyword can be used and repeated. This enables you to include more than one type of CDR selection in a single command.

context *cntx_name*

Specifies an accounting context to be associated with the GPRS service.

cntx_name: Define a string of 1 to 79 alphanumeric characters.

Usage Guidelines

Use this command to define the type of CDRs to generate for GPRS service. By default all types of CDRs are generated. Note that change of this configuration will be applied to new calls and/or to new PDP contexts only.

By default, the generation of all CDR types is enabled.

Example

The following command configures the system to generate only M-CDRs for accounting in the current GPRS service:

```
accounting cdr-types mcdr
```

admin-disconnect-behavior

This command defines some of the actions the SGSN will take during an Admin-Disconnect procedure.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
admin-disconnect-behavior { clear-subscription | detach-type {
reattach-not-required | reattach-required } }
default admin-disconnect-behavior { clear-subscription | detach-type }
```

clear-subscription

Including this keyword in the configuration instructs the SGSN to clear subscriber contexts and the subscription data database whenever the **clear subscribers all** command is issued (from the Exec mode) for attached subscribers. As well, the SGSN will issue an appropriate Map-Purge-MS-Req to the HLR if needed.

Default: disabled

detach-type

Including this keyword defines which type of detach instruction to include in the Detach-Request message during an Admin-Disconnect procedure. One of the following options must be included when this command is entered:

- **reattach-not-required**
- **reattach-required**

Default: reattach-required

default

Including the **default** keyword in the command, instructs the SGSN to use the default value for the specified parameter.

no

Returns the SGSN to the default where this clear function is disabled

Usage Guidelines

Using he **clear subscribers all** command (in the Exec Mode) clears subscriber contexts and the subscription data database, and if needed, issues an appropriate Map-Purge-MS-Req to the HLR.

Include the **clear-subscription** keyword with this command configuration to ensure that more than attached MM-context and active PDP-contexts are cleared when the clear **subscribers all** command is issued for attached subscribers.

To clear subscription data for detached subscribers, refer to the **sgsn clear-detached-subscriptions** command described in the *Exec* mode chapter.

Including the **detach-type** keyword with this command instructs the SGSN to include either a 'reattach-required' or a 'reattach-no-required' instruction in the Detach-Request message.

Example

Enable the clearing function so that subscription data is cleared from the HLR database:

```
admin-disconnect-behavior
clear-subscription
```

associate

Associates or disassociates supportive services and policies, such as an Evolved GPRS Tunnelling Protocol (eGTP) service or a DSCP marking template with this GPRS service configuration.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

associate { { camel-service *service_name* **[context** *context_name* **] | dscp-template downlink** *dscp_template_name* **| egtp-service** *egtp_svc_name* **[context** *context_name* **] | gs-service** *gs_svc_name* **[context** *context_name* **] | hss-peer-service** *hss_svc_name* **[context** *context_name* **] | location-service** *loc_name* **] | map-service** *map_svc_name* **[context** *context_name* **] | network-global-mme-id-mgmt-db | sgtp-service** *sgtp_svc_name* **[context** *context_name* **] | tai-mgmt-db** *database_name* **}**
no associate { camel-service | dscp-template downlink | egtp-service | gs-service | hss-peer-service | location-service | map-service | network-global-mme-id-mgmt-db | sgtp-service | tai-mgmt-db }

no

Disassociates a previously associated service, DSCP marking template or management database with this GPRS service.

context *ctx_name*

Identifies an existing context name in which the named service is configured. If this keyword is omitted, the named service must exist in the same context as the GPRS service.

ctx_name- Enter an alphanumeric string of 1 through 63 characters.

camel-service *camel_svc_name*

Associates a CAMEL service with this GPRS service.

camel_svc_name specifies the name for a configured CAMEL service to associate with the GPRS service. Enter an alphanumeric string of 1 to 63 characters.

dscp-template downlink *template_name*

Associates a DSCP template with the GPRS service.

template_name specifies a configured DSCP marking template to associate with this GPRS service. Enter an alphanumeric string of 1 to 64 characters.

egtp-service *egtp_svc_name*

Associates an eGTP service with GPRS service.

egtp_svc_name specifies the name for a configured eGTP service to associate with this GPRS service. Enter an alphanumeric string of 1 to 63 characters.

The eGTP service is created with the **egtp-service** command in the *Context Configuration Mode Commands* chapter. The eGTP service provides eGTP-C protocol interface support between the SGSN and EPS nodes. For more information on the eGTP service and the supported interface type(s), refer to the *eGTP Service Configuration Mode Commands* chapter.

Important Only one eGTP service can be associated with a GPRS service. The eGTP service should be configured prior to issuing this command.

gs-service *gs_svc_name*

Associates a GS service with this GPRS service.

gs_svc_name specifies the name for a configured Gs service to associate with the GPRS service. Enter an alphanumeric string of 1 to 63 characters.

The Gs service is created with the **gs-service** command in the *Context Configuration Mode Commands* chapter. The Gs service provides Gs interface support between the SGSN and MSC/VLR nodes. For more information on the Gs service and the supported interface type, refer to the *Gs Service Configuration Mode Commands* chapter.

Important Only one Gs service can be associated with a GPRS service. The Gs service should be configured prior to issuing this command.

hss-peer-service *hss_svc_name*

Associates an HSS peer service with this GPRS service.

hss_svc_name specifies the name for a configured HSS peer service to associate with this GPRS service. Enter an alphanumeric string of 1 to 63 characters.

The HSS peer service provides S6d and S13-prime interface support via the Diameter protocol between the GPRS and an HSS (S6d) or EIR (S13-prime). For more information about the HSS peer service, refer to the **hss-peer-service** command in the *Context Configuration Mode Commands* chapter and the *HSS Peer Service Configuration Mode Commands* chapter.

Important Only one HSS peer service can be associated to a service in this release. The HSS peer service should be configured prior to issuing this command.

location-service *loc_svc_name*

map-service *map_svc_name*

Associates a location service with this GPRS service.

loc_svc_name specifies the name for a pre-configured location service to associate with the GPRS service. Enter an alphanumeric string of 1 to 63 characters.

The location service is created with the **location-service** command in the *Context Configuration Mode Commands* chapter. For more information on the location services, refer to the *Location Services Configuration Mode* section.

Important Only one MAP service can be associated with a GPRS service. The MAP service should be configured prior to issuing this command.

network-global-mme-id-mgmt-db

Associates the configured global MME ID management database with the GPRS service. This enables operators to associate a single custom list of MME Group IDs for use in GPRS to E-UTRAN handovers on the S4-SGSN. The global MME ID management database is configured in the *LTE Policy Configuration Mode* using the **network-global-mme-id-mgmt-db** command.

This command is available only if the *SGSN S4 Interface* license is enabled on the SGSN.

sgtp-service *sgtp_svc_name*

Associates an SGTP service with this GPRS service.

sgtp_svc_name specifies the name for a configured SGTP service to associate with the GPRS service. Enter an alphanumeric string of 1 to 63 characters.

The SGSN GPRS Tunneling Protocol (SGTP) service manages the configuration of the GTP-C and GTP-U related parameters. For more information on the SGTP service, refer to the **sgtp-service** command in the *Context Configuration Mode Commands* chapter and/or the *SGTP Service Configuration Mode Commands* chapter.

Important Only one SGTP service can be associated with a GPRS service. The SGTP service should be configured prior to issuing this command. When co-locating an SGSN and MME, the GPRS Service cannot be associated with the same SGTP service that is used by the MME.

tai-mgmt-db *database_name*

Associates this GPRS service with a pre-configured TAI Management Database.

database_name specifies the name of a pre-configured TAI Management Database to associate with the SGSN service as alphanumeric string of 1 through 64 characters. For more information on subscriber maps, refer to the **tai-mgmt-db** command in the *LTE Policy Configuration Mode Commands* chapter and the *LTE TAI Management Database Configuration Mode Commands* chapter.

This command is available only if the *SGSN S4 Interface* license is enabled on the SGSN.

Usage Guidelines

Use this command to associate a pre-configured service and/or DSCP marking template and/or management database with this GPRS service. The command can be repeated as necessary to configure associations for all desired services/templates/databases.

Caution This is a critical configuration. The GPRS service cannot be started without this configuration. Any change to this configuration would lead to restarting the GPRS service. Removing or disabling this configuration will stop the GPRS service.

Example

The following command associates a previously-configured eGTP service called *egtp1* in the *dst_ctx* context to this GPRS service:

```
associate egtp-service egtp1 context dst_ctx
```

The following command disassociates a MAP service called *map1* that was previously associated with this GPRS service:

```
no associate map-service egtp1
```

The following command associates an HSS peer service called *hss1*, previously-configured in the same context as the GPRS service, to this GPRS service:

```
associate hss-peer-service hss1
```

The following command associates a previously-configured DSCP marking template called *dscp-temp1* to this GPRS service:

```
associate dscp-template downlink dscp-temp1
```

associate-dscp-template

Identifies a DSCP template to be associated with the GPRS service.

Important This command is used only in Releases 12.0 and 12.2. For Release 14.0 refer to the **associate** command.

Important This command can be used before the associated DSCP template instance is created and configured but care should be used to match the template names.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
associate-dscp-template downlink template_name
no associate-dscp-template downlink
```

no

Removes the template association definition from the configuration.

template_name

Specifies a unique DSCP template to associate with this GPRS service.

template_name must be a string of 1 to 64 alphanumeric characters with dots (.), dashes (-), and forward slashes (/) but with no spaces.

Usage Guidelines

Use this command to associate DSCP templates with this GPRS service. A single template can be associated with multiple GPRS services.

Related commands:

- The**dscp-template** command in the SGSN Global configuration mode creates / deletes an instance of a template. This command also provides access to the mode containing all the configuration commands used to define DSCP settings for the control packets for the Iu interface and the control and data packets for the Gb interface (see the *DSCP Template Configuration Mode Commands* chapter).
- To check the list of DSCP templates configured, use the **show sgsn-mode** command documented in the *Exec Mode Commands* chapters.

Example

The following command associates the template with DSCP settings for traffic going through one of the SGSNs located in the *paris3* mobile network:

```
associate-dscp-template dscp-template-paris3
```

associate-service

Identifies services to be associated with the GPRS Service.

Important This command is used only in Releases 12.0 and 12.2. For Release 14.0 refer to the **associate** command.

Important This command can be used before the associated service instance is created and configured but care should be used to match the service names.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

[no] associate-service { gs *name* **| map** *name* **| sgtp** *name* **} [context** *ctxt_name* **]**

no

Removes the service association definition from the configuration.

gs *name*

Specifies the Gs service configuration to associate with this GPRS service.

name must be a string of 1 to 63 alphanumeric characters with no spaces.

map *name*

Specifies the MAP service configuration to associate with this GPRS service.

name must be a string of 1 to 63 alphanumeric characters with no spaces.

sgtp *name*

Specifies the SGTP service configuration to associate with this GPRS service.

name must be a string of 1 to 63 alpha numeric characters with no spaces.

context *ctxt_name*

Defines the context in which the service was created.

ctxt_name must be a string of 1 to 63 alphanumeric characters with no spaces.

Usage Guidelines

Use this command to associate other services, that have been or will be configured, to this GPRS service.

Example

The following command associates Gs service *gs1* with this GPRS service.

associate-service gs *gs1* **context** *sgsn2*

cc profile

Configures the charging characteristic (CC) profile index properties.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
[ no ] cc profile index { buckets number | interval time | tariff time1 mins
 hours [ time2 mins hours [ time3 mins hours [ time4  mins hours ] ] ] | volume
 { downlink octets uplink octets | total octets } }
default cc profile index
```

no

Removes the a specific charging characteristics configuration definition.

default

Resets the charging characteristics to system defaults.

index

Configures a profile index for the parameter to be specified. index can be configured to any integer from 0 to 15.

Important 3GPP standards suggest that profile index values of 1, 2, 4, and 8 be used for hot billing, flat rate billing, prepaid billing and normal billing, respectively. A single charging characteristics profile can contain multiple behavior settings.

buckets *number*

Default: 4

Specifies the number of statistics container changes due to QoS changes or tariff time that can occur before an accounting record should be closed.

number can be configured to any integer value from 1 through 4.

interval *time*

time is measured in seconds and can be configured to any integer from 60 to 40,000,000.

tariff time1 *mins hours* time2 *mins hours* time3 *mins hours* time4 *mins hours*

Specifies time-of-day time values to close the current statistics container (but not necessarily the accounting record). Six different tariff times may be specified. If less than six times are required, the same time can be specified multiple times.

Important The system assumes that the billing system uses the day/date to determine if the statistics container represents an actual tariff period.

For each of the different tariff times, the following parameters must be configured:

- *mins*: The minutes of the hour, an integer from 0 to 59.
- *hours*: The hour of the day, an integer from 0 to 23.

volume { downlink *vol_down_octets* uplink *vol_up_octets* | total *total_octets* }

Specifies the downlink, uplink, and total volumes that must be met before closing a CDR.

vol_down_octets : Measured in octets; can be configured to any integer from 100,000 to 4,000,000,000.

vol_up_octets : Measured in octets; can be configured to any integer from 100,000 to 4,000,000,000.

total_octets : The total traffic volume (up and downlink) measured in octets; can be configured to any integer from 100,000 to 4,000,000,000.

Usage Guidelines

Charging characteristics consist of a profile index and behavior settings. This command configures profile indexes for the SGSN's charging characteristics. The SGSN supports up to 16 profile indexes.

This command works in conjunction with the cc-sgsn command located in the APN configuration mode that dictates which CCs should be used for subscriber PDP contexts.

Example

The following command configures a profile index of 10 for tariff times of 7:00 AM and 7:30 PM:

```
cc profile 10 tariff time1 0 7 time2 30 19
```

check-imei

Configures the action the SGSN will take if the route towards the Equipment Identity Register (EIR) is down.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
check-imei { gf-failure-action | gf-timeout-action } { continue | reject
 }
default check-imei { gf-failure-action | gf-timeout-action }
```

default

Resets the default function to reject the Attach.

gf-failure-action

Coupled with either **continue** or **reject**, this keyword instructs the SGSN to take action if a valid EIR configuration exists under the MAP service and if the EIR is temporarily unreachable due to associated DPC/SSN inaccessible/out-of-service.

gf-timeout-action

Coupled with either **continue** or **reject**, this keyword instructs the SGSN to take action if a valid EIR configuration exists under the MAP service and the route to the EIR is available, but no response is received from the EIR.

continue

Instructs the SGSN to continue the Attach process.

reject

Instructs the SGSN to reject the Attach process.

Usage Guidelines

Typically, the Attach process will be continued when there is an IMEI check timeout based on the configuration under the SGSN service configuration and/or the GPRS service configuration. But this works only if the route towards the EIR is UP and the IMEI request timer expires. This command configures the SGSN to allow the Attach process to continue in the case the route towards the EIR is down, that is the DPC / SSN is out-of-service.

Example

Use the following command to reset the default and reject Attach:

```
default check-imei gf-failure-action
```

check-imei-timeout-action

This command has been deprecated.

ciphering-algorithm

Configures the priority, ordering, for the use of the GPRS encryption ciphering algorithms.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

ciphering-algorithm { negotiation-failure-action { reject [failure-code *cause_code* **] | use-geo0 } priority** *priority [algorithm]* **}**
default ciphering-algorithm priority *priority*

default

Returns the system ciphering-algorithm priority to the default of GEA0 - which means that no ciphering will be done.

negotiation-failure-action { reject [failure-code *cause_code*] | use-geo0 }

This set of keywords configure the SGSN's action if there is not a match between the MS and SGSN ciphering algorithm configurations.

- **reject**: Instructs the SGSN to reject a call when the ciphering algorithms do not match.
- **failure-code** *cause_code*: Instructs the SGSN to include a GMM cause code in the Reject message. Enter an integer from 2 to 111; default code is 14 (GPRS services not allowed in this PLMN). Refer to the GMM failure cause codes listed below (information has been taken from section 10.5.5.14 of the 3GPP TS 124.008 v7.2.0 R7):
  - 2 - IMSI unknown in HLR
  - 3 - Illegal MS
  - 6 - Illegal ME
  - 7 - GPRS services not allowed
  - 8 - GPRS services and non-GPRS services not allowed
  - 9 - MSID cannot be derived by the network
  - 10 - Implicitly detached
  - 11 - PLMN not allowed
  - 12 - Location Area not allowed
  - 13 - Roaming not allowed in this location area
  - 14 - GPRS services not allowed in this PLMN
  - 15 - No Suitable Cells In Location Area
  - 16 -MSC temporarily not reachable
  - 17 - Network failure
  - 20 - MAC failure
  - 21 - Synch failure
  - 22 - Congestion
  - 23 - GSM authentication unacceptable

- 40 - No PDP context activated
- 48 to 63 - retry upon entry into a new cell
- 95 - Semantically incorrect message
- 96 - Invalid mandatory information
- 97 - Message type non-existent or not implemented
- 98 - Message type not compatible with state
- 99 - Information element non-existent or not implemented
- 100 - Conditional IE error
- 101 - Message not compatible with the protocol state
- 111 - Protocol error, unspecified

- **use-geo0**: Instructs the SGSN to honor the Attach/RAU Request without ciphering (geo0). This is the default action for negotiation failure.

priority *priority algorithm*

Defines the priority, order of use, for the ciphering algorithm.

priority: Must be an integer from 1 to 4.

algorithm

Identifies the algorithm to be matched to the priority. Options include:

- gea0 - No ciphering
- gea1 - GPRS Encryption Algorithm - GEA1
- gea2 - GPRS Encryption Algorithm - GEA2
- gea3 - GPRS Encryption Algorithm - GEA3

Usage Guidelines

Use this command to specify the order (priority) of usage for the GPRS encryption algorithms. All of the GPRS encapsulation algorithms use a 64-bit key derived from a common mechanism: the mobile receives a random challenge, then the SIM calculates an authentication signature and an encryption key.

Also use this command to define the action to be taken if there is not a match between the MS and the SGSN ciphering algorithm configurations.

Example

The following command sets no ciphering to be used after two encryption algorithms have been used:

```
ciphering-algorithm priority 3 gea0
```

The following command configures the SGSN to reject calls if the ciphering algorithm configurations don't match:

```
ciphering-algorithm negotiation-failure-action reject
```

dns mcc-mnc-encoding

Configures the encoding format for the MCC and MNC values in the DNS query.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

```
 dns mcc-mnc-encoding  { apn-fqdn | mmec-fqdn | rai-fqdn| rnc-fqdn|
tai-fqdn }* { a-query | snaptr-query }*  { decimal | hexadecimal }
 default dns mcc-mnc-encoding
```

default

Resets the SGSN to send the MCC and MNC values in decimal format for DNS queries.

apn-fqdn

This keyword is used for PGW/GGSN selection during PDP activation.

mmec-fqdn

Selects the Peer MME during MME to SGSN ATTACH/RAU procedure and Suspend procedure.

rai-fqdn

Selects the SGW and peer SGSN during RAU/Attach procedure, Suspend procedure and RIM procedure.

rnc-fqdn

Selects the Peer SGSN during SRNS re-location.

tai-fqdn

Selects the Peer MME during SGSN to MME SRNS re-location and RIM procedure.

a-query

Controls the DNS A/AAAA query MCC/MNC encoding format.

snaptr-query

Controls the DNS SNAPTR query MCC/MNC encoding format.

decimal

Default

Instructs the SGSN to send the MCC and MNC in decimal format in the DNS query.

hexadecimal

Instructs the SGSN to send the MCC and MNC in hexadecimal format in the DNS query.

Usage Guidelines

In order to provide effective control on DNS queries for particular type of procedures, existing CLI commands in GPRS and SGSN services have been deprecated and replaced with new enhanced commands. The command **dns israu-mcc-mnc-encoding [hexadecimal | decimal]** has been deprecated and this new CLI command is introduced. New keyword options **snaptr-query** and **a-Query** are provided to control different types of queries.

Example

Use the following command to configure hexadecimal encoding in the DNS query:

```
dns mcc-mnc-encoding rai-fqdn apn-fqdn mmec-fqdn rnc-fqdn tai-fqdn a-query
 hexadecimal
```

dns israu-mcc-mnc-encoding

Configures either decimal or hexadecimal format for the MCC and MNC values in the DNS query.

Important

This command is deprecated from release 16.0 onwards, it is replaced by the **dns mcc-mnc-encoding** command. See the **dns mcc-mnc-encoding** command for more information.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
dns israu-mcc-mnc-encoding { decimal | hexidecimal }
default dns israu-mcc-mnc-encoding
```

default

Resets the SGSN to send the MCC and MNC values in decimal format for DNS queries.

decimal

Default.

Instructs the SGSN to send the MCC and MNC in decimal format in the DNS query.

hexadecimal

Instructs the SGSN to send the MCC and MNC in hexadecimal format in the DNS query.

Usage Guidelines

Use this command to determine the type of encoding for the MCC and MNC to be included in the DNS query. For example:

In decimal, the MNC/MCC in a DNS query would appear like:

`rac0017.lac42e3.mnc310.mcc722.gprs`

In hexadecimal, the MNC/MCC in a DNS query would appear like:

`rac0017.lac42e3.mnc0136.mcc02d2.gprs`

Example

Use hexadecimal values for the MCC/MNC in the DNS query.

`dns israu-mcc-mnc-encoding hexadecimal`

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`do show`

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **`end`**

Usage Guidelines Return to the Exec mode.

exit

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

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **`exit`**

Usage Guidelines Return to the context configuration mode.

gmm

gmm actually provides a set of commands used to define the GPRS mobility management (GMM) parameters for the SGSN service.

Important The **gmm** commands can be repeated as needed to set each timer.

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description **`gmm [ Extended-T3312-timeout { value`** *`exT3312_minutes`* **`| when-subscribed } [ low-priority-ind-ue ] { accept-procedure [ new-tlli | old-tlli ] | attach ptmsi-signature-mismatch send-reject failure-code`** *`cause_code`* **`|`**

```
ciph-gmm-msg-from-unknown-ms { detach | ignore } | mobile-reachable-timeout
 mins implicit-detach-timeout secs | negotiate-t3314-timeout secs |
paging-failure-action downlink-data-lockout-timer seconds [ repeat
number_repeats ] | purge-timeout mins | T3302-timeout mins | T3312-timeout
mins | T3313-timeout secs | t3346 min minimum max maximum | T3350-timeout secs
 | T3360-timeout secs | T3370-timeout secs | trau-timeout secs }
default gmm { attach ptmsi-signature-mismatch |
ciph-gmm-msg-from-unknown-ms | mobile-reachable-timeout |
implicit-detach-timeout secs | negotiate-t3314-timeout | purge-timeout |
T3302-timeout | T3312-timeout | T3313-timeout | T3350-timeout |
T3360-timeout | T3370-timeout | trau-timeout }
no gmm  { Extended-T3312-timeout | negotiate-t3314-timeout | t3346 }
```

default

Disables the specified function or resets the specified timer to system defaults.

no

Removes the specified GMM definition from the configuration.

Extended-T3312-timeout

This keyword enables the operator to determine how the SGSN handles Extended T3312 timer values in a 2G GPRS network environment.

- **value** : This keyword instructs the SGSN to send the defined Extended T3312 timer value in Attach or RAU Accept messages to the MS if the subscriber has a subscription for the Extended T3312 timer (Subscribed Periodic RAU/TAU Timer in ISD) and indicates support for the extended periodic timer via the MS Network Feature Support.
- *exT3312_minutes* : Enter an integer from 0 to 18600 to identify the number of minutes for the timeout; default is 186 minutes.
- **when-subcribed** : This keyword instructs the SGSN to only send the extended T3312 period RAU timer value in Attach or RAU Accept messages if the SGSN receives the timeout value in an ISD when the MS has indicated support in MS Network Feature Support.
- **low-priority-ind-ue** : This keyword instructs the SGSN to include the extended T3312 timer value only if the Attach/RAU Request messages include a LAPI (low access priority indicator) in the "MS Device Properties".
- **no** : This filter, when used with the command, instructs the SGSN to remove the extended T3312 configuration from the GPRS Service configuration.

accept-procedure [new-tlli | old-tlli]

Default: new-tlli

This keyword enables the use of either a new TLLI (temporary logical link identifier) or an old TLLI for attach-accept or RAU-accept messages sent by the SGSN to the MS during related procedures.

attach ptmsi-signature-mismatch send-reject failure-code *cause_code*

Default: disabled

This keyword enables the SGSN to validate the P-TMSI signature, present in the Attach Request, against the PTMSI-SIGNATURE stored at the SGSN. The SGSN then sends an Attach Reject to the MS if the PTMSI-SIGNATURE does not match.

The P-TMSI signature validation functionality only works if the feature is enabled. But even if it is enabled, the feature does not validate in the following situations:

- when the PTMSI-SIGNATURE is absent from the 2G Attach Request.
- if the first subscriber being in DETACHED state or is purged with FREEZE-PTMSI. In both the scenarios PTMSI-SIGNATURE cannot be validated.
- when the 2G subscriber(MS2) attaches with the same P-TMSI and a different P-TMSI_Signature as previously attached 2G subscriber (MS1), both the subscriber profiles are cleared from the system. This is relevant where the old RAI for MS-2 is the same as the current RAI for MS-1.

Optionally, a GMM failure *cause_code* can be configured to include in the Attach Reject if one is sent. Refer to the GMM failure cause codes listed below (information has been taken from section 10.5.5.14 of the 3GPP TS 124.008 v7.2.0 R7):

- 2 - IMSI unknown in HLR
- 3 - Illegal MS
- 6 - Illegal ME
- 7 - GPRS services not allowed
- 8 - GPRS services and non-GPRS services not allowed
- 9 - MSID cannot be derived by the network
- 10 - Implicitly detached
- 11 - PLMN not allowed
- 12 - Location Area not allowed
- 13 - Roaming not allowed in this location area
- 14 - GPRS services not allowed in this PLMN
- 15 - No Suitable Cells In Location Area
- 16 -MSC temporarily not reachable
- 17 - Network failure
- 20 - MAC failure
- 21 - Synch failure
- 22 - Congestion
- 23 - GSM authentication unacceptable
- 40 - No PDP context activated
- 48 to 63 - retry upon entry into a new cell
- 95 - Semantically incorrect message

- 96 - Invalid mandatory information
- 97 - Message type non-existent or not implemented
- 98 - Message type not compatible with state
- 99 - Information element non-existent or not implemented
- 100 - Conditional IE error
- 101 - Message not compatible with the protocol state
- 111 - Protocol error, unspecified

ciph-gmm-msg-from-unknown-ms { detach | ignore }

Configures how the SGSN will behave when it receives a ciphered GMM message from an unknown MS.

detach - Instructs the SGSN to send a Detach message to the MS.

ignore - Instructs the SGSN to send an Ignore (drop) message to the MS.

Default: **ignore**

implicit-detach-timeout *secs*

Specifies the implicit detach timer (IDT) value for the 2G ISR implicit detach procedure on the network side (see ISR -- *Idle Mode Signaling Reduction on the S4-SGSN* feature chapter in the *SGSN Administration Guide* for additional timer usage details).

The IDT is configurable from release 15.0 onwards and it is only applicable to 2G ISR activated calls. If ISR is not activated on a 2G call then the subscriber is detached soon after expiry of the mobile reachability timer (MNR) timer.

secs must be an integer from 240 to 86400 and the default value is 3600.

mobile-reachable-timeout *mins*

Default: 58 minutes

Specifies the timeout value for the mobile reachability timer (MNR). This timer is used with the IDT timer described above.

mins must be an integer from 4 to 1440.

negotiate-T3314-timeout *secs*

Set the number of seconds for the T3314-timeout ready timer value. Value sent out from SGSN so MS can negotiate ready timer.

secs must be an integer from 0 to 11160. Default is 44 seconds.

- If the MS does not send the ready timer in the Attach/RAU request, then the SGSN sends this T3314-timeout (ready timer) value.
- If the MS sends the requested value of the ready timer in the Attach/RAU Request, and if the requested value is less than or equal to the value of the negotiate-T3314-timeout timer, then the SGSN sends Att/RAU Accept with the requested T3314 value.

- If the MS sends the requested value of the ready timer in the Attach/RAU Request, and if the requested value is greater than the value of the negotiate-T3314-timeout timer, then the SGSN sends Att/RAU Accept with the negotiate-T3314-timeout value.

Important This is the only GMM timer that can be disabled by entering **no** at the beginning of the command syntax: **no gmm negotiate-t3314-timeout** By disabling negotiation of the T3314-timeout value, if the MS sends the requested value of the ready timer in the Att/RAU Request, then the SGSN sends the T3314-timeout value in the Att/RAU Accept.

paging-failure-action downlink-data-lockout-timer *seconds* [repeat *number_repeats*]

Default: 1000 seconds.

Enables and configures the downlink data lockout timer, for the SGSN services, to reduce the frequency of mobile-initiated keep alive messages.

seconds set the number of seconds before timer expire, range of 0 to 10000.

repeat *number_repeats* optionally sets the number of times (1 to 10) that the timer restarts after paging failure. **Note**: If repeat is not configured then paging proceeds endlessly until the MR timer expires.

[default | no] gmm paging-failure-action disables the downlink data lockout timer.

purge-timeout *mins*

Default: 10080 minutes

The purge timer defines the MM-context lifetime, part of the MM-context procedure on the network side. The configured value sets the duration (number of minutes) the SGSN holds the detached subscriber's MM-context profile. If the subscriber does not reattach to the SGSN during this time, then the SGSN purges this detached subscriber's MM-context information from its database and sends a MAP purge request towards the HLR to indicate that the subscribers profile is gracefully purged from SGSN's database.

mins must be an integer from 1 to 20160.

T3302-timeout *mins*

Default: 12 minutes

Defines the number of minutes for timer to send to MS.

mins is an integer from 1 to 186.

T3312-timeout *min*

Default: 54 minutes

Periodic RAU update timer to send to MS.

mins is an integer from 0 to 186.

T3313-timeout *secs*

Default: 5 seconds

Initial page timeout timer for retransmission for Paging Requests.

secs is an integer from 1 to 60.

T3314-timeout *secs*

Default: 44 seconds

Ready Timer for controlling Cell Update Procedure.

secs must be an integer from 0 to 11519.

t3346

This keyword enables the mobility management (MM) T3346 back-off timer for the 2G service. When the SGSN is confronted by a situation involving congestion, the SGSN can assign the back-off timer value to the UEs and requests the UEs not to access the network for a given period of time.

min *minimum*: Enter an integer from 1 to 15 to identify the minimum number of minutes that the timer will run; default is 15 minutes.

max *maximum*: Enter an integer from 1 to 30 to identify the maximum number of minutes the timer can run; default is 30 minutes.

- If an Attach Request or RAU Request or Service Request is rejected due to congestion, then the T3346 value will be included in the reject message with GMM cause code 22 (congestion). The MM back-off timer value sent will be chosen randomly from within the configured T3346 timer value range.
- The timer will be ignored if a Request message is received after congestion has cleared.
- If MM T3346 timer value is configured in a Call-Control Profile then that value will override the back-off timer values defined for this GPRS Service configurations.

T3350-timeout *secs*

Default: 6 seconds

Retransmission timer for Attach Accept/RAU Accept/P-TMSI Realloc Command.

secs must be an integer from 1 to 20.

T3360-timeout *secs*

Default: 6 seconds

Retransmission timer for Authentication Request.

secs must be an integer from 1 to 20.

T3370-timeout *secs*

Default: 6 seconds

Retransmission timer for Identity Request.

secs must be an integer from 1 to 20.

trau-timeout *secs*

Default: 30

Specifies the number of seconds the "old" 3G SGSN waits to purge the MS's data. This timer is started by the "old" SGSN after completion of the inter-SGSN RAU.

secs : Must be an integer from 5 to 60.

Usage Guidelines

Use this command to set GMM timers.

Example

Set the t3370 timer expiration for 15 seconds:

```
gmm t3370-timeout 15
```

llc

Configures the timers that control the data flow for the logical link control (LLC) sub-layer.

Important This command may be repeated as often as necessary to define the needed timers.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
llc { iov-ui-in-xid-reset | n201u-max { sapi11 pkt-size | sapi3 pkt-size |
sapi5 pkt-size | sapi9 pkt-size } | nu-overflow-detection high-watermark
high_num low-watermark low_num increment-oc| pdu-lifetime secs |
random-value-in-iov-ui [ negotiation-failure-action {
fallback-to-default-iovui | reject } ] | reset-vur | t200 sapi1 time |
t200 [ sapi11 time | sapi3 time | sapi5 time | sapi7 time | sapi9 time ] |
uplink-pdu-len-validation }
default llc { iov-ui-in-xid-reset | n201u-max { sapi11 | sapi3 | sapi5 |
 sapi9 } | nu-overflow-detection | pdu-lifetime | random-value-in-iov-ui
 | reset-vur | T200 [ sapi1 | sapi11 | sapi3 | sapi5 | sapi7 | sapi9 ] |
 uplink-pdu-len-validation }
no llc { iov-ui-in-xid-reset | nu-overflow-detection |
random-value-in-iov-ui | reset-vur | uplink-pdu-len-validation }
```

default

Resets the configuration parameter to the default values.

no

Disables a defined configuration parameter and returns to the SGSN default.

iov-ui-in-xid-reset

This keyword makes it possible for the operator to configure whether or not to send IOV-UI in an XID-RESET. This is useful when the MS is not setup to accept IOV-UI (for example, MS sends Attach/RAU Requests with cksn=7) and including IOV-UI in the XID-Reset would result in Attach/RAU failure.

Default: Enabled

n201u-max sapi *n pkt_size*

This keyword sets the maximum number of octets, per service access point identifier (SAPI), for the downlink data packets. This is the upper limit that the SGSN will negotiate with the subscriber for packets sent from the SGSN to the BSC.

sapi *n* : Command must identify one of the following SAPI: sapi11, sapi3, sapi5, or sapi9.

pkt_size : Must be an integer from 140 to 1520. Default size is 1520 octets.

nu-overflow-detection high-watermark *high_num* low-watermark *low_num* increment-oc

Enables/disables overflow detection for the N(u) counter and setting overflow high/low thresholds facilitates ciphering synchronization between the MS and SGSN.

high_num: Enter an integer between 1 and 511.

low_num: Enter an integer between 0 and 510.

If the expected value of nu(Vur) is greater than or equal to the configured high-watermark, and the received nu(LFN) is less than or equal to the configured low-watermark, the SGSN increments the overflow counter (VurOC).

The recommended overflow settings are as follows:**llc nu-overflow-detection high-watermark 496 low-watermark 15 increment-oc** While expecting a packet with 496 < nu < 511 and a packet with 0 < nu < 15 is received, overflow is detected and VurOC is incremented.

pdu-lifetime *secs*

Defines LLC layer PDU lifetime at the BSC. .

secs must be an integer from 0 to 90.

Default: 6

random-value-in-iov-ui [negotiation-failure-action { fallback-to-default-iovui | reject }]

Including this keyword enables the SGSN to negotiate the sending of a random value for the IOV-UI in the XID Request sent to the MS. If this keyword is not included, then by default the SGSN sends a zero (0) as the value of the IOV-UI in the XID message.

Including **default** in a command with the **negotiation-failure-action** keyword resets the SGSN configuration so that all calls are rejected whenever the decipering fails due to failure of the XID negotiation for random IOV-UI

If the **negotiation-failure-action fallback-to-default-iovui** option is included in the configuration, then the SGSN will fall back to unencrypted mode whenever tthe XID negotiation for random IOV-UI negotiation fails..

If the **negotiation-failure-action reject** option is included in the configuration to return the SGSN to the default functionality and reject all calls when random IOV-UI negotition fails. This option is typically used only if the **negotiation-failure-action fallback-to-default-iovui** option has previously been part of the configuration.

The **reject** option conditionally causes the SGSN to reject calls , for example, when XID for random IOV-UI negotiation failure occurs during intra-RAU or standalone authentication for SMS, the SGSN moves the subscriber to STANDBY and marks the XID negotiation as a failure.

OR

Despite the **reject** configuration, the SGSN may respond to XID negotiation failure in one of the following mnners according to associated circumstances:

- Initiates XID for new random IOV-UI negotiation:
  - with the MS is in STANDBY state, any uplink packet (in either ciphered or unciphered mode, except Attach / Intra-RAU) from the MS which results in CELL-UPDATE, READY TIMER START and RADIO STATUS READY causes an event indication to the application.
- Initiates Detach:
  - with the MS is in STANDBY state, any uplink activity causes the SGSN to initiate a new XID exchange, which if it fails or aborts due to the reception of SUSPEND, RADIO-STATUS and READY-TIMER expiry, results in the SGSN initiating Detach.
  - when PAGING is ongoing , any Page response from the MS results in the SGSN initiating Detach.
  - during OLD_SGSN ISRAU, when any uplink data comes before T3 tunnel timer expiry then the SGSN initiates Detach.
- Handles Messages:
  - Attach and intra-RAU (from both local and non-local TLLI or from both the same and different RA) will be processed in any state.
- Moves to STANDBY state:
  - MS is moved to STAND-BY state if the XID exchange failed due to any of the following cases suspend, radio status, BVC block, BVC reset, ready timer expiry, no response received for XID exchange during INTRA-RAU/Standalone Authentication for SMS.
  - XID is ongoing in READY state and if the MS moves to either 3G or to the peer-SGSN then the subscriber is moved to STANDBY state.

reset-vur

Enables/disables the mechanism to reset the Vur value maintained at LLC if the intra RAU request is received with N(U) = 0

Default: Disabled

T200 sapi1 *time*

Sets the retransmission timer (in seconds) for sapi1.

time must be an integer of 1 to 10.

Default: 5

T200 sapi11 *time*

Sets the retransmission timer (in seconds) for sapi11.

time must be an integer of 1 to 50.

Default: 40

T200 sapi3 *time*

Sets the retransmission timer (in seconds) for sapi3.

time must be an integer of 1 to 10.

Default: 5

T200 sapi5 *time*

Sets the retransmission timer (in seconds) for sapi5.

time must be an integer of 1 to 20.

Default: 10

T200 sapi7 *time*

Sets the retransmission timer (in seconds) for sapi7.

time must be an integer of 1 to 40.

Default: 20

T200 sapi9 *time*

Sets the retransmission timer (in seconds) for sapi9.

time must be an integer of 1 to 40.

Default: 20

uplink-pdu-len-validation

This feature enables validation of the size of the uplink LLC packets. With validation enabled, the SGSN will drop any uplinked packets that are larger than the negotiated limit.

If the **no** form of the command is used, then this feature is disabled. The SGSN will be more flexible with uplink packet sizes. So if the SGSN and MS have a mismatch and the MS sends packets that are larger than expected, then the SGSN will not drop the packets.

Default: Enabled.

Usage Guidelines

Use the command repeatedly to configure additional timers and features for the LLC sub-layer.

Example

Set the T200 retransmission timer to timeout at 12 seconds for SAPI5:

llc t200 sapi5 12

Use the following command to instruct the SGSN to ignore the N201_U packet size limits for uplink packets from an MS:

no uplink-pdu-len-validation

network-sharing

Enables or disables CS-PS coordination checking for homers (UEs in their home network) or roamers (UEs from outside the home network). The command also sets the failure code that will be sent for GPRS MOCN.

Product

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(config-gprs-service)#

Syntax Description

network-sharing { cs-ps-coordination { failure-code *<gmm-cause>* **| homer | roarmer } | failure-code** *<gmm-cause>*
no network-sharing cs-ps-coordination { homer | roarmer }
default network-sharing cs-ps-coordination

no

Disables CS-PS coordination check for either homers or roamers.

default

Set the CS-PS coordination parameters to default values.

failure-code *<gmm-cause>*

This keyword has two optional functions:

- When used *with* the **cs-ps-coordination** keyword, it sets the GMM cause code that is to be included in the message when the SGSN requests the BSC to provide CS-PS coordination. Default value is 14.
- When used as an independent keyword with the **network-sharing** command, it sets the failure cause that is used by GPRS MOCN if no failure cause is available when the SGSN sends a Reject message. Default value is 7.

<*gmm-cause*> is an integer from 2-111. Valid options include:

- 2 - IMSI unknown in HLR
- 3 - Illegal MS
- 6 - Illegal ME
- 7 - GPRS services not allowed
- 8 - GPRS services and non-GPRS services not allowed

- 9 - MSID cannot be derived by the network
- 10 - Implicitly detached
- 11 - PLMN not allowed
- 12 - Location Area not allowed
- 13 - Roaming not allowed in this location area
- 14 - GPRS services not allowed in this PLMN
- 15 - No Suitable Cells In Location Area
- 16 - MSC temporarily not reachable
- 17 - Network failure
- 20 - MAC failure
- 21 - Synch failure
- 22 - Congestion
- 23 - GSM authentication unacceptable
- 40 - No PDP context activated
- 48 to 63 - retry upon entry into a new cell
- 95 - Semantically incorrect message
- 96 - Invalid mandatory information
- 97 - Message type non-existent or not implemented
- 98 - Message type not compatible with state
- 99 - Information element non-existent or not implemented
- 100 - Conditional IE error
- 101 - Message not compatible with the protocol state
- 111 - Protocol error, unspecified

homer

Enables checking for CS-PS coordination for UEs from inside the home network (homers) only.

roamers

Enables checking for CS-PS coordination for UEs fromanother network (roamers) only.

Usage Guidelines

The operator can use this command to configure CS-PS coordination checking explicitly for homer **or** roamer subscribers and for the failure-code to be sent when the SGSN asks the BSC to perform CS-PS coordination.

Example

Use a command similar to the following to have the SGSN perform CS-PS coordination checking only for all UEs from outside of the home network:

```
network-sharing cs-ps-coordination homer
```

nri

Configures the network resource identifier (NRI) to identify a specific SGSN. The NRI information is stored in the P-TMSI. The SGSN uses a portion of this NRI to set the parameters for Gb flex (SGSN pooling) functionality.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
nri length nri_length { nri-value nri_value | null-nri-value null_nri_value
non-broadcast-lac lac_id rac rac_id [ nri-value value ][ non-pooled-nri-value
 value ] }
default nri
no nri
```

default

A default configuration was made available beginning in Release 14.0.

Using this keyword now resets the nri configuration to **nri length** 6 and **nri-value** 0.

Important Behavior change in Release 14.0 -- it is no longer necessary to configure NRI as default values have been enabled.

no

Important **no nri** command form is deprecated in Release 14.0. To ensure backward compatibility with configuration files created with pre-Release 14.0 builds, the **no nri** configuration will be automatically converted to the Release 14.0 default values of **nri** 6 and 0.

This command removes the configured NRI value and location information in the P-TMSI that would be retrieved by this SGSN.

length *nri_length*

Specifies the number of bits to be used in the P-TMSI, bits 23 to 18 are used to define the network resource identifier (NRI). The NRI length configuration also sets the maximum size of the pool. If not configured, the NRI length will be of zero length.

nri_length : Must be an integer from 1 to 6 to identify the number of bits.

null-nri-value *null_nri_value*

Configures the null NRI value which must be unique across the pool areas. This keyword is used for the offloading procedure for SGSN pooling (enabled with the **sgsn offloading** command, see the *Exec Mode* chapter).

null_nri_value is an integer from 0 (zero) to 63 used to identify the SGSN to be used for the offloading procedure for SGSN pooling. There is no default value for this parameter.

non-broadcast lac *lac_id* rac *rac_id*

Defines the non-broadcast LAC/RAC to be used in combination with the null-NRI for the offloading procedure.

lac_id defines a location area code associated with a BSS. Must be an integer between 1 and 65535.

rac_id defines the remote area code to be associated with a BSS. Must be an integer between 1 and 255.

nri-value *nri_value*

Specifies the MS-assigned value of the NRI to retrieve from the P-TMSI. This value must not exceed the maximum possible value specified by the NRI length. The NRI value must be unique across the pool or across all overlapping pools.

nri_value must be an integer from 1 to 63 to identify a specific SGSN in a pool. Use of 0 (zero) value is not recommended.

Multiple NRI values can be identified by providing multiple nri-values separated by a blank space for example: **nri length** *6* **nri-value** *29 43 61*

The NRIs configured using this keyword will be used only in pooled area if the keyword **non-pooled-nri-value** is configured, else the NRIs configured using the **nri-value** keyword will be used for both pooled and non-pooled areas.

non-pooled-nri-value *value*

If pooling is supported (the **null-nri-value** keyword is configured) use this keyword to configure values of NRIs to be used for non-pooled area. If the NRI CLI is configured as **nri length** *length_value* **nri-value** *values* **non-pooled-nri-value** *values* (null-nri-value is not configured, that is pooling not supported at SGSN) , NRIs will be used from "non-pooled-nri-value" irrespective of RNC/BSC being pooled or non-pooled.

Note The same NRI can be configured using both the keywords **nri-value** and **non-pooled-nri-value**, this implies the NRI can be used either in pooled area or non-pooled area. If an NRI is configured for both pooled and non-pooled areas, then the SGSN re-uses the same NRI when moving from pooled to non-pooled areas and vice versa.

Usage Guidelines

Use this command to add or remove the Gb flex pool configuration for this GPRS service. The command can be repeated to specify different values for any of the keyword parameters. If more than one NRI is configured, the GPRS service will round-robin between the available NRIs when new subscribers (re)connect.

Use this command to retrieve the NRI (identity of an SGSN) stored in in bits 23 to 18 of the packet-temporary mobile subscriber identity (P-TMSI). If more than one NRI value is configured, the GPRS service will round-robin between the available NRIs when new subscribers (re)connect.

Example

The following command specifies the the NRI length as *5* bits, identifies SGSN *23* with LAC *222* and RAC *12* for offloading procedure with NRIs *6* and *41*:

```
nri length 5 null-nri-value 34 non-broadcast lac 222 rac 12 nri-value 6
41
```

paging-policy

Configures the paging parameters for the GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

```
paging-policy { last-known-area { all | bsc | cell | location-area |
routing-area } + | max-retransmissions retran_num }
no paging-policy last-known-area { bsc | cell | location-area |
routing-area }
default paging-policy { last-known-area | max-retransmissions }
```

no

Disables the paging-policy definition for this GPRS service configuration.

default

Resets the defaults for parameters managed by this paging policy.

last-known-area

Select one or more paging areas and enter them in preferred paging order:

- **all** : Pages in the last known BSC.
- **bsc** : Pages in last known BSC.
- **cell** : Pages in last known cell.
- **location-area** : Pages in last known location area.
- **routing-area** : Pages in last known routing area.

By default, paging occurs in the following order:

cell, BSC, routing area, location area.

max-retransmission *retran_num*

Configures the maximum number of retries for a page request per paging area.

retran_num: Enter an integer from 0 to 5.

- 2 : default.
- 0 : disables retransmission for paging request so that the SGSN only sends a single 2G PS-paging request to the BSC with no retransmissions.

+

Keywords can be repeated or combined as needed to complete the paging policy configuration.

Usage Guidelines

Use this command to configure the order of preference for retransmitting into specified paging-areas.

Example

Use the following command to instruct the SGSN to page the cell and BSC as the last-known areas
:

```
paging-policy last-known-area cell bsc
```

peer-nsei

This command associates a peer (remote) network service entity (NSEI) for a BSS with this GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
peer-nsei nse_id { associate dscp-template downlink template_name | lac lac_id
 rac rac_id | name peer_nsei_name | pooled }
no peer-nsei nse_id [ associate dscp-template downlink  | lac lac_id rac
rac_id | name | pooled ]
```

no

Removes the specified configuration from this peer-nsei configuration.

Important Deleting the LAC/RAC portion of the configuration will probably result in the loss of subscriber connections.

nse_id

Defines a specific peer NSEI configuration for this GPRS service.

nse_id - enter an integer from 0 to 65535.

associate dscp-template downlink *template_name*

Identifies a specific DSCP marking template to associate with the peer-NSE. The DSCP template must first be created with SGSN Global configuration mode and then defined with the commands in the DSCP Template configuration mode. The template provides a mechanism for differentiated services code point (DSCP) marking of control packets and LLC signaling messages on Gb interfaces. This DSCP marking feature enables the SGSN to perform classifying and managing of network traffic and to determine quality of service (QoS) for the interfaces to an IP network

template_name- enter an alphanumeric string of 1 to 64 characters.

lac *lac_id*

Defines a location area code associated with the NSE BSS.

lac_id must be an integer between 1 and 65535.

rac *rac_id*

Defines the remote area code to be associated with the NSE BSS

rac_id must be an integer between 1 and 255.

name *peer_nsei_name*

Enables identifying a BSC by a name which is stored in SCT.

peer_nsei_name - enter an alphanumeric string of 1 to 64 characters.

pooled

Enables pooling with non-pooled BSCs within the pool area.

Usage Guidelines

Use this command repeatedly to associate one or more LAC/RAC combinations and/or pooling with this peer-GPRS service configuration. Also repeat the command as needed to create an association with a DSCP marking template, to define a name for a BSC, and to enable pooling with non-pooled BSCs.

The Network Service Entity (NSE) at the BSS and the SGSN provides the network management functionality required for the operation of the Gb interface. Each NSE is identified by means of NSE identifier (NSEI).

Example

The following command configures the NSE with identifier as *4114* having location area code *234* and routing area code as *22*:

```
peer-nsei 4114 lac 234 rac 22
```

The following command enables Gb flex (pooling) functionality for NSEI *4414* for this GPRS service:

```
peer-nsei 4114 pooled
```

plmn

This command identifies the Public Land Mobile Network (PLMN) for the GPRS service. It also configures the common PLMN-Id and an optional list of dedicated PLMN-Ids in support of Multi-Operator Core Network (MOCN) operation.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > context *context_name* **> gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

plmn id mcc *mcc_num* **mnc** *mnc_num* **[network-sharing common-plmn mcc** *mcc_num* **mnc** *mnc_num* **[plmn-list mcc** *mcc_num* **mnc** *mnc_num* **[mcc** *mcc_num* **mnc** *mnc_num* **] +]]**
no plmn id

no

Removes the PLMN information from the configuration for the current SGSN service.

mcc *mcc_num*

Defines the mobile country code (MCC) portion of the PLMN Id.

mnc_num must be a 3-digit integer from 100 to 999. MCC values of 000-099 are Reserved codes.

mnc *mnc_num*

Defines the mobile network code (MNC) portion of the PLMN Id.

mnc_num must be a 2- or 3-digit integer from 00 to 999. MNC value of 000 is reserved.

network-sharing common-plmn

Configures the common PLMN-Id broadcast by a radio network. An MS that does not support network sharing will only see this PLMN-Id. An MS that supports network sharing (MOCN) will see this PLMN-Id and the list of PLMN-Ids configured using the **plmn-id** keyword.

plmn-list

Configures a list of PLMN-Ids that an MS will see when network sharing is enabled.

+

The plus symbol indicates that indicates that more than one more than one set of the keywords, for PLMN-Id, can be entered within a single command.

Usage Guidelines

Use this command to set PLMN parameters for the current SGSN service. This command also sets the common PLMN-Id and a list of PLMN-Ids employed in network sharing (MOCN) deployments. There is no limit to the number of PLMN-Ids that can be included in the list.

Example

The following command identifies the PLMN MCC as *200* and the MNC as *10*:

```
plmn id mcc 200 mnc 10
```

rai-skip-validation

Enable or disable if validation checks are done to verify the MCC and MNC fields received in the old RAI IE in Attach/RAU Requests.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
[ no ] rai-skip-validation
```

no

Disables skipping the validation of the old RAI MCC/MNC fields and enables the default behavior to validate.

Usage Guidelines

This command configures the SGSN to enable or disable rejection of RAU requests with invalid MCC/MNC values in the old RAI field. By default, this configuration is disabled allowing the default behavior to validate the old RAI MCC/MNC fields.

This command also impacts the PTMSI attaches where the old RAI field is invalid. If the OLD RAI field is invalid and if the validation is enabled, the identity of the MS is requested directly from the MS instead of the peer SGSN.

Validation checks are done per 3GPP TS 24.008 for the MCC/MNC fields of the old RAI IE in Attach/RAU Requests. RAU requests with invalid MCC/MNC values in the old RAI field are rejected. For Attach requests with invalid MCC/MNC values in the old RAI field, the identity of the MS is retrieved directly from the MS instead of sending an identity request to the peer Node where the MS identity is derived from the valid old-RAI.

Example

Use this command to configure rejection of RAU requests with invalid MCC/MNC values in the old RAI field:

```
no rai-skip-validation
```

reporting-action event-record

This command enables the SGSN to log GMM/SM events in EDR files for 2G services.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

```
reporting-action event-record
[ default | no ] reporting-action event-record
```

default

Disables the logging function.

no

Removes the logging function from the configuration file.

Usage Guidelines

This command is one of the steps needed to enable the SGSN to create a log for events such as Attach, RAU, and Activations. The log is an EDR (event data record) in CSV format. For details about how this feature works, refer to the *GMM-SM Event Logging* chapter in the *SGSN Administration Guide*.

Related Commands:

- To enable GMM/SM event logging for 2G services, the **reporting-action event-record** command must be configured in the SGSN service configuration.
- To enable a log to be generated in an EDR file, the **edr-module active-charging-service** command must be enabled in the Context configuration mode.
- To configure parameters for the logging file characteristics and for file transfer, use the commands in the EDR Module Configuration Mode.

Example

Enable GMM/SM event logging for 3G services:

```
reporting-action event-record
```

s4-overcharge-protection

Enables or disables Subscriber Overcharging Protection functionality for the S4-SGSN in the 2G network *and* associates a BSSGP (base station subsystem GPRS protocol) cause code group with the GPRS Service configuration.

Product

Important We recommend that you enable Release Access Bearer, with the **release-access-bearer command** in the Call-Control Profile Configuration mode, *before* this **s4-overcharge-protection** command is used to enable Subscriber Overcharging Protection.

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

s4-overcharge-protection bssgp-cause-code-group *group_name*
no s4-overcharge-protection

no

Disables Subscriber Overcharging Protection functionality for 2G. Disabled is the default.

bssgp-cause-code-group *group_name*

Associates a BSSGP cause code group with the GPRS Service configuration. You can enter a group's name before the cause code group is actually created but the names must match.

group_name: Enter an alphanumeric string up to 16 characters long to identify the cause code group.

Usage Guidelines

The cause code group is created with the **cause-code-group** command in the LTE Policy Configuration mode.

To see the name of the defined cause code group(s) or the configuration of the BSSGP cause code groups, use the **show lte-policy cause-code-group [name | summary]** command in Exec mode.

To see the status of the Subscriber Overcharging Functionality and the associated BSSGP cause code group, use Exec command **show gprs-service name** *service_name*.

Important If Release Access Bearer is enabled and going out of the S4-SGSN, the ARRL (abnormal release of radio link) bit will be included if this CLI is enabled and if LORC (loss of radio coverage) is detected.

Example

Enable Subscriber Overcharging Protection and associated cause code group *ccgp1* with a command similar to the following:

```
s4-overcharge-protection bssgp-cause-code-group ccgp1
```

Disable Subscriber Overcharging Protection and automatically disassociate the cause code group with the GPRS Service configuration by using a command similar to the following:

```
no s4-overcharge-protection
```

setup-timout

Configures the maximum number of seconds allowed for session setup.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

setup-timout *seconds*

default setup-timout

default

Returns the configuration to the default, 60 seconds.

seconds

An integer from 1 to 1000000.

Usage Guidelines

Use this command to set the time allowed for session setup.

Example

The following command sets the maximum session setup time to *300* seconds:

```
setup-timout 300
```

sgsn-context-request

Specifies whether or not the PTMSI signature check should be skipped if the PTMSI signature is not included in the SGSN context request.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gprs-service)#`

Syntax Description

sgsn-context-request ptmsi-signature-absence allowed

default sgsn-context-request ptmsi-signature-absence

no sgsn-context-request ptmsi-signature-absence allowed

default

Returns the configuration to the default action to perform the PTMSI signature check.

no

Removes this definition from the system configuration.

Usage Guidelines

Use this command to skip the PTMSI signature check.

Example

The following command instructs the system to perform the PTMSI signature check.

default sgsn-context-request ptmsi-signature-absence

sgsn-number

Define the SGSN E.164 number to be used when interacting via MAP protocol for this GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

sgsn-number *sgsn_number*
no sgsn-number

no

Disables the use of this definition in the system configuration.

sgsn-number

Enter a string of 1 to 16 digits to identify the SGSN's E.164 identification (Country Code+National Destination Code+Subscriber Number).

Usage Guidelines

Use this command to identify the ISDN number for the SGSN associated with this GPRS service.

The SGSN supports multiple SGSN numbers – different numbers in the 2G GPRS service configuration and the the 3G SGSN service configuration. If an HLR-initiated dialog is received, the SGSN will perform a lookup based on the IMSI and find the correct SGSN number with which the MS is associated. Subsequent messaging will use this address.

Example

Disable the E.164 number for this GPRS service.

no sgsn-number

sm

Configures the session management (SM) parameters associated with this particular GPRS service context.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

sm { activate-max-retransmissions *num_retries* **| deactivate-max-retransmissions** *num_retries* **| guard-timer** *guard_seconds* **| ignore-pco-decode-error | modify-max-retransmissions** *num_retries* **| partial-apn-match | radio-priority from-arp** *arp-rp_prof_name***| requested-apn-from-first-subrec | t3385-timeout** *secs* **| t3386-timeout** *secs* **| t3395-timeout** *secs* **| t3396 min** *minimum* **max** *maximum* **cause** *cause_code* **| trim-trailing-spaces-in-apn }**
default sm { activate-max-retransmissions | deactivate-max-retransmissions | ignore-pco-decode-error | modify-max-retransmissions | t3385-timeout

```
| t3386-timeout | t3395-timeout | trim-trailing-spaces-in-apn }
no sm { ignore-pco-decode-error  | radio-priority from-arp |
partial-apn-match | radio-priority | requested-apn-from-first-subrec |
t3396 | trim-trailing-spaces-in-apn }
```

default

Resets the SM parameters to their defaults.

no

Removes the identified parameter configuration from the GPRS Service configuration.

activate-max-retransmissions *num_retries*

Defines the maximum number of retries to transmit 'activate PDP context request'.

num_retries : Must be an integer from 1 to 10.

Default: 4

deactivate-max-retransmissions *num_retries*

Defines the maximum number of retries to transmit 'deactivate PDP context request'.

num_retries : Must be an integer from 1 to 10.

Default: 4

guard-timer *guard_seconds*

Sets the number of seconds before the session manager resources are cleared.

guard_seconds is an integer from 30 to 150.

Default: 80 seconds

ignore-pco-decode-error

Enables the SGSN to ignore received decode errors that are due to incorrectly encoded PCO IE length in SM Requests.

Default: disabled

modify-max-retransmissions *num_retries*

Defines the maximum number of retries to transmit 'modify PDP context request'.

num_retries: integer from 1 to 10.

Default: 4

partial-apn-match

Enables partial matching of requested APN during APN selection.

Partial APN or APN with trailing spaces may be present in an Activate Request because incorrect information was keyed in by the user. Though it is valid to reject such Activation Requests, it increases the signaling between the MS and the SGSN. This has an impact on the radio resources.

radio-priority from-arp

Associates an ARP-RP Mapping Profile with the GPRS service. The profile is created and configured via the ARP-RP Mapping Profile configuration mode under the SGSN-Global configuration mode.

arp-rp_prof_name - Enter a string of 1 to 64 alphanumeric characters to identify the mapping profile and moves into the ARP-RP mapping profile configuration mode.

Use the **show configuration** command to display the association.

requested-apn-from-first-subrec

Enables use of a 'requested APN' from the first subscription record. When this feature is enabled, the PDP Activation is not rejected during APN Selection; instead, the APN from the first subscription record is used as the requested APN and the SGSN continues with the rest of the APN Selection process.

A requested APN is an optional IE in an Activate PDP Request. To get the requested PDP type, if multiple PDP subscription records exist for the subscriber, then the MS has to include the APN information to choose the PDP subscription record during APN selection. Otherwise, such activations will be rejected during APN selection (per TS 23.060 Appendix A). Though it is valid to reject such activation requests, it increases the signaling between the MS and the SGSN, which impacts the radio resources.

t3385-timeout*secs*

Defines the maximum amount of time for retransmission of 'activate request' messages.

secs : Must be an integer from 1 to 60.

Default: 8

t3386-timeout *secs*

Defines the maximum amount of time for retransmission of 'modify request' messages.

secs : Must be an integer from 1 to 60.

Default: 8 seconds.

t3395-timeout *secs*

Defines the maximum amount of time for retransmission of 'deactivate request' messages.

secs : Must be an integer from 1 to 60.

Default: 8

t3396

Enables the session management (SM) T3396 back-off timer for the 2G service. When the SGSN is confronted by a situation involving congestion, the SGSN can assign the back-off timer value to the UEs and reques the UEs not to access the network for a given period of time.

min *minimum*: Enter an integer from 1 to 15 to identify the minimum number of minutes that the timer will run; default is 15 minutes.

max *maximum*: Enter an integer from 1 to 30 to identify the maximum number of minutes the timer can run; default is 30 minutes.

cause *cause_code*: Enter an integer from 1 to 255 to identify the appropriate rejection cause code. The default is 26. During congestion, the configured value is ignored and 26 is sent.

- During congestion, the SGSN randomly chooses a T3396 value from the configured range and sends that timer value to the UE in the Reject message with the cause code #26.
- The command can be repeated to define a maximum of 16 cause codes.

trim-trailing-spaces-in-apn

Enables SGSN to strip off any trailing space(s) in requested APN.

If a requested APN in an Activate PDP Context Request has any trailing spaces, then those trailing spaces will be removed and the length field will be updated.

Usage Guidelines

Repeat this command with different keywords (parameters) to configure the SM (session management) as needed for this GPRS service. Keywords can be used to optimize signaling between the MS and the SGSN to reduce the impact on the radio resources.

Example

Reset the number of retransmission messages for deactivate PDP context request to *5*.

```
sm deactivate-max-retransmissions 5
```

sndcp

Defines the sub-network dependent convergence protocol (SNDCP) network packet data unit (N-PDU) reassembly timeout interval associated with this GPRS service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GPRS Service Configuration

configure > **context** *context_name* > **gprs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gprs-service)#
```

Syntax Description

sndcp reassembly-timeout *seconds*

default sndcp reassembly-timeout

default

Resets the timer configuration to the default value of 30 seconds.

seconds

Defines the number of seconds the SGSN waits for all the SNDCP segments to arrive before dropping all the disassembled segments.

seconds: Must be an integer from 1 to 300.

Usage Guidelines

Use this command to modify the SNDCP reassembly timer. This timer starts as soon as the first N-PDU segment is received (either in-order or out-of-order). If all the segments belong to the N-PDU arrive before the timer expires then the segments are reassembled. If all the segments do not arrive before the timer expires, then the stored segments are discarded.

Example

Reset the default for the timer.

```
default sndcp reassembly-timeout
```

CHAPTER 13

Event Report Conn Configuration Mode Commands

The event report conn Configuration Mode is used to configure Global Mobile Positioning Center (GMPC) event report connection..

Command Modes

Exec > Global Configuration > Context Configuration > Interface Configuration > Event-Report-Conn Configuration

configure > **context** *context_name* > **interface** *gmpc_interface_name* **event-report-conn**

Entering the above command sequence results in the following prompt:

`[context_name]gmpc_interface_name(event-report-conn)#`

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- end, on page 753
- exit, on page 754
- gmpc-event-report, on page 754

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

gmpc-event-report

This command configures the destination IP address for the specific GMPC event report.

Product

SGSN

MME

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Event-Report-Conn Configuration

configure > context *context_name* **event-report-conn** *event_report_conn_name*

Entering the above command sequence results in the following prompt:

*[local]***host_name** (config-contxt-event-report-conn)#

Syntax Description

gmpc-event-report { dest-addr { ipv4_address | ipv6_address } dest-port *port_number* | **src-addr {ipv4_address | ipv6_address } src-port** *port_number* **}**

no

Removes or disassociates the configured event-report-conn name configuration.

dest-addr *ipv4_address ipv6_address*

Configure GMPC event report destination ip-address.

ipv4_address must be specified using the IPv4 dotted-decimal notation.

ipv6_address must be specified using the IPv6 dotted-decimal notation.

dest-port *port_number*

Configures the destination port to bind the GMPC event.

Port number must be an integer from 0 to 65535.

src-addr ***ipv4_address ipv6_address***

Configures gmpc-event-report source ip-address.

src-port ***port_number***

Configures the src-port address to bind the gmpc-event-report-conn.

Port number must be an integer from 0 to 65535.

Usage Guidelines

Use of this configuration command is to create interface between MME/SGSNs and GMPC.

Example

The following command configures the IP parameters for specific GMPC Event Report Connections:

```
event-report-conn_gmpc-event conn1gmpc-event-report src-addr 209.165.200.226
 src-port 32001
gmpc-event-report dest-addr 209.165.200.226dest-port 32001
```

CHAPTER 14

GRE Tunnel Interface Configuration Mode Commands

The Generic Routing Encapsulation (GRE) Tunnel Interface Configuration Mode is used to create and manage the GRE tunneling interfaces for addresses, address resolution options, etc.

Command Modes

Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-if-tunnel-gre)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- destination, on page 757
- end, on page 758
- exit, on page 758
- keepalive, on page 759
- source, on page 760
- tos, on page 761
- ttl, on page 763

destination

This command configures the destination IP address of the tunnel by specifying the destination end address. This is a mandatory configuration for a GRE tunnel interface.

Product All

Privilege Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-if-tunnel-gre)#`

Syntax Description

[no] destination address *ipv4_address*

no

Removes or disassociates the configured destination IPv4 address from a specific GRE tunnel interface configuration.

address *ipv4_address*

Configures the IPv4 address for the interface. *ipv4_address* must be specified using the IPv4 dotted-decimal notation.

Usage Guidelines

Use this command to configure the destination IP address of the tunnel for GRE tunnel interface.

Important The state of the source address will affect the operational state of the tunnel.

Example

The following command sets *209.165.200.229* as the destination IPv4 address of the GRE tunnel interface:

```
destination address 209.165.200.229
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description `exit`

Usage Guidelines Use this command to return to the parent configuration mode.

keepalive

This command configures various parameters for sending keepalive messages to the remote end-point in GRE tunnel interface configuration. By default sending keepalives is disabled.

Product All

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-if-tunnel-gre)#`

Syntax Description

```
keepalive [ interval time_interval num-retry retry ]
{ default | no } keepalive
```

default

Sets the sending of keepalive messages with default parameters.

interval: 10 seconds

num-retry: 3 retries

no

Disables keepalive and turns off the sending of keepalive messages.

interval *time_interval*

Specifies the time interval (in seconds) between two keepalive messages sent to remote ends of GRE tunnel interface configuration.

time_interval is an integer from 5 to 3600.

Default: 10

num-retry *retry*

Specifies the number of retransmission of keepalive messages to remote node without getting any response before the remote node is marked as dead/down.

retry is an integer from 0 to 10.

Default: 3

Usage Guidelines

Use this command to configure the parameters for sending keepalives to the remote end-point of GRE tunnel. It also configures the interval at which GRE keepalives are sent on the interface and number of retries without getting a response from the remote end-point before the tunnel is shutdown. By default, keepalives will not be sent.

Example

The following command enables keepalive and sets the other parameters to default values:

```
default keepalive
```

source

This command configures the source IP address of the tunnel either by specifying the IP address (host address) or by specifying another configured non-tunnel IP interface. This is a mandatory configuration for GRE tunnel interface.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-if-tunnel-gre)#
```

Syntax Description

```
[ no ] source { address ipv4_address | interface interface_name }
```

no

Removes or disassociates the configured source IP address or host interface from a specific GRE tunnel interface configuration.

address *ipv4_address*

Configures the IP address for the interface specifying the IPv4 address.

ipv4_address must be specified using IPv4 dotted-decimal notation.

interface *interface_name*

Configures the name of the pre-configured non-tunnel IP interface, whose address is used as the source address of the GRE tunnel.

interface_name is an alphanumeric string of 1 through 79 characters.

Usage Guidelines

Use this command to configure the source IP address of the tunnel either by specifying the IP address (host address) or by specifying another configured non-tunnel IP interface for GRE tunnel interface.

Important State of the source address will affect the operational state of the tunnel.

Example

The following command sets *209.165.200.229* as the source IP address of the GRE tunnel interface:

```
source address 209.165.200.229
```

tos

This command configures the parameters/action for the type of Service (ToS) parameter in the IP tunnel transport protocol header.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-if-tunnel-gre)#
```

Syntax Description

```
tos { value [ af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 |
af33 | af41 | af42 | af43 | be | ef | lower-bits tos_value ] | copy }
default tos
```

default

Sets the IP TOS to lower bits value of 0.

value [*tos_value*]

Specifies the IP QoS DSCP per-hop behavior to be marked on the outer header of signaling packets originating from the Access Gateway. This is a standards-based feature (RFC 2597). The following forwarding types are supported:

- **af11**: Assured Forwarding 11 per-hop behavior
- **af12**: Assured Forwarding 12 per-hop behavior
- **af13**: Assured Forwarding 13 per-hop behavior
- **af21**: Assured Forwarding 21 per-hop behavior

- **af22**: Assured Forwarding 22 per-hop behavior
- **af23**: Assured Forwarding 23 per-hop behavior
- **af31**: Assured Forwarding 31 per-hop behavior
- **af32**: Assured Forwarding 32 per-hop behavior
- **af33**: Assured Forwarding 33 per-hop behavior
- **af41**: Assured Forwarding 41 per-hop behavior
- **af42**: Assured Forwarding 42 per-hop behavior
- **af43**: Assured Forwarding 43 per-hop behavior
- **be**: Best Effort forwarding per-hop behavior
- **ef**: Expedited Forwarding per-hop behavior typically dedicated to low-loss, low-latency traffic.

Default: **af11**

The assured forwarding behavior groups are listed in the table below.

	Class 1	**Class 2**	**Class 3**	**Class 4**
Low Drop	AF11	AF21	AF31	AF41
Medium Drop	AF12	AF22	AF32	AF42
High Drop	AF13	AF23	AF33	AF43

Traffic marked with a higher class is given priority during congestion periods. If congestion occurs to traffic with the same class, the packets with the higher AF value are dropped first.

lower-bits *tos_value*

Sets the least-significant 6 bits in the ToS byte with the specified numeric value.

tos_value is an integer from 0 to 255.

Default: 0

copy

Instructs the system to copy the ToS value from the passenger IPv4 packet or Traffic class value from the passenger IPv6 packet to the ToS value of the IPv4 tunnel transport protocol header.

Usage Guidelines

Use this command either to set the ToS parameter in the IPv4 tunnel transport protocol header to the specified value or instructs to copy the ToS value from the passenger IPv4 packet or Traffic class value from the passenger IPv6 packet to the ToS value of the IPv4 tunnel transport protocol header. If one of the enumerated values is set, the DSCP bits which are the six most-significant bits in the ToS byte are marked. If the integer value is set, it will be written into the six least-significant bits of the ToS byte.

Example

The following command instructs the system to copy the ToS value from the passenger IPv4 packet or Traffic class value from the passenger IPv6 packet to the ToS value of the IPv4 tunnel transport protocol header:

```
tos copy
```

ttl

This command configures the time to live (TTL) parameter to be used in the tunnel transport protocol header for the current GRE tunnel interface.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Tunnel Interface Configuration > GRE Tunnel Interface Configuration

configure > **context** *context_name* > **interface** *interface_name* **tunnel** > **tunnel-mode gre**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-if-tunnel-gre)#
```

Syntax Description

```
ttl ttl_value
default ttl
```

default

Sets the TTL value to the system default value.

ttl_value

Specifies the maximum time to live to be used in the tunnel transport protocol header. The time to live (TTL) is not a measure of time but the number of hops through the network.

ttl_value is an integer from 1 to 255.

Default: 15

Usage Guidelines

Use this command to set the TTL parameter to be used in the tunnel transport protocol header for the GRE tunnel configuration.

Example

The following command configures the TTL value to *10*:

```
ttl 10
```

CHAPTER 15

Gs Service Configuration Mode Commands

Command Modes

The Gs Service configuration mode configures the parameters used to setup and maintain a Gs interface for a connection between the SGSN and an MSC/VLR.

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- associate-sccp-network, on page 765
- bssap+, on page 766
- do show, on page 767
- end, on page 768
- exit, on page 768
- max-retransmission, on page 768
- non-pool-area, on page 769
- pool-area, on page 770
- sgsn-number, on page 771
- timeout, on page 772
- vlr, on page 774

associate-sccp-network

This command associates a previously defined Signaling Connection Control Part (SCCP) network instance with the Gs service. This association is required to access Visitor Location Register(s) (VLRs).

Product SGSN

Privilege Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

associate-sccp-network *sccp_net_id*
no associate-sccp-network

no

Removes the associated SCCP network configuration instance from this Gs service configuration.

sccp_net_id

Identifies the SCCP network configuration instance to associate with this Gs interface to enable connection with VLR(s).

sccp_network_num: Must be an integer from 1 through 12.

Usage Guidelines

Use this command to associate the SCCP network configuration instance with the Gs interface in this service.

Important A single SCCP network configuration instance can not be shared with multiple Gs services.

Important To enable a Gs service, the user needs to configure **ssn** with the **bssap+** command.

Example

Following command associates SCCP network 2 with this Gs service.

associate-sccp-network *2*

bssap+

This command defines the Base Station System Application Part Plus configuration parameters for the Gs service to enable the SGSN to access a Visitor Location Register(s) (VLRs).

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

```
bssap+ ssn ss_num
no bssap+ ssn ss_num
```

no

Removes the configured BSSAP+ subsystem number from this Gs service.

ssn *ss_num*

Specifies the subsystem number to configure in this Gs interface to use BSSAP+.

ss_num must be an integer from 1 through 255.

Usage Guidelines

Use this command to configure the BSSAP+ subsystem with Gs interface in this service to communicate with VLR(s).

Important A single SCCP network configuration instance can not be shared with multiple Gs services.

Important To start a Gs service, the user needs to configure the command parameter.

Example

Following command configures subsystem 101 with BSSAP+ in this Gs service.

```
bssap+ ssn 101
```

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **end**

Usage Guidelines Return to the Exec mode.

exit

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

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **exit**

Usage Guidelines Return to the previous configuration mode.

max-retransmission

This command configures the retransmission values for different procedure counters in Gs service as described in TS 29.018.

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

```
max-retransmission { n10 | n12 | n8 | n9 } retrans_num
default max-retransmission { n10 | n12 | n8 | n9 }
```

no

Removes the configured Gs procedures from this Gs service.

{ n10 | n12 | n8 | n9 }

Specifies the various Gs service procedures that are available to be used to communicate with VLR(s).

- **n10**: Defines the maximum number of retries for implicit IMSI detach from the GPRS service. Default is 2.
- **n12**: Defines the maximum number of retries for BSSAP+ to send Reset Indication messages. Default is 2.
- **n8**: Defines the maximum number of retries for explicit IMSI detach from a GPRS service. Default is 2.
- **n9**: Defines the maximum number of retries for explicit IMSI detach from a non-GPRS service. Default is 2.

retrans_num

Specifies the number of retransmission of message for specified procedures.

retrans_num is an integer from 0 to 10.

Default: 2

Usage Guidelines

Use this command to configure the retransmission values for specific procedure counters in Gs service, based on TS 29.018.

This command can be entered for each procedure counter separately.

Example

The following command configures the retransmission value as *3* for the Gs service procedure to send BSSAP+ Reset Indication messages in this Gs service:

```
max-retransmission n12 3
```

non-pool-area

This command creates a non-pool area for a set of subscriber location area code (LAC) values that can be used with a specific VLR for the Gs service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

```
non-pool-area non_pool_name { use-vlr vlr_name lac lac_num } +
no non-pool-area non_pool_name [ lac lac_num
```

no

Removes the configured non-pool area from this Gs service.

non_pool_name

Specifies the name of the non-pool area to configure with this command.

non_pool_name must be an alpha and/or numeric string of 1 to 63 characters.

use-vlr *vlr_name*

Specifies the name of the VLR to be associated with this non-pool area.

vlr_name is the name of VLR and must be an alpha and/or numeric string of 1 to 63 characters.

lac *lac_num*

Specifies the subscribers' location area code to be attached with this non-pool area and specific VLR. This LAC of subscriber is obtained from the radio area indicator (RAI).

Including this keyword with the **no** form of the command enables the operator to remove a specific LAC from the non-pool area configuration.

lac_num is the LAC value and must be an integer value from 1 through 65535.

+

More than one *lac_num*, separated by a space, can be entered within a single command.

Usage Guidelines

This command can be repeated as necessary to define a total of 32 configured LACs for the combined **non-pool-area** and **pool-area** configurations per Gs service.

Example

Following command configure a non-pool area *starpool1* to use VLR named *starvlr1* for LAC *101* in a Gs service.

```
non-pool-area starpool1 use-vlr starvlr1 lac 101
```

pool-area

This command creates a pool area configuration instance. This command also enters the Pool Area configuration mode to define the set of VLRs to use for a pool area for a set of subscriber location area code (LAC) values in the Gs service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gs-service)#`

Syntax Description

pool-area *pool_name* **[-noconfirm]**
no pool-area *non_pool_name*

no

Removes the configured pool area from this Gs service.

pool_name

Specifies the name of the pool area to configure with this command for VLR pooling and association of a LAC.

pool_name: Must be an alpha and/or numeric string of 1 to 63 characters.

-noconfirm

Indicates that the command is to execute without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to create/enter the pool area configuration mode. This mode is used configure the set of VLRs to be used for a set of subscriber LAC.

This command can be used multiple times, subject to a limit of 128 LAC values (the total number of **non-pool-area** and **pool-area** configurations) per Gs service.

Example

The following command configures a pool area named *starpool1* in a Gs service without any confirmation prompt.

pool-area *starpool1* **-noconfirm**

sgsn-number

Define the SGSN's E164 number to associate an SGSN with this Gs Service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

sgsn-number *E.164_number*

E.164_number

Defines the SGSN's 'telephone' number, the ISDN number for per ITU-T E.164 numbering plan. The number must be a numerical string of 1 to 15 digits.

Usage Guidelines

For releases 8.1 or higher, use this command to define the SGSN's E.164 ISDN number. This value should match the **sgsn-number** defined for SGSN Service or GPRS Service.

Important Note: the Gs Service will not start unless the SGSN's E.164 number is configured.

Example

sgsn-number *12345678901234*

timeout

This command configures various timers defining the wait before retransmitting a specific message for Gs service procedures.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

timeout { t6-1-timer *t6_1_dur* **| t8-timer** *t8_dur* **| t9-timer** *t9_dur* **| t10-timer** *t10_dur* **| t12-1-timer minute** *t12_1_dur* **| t12-2-timer** *t12_2_dur***}**
[default] timeout { t6-1-timer | t8-timer | t9-timer | t10-timer | t12-1-timer | t12-2-timer }

default

Sets the timer value to wait in seconds/minutes to default values. Default values for timers are:

- **t6-1-timer**: 10 seconds
- **t8-timer**: 4 seconds

- **t9-timer**: 4 seconds
- **t10-timer**: 4
- **t12-1-timer**: 54 mins (+ 8 seconds)
- **t12-2-timer**: 4 seconds

t6-1-timer *t6_1_dur*

Default: 10

Specifies the retransmission timer value to guard the location update.

t6_1_dur is the waiting duration in seconds before retransmitting the specific message and must be an integer from 10 through 90.

t8-timer *t8_dur*

Default: 4

Specifies the retransmission timer value to guard the explicit IMSI detach from the GPRS service procedure.

t8_dur is the waiting duration in seconds before retransmitting the specific message and must be an integer from 1 through 30.

t9-timer *t9_dur*

Default: 4

Specifies the retransmission timer value to guard the explicit IMSI detach from the non-GPRS service procedure.

t9_dur is the waiting duration in seconds before retransmitting the specific message and must be an integer from 1 through 30.

t10-timer *t10_dur*

Default: 4

Specifies the retransmission timer value to guard the implicit IMSI detach from the GPRS service procedure.

t10_dur is the waiting duration in seconds before retransmitting the specific message and must be an integer from 1 through 30.

t12-1-timer minute *t12_1_dur*

Default: 54 minutes (plus 8 seconds for transmission delay)

Specifies the retransmission timer value to control the resetting of SGSN-Reset variable procedure.

t12_1_dur is the waiting duration in minutes before retransmitting reset message for the SGSN Reset variable and must be an integer from 0 through 384.

t12-2-timer *t12_2_dur*

Default: 4

Specifies the retransmission timer value to guard the SGSN reset procedure.

t12_2_dur is the waiting duration in seconds before retransmitting the specific message and must be an integer from 1 through 120.

Usage Guidelines

Use this command to configure the time, for different procedure timers, to wait before retransmitting a procedure message.

This command can be repeated for each timer to configure multiple timers.

Example

Following command sets the timeout duration of 4 seconds for t8 timer to wait before retransmitting the procedure message to explicitly do the IMSI detach from GPRS service:

```
default timeout t8-timer
```

vlr

This command defines a VLR configuration for use with this Gs service.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Gs Service Configuration

configure > **context** *context_name* > **gs-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gs-service)#
```

Syntax Description

```
vlr vlr_name isdn-number E164_num [exclude-opc-in-sccp] {point-code pt_code
| bssap+ ssn ssn  [exclude-opc-in-sccp]  [point-code pt_code]
no vlr vlr_name
```

no

Removes the configured VLR from the Gs service.

vlr_name

Specifies the name of the VLR to configure in this Gs mode with ISDN number.

vlr_name must be an alpha and/or numeric string of 1 to 63 characters.

isdn-number *E164_num*

Specifies the VLR number to configure with this command.

E164_num: The ISDN number for the target VLR. Value must be defined according to the E.164 numbering plan and must be a numeric string of 1 to 15 digits.

bssap+ ssn *ssn*

Specifies the subsystem number to configure with this VLR to use BSSAP+.

ssn: Must be an integer from 1 through 255. Default value is 252.

point-code *pt_code*

Specifies SS7 address of VLR in point code value to this configured VLR name.

pt_code: Must be in SS7 point code dotted-decimal ###.###.### format or decimal ######## format.

exclude-opc-in-sccp

This keyword is provides the operator with an option to either include or exclude OPC in the SGSN generated SCCP Calling Party Address for "route-on-gt" on the Gs Service.

By default this keyword is not enabled and the OPC is included in the SCCP calling party address for "route-on-gt".

Usage Guidelines

Use this command to define VLR configuration instances to be associated with the Gs service.

A maximum of 32 VLRs can be configured per Gs service.

Example

Following command configures the VLR named *starvlr1* with an ISDN number *12344567*, a subsystem number of *252*, and a point code value of *123.345.567*:

```
vlr starvlr1 isdn-number 12344567 point-code 123.345.567
```

The following command is used to exclude OPC in the SCCP Calling Party Address for "route-on-gt":

```
vlr vlr1 isdn-number 12345 bssap+ ssn 121 exclude-opc-in-sccp
vlr vlr2 isdn-number 92349 exclude-opc-in-sccp
```

CHAPTER 16

GT-Format1 Configuration Mode Commands

Command Modes

The GT-Format1 configuration mode is a sub-mode for either the Global Title Translation Association configuration mode or the Global Title Translation Address-Map configuration mode. This sub-mode configures a set of rules used in the global title translation (GTT) process.

Exec > Global Configuration > GTT Association Configuration > GT-Format1 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format1)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 777
- end, on page 778
- exit, on page 778
- nature-of-address, on page 778
- odd-even-indicator, on page 779

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product All

Privilege Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines Use this command to return to the parent configuration mode.

nature-of-address

This command configures the indicator to identify the nature of the address.

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > GTT Association Configuration > GT-Format1 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format1)#
```

Syntax Description

nature-of-address { international | national | subscriber)

international

Identifies the international numbers.

national

Identifies the national significant numbers.

subscriber

Identifies the subscriber numbers.

Usage Guidelines

Use this command to identify the nature of address indicator.

Example

The following command configures the nature of address indicator as *national*:

nature-of-address national

odd-even-indicator

This command configures the even or odd bits for matching the global title translation (GTT).

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format1 Configuration

configure > **global title translation association instance** *instance_number* > **gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-instance-format1)#`

Syntax Description

odd-even-indicator { even | odd }

even

Sets the even bit for matching the GTT.

odd

Sets the odd bit for matching the GTT.

Usage Guidelines

Use this command to configure the even or odd bits for matching the global title translation (GTT).

Example

The following command configures the **even** bit for matching the GTT.

```
odd-even-indicator even
```

CHAPTER 17

GT-Format2 Configuration Mode Commands

Command Modes

The GT-Format2 configuration mode is a sub-mode for either the Global Title Translation Association configuration mode or the Global Title Translation Address-Map configuration mode. This sub-mode configures a set of rules used in the global title translation (GTT) process.

Exec > Global Configuration > GTT Association Configuration > GT-Format2 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format2)#
```

Important

The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 781
- end, on page 782
- exit, on page 782
- translation-type, on page 782

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **end**

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **exit**

Usage Guidelines Use this command to return to the parent configuration mode.

translation-type

This command configures the translation type to be applied during the translation process.

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > GTT Association Configuration > GT-Format2 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format2)#
```

Syntax Description

translation-type *number*

number

Enter the translation type value as an integer from 0 to 255.

Default: 0

Usage Guidelines

Use this command to configure the GTT translation type to be applied during the translation process.

Example

The following command configures the translation type with value set to *232*:

```
translation-type 232
```

CHAPTER 18

GT-Format3 Configuration Mode Commands

Command Modes

The GT-Format3 configuration mode is a sub-mode for either the Global Title Translation Association configuration mode or the Global Title Translation Address-Map configuration mode. This sub-mode configures a set of rules used in the global title translation (GTT) process.

Exec > Global Configuration > GTT Association Configuration > GT-Format3 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format3)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 785
- encoding-scheme, on page 786
- end, on page 787
- exit, on page 787
- numbering-plan, on page 787
- translation-type, on page 788

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
do show
```

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

encoding-scheme

This command configures the encoding scheme to use during global title translation (GTT).

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format3 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format3)#
```

Syntax Description

encoding-scheme { bcd-even | bcd-odd | nw-specfic | unknown }

bcd-even

Configures the BCD even encoding scheme.

bcd-odd

Configures the BCD odd encoding scheme.

nw-specfic

Configures the network specific encoding scheme.

unknown

Configures the unknown encoding scheme.

Usage Guidelines

Use this command to select one of the encoding scheme types to determine the encoding type to be used during GTT.

Example

The following command configures the **bcd-even** encoding scheme for GTT:

encoding-scheme bcd-even

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

numbering-plan

This command configures the numbering plan to apply during the GT translation process.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format3 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-instance-format3)#`

Syntax Description

numbering-plan *plan_type*

plan_type

Select one of the following numbering plans to be employed during GTT:

- **data**: Data numbering plan
- **generic**: Generic number plan

- **isdn**: ISDN tel numbering plan
- **isdn-mobile**: ISDN mobile numbering plan
- **land-mobile**: Land mobile numbering plan
- **maritime-mobile**: Maritime mobile numbering plan
- **nw-specific**: Private network / network-specific numbering plan
- **telex**: Telex numbering plan
- **unknown**: Unknown numbering plan

Usage Guidelines

Use this command to select the required number plan for GTT process.

Example

The following command sets the numbering plan to use during GTT processing to **isdn**:

```
numbering-plan isdn
```

translation-type

This command configures the translation type to be applied during the translation process.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format3 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format3)#
```

Syntax Description

```
translation-type number
```

number

Enter the translation type value as an integer from 0 to 255.

Default: 0

Usage Guidelines

Use this command to define the translation type to be applied during the global title translation process.

Example

The following command configures the translation type with value set to *233*:

```
translation-type 233
```

CHAPTER 19

GT-Format4 Configuration Mode Commands

Command Modes

The GT-Format4 configuration mode is a sub-mode for either the Global Title Translation Association configuration mode or the Global Title Translation Address-Map configuration mode. This sub-mode configures a set of rules used in the global title translation (GTT) process.

Exec > Global Configuration > GTT Association Configuration > GT-Format4 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtt-instance-format4)#`

Important

The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 789
- encoding-scheme, on page 790
- end, on page 791
- exit, on page 791
- nature-of-address, on page 791
- numbering-plan, on page 792
- translation-type, on page 793

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`do show`

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

encoding-scheme

This command configures the encoding scheme to use during global title translation (GTT).

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format4 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtt-instance-format4)#`

Syntax Description

`encoding-scheme { bcd-even | bcd-odd | nw-specfic | unknown }`

bcd-even

Configures the BCD even encoding scheme.

bcd-odd

Configures the BCD odd encoding scheme.

nw-specfic

Configures the network specific encoding scheme.

unknown

Configures the unknown encoding scheme.

Usage Guidelines

Use this command to select one of the encoding scheme types to determine the encoding type to be used during GTT.

Example

The following command configures the **bcd-even** encoding scheme for GTT:

`encoding-scheme bcd-even`

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`end`

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`exit`

Usage Guidelines

Use this command to return to the parent configuration mode.

nature-of-address

This command configures the indicator to identify the nature of the address.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format4 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtt-instance-format4)#`

Syntax Description

`nature-of-address { international | national | subscriber )`

international

Identifies the international numbers.

national

Identifies the national significant numbers.

subscriber

Identifies the subscriber numbers.

Usage Guidelines

Use this command to identify the nature of address indicator.

Example

The following command configures the nature of address indicator as *national*:

```
nature-of-address national
```

numbering-plan

This command configures the numbering plan to apply during the GT translation process.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format4 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtt-instance-format4)#
```

Syntax Description

numbering-plan *plan_type*

plan_type

Select one of the following numbering plans be employed during GTT:

- **data**: Data numbering plan
- **generic**: Generic number plan
- **isdn**: ISDN tel numbering plan
- **isdn-mobile**: ISDN mobile numbering plan
- **land-mobile**: Land mobile numbering plan
- **maritime-mobile**: Maritime mobile numbering plan
- **nw-specific**: Private network/network-specific numbering plan
- **telex**: Telex numbering plan
- **unknown**: Unknown numbering plan

Usage Guidelines

Use this command to select the required number plan for GTT process.

Example

The following command sets the numbering plan to use during GTT processing to **isdn**:

```
numbering-plan isdn
```

translation-type

This command configures the translation type to be applied during the translation process.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTT Association Configuration > GT-Format4 Configuration

configure > global title translation association instance *instance_number* **> gt-format** *format_number*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtt-instance-format4)#`

Syntax Description

`translation-type` *`number`*

number

Enter the translation type value as an integer from 0 to 255.

Default: 0

Usage Guidelines

Use this command to define the translation type to be applied during the global title translation process.

Example

The following command configures the translation type with value set to *235*:

```
translation-type 235
```

CHAPTER 20

GTPC Load Control Profile Configuration Mode Commands

Load control enables a GTP-C entity (for example, an S-GW/P-GW) to send its load information to a GTP-C peer (e.g. an MME/SGSN, ePDG, TWAN) to adaptively balance the session load across entities supporting the same function (for example, an S-GW cluster) according to their effective load. The load information reflects the operating status of the resources of the GTP-C entity.

Command Modes

This chapter describes the GTPC Load Control Profile Configuration Mode commands.

Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > gtpc-load-control-profile *profile_name*

Entering the above command results in the following prompt:

```
[local]host_name(config-gtpc-load-control-profile)#
```

Important Available commands or keywords/variables vary based on platform type, product version, and installed license(s).

- end, on page 795
- exit, on page 796
- inclusion-frequency, on page 796
- load-control-handling, on page 797
- load-control-publishing, on page 799
- threshold, on page 800
- weightage, on page 801

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description `end`

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description `exit`

Usage Guidelines Use this command to return to the parent configuration mode.

inclusion-frequency

Configures parameters to determine the inclusion frequency of the Load Control Information IE for a GTP-C Load Control Profile configuration.

Product

Important GTP-C Load Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege Administrator, Security Administrator

Command Modes Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > **gtpc-load-control-profile** *profile_name*

Entering the above command results in the following prompt:

`[local]host_name(config-gtpc-load-control-profile)#`

Syntax Description

```
inclusion-frequency { advertisement-interval interval_in_seconds |
change-factor change_factor  }
default inclusion-frequency  { advertisement-interval | change-factor }
```

inclusion-frequency

Specifies that parameters to determine the inclusion frequency of the Load Control Information IE for a GTP-C Load Control Profile configuration will be configured. The Load Control Information IE is a 3GPP-specific

IE that is sent to peers when a configured threshold is reached. This parameter specifies how often the operator wants to send this information to the peers.

advertisement-interval *interval_in_seconds*

Configures the advertisement-interval for Load Control in seconds. Specifies how often load control information should be sent to the peers. If configured to 0, the node will send load control information in each and every outgoing message to the peers.

interval_in_seconds must be an integer from 0 to 3600.

Default: 300

change-factor *change_factor*

Configures the change factor for Load Control. If the load control factor changes by the configured factor, whether it is an increase or decrease, the load control information should be sent to the peers. This information is only sent to the peers when the load factor changes by the factor configured.

change_factor must be an integer from 1 to 20.

Default: 5%

default

Returns configured parameters to their default value.

Usage Guidelines

Use this command to specify parameters to determine the inclusion frequency of the Load control information IE for a GTP-C Load Control Profile configuration. This IE reflects the current operating status of the network element based on the configured **weightage** parameters. The network element ensures that new/updated load control information is propagated to the target receivers within an acceptable delay, so that the purpose of the information (i.e., effective load balancing) is achieved.

The **weightage** command in GTP-C Load Control Profile Configuration Mode should also be configured along with the **inclusion-frequency** setting.

If this setting is not configured, the node will use the default setting.

The Load Control profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This example configures the inclusion-frequency advertisement-interval to 120 seconds.

```
inclusion-frequency  advertisement-interval 120
```

load-control-handling

Enables or disables the handling of GTP-C load control information provided to the MME and S-GW.

Product

Important GTP-C Load Control Profile is a licensed-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

S-GW

SAEGW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > gtpc-load-control-profile *profile_name*

Entering the above command results in the following prompt:

```
[local]host_name(config-gtpc-load-control-profile)#
```

Syntax Description

```
[ no ] load-control-handling { home | visited }
[ default ] load-control-handling
```

no

Disables load-control-handling for the specified option (home or visited).

default

Returns the load-control-handling feature to its default behavior (enabled).

load-control-handling

Enables load control handling for the specified option.

home

Enables load control handling information for the home PLMN.

visited

Enables/disables load control handling information for the visited PLMN.

Usage

Use this command to enable/disable the handling of load control information handling for the home or visited PLMN.

If no parameters are specified, the system will use the default settings.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode

- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command enables load control handling for the home PLMN.

```
load-control-handling home
```

load-control-publishing

Enables/disables the publishing of GTP-C load control information.

Product

Important GTP-C Load Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

S-GW

SAEGW

Privilege

Adminstrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > gtpc-load-control-profile *profile_name*

Entering the above command results in the following prompt:

```
[local]host_name(config-gtpc-load-control-profile)#
```

Syntax Description

```
[ no ] load-control-publishing { home | visited }
default load-control-publishing
```

no

Disables load control publishing for the specified option.

default

Returns load control publishing to its default behavior (enabled).

load-control-publishing

Enables the publishing of load control information towards the home or visited PLMN.

home

Enables load control publishing information for the home PLMN.

visited

Enables load control publishing information for the visited PLMN.

Usage Guidelines

Use this command to enable/disable load control information publishing for the home or visited PLMN.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command enables the publishing of load control information towards the visited peers.

```
load-control-publishing visited
```

threshold

Configures the minimum threshold value above which PGW-provided GTP-C load control information should be utilized for calculating the PGW effective weight during initial node selection.

Product

Important GTP-C Load Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

S-GW

SAEGW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > **gtpc-load-control-profile** *profile_name*

Entering the above command results in the following prompt:

```
[local]host_name(config-gtpc-load-control-profile)#
```

Syntax Description

```
threshold percentage
[ no ] threshold
```

threshold

Enables the configuration of the minimum threshold value above which PGW-provided load control information should be utilized for calculating the P-GW effective weight during initial node selection.

percentage

Enter the threshold setting as a percentage of 100%. The entry must be an integer from 1 to 100. The default setting is 50%.

no

Disables the configured threshold setting.

Usage Guidelines

Use this command to configure the minimum threshold value above which PGW-provided load control information should be utilized for calculating the P-GW effective weight during initial node selection.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command sets the threshold to 60%.

```
threshold 60
```

weightage

Configures weightage for various GTP-C load control profile parameters.

Product

Important GTP-C Load Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Load Control Profile Configuration

configure > gtpc-load-control-profile *profile_name*

Entering the above command results in the following prompt:

```
[local]host_name(config-gtpc-load-control-profile)#
```

Syntax Description

weightage system-cpu-utilization *percentage* **system-memory-utilization** *percentage* **license-session-utilization** *percentage*
default weightage

weightage

Specifies that system memory, system CPU, and license session utilization parameters will be configured.

Important All parameters must be specified. The total of all three parameter settings should total, but not exceed, 100%.

system-cpu-utilization *percentage*

Specifies system CPU utilization weightage as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 40%

system-memory-utilization *percentage*

Specifies system memory utilization weightage as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 30%

license-session-utilization *percentage*

Specifies the license session utilization as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 30%

default weightage

Returns all parameters to their default settings.

Usage Guidelines

Use this command to set weightage percentages for system CPU, memory, and license session utilization as part of a GTP-C Load Control Profile configuration. These settings constitute the basic Load Control Profile for this network element. These parameters allow the P-GW/S-GW/SAEGW to send its load information to a peer GTP control plane node which the receiving GTP control plane peer node uses to augment existing GW selection procedure for the P-GW and S-GW. Load Information reflects the operating status of the resources of the originating GTP control plane node.

If no parameters are specified, the system will use the default settings.

Operators should also configure the **inclusion-frequency** command in GTP-C Load Control Profile Configuration mode to specify parameters to determine the inclusion frequency of the Load Control Information IE sent to peers for the GTP-C Load Control Profile configuration.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following example configures system-cpu-utilization at 30%, system-memory utilization at 40%, and license-utilization at 30%.

```
weightage system-cpu-utilization 30 system-memory-utilization 40
license-session-utilization 30
```

CHAPTER 21

GTPC Overload Control Profile Configuration Mode Commands

Overload control enables a GTP-C entity becoming or being overloaded to gracefully reduce its incoming signalling load by instructing its GTP-C peers to reduce sending traffic according to its available signalling capacity to successfully process the traffic. A GTP-C entity is in overload when it operates over its signalling capacity, which results in diminished performance (including impacts to handling of incoming and outgoing traffic).

Command Modes

This chapter describes the GTPC Overload Profile Configuration Mode Commands

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Important Available commands or keywords/variables vary based on platform type, product version, and installed license(s).

- end, on page 806
- exit, on page 806
- cpu-utilization, on page 806
- inclusion-frequency, on page 807
- message-prioritization, on page 809
- overload-control-handling, on page 810
- overload-control-publishing, on page 812
- self-protection-behavior, on page 813
- tolerance, on page 814
- throttling-behavior, on page 816
- validity-period, on page 817
- weightage, on page 818

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

cpu-utilization

This command allows the user to configure the inclusion of CPU utilization of Session Manager, Demux Manager, IMSI Manager and MME Manager under GTP-C overload control profile for overload factor calculation.

Product

P-GW

MME

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtpc-overload-control-profile)#`

Syntax Description

```
cpu-utilization { sessmgr-card | demuxmgr-card | imsimgr | mmemgr }
no cpu-utilization
default cpu-utilization
```

no

Disables the configuration of CPU utilization of Sessmgr/Demuxmgr/IMSImgr/MMEmgr under GTP-C overload control profile for overload factor calculation.

default

The default behavior for the above CLI is to include the average CPU utilization of Sessmgr cards and Demuxmgr card in the overload factor calculation.

cpu-utilization

This command configures the inclusion of average CPU-utilization SessMgr Cards/DemuxMgr Card/MMEMgr/IMSIMgr for load factor calculation.

sessmgr-card

This keyword configures the inclusion of average cpu-utilization of SessMgr cards for overload factor calculation.

demuxmgr-card

This keyword configures the inclusion of average cpu-utilization of Demux Manager card for overload factor calculation.

imsimgr

This keyword configures the inclusion of cpu-utilization of IMSIMgr(s) proclet for overload factor calculation.

mmemgr

This keyword configures the inclusion of cpu-utilization of MMEMgr(s) proclet for overload factor calculation.

Example

The following example configures the inclusion of CPU utilization of Sessmgr,Demuxmgr, IMSImgr and MMEmgr:

```
cpu-utilization sessmgr-card demuxmgr-card imsimgr mmemgr
```

inclusion-frequency

Configure parameters to determine the inclusion frequency of the Overload Control Information IE.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

```
inclusion-frequency { advertisement-interval interval_in_seconds |
change-factor change_factor  }
default inclusion-frequency  { advertisement-interval | change-factor }
```

inclusion-frequency

Specifies that parameters to determine the inclusion frequency of the Overload Control Information IE for a GTP-C Overload Control Profile configuration will be configured. The Overload Control Information IE is a 3GPP-specific IE that is sent to peers when a configured threshold is reached. This parameter specifies how often the operator wants to send overload information to the peers.

advertisement-interval *interval_in_seconds*

Configures the advertisement-interval for overload control in seconds. Specifies how often overload control information should be sent to the peers. If configured to 0, the node will send overload control information in each and every outgoing message to the peers.

interval_in_seconds must be an integer from 0 to 3600.

Default: 300

change-factor *change_factor*

P-GW only. Configures the change factor for overload control. If the overload control factor changes by a configured factor, whether by an increase or decrease, the overload control information should be sent to the peers. This information is only sent to the peers when the overload factor changes by the factor configured.

change_factor must be an integer from 1 to 20.

Default: 5%

Usage Guidelines

Use this command to configure parameters to decide inclusion frequency of Overload Control Information IE. How often the sender includes the overload control information is implementation specific. The network element ensures that new/updated overload control information is propagated to the target receivers within an acceptable delay so that the purpose of the information, effective load balancing, is achieved.

If no parameters are specified, the system will use the default settings.

The Overload Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following example configures the inclusion-frequency change factor to 10.

```
inclusion-frequency change-factor  10
```

message-prioritization

Configures the priority percentage to be given to the two specific message groups for the GTP-C Overload Control Profile feature.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. Fore more information, contact your Cisco account or support representative.

ePDG

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

```
message-prioritization group1 percentage  group2 percentage
[ no | default ] message-prioritization
```

no

Disables message-prioritization for this node.

default

Returns the message-prioritization settings to there default value. The defaults are 50% for each message group.

message-prioritization

Configures the priority percentage to be given to the two message groups.

group1*percentage*

In the overload control it is possible to apply message throttling (when peer indicated it is overloaded) based on message priority. To apply message prioritization using the loss algorithm the node must know how many messages each node (PGW or ePDG) is expected to generate. This keyword allows the operator to define the expected number of messages in, as a percentage in each message group. **group1** messages are:

- Update Bearer Request message for default bearer generated from PGW ingress
- Update Bearer Request message for dedicated bearer generated from PGW ingress
- Handoff Create Session Request message generated from ePDG egress.

The entry must be an integer from 0 to 100.

The default setting is 50%.

group2*percentage*

In the overload control it is possible to apply message throttling (when peer indicated it is overloaded) based on message priority. To apply message prioritization using the loss algorithm the node must know how many messages each node (PGW or ePDG) is expected to generate. This keyword allows the operator to define the expected number of messages in, as a percentage in each message group. **group2** messages are:

- Create Bearer Request message for default bearer generated from PGW ingress
- PDN connection requested Create Session Request message from ePDG egress.

The entry must be an integer from 0 to 100.

The default setting is 50%.

Usage Guidelines

Use this command to configure priority the message prioritization percentage to be given to the two specific message groups.

The Overload Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command sets the message-prioritization for both message groups to 40%.

```
message prioritization group1 40 group2 60
```

overload-control-handling

Enables/disables the handling of GTP-C overload control information for the node.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-gtpc-overload-control-profile)#`

Syntax Description

`[ no ] overload-control-handling { home | visited }`

no

Disables overload control information handling for this node.

overload-control-handling

Enables the handling of overload control information.

home

Specifies that the handling of overload control information will be enabled for the home PLMN.

visited

Specifies that the handling of overload control information will be enabled for the visited PLMN.

Usage Guidelines

Use this command to enable/disable the handling of overload control information for this node.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command enables the handling of overload control information for the home PLMN.

`overload-control-handling home`

overload-control-publishing

Enables/disables the publishing of overload control information towards the home or visited PLMN.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

[no] overload-control-publishing { home | visited }
default overload-control-publishing

no

Disables overload control information publishing towards the home or visited PLMN.

default

Returns overload control publishing to the default setting.

overload-control-publishing

Enables the publishing of overload control information.

home

Enables the publishing of overload control information towards the home PLMN.

visited

Enables the publishing of overload control information towards the visited PLMN.

Usage Guidelines

Use this command to enable/disable the publishing of overload control information towards the home or visited PLMN.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This command enables overload control publishing towards the visited PLMN.

```
overload-control-publishing visited
```

self-protection-behavior

Configures self protection behavior for up to three APN names or eight EARP values for the GTP-C Overload Control Profile feature.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

```
[ no ] self-protection-behavior { apn apn_name * exclude | earp { 1 | 2 |
3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 * } exclude } }
```

no

Disables self-protection-behavior for this node.

self-protection-behavior

Enables self protection behavior for this node

apn *apn_name* *

Specify up to three APN names to be allowed under self-protection behavior.

earp ***{ 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 * }***

Configures up to eight EARP priority level values so that incoming request messages for the configured EARP priority values are not rejected even if the system is under self-protection mode.

exclude

Specifies that configured emergency pdn connections and/or EARP priority values are not rejected.

Usage Guidelines

Use this command to configure GTP-C overload control self-protection behavior. This functionality enables the operator to configure up to three APN names and up to eight EARP priority level values for self-protection mode so that incoming request messages for emergency packet data node (PDN) connections and/or configured EARP priority values are not rejected even if the system is under self-protection mode.

The Load Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following command configures self protection behavior for the APN named **APN1**.

```
self-protection-behavior apn APN1
```

tolerance

Configures GTP-C Overload Control Profile tolerance limits.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

tolerance { initial-reduction-metric *percentage* **| threshold report-reduction-metric** *percentage* **self-protection-limit** *percentage* **}**
default tolerance [initial-reduction-metric | threshold]

tolerance

Specifies that GTP-C overload profile configuration tolerance parameters will be configured.

initial-reduction-metric *percentage*

Configures initial overload reduction metric value to be advertised upon reaching minimum overload tolerance limit. When reaching the configured minimum threshold, this parameter specifies how much the node wants the peers to reduce incoming traffic.

percentage must be an integer from 1 to 100.

Default: 10%

threshold report-reduction-metric *percentage*

Configures the minimum overload tolerance threshold for advertising overload reduction metric to the peer. When the minimum threshold is reached, the node will report this information to peers. When the maximum limit is reached, the node will go into self-protection mode.

Important The **threshold report-reduction-metric** should always be lower than the **self-protection-limit**.

percentage must be an integer from 1 to 100.

Default: 80%

self-protection-limit *percentage*

Configures the maximum overload tolerance threshold after which node will move to self protection mode. When the maximum limit is reached, the node will start rejecting all incoming messages, except for delete messages. The node will not initiate any new messages to the peers. This is to mitigate the overload condition.

percentage must be an integer from 1 to 100.

Default: 95%

Usage Guidelines

Use this command to configure GTP-C Overload Control Profile tolerance limits.

Default parameters are used if any parameters are not configured.

The Overload Control Profile must be associated with a P-GW, S-GW or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following example configures the initial-reduction-metric to 20%.

```
tolerance initial-reduction-metric  20
```

throttling-behavior

Configures throttling behavior based on peer's overload reduction-metric by excluding some or all emergency events and/or EARP messages for the GTP-C Overload Control Profile feature.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-gtpc-overload-control-profile)#`

Syntax Description

```
throttling-behavior { earp [ 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9| 10 | 11
| 12 | 13 | 14 | 15 * ] exclude } | emergency-events exclude }
no throttling-behavior { earp [ 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9| 10 |
11 | 12 | 13 | 14 | 15 * ] exclude } | emergency-events exclude }
```

throttling-behavior

Configures throttling behavior based on peer's overload reduction-metric.

earp [1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 *] exclude

Excludes the specified messages with configured earp from throttling due to peer's overload-reduction metric. If a bearer with configured EARP is created or updated, it will be excluded from throttling. A maximum of eight EARP values can be configured.

*****: More than one of the previous keywords can be entered within a single command.

emergency events exclude

P-GW Only. Excludes all emergency events from throttling due to the peer's overload reduction-metric. While reducing messages towards the peer based on the overload information received from the peer, the P-GW will exclude events sent for emergency sessions.

Usage Guidelines

Use this command to configure throttling behavior based on peer's overload reduction-metric by excluding some or all emergency events and/or messages with configured EARP. Message throttling applies only to initial messages. Triggered request or response messages should not be throttled since that would result in the retransmission of the corresponding request message by the sender.

If throttling behavior is configured, the profile can be associated with an S-GW or P-GW service. If a P-GW specific keyword is configured, and the profile is associated with an S-GW service, the S-GW will ignore the P-GW specific configuration. Only the parameters specific to S-GW or P-GW will be utilized.

The Overload Control Profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following example excludes emergency events.

```
throttling-behavior emergency-events exclude
```

validity-period

Configures the time, in seconds, that specifies how long the overload control information is valid.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

```
validity-period seconds
default validity-period
```

validity-period *seconds*

Specifies the length of time during which the overload condition specified by the OCI IE is to be considered as valid, unless overridden by subsequent new overload control information.

seconds must be an integer from from 1 to 3600.

Default: 600

Usage Guidelines

Use this command to configure how long the overload control profile information is valid.

If no validity-period is configured, the system will use the default setting.

The Overload Control profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

The following example configures the validity-period to 700 seconds:

```
validity-period 700
```

weightage

Configures weightage for various GTP-C Overload Control Profile parameters.

Product

Important GTP-C Overload Control Profile is a license-controlled feature. For more information, contact your Cisco account or support representative.

P-GW

SAEGW

S-GW

Privilege

Administrator, Security Administrator

Command Modes

Exec > Global Configuration > GTPC Overload Control Profile Configuration

configure > gtpc-overload-control-profile *profile_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-gtpc-overload-control-profile)#
```

Syntax Description

weightage system-cpu-utilization *percentage* **system-memory-utilization** *percentage* **license-session-utilization** *percentage*
default weightage

weightage

Specifies that system memory, CPU, and license session utilization parameters are to be configured.

Important All parameters must be specified. The total weightage for all parameters should be 100%. The total of all three parameters cannot exceed 100%.

system-cpu-utilization *percentage*

Specify the desired system CPU utilization weightage as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 40%

system-memory-utilization *percentage*

Specify the system memory utilization weightage as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 30%

license-session-utilization *percentage*

Specify the license session utilization weightage as a percentage of 100.

percentage must be an integer from 0 to 100.

Default: 30%

default weightage

Returns all settings to their default value.

Usage Guidelines

Use this command to specify weightage for various GTP-C Overload Control Profile parameters. These parameters constitute the basic settings for this GTP-C Overload Control Profile. Communication of these parameters indicate to peers when this network element is becoming or being overloaded. When this occurs, the NE will be able to instruct its peers to gracefully reduce its incoming signalling load by instructing the peers to reduce sending traffic according to its available signalling capacity to successfully process the traffic. A GTP-C entity is in overload when it operates over its signalling capacity, which results in diminished performance (including impacts to handling of incoming and outgoing traffic).

Use the **inclusion-frequency** command in GTP-C Overload Profile Configuration mode to to determine the inclusion frequency of the Overload-Load control information IE that is sent to the peers to keep them up to date on the overload condition on this network element.

If no parameters are specified, the system will use the default settings.

The Overload Control profile must be associated with a P-GW, S-GW, or SAEGW service using one of the following commands:

- P-GW: **associate** command in P-GW Service Configuration Mode
- S-GW: **associate** command in S-GW Service Configuration Mode
- SAEGW: **associate** commands in both P-GW and S-GW Service Configuration modes

Example

This example configures system-cpu-utilization to 30%, system-memory-utilization to 30%, and license-session-utilization to 40%.

```
weightage system-cpu-utilization 30 system-memory-utilization 30
license-session-utilization 40
```

CHAPTER 22

GTPP Server Group Configuration Mode Commands

GTPP server group commands facilitate the setup of the hard disk for CDR storage. They also support accounting and charging functionality within a context, and configuration of a group (list) of charging gateway function (CGF) servers on a per subscriber or per GGSN/P-GW APN level.

Command Modes

The GTPP Server Group Configuration Mode is used to create and manage the GTPP server groups within the context or system.

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- end, on page 822
- exit, on page 822
- gtpp attribute, on page 823
- gtpp attribute secondary-rat-usage, on page 835
- gtpp charging-agent, on page 836
- gtpp data-record-format-version, on page 837
- gtpp cdr-duration-ceiling, on page 838
- gtpp data-request sequence-numbers, on page 839
- gtpp deadtime, on page 840
- gtpp dead-server suppress-cdrs, on page 841
- gtpp detect-dead-server, on page 842
- gtpp dictionary, on page 843
- gtpp duplicate-hold-time, on page 845
- gtpp echo-interval, on page 846
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- gtpp limit-secondary-rat-usage, on page 852
- gtpp max-cdrs, on page 853
- gtpp max-pdu-size, on page 854
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- gtpp mbms bucket, on page 857
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- gtpp mbms tariff, on page 858
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- gtpp prioritize-imei-over-mac-address, on page 860
- gtpp redirection-allowed, on page 861
- gtpp redirection-disallowed, on page 862
- gtpp server, on page 862
- gtpp source-port-validation, on page 864
- gtpp storage-server, on page 864
- gtpp storage-server local file, on page 865
- gtpp storage-server max-retries, on page 870
- gtpp storage-server mode, on page 871
- gtpp storage-server timeout, on page 872
- gtpp suppress-cdrs zero-volume, on page 873
- gtpp suppress-cdrs zero-volume-and-duration, on page 875
- gtpp suppress-secondary-rat-usage zero-volume, on page 876
- gtpp v1-header-suppress-zeros, on page 877
- gtpp timeout, on page 877
- gtpp transport-layer, on page 878
- gtpp trigger, on page 879

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

gtpp attribute

Enables the specification of some of the optional fields in the CDRs that the GSN (GGSN or SGSN) generates and/or how the information is to be presented. Many keywords are also applicable to S-GW and P-GW CDRs.

Product

GGSN

P-GW

SAEGW

SaMOG

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

```
gtpp attribute { apn-ambr [ include-for-all-bearers |
include-for-default-bearer | include-for-non-gbr-bearers ] | apn-ni |
apn-selection-mode | charging-characteristic-selection-mode | camel-info
 | cell-plmn-id | servers-unreachable { ciot-cp-optind | ciot-unipdu-cponly
 } | diagnostics[ abnormal-release-cause ] | direct-tunnel | duration-ms
 | dynamic-flag | dynamic-flag-extension | extended-bitrate |
furnish-charging-information | imei | imsi-unauthenticated-flag | lapi
last-ms-timezone | last-uli |
| local-record-sequence-number | losdv | ms-timezone | msisdn | node-id
| node-id-suffix STRING packet-count | pco-nai | pdn-connection-id |
pdp-address | pdp-type | pgw-ipv6-addr | pgw-plmn-id | plmn-id | qos
max-length | rat | recordextension | record-extensions rat | record-type
 { sgsnpdprecord | sgwrecord } | served-mnai |
served-pdp-pdn-address-extension | served-pdp-pdn-address-prefix-length
| sgsn-change |  sms { destination-number | recording-entity |
service-centre } | sgw-ipv6-addr | sna-ipv6-addr | sponsor-id | start-time
 | stop-time | twanuli | ue-tun-ip-port | uwanuli | uli |
user-csg-information } +
default gtpp attribute { apn-ambr [ include-for-all-bearers |
include-for-default-bearer | include-for-non-gbr-bearers ] | apn-ni |
apn-selection-mode | charging-characteristic-selection-mode | camel-info
 | cell-plmn-id |  { ciot-cp-optind | ciot-unipdu-cponly } | diagnostics[
 abnormal-release-cause ] | direct-tunnel | duration-ms | dynamic-flag |
```

```
 dynamic-flag-extension | furnish-charging-information | imei |
imsi-unauthenticated-flag | lapi last-ms-timezone | last-uli |
| local-record-sequence-number | losdv | ms-timezone | msisdn | node-id
| node-id-suffix STRING | pdn-connection-id | pdp-address | pdp-type |
pgw-ipv6-addr | pgw-plmn-id | plmn-id | qos max-length | rat |
recordextension | record-extensions rat | record-type { sgsnpdprecord |
sgwrecord } | served-mnai | served-pdp-pdn-address-extension |
served-pdp-pdn-address-prefix-length | sgsn-change |  sms {
destination-number | recording-entity | service-centre } | sgw-ipv6-addr
 | sna-ipv6-addr | sponsor-id | start-time | stop-time | twanuli | uwanuli
 | uli | user-csg-information } +
no gtpp attribute { apn-ambr [ include-for-all-bearers |
include-for-default-bearer | include-for-non-gbr-bearers ] | apn-ni |
apn-selection-mode | charging-characteristic-selection-mode | camel-info
 | cell-plmn-id |  { ciot-cp-optind | ciot-unipdu-cponly } | diagnostics[
 abnormal-release-cause ] | direct-tunnel | duration-ms | dynamic-flag |
 dynamic-flag-extension | extended-bitrate | furnish-charging-information
 | imei | imsi-unauthenticated-flag | lapi last-ms-timezone | last-uli |

| local-record-sequence-number | losdv | ms-timezone | msisdn | node-id
| node-id-suffix STRING packet-count | pco-nai | pdn-connection-id |
pdp-address | pdp-type | pgw-ipv6-addr | pgw-plmn-id | plmn-id | qos
max-length | rat | recordextension | record-extensions rat | record-type
 { sgsnpdprecord | sgwrecord } | served-mnai |
served-pdp-pdn-address-extension | served-pdp-pdn-address-prefix-length
| af-record-info  | sgsn-change |  sms { destination-number |
recording-entity | service-centre } | sgw-ipv6-addr | sna-ipv6-addr |
sponsor-id | start-time | stop-time | twanuli | ue-tun-ip-port | uwanuli
 | uli | user-csg-information } +
```

default

Resets the default attribute values for this GTPP group configuration.

no

Disables the specified optional field so that the information will not be present in generated CDRs.

apn-ambr [include-for-all-bearers | include-for-default-bearer | include-for-non-gbr-bearers]

Default: Disabled

This keyword controls the inclusion of the optional field "apn-ambr" in the PGW-CDRs in the custom24 GTPP dictionary.

Important This keyword option will be available only if a valid license is installed. For more information, contact your Cisco account representative.

The APN Aggregate Maximum Bit Rate (AMBR) is a subscription parameter stored per APN. It limits the aggregate bit rate that can be expected to be provided across all non-GBR bearers and across all PDN connections of the same APN. Each of these non-GBR bearers potentially utilize the entire APN AMBR, e.g.

when the other non-GBR bearers do not carry any traffic. The APN AMBR is present as part of QoS information.

In 15.0 and later releases, this CLI command should be configured along with the following additional options to support APN-AMBR reporting in SGW-CDRs in all GTPP dictionaries.

- **include-for-all-bearers**: Includes the APN-AMBR information in SGW-CDRs for all bearers (GBR and NON-GBR)
- **include-for-default-bearer**: Includes APN-AMBR information in SGW-CDRs only for default bearer.
- **include-for-non-gbr-bearers**: Includes APN-AMBR information for non-gbr-bearers.

This feature is required to enable post-processing of CDRs to verify MVNO subscribers actual QoS against invoicing systems.

Important This CLI command and the associated options are not available for products other than S-GW and P-GW. The option "**non-gbr-bearers-only**" is available in S-GW and P-GW but the other options are available in S-GW only.

In the P-GW implementation, if the CLI command "**gtpp attribute apn-ambr**" is configured, it will be treated as "**gtpp attribute apn-ambr non-gbr-bearers-only**". In case of S-GW/P-GW combo if any of the options is configured, it will be considered that the attribute is available.

apn-ni

Default: Enabled

This keyword controls the inclusion of the optional field "APN" in the x-CDRs.

apn-selection-mode

Default: Enabled

This keyword controls the inclusion of the optional field "APN Selection Mode" in the x-CDRs.

camel-info

SGSN only

Enter this keyword to include CAMEL-specific fields in SGSN CDRs. Default: Disabled

cell-plmn-id

SGSN only

Enter this keyword to enable the system to include the Cell PLMN ID field in the M-CDR. Default: Disabled

servers-unreachable

Specifying this option includes the optional field `ServersUnreachablesContinue` or `ServersUnreachablesTerminate` in the CDR.

charging-characteristic-selection-mode

Default: Enabled

This keyword controls the inclusion of the optional field "Charging Characteristic Selection Mode" in the x-CDRs.

ciot-cp-optind

Includes optional field "CP CIoT EPS optimisation indicator" in the CDR.

ciot-unipdu-cponly

Includes optional field "UNI PDU CP Only Flag" in the CDR.

diagnostics [abnormal-release-cause]

Default: Disabled

Enables the system to include the Diagnostic field in the CDR that is created when PDP contexts are released. The field will include one of the following values:

- **26** - For GGSN: if the GGSN sends "delete PDP context request" for any other reason (e.g., the operator types "clear subscribers" on the GGSN). For SGSN: The SGSN includes this cause code in the S-CDR to indicate that a secondary PDP context activation request or a PDP context modification request has been rejected due to insufficient resources.
- **36** - For GGSN: this cause code is sent in the G-CDR to indicate the PDP context has been deactivated in the GGSN due to the SGSN having sent a "delete PDP context request" to the GGSN. For SGSN, this cause code is used to indicate a regular MS or network-initiated PDP context deactivation.
- **37** - when the network initiates a QoS modification, the SGSN sends in the S-CDR to indicate that the MS initiation deactivate request message has been rejected with QoS not accepted as the cause.
- **38** - if the GGSN sends "delete PDP context request" due to GTP-C/GTP-U echo timeout with SGSN. If the SGSN sends this cause code, it indicates PDP context has been deactivated due to path failure, specifically GTP-C/GTP-U echo timeout.
- **39** - SGSN only - this code indicates the network (GGSN) has requested a PDP context reactivation after a GGSN restart.
- **40** - if the GGSN sends "delete PDP context request" due to receiving a RADIUS Disconnect-Request message.

abnormal-release-cause: This keyword controls the inclusion of abnormal bearer termination information in diagnostics field of SGW-CDR. Note that the CLI command "**gtpp attribute diagnostics**" will disable **abnormal-release-cause** and enable the **diagnostics** field. The **no gtpp attribute diagnostics** command will disable both **abnormal-release-cause** and **diagnostics** field.

Important The Abnormal Bearer Termination feature is currently applicable only to custom34 and custom35 GTPP dictionaries. That is, the bearer termination cause is populated in SGW-CDR for custom34 and custom35 dictionaries, and PGW-CDRs for custom35 GTPP dictionary when the cause for record closing is "Abnormal Release".

direct-tunnel

Default: Disabled

Includes the Direct Tunnel field in PGW-CDR/eG-CDRs.

This keyword is applicable for GGSN, P-GW and S-GW only.

duration-ms

Specifies that the information contained in the mandatory Duration field be reported in milliseconds instead of seconds (as the standards require). Default: Disabled

dynamic-flag

Default: Enabled

This keyword controls the inclusion of the optional field "Dynamic Flag" in the x-CDRs.

dynamic-flag-extension

Default: Enabled

This keyword controls the inclusion of the optional field "Dynamic Address Flag Extension" in the x-CDRs.

This field is seen in the CDR when the IPv4 address is dynamically assigned for a dual PDP context. This extension field is required in the 3GPP Release 10 compliant CDRs so that the Dual Stack Bearer support is available.

extended-bitrate

Default: Disabled

This keyword controls the inclusion of extended bit-rate information in P-GW CDRs when the APN-AMBR, MBR, or GBR is greater than 4.2 Gbps.

furnish-charging-information

Default: Disabled

This keyword controls the inclusion of the optional field "pSFurnishChargingInformation" in the eG-CDRs and PGW-CDRs.

Important The Furnish Charging Information (FCI) feature is applicable to all GTPP dictionaries compliant to 3GPP Rel.7 and 3GPP Rel.8 except custom43 dictionary. This keyword option will be available only if a valid license is installed. For more information, contact your Cisco account representative.

PGW-CDR and eG-CDR will contain FCI only if it is enabled at command level, i.e. using the **gtpp attribute furnish-charging-information** command in GTPP Server Group Configuration mode.

Whenever FCI changes, a new Free-Format-Data (FFD) value is either appended to existing FFD or overwritten on the existing FDD depending on Append-Free-Format-Data (AFFD) flag. CDR is not generated upon FCI change.

FCI is supported in main CDR as well as in LOSDV. Whenever a trigger (volume, time, RAT, etc.) happens current available FFD at command level is added to the main body of the CDR. The same FFD at command level is added to the main body of the next CDRs until it is not appended or overwritten by next Credit-Control-Answer message at command level.

In the case of custom43 dictionary, the FCI implementation will be as follows:

- Whenever FCI changes PGW-CDR will generate CDR i.e close old bucket and will have old FCI details in the generated CDR.
- Translation for the PS-Free-Format-Data in CDR will be conversion of hexadecimal values in ASCII format (for numbers 0 to 9) to decimal values as integers.
- PS-Append-Free-Format-Data always OVERWRITE.

imei

Default: Disabled

For SGSN: includes the IMEI value in the S-CDR.

For GGSN: includes the IMEISV value in the G-CDR.

imsi-unauthenticated-flag

Default: Enabled

This keyword controls the inclusion of the optional field "IMSI Unauthenticated Flag" in the x-CDRs.

When the served IMSI is not authenticated, this field "IMSI Unauthenticated Flag" if configured, will be present in the P-GW CDR record for custom35 dictionary. This field is added per 3GPP TS 32.298 v10.7.

lapi

Default: Disabled

Includes the Low Access Priority Indicator (LAPI) field in the CDRs. This field is required to support MTC feature.

When UE indicates low priority connection, then the "lowPriorityIndicator" attribute will be included in the CDR.

last-ms-timezone

Sets the "Last MS-Timezone" in the CDR field. This option would be disabled when the default option is used.

last-uli

Sets the "Last ULI" in the CDR field. This option would be disabled when the default option is used.

local-record-sequence-number

Default: Disabled

This keyword provides both the local record sequence number and the Node ID. In the x-CDRs, this field indicates the number of CDRs generated by the node and is unique within the session manager.

The Node ID field is included in the x-CDR for any of several reasons, such as when PDP contexts are released or if partial-CDR is generated based on configuration. The field will consist of a AAA Manager identifier automatically appended to the name of the SGSN or GGSN service.

The name of the SGSN or GGSN service may be truncated, because the maximum length of the Node ID field is 20 bytes. Since each AAA Manager generates CDRs independently, this allows the Local Record Sequence Number and Node ID fields to uniquely identify a CDR.

Important If the **gtpp single-source centralized-lrsn** is configured, the 'Node-ID' field consists of only the specified NodeID-suffix. If NodeID-suffix is not configured, GTPP group name is used. For default GTPP groups, GTPP context-name is used. If the **gtpp single-source centralized-lrsn** is not configured, then node-id format for CDRs generated by Sessmgr is as follows: <1-byte Sessmgr restartvalue><3-byte Sessmgr instance number> <node-id-suffix>. If the **gtpp single-source centralized-lrsn** is not configured, then node-id format for CDRs generated by ACSmgr is as follows: <1-byte ACSmgr restart-value> <3-byte ACSmgr instance number> <Active charging service-name>.

losdv

Default: Enabled

This keyword controls the inclusion of the optional field "List of Service Data" in the x-CDRs.

ms-timezone

Default: Enabled

This keyword controls the inclusion of the optional field "MS-Timezone" in the x-CDRs.

msisdn

Default: Enabled

This keyword controls the inclusion of the optional field "MSISDN" in the x-CDRs.

node-id

Default: Enabled

This keyword controls the inclusion of the optional field "Node ID" in the x-CDRs.

node-id-suffix *STRING*

Default: Disabled

Specifies the configured Node-ID-Suffix to use in the NodeID field of GTPP CDRs as an alphanumeric string of 1 through 16 characters. Each Session Manager task generates a unique NodeID string per GTPP context.

Important The NodeID field is a printable string of the *ndddSTRING* format: *n*: The first digit is the Sessmgr restart counter having a value between 0 and 7. *ddd*: The number of sessmgr instances. Uses the specified NodeID-suffix in all CDRs. The "Node-ID" field consists of sessMgr Recovery counter (1 digit) *n* + AAA Manager identifier (3 digits) *ddd* + the configured Node-Id-suffix (1 to 16 characters) *STRING*. If the centralized LRSN feature is enabled, the "Node-ID" field will consist of only the specified NodeID-suffix (NodeID-prefix is not included). If this option is not configured, then GTPP group name will be used instead (For default GTPP groups, context-name will be used).

Important If this **node-id-suffix** is not configured, the GGSN uses the GTPP context name as the Node-id-suffix (truncated to 16 characters) and the SGSN uses the GTPP group named as the node-id-suffix.

packet-count

Default: Disabled

Specifying this option includes the optional field "datapacketFBCUplink" and "datapacketFBCDownlink" in the CDR.

Important This keyword is applicable to custom24 GTPP dictionary.

pco-nai

Specifying this option includes optional field "PCO- Network Access Identifier" in the P-GW CDR.

Important This keyword is applicable to custom44 GTPP dictionary.

pdn-connection-id

Default: Enabled

This keyword controls the inclusion of the optional field "PDN Connection ID" in the x-CDRs.

pdp-address

Default: Enabled

This keyword controls the inclusion of the optional field "PDP Address" in the x-CDRs.

pdp-type

Default: Enabled

This keyword controls the inclusion of the optional field "PDP Type" in the x-CDRs.

pgw-ipv6-addr

Default: Disabled

Specifying this option allows to configure the P-GW IPv6 address.

Important This attribute can be controllably configured in custom24 and custom35 SGW-CDR dictionaries.

pgw-plmn-id

Default: Enabled

This keyword controls the inclusion of the optional field "PGW PLMN-ID" in the x-CDRs.

plmn-id [unknown-use]

Default: Enabled

For SGSN, reports the SGSN PLMN Identifier value (the RAI) in the S-CDR provided if the dictionary supports it.

For GGSN, reports the SGSN PLMN Identifier value (the RAI) in the G-CDR if it was originally provided by the SGSN in the GTP create PDP context request. It is omitted if the SGSN does not supply one.

Normally when SGSN PLMN-id information is not available, the attribute sgsnPLMNIdentifier is not included in the CDR. This keyword enables the inclusion of the sgsnPLMNIdentifier with a specific value when the SGSN PLMN-id is not available.

unknown-use *hex_num*: is aa hexadecimal number from 0x0 through 0xFFFFFF that identifies a foreign SGSN that has not provided a PLMN-id. For GGSN only.

qos max-length

Default: Disabled

Specifying this option will change the parameters related to QoS sent in S-CDR and SaMOG CDR. The **max-length** option is used to modify the length of QoS sent in CDR. The **qos_value** must be an integer from 4 through 24.

This feature is introduced to support Rel.7+ QoS formats.

rat

Default: Enabled

For SGSN: includes the RAT (identifies the radio access technology type) value in the S-CDR.

For GGSN: includes the RAT (identifies the radio access technology type) value in the G-CDR.

recordextension

Default: Disabled

This keyword controls the inclusion of the optional field "RecordExtension" in the x-CDRs.

record-extensions rat

Default: Disabled

Enables network operators and/or manufacturers to add their own recommended extensions to the CDRs according to the standard record definitions from 3GPP TS 32.298 Release 7 or higher.

record-type { sgsnpdprecord | sgwrecord }

Important This keyword is available only when the SaMOG Mixed Mode license (supporting both 3G and 4G) is configured.

Default: sgwrecord

Specifies the SaMOG CDR type to use.

For an SaMOG 3G license, this keyword will not be available. However, sgsnpdprecord type will be used as the default record type.

served-mnai

Default: Disabled

This keyword controls the inclusion of the optional field "Served MNAI" in the x-CDRs.

served-pdp-pdn-address-extension

Default: Disabled

In support of IPv4v6 dual-stack PDP address types, this keyword causes the service to include IPv4v6 address information in the CDR. The IPv4 address goes in the Served PDP PDN Address Extension field and the IPv6 address goes in the Served PDP Address or Served PDP PDN Address field.

Important This attribute will not be displayed if the GTPP dictionary is set to custom34.

Note For SGSN, on enabling **served-pdp-pdn-address-extension** all custom S-CDR dictionaries will support the CDR field "Served PDP/ PDN Address extension" except for the following dictionaries:

- custom17
- custom18
- custom23
- custom42
- custom41

served-pdp-pdn-address-prefix-length

Default: Enabled

In support of IPv6 prefix delegation, this keyword causes the service to include this field "Served PDP PDN Address" in the x-CDRs.

If this field is configured, the servedPDPPDNAddress field will support reporting the IPv6 prefix length as outlined in 3GPP 32.298. The prefix length will only be reported if:

- it is configured
- it is not the default length of 64

- it is an IPv6 or IPv4v6 call

af-record-info

Defaulr: Disabled

Enable attribute to include the**AF Charging Identifier** keyword and associated flow identifiers generated by the AF and received by the P-GW over Gx interfaces. This keyword is applicable to custom24 GTPP dictionary.

sgsn-change

Default: Enabled

This keyword is specific to SGSN and is license restricted.

This keyword controls the inclusion of the S-CDR attribute "SGSN Change" in the S-CDRs. It is enabled by default and the attribute "SGSN Change" is included in the S-CDRs by default.

Note For SGSN specific custom33 dictionary, it is recommended to disable this keyword before an upgrade to prevent billing issues.

sgw-ipv6-addr

Default: Disabled

Specifying this option allows to configure the S-GW IPv6 address.

Important This attribute can be controllably configured in custom24 and custom35 SGW-CDR dictionaries.

sms { destination-number | recording-entity | service-centre }

This keyword is specific to the SGSN.

Entering this keyword causes the inclusion of an SMS-related field in the SMS-MO-CDR or SMS-MT-CDR.

destination-number: Includes the "destinationNumber" field in the SMS-MO-CDR or SMS-MT-CDR.

recording-entity: Includes the "recordingEntity" field in the SMS-MO-CDR or SMS-MT-CDR.

service-centre: Includes the "serviceCentre" field in the SMS-MO-CDR or SMS-MT-CDR.

sna-ipv6-addr

Default: Disabled

Specifying this option allows to configure the Serving Node IPv6 Address (SNAv6).

Important This attribute can be controllably configured in custom24 and custom35 SGW-CDR dictionaries.

sponsor-id

Default: Disabled

Includes the Sponsor ID and Application-Service-Provider-Identity fields in PGW-CDR.

Note that the "Sponsor ID" and "Application-Service-Provider-Identity" attributes will be included in PGW-CDR if the PCEF supports Sponsored Data Connectivity feature or the required reporting level is sponsored connectivity level as described in 3GPP TS 29.212.

This feature is implemented to be in compliance with Release 11 3GPP specification for CDRs. So, this behavior is applicable to all GTPP dictionaries that are Release 11 compliant, i.e. custom35.

start-time

Default: Enabled

This keyword controls the inclusion of the optional field "Start-Time" in the x-CDRs.

stop-time

Default: Enabled

This keyword controls the inclusion of the optional field "Stop-Time" in the x-CDRs.

twanuli

Default: Disabled

This keyword controls the inclusion of the optional field "TWAN User Location Information" in the CDRs.

ue-tun-ip-port

Default: Disabled

In 21.9.5 and later releases, this keyword is introduced for P-GW to include new parameter in CDR generated for S2b (VoWifi) call/subscriber.

Important This keyword is applicable to custom24 GTPP dictionary.

uwanuli

Default: Disabled

This keyword controls the inclusion of the optional field "UWAN User Location Information" in the CDRs.

uli

Default: Enabled

This keyword controls the inclusion of the optional field "User Location Information" in the x-CDRs.

user-csg-information

Default: Disabled

This keyword controls the inclusion of the optional field "User CSG Information" in the x-CDRs.

Important Currently, UCI values are only supported for SGW-CDRs.

This attribute will not be displayed if the GTPP dictionary is set to custom11, custom34, or custom35.

+

Indicates that this command can be entered multiple times to configure multiple attributes.

Usage Guidelines

This command dictates some of the optional information fields that should be reported in CDRs generated by the GGSN. In addition, it controls how the information for some of the mandatory fields are reported.

Fields described as optional by the standards but not listed above will always be present in the CDRs, except for Record Extensions (which will never be present).

Example

The following command disables the inclusion of the field "SGSN Change" in the S-CDR:

```
no gtpp attribute sgsn-change
```

Example

The following command dictates that the time provided in the Duration field of the CDR is reported in milliseconds:

```
gtpp attribute duration-ms
```

gtpp attribute secondary-rat-usage

Enables or disables secondary RAT Usage report.

Product

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp attribute secondary-rat-usage
```

```
default gtpp attribute secondary-rat-usage
no gtpp attribute secondary-rat-usage
```

default

Sends an optional attribute Secondary RAT usage records by default.

gtpp attribute secondary-rat-usage

Sends an optional attribute Secondary RAT usage records.

no

Does not send the optional attribute Secondary RAT usage records.

Usage Guidelines

Use the following command to enable or disable secondary RAT Usage report.

Example

The following command enables the secondary RAT usage report.

```
gtpp attribute secondary-rat-usage
```

gtpp charging-agent

Configures the IP address and port of the system interface within the current context used to communicate with the CGF or the GSS.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp charging-agent address ip_address [ port port ]
no gtpp charging-agent
```

no

Removes a previously configured charging agent address.

address *ip_address*

Specifies the IP address of the interface configured within the current context that is used to transmit G-CDR records to the CGF or the GSS.

ip_address is expressed in IPv4 dotted-decimal notation.

port *port*

Specifies the Charging Agent UDP port as an integer from 1 through 65535. If the port is not defined, the default port number 49999 will be used.

Important Configuring GTPP charging-agent on port 3386 may interfere with ggsn-service configured with the same ip address.

Usage Guidelines

This command can be used to establish a UDP interface to connect to the GSS or this command can establish a Ga interface to connect to the CFG. These interfaces must exist in the same context in which GTPP functionality is configured (refer to the **gtpp** commands in this chapter).

This command instructs the system as to what interface to use. The IP address supplied is also the address by which the GGSN/SGSN is known to the CGF or the GSS. Therefore, the IP address used for the Ga or UDP interface could be identical to one bound to a GGSN/SGSN service (a Gn interface).

If no GGSN/SGSN services are configured in the same context as the Ga/UDP interface, the address configured by this command is used to receive unsolicited GTPP packets.

Example

The following command configures the system to use the interface with an IP address of 209.165.200.234 as the accounting interface with port *20000* to the CGF:

```
gtpp charging-agent address 209.165.200.234
gtpp charging-agent address 209.165.200.234 port 20000
```

gtpp data-record-format-version

Encodes the data record format version. The version indicates the 3GPP release version.

Product

Important In releases prior to 18, this is applicable only to custom24 and custom35 GTPP dictionaries for S-GW. In 18 and later releases, this command is applicable to all GTPP dictionaries for all products including GGSN, P-GW, S-GW and SGSN.

GGSN

P-GW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration

configure > context *context_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ctx)#`

Syntax Description

`[ no ] gtpp data-record-format-version` *`string`*

no

Specifies that the default data record format will be encoded based on the GTPP dictionary being used.

gtpp data-record-format-version *string*

Specifies the 3GPP release version to be encoded. *string* must be in the format a.b (for example 10.10). The entry can be from 1 to 1023 alphanumeric characters.

Usage Guidelines

Use this command to support a configurable multiple data record format version *only for custom24 and custom35 dictionaries* in releases prior to 18, and all GTPP dictionaries in release 18 and beyond. The entry can be from 1 to 1023 alphanumeric characters. This is useful when the value of the data record format version is taken according to the dictionary being used. If only the default configuration is used, a version mismatch causes the GTPP request to be discarded while using R10 attributes.

Example

This example configures the data record format version *10.10* to be encoded.

```
gtpp data-record-format-version 10.10
```

gtpp cdr-duration-ceiling

Configure SGWCDR duration calculation method to ceiling method.

Product

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > context *context_name* **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

```
gtpp cdr-duration-ceiling
default gtpp cdr-duration-ceiling
no gtpp cdr-duration-ceiling
```

default

Command is disabled by default. Round off method will get applied.

gtpp cdr-duration-ceiling

Allows calculation of SGWCDR close timestamp using the ceiling method.

no

Allows the calculation of SGWCDR close timestamp using the round-off method.

Usage Guidelines

Use this command to avoid “duration 0” SGWCDRs by calculating the close timestamp with the ceiling method. As the CLI is disabled by default the close timestamp gets calculated using the round-off method.

Example

The following configuration is used to calculate SGWCDR close timestamp with the ceiling method.

```
gtpp cdr-duration-ceiling
```

gtpp data-request sequence-numbers

Configures the range of sequence numbers to be used in the GTPP data record transfer record (DRT). Use this command to set the start value for the sequence number.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp data-request sequence-numbers start { 0 | 1 }
default gtpp data-request sequence-numbers start
```

default

Default is 0 (zero).

start { 0 | 1 }

Specifies the value of the start sequence number for the GTPP Data Record Transfer Request. Default: 0

- **0**: Designates the start sequence number as 0.
- **1**: Designates the start sequence number as 1.

Usage Guidelines

When the GGSN/P-GW/SGSN is configured to send GTPP echo request packets, the SGSN always uses 0 as the sequence number in those packets. Re-using 0 as a sequence number in the DRT packets is allowed by the 3GPP standards; however, this CLI command ensures the possibility of inter-operating with CGFs that can not properly handle the re-use of sequence number 0 in the echo request packets.

Example

The following command sets the sequence to start at 1.

```
gtpp data-request sequence-numbers start 1
```

gtpp deadtime

Configures the amount of time the GGSN/SGSN waits before attempting to communicate with a CGF that was previously marked as unreachable (non-responsive).

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp deadtime time
default gtpp deadtime
```

default

Resets the deadtime to the default of 120 seconds.

time

Specifies the amount of time (in seconds) that must elapse before the system attempts to communicate with a CGF that was previously unreachable.

time is an integer from 1 to 65535. Default: 120

Usage Guidelines

If the system is unable to communicate with a configured CGF, after a pre-configured number of failures the system marks the CGF as being down.

This command specifies the amount of time that the system waits prior to attempting to communicate with the downed CGF.

Refer to the **gtpp detect-dead-server** and **gtpp max-retries** commands for additional information on the process the system uses to mark a CGF as down.

Example

The following command configures the system to wait 60 seconds before attempting to re-communicate with a CGF that was marked as down:

```
gtpp deadtime 60
```

gtpp dead-server suppress-cdrs

Configures the action the GGSN or the SGSN will take on CDRs generated during a communication failure between the GGSN or the SGSN and the GTPP servers.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
[ no | default ] gtpp dead-server suppress-cdrs
```

no

Removes the suppression instruction from the configuration and sets the CDR suppression mode as disabled.

default

Resets to the default mode: disable suppression of CDRs when GTPP server detected as "dead" or unreachable.

Usage Guidelines

For the GGSN/P-GW: This command works in conjunction with the **gtpp detect-dead-server** to set an action when a communication failure is detected between the GGSN and a configured GTPP server. It disables the archiving of CDRs on the system when the GTPP server is unreachable or dead.

For the GGSN, P-GW, and SGSN: During a communication or server failure, the GGSN, P-GW, or SGSN typically retains the GTPP requests until the system buffer runs out of resources. This command enables suppression of the CDRs, so with this command the GGSN, P-GW, or the SGSN will start purging all CDRs associated with this GTPP group as soon as the GGSN/P-GW/SGSN detects that the GTPP server is down or that a communication failure has occurred. The CDRs generated, for the period while the server is down/unreachable, will also be purged.

Example

The following command configures the system to start purging CDRs when a communication failure with a server is detected:

```
gtpp dead-server suppress-cdrs
```

gtpp detect-dead-server

Configures the number of consecutive communication failures that could occur before the system marks a CGF as "dead" (unreachable).

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

gtpp detect-dead-server consecutive-failures *max_number*
default gtpp detect-dead-server consecutive-failures

default

Resets the system to the default number of consecutive failures.

consecutive-failures ***max_number***

Default: 0

Specifies the number of failures that could occur before marking a CGF as down as an integer from 0 through 1000. If 0 (zero) is the value entered, the system will mark the CGF as dead after a single instance of **max-retries** has been attempted with no success, regardless of configured **deadtime**.

Usage Guidelines

This command works in conjunction with the **gtpp max-retries** parameter to set a limit to the number of communication failures that can occur with a configured CGF.

The **gtpp max-retries** parameter limits the number of attempts to communicate with a CGF. Once that limit is reached, the system treats it as a single failure. The **gtpp detect-dead-server** parameter limits the number of consecutive failures that can occur before the system marks the CGF as down and communicate with the CGF of next highest priority.

If all of the configured CGFs are down, the system ignores the detect-dead-server configuration and attempt to communicate with highest priority CGF again.

If the system receives a GTPP Node Alive Request, Echo Request, or Echo Response message from a CGF that was previously marked as down, the system immediately treats it as being active.

Refer to the **gtpp max-retries** command for additional information.

Example

The following command configures the system to allow 8 consecutive communication failures with a CGF before it marks it as down:

```
gtpp detect-dead-server consecutive-failures 8
```

gtpp dictionary

Designates specific dictionary used by GTPP for specific context.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp dictionary { custom1 | custom10 | custom11 | custom12 | custom13 |
custom14 | custom15 | custom16 | custom17 | custom18 | custom19 | custom2
 | custom20 | custom21 | custom22 | custom23 | custom24 | custom25 |
custom26 | custom27 | custom28 | custom29 | custom3 | custom30 | custom31
 | custom32 | custom33 | custom34 | custom35 | custom36 | custom37 |
custom38 | custom39 | custom4 | custom40 | custom41 | custom42 | custom43
 | custom44 | custom45 | custom46 | custom47 | custom48 | custom49 |
custom5 | custom50 | custom51 | custom52 | custom53 | custom54 | custom55
 | custom56 | custom57 | custom58 | custom59 | custom6 | custom60 | custom7
 | custom8 | custom9 | standard }
default gtpp dictionary
```

default

Configures the default dictionary.

custom1

Custom-defined dictionary. It conforms to TS 32.015 v 3.6.0 for R99. It supports the encoding of IP addresses in text format for G-CDRs.

custom2

Custom-defined dictionary.

custom3

Custom-defined dictionary. It conforms to TS 32.015 v 3.6.0 for R99 but it does support the encoding of IP addresses in binary format for CDRs.

custom4

Custom-defined dictionary. It conforms to TS 32.015 v 3.6.0 for R99 except that:

- the Data Record Format Version information element contains 0x1307 instead of 0x1308
- "QoSRequested" is not present in the LoTV containers
- "QoSnegotiated" is added only for the first container and the container after a QoS change

custom5 ... custom20

Custom-defined dictionaries.

custom21 ... custom25

Custom-defined dictionaries for GGSN only.

custom26

Custom-defined dictionary for customization of G-CDR records for GGSN only. This is compliant to 3GPP TS 32.298 (R6 v 6.5.0) for proprietary fields and encoding.

custom27

Custom-defined dictionary for customization of S-CDR records for SGSN only. This is compliant to 3GPP TS 32.298 (R6 v 6.6.0) for proprietary fields and encoding.

custom28 ... custom30

Custom-defined dictionaries for GGSN only.

custom31 ... custom40

Custom-defined dictionaries based on 3GPP 32.298 v6.4.1 for SGSN only.

- **custom31:** Custom-defined dictionary for S-CDR encoding. Includes a field appended for PLMN-ID.
- **custom33:** Custom-defined dictionary for S-CDR encoding. Includes a field appended for PLMN-ID and does not support diagnostic or SGSN-change fields.

standard

Default: Enabled

A dictionary conforming to TS 32.215 v 4.6.0 for R4 (and also R5 - extended QoS format).

Usage Guidelines

Use this command to designate specific dictionary used by GTPP for specific context.

Important Note that the following warning message will be displayed whenever an existing GTPP dictionary is being changed or a new GTPP dictionary is configured irrespective of whether or not the calls are active on the system.

Warning: It is not recommended to change the dictionary when the system has active calls.

Are you sure? [Yes|No]: n

Important This change will require user's input on the CLI console for GTPP dictionary configuration / change.

Example

The following command configures the system to use custom3 dictionary to encode IP address in Binary format in G-CDRs:

```
gtpp dictionary custom3
```

gtpp duplicate-hold-time

Configures the number of minutes to hold onto CDRs that are possibly duplicates while waiting for the primary CGF to come back up.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp duplicate-hold-time minutes minutes
default gtpp duplicate-hold-time
```

default

Resets the configuration to the default value of 60 minutes for the duplicate hold time.

minutes

When the primary CGF is down, the number of minutes to hold onto CDRs that may be duplicates. *minutes* must be an integer from 1 to 10080. Default is 60.

Usage Guidelines

Use this command to configure how long to hold onto CDRs, that are possibly duplicates, while waiting for the primary CGF to come back up. If the GGSN determines that the primary CGF is down, CDRs that were sent to the primary CGF, but not acknowledged, are sent by the GGSN to the secondary CGF as "possibly duplicates". When the primary CGF comes back up, the GGSN uses GTPP to determine whether the possibly duplicate CDRs were received by the primary CGF. Then the secondary CGF is told whether to release or cancel those CDRs. This command configures how long the system should wait for the primary CGF to come back up. As soon as the configured time expires, the secondary CGF is told to release all of the possibly duplicate CDRs.

Example

Use the following command to set the amount of time to hold onto CDRs to 2 hours (120 minutes):

```
gtpp duplicate-hold-time minutes 120
```

gtpp echo-interval

Configures the frequency at which the system sends GTPP echo packets to configured CGFs.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

gtpp echo-interval *time*
{ default | no } gtpp echo-interval

default

Resets the configuration to the default echo-interval of 60 seconds.

no

Disables the use of the echo protocol except for the scenarios described in the Usage section for this command.

time

Specifies the number of seconds for sending GTPP echo packets as an integer from 60 to 3600. Default: 60.

Usage Guidelines

The GTPP echo protocol is used by the system to ensure that it can communicate with configured CGFs. The system initiates this protocol for each of the following scenarios:

- Upon system boot
- Upon the configuration of a new CGF server on the system using the **gtpp server** command as described in this chapter
- Upon the execution of the **gtpp test accounting** command as described in the Exec Mode Commands chapter of this reference
- Upon the execution of the **gtpp sequence-numbers private-extensions** command as described in this chapter

The echo-interval command is used in conjunction with the **gtpp max-retries** and **gtpp timeout** commands as described in this chapter.

In addition to receiving an echo response for this echo protocol, if we receive a GTPP Node Alive Request message or a GTPP Echo Request message from a presumed dead CGF server, we will immediately assume the server is active again.

The alive/dead status of the CGFs is used by the AAA Managers to affect the sending of CDRs to the CGFs. If all CGFs are dead, the AAA Managers will still send CDRs, (refer to the **gtpp deadtime** command), albeit at a slower rate than if a CGF were alive. Also, AAA Managers independently determine if CGFs are alive/dead.

Example

The following command configures an echo interval of 120 seconds:

```
gtpp echo-interval 120
```

gtpp egcdr

Configures the eG-CDR and P-CDR (P-GW CDR) parameters and triggers.

Product

GGSN

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp egcdr { closure-reason admin-disconnect [ management-intervention |
 normal-release ] | final-record [ [ include-content-ids { all |
only-with-traffic } ] [ closing-cause { same-in-all-partials | unique }
] ] | losdv-max-containers max_losdv_containers | lotdv-max-containers
max_lotdv_containers | dynamic-path ddl-path | rulebase-max-length
rulebase_name_max_length | service-data-flow threshold { interval interval |
volume { downlink bytes [ uplink bytes ] | total bytes | uplink bytes [ downlink
 bytes ] } } | service-idle-timeout { 0 | service_idle_timeout } }
default gtpp egcdr { closure-reason admin-disconnect | dynamic-path |
final-record include-content-ids only-with-traffic closing-cause
same-in-all-partials | losdv-max-containers | lotdv-max-containers |
service-idle-timeout 0 }
no gtpp egcdr { dynamic-path | rulebase-max-length | service-data-flow
threshold { interval | volume { downlink [ uplink ] | total | uplink [
downlink ] } } }
```

closure-reason admin-disconnect [management-intervention | normal-release]

Controls the configuration of "causeForRecordClosing" in PGW-CDR when a call is cleared from the chassis.

Releases prior to 14.1, when a call is cleared from the chassis the field "causeForRecordClosing" in a PGW-CDR shows "Normal Release". In 15.0 and later releases, the behavior has changed to comply with the 3GPP specifications. That is, the default "causeForRecordClosing" in PGW-CDR will be "Management Intervention".

Important This behavioral change is limited to PGW-CDR Release 8 dictionaries only.

closing-reason: Configures the record closing reason for PGW-CDR.

- **management-intervention**: Specifies to send Management-Intervention as causeForRecordClosing in PGW-CDRs. By default, Management-Intervention will be sent as the record closure reason for PGW-CDRs.
- **normal-release**: Specifies to send Normal Release as causeForRecordClosing in PGW-CDRs.

final-record [[include-content-ids { all | only-with-traffic }] [closing-cause { same-in-all-partials | unique }]]

Enables configuration of the final eG-CDR/P-CDR.

- **include-content-ids**: Controls which content-ids are being included in the final eG-CDR/P-CDR.
  - **all**: Specifies that all content-ids be included in the final eG-CDR/P-CDR.
  - **only-with-traffic**: Specifies that only content-ids with traffic be included in the final eG-CDR/P-CDRs.
- **closing-cause**: Configures closing cause for the final eG-CDR/P-CDR.
  - **same-in-all-partials**: Specifies that the same closing cause is to be included for multiple final eG-CDR/P-CDRs.
  - **unique**: Specifies that the closing cause for final eG-CDR/P-CDRs is to be unique.

losdv-max-containers *max_losdv_containers*

Specifies the maximum number of List of Service Data Volume (LoSDV) containers in one eG-CDR/P-CDR.

max_losdv_containers must be an integer from 1 through 255.

Default: 10

lotdv-max-containers *max_lotdv_containers*

Specifies the maximum number of List of Traffic Data Volume (LoTDV) containers in one eG-CDR/P-CDR.

max_lotdv_containers must be an integer from 1 through 8.

Default: 8

dynamic-path *ddl-path*

This keyword activates a new and extensible framework to enable field defined (customer created) eGCDR/PGW-CDR generation. This option enables the user to load the customized or modified dictionary. The dictionary configured through this CLI command takes precedence over existing the **gtpp dictionary** CLI command.

This new framework is implemented to define a GTPP dictionary in a structured format using a "Dictionary Definition Language (DDL)". Using this language, customers can clearly define fields, triggers and behaviors applicable for a particular GTPP dictionary.

DDL file will be parsed at compilation time and metadata will be populated to generate eGCDR and PGW-CDR. This metadata makes the new framework more modular and maintainable. This will help in faster turnaround time in supporting any new enhancements.

When customer wants to add/modify/remove a field, this information has to be updated in DDL. The DDL file is processed dynamically and the field reflects in CDR. This framework works only for eGCDR and PGW-CDR.

ddl-path: Specifies the path of dictionary DDL. The path must be a string of size 0 through 127. This is to support field-loadable ddls. The DDL file will be parsed to populate metadata required to generate eGCDR/PGW-CDR.

Important It is not recommended to enable **gtpp egcdr dynamic-path** when there are active calls.

In this release, both current and new framework are functional to enable field defined (customer created) eGCDR/PGW-CDR generation. By default, the new framework is disabled.

rulebase-max-length *rulebase_name_max_length*

Specifies the maximum character length of charging rulebase name in LOSDVs of eG- CDR/P-GW-CDR.

rulebase_name_max_length must be an integer from 0 through 63. Zero (0) means the rulebase name is added as-is.

Default: None. That is, full (un-truncated) charging rulebase name will go in LOSDVs of eG-CDR/P-GW-CDR.

service-data-flow threshold { interval *interval* | volume { downlink *bytes* [uplink *bytes*] | total *bytes* | uplink *bytes* [downlink *bytes*] } }

Configures the thresholds for closing a service data flow container within an eG-CDR/P-CDR.

- **interval** *interval*: Specifies the time interval (in seconds) to close the eG-CDR/P-CDR if the minimum time duration thresholds for service data flow containers satisfied in flow-based charging. The interval is an integer from 60 through 40000000. Default: Disabled
- **volume { downlink** *bytes* **[uplink** *bytes* **] | total** *bytes* **| uplink** *bytes* **[downlink** *bytes* **] }**: Specifies the volume octet counts for the generation of the interim eG-CDR/P-CDRs to the service data flow container in FBC.
  - **downlink** *bytes*: Specifies the limit for the number of downlink octets after which the eG-CDR/P-CDR is closed.
  - **total** *bytes*: Specifies the limit for the total number of octets (uplink+downlink) after which the eG-CDR/P-CDR is closed.
  - **uplink** *bytes*: Specifies the limit for the number of uplink octets after which the eG-CDR/P-CDR is closed.
  - *bytes* must be an integer from 10000 through 400000000.

A service data flow container has statistics for an individual content ID. When the threshold is reached, the service data flow container is closed.

In 12.3 and earlier releases, when the CLI command **gtpp egcdr service-data-flow threshold interval** was configured to 'n' seconds, the difference between "timeOfFirstUsage" and "timeOfReport" of LOSDV was always 'n' seconds for the LOSDVs closed due to "service-data-flow" threshold. Here, changeTime of LOSDV was reported incorrectly. It was always timeOfFirstUsage + 'n'. This does not hold true when the traffic for a particular content ID was not continuous.

In StarOS release 14.0 and later, when the command **gtpp egcdr service-data-flow threshold interval** is configured to 'n' seconds, the difference between "timeOfFirstUsage" and "timeOfReport" of LOSDV can be any value between 1 and 'n' seconds depending on the continuity of traffic. If the traffic is not continuous, the difference is less than 'n' seconds. And if the traffic is continuous the difference will be 'n' seconds. When this CLI command is configured in the GTPP Server Group Configuration mode, each LOSDV will be closed at configured regular interval after the arrival of first packet.

Note The **interval** and **volume total** fields are not supported in gtpp group for CUPS. Therefore, configure these fields in the **rulebase**.

service-idle-timeout { 0 | *service_idle_timeout*}

Specifies a time period during which if no data is reported for a service flow, the service container is closed and added to eG-CDR/P-CDR (as part of LOSDV container list) with service condition change as ServiceIdleOut.

0: Specifies there is no service-idle-timeout trigger.

service_idle_timeout is an integer from 10 through 86,400. Default: 0

Usage Guidelines

Use this command to configure individual triggers for eG-CDR/P-CDR generation.

Example

Use the following command to set the maximum number of LoSDV containers to 7:

```
gtpp egcdr losdv-max-containers 7
```

gtpp error-response

Configures the response when the system receives an error response after transmitting a DRT (data record transfer) request.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp error-response { discard-cdr | retry-request }
default gtpp error-response
```

default

Resets the system's configuration to the default value for error-response. Default is retry-request.

discard-cdr

Purges the request upon receipt of an error response and not to retry.

retry-request

Retries sending a DRT after receiving an error response. This is the default behavior.

Usage Guidelines

This command configures the system's response to receiving an error message after sending a DRT request.

Example

```
gtpp error-response discard-cdr
```

gtpp limit-secondary-rat-usage

Configures maximum number of Secondary RAT usage record entries in the P-GW and S-GW CDRs. If the limit is configured with a value more than 32, the partial CDRs get generated with maximum of 32 for S-GW CDR.

Product

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp limit-secondary-RAT-usage usage_limit
default gtpp limit-secondary-RAT-usage
no gtpp limit-secondary-RAT-usage
```

default

Specifies a default value of 32.

gtpp limit-secondary-RAT-usage *usage_limit*

Specifies a maximum number of secondary RAT reports ranging from 1 to 100. Recommended value for S-GW CDR is 32.

For example, if the limit is set to 10, then the CDR is generated once the configured value is reached.

no

Disables the CDR generation with limited number of secondary RAT usage information.

Usage Guidelines

When the secondaryRATusage record reaches a configured maximum number within a CDR, the CDR closure cause occurs and uses **maxChangeCond**. The **gtpp limit-secondary-RAT-usage** CLI command is used to control maximum number of Secondary RAT usage report entries in the P-GW and S-GW CDRs. If the limit is configured with a value more than 32, the partial CDRs get generated with maximum of 32 for S-GW CDR.

Note The existing behaviour of S-GW has a limit of 32 Secondary RAT Usage records.

Example

The following command controls the maximum number of Secondary RAT usage report entries in P-GW and S-GW CDR records.

```
gtpp limit-secondary-RAT-usage 32
```

gtpp max-cdrs

Configures the maximum number of charging data records (CDRs) to be included in a packet.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

```
gtpp max-cdrs max_cdrs [ wait-time wait_time ]
default gtpp max-cdrs
```

default

Sets the default configuration.

max_cdrs

Specifies the maximum number of CDRs to insert in a single packet as an integer from 1 through 255. Default: 1

wait-time*wait_time*

Specifies the number of seconds the GSN waits to send the packet while accumulating CDRs as defined by **max-cdrs**. If the **wait-time** interval expires before **max-cdrs** is reached, this keyword over-rides and the packet is sent. Default: Disabled

wait_time is an integer from 1 through 300.

Important The **wait-time** interval can only be enabled if the value for **max-cdrs** is greater than 1.

Usage Guidelines

The system places CDRs into a packet until either **max-cdrs** is met, **wait-time** times out, or the maximum PDU size, configured by the **gtpp max-pdu-size** command, is met.

The **gtpp max-pdu-size** and the **wait-time** parameters take priority over **max-cdrs**.

Important This command's configuration is ignored if CDRs are stored on an SMC hard disk.

Example

The following command configures the system to place a maximum of 10 CDRs in a single GTPP packet with a wait-time of *30* seconds:

```
gtpp max-cdrs 10 wait-time 30
```

gtpp max-pdu-size

Configures the maximum payload size of a single GTPP packet that could be sent by the system.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp max-pdu-size pdu_size
default gtpp max-pdu-size
```

default

Resets the default **max-pdu-size** of 65400.

pdu_size

Specifies the maximum payload size (in bytes) of the GTPP packet as an integer from 1024 to 65400. The payload includes the CDR and the GTPP header. Default: 65400

Usage Guidelines

The GTPP packet contains headers (layer 2, IP, UDP, and GTPP) followed by the CDR. Each CDR contains one or more volume containers. If a packet containing one CDR exceeds the configured maximum payload size, the system creates and send the packet containing the one CDR regardless.

The larger the packet data unit (PDU) size allowed, the more volume containers that can be fit into the CDR.

The system performs standard IP fragmentation for packets that exceed the system's maximum transmission unit (MTU).

Important The maximum size of an IPv4 PDU (including the IPv4 and subsequent headers) is 65,535. However, a slightly smaller limit is imposed by this command because the system's max-pdu-size doesn't include the IPv4 and UDP headers, and because the system may need to encapsulate GTPP packets in a different/larger IP packet (for sending to a backup device).

Example

The following command configures a maximum PDU size of 2048 octets:

```
gtpp max-pdu-size 2048
```

gtpp max-retries

Configures the maximum number of times the system attempts to communicate with an unresponsive CGF.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

gtpp max-retries *max_attempts*
default gtpp max-retries

default

Resets the maximum number of to the default of 4.

max_attempts

Specifies the number of times the system attempts to communicate with a CGF that is not responding as an integer from 1 to 15. Default: 4

Usage Guidelines

This command works in conjunction with the **gtpp detect-dead-server** and **gtpp timeout** parameters to set a limit to the number of communication failures that can occur with a configured CGF.

When the value specified by this parameter is met, a failure is logged. The **gtpp detect-dead-server** parameter specifies the number of consecutive failures that could occur before the server is marked as down.

In addition, the **gtpp timeout** command controls the amount of time between re-tries.

If the value for the max-retries is met, the system begins storing CDRs in Random Access Memory (RAM). The system allocates memory as a buffer, enough to store one million CDRs for a fully loaded chassis (a maximum of one outstanding CDR per PDP context). Archived CDRs are re-transmitted to the CGF until they are acknowledged or the system's memory buffer is exceeded.

Refer to the **gtpp detect-dead-server** and **gtpp timeout** commands for additional information.

Example

The following command configures the maximum number of re-tries to be 8.

gtpp max-retries 8

gtpp mbms bucket

Configures the traffic data volume (bucket) limit of charging buckets due to QoS changes of tariff time that can occur before a G-MBMS-CDR should be closed.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp mbms buckets number
[ no ] gtpp mbms buckets
```

no

Disables the configured traffic data volume bucket limits trigger for G-MBMS-CDR generation for MBMs user service data.

number

Specifies the number of statistics container changes due to QoS changes or tariff time that can occur before a G-MBMS-CDR should be closed as an integer from 1 through 4. Default: 4

Usage Guidelines

Use this command to configure the traffic data volume (bucket) based G-MBMS-CDR generation triggers for MBMS user data service.

Example

The following command configures the bucket-based trigger to generate G-MBMS-CDRs after changes in *2* container:

```
gtpp mbms buckets 2
```

gtpp mbms interval

Configures the interval duration for interval-based triggers for GTPP MBMS Charging Data Record (G-MBMS-CDR) generation.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp mbms interval duration_sec
no gtpp mbms interval
```

no

Disables the interval-based trigger for G-MBMS-CDR generation for MBMs user service data.

duration_sec

Specifies the normal time duration (in seconds) that must elapse before closing an accounting record provided that any or all of the following conditions occur:

- Downlink traffic volume is reached within the time interval
- Tariff time based trigger occurred within the time interval
- Data volume (up and downlink) bucket trigger occurred within the time interval

duration_sec is an integer from 60 through 40,000,000. Default: Disabled

Usage Guidelines

Use this command to configure the G-MBMS-CDR generation triggers for MBMS user data service.

Example

The following command configures the interval-based trigger to generate G-MBMS-CDRs in every *60* seconds:

```
gtpp mbms interval 60
```

gtpp mbms tariff

Configures the tariff slots for tariff-based triggers for GTPP MBMS Charging Data Record (G-MBMS-CDR) generation.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

gtpp mbms tariff time1 *mins hours* **[time2** *mins hours* **[time3***mins hours* **[time4***mins hours* **]]]**
no gtpp mbms tariff

no

Disables the tariff-based triggers for GTPP MBMS Charging Data Record (G-MBMS-CDR) generation.

tariff time1 *mins hours* [time2*mins hours* [time3*mins hours* [time4*mins hours*]]]

Specifies time-of-day time values to close the current statistics container (but not necessarily the accounting record). Default: Disabled

Important The system assumes that the billing system uses the day/date to determine if the statistics container represents an actual tariff period.

For each of the different tariff times, the following parameters must be configured:

- *mins*: Minute of the hour, an integer from 0 through 59.
- *hours*: Hour of the day, an integer from 0 through 23.

Usage Guidelines

Use this command to configure the tariff-time-based triggers for G-MBMS-CDR generation in MBMS user data service.

Example

The following command configures the tariff-time-based trigger to generate G-MBMS-CDRs every day at 11 hours and 30 min:

```
gtpp mbms tariff time1 30 11
```

gtpp mbms volume

Configures the download traffic data volume based trigger for GTPP MBMS Charging Data Record (G-MBMS-CDR) generation.

Product

GGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > context *context_name* **> gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp mbms volume download_bytes
no gtpp mbms volume
```

no

Disables the configured download traffic data volume based trigger for G-MBMS-CDR generation for MBMs user service data.

volume *download_bytes*

Specifies the threshold of downlink data volumes that (in bytes) must be met before a G-MBMS-CDR should be closed as an integer from 100000 through 4000000000. Default: Disabled

Usage Guidelines

Use this command to configure the traffic data volume (download) based G-MBMS-CDR generation triggers for MBMS user data service.

Example

The following command configures the traffic data volume (download) limit to trigger to generate G-MBMS-CDRs after reaching 150,000 octets:

```
gtpp mbms volume download_bytes
```

gtpp prioritize-imei-over-mac-address

Set preference for IMEI over MAC address and encode IMEI in the servedIMEISV field of the CDR.

Product

CUPS

P-GW

SAEGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
[ default | no ] gtpp prioritize-imei-over-mac-address
```

default | no

Specify to prioritize MAC over IMEI and encode it in servedIMEISV field. This is the existing behavior.

If MAC is not available, then IMEI is encoded in the servedIMEISV field.

Usage Guidelines

Use this command to prioritize IMEI over MAC and encode it in the servedIMEISV field. If IMEI is not available, the servedIMEISV field will not be present in the CDR.

gtpp redirection-allowed

Configures the system to allow/disallow the redirection of CDRs when the primary CGF is unavailable.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

`[ default | no ] gtpp redirection-allowed`

default

Resets the system to allow redirection of CDRs.

no

Removes the redirection definition from the configuration.

Usage Guidelines

This command allows operators to better handle erratic network links, without having to remove the configuration of the backup server(s) via the **no gtpp server** command.

This functionality is enabled by default.

If the **no gtpp redirection-allowed** command is executed, the system only sends CDRs to the primary CGF. If that CGF goes down, the system will buffer the CDRs in memory until the CGF comes back or until the system runs out of buffer memory. In addition, if the primary CGF announces its intent to go down (with a GTPP Redirection Request message), the system responds to that request with an error response.

Example

The following command configures the system to allow the redirection of CDRs when the primary CGF is unavailable:

`default gtpp redirection-allowed`

gtpp redirection-disallowed

This command has been obsoleted and is replaced by the **gtpp redirection-allowed** command.

gtpp server

Configures the charging gateway function (CGF) accounting server(s) with in GTPP server group that the system is to communicate with.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp server ip_address [ max msgs ] [ priority priority ] [ udp-port port ] [
 node-alive { enable | disable } ] [ -noconfirm ]
no gtpp server ip_address [ udp-port  port ]
```

no

Deletes a previously configured CGF.

ip_address

Specifies the IP address of the CGF in IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation.

max *msgs*

Specifies the maximum number of outstanding or unacknowledged GTPP packets (from any one AAA Manager task) allowed for this CGF before the system begins buffering the packets.

msgs can be configured to an integer from 1 to 256. Default: 256

Important In release 16.0, a warning message is displayed if the user tries to configure a value greater than 100 and the max-outstanding is configured as 100. This is because there is an internal limit of up to 100 max outstanding requests that can be configured.

priority *priority*

Default:1000

Specifies the relative priority of this CGF as an integer from 1 through 1000. When multiple CGFs are configured, the priority is used to determine which CGF server to send accounting data to. When configuring two or more servers with the same priority you will be asked to confirm that you want to do this.

If you use the **-noconfirm** option, you are not asked for confirmation and multiple servers could be assigned the same priority.

udp-port*port*

Specifies the UDP port over which the GGSN communicates with the CGF. as an integer from 1 through 65535. Default: 3386

node-alive { enable | disable }

Enable or disables GGSN sending Node Alive Request to a GTPP Server (such as CGF). This configuration can be done per GTPP Server. Default: Disable.

-noconfirm

Executes this command without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to configure the CGF(s) that the system sends CDR accounting data to.

Multiple CGFs can be configured using multiple instances of this command subject to the following limits:

- Up to 4 CGFs can be configured in one GTPP server group
- Total of 32 CGFs can be configured per context.

Each configured CGF can be assigned a priority. The priority is used to determine which server to use for any given subscriber based on the routing algorithm that has been implemented. A CGF with a priority of "1" has the highest priority.

Important The configuration of multiple CGFs with the same IP address but different port numbers is not supported.

Each CGF can also be configured with the maximum allowable number of unacknowledged GTPP packets. Since multiple AAA Manager tasks could be communicating with the same CGF, the maximum is based on any one AAA Manager instance. If the maximum is reached, the system buffers the packets Random Access Memory (RAM). The system allocates memory as a buffer, enough to store one million CDRs for a fully loaded chassis (a maximum of one outstanding CDR per PDP context).

Example

The following command configures a CGF with an IP address of 209.165.200.226 and a priority of 5.

```
gtpp server 209.165.200.226 priority 5
```

The following command deletes a previously configured CGF with an IP address of 209.165.200.231:

```
no gtpp server 209.165.200.231
```

gtpp source-port-validation

Configures whether the system validates the UDP source port in received GTPP messages.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

[default | no] gtpp source-port-validation

default

Restores this parameter to its default setting of enabled.

no

Validates the IP source address but not the UDP source port.

Usage Guidelines

This command configures whether the system validates the UDP source port in received GTPP messages.

Example

The following command disables UDP port validation:

```
no gtpp source-port-validation
```

gtpp storage-server

Configures information for the GTPP back-up storage server.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

[no] gtpp storage-server *ip_address* **port** *port_num*

no

Removes a previously configured back-up storage server.

ip_address

The IP address of the back-up storage server expressed in IPv4 dotted-decimal notation.

port *port_num*

Specifies the UDP port number over which the GGSN communicates with the back-up storage server. Default: 3386

Usage Guidelines

This command identifies the connection to the GSS. One backup storage server can be configured per GTPP group.

Example

The following command configures a GSS with an IP address of 209.165.200.226:

```
gtpp storage-server 209.165.200.226
```

gtpp storage-server local file

Configures the parameters for GTPP files stored locally on the GTPP storage server.

Product

GGSN

IPSG

PDG/TTG

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp storage-server local file { compression { gzip | none } | format {
custom1 | custom2 | custom3 | custom4 | custom5 | custom6 | custom7 |
custom8 } | name { format string [ max-file-seq-num seq_number ] | prefix
prefix } | purge-processed-files [ file-name-pattern name_pattern |
purge-interval purge_interval ] | push { encrypted-url encrypted_url | url url
 } [ encrypted-secondary-url encrypted_url | secondary-url url ] [
source-address ip_address ] [ via-local-context ] | rotation { cdr-count
count | time-interval time [ force-file-rotation ] | volume mb size } |
start-file-seq-num seq_num [ recover-file-seq-num ]
default gtpp storage-server local file { compression | format | name {
format | prefix } | purge-processed-files | rotation { cdr-count |
time-interval | volume }  start-file-seq-num }
no gtpp storage-server local file { purge-processed-files | push | rotation
 { cdr-count | time-interval } }
```

no

Removes a previously configured parameters for local storage of CDR files on HDD on SMC card.

compression { gzip | none }

Configures the type of compression to be used on the files stored locally.

gzip — Enables Gzip file compression.

none — Disables Gzip file compression -this is the default value.

format custom1 .. 8

Configures the file format to be used to format files to be stored locally.

custom1 — File format custom1 - this is the default file format.

custom2 to custom5 Customer specific CDR file formats.

custom6 — File format custom6 with a block size of 8K for CDR files.

custom7 — File format custom7 is a customer specific CDR file format.

custom8 — File format custom8 is a customer specific CDR file format. It uses *node-id-suffix_date_time_fixed-length-seq-num*.u format for file naming where:

- *date* is date in MMDDYYYYY (01312010) for mat
- *time* is time in HHMMSS (023508) format

- *fixed-length-seq-num* is the fixed length of the sequence number for s specific file having a 6-digit counter starting from 000001 and ending at 999999. When file sequence reaches 999999, the sequence is reset to 000001.

name format *string*

Allows the format of the CDR filenames to be configured independently so that the name format contains the file name with conversion specifications.

string —is an alphanumeric string of 1 through 127 characters. It ***must begin*** with the % (percent sign).

- **%y** = year as a decimal number without century (range 00 to 99).
- **%Y** = year as a decimal number with century.
- **%m** = month as a decimal number (range 01 to 12).
- **%d** = day of the month as a decimal number (range 01 to 31).
- **%H** = hour as a decimal number 24-hour format (range 00 to 23).
- **%h** = hour as a decimal number 12-hour format (range 01 to 12).
- **%M** = minute as a decimal number (range 00 to 59).
- **%S** = second as a decimal number (range 00 to 60). (The range is up to 60 to allow occasional leap seconds.)
- **%Q** = file sequence number. Field width may be specified between the % and the Q. If the natural size of the field is smaller than this width, then the result string is padded (on the left) to the specified width with 0s
- **%N** = No of CDRs in the file. Field width may be specified between the % and the N. If the natural size of the field is smaller than this width, then the result string is padded (on the left) to the specified width with 0s
- **%%** = This field is used to add % to the CDR file name.
- **max-file-seq-no**: This can be configured optionally. It indicates the maximum value of sequence number in file name (starts from 1). Once the configured max-file-seq-no limit is reached, the sequence number will restart from 1. If no max-file-seq-no is specified then file sequence number ranges from 1-4294967295.

By default the above keyword is not configured (default gtpp storage-server local file name format). In which case the CDR filenames are generated based on the file format as before (maintains backward compatibility).

name prefix *prefix*

Defines the prefix to be used for the file name. By default the file name prefix would be "GTPP-group-name + VPN-ID". It is possible to have a NULL value prefix where the system would enter a default, which would be *group+vpn*,

prefix — is an alphanumeric string of 1 through 64 characters, Do not enter a value (NULL).

purge-processed-files [file-name-pattern *file_pattern* | purge-interval *purge_dur*]

Enables the GSN to periodically (every 4 minutes) delete locally processed (*.p) CDR files from the HDD on the SMC card. Default: Disabled

This keyword also deletes the processed push files (tx.*,under $CDR_PATH/TX/tx.*) a well when purging is enabled instead of "*.p:*.P".

Important This option is available only when GTPP server storage mode is configured for local storage of CDRs with the **gtpp storage-server mode local** command.

Optional keyword **file-name-pattern** *file_pattern* provides an option for user to control the pattern of files. *file_pattern* must be mentioned in "*.p:*.P:tx.*" format in a string of size 1 through 127, which is also the default format. Wildcards * and: (synonymous to |) are allowed.

Optional keyword **purge-interval** *purge_dur* provides an option for user to control the purge interval duration (in minutes). *purge_dur* must be an integer from 1 through 259200. Default value 60.

push { encrypted-url *encrypted_url* | url *url* } [encrypted-secondary-url *encrypted_url* | secondary-url *url*] [source-address *ip_address*] [via-local-context]

Enables push method to transfer local CDR files to remote system.

- **encrypted-url**: Defines use of an encrypted url.
- *encrypted_url* must be an alphanumeric string of 1 through 8192 characters in SFTP format.
- **url**: Location where the CDR files are to be transferred.
- *url* must be an alphanumeric string of 1 through 1024 characters in the format:

  scheme://user:password@host
- **encrypted-secondary-url**: Defines use of an encrypted secondary url.
- *encrypted_url* must be an alphanumeric string of 1 through 8192 characters in SFTP format.
- **secondary-url**: Secondary location where the CDR files are to be transferred, in case primary is unreachable.
- *url* must be an alphanumeric string of 1 through 1024 characters in the format:

  scheme://user:password@host

Important When a file transfer to primary fails four times, the transfer of files will automatically be failed over to the secondary server. The transfer will switch back to the original primary after 30 minutes, or if there are four transfer failures to the secondary server.

- **source-address** *ip_address*: Configures the source IP address to be used to establish the connection for the SFTP/SSH file-transfer operation.
- **via-local-context**: Pushes the CDR files via SPIO in the local context.

Default: Pushes via the group's context.

Important If the push is done through gtpp context, then the push rate is lesser compared to via local context as the HDD is attached to the local context.

rotation { cdr-count *count* | time-interval *time* [force-rotation] | volume *size* }

Specifies rotation related configuration for GTPP files stored locally.

cdr-count *count*: Configures the CDR count for the file rotation as an integer from 1000 through 65000. Default value 10000.

time-interval *time*: Configures the time interval for file rotation (in seconds) as an integer from 30 through 86400. Default: 3600 (1 hour).

force-file-rotation : Forces CDR file-rotation at a specified interval configured via the **time-interval** keyword, even if no CDRs were generated. By default this keyword is Disabled.

volume *size* **—**: Configures the file volume (in megabytes) for file rotation as an integer from 2 through 40. This trigger can not be disabled. Default: 10

start-file-seq-num *seq_num* [recover-file-seq-num

Default: disabled

Enables the continuous file sequence number function. **start-file-seq-num** specifies the lowest number to be used as a file sequence number in the case of an aaaproxy or a chassis restart/reboot.

seq_num is an integer from 1 to 4294967295. Entering a value of 1 disables the recover file sequence number function. Entering any other number, for example 10, would instruct the system to always start from 10 as the file sequence number in the event of an aaaproxy or chassis reload.

When files are moved, the file sequence numbers are synced and stored in both RAM and the hard disk drive (HDD). **recover-file-seq-num** instructs the system to recover the last (largest) stored file sequence number, in the event of an aaaproxy/chassis restart/reboot, to continue file sequence numbering rather than resetting the file sequence numbering to the lowest start file sequence number.

Important After you configure this keyword, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

Usage Guidelines

This command configures the parameters for storage of GTPP packets as files on the local server - meaning the hard disk drive (HDD).

Example

The following command configures rotation for every 1.5 hours for locally stored files.

```
gtpp storage-server local file rotation time-interval 5400
```

Configuring file name format along with max-file-seq-no:

```
gtpp storage-server local file name format processed_2g_%Y%m%d_%5Q_%N.cdr
 max-file-seq-no 2345
```

Configuring file name prefix with a NULL value:

```
gtpp storage-server local file name prefix NULL
```

Configure the file name pattern and purge interval to setup file purging from the HDD:

```
gtpp storage-server local file purge-processed-files file-name-pattern
*.z purge-interval 4
```

gtpp storage-server max-retries

Configures the maximum number of times the system attempts to communicate with an unresponsive GTPP back-up storage server.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

[default] gtpp storage-server max-retries *max_attempts*

default

Restores the system to the default value of 2 retry attempts.

max_attempts

Specifies the number of times the system attempts to communicate with a GTPP back-up storage server that is not responding as an integer from 1 to 15. Default: 2

Usage Guidelines

This command works in conjunction with the **gtpp storage-server timeout** parameters to set a limit to the number of communication failures that can occur with a configured GTPP back-up storage server.

The **gtpp storage-server timeout** command controls the amount of time between retries. Refer to the description of this command for additional information.

Example

The following command configures the maximum number of re-tries to be 8.

```
gtpp storage-server max-retries 8
```

gtpp storage-server mode

Configures the storage mode (local, remote or streaming for CDRs) to be used. Local storage mode is available with ASR 5000 platforms only.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp storage-server mode { local | remote | streaming [ parallel ] }
default gtpp storage-server mode
```

default

Returns the GTPP group configuration to the default "remote" value for the GTPP storage server mode.

local

Specifies the use of the hard disk for storing CDRs. Default: Disabled

Important This option is available with ASR 5000 platforms only.

remote

Specifies the use of an external server for storing CDRs. This is the default value.

Important When the external server is down, the Session Managers will start buffering up to a maximum of 26400 CDRs or a total of 120 MB worth of CDRs, whichever limit reaches first. The maximum CDR limit specified is per the session manager. The chassis level limit varies depending on the number of session manager instances and number of active cards.

streaming [parallel]

Specifies the use of HDD to store CDRs in case if CGF fails and then stream the CDRs to the CGF when CGF is up. Streaming can be done in a First-In-First-Out (FIFO) or parallel mode. Default: streaming (FIFO)

streaming: This keyword allows the operator to configure "streaming" mode of operation for GTPP group. When this keyword is supplied the CDRs will be stored in following fashion:

- When GTPP link is active with CGF, CDRs are sent to a CGF via GTPP and local hard disk is NOT used as long as every record is acknowledged in time.
- If the GTPP connection is considered to be down, all streaming CDRs will be saved temporarily on the local hard disk and once the connection is restored, unacknowledged records will be retrieved from the hard disk and sent to the CGF.

In the streaming mode, when the CGF becomes active, CDRs in HDD are streamed in a First-In-First-Out order. In this mode, newly generated CDRs are routed to CGF via HDD.

parallel: In this mode, when the CGF becomes active, CDRs in HDD are streamed at slower pace. Newly generated CDRs are sent directly to CGF servers along with CDRs streamed from HDD.

In PARALLEL mode, rate of streaming from HDD will be slow. The maximum requests that can be streamed from HDD will be either set to 1 or 25% of the available bandwidth (i.e. max outstanding - outstanding req) if it is greater than 1. It is expected that the billing domain should be capable of handling Out-Of-Order CDRs in parallel streaming mode.

Usage Guidelines

This command configures whether the CDRs should be stored on the hard disk of the SMC or remotely, on an external server.

Example

The following command configures use of a hard disk for storing CDRs.

```
gtpp storage-server mode local
```

gtpp storage-server timeout

Configures the amount of time that must pass with no response before the system re-attempts to communicate with the GTPP back-up storage server.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

[default] gtpp storage-server timeout *duration*

default

Restores the timeout duration to the default of 30 seconds.

duration

Specifies the maximum amount of time (in seconds) that the system waits for a response from the GTPP back-up storage server before assuming the packet is lost.

duration is an integer from 30 through 120. Default: 30

Usage Guidelines

This command works in conjunction with the **gtpp storage-server max-retries** command to establish a limit on the number of times that communication with a GTPP back-up storage server is attempted before a failure is logged.

This parameter specifies the time between retries.

Example

The following command configures a retry timeout of *60* seconds:

```
gtpp storage-server timeout 60
```

gtpp suppress-cdrs zero-volume

Suppresses the CDRs with zero byte data count, so that the OCG node is not overloaded with a flood of CDRs. By default this mode is "disabled".

Important Use of the Zero Volume CDR Suppression feature requires that a valid ECS license key be installed. Contact your Cisco account representative for information on how to obtain a license.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

gtpp suppress-cdrs zero-volume { final-cdr | internal-trigger-cdr | external-trigger-cdr } +
{ default | no } gtpp suppress-cdrs zero-volume

default | no

Disables the CDR suppression mode. By default this command is disabled and system will not suppress any CDR.

final-cdr

Suppresses only the Final Zero Volume CDRs i.e. the CDRs that are generated when the session ends.

internal-trigger-cdr

Supresses Zero Volume interim CDRs that are generated due to internal triggers such as volume limit, time limit, tariff change or user generated interims through the CLI commands.

external-trigger-cdr

Supresses Zero Volume interim CDRs that are generated due to external triggers such as QoS Change, RAT change and so on.

Usage Guidelines

Use this command to suppress the CDRs (G-CDRs, eG-CDR, PGW-CDRs, SGW-CDRs, SGSN CDRs) with zero-volume session due to any reason.

This feature allows the customers to suppress the CDRs with zero byte data count, so that the OCG node is not overloaded with a flood of CDRs.

The CDRs can be categorized as follows:

- final-cdr: These CDRs are generated when the session ends.
- internal-trigger-cdr: These CDRs are generated due to internal triggers such as volume limit, time limit, tariff change or user generated interims through the CLI commands.
- external-trigger-cdr: These CDRs are generated due to external triggers such as QoS Change, RAT change and so on. All triggers which are not considered as final-cdrs or internal-trigger-cdrs are considered as external-trigger-cdrs.

Customers can select the CDRs they want to suppress. This feature is disabled by default to ensure backward compatibility.

Example

The following command configures the system to suppress Zero Volume Final CDRs, interim CDRs due to internal and external triggers:

```
gtpp suppress-cdrs zero-volume final-cdr internal-trigger-cdr
external-trigger-cdr
```

gtpp suppress-cdrs zero-volume-and-duration

Suppresses the CDRs created by session having zero duration and/or zero volume. By default this mode is "disabled".

Product

GGSN

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp suppress-cdrs zero-volume-and-duration { gcdrs [ egcdrs ] | egcdrs
[ gcdrs ] }
default gtpp suppress-cdrs zero-volume-and-duration
```

default

Disables the CDR suppression mode.

gcdrs [egcdrs]

Specifies that this command will handle G-CDRs before eG-CDR/P-CDRs.

gcdrs [egcdrs]

Specifies that this command will handle eG-CDR/P-CDRs before G-CDRs.

Usage Guidelines

Use this command to suppress the CDRs (G-CDRs and eG-CDR/P-CDRs) which were created due with zero-duration session and zero-volume session due to any reason. By default this command is disabled and system will not suppress any CDR.

Example

The following command configures the system to suppression the eG-CDR/P-CDRs created for a zero duration session or zero volume session:

```
gtpp suppress-cdrs zero-volume-and-duration egcdrs gcdrs
```

gtpp suppress-secondary-rat-usage zero-volume

Suppresses zero-volume Secondary RAT Usage report. By default this mode is "disabled".

Product

P-GW

SAEGW

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

```
gtpp suppress-secondary-rat-usage zero-volume
default gtpp suppress-secondary-rat-usage zero-volume
no gtpp suppress-secondary-rat-usage zero-volume
```

default

Does not suppress the zero volume secondary RAT usage records.

gtpp suppress-secondary-rat-usage zero-volume

Suppresses either secondary RAT records or zero volume Secondary RAT records.

no

Does not suppress the zero volume secondary RAT usage records.

Usage Guidelines

Use this command to suppress the CDRs which were created with zero-volume Secondary RAT Usage report. By default this command is disabled and system will not suppress any CDR.

Example

The following command configures the system to suppress CDRs created for a zero-volume Secondary RAT Usage report:

```
gtpp suppress-secondary-rat-usage zero-volume pgwcdrs
```

gtpp v1-header-suppress-zeros

Enables or disables extra zeros in gtpp version1 header.

Product

GGSN

P-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

`{ no | default } gtpp v1-header-suppress-zeros`

no gtpp v1-header-suppress-zeros

no disables the extra zeros in the gtpp version 1 header.

By default, the **v1 header-suppress-zeros** command is disabled.

gtpp v1-header-suppress-zeros

Enables extra zeros in the version1 header. The 14-octet length zeros does not get included in the version-1 header.

Usage Guidelines

Use this command to enable extra zeros in the gtpp version1 header. This feature allows the GTPP version 1 header P-GW to remove the extra zeros in the header. It will allow the "GTPP_DATA_RECORD_TRANSFER_REQUEST" message with the appropriate extension header from the accounting server thus avoiding billing issues for the users.

Example

The following command :

```
gtpp v1-header-suppress-zeros
```

gtpp timeout

Configures the amount of time that must pass with no response before the system re-attempts to communicate with the CGF.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > context *context_name* **> gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpp-group)#
```

Syntax Description

[default] gtpp timeout *time*

default

Resets the systems GTPP timeout value to 20 seconds.

time

Specifies the maximum amount of time (in seconds) the system waits for a response from the CGF before assuming the packet is lost.

time is an integer from 1 through 60. Default: 20

Usage Guidelines

This command works in conjunction with the **gtpp max-retries** command to establish a limit on the number of times that communication with a CGF is attempted before a failure is logged.

This parameter specifies the time between retries.

Example

The following command configures a retry timeout of 30 seconds:

```
gtpp timeout 30
```

gtpp transport-layer

Selects the transport layer protocol for Ga interface for communication between AGW (GSNs) and GTPP servers.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

```
gtpp transport-layer { tcp | udp }
default gtpp transport-layer
```

default

Resets the transport layer protocol to GTPP servers to the default of UDP.

tcp

Enables the system to implement TCP as transport layer protocol for communication with GTPP server. Default: Disabled

udp

Enables the system to implement UDP as transport layer protocol for communication with GTPP server. Default: Enabled

Usage Guidelines

Use this command to select the TCP or UDP as the transport layer protocol for Ga interface communication between GTPP servers and AGWs (GSNs).

Example

The following command enables TCP as the transport layer protocol for the GSN's Ga interface.

```
gtpp transport-layer tcp
```

gtpp trigger

Disables GTPP trigger conditions that cause either partial CDR record closure or opening of a new CDR record container. GTPP Triggers are specified in 3GPP TS 32.251 v6.6.0. All GTPP trigger changes take effect immediately, except **volume-limit**.

Product

ECS

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTPP Server Group Configuration

configure > **context** *context_name* > **gtpp group** *group_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpp-group)#`

Syntax Description

```
gtpp trigger { apn-ambr-change | [ default-bearer-only |
all-non-gbr-bearers | all-bearers ] | cell-update |  ciot-userplane-change|
 dcca | direct-tunnel | egcdr max-losdv | ggsn-preservation-mode-change
| inter-plmn-sgsn-change | ms-timezone-change | plmn-id-change | qos-change
 | rat-change [ generate { cdr | container } ] | routing-area-update |
service-idle-out | serving-node-change-limit | sgsn-change-limit |
tariff-time-change | time-limit | uli-change | volume-limit }
default gtpp trigger
no gtpp trigger { apn-ambr-change | [ default-bearer-only |
all-non-gbr-bearers | all-bearers ] | cell-update |  ciot-userplane-change|
 dcca | direct-tunnel | egcdr max-losdv | ggsn-preservation-mode-change
| inter-plmn-sgsn-change | ms-timezone-change | plmn-id-change | qos-change
 | rat-change [ generate { cdr | container } ] | routing-area-update |
service-idle-out | serving-node-change-limit | sgsn-change-limit |
tariff-time-change | time-limit | uli-change | volume-limit }
```

default

Sets the specified trigger condition back to the default setting. All trigger conditions are enabled by default.

no

Disables the specified trigger condition.

apn-ambr-change [default-bearer-only | all-non-gbr-bearers | all-bearers]

Default: Disabled

Enables APN AMBR trigger only for default-bearer or for all bearers for that PDN or selectively for apn-non-gbr bearers.

Important This keyword option will be available only if a valid license is installed. For more information, contact your Cisco account representative.

The APN Aggregate Maximum Bit Rate (AMBR) is a subscription parameter stored per APN. It limits the aggregate bit rate that can be expected to be provided across all non-GBR bearers and across all PDN connections of the same APN. Each of these non-GBR bearers potentially utilize the entire APN AMBR, e.g. when the other non-GBR bearers do not carry any traffic.

In 15.0 and later releases, this CLI command should be configured along with the following additional options to enable APN-AMBR trigger for SGW-CDRs in all GTPP dictionaries.

- **default-bearer-only**: Adds container only to default bearer.
- **all-non-gbr-bearers**: Adds container to all non-gbr-bearers.
- **all-bearers**: Adds containers for all bearers.

Important This CLI command and the associated options are not available for products other than S-GW and P-GW.

The first container of each CDR includes apn-ambr fields along with QoS. In the following containers this field is present if previous change condition is "QoS change" or "APN AMBR Change".

cell-update

Enables the cell update trigger for S-CDRs, if the dictionary specified in the **gtpp dictionary** configuration includes support for cell update. This trigger is available only for 2G. Currently, custom18 dictionary supports the cell update trigger.

ciot-userplane-change

Enables User Plane change trigger for CDR.

dcca

This keyword enables or disables the addition of LOSDV in PGW-CDR for the following DCCA generated triggers.

- Time Threshold Reached
- Volume Threshold Reached
- Service Specific Unit Threshold Reached
- Time Exhausted
- Volume Exhausted
- Validity Timeout
- Reauthorization Request
- Continue Ongoing Session
- Retry And Terminate Ongoing Session
- Terminate Ongoing Session
- Service Specific Unit Exhausted
- Envelope Closure

direct-tunnel

Enables the direct tunnel trigger for CDRs.

egcdr max-losdv

Enables the trigger for an eG-CDR/P-CDR if the List of Service Data Volume (LoSDV) containers crosses the configured limit for LOSDV containers. Default: Disabled

ggsn-preservation-mode-change

This keyword is for GGSN only.

This trigger enables the preservation-mode-change trigger for G-CDR.

inter-plmn-sgsn-change

This keyword is for GGSN only.

Disabling this trigger ignores an Inter-PLMN SGSN change and doesn't release a G-CDR. Default: Enabled

ms-timezone-change

This keyword is specific to GGSN.

No partial record closure for a time zone change occurs when this trigger is disabled. MS time zone change should be applicable only for 3GPP R6 based GTPP dictionaries. Default: Enabled

plmn-id-change

This trigger keyword is specific to the 2G SGSN and is proprietary (non-standard).

Enables the PLMNID change trigger for S-CDRs if the dictionary specified in the **gtpp dictionary** configuration supports the PLMNID change. If enabled, the SGSN generates a partial S-CDR when the MS changes the PLMN while under the same SGSN (intra-system intra-SGSN PLMN-ID handover). Currently, custom18 dictionary supports this trigger. Default: Disabled

qos-change

Enables the QoS-change trigger for CDRs. Disabling this trigger ignores a QoS-change and does not open a new CDR for it. Default: Enabled

When QoS changes are observed, the system generates only containers. However when the max-container condition is reached, an interim CDR is generated.

rat-change [generate { cdr | container }]

Enables or disables the partial record closure for a RAT change. If disabled, no partial record closure for a RAT change occurs. RAT change should be applicable only for 3GPP R6 based GTPP dictionaries. Default: Enabled

In SGSN, RAT change trigger (2G<->3G) means inter-service handoff (SGSN service <-> GPRS service). If this trigger is enabled, after the RAT change interim CDR is generated. After this RAT change CDR, CDR thresholds such as volume/time etc. and GTPP Group are applicable from new service. If RAT change trigger is disabled, the CDR thresholds and GTPP group etc. will not change and will continue to use from old service.

After the RAT change, the System Type field in CDR changes to indicate the new system type. If this trigger is disabled, then the next CDR generated will indicate System Type, but the data count in the CDR does not necessarily belong to the system type indicated in CDR; instead, it may belong to both 2G and 3G as CDR is not closing when handover takes place.

Important The System Type field in CDR-related change is not applicable to customized CDR formats, which does not use the System Type field.

generate { cdr | container }: Sets generation of CDR or just a Container on a RAT change.

cdr: Generates a CDR on a RAT-change.

container: Generates a container only on a RAT-change.

routing-area-update

Enables the routing-area-update trigger for CDRs.

service-idle-out

This keyword enables or disables the addition of LOSDV in PGW-CDR when a service idles out.

Note that the CDR module receives service idle out trigger from DCCA module when the quota hold timer expires, or from ACS manager when rulebase has a service idle out configuration.

serving-node-change-limit [also-intra-sgsn-multiple-address-group-change]

This keyword is enabled for P-GW, S-GW, and GGSN. However, the **also-intra-sgsn-multiple-address-group-change** is enabled only for GGSN. Default: Enabled

Disabling this trigger ignores an SGSN change and does not add the SGSN IP address into the SGSN address list of the CDR. This helps to reduce the release of CDRs due to SGSN changes crossing the configured limit.

also-intra-sgsn-multiple-address-group-change: This keyword includes Intra-SGSN group changes as an SGSN change.

sgsn-change-limit [also-intra-sgsn-multiple-address-group-change]

This keyword is obsolete and is available to maintain the backward compatibility for existing customers. The new keyword for **sgsn-change-limit** is **serving-node-change-limit**. Default: Enabled

Disabling this trigger ignores an SGSN change and does not add the SGSN IP address into the SGSN address list of the CDR. This helps to reduce the release of CDRs due to SGSN changes crossing the configured limit.

also-intra-sgsn-multiple-address-group-change: This keyword includes Intra-SGSN group changes as an SGSN change.

tariff-time-change

When this trigger is disabled, container closure does not happen for a tariff-time change. Default: Enabled

This trigger is applicable for G-MB-CDRs for MBMS session too.

time-limit

When this trigger is disabled, no partial record closure occurs when the configured time limit is reached. Default: Enabled

This trigger is applicable for G-MB-CDRs for MBMS session too.

uli-change

Enables the user location update trigger for eG-CDRs/PGW-CDRs/SGW-CDRs, if the dictionary specified in the GTPP dictionary configuration includes support for user location update trigger. Default: Enabled

volume-limit

When this trigger is disabled no partial record closure occurs when volume limit is reached. Default: Enabled

This trigger is applicable for G-MB-CDRs for MBMS session too.

Usage Guidelines

Use this command to disable or enable GTTP triggers that can cause partial CDR record closure or cause a new CDR to be created.

Example

The following command disables partial record closure when a configured time limit is reached:

```
gtpp trigger time-limit
```

The following command re-enables partial record closure when a configured time limit is reached:

```
no gtpp trigger time-limit
```

CHAPTER 23

GTP-U Service Configuration Mode Commands

The GTP-U Service Configuration Mode is used to manage parameters applied to incoming GTP-U packets.

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- bind, on page 885
- echo-interval, on page 887
- echo-retransmission-timeout, on page 888
- end, on page 889
- exit, on page 890
- extension-header, on page 890
- ip qos-dscp, on page 891
- ipsec-allow-error-ind-in-clear, on page 893
- ipsec-tunnel-idle-timeout, on page 893
- max-retransmissions, on page 894
- path-failure clear-trap, on page 895
- path-failure detection-policy, on page 896
- retransmission-timeout, on page 897
- sequence-number, on page 898
- source-port, on page 899
- udp-checksum, on page 901

bind

Configures the IP address to use for GTP-U data packets.

Product

ePDG

GGSN

P-GW

SAEGW

SaMOG

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

[no] bind { ipv4-address *ipv4_address* **[crypto-template** *crypto_template* **] [ike-bind-address {** *ipv4_address* **}] [ipv6-address** *ipv6_address* **[bearer-type { non-ims-media | ims-media | all }] | ipv6-address** *ipv6_address* **[crypto-template** *crypto_template* **] [ike-bind-address {** *ipv6_address* **}] [ipv4-address** *ipv4_address* **] [bearer-type { non-ims-media | ims-media | all }] }**

no

removes a configured IP address from this service.

ipv4-address *ipv4_address*

Binds this service to the IPv4 address of a configured interface.

ipv4_address must be entered using IPv4 dotted-decimal notation.

bearer-type *non-ims-media | ims-media | all*

Specifies the type of bearer to be associated with the bind address. Default behavior is for that the address will be used for all bearer types.

non-ims-media Configures bind address for non-ims media only.

ims-media Configures bind address for ims-media traffic only.

all configures bind address to handle all types of bearer traffic. This is the default setting.

ipv6-address *ipv6_address*

Binds this service to the IPv6 address of a configured interface.

ipv6_address must be entered using IPv6 colon-separated-hexadecimal notation.

crypto-template *crypto_template*

Configures crypto template for IPSec, which enables IPSec tunneling for this GTP-U address. Must be followed by the name of an existing crypto template.

crypto_template must be an alphanumeric string of 1 through 127 characters.

ike-bind-address *ip_address*

Configures an IKE bind address. Must be followed by IPv4 or IPv6 address; IP address type must be the same as the GTP-U address type.

ipv4_address must be entered using IPv4 dotted-decimal notation.

ipv6_address must be entered using IPv6 colon-separated-hexadecimal notation.

bearer-type *non-ims-media | ims-media | all*

Specifies the type of bearer to be associated with the bind address. Default behavior is for that the address will be used for all bearer types.

non-ims-media configures bind address for non-ims media only.

ims-media configures bind address for ims-media traffic only.

all configures bind address to handle all types of bearer traffic. This is the default setting.

Usage Guidelines

Use this command to bind the service to an interface for sending/receiving GTP-U packets.

Important If you modify this command, the parent service (service within which the eGTP/GTP-U service is configured) will automatically restart. Service restart results in dropping of active calls associated with the parent service.

Important A GTP-U service can support a maximum of 12 GTP-U endpoints/interfaces.

Example

The following command configures the IPv4 address for this GTP-U service as *209.165.200.229*:

```
bind ipv4-address 209.165.200.229
```

echo-interval

Configures the rate at which GPRS Tunneling Protocol (GTP) v1-U echo packets are sent.

Product

ePDG

GGSN

P-GW

SAEGW

SaMOG

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpu-service)#`

Syntax Description

echo-interval *seconds* **[dynamic [smooth-factor** *multiplier* **]]**
{ default | no } echo-interval

default

Disables the configured echo-interval setting.

no

Removes the configured echo-interval setting.

seconds

Specifies the number of seconds between the sending of a GTP-Uv1 echo packet. *seconds* must be an integer from 60 through 3600. Default: 60

dynamic [smooth-factor *multiplier*]

Enables the dynamic echo timer for the GTP-U service.

smooth-factor *multiplier*: Introduces a multiplier into the dynamic echo timer as an integer from 1 through 5. Default: 2

Usage Guidelines

Use this command to configure the rate at which GTP-Uv1 echo packets are sent.

Example

The following command sets the rate between the sending of echo packets at *120* seconds:

echo-interval 120

echo-retransmission-timeout

Configures the timeout for GTP-U echo message retransmissions for this service.

Product

ePDG

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

echo-retransmission-timeout *seconds*
default echo-retransmission-timeout

default

Returns the command to its default setting of 5.

seconds

Default: 5

Configures the echo retransmission timeout, in seconds, for the GTP-U service as an integer ranging from 1 to 20.

Usage Guidelines

Use this command to configure the amount of time, in seconds, before the GTP-U service transmits another echo request message. The value set in this command is used, as is, for the default echo. If dynamic echo is enabled (**echo-interval dynamic**) the value set in this command serves as the dynamic minimum (if the RTT multiplied by the smooth factor is less than the value set in this command, the service uses this value).

Example

The following command sets the retransmission timeout for echo messages to 2 seconds:

echo-retransmission-timeout 2

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

extension-header

Configures the addition of an extension header in the GTP-U packet header, allowing for error indication messages.

Product

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(config-gtpu-service)#

Syntax Description

[default | no] extension-header source-udp-port

default

Returns the command to its default setting of disabled.

no

Disables the feature.

source-udp-port

Configures extension header type UDP Port support in GTP-U header for GTP-U Error Indication messages.

Usage Guidelines

Use this command to configure the addition of an extension header in the GTP-U packet to allow for error indication messages

Example

The following command enables the inclusion of an extension header to allow for error indication messages:

```
extension-header source-udp-port
```

ip qos-dscp

Configures the quality of service (QoS) differentiated service code point (DSCP) per-hop behavior (PHB) to be marked on the outer header of signalling packets originating from the LTE component.

Product

ePDG

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
ip qos-dscp { af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 |
af33 | af41 | af42 | af43 | be | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7
 | ef }
[ default | no ] ip qos-dscp
```

default

Sets/restores default value.

no

Disables DSCP marking.

af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | be | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef

Specifies the IP QoS DSCP PHB to be marked on the outer header of signalling packets originating from the LTE component. This is a standards-based feature (RFC 2597 and RFC 2474).

Note that CS (class selector) mode options below are provided to support backward compatibility with the IP precedence field used by some network devides. CS maps one-to-one to IP precedence, where CS1 is IP precedence value 1. If a packet is received from a non-DSCP aware router that used IP precedence markings, then the DSCP router can still understand the encoding as a Class Selector code point.

The following forwarding types are supported:

- **af11**: Designates the use of Assured Forwarding 11 PHB.

  This is the default setting.
- **af12**: Designates the use of Assured Forwarding 12 PHB.
- **af13**: Designates the use of Assured Forwarding 13 PHB.
- **af21**: Designates the use of Assured Forwarding 21 PHB.
- **af22**: Designates the use of Assured Forwarding 22 PHB.
- **af23**: Designates the use of Assured Forwarding 23 PHB.
- **af31**: Designates the use of Assured Forwarding 31 PHB.
- **af32**: Designates the use of Assured Forwarding 32 PHB.
- **af33**: Designates the use of Assured Forwarding 33 PHB.
- **af41**: Designates the use of Assured Forwarding 41 PHB.
- **af42**: Designates the use of Assured Forwarding 42 PHB.
- **af43**: Designates the use of Assured Forwarding 43 PHB.
- **be**: Designates the use of Best Effort forwarding PHB.
- **cs1**: Designates the use of Class Selector code point "CS1".
- **cs2**: Designates the use of Class Selector code point "CS2".
- **cs3**: Designates the use of Class Selector code point "CS3".
- **cs4**: Designates the use of Class Selector code point "CS4".
- **cs5**: Designates the use of Class Selector code point "CS5".
- **cs6**: Designates the use of Class Selector code point "CS6".
- **cs7**: Designates the use of Class Selector code point "CS7".
- **ef**: Designates the use of Expedited Forwarding PHB typically dedicated to low-loss, low-latency traffic.

The assured forwarding behavior groups are listed in the table below.

	Class 1	Class 2	Class 3	Class 4
Low Drop	AF11	AF21	AF31	AF41
Medium Drop	AF12	AF22	AF32	AF42
High Drop	AF13	AF23	AF33	AF43

Traffic marked with a higher class is given priority during congestion periods. If congestion occurs to traffic with the same class, the packets with the higher AF value are dropped first.

Usage Guidelines

Use this command to implement DSCP marking only for GTP-U ECHO Request and Response messages.

Example

Use the following command to set the use of Best Effort forwarding PHB:

```
ip qos-dscp be
```

ipsec-allow-error-ind-in-clear

Configures whether error-indication is dropped or sent without IPSec tunnel.

Product

S-GW

SAEGW

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
[ default | no ] ipsec-allow-error-ind-in-clear
```

default

Error-indication is dropped if no IPSec tunnel is present for that peer.

no

Disables the feature.

Usage Guidelines

Use this command to determine whether error-indication is dropped or sent without an IPSec tunnel.

On receiving data packets for a session that does not exist, error-indication needs to be sent back to the peer. If there is no IPSec tunnel present with that peer, error-indication may be either dropped or sent without any IPSec tunnel.

Example

The following command allows error-indication to be sent without any IPSec tunnel:

```
ipsec-allow-error-ind-in-clear
```

ipsec-tunnel-idle-timeout

Configures the IPSec tunnel idle timeout after which IPSec tunnel deletion is triggered.

Product

S-GW

SAEGW

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

ipsec-tunnel-idle-timeout *seconds*
default ipsec-tunnel-idle-timeout

seconds

Default: 60

Specifies the number of seconds an IPSec tunnel is idle before tunnel deletion is triggered. *seconds* must be an integer from 10 through 600.

default

Returns the command to its default setting of 60.

Usage Guidelines

When there are no bearers on a particular IPSec tunnel, GTPUMGR initiates the delete for that tunnel. This timer helps to avoid unnecessary IPSec tunnel deletions for an idle tunnel.

Example

The following command sets the IPsec tunnel idle timeout to *100* seconds:

ipsec-tunnel-idle-timeout 100

max-retransmissions

Configures the maximum retry limit for GTP-U echo retransmissions.

Product

ePDG

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-gtpu-service)#`

Syntax Description

max-retransmissions *num*
no max-retransmissions

num

Default: 4

Specifies the number of GTP-U echo message retransmissions allowed before triggering a path failure error condition. *num* must be an integer from 0 through 15.

no

Disables the feature.

Usage Guidelines

Use this command to set the maximum number of GTP-U echo message retransmissions in order to define a limit that triggers a path failure error.

Example

The following command sets the maximum GTP-U echo message retransmissions for this service to *10*:

max-retransmissions 10

path-failure clear-trap

Configures a trigger for clearing the path failure trap.

Product

ePDG

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
path-failure clear-trap gtp echo
[ default | no ] path-failure clear-trap
```

gtp echo

Sets the clearing trigger/trap to detect a failure upon reaching the maximum number of GTP-U echo message retransmissions.

default

Resets the command to its default setting of enabled.

no

Disables the feature.

Usage Guidelines

Use this command to set the detection policy for path failures. By default, path failure trap is cleared on receiving first control plane message for that GTP-U peer allocation.

Example

The following command sets the clearing trigger to detect failures upon reaching the maximum number of GTP-U echo message retries:

```
path-failure clear-trap gtp echo
```

path-failure detection-policy

Configures a path failure detection policy on GTP-U echo messages that have been retransmitted the maximum number of retry times.

Product

ePDG

GGSN

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
path-failure detection-policy gtp echo
[ default | no ] path-failure detection-policy
```

gtp echo

Sets the detection policy to detect a failure upon reaching the maximum number of GTP-U echo message retransmissions.

default

Resets the command to its default setting of enabled.

no

Disables the feature.

Usage Guidelines

Use this command to set the detection policy for path failures.

Example

The following command sets the path failure detection policy to detect failures upon reaching the maximum number of GTP-U echo message retries:

```
path-failure detection-policy gtp echo
```

retransmission-timeout

Configures retransmission timeout for GTPU echo message retransmissions for this service.

Important In release 14.0 and later versions, this command is replaced by the **echo-retransmission-timeout** command.

Product

ePDG

GGSN

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

retransmission-timeout *seconds*
default retransmission-timeout

default

Returns the command to its default setting of 5.

seconds

Default: 5

Specifies the number of seconds between the re-sending of GTP-U echo messages. *seconds* must be an integer from 1 through 20.

Usage Guidelines

Use this command to set the number of seconds between the retransmission of GTP-U echo messages.

Example

The following command sets the number of seconds between the sending of GTP-U echo messages to *7*:

retransmission-timeout 7

sequence-number

Enables addition of the sequence number to every GTP-U packet. Default is disabled.

Product

GGSN

HSGW

P-GW

SAEGW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(config-gtpu-service)#

Syntax Description

[no] sequence-number

no

Disables addition of the sequence number to every GTP-U packet.

Usage Guidelines

Use this command to enable/disable addition of the sequence number to every GTP-U packet coming from Gi interface and going towards Gn/Gp interface. If GTP-U packets are received out of sequence, sequence numbers would allow the packets to be reorded.

Example

The following command enables addition of the sequence number to every GTP-U packet:

```
sequence-number
```

source-port

Configures GTP-U data packet source port related parameters.

Product

GGSN

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
source-port  { non-standard | standard }
source-port  { non-standard [ offset integer ] | standard }
default source-port
```

default

Configures GTP-U service to use standard port 2152 as source port for all GTP-U data packets.

By default, standard port 2152 will be configured as GTP-U data packet source port (same as existing behavior).

non-standard

Configures GTP-U service to use multiple non-standard ports defined by system as a source port for GTP-U data packets. Starting port is 25500. Non-standard port number is unique per session manager instance.

offset *integer*

Generates a randomized source port using following logic.

If configured offset is R, and Session Manager instance number is N, then GTP-U service on Session Manager N generates a random number between [25500 + (N-1) x R + 1] and [25500 + N x R] and uses the number as a source port.

The integer range is from one to nine.

Important Note the following recommendations while specifying the offset value.

- Currently the base non-standard GTP-U source port is 25500 and the largest GTP-U source port that can be used is 65535. To avoid collision and use different source port for each Session Manager, it is recommended to use offset value less than or equal to (<=) 35000 or the maximum number of active Session Managers configured in the system.

  Note 40035 (65535 - 25500) is the exact range of source port that all Session Managers can use for outgoing GTP-U data packets. 35000 is a safe number to avoid collision of GTP-U source port usage across Session Managers.

- Offset can be configured per GTP-U service. If offset is configured differently for different GTP-U services, allowed range of source port for Session Managers will be different for each GTP-U service. Due to randomized GTP-U source port generation logic, two different Session Managers may use same GTP-U source port. To avoid this collision, it is recommended to use the same offset configured across all GTP-U services in the system.

standard

Configures GTP-U service to use standard port 2152 as source port for all GTP-U data packets.

Usage Guidelines

Currently, for forwarding GTP-U data packets, standard UDP port (2152) as source and destination port are used for outgoing GTP-U packet. This creates hardship to balance traffic properly over the LAG interfaces between the different L2/L3 elements in the network. Some routers use source UDP port to do load balancing of packets towards destination.

This command allows the source port outgoing GTP-U packet to be different for each SESSMGR. The destination port should remain as 2152, as per protocol.

When **offset** is configured in GTP-U service for non-standard source-port, the P-GW, SAEGW, or S-GW to which this GTP-U service is associated generates random GTP-U source port based on the configured offset and uses the same for outgoing GTP-U data packets.

After redundancy actions (like inter and intra chassis session recovery, sessctrl restart), GTP-U service recalculates the source port to be used for outgoing GTP-U data packets.

Example

The following command configures GTP-U service to use standard port 2152 as source port for all GTP-U data packets.:

```
source-port standard
```

udp-checksum

Inserts UDP-checksum in the UDP header of GTP-U packet.

Important In Release 20 and later, HNBGW is not supported. This command must not be used for HNBGW in Release 20 and later. For more information, contact your Cisco account representative.

Product

GGSN

HNB-GW

P-GW

SGSN

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > GTP-U Service Configuration

configure > **context** *context_name* > **gtpu-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-gtpu-service)#
```

Syntax Description

```
udp-checksum { no-optimize | optimize }
[ default | no ] udp-checksum
```

default

Through releases 14.0: Enables the UDP checksum, but no optimization is attempted. Releases 15.0 and later: Enables the UDP checksum, and attempts optimization of the UDP checksum in UDP header of GTPU packet using the inner payload transport checkusm.

no

Outer UDP checksum is marked as 'ZERO,' effectively disabling UDP checksum. Applicable only for IPv4 data.

no-optimize

No optimization attempt over UDP checksum in UDP header of GTP-U packet.

optimize

Attempts optimization of UDP checksum in UDP header of GTP-U packet using inner payload transport checksum.

Usage Guidelines

This command is used for enabling optimization of UDP checksum in UDP header of the GTP-U packet. An option to completely disable the UDP checksum of GTP-U packet is also introduced.

Example

The following command enables the optimization of UDP checksum in UDP header of the GTP-U packet:

```
udp-checksum optimize
```

CHAPTER 24

HA Proxy DNS Configuration Mode Commands

Important HA Proxy DNS Intercept is a license-enabled feature.

Command Modes

The HA Proxy DNS Configuration Mode is used to create rules for Home Agent (HA) proxy DNS intercept lists that redirect packets with unknown foreign DNS addresses to a home network DNS server.

Exec > Global Configuration > Context Configuration > Proxy DNS Configuration

configure > **context** *context_name* > **proxy-dns intercept-list** *list_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-proxy-dns-intercept-list)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- description, on page 903
- end, on page 904
- exit, on page 904
- pass-thru, on page 904
- redirect, on page 905

description

Allows you to enter descriptive text for this configuration.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
description text
no description
```

no

Clears the description for this configuration.

text

Enter descriptive text as an alphanumeric string of 1 to 100 characters.

If you include spaces between words in the description, you must enclose the text within double quotation marks (" "), for example, "AAA BBBB".

Usage Guidelines

The description should provide useful information about this configuration.

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

pass-thru

Sets IP addresses that should be allowed through the proxy DNS intercept feature.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Proxy DNS Configuration

configure > context *context_name* **> proxy-dns intercept-list** *list_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-proxy-dns-intercept-list)#
```

Syntax Description

[no] pass-thru { *ipv4_address* | *ipv6_address* } [/*ip_mask*]

no

Removes the DNS IP address from the pass-thru rule.

pass-thru *ip_address* [/*ip_mask*]

Specifies an DNS IP address that is allowed through the intercept feature.

ip_address [/*ip_mask*]: Specifies the IP address and network mask bits. *ip_address* [/*ip_mask*] is specified using IPv4 dotted decimal or IPv6 colon-separated-hexadecimal notation. The mask bits are a numeric value which is the number of bits in the subnet mask (CIDR notation).

Usage Guidelines

Use this command to identify DNS IP addresses that should be allowed through the intercept feature. For a more detailed explanation of the proxy DNS intercept feature, see the **proxy-dns intercept-list** command in the *Context Configuration Mode Commands* chapter. A maximum of 16 intercept rules (either **redirect** or **pass-thru**) are allow for each intercept list.

Important To allow packets through that do not match either the **pass-thru** or **redirect** rules, set a **pass-thru** rule address as: 0.0.0.0/0. If a packet does not match either the **pass-thru** or **redirect** rule, the packet is dropped.

Example

The following command allows a foreign network's DNS with an IP address of *10.2.55.12* to avoid being redirected:

```
pass-thru 10.2.55.12
```

redirect

Redirects DNS IP addresses from foreign networks matching an IP address in this command to a home network DNS.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Proxy DNS Configuration

configure > **context** *context_name* > **proxy-dns intercept-list** *list_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-proxy-dns-intercept-list)#
```

Syntax Description

```
redirect { ipv4_address | ipv6_address } [ primary-dns { ipv4_address | ipv6_address
 } + | [ secondary-dns { ipv4_address | ipv6_address } + ] ]
no redirect { ipv4_address | ipv6_address }
```

no

Removes the DNS IP address from the redirect rule.

primary-dns { *ipv4_address* | *ipv6_address* }+

Specifies the IP address of the primary home network DNS.

ipv4_address must be an IPv4 address in dotted-decimal notation.

ipv6_address must be an IPv6 address in colon-separated hexadecimal notation.

+ indicates that the keyword and variable option can be used multiple times in the same command.

secondary-dns { *ipv4_address* | *ipv6_address* }+

Specifies the IP address of the secondary home network DNS.

ipv4_address must be an IPv4 address in dotted-decimal notation.

ipv6_address must be an IPv6 address in colon-separated hexadecimal notation.

+ indicates that the keyword and variable option can be used multiple times in the same command.

Usage Guidelines

Use this command to identify DNS IP addresses from foreign networks that are to be redirected to the home DNS. For a more detailed explanation of the Proxy DNS feature, see the proxy-dns intercept-list command in the *Context Configuration Mode Commands* chapter. A maximum of 16 intercept rules (either **redirect** or **pass-thru**) are allow for each intercept list.

Since this command is configured in the source context, the destination context containing the path to the home network DNS is identified using the Context Configuration Mode command **ip dns-proxy source-address**.

Important If a packet does not match the **pass-thru** or **redirect** rule, the packet is dropped. If **primary-dns** or **secondary-dns** is not configured, DNS messages are redirected to the primary-dns-server (or the secondary-dns-server) configured for the subscriber OR inside the context.

Example

The following command identifies a foreign network DNS with an IP address of *209.165.200.236* and redirects it to a primary home network DNS with an IP address of *209.165.201.5*:

```
redirect 209.165.200.236 primary-dns 209.165.201.5 primary-dns
209.165.202.133 secondary-dns 209.165.201.2
```

CHAPTER 25

HA Service Configuration Mode Commands

The HA Service Configuration Mode is used to create and manage the Home Agent (HA) services within the current context.

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

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a11-signalling-packets

Applies Differentiated Services Code Point (DSCP) marking for IP headers carrying outgoing signalling packets.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

a11-signalling-packets ip-header-dscp *ip-header-dscp*
{ default | no } a11-signalling-packets ip-header-dscp

no

Disables DSCP marking for IP header encapsulation for the HA service.

default

Configures DSCP marking for IP header encapsulation for a specific HA service.

ip-header-dscp

Is a hexadecimal number between 0x0 and 0x3F.

Usage Guidelines

Use this command to apply DSCP marking for IP header carrying outgoing signalling packets.

Example

The following command applies DSCP marking for IP header carrying outgoing signalling packets.

a11-signalling-packets ip-header-dscp 0x2f

aaa

Configures the sending of subscriber session AAA accounting by the HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
aaa { accounting [ roaming ] | group string }
no aaa { accounting | group }
default aaa accounting
```

no

Disables AAA accounting for the HA service.

default

Configures AAA parameters for specific HA service

accounting

accounting Enables the sending of AAA accounting information for subscriber sessions by the Home Agent (HA), by default is enabled.

roaming Enables the sending of AAA accounting information for subscriber sessions by the Home Agent (HA) only for roaming subscribers.

group

group configures aaa group for ha-service, **group** has lower priority than subscriber/apn config.

string: size ranges between *1* and *63*.

Usage Guidelines

Enabling the HA service will send all accounting data (start, stop, and interim) to the configured AAA servers.

The chassis is shipped from the factory with the AAA accounting enabled.

Important In order for this command to function properly, AAA accounting must be enabled for the context in which the HA service is configured using the aaa accounting subscriber radius command.

Example

The following command disables aaa accounting for the HA service:

```
no aaa accounting
```

access-network

Configures a specific access network configuration.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
access-network accounting identifier  access_network_accounting_identifier
no access-network accounting identifier
```

no

Disables a specific access network configuration.

accounting

Specifies an access network configuration for accounting

identifier

Specifies an access network accounting identifier

access_network_accounting_identifier

This is an alphanumeric string of 1 through 128 characters.

Usage Guidelines

This command is used to configure an access network for accounting.

Example

The following command configures an access network for accounting with the identifier *idnt*:

access-network accounting identifier idnt

associate

Associates an HA-service with a QoS policy.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

`associate qci-qos-mapping` *`string`*
`no associate qci-qos-mapping`

no

Disables the association of an HA-service with a QoS policy.

qci-qos-mapping*string*

Maps a QoS Class Identifier (QCI) for this HA service.

string is an alphanumeric string of 1 through 63 characters.

Usage Guidelines

This command associates an HA-service with a QoS policy.

Example

The following command associates an HA-service with a QCI *map01*.

associate qci-qos-mapping map01

authentication

Configures authentication parameters for a specific HA service within a context.

Product

HA

ASN-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

```
authentication { aaa-distributed-mip-keys [ disabled | optional | required
 ] | dmu-refresh-key | imsi-auth| mn-aaa { allow-noauth | always|
dereg-noauth | noauth | renew-reg-noauth | renew-and-dereg-noauth } |
mn-ha { allow-noauth | always } | pmip-auth | stale-key-disconnect }
no authentication { imsi-auth | pmip-auth }
default authentication { aaa-distributed-mip-keys | dmu-refresh-key |
imsi-auth | mn-aaa | mn-ha | pmip-auth | stale-key-disconnect }
```

no

Disable the parameter.

default

Resets the specified option to its default setting.

aaa-distributed-mip-keys [disabled | optional |required]

Configures use of AAA distributed MIP keys for authenticating RRQ for WiMAX HA calls.

Default is disabled.

disabled: Disables using AAA distributed WiMAX Mobile IP (MIP) keys for authenticating MIP RRQ.

optional: Uses AAA distributed WiMAX MIP keys for authenticating RRQ with fallback option to use static/3GPP2 based MIP keys.

required: AAA distributed WiMAX MIP keys for authenticating MIP RRQ are mandatory

dmu-refresh-key

Typically, when a Dynamic Mobile IP Update (DMU) resets, the next MIP re-registration causes MN-HA authorization failure and the HA rejects the MIP RRQ. This parameter enables the HA to retrieve the MN-HA key again from the AAA during the call and to use the freshly retrieved key value to recheck authentication.

Default is disabled.

imsi-auth

Enable uses the International Subscriber Mobile identity (IMSI) to determine if MN-AAA or MN-FAC extensions are not present in the RRQ.

Default is disabled.

mn-aaa { allow-noauth | always | dereg-noauth | noauth | renew-reg-noauth | renew-and-dereg-noauth }

Specifies how mobile node-to-AAA authentication extension in registration requests from the mobile node should be handled by the HA service.

Default is always.

allow-noauth: Specifies that the HA service does not require authentication for every mobile node registration request. However, if the mn-aaa extension is received, the HA service will authenticate it.

always: Specifies that the HA service will perform authentication each time a mobile node registers.

dereg-noauth: Disables authentication request upon de-registration.

noauth: Specifies that the HA service will not look for mn-aaa extension and will not authenticate it.

renew-reg-noauth: Specifies that the HA service will not perform authentication for mobile node re-registrations. Initial registration and de-registration will be handled normally.

renew-and-dereg-noauth: Disables authentication request upon re-registration and de-registration.

mn-ha { allow-noauth | always }

Specifies whether the HA service looks for an MN-HA authentication extension in the RRQ.

Default is always.

allow-noauth: Allows a request that does not contain the auth extension.

always: A request should always contain the auth extension to be accepted.

pmip-auth

Specifies whether the HA service looks for an MN-HA authentication extension in the RRQ.

Default is always.

allow-noauth: Allows a request that does not contain the auth extension.

always: A request should always contain the auth extension to be accepted.

stale-key-disconnect

If MN-HA auth fails for MIP renew and dereg, disconnects the call immediately.

Disabled by default.

Usage Guidelines

The **authentication** command, combined with a keyword, can be used to specify how the system will perform authentication of registration request messages.

Example

The following command configures the HA service to always perform mobile node authentication for every registration request.

authentication mn-aaa always

The following command configures the HA service to always look for an MN-HA authentication extension in the RRQ.

authentication mn-ha always

bind

Binds the HA service to a logical IP interface serving as the Pi interface and specifies the maximum number of subscribers that can access this service over the interface.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
bind address { range_IPv4address ip_mask | range_IPv4address/bitmask } [
max-subscribers count ]
no bind address
```

range_IPv4address ip_mask | range_IPv4address/bitmask

Specifies the pool of IP addresses (in IPv4 dotted-decimal notation) of the interface configured as the Pi interface with an enterprise HA (EHA). *ip_mask* and *bitmask* specifies the number of subnet bits, representing the subnet mask in CIDR notation and must be a value between 1 to 32.

range_IPv4address is a preconfigured range of IPv4 addresses in Loopback Interface Configuration Mode to enable the Enterprise HA support with enhanced capacity and configured

max-subscribers *count*

Default: *2500000*

Specifies the maximum number of subscribers that can access this service on this interface.

count can be configured to an integer from 0 through 4000000.

Important The maximum number of subscribers supported is dependant on the license key installed and the number of active packet processing cards installed in the system.

Usage Guidelines

Associate the HA service to a specific logical IP address. The logical IP address or interface takes on the characteristics of a Pi interface. Only one interface can be bound to a service. The interface should be configured prior to issuing this command.

This command also sets a limit as to the number of simultaneous subscribers sessions that can be facilitated by the service/interface at any given time.

When configuring the **max-subscribers** option, be sure to consider the following:

- The total number of interfaces that you will configuring for use as Pi interfaces
- The maximum number of subscriber sessions that all of these interfaces may handle during peak busy hours
- The average bandwidth for each of the sessions
- The type of physical port to which these interfaces will be bound

Taking these factors into account and distributing your subscriber session across all available interfaces will allow you to configure your interfaces to optimally handle sessions without degraded performance.

IP range support is provided through *ranged_address* value. This value enables the pool of IPv4 addresses to support Enterprise HA on HA service to connect enhanced number of enterprise nodes. Refer *HA Administration Guide* for more information.

Use the **no bind address** command to delete a previously configured binding.

Example

The following command would bind the logical IP interface with the address of *209.165.201.1* to the HA service and specifies that a maximum of *600* simultaneous subscriber sessions can be facilitated by the interface/service at any given time.

```
bind address 209.165.201.1
max-subscribers 600
```

The following command disables a binding that was previously configured:

```
no bind address
```

The following command binds the range of IP addresses with HA service to be used with Enterprise HA support:

```
bind address 209.165.201.0/24
```

binding-update

Configures MIP binding-update message related parameters.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

binding-update { max-retransmission *num* **| retransmission-timeout** *seconds* **}**

max-retransmission *num*

Default *3*.

Configures the number of times the message shall be transmitted. *num* must be an integer from 1 through 5.

retransmission-timeout *seconds*

Default 2.

Configures the transmission timeout for the message in seconds. *seconds* must be an integer from 1 through 60.

Usage Guidelines

Configure binding update parameters.

Example

Set the maximum number of times a MIP binding update message is transmitted to *4* with the following command:

```
binding-update max-retransmission 4
```

default

Restores default values assigned for a specified parameter.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
default { authentication { imsi-auth | mn-aaa | mn-ha } | binding-update
 { max-retransmission | retransmission-timeout } | encapsulation | gre {
 checksum | checksum-verify | reorder-timeout | sequence-mode |
sequence-numbers } | ip local-port | policy { null-username |
nw-reachability-fail | overload } | private-address allow-no-reverse-tunnel
 | reg-lifetime | reverse-tunnel | revocation [ enable | max-retransmission
 | retransmission-timeout | trigger handoff ] | setup-timeout |
simul-bindings }
```

authentication

imsi-auth: Restores IMSI authentication to its default: disabled.

mn-aaa: Restores the Foreign Agent (FA) mobile node re-registration authentication setting to its default: always.

mn-ha: Configures the HA service to its default behavior of looking for an MN-HA authentication extension in the RRQ.

binding-update { max-retransmission | retransmission-timeout }

Sets the MIP binding-update message related parameters to their defaults.

max-retransmission: Default 3.

Configures the number of times the message shall be transmitted to 3.

retransmission-timeout: Configures the transmission timeout for the message to 2 seconds.

encapsulation

Sets MIP data encapsulation using GRE to its default: enabled.

gre { checksum | checksum-verify | reorder-timeout | sequence-mode | sequence-numbers }

Sets default Generic Routing Encapsulation (GRE) parameters.

checksum: Disables the introduction of the checksum field in outgoing GRE packets.

checksum-verify: Disables verification of the GRE checksum (if present) in incoming GRE packets.

reorder-timeout: Sets the maximum number of milliseconds to wait before processing reordered out-of-sequence GRE packets to the default setting: 100.

sequence-mode: Disables the reordering of incoming out-of-sequence GRE packets by setting this parameter to the default setting: none.

sequence-numbers: Disables the insertion or removal of GRE sequence numbers in GRE packets.

ip local-port

Restores the IP local-port setting to its default: 434.

policy { null-username | nw-reachability-fail | overload }

Restores the Home Agent service session policy settings.

null-username: Rejects all RRQs that do not have an NAI.

nw-reachability-fail: If the network is not reachable, rejects all incoming sessions.

overload: Restores the Home Agent service session overload policy setting to its default: reject.

private-address allow-no-reverse-tunnel

Resets the HA so that it does not accept MIP calls that use a private address without reverse tunneling.

reg-lifetime

Restores the Mobile IP session registration lifetime setting configured by the **reg-lifetime** command to its default: 600 seconds.

reverse-tunnel

Restores the reverse tunneling setting to its default: enabled.

revocation [enable | max-retransmission | retransmission-timeout | trigger { handoff | idle-timeout}]

Resets the MIP Registration Revocation settings to their default values. When no optional keywords are specified all revocation settings are set to their defaults.

enable: Disables MIP Registration Revocation on the FA.

max-retransmission: Sets the maximum number of retransmissions to 3.

retransmission-timeout: Sets the retransmission timeout to 3 seconds.

trigger { handoff | idle-timeout }: **handoff** enables inter-Access Gateway/FA handoff as a trigger for MIP Registration Revocation. **idle-timeout** enables session idle timer expiration as a trigger for MIP Registration Revocation.

setup-timeout

Restore the maximum amount of time allowed for setting up a session to the default: 60 seconds.

simul-bindings

Restores the simultaneous bindings setting to its default: 3.

Usage Guidelines

After the system has been modified from its default values, this command is used to set/restore specific parameters to their default values.

Example

The following command is used to return the IP local-port parameter to its default value:

```
default ip local-port
```

default subscriber

Specifies the name of a subscriber profile configured within the same context as the HA service from which to base the handling of all other subscriber sessions handled by the HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

[no] default subscriber *profile_name*

profile_name

Specifies the name of the configured subscriber profile. *profile_name* is an alphanumeric string of 1 through 127 characters that is case sensitive.

Usage Guidelines

Each subscriber profile specifies "rules" such as permissions, PPP settings, and timeout values.

By default, the HA service will use the information configured for the subscriber named default within the same context. This command allows for multiple HA services within the same context to apply different "rules" to sessions they process. Each set of rules can be configured under a different subscriber name which is pointed to by this command.

Use the **no default subscriber** *profile_name* command to delete the configured default subscriber.

Example

To configure the HA service to apply the rules configured for a subscriber named *user1* to every other subscriber session it processes, enter the following command:

```
default subscriber user1
```

description

Allows you to enter descriptive text for this configuration.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

description *text*
no description

no

Clears the description for this configuration.

text

Enter descriptive text as an alphanumeric string of 1 to 100 characters.

If you include spaces between words in the description, you must enclose the text within double quotation marks (" "), for example, "AAA BBBB".

Usage Guidelines

The description should provide useful information about this configuration.

encapsulation

Configures Mobile IP (MIP) encapsulation types supported for a specific HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

[no] encapsulation allow { gre | keyless-gre }

no

Disables MIP encapsulation types supported for specific HA service

allow

Allows encapsulation type for MIP data.

gre

Default: Enabled.

Specifies the use of Generic Routing Encapsulation (GRE) for MIP data.

keyless-gre

Default: Disabled.

Specifies the use of GRE without exchanging keys for MIP data.

Usage Guidelines

Use to disable or re-enable the use of GRE encapsulation or Key-less encapsulation for MIP sessions.

In case of chassis HA operating with other vendor equipment, which does not support the 3GPP2 to exchange key, this command with **keyless-gre** keyword will make the chassis HA to accept MIP data with legacy GRE.

Example

To disable GRE for MIP sessions, enter the following command:

```
no encapsulation allow
gre
```

To re-enable GRE for MIP sessions, enter the following command:

```
encapsulation allow
gre
```

To enable key-less GRE for MIP sessions, enter the following command:

```
encapsulation allow
keyless-gre
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

fa-ha-spi

Configures the security parameter index (SPI) for specific HA service parameters.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

fa-ha-spi remote-address { *fa_ip_address* **|** *fa_ip_address_mask* **} spi-number** *number* **{ encrypted secret** *enc_secret* **| secret** *secret* **} [allow-fa-ha-auth-extension] [description** *string* **] [disallow-fa-ha-auth-extension] [hash-algorithm { hmac-md5 | md5 | rfc2002-md5 }] [replay-protection { nonce | timestamp [timestamp-tolerance tolerance] }] [timestamp-tolerance** *tolerance* **]**

no fa-ha-spiremote-address { *ha_ip_address* | *ha_ip_address/mask* } **spi-number** *number*

no

Disables the security parameter index (SPI) for specific HA service parameters.

remote-address { *fa_ip_address* | *fa_ip_address/mask* }

Specifies the IP address of the FA. *fa_ip_address* is entered using IPv4 dotted-decimal notation with CIDR for the subnet mask.

Important The system supports unlimited peer FA addresses per HA but only maintains statistics for a maximum of 8,192 peer FAs. If more than 8,192 FAs are attached, older statistics are overwritten.

spi-number *number*

Specifies the SPI (number) which indicates a security context between the FA and the HA in accordance with RFC 2002.

number is an integer value from 256 through 4294967295.

encrypted secret *enc_secret* | secret *secret*

Configures the shared-secret between the HA service and the FA. The secret can be either encrypted or non-encrypted.

encrypted secret *enc_secret*: Specifies the encrypted shared key between the HA service and the FA. *enc_secret* must be an alphanumeric string of 1 through 236 characters that is case sensitive.

secret *secret*: Specifies the shared key between the HA service and the FA. *secret* must be an alphanumeric string of 1 through 236 characters that is case sensitive.

allow-fa-ha-auth-extension

Allows validation of FA HA Authentication extension.

description *string*

This is a description for the SPI. *string* must be an alphanumeric string of 0 through 31 characters.

hash-algorithm { hmac-md5 | md5 | rfc2002-md5 }

Default: hmac-md5

Specifies the hash-algorithm used between the HA service and the FA.

hmac-md5: Configures the hash-algorithm to implement HMAC-MD5 per RFC 2002bis.

md5: Configures the hash-algorithm to implement MD5 per RFC 1321.

rfc2002-md5: Configures the hash-algorithm to implement keyed-MD5 per RFC 2002.

replay-protection { timestamp [timestamp-tolerance tolerance] | nonce }

Specifies the replay-protection scheme that should be implemented by the FA service for this SPI.

nonce: Configures replay protection to be implemented using NONCE per RFC 2002.

timestamp: Configures replay protection to be implemented using timestamps per RFC 2002.

timestamp-tolerance: Specifies the allowable difference (tolerance) in timestamps that is acceptable. If the difference is exceeded, then the session will be rejected. *tolerance* is measured in seconds and can be configured to an integer from 1 and 65535. The default is 60.

Usage Guidelines

An SPI is a security mechanism configured and shared by the HA service and the FA. Please refer to RFC 2002 for additional information.

Though it is possible for FAs and HAs to communicate without SPIs being configured, the use of them is recommended for security purposes. It is also recommended that a "default" SPI with a remote address of 0.0.0.0/0 be configured on both the HA and FA to prevent hackers from spoofing addresses.

Important The SPI configuration on the HA must match the SPI configuration for the FA service on the system in order for the two devices to communicate properly.

A maximum of 2,048 SPIs can be configured per HA service.

Use the **no** version of this command to delete a previously configured SPI.

Example

The following command configures the FA service to use an SPI of *512* when communicating with an HA with the IP address *209.165.200.226*. The key that would be shared between the HA and the FA service is *q397F65*. When communicating with this HA, the FA service will also be configured to use the rfc2002-md5 hash-algorithm.

```
fa-ha-spi remote-address 209.165.200.226 spi-number 512 secret q397F65
hash-algorithm rfc2002-md5
```

The following command deletes the configured SPI of 400 for an HA with an IP address of *209.165.202.128*:

```
no fa-ha-spi remote-address 209.165.202.128 spi-number 400
```

gre

Configures Generic Routing Encapsulation (GRE) parameters.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
gre { checksum | checksum-verify | reorder-timeout timeout | sequence-mode
 { none | reorder } | sequence-numbers }
default gre { checksum | checksum-verify | reorder-timeout | sequence-mode
 | sequence-numbers }
no gre { checksum | checksum-verify | sequence-numbers }
```

no

Disables the specified functionality.

default

Sets or restores default value assigned for specified parameter.

checksum

Default: disabled

Enables the introduction of the checksum field in outgoing GRE packets.

checksum-verify

Default: disabled

Enables verification of the GRE checksum (if present) in incoming GRE packets.

reorder-timeout *timeout*

Default: 100

Configures the maximum number of milliseconds to wait before processing reordered out-of-sequence GRE packets. *timeout* must be an integer from 0 through 5000.

sequence-mode { none | reorder }

Default: none

Configures how incoming out-of-sequence GRE packets should be handled.

none: Disables reordering of incoming out-of-sequence GRE packets.

reorder: Enables reordering of incoming out-of-sequence GRE packets.

sequence-numbers

Default: Disabled

Enables the insertion of sequence numbers into the GRE packets.

Usage Guidelines

Use this command to configure how the HA service handles GRE packets.

Example

To set the maximum number of milliseconds to wait before processing reordered out-of-sequence GRE packets to *500* milliseconds, enter the following command:

```
gre reorder-timeout 500
```

To enable the reordering of incoming out of sequence GRE packets, enter the following command:

```
gre sequence-mode reorder
```

To enable the insertion or removal of GRE sequence numbers in GRE packets, enter the following command:

```
gre sequence-numbers
```

idle-timeout-mode

Configures the sessions idle-timer reset behavior.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

```
idle-timeout-mode { aggressive | handoff | normal } [ upstream-only ]
default idle-timeout-mode
```

default

Resets the idle timeout mode to the default settings.

aggressive

Resets the session idle timer only when MIP user data is detected. This is the default behavior.

handoff

Resets the session idle timer when MIP user data is detected and an inter-Access Gateway/FA handoff occurs.

normal

Resets the session idle timer when MIP user data is detected and any MIP control signaling occurs.

upstream-only

Only upstream user data (data from the mobile node) resets the idle timer for the session. This is disabled by default.

Usage Guidelines

Use this command to set how the current HA service resets the idle timer for a session.

Example

To reset the idle timer whenever user data is detected or whenever an inter-Access Gateway/FA occurs, use the following command:

idle-timeout-mode handoff

ikev1

Configures IPSec Internet Key Exchange (IKE) parameters.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
ikev1 { aaa-context aaa_context_string | peer-fa  IPAddress crypto-map
crypto_map_string [ encrypted ] [ secret secret_string ] | skew-lifetime seconds
 }
no ikev1 { aaa-context | peer-fa IPAddress | skew-lifetime }
```

no

Disables IPSec IKE parameters.

aaa-context *aaa_context_string*

Configures AAA context from which to retrieve IKE keys. Must be followed by the context name.

aaa_context_string is an alphanumeric string of 1 through 63 characters.

peer-fa *IPAddress*

Sets the IKE crypto-map for a peer Foreign Agent (FA).

IPAddress is IP address entered using IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation.

crypto-map *crypto_map_string*

Configures IKE crypto-map. Must be followed by the crypto-map name.

crypto_map_string is an alphanumeric string of 1 through 63 characters.

encrypted designates use of encryption

secret *secret_string* uses a secret that is shared between FA and HA. *secret_string* is an alphanumeric string of 1 through 256 characters.

skew-lifetime *seconds*

Configures the "S" lifetime Skew (in seconds). *seconds* is an integer from 1 through 65534. Default is 10.

Usage Guidelines

Use this command to configure IPSec IKE parameters.

Example

```
ikev1 peer-fa 11.22.33.44 crypto-map er encrypted secret ert
```

ip context-name

Specifies name of the destination context to be applied to the subscribers.

This configuration overrides the local subscriber configuration as well as the return attributes sent by RADIUS. All calls coming to this HA service are assigned this destination context; the IP address is allocated from the specified IP pool or group that is configured in the context specified in the service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
ip context-name name
{ default | no } ip context-name
```

default

Sets the default value assigned for context-name.

no

Removes the current assigned context from the subscriber's data.

name

Specifies the name of the context to assign the subscriber to once authenticated. *name* must be an alphanumeric string from 1 through 79 characters.

Usage Guidelines

Set the name of the destination context to be applied to the subscribers.

Example

The following command configures the IP context name of *sampleName*:

```
ip context-name sampleName
```

ip local-port

Configures the local User Datagram Protocol (UDP) port for the Pi interface's IP socket on which to listen for Mobile IP Registration messages.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
ip local-port number
default ip local-port
```

default

Sets or restores the default value assigned for the IP local port.

number

Specifies the UDP port number.

number is an integer from 1 through 65535. Default is 434.

Usage Guidelines

Specify the UDP port that should be used for communications between the FA service and the HA.

Example

The following command specifies a UDP port of *3950* for the HA service to use to communicate with the HA on the Pi interface:

```
ip local-port 3950
```

ip pool

Specifies name of the IP address pool or group to use for subscriber IP address allocation.

This configuration overrides the local subscriber configuration, as well as the return attributes sent by RADIUS. All calls coming to this HA service are assigned this destination context and an IP address is allocated from the specified IP pool or group that is configured in the context specified in the service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
ip pool name
{ default | no } ip pool
```

name

Specifies the logical name of the IP address pool. *name* must be an alphanumeric string of 1 through 31 characters.

no

Removes the specified IP address pool specified from the current context or disables the option for an IP pool.

default

Clears the IP address pool or group setting.

Usage Guidelines

Define a pool of IP addresses for the context to use in assigning IPs for this service.

Example

The specifies name of the IP address pool or group to use for subscriber IP address allocation:

```
ip pool pool1
```

The following command removes the specified IP address pool:

```
no ip pool
```

isakmp

Configures the crypto map for a peer HA and the default crypto map for the FA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
isakmp { peer-fa fa_address |   [ [ encrypted ] secret  ] } | skew-lifetime
 time | aaa-context context_name }
no isakmp { peer-fa fa_address | default | skew-lifetime | aaa-context }
```

no

Deletes the reference to the crypto map for the specified HA; deletes the reference for the default crypto map; resets the skew-lifetime to the default; or resets the aaa-context to the default.

peer-fa *fa_address* { crypto map map_name [[encrypted] secret *secret*] }

Configures a crypto map for a peer FA.

- *fa_address*: IP address of the peer FA to which this IPSec SA will be established.
- **crypto map** *map_name*: The name of a crypto map configured in the same context that defines the IPSec tunnel properties. *map_name* is an alphanumeric string of 1 through 63 characters.
- **encrypted**: This keyword is intended only for use by the chassis while saving configuration scripts. The system displays the **encrypted** keyword in the configuration file as a flag that the variable following the **secret** keyword is the encrypted version of the plain text secret key. Only the encrypted secret key is saved as part of the configuration file.
- **secret** *secret*: The pre-shared secret that will be used to during the IKE negotiation. *secret* is an alphanumeric string of 1 through 127 characters.

skew-lifetime *time*

Default: *10* seconds

Configures the IKE pre-shared key's time skew.

time is the amount of time the fetched from AAA that is considered valid after the key has expired. It is measured in seconds and can be configured to an integer from 1 through 65534.

aaa-context *context_name*

Default: The context in which the service is configured

Configures the name of the context on the system in which AAA functionality is performed.

context_name is the name of the context through which the HA service accesses the HAAA server to fetch the IKE S Key and S Lifetime parameters. It is an alphanumeric string of 1 through 63 characters that is case sensitive.

Usage Guidelines

Use this command to configure the FA-service's per-HA IPSec parameters. These dictate how the HA service is to establish an IPSec SA with the specified FA.

Important For maximum security, this command be executed for every possible FA with which the HA service communicates.

Note that once an IPSec tunnel is established between the FA and HA for a particular subscriber, all new Mobile IP sessions using the same FA and HA are passed over the tunnel regardless of whether or not IPSec is supported for the new subscriber sessions. Data for existing Mobile IP sessions is unaffected.

Example

The following command creates a reference for an HA with the IP address *10.2.3.4* to a crypto map named *map1*:

```
isakmp peer-fa 10.2.3.4 crypto-map map1
```

The following command deletes the crypto map reference for the HA with the IP address *10.2.3.4*.

```
no isakmp peer-fa 10.2.3.4 crypto-map map1
```

The following command sets the time an S key can used after the S lifetime expires to *120* seconds.

```
isakmp skew-lifetime 120
```

The following command creates the default reference for an HA to a crypto map named *map1*, where peer address is unknown:

```
isakmp default crypto-map map1
```

min-reg-lifetime

Configures Mobile IP session minimum registration lifetime, in seconds.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

[no | default] min-reg-lifetime *min_reg_lifetime_seconds*

no

Disables the min registered lifetime.

default

Configures Mobile IP session minimum registration lifetime to default which is *0*.

min-reg-lifetime

Configures Mobile IP session minimum registration lifetime.

min_reg_lifetime_seconds

This is the minimum registration lifetime value in seconds and must be an integer between 1 through 65534.

Usage Guidelines

Use this command to configure Mobile IP session minimum registration lifetime, in seconds, between *1* and *65534*. Default is *0* seconds.

Example

Use the following command to configure mobile IP session to minimum registered life time to *100* seconds:

```
min-reg-lifetime 100
```

mn-ha-spi

Configures the security parameter index (SPI) between the HA service and the mobile node (MN).

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
mn-ha-spi spi-number number [ description string ] [ encrypted secret
enc_secret ] [ hash-algorithm { hmac-md5 | md5 | rfc2002-md5 } ] [
permit-any-hash-algorithm ] [ replay-protection { nonce | timestamp } ]
[ secret secret ] [ timestamp-tolerance tolerance ]
no mn-ha-spi spi-number number
```

spi-number *number*

Specifies the SPI (number) which indicates a security context between the mobile node and the HA service in accordance with RFC 2002. *number* can be configured to an integer from 256 through 4294967295.

description *string*

This is a description for the SPI. *string* is an alphanumeric string of 1 through 31 characters.

encrypted secret *enc_secret* | secret *secret*

Configures the shared-secret between the HA service and the mobile node. The secret can be either encrypted or non-encrypted.

encrypted secret *enc_secret*: Specifies the encrypted shared key between the HA service and the mobile node. *enc_secret* must be an alphanumeric string of 1 through 254 characters that is case sensitive.

secret *secret*: Specifies the shared key between the HA service and the mobile node. *secret* must be an alphanumeric string of 1 through 127 characters that is case sensitive.

The **encrypted** keyword is intended only for use by the chassis while saving configuration scripts. The system displays the **encrypted** keyword in the configuration file as a flag that the variable following the **secret** keyword is the encrypted version of the plain text secret key. Only the encrypted secret key is saved as part of the configuration file.

hash-algorithm { hmac-md5 | md5 | rfc2002-md5 }

Default: hmac-md5

Specifies the hash-algorithm used between the HA service and the mobile node.

hmac-md5: Configures the hash-algorithm to implement HMAC-MD5 per RFC 2002bis.

md5: Configures the hash-algorithm to implement MD5 per RFC 1321.

rfc2002-md5: Configures the hash-algorithm to implement keyed-MD5 per RFC 2002.

permit-any-hash-algorithm

Default: disabled

Allows verification of the MN-HA authenticator using all other hash-algorithms after failure with configured hash-algorithm. The successful algorithm is logged to aid in troubleshooting and used to create the MN-HA authenticator in the Registration Reply message.

replay-protection { nonce | timestamp }

Default: timestamp

Specifies the replay-protection scheme that should be implemented by the HA service for this SPI.

nonce: configures replay protection to be implemented using NONCE per RFC 2002.

timestamp: configures replay protection to be implemented using timestamps per RFC 2002.

timestamp-tolerance *tolerance*

Default: *60*

Specifies the allowable difference (tolerance) in timestamps that is acceptable. If the difference is exceeded, then the session will be rejected. If this is set to *0*, timestamp tolerance checking is disabled at the receiving end.

Tolerance is measured in seconds and can be configured to an integer from 0 through 65535.

Usage Guidelines

An SPI is a security mechanism configured and shared by the HA service and the mobile node. Please refer to RFC 2002 for additional information.

Use the **no** version of this command to delete a previously configured SPI.

Example

The following command configures the HA service to use an SPI of 640 when communicating with a mobile node. The key that would be shared between the mobile node and the HA service is q397F65.

```
mn-ha-spi spi-number 640 secret q397F65
```

The following command deletes the configured SPI of *400*:

```
no mn-ha-spi spi-number 400
```

nat-traversal

This command enables NAT traversal and also configures the forcing of UDP tunnels for NAT traversal.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

```
[ default | no ] nat-traversal [ force-accept ]
```

no

Disables NAT traversal or disables forcing the acceptance of UDP tunnels for NAT traversal.

default

Reset the defaults for this command.

Default: NAT traversal disabled, force-accept disabled.

force-accept

This keyword configures the HA to accept requests when NAT is not detected but the Force (F) bit is set in the RRQ with the UDP Tunnel Request. By default this type of request is rejected if NAT is not detected.

Usage Guidelines

Use this command to enable NAT traversal and enable the forcing of UDP tunnels for NAT traversal.

Example

The following command enables NAT traversal for the current HA service and forces the HA to accept UDP tunnels for NAT traversal:

```
nat-traversal force-accept
```

optimize tunnel-reassembly

Designates that tunnel reassembly optimization will be used for fragmented large packets passed between HA and FA. Default is disabled.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

`[ default | no ] optimize tunnel-reassembly`

Usage Guidelines

Enabling this functionality fragments large packets prior to encapsulation for easier processing.

Tunnel reassembly optimization is disabled by default.

Important You should not use this command without first consulting Cisco Systems Technical Support. This command applies to very specific scenarios where packet reassembly is not supported at the far end of the tunnel. There are cases where the destination network may either discard the data, or be unable to reassemble the packets.

Important This functionality works best when the HA service is communicating with an FA service running in a system. However, an HA service running in the system communicating with an FA from a different manufacturer will operate correctly even if this parameter is enabled.

Use the **no** version of this command to disable tunnel optimization if enabled.

Example

The following command enables tunnel reassembly optimization:

`optimize tunnel-reassembly`

per-domain statistics-collection

Enables per-domain statistics collection.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

[no] per-domain statistics-collection

no

Disables per-domain statistics collection.

Usage Guidelines

Use this command to enable per-domain statistics collection.

Example

The following command enables per-domain statistics collection.

per-domain statistics-collection

policy bc-query-result

Configure the binding cache (BC) query Response Result code.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

policy bc-query-result network-failure *code*
default policy bc-query-result network-failure

network-failure *code*

Default: *0xFFFF*

Specify the response code for BC responses sent on network failures.

code must be either 0xFFFF or 0xFFFE.

Usage Guidelines

Use this command to specify the type of response code to send in a P-MIP BC query result.

Example

The following command sets the P-MIP BC query result response code to *0xFFFE*:

```
policy bc-query-result network-failure 0xFFFE
```

policy nw-reachability-fail

Specifies the action to take upon detection of an up-stream network -reachability failure.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

```
policy nw-reachability-fail { redirect ip_addr1 [ weight value ] [ ip_addr2
[ weight value ] ... ip_addr16 [ weight value ] ] | reject [ use-reject-code
{ admin-prohibited | insufficient-resources } ] }
no policy nw-reachability-fail [ redirect ip_addr1 ... ip_addr16 ]
```

no

Deletes the network reachability policy completely or deletes the specified redirect addresses fro the policy.

reject [use-reject-code { admin-prohibited | insufficient-resources }]

Upon network reachability failure, reject all new calls for this context.

use-reject-code { admin-prohibited | insufficient-resources }: When rejecting calls send the specified reject code. If this keyword is not specified the admin-prohibited reject code is sent by default.

reject [use-reject-code { admin-prohibited | insufficient-resources }]

Upon network reachability failure reject all new calls for this context. If no reject code is specified, the HA sends a registration reply code of 81H (admin-prohibited).

use-reject-code { admin-prohibited | insufficient-resources }: Use the specified reject code when rejecting traffic.

admin-prohibited: When this keyword is specified and traffic is rejected, the error code 81H (admin-prohibited) is returned.

insufficient-resources: When this keyword is specified and traffic is rejected, the error code 82H (insufficient resources) is returned.

redirect *ip_addr1* [weight *value*] [*ip_addr2* [weight *value*] ... *ip_addr16* [weight *value*]]

Upon network reachability failure redirect all calls to the specified IP address.

ip_addr1: This must entered using IPv4 dotted-decimal notation. Up to 16 IP addresses and optional weight values can be entered on one command line.

weight *value*: When multiple addresses are specified, they are selected in a weighted round-robin scheme. If a weight is not specified the entry is automatically assigned a weight of 1. *value* must be an integer from 1 through 10.

Usage Guidelines

Use this command to set the action for the HA service to take upon a network reachability failure.

Important Refer to the Context Configuration mode command **nw-reachability server** to configure network reachability servers.

Important Refer to the Subscriber Configuration mode command **nw-reachability-server** to bind the network reachability to a specific subscriber.

Important Refer to the **nw-reachability server server_name** keyword of the Context Configuration mode **ip pool** command to bind the network reachability server to an IP pool.

Example

To set the HA service to reject all new calls on a network reachability failure, enter the following command:

policy nw-reachability-fail reject

Use the following command to set the HA service to redirect all calls to the HA at IP address *209.165.200.234* and *209.165.201.10* on a network reachability failure:

```
policy nw-reachability-fail redirect 209.165.200.234 209.165.201.10
```

policy overload

Configures the overload policy within the HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

policy overload { redirect *address* **[weight** *weight_num* **] [** *address2* **[weight** *weight_num* **] ...** *address16* **[weight** *weight_num* **]] | reject [use-reject-code {**

```
 admin-prohibited | insufficient-resources } ] }
no policy overload [ redirect address [ address2...address16 ]
```

no policy overload [redirect address [*address2...address16*]]

Deletes a previously set policy or removes a redirect IP address.

overload: Without any options deletes the complete overload policy from the PDSN service.

overload redirect *address* [*address2* ... *address16*]: deletes up to 16 IP addresses from the overload redirect policy. The IP addresses must be expressed in IP v4 dotted-decimal notation

redirect *address* [weight *weight_num*] [*address2* [weight *weight_num*] ... *address16* [weight *weight_num*]

This option enables a redirect policy for overloading conditions. When a redirect policy is invoked, the HA service rejects new sessions with a Registration Reply Code of 136H (unknown home agent address) and provides the IP address of an alternate HA. This command can be issued multiple times.

address: The IP address of an alternate HA expressed in IP v4 dotted-decimal notation. Up to 16 IP addresses can be specified either in one command or by issuing the redirect command multiple times. If you try to add more than 16 IP addresses to the redirect policy, the CLI issues an error message. If you specify an IP address and weight that already exists in the redirect policy the new values override the existing values.

weight *weight_num*: When multiple addresses are specified, they are selected in a weighted round-robin scheme. Entries with higher weights are more likely to be chosen. If a weight is not specified the entry is automatically assigned a weight of 1. *weight_num* must be an integer from 1 through 10.

reject [use-reject-code { admin-prohibited | insufficient-resources }]

This option causes any overload traffic to be rejected. If no reject code is specified, the HA sends a registration reply code of 81H (admin-prohibited).

use-reject-code { admin-prohibited | insufficient-resources }: Use the specified reject code when rejecting traffic.

admin-prohibited: When this keyword is specified and traffic is rejected, the error code 81H (admin-prohibited) is returned.

insufficient-resources: When this keyword is specified and traffic is rejected, the error code 82H (insufficient resources) is returned.

Usage Guidelines

The system invokes the overload policy if the number of calls currently being processed exceeds the licensed limit for the maximum number of sessions supported by the system.

The system automatically invokes the overload policy when an on-line software upgrade is started.

Use the **no** version of this command to restore the default policy.

The setting for overload policy is reject.

Example

The following command enables an overload redirect policy for the HA service that will send overload calls to either of two destinations with weights of *1* and *10* respectively:

```
policy overload redirect 209.165.200.234 weight 1 209.165.200.244 weight
 10
```

policy null-username

Configures the current HA service to accept or reject an RRQ without an NAI extension.

Important This command is customer specific and license enabled.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

```
policy null-username { accept-static | reject }
no policy null-username
```

no

Set the HA back to the default behavior of rejecting an RRQ without an NAI extension.

accept-static

This enable the HA to accept an RRQ with a static (non-zero) home address request but without NAI extension, when MN-AAA authentication is disabled at the HA. MN-NAI is required for MN-AAA authentication.

reject

Default. This is the default behavior of rejecting an RRQ without an NAI extension.

Usage Guidelines

Use this command to enable or disable the HA from accepting an RRQ without an NAI.

Example

The following command enables the current HA service to accept RRQs that do not have an NAI extension:

```
policy null-username accept-static
```

private-address allow-no-reverse-tunnel

This command allows the HA service to accept private addresses without using reverse tunneling.

Important This command is customer specific and license enabled.

Product HA

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

`[ no ] private-address allow-no-reverse-tunnel`

no

Reject MIP calls that use private addresses and do not use reverse tunneling.

Usage Guidelines Use this command to enable or disable the HA from accepting calls that use private addresses without reverse tunneling.

Example

The following command enables the current HA service to accept MIP calls that use private addresses but do not use reverse tunneling:

```
private-address allow-no-reverse-tunnel
```

radius accounting dropped-pkts

This command enables or disables RADIUS accounting related configuration for dropped packets.

Important This command is customer-specific. Contact your Cisco account representative for more information.

Product HA

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
[ no ] radius accounting dropped-pkts
```

no

Enables the RADIUS accounting related configuration for dropped packets.

radius accounting dropped-pkts

Disables the RADIUS accounting related configuration for dropped packets. This is the default behavior.

Usage Guidelines

Use this command to enable or disable the RADIUS accounting related configuration for dropped packets.

By default, the feature is disabled.

Important The configuration will be picked up during **call-setup** and can not be changed dynamically.

Example

The following command enables the RADIUS accounting related configuration for dropped packets for the HA service:

```
no radius accounting dropped-pkts
```

reg-lifetime

Configures Mobile IP session registration lifetime.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
reg-lifetime time
{ default | no } reg-lifetime
```

no

Sets the registration lifetime to infinite.

default

Sets the registration lifetime to default value, 600.

time

Specifies the registration lifetime in seconds.

time is an integer from 1 through 65534.

Usage Guidelines

Use this command o limit a mobile node's lifetime. If the mobile node requests a shorter lifetime than what is specified, it is granted. However, Per RFC 2002, should a mobile node request a lifetime that is longer than the maximum allowed by this parameter, the HA service will respond with the value configured by this command as part of the Registration Reply. The default is 600 seconds.

Example

The following command configures the registration lifetime for the HA service to be *2400* seconds:

```
reg-lifetime 2400
```

The following command configures an infinite registration lifetime for MIP calls:

```
no reg-lifetime
```

reverse-tunnel

Enables use of reverse tunneling for Mobile IP session. Use no reverse-tunnel command to disable. If disabled, mobile node (MN) packets are not tunneled to the HA in the reverse direction.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
[ default | no ] reverse-tunnel
```

no

Indicates the reverse tunnel option is to be disabled. When omitted, the reverse tunnel option is enabled.

default

Indicates the reverse tunnel option is to be set to the default. When omitted, the reverse tunnel option is enabled.

Usage Guidelines

Reverse tunneling involves tunneling datagrams originated by the mobile node to the HA service via the FA.

When an MN arrives at a foreign network, it listens for agent advertisements and selects an FA that supports reverse tunnels. The MN requests this service when it registers through the selected FA. At this time, the MN may also specify a delivery technique such as Direct or the Encapsulating Delivery Style.

Among the advantages of using reverse-tunneling are that:

- All datagrams from the mobile node seem to originate from its home network
- The FA can keep track of the HA to which the mobile node is registered and tunnel all datagrams from the mobile node to its HA

Use the **no** version of this command to disable reverse tunneling. If reverse tunneling is disabled, and the mobile node does not request it, triangular routing will be performed.

Routing will be used.

The default setting is reverse tunnel enabled.

Important If reverse tunneling is disabled on the system and a mobile node requests it, the call will be rejected with a reply code of 74H (reverse-tunneling unavailable).

Example

The following command disables reverse-tunneling support for the HA service:

```
no reverse-tunnel
```

revocation

Configures the Registration Revocation feature for a specific HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
revocation { enable | max-retransmission number | negotiate-i-bit |
retransmission-timeout secs | send-nai-ext | trigger { handoff |
idle-timeout } }
no revocation { enable | negotiate-i-bit | send-nai-ext | trigger { handoff
 | idle-timeout } }
default revocation [ enable ] [ max-retransmission ] [ negotiate-i-bit ]
 [ retransmission-timeout ] [ send-nai-ext ] [ trigger { handoff |
idle-timeout } ]
```

no

Completely disables registration revocation on the HA, disables trigger handoff, or disables revocation on idle timer expiration.

default

Sets or restores the default value assigned for specified parameter.

enable

Enables the MIP registration revocation feature on the HA. When enabled, if revocation is negotiated with an FA and a MIP binding is terminated, the HA can send a Revocation message to the FA. This feature is disabled by default.

max-retransmission *number*

Default: 3

The maximum number of retransmissions of a Revocation message before the revocation fails. *number* must be an integer from 0 through 10.

negotiate-i-bit

Default: disabled

Enables the HA to negotiate the i-bit via PRQ/RRP messages and processes the i-bit revocation messages.

retransmission-timeout *secs*

Default: 3

The number of seconds to wait for a Revocation Acknowledgement from the FA before retransmitting the Revocation message. *secs* must be an integer from 1 through 10.

send-nai-ext

Default: off

Enables sending the NAI extension in the revocation message.

trigger { handoff | idle-timeout }

handoff: Default: Enabled

Triggers the HA to send a Revocation message to the FA when an inter-Access Gateway/FA handoff of the MIP session occurs. If this is disabled, the HA is never triggered to send a Revocation message.

idle-timeout: Default: Enabled

Triggers the HA to send a Revocation message to the FA when a session idle timer expires.

Usage Guidelines

Use this command to enable or disable the MIP revocation feature on the HA or to change settings for this feature. Both the HA and the FA must have Registration Revocation enabled and FA/HA authorization must be in use for Registration Revocation to be negotiated successfully.

Example

The following command enables Registration Revocation on the HA:

```
revocation enable
```

The following command sets the maximum number of retries for a Revocation message to *10*:

```
revocation max-retransmission 10
```

The following command sets the timeout between retransmissions to *3*:

```
revocation retransmission-timeout 3
```

The behavior of send MIP revocation to FA is as follows:

- 1st retry: Retransmit in 3 seconds after previous MIP revocation send.
- 2nd retry: Retransmit in 6 seconds after previous MIP revocation send (9 seconds after sending initial MIP revocation).
- 3rd retry: Retransmit in 12 seconds after previous MIP revocation send (21 seconds after sending initial MIP revocation).
- 4th retry: Retransmit in 24 seconds after previous MIP revocation send (45 seconds after sending initial MIP revocation).
- 5th retry: Retransmit in 48 seconds after previous MIP revocation send (93 seconds after sending initial MIP revocation).

Important The value of retransmission-timeout doubles. HA disconnects the session forcibly in 120 seconds after sending initial MIP revocation.

setup-timeout

The maximum time allowed for session setup in seconds. Default is 60 seconds.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
setup-timeout seconds
default setup-timeout
```

default

Sets or restores the default value.

seconds

Default: 60 seconds

The maximum amount of time (in seconds) to allow for setup of a session. *seconds* must be an integer from 1 through 1000000

Usage Guidelines

Use this command to set the maximum amount of time allowed for setting up a session.

Example

To set the maximum time allowed for setting up a session to 5 minutes (*300* seconds), enter the following command:

```
setup-timeout 300
```

simul-bindings

Specifies the maximum number of "care-of" addresses that can simultaneously be bound for the same user as identified by NAI and Home address.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
simul-bindings number
default simul-bindings
```

default

Sets or restores the default value.

number

Configures the maximum number of simultaneous "care-of" bindings that the HA service will maintain for any given subscriber.

is an integer from 1 through 3.

Usage Guidelines

Per RFC 2002, the HA service creates a mobile binding record (MBR) for each subscriber session it is facilitating. Each MBR is associated with a care-of address. As the mobile node roams, it is possible that the session will be associated with a new care of address.

Typically, the HA service will delete an old binding and create a new one when the information in the Registration Request changes. However, the mobile could request that the HA maintain previously stored MBRs. This command allows you to configure the maximum number of MBRs that can be stored per subscriber if the requested. The default value is 3.

Example

The following command configures the HA service to support up to 4 MBRs per subscriber:

```
simul-bindings 4
```

threshold dereg-reply-error

Sets an alarm or alert based on the number of de-registration reply errors per HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold dereg-reply-error high_thresh [ clear low_thresh ]
no threshold dereg-reply-error
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of de-registration reply errors that must be met or exceeded within the polling interval to generate an alert or alarm. It can be configured to an integer from 0 through 100000.

clear *low_thresh*

Default: 0

The low threshold number of de-registration reply errors that must be met or exceeded within the polling interval to clear an alert or alarm. It can be configured to an integer from 0 through 100000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of de-registration reply errors is equal to or greater than a specified number of calls per second.

Alerts or alarms are triggered for the number of de-registration reply errors on the following rules:

- **Enter condition:** Actual number of de-registration reply errors > High Threshold
- **Clear condition:** Actual number of de-registration reply errors < Low Threshold

Example

The following command configures a de-registration reply error threshold of *1000* and a low threshold of *500* for a system using the Alarm thresholding model:

```
threshold dereg-reply-error 1000 clear 500
```

threshold init-rrq-rcvd-rate

Sets an alarm or alert based on the average number of calls setup per second for the context.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold init-rrq-rcvd-rate high_thresh [ clear low_thresh ]
no threshold init-rrq-rcvd-rate
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold average number of calls setup per second that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100000.

clear *low_thresh*

Default:0

The low threshold average number of calls setup per second that must be met or exceeded within the polling interval to clear an alert or alarm. *low_thresh* is an integer from 0 through 100000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the average number of calls setup per second is equal to or greater than a specified number of calls per second.

Alerts or alarms are triggered for the number of calls setup per second based on the following rules:

- **Enter condition:** Actual number of calls setup per second is greater than the high threshold.
- **Clear condition:** Actual number of calls setup per second is less that the low threshold.

Example

The following command configures a number of calls setup per second threshold of 1000 and a low threshold of *500* for a system using the Alarm thresholding model:

```
threshold init-rrq-rcvd-rate 1000 clear 500
```

threshold ipsec-call-req-rej

Configures a threshold for the total IPSec calls request rejected.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold ipsec-call-req-rej high_thresh [ clear low_thresh ]
no threshold ipsec-call-req-rej
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of IPSec call requests rejected per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default:*0*

Specifies the low threshold number of IPSec call requests rejected per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of IPSec call requests rejected is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the number of IPSec IKE requests on the following rules:

- **Enter condition:** Actual number of IPSec IKE requests is greater than the high threshold.
- **Clear condition:** Actual number of IPSec IKE requests is less than the low threshold.

Example

The following command configures a number of IPSec call requests rejected threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-call-req-rej 1000 clear 800
```

threshold ipsec-ike-failrate

Configures a threshold for the percentage of IPSec IKE failures.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold ipsec-ike-failrate high_thresh [ clear low_thresh ]
no threshold ipsec-ike-failrate
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold percentage of IPSec IKE failures per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 100.

clear *low_thresh*

Default:*0*

Specifies the low threshold percentage of IPSec IKE failures per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 100.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the percentage of IPSec IKE failures is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the percentage of IPSec IKE failures on the following rules:

- **Enter condition:** Percentage of IPSec IKE failures is greater than the high threshold.
- **Clear condition:** Percentage of IPSec IKE failures is less than the low threshold.

Example

The following command configures a percentage of IPSec IKE failures threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-ike-failrate 90 clear 80
```

threshold ipsec-ike-failures

Configures a threshold for the total IPSec IKE failures.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

threshold ipsec-ike-failures *high_thresh* **[clear** *low_thresh* **]**
no threshold ipsec-ike-failures

no

Deletes the alert or alarm.

high_thresh

Default: *0*

Specifies the high threshold number of IPSec IKE failures per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default:0

Specifies the low threshold number of call IPSec IKE failures per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of IPSec IKE failures is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the number of IPSec IKE failures on the following rules:

- **Enter condition:** Actual number of IPSec IKE failures is greater than the high threshold.
- **Clear condition:** Actual number of IPSec IKE failures is less than the low threshold.

Example

The following command configures a number of IPSec IKE failures threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-ike-failures 1000 clear 800
```

threshold ipsec-ike-requests

Configures a threshold for the total IPSec IKE requests.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ha-service)#`

Syntax Description

threshold ipsec-ike-requests *high_thresh* **[clear** *low_thresh* **]**
no threshold ipsec-ike-requests

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of IPSec IKE requests per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default:0

Specifies the low threshold number of call IPSec IKE requests per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of IPSec IKE requests is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the number of IPSec IKE requests on the following rules:

- **Enter condition:** Actual number of IPSec IKE failures is greater than the high threshold.
- **Clear condition:** Actual number of IPSec IKE failures is less than the low threshold.

Example

The following command configures a number of IPSec IKE requests threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-ike-requests 1000 clear 800
```

threshold ipsec-tunnels-established

Configures a threshold for the total IPSec tunnels established.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold ipsec-tunnels-established high_thresh [ clear low_thresh ]
no threshold ipsec-tunnels-established
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of IPSec tunnels established per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default:0

Specifies the low threshold number of call IPSec tunnels established per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of IPSec tunnels established is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the number of IPSec tunnels established on the following rules:

- **Enter condition:** Actual number of IPSec tunnels established is greater than the high threshold.
- **Clear condition:** Actual number of IPSec tunnels established is less than the low threshold.

Example

The following command configures a number of IPSec tunnels established threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-tunnels-established 1000 clear 800
```

threshold ipsec-tunnels-setup

Configures a threshold for the total IPSec tunnels setup.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold ipsec-tunnels-setup high_thresh [ clear low_thresh ]
no threshold ipsec-tunnels-setup
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of IPSec tunnels setup per second that must be met or exceeded within the polling interval to generate an alert or alarm.

high_thresh is an integer from 0 through 1000000.

clear *low_thresh*

Default:0

Specifies the low threshold number of call IPSec tunnels setup per second that must be met or exceeded within the polling interval to clear an alert or alarm.

low_thresh is an integer from 0 through 1000000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of IPSec tunnels setup is equal to or greater than a specified number per second.

Alerts or alarms are triggered for the number of IPSec tunnels setup on the following rules:

- **Enter condition:** Actual number of IPSec tunnels setup is greater than the high threshold.
- **Clear condition:** Actual number of IPSec tunnels setup is less than the low threshold.

Example

The following command configures a number of IPSec tunnels setup threshold of *1000* and a low threshold of *800* for a system using the Alarm thresholding model:

```
threshold ipsec-tunnels-setup 1000 clear 800
```

threshold reg-reply-error

Set an alarm or alert based on the number of registration reply errors per HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold reg-reply-error high_thresh [ clear low_thresh ]
no threshold reg-reply-error
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of registration reply errors that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100000.

clear *low_thresh*

Default:0

Specifies the low threshold number of registration reply errors that must be met or exceeded within the polling interval to clear an alert or alarm. *low_thresh* is an integer from 0 through 100000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of registration reply errors is equal to or greater than a specified number of calls per second.

Alerts or alarms are triggered for the number of registration reply errors on the following rules:

- **Enter condition:** Actual number of registration reply errors is greater than the high threshold.
- **Clear condition:** Actual number of registration reply errors is less than the low threshold.

Example

The following command configures a registration reply error threshold of *1000* and a low threshold of *500* for a system using the Alarm thresholding model:

```
threshold reg-reply-error 1000 clear 500
```

threshold rereg-reply-error

Set an alarm or alert based on the number of re-registration reply errors per HA service.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
threshold rereg-reply-error high_thresh [ clear low_thresh ]
no threshold rereg-reply-error
```

no

Deletes the alert or alarm.

high_thresh

Default: 0

Specifies the high threshold number of re-registration reply errors that must be met or exceeded within the polling interval to generate an alert or alarm. *high_thresh* is an integer from 0 through 100000.

clear *low_thresh*

Default:0

Specifies the low threshold number of re-registration reply errors that must be met or exceeded within the polling interval to clear an alert or alarm. *low_thresh* is an integer from 0 through 100000.

Important This value is ignored for the Alert model. In addition, if this value is not configured for the Alarm model, the system assumes it is identical to the high threshold.

Usage Guidelines

Use this command to set an alert or an alarm when the number of re-registration reply errors is equal to or greater than a specified number of calls per second.

Alerts or alarms are triggered for the number of re-registration reply errors on the following rules:

- **Enter condition:** Actual number of re-registration reply errors is greater than the high threshold.
- **Clear condition:** Actual number of re-registration reply errors is less than the low threshold.

Example

The following command configures a reregistration reply error threshold of *1000* and a low threshold of *500* for a system using the Alarm thresholding model:

```
threshold rereg-reply-error 1000 clear 500
```

wimax-3gpp2 interworking

Configures the interworking between WiMAX and 3GPP2 network at HA. This support provides handoff capabilities from 4G to 3G (PDSN) network access and vice-versa.

Product

HA

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HA Service Configuration

configure > **context** *context_name* > **ha-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ha-service)#
```

Syntax Description

```
[ no | default ] wimax-3gpp2 interworking
```

no

Disables the pre-configured interworking between WiMAX and 3GPP2 networks at HA level.

default

Configures the **WiMAX-3GPP2 interworking** to default setting: disabled.

Usage Guidelines

Use this command to enable/disable the interworking between WiMAX and 3GPP2 network for seamless session continuity.

This functionality provides HA support for both 4G and 3G technology HA (WiMAX HA and PDSN/HA) for handoff from 4G and 3G network access (ASN GW/FA and PDSN/FA) and vice-versa.

Important Use this command in conjunction with the **authentication aaa-distributed-mip-keys required** command.

Example

The following command enables the interworking for a subscriber between WiMAX and 3GPP2 network.

```
wimax-3gpp2 interworking
```

CHAPTER 26

HD RAID Configuration Mode Commands

The HD RAID Configuration Mode is used to configure RAID parameters on the platform's hard disk drives.

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- disk, on page 961
- do show, on page 962
- end, on page 962
- exit, on page 963
- failure, on page 963
- overwrite, on page 963
- quarantine, on page 965
- read-ahead, on page 966
- select, on page 967
- speed, on page 968

disk

Enters the HD RAID Disk configuration mode, and enables the HD RAID disk parameter configuration. This command is applicable only for VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

[default] disk

Usage Guidelines

Use this command to configure the HD RAID disk parameters. This command is applicable only for VPC-DI.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

do show

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`exit`

Usage Guidelines

Use this command to return to the parent configuration mode.

failure

Configures the disk failure handling options. This command is applicable only for the VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hd-raid)#`

Syntax Description

`[ no ] failure switchover`

Usage Guidelines

Use this command to set the RAID disk handling options. More specifically, this command initiates a planned switchover to the standby CFC if the RAID is unavailable due to invalid RAID image on a local disk.

Important

This command is applicable only for the VPC-DI platform.

Caution

Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

overwrite

This command sets the disk overwriting options.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

[default | no] overwrite { invalid disk | unknown disk | valid disk } [-noconfirm]

default

For the ASR 5000, VPC-SI and VPC-DI platforms, the **overwrite** command sets the default overwrite option as:

- **invalid disk** — the disk with an invalid partition or RAID image (Default = On)
- **unknown disk** — the disk with an unknown RAID image (Default = Off)
- **valid disk** — the disk with a valid RAID image (Default = Off)

For the ASR 5500, the **overwrite** command sets the default overwrite option as:

- **invalid disk** — the disk with an invalid partition or RAID image (Default = On)
- **unknown disk** — the disk with an unknown RAID image (Default = On)
- **valid disk** — the disk with a valid RAID image (Default = On)

overwrite { invalid disk | unknown disk | valid disk }

When enabled, this command overwrites the specified disk and adds it to the current running RAID array.

- **invalid disk** — Specifies the disk with an invalid partition (empty, incorrectly partitioned or partially constructed) or RAID image.
- **unknown disk** — Specifies the disk with an unknown RAID image that has a valid RAID superblock but is not configured in the standard way.
- **valid disk** — Specifies the disk with a valid RAID image that is a clean RAID component but is not part of the current or selected RAID.

-noconfirm

Executes the command without displaying "are you sure" prompts.

Usage Guidelines

Use this command to set the RAID disk overwriting options.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

Example

The following instructs StarOS to overwrite an invalid hard disk drive.

```
overwrite invalid disk
```

quarantine

This command recovers and quarantines the dirty-degraded RAID. This command is not supported on the ASR 5000.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

```
quarantine [ directory dir_name | limit number_files | mtime minutes ] [
-noconfirm ]
```

```
{ default | no } quarantine
```

default

When enabled without any options, it restores the default quarantine parameters (directory = lost+found; limit = 3000 files; mtime = 5 minutes).

no

The **no** variant of this command turns off quarantine and lets the dirty degraded RAID to fail.

directory *dir_name*

This keyword sets the directory name for recovery and quarantine of the dirty-degraded RAID. The *dir_name* must be an alphanumeric string of 1 through 39 characters. Default: lost+found.

limit *number_files*

This keyword sets the maximum number of files to quarantine. The *number_files* must be an integer from 0 through 1000000. Default: 3000.

mtime *minutes*

Specifies within how many minutes the file is modified to be considered suspects for quarantine. The *minutes* must be an integer from 0 through 1440, where 0 means no files will be quarantined. Default: 5 minutes.

-noconfirm

Executes the command without displaying "are you sure" prompts.

Usage Guidelines

Use this command to recover and quarantine the dirty-degraded RAID.

This command is not supported on the ASR 5000. On the ASR 5500 it is disabled by default.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

Example

The following instructs StarOS to perform quarantine operation for up to 3000 files.

```
quarantine limit 3000
```

read-ahead

Configures the read ahead buffer size for disks which are part of a RAID array. This command is applicable only for VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

```
read-ahead kilobytes
default read-ahead
```

read-ahead *kilobytes*

Sets the size of data in KB from 128 to 32768 KB that will be read beyond the block of data that was requested. This parameter is ignored if RAID is not available on the VPC-DI node. Default: 128 KB

Note This setting applies for RAIDs only. A separate **read-ahead** command is available to configure read ahead buffer size for individual hard disks. Refer to the *HD RAID Disk Mode Configuration Mode* chapter for more information.

Usage Guidelines

Use this command to configure the read ahead buffer size for disks which are part of a RAID array. This command is applicable only for VPC-DI.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

select

Sets the disk preference when both disks contain valid RAID. This command is not supported on the ASR 5500.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

For ASR 5000:

```
select { newer | none } [ disk ]  [ -noconfirm ]
```

For VPC-SI and VPC-DI:

```
select { local1 | local2 | newer | none } [ disk ]  [ -noconfirm ]
default select
```

default

Sets the default disk preference when both disks contain valid RAID. For the ASR 5000 and VPC platforms, the default setting is **newer disk**.

select { local1 | local2 | newer | none } [disk]

Selects the specified disk or Virtual Hard Disk (vHD) to assemble a RAID when two or more unrelated RAID disks are present in the system. The resulting RAID runs in degraded mode.

- **local1 disk** — Selects the specified vHD to assemble a RAID. This keyword is supported only on the VPC.
- **local2 disk** — Selects the specified vHD to assemble a RAID. This keyword is supported only on the VPC.
- **newer disk** — Specifies the newest disk by timestamp and event counter in superblocks. If all are the same, the array will start with both disks. A different array will need administrator intervention.

  This keyword is supported on the ASR 5000 and VPC platforms.

- **none disk** — Indicates wait for administrator intervention.

  This keyword is supported on the ASR 5000 and VPC platforms.

-noconfirm

Executes the command without displaying "are you sure" prompts.

Usage Guidelines

Use this command to set the disk preference when both disks contain valid RAID. This command is not supported on the ASR 5500.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

Example

The following instructs StarOS to select the specified vHD for RAID assembly.

```
select local1 disk
```

speed

Configures the minimum and maximum disk speeds which are used during RAID synchronization. This command is applicable only for VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration

configure > hd raid

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid)#
```

Syntax Description

```
[ default ] speed { max mbps | min mbps }
```

default

Restores the hard disk speed to its respective default values:

- max: Default: 200 megabytes per second
- min: Default: 100 megabytes per second

speed { max *mbps* | min *mbps* }

Configures the minimum and maximum disk speeds which are used during RAID synchronization.

- **max** *mbps* : Sets the maximum disk speed in megabytes per second from 200-300. Default: 200 MBps.
- **min** *mbps* : Sets the minimum disk speed in megabytes per second from 1-100. Default: 100 MBps.

Usage Guidelines

Use this command to configure the minimum and maximum disk speeds which are used during RAID synchronization. This command is applicable only for VPC-DI.

This setting can be used to reduce the time needed to perform a resynchronization after a disk failure. This setting is applicable for all RAIDs as a whole and can be applied even when RAID is not available.

Caution Use of the **hd raid** commands and keywords has the potential for deleting the contents of hard disk drives without the possibility of recovery. You should only use these commands under guidance from the Cisco Technical Assistance Center (TAC).

Example

The following command sets the maximum speed to 200 MBps for RAID synchronization.

```
speed max 200
```

CHAPTER 27

HD RAID Disk Configuration Mode Commands

The HD RAID Disk Configuration Mode is used to configure RAID settings on the VPC-DI platform.

Command Modes

Exec > Global Configuration > HD RAID Disk Configuration

configure > hd raid > disk

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid-disk)#
```

Important

The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 971
- end, on page 972
- exit, on page 972
- ncq, on page 972
- read-ahead, on page 973

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

do show

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

ncq

Disables Native Command Queuing (NCQ). This command is applicable only for VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration > Disk Configuration

configure > hd raid > disk

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-raid-disk)#
```

Syntax Description

`ncq`

ncq

ncq (VPC-DI only): Disables Native Command Queuing for all disks. Default: Enabled

Usage Guidelines

Native Command Queuing is a technology designed to improve performance and reliability of SATA hard disks by allowing the disk to group commands in order of processing efficiency.

This setting persists after a card reload or chassis reboot.

read-ahead

Configures the read ahead buffer size for individual disks. This command is applicable only for VPC-DI.

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HD RAID Configuration > Disk Configuration

configure > hd raid > disk

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hd-raid-disk)#`

Syntax Description

`read-ahead kilobytes`

read-ahead *kilobytes*

read-ahead *kilobytes* (VPC-DI only): Sets the size of data in KB from 128 to 32768 KB that will be read beyond the block of data that was requested. Default: 128 KB

Note This setting applies for individual disks only. A separate read-ahead command is available to configure the read ahead buffer size for disks which are part of a RAID array. Refer to the *HD RAID Configuration Mode* chapter for more information.

Usage Guidelines

Use this command to tune the performance of disks used within the system.

This parameter value persists after a card reload or chassis reboot.

CHAPTER 28

HD Storage Policy Configuration Mode Commands

The HD Storage Policy Configuration Mode is used to configure directory name and file parameters for Diameter record files being stored on the HD storage device.

Command Modes

Exec > Global Configuration > HD Storage Policy Configuration

configure > hd storage-policy *policy_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-storage-policy)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- directory, on page 975
- end, on page 976
- exit, on page 976
- file, on page 977

directory

Configures the name of the directory on the HD storage drive where Diameter records are stored.

Product

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > HD Storage Policy Configuration

configure > hd storage-policy *policy_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-storage-policy)#
```

Syntax Description

directory name *dir_name*
default directory name

default

Returns the command to its default setting of using the policy name as the directory name.

name *dir_name*

Specifies the name to be applied to the directory. *dir_name* must be an alphanumeric string of 1 through 63 characters.

When configured, the actual directory path is:

```
/hd-raid/records/<record-type>/<dir_name>/
```

So if the directory name variable is entered as "*sgwpgw*", the path is:

```
/hd-raid/records/acr/sgwpgw
```

Usage Guidelines

Use this command to name a directory on the HD storage drive where Diameter records are to be stored.

Example

The following command configures a directory named *cdr1*:

directory name cdr1

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

file

Configures file parameters for Diameter records being stored on the HD storage device.

Product

HSGW

P-GW

SAEGW

S-GW

Privilege

Administrator

Command Modes

Exec > Global Configuration > HD Storage Policy Configuration

configure > hd storage-policy *policy_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hd-storage-policy)#
```

Syntax Description

```
file { format acr { custom1...custom10 } | name { extension string | prefix
 string } | rotation { record-count num | time-interval sec | volume mb
mbytes } }
default file { format acr | name prefix | rotation { record-count |
time-interval | volume } }
no file ( extension | rotation { record-count | time-interval } }
```

default

Returns the command to the default settings for the specified keywords.

no

Removes the configuration for the specified parameters.

format acr { custom1...custom10 }

Default: **custom1**

Specifies the file format used when storing records on the HD storage device. **custom1** is a vendor-specific file format.

name { extension *string* | prefix *string* }

Specifies a string to be pre-pended or appended to the filenames. By default, the policy name is used for the prefix.

extension *string*: Specifies a file extension to append to the filename. *string* must be an alphanumeric string of 1 through 10 characters.

prefix *string*: Specifies a file prefix to append to the filename. *string* must be an alphanumeric string of 1 through 63 characters. This parameter replaces the policy name used by default.

rotation { record-count *num* | time-interval *sec* | volume mb *mbytes* }

Specifies the triggers that prompt file rotation on the HD storage drive. All options can be configured and upon reaching any of the thresholds, file rotation is initiated.

record-count *num*: File rotation occurs when the number of records reaches the number configured in this keyword. *num* must be an integer from 1000 through 65000. Default = 10000

time-interval *sec*: File rotation occurs at time intervals (in seconds) configured by this keyword. *sec* must be an integer from 30 through 86400. Default = 3600 (1 hour)

volume mb *mbytes*: File rotation occurs when the record volume exceeds the value (in megabytes) configured by this keyword. *mbytes* must be an integer from 2 through 40. Default = 4

Usage Guidelines

Use this command to configure file parameters for Diameter records being stored on the HD storage device.

Example

The following command sets the file rotation thresholds for files being stored on the HD storage device:

```
file rotation volume mb 4
file rotation record-count 15000
file rotation time-interval 7200
```

The following command replaces the policy name as the prefix of all files being stored through this policy with the prefix *sgw*:

```
file name prefix sgw
```

CHAPTER 29

HeNB-GW Access Service Configuration Mode Commands

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. Commands in this configuration mode must not be used in these releases. For more information, contact your Cisco account representative.

A new service "henbgw-access-service" is defined under Context Configuration Mode to initialize HeNB-GW functionality. This service configuration controls the S1-MME interface for communication between HeNB-GW to HeNB(s). HeNBs connect to the S1-MME bind address configured in this service.

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- associate henbgw-network-service, on page 980
- associate sctp-param-template, on page 981
- associate x2gw-service, on page 981
- bind s1-mme, on page 982
- csg-optimized-paging, on page 983
- end, on page 984
- exit, on page 984
- mme-id, on page 984
- nas-node-selection, on page 985
- plmn, on page 986
- s1-mme ip qos-dscp, on page 987
- s1-mme sctp port, on page 988
- s1u-relay, on page 989

• security-gateway bind, on page 990
• security-gateway ip, on page 991
• timeout, on page 992

associate henbgw-network-service

Associates a previously configured HeNB-GW Network service to this HeNB-GW Access service. An HeNB-GW Network service must be configured in Context Configuration mode before using this configuration.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
associate henbgw-network-service svc_name [ context contxt_name ]
no associate henbgw-network-service
```

no

Removes the associated HeNB-GW Network service from this HeNB-GW Access service configuration.

svc_name

Identifies the name of the pre-configured HeNB-GW Network service to associate with this HeNB-GW Access service.

svc_name is an alphanumeric string of 1 through 63 characters.

context *contxt_name*

Identifies the name of the context to which the HeNBGW service belongs.

contxt_name is an alphanumeric string of 1 through 79 characters.

Usage Guidelines

Use this command to bind/associate a pre-configured HeNB-GW Network service to the this HeNB-GW Access service. The HeNB-GW Network service can be configured in Context configuration mode. The associate configuration is used to establish associations with other helper services in general.

Example

Following command associates an HeNB-GW Network service named *henb-network* with specific HeNB-GW Access service.

```
associate henbgw-network-service henb-network
```

associate sctp-param-template

Associates a previously configured SCTP Parameter Template to this HeNB-GW Access service. An SCTP Parameter Template must be configured globally before using this configuration.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
associate sctp-param-template template_name
no associate sctp-param-template
```

no

Removes the associated SCTP Parameter Template from this HeNB-GW Access service configuration.

template_name

Identifies the name of the pre-configured SCTP Parameter Template to associate with this HeNB-GW Access service.

template_name is an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to bind/associate a pre-configured SCTP Parameter Template to the this HeNB-GW Access service. The SCTP Parameter Template can be configured global mode. The associate configuration is used to establish associations with other helper services in general.

Example

Following command associates an SCTP Parameter Template named *sctp_tmpl* with specific HeNB-GW Access service.

```
associate sctp-param-template sctp_tmpl
```

associate x2gw-service

This command Configures x2gw-service for this HENBGW ACCESS service.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-access-service)#`

Syntax Description

associate x2gw-service *associate_x2gw-service_name* **context** *context_name*
no associate x2gw-service

no

Removes the association of x2gw-service interface from this HeNB-GW Access service configuration.

associate_x2gw-service_name

Name of the service that will be used by this HENBGW ACCESS service to associate with. Name of the string is an alphanumeric, 1 through 63 characters.

context_name

Name of the context that will be used by this HENBGW ACCESS service to associate with. Name of the string is an alphanumeric, 1 through 79 characters.

Usage Guidelines

Use this command to associate x2gw-service with HeNBGW Access service.

Example

Following command associates an x2gw-service with specific HeNB-GW Access service with name *gate123*:

associate x2gw-service gate123 **context** ctx1

bind s1-mme

Binds the pre configured HeNB-GW Access Service to the IP address of the S1-MME interface.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-access-service)#`

Syntax Description

bind s1-mme { ipv4-address *ipv4_addr* **[ipv6-address** *ipv6_addr* **] | ipv6-address** *ipv6_addr* **[ipv4-address** *ipv4_addr* **] } max-subscribers** *max_sub*

no bind s1-mme

no

Removes the binding of S1-MME interface from this HeNB-GW Access service configuration.

ipv4-address | ipv6-address

Identifies the IPv4 and/or IPv6 address of the S1-MME interface to associate with this HeNB-GW Access service.

ipv4_addr must be an IPv4 (dotted decimal notation) address.

ipv6_addr must be an IPv6 (colon-separated) address.

max-subscribers *max_sub*

Configures the maximum number of subscribers HENBGW ACCESS service can support.

max_sub is an integer ranging from *0* through *4000000*.

Usage Guidelines

Use this command to bind the pre configured IPv4 address of the S1-MME interface to the HeNB-GW Access Service.

Example

Following command binds the S1-MME interface having *209.165.202.128*IP address with specific HeNB-GW Access service.

```
bind s1-mme ipv4-address 209.165.202.128 max-subscribers 20
```

csg-optimized-paging

Configures the support for Paging Optimization Function on this HeNB-GW Access service based on the CSG-ID in the Paging message

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
[ no ] csg-optimized-paging
```

no

Removes the paging optimization function from this HeNB-GW Access service configuration.

Usage Guidelines

Use this command to enable the CSG-ID based paging optimization function to the HeNB-GW Access Service.

Example

Following command enables the CSG-ID based paging optimization on a specific HeNB-GW Access service.

csg-optimized-paging

end

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **end**

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **exit**

Usage Guidelines Use this command to return to the parent configuration mode.

mme-id

Configures the MME ID for this HeNB-GW Access service. For this configuration, MME Group ID and MME Code has to be configured.

Product HeNB-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(config-henbgw-access-service)#

Syntax Description

mme-id group-id *mme_group_id* **mme-code** *mme_code*
no mme-id

no

Removes the configured MME ID from this HeNB-GW Access service configuration.

mme_group_id

Identifies the MME Group ID which must be entered as an integer between 32768 and 65535.

mme_code

Identifies the MME code which is again an integer value between 0 and 255.

Usage Guidelines

Use this command to configure the MME Identifier which includes the MME Group ID and MME Code for this HeNB-GW Access service. MME ID configuration is required, because it is the same ID which HeNB-GW sends in response messages to HeNBs.

Caution Changing the MME ID is a disruptive operation. HeNB-GW service is restarted on any change.

Example

Following command configures 32770 as the MME Group ID and 105 as MME code on a specific HeNB-GW Access service.

mme-id group-id *32770* **mme-code** *105*

nas-node-selection

This command configures the selection of logical eNodeB/ MME based on TAI or Global eNodeB id.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(config-henbgw-access-service)#

Syntax Description

nas-node-selection { global-eNodeB-id-based | tai-based }

Important This command is functional for 8 logical eNodeBs only.

global-eNodeB-id-based

Specifies the Global eNodeB id Based selection.

tai-based

Specifies the TAI based selection.This is the default option.

Usage Guidelines

Use this command to configure the selection of logical eNodeB/ MME based on TAI or Global eNodeB id.

Example

Following command configures the selection of logical eNodeB/ MME based on Global eNodeB id.

```
nas-node-selection global-eNodeB-id-based
```

plmn

Configures the PLMN identifier for this HeNB-GW Access service. Other identifiers that are configured along with the PLMN include the MCC and MNC values too.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

[no] plmn id mcc *mcc_val* **mnc** *mnc_val*

no

Removes the existing PLMN configuration from this HeNB-GW Access service configuration.

mcc_val

Identifies the mobile country code for the IMSI which must be entered between 100 and 999 as a string of size 3.

mnc_val

Identifies the Mobile Network Code which is a value between 00 and 999, as a string of size 2 to 3.

Usage Guidelines

Use this command to configure the PLMN related configuration for this HeNB-GW Access service.

Example

Following command configures 123 as the MCC value and 456 as the MNC value as part of the PLMN configuration for this HeNB-GW Access service.

```
plmn id mcc 123 mnc 456
```

s1-mme ip qos-dscp

This command configures the quality of service (QoS) differentiated service code point (DSCP) marking for IP packets sent out on the S1-MME interface, from the HeNB-GW to the HeNB(s).

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
s1-mme ip qos-dscp { af11 | af12 | af13 | af21 | af22 | af23 | af31 |
af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5
 | cs6 | cs7 | ef }
default s1-mme ip qos-dscp
```

qos-dscp { af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef }

Default: **af11**

Specifies the DSCP for the specified QoS traffic pattern. **qos-dscp** can be configured to any one of the following:

af11: Assured Forwarding 11 per-hop-behavior (PHB)

af12: Assured Forwarding 12 PHB

af13: Assured Forwarding 13 PHB

af21: Assured Forwarding 21 PHB

af22: Assured Forwarding 22 PHB

af23: Assured Forwarding 23 PHB

af31: Assured Forwarding 31 PHB

af32: Assured Forwarding 32 PHB

af33: Assured Forwarding 33 PHB

af41: Assured Forwarding 41 PHB

af42: Assured Forwarding 42 PHB

af43: Assured Forwarding 43 PHB

be: Best effort forwarding PHB

cs0: Designates use of Class Selector 0 PHB.This is same as DSCP Value BE

cs1: Designates use of Class Selector 1 PHB

cs2: Designates use of Class Selector 2 PHB

cs3: Designates use of Class Selector 3 PHB

cs4: Designates use of Class Selector 4 PHB

cs5: Designates use of Class Selector 5 PHB

cs6: Designates use of Class Selector 6 PHB

cs7: Designates use of Class Selector 7 PHB

ef: Expedited forwarding PHB

default

Specifies the default DSCP for the specified QoS traffic pattern. The default value of DSCP is af11.

Usage Guidelines

DSCP levels can be assigned to specific traffic patterns to ensure that data packets are delivered according to the precedence with which they are tagged. The diffserv markings are applied to the IP header of every subscriber data packet transmitted over the S1-MME interface(s).

Example

The following command sets the DSCP-level for data traffic sent over the S1-MME interface to **af12**:

```
s1-mme ip qos-dscp af12
```

s1-mme sctp port

This command configures the local Stream Control Transmission Protocol (SCTP) port used for binding the SCTP socket to communicate with the HeNBs over S1-MME interface.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
s1-mme sctp port port_num
default s1-mme sctp port
```

default

Sets the SCTP port to the default value of 36412 to communicate with the HeNBs using S1-MME interface.

port_num

Specifies the SCTP port number to communicate with the HeNBs using S1-MME interface as an integer from 1 through 65535. Default: 36412

Usage Guidelines

Use this command to assign the SCTP port with SCTP socket to communicate with the HeNB using S1AP.

Only one SCTP port can be associated with one MME service.

Example

The following command sets the default SCTP port number 699 for to interact with Home eNodeB using S1AP on S1-MME interface:

```
default s1-mme sctp port
```

s1u-relay

This command configures the S1-U Relay service for the HeNB-GW Access service. The user enters in the S1-U Relay configuration mode using this command.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
[ no ] s1u-relay
```

no

Removes the S1-U Relay service function from this HeNB-GW Access service configuration.

Usage Guidelines

Use this command to enable the S1-U Relay service function to the HeNB-GW Access Service. S1-U relay service is disabled by default.

Example

Following command enables the S-U Relay service on a specific HeNB-GW Access service.

```
s1u-relay
```

security-gateway bind

This command configuration defines the IPv4 or IPv6 address to be used as the connection point for establishing IKEv2 sessions, and to specify the crypto template for the security gateway (SecGW) for the HeNB-GW Access service.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > context *context_name* **> henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
security-gateway bind { ipv4-address | ipv6-address } ip_addr
crypto-template template_name [ context ctxt_name ]
no security-gateway bind
```

no

Removes the security gateway related configuration associated with this HeNB-GW Access service configuration.

ip_addr

Identifies the security gateway address used for this HeNB-GW Access service.

For **ipv4-address** , *ip_addr* must be an IPv4 address in dotted decimal notation.

For **ipv6-address** , *ip_addr* must be an IPv6 address in colon-separated hexa-decimal notation.

template_name

Identifies the crypto template name for security gateway for this HeNB-GW Access service. It must be entered a string of size 0 to 127.

ctxt_name

Identifies the context name where crypto template is defined for this HeNB-GW Access service. It must be entered a string of size 1 to 79.

Usage Guidelines

Use this command to configure the IPv4 or IPv6 address to be used as the connection point for establishing IKEv2 sessions for this HeNB-GW Access service, and the crypto template for the SecGW . The SecGW configuration includes crypto template configuration as part of IPSec settings. Therefore, if the crypto-template is defined in a different context than the current HeNB-GW Access service, the context name has to be specified.

Example

Following command configures 209.165.201.15 as the SecGW address and crypto-temp as the crypto template name on a specific HeNB-GW Access service.

security gateway bind ipv4-address*209.165.201.15* **crypto-template** *crypto-temp*

security-gateway ip

Configures the behavior of IP allocation when HeNB requests for a dual IP.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-access-service)#`

Syntax Description

security-gateway ip alloc-mode { single | dual }

default security-gateway ip alloc-mode

default

Restores the configuration to its default value.

Default: single

alloc-mode { single | dual }

Specifies to allocate a single or dual IP address.

single: On receiving a request for dual IP, the HeNB-GW access service will try to allocate an IPv6 address to HeNB. If the IPv6 address is unavailable, an IPv4 address will be allocated. This is the default behaviour.

dual: On receiving a request for dual IP, the HeNB-GW access service will allocate both IPv6 and IPv4 addresses to HeNB based on availability.

Usage Guidelines

Use this command to configure the behavior of IP allocation when HeNB requests for a dual IP.

Example

Following command allocates both IPv4 and IPv6 addresses when a dual IP request comes from HeNB:

security gateway ip alloc-mode dual

timeout

Configures the the maximum duration of the session for this HeNB-GW Access service, in seconds, before system automatically reports/terminates the session.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
timeout long-duration dur action { detection | disconnect }
no timeout long-duration
```

no

Removes the currently setup maximum duration of session.

dur

Specifies the number of seconds for the session's timeout duration, before system automatically terminates the session or a defined action is to be taken.

dur is an integer from 1 through 2147483647. Default: 0

Usage Guidelines

Use this command to configure the maximum duration of the session, in seconds, before system automatically reports/terminates the session of this HeNB-GW Access service.

Example

The following command sets the timeout duration of 60 seconds for a particular HeNB-GW Access service and disconnect the session:

```
timeout long-duration 60 action disconnect
```

CHAPTER 30

HeNBGW Qci Dscp Mapping Table Configuration Mode Commands

Command Modes

Creates HeNBGW Qci Dscp Mapping Table configuration mode.

Exec > LTE Policy > HENBGW QCI DSCP Mapping Table Configuration

configure > lte-policy > henbgw qci-dscp-mapping-table *table_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-qci-dscp-mapping-table)#`

- dscp-marking-default, on page 993
- end, on page 995
- exit, on page 995
- qci, on page 995

dscp-marking-default

This command is used to configure default dscp-marking value for qci.

Product

HeNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > LTE Policy > HENBGW QCI DSCP Mapping Table Configuration

configure > lte-policy > henbgw qci-dscp-mapping-table *table_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-qci-dscp-mapping-table)#`

Syntax Description

```
dscp-marking-default { af11 | af12 | af13 | af21 | af22 | af23 | af31 |
af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5
 | cs6 | cs7 | ef }
no dscp-marking-default
```

no

Disables the configuration of default dscp-marking value for qci.

dscp-marking-default { af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef }

Specifies the default dscp-marking value for qci.**dscp-marking-default** designates the use of one of the following as default value:

af11: Assured Forwarding 11 per-hop-behavior (PHB)

af12: Assured Forwarding 12 PHB

af13: Assured Forwarding 13 PHB

af21: Assured Forwarding 21 PHB

af22: Assured Forwarding 22 PHB

af23: Assured Forwarding 23 PHB

af31: Assured Forwarding 31 PHB

af32: Assured Forwarding 32 PHB

af33: Assured Forwarding 33 PHB

af41: Assured Forwarding 41 PHB

af42: Assured Forwarding 42 PHB

af43: Assured Forwarding 43 PHB

be: Best effort forwarding PHB. This is same as DSCP value CS0.

cs0: Class Selector 0 PHB. This is same as DSCP Value BE.

cs1: Class Selector 1 PHB.

cs2: Class Selector 2 PHB.

cs3: Class Selector 3 PHB.

cs4: Class Selector 4 PHB.

cs5: Class Selector 5 PHB.

cs6: Class Selector 6 PHB.

cs7: Class Selector 7 PHB.

ef: Expedited forwarding PHB

Usage Guidelines

Use this command to configure default dscp-marking value for qci.

Example

Following command configures cs6 as the default dscp-marking value for qci:

```
dscp-marking-default cs6
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

qci

This command is used to configure qci value for HENBGW.

Product

HeNBGW

Privilege

Security Administrator, Administrator

Command Modes

Exec > LTE Policy > HENBGW QCI DSCP Mapping Table Configuration

configure > lte-policy > henbgw qci-dscp-mapping-table *table_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-qci-dscp-mapping-table)#`

Syntax Description

qci *qci_value* **dscp-marking { af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef }**
no qci *qci_value*

no

Disables the configuration of qci value for HeNBGW.

qci_value

This is an integer between 0 and 255.

dscp-marking { af11 | af12 | af13 | af21 | af22 | af23 | af31 | af32 | af33 | af41 | af42 | af43 | be | cs0 | cs1 | cs2 | cs3 | cs4 | cs5 | cs6 | cs7 | ef }

Configures dscp-marking value for qci.**dscp-marking** designates the use of one of the following as qci value:

af11: Assured Forwarding 11 per-hop-behavior (PHB)

af12: Assured Forwarding 12 PHB

af13: Assured Forwarding 13 PHB

af21: Assured Forwarding 21 PHB

af22: Assured Forwarding 22 PHB

af23: Assured Forwarding 23 PHB

af31: Assured Forwarding 31 PHB

af32: Assured Forwarding 32 PHB

af33: Assured Forwarding 33 PHB

af41: Assured Forwarding 41 PHB

af42: Assured Forwarding 42 PHB

af43: Assured Forwarding 43 PHB

be: Best effort forwarding PHB. This is same as DSCP value CS0.

cs0: Class Selector 0 PHB. This is same as DSCP Value BE.

cs1: Class Selector 1 PHB.

cs2: Class Selector 2 PHB.

cs3: Class Selector 3 PHB.

cs4: Class Selector 4 PHB.

cs5: Class Selector 5 PHB.

cs6: Class Selector 6 PHB.

cs7: Class Selector 7 PHB.

ef: Expedited forwarding PHB

Usage Guidelines

Use this command to configure qci value for HENBGW.

Example

Following command configures qci value as 5 with dscp marking as af11:

```
qci 5 dscp-marking  af11
```

CHAPTER 31

HeNB-GW Network Service Configuration Mode Commands

Important In Release 20, 21.0 and 21.1, HeNBGW is not supported. Commands in this configuration mode must not be used in these releases. For more information, contact your Cisco account representative.

A new service "henbgw-network-service" is defined under the Context configuration mode in order to support HeNB-GW functionality. This service configuration controls the S1-MME interface functionality between HeNB-GW and MME node.

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(`**`config-henbgw-network-service`**`)#`

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- anr-info-retrieval, on page 998
- associate sctp-param-template, on page 998
- default-paging-drx, on page 999
- end, on page 1000
- exit, on page 1000
- logical-enb, on page 1001
- paging-rate-control, on page 1002
- public-warning-system, on page 1003
- pws, on page 1003
- s1ap-max-retransmissions, on page 1004
- s1ap-retransmission-timeout, on page 1005

anr-info-retrieval

This command enables the HeNB-GW to intercept and respond to the Automatic Neighbor Relation (ANR) related SON messages with the requested information.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(`**`config-henbgw-network-service`**`)#`

Syntax Description

`[ no | default ] anr-info-retrieval`

no

Removes the ANR information retrieval related function from this HeNB-GW Network service configuration.

default

Sets/Restores the default value assigned for the ANR information retrieval related function from the configured HeNB-GW Network service.

Usage Guidelines

Use this command to enable the ANR information retrieval function to the HeNB-GW Network Service.

Example

Following command enables the ANR information retrieval function on a specific HeNB-GW Network service.

`anr-info-retieval`

associate sctp-param-template

Associates a previously configured SCTP Parameter Template to the this HeNB-GW Network service. A SCTP Parameter Template must be configured globally before using this configuration.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Access Service Configuration

configure > **context** *context_name* > **henbgw-access-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-access-service)#
```

Syntax Description

```
associate sctp-param-template template_name
no associate sctp-param-template
```

no

Removes the associated SCTP Parameter Template from this HeNB-GW Network service configuration.

template_name

Identifies the name of the pre-configured SCTP Parameter Template to associate with this HeNB-GW Network service.

template_name is an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to bind/associate a pre-configured SCTP Parameter Template to the this HeNB-GW Network service. The SCTP Parameter Template can be configured global mode. The associate configuration is used to establish associations with other helper services in general.

Example

Following command associates an SCTP Parameter Template named *sctp_tmpl* with specific HeNB-GW Network service.

```
associate sctp-param-template sctp_tmpl
```

default-paging-drx

This command is used to configure the Default paging DRX value that is sent to the MME(s) in the S1 SETUP request message.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-henbgw-network-service)#
```

Syntax Description

```
default-paging-drx { v128 | v256 | v32 | v64 }
default default-paging-drx
```

default

Sets/Restores the default value assigned for Default-Paging-DRX for the configured HeNB-GW Network service.

default-paging-drx { v128 | v256 | v32 | v64 }

Any one of the following DRX values can be configured :

- v128: Designates use of Paging DRX v128.
- v256: Designates use of Paging DRX v256.
- v32: Designates use of Paging DRX v32.
- v64: Designates use of Paging DRX v64.

Usage Guidelines

Use this command to configure the Default Paging DRX value for this HeNB-GW Network service.

Example

Following command configures v256 as the Default Paging DRX value on a specific HeNB-GW Network service.

```
default-paging-drx v256
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > context *context_name* **> henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > context *context_name* **> henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

logical-enb

This command enables the configuration of one or more logical eNodeBs within the HeNB-GW.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

logical-enb global-enb-id plmn id mcc *mcc_val* **mnc** *mnc_val* **{ home-enb-id** *henb_id* **| macro-enb-id** *menb_id* **[-noconfirm] }**
no logical-enb global-enb-id plmn id mcc *mcc_val* **mnc** *mnc_val* **{ home-enb-id** *henb_id* **| macro-enb-id** *menb_id* **}**

no

Removes the configured logical eNodeB from this HeNB-GW Network service configuration.

mcc *mcc_val*

Identifies the mobile country code for the IMSI which must be entered between 100 and 999, as a string of size 3.

mnc *mnc_val*

Identifies the Mobile Network Code which is a value between 00 and 999, as a string of size 2 to 3.

home-enb-id *henb_id*

Identifies the Home eNodeB ID which is an integer from 1 to 268435455.

macro-enb-id *menb_id*

Identifies the Macro eNodeB ID which is again an integer value between 1 and 1048575.

-noconfirm

Creates a new HeNB-GW network service without prompting for confirmation.

Usage Guidelines

Use this command for the configuration of one or more logical eNodeBs within the HeNB-GW. The Logical eNodeB configuration can be used to support load balancing within a pool of TAIs (i.e. Multiple logical eNodeBs can service calls connecting from a specific set of TAIs). It can also be used to create and support disjoint serving areas, that is each logical eNodeB will serve a different set of TAIs.

At least one logical eNodeB configuration is required to START an HeNB-GW Network service.

Caution Deleting or modifying any of the parameters for a fully configured logical eNodeB is a disruptive operation. It will result in the termination of SCTP connections to MMEs from that logical eNodeb.

Example

Following command configures a logical eNodeB having Home eNodeB ID as 1000 on a specific HeNB-GW Network service.

logical-enb global-enb-id plmn id mcc *123* **mnc** *456* **home-enb-id** *1000*

paging-rate-control

This command is used to configure the Paging-Rate-Control which determines the maximum number of paging messages per second which an HeNB-GW can handle received from the MME(s).

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

paging-rate-control *number_of_msg*
no paging-rate-control

no

Removes the configured rate of paging messages from this HeNB-GW Network service configuration.

number_of_msg

Identifies the number of paging messages to be handled by the HeNBGW service per second. This number must be entered as an integer between 1 and 65535 (min 1 and max 65535) .

Usage Guidelines

Use this command to configure the number of paging messages per second to be handled by this HeNB-GW Network service. MME ID configuration is required, because it is the same ID which HeNB-GW sends in response messages to HeNBs.

This parameter is not part of logical-enb configuration and therefore it would include paging messages received from all the MMEs to which tis HeNB-GW is connected on the network side.

Important Paging messages exceeding the configured rate are dropped. Total Paging and Dropped Statistics is updated in the logs.

Example

Following command configures 32770 as the number of paging messages per second to be handled on a specific HeNB-GW Network service.

paging-rate-control *32770*

public-warning-system

This command enables / disables the Public warning system.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

[no] public-warning-system

no

Disables the Public warning system.

Usage Guidelines

Use this command to enable / disable the Public warning system.

Example

Following command disables the Public warning system:

no public-warning-system

pws

This command sets values for parameters related to public warning system feature.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-network-service)#`

Syntax Description

```
pws { kill-request-timeout  kill_req_timeout_seconds  |
restart-indication-timeout  restart_ind_timeout_seconds  |
warning-request-timeout  warn_req_timeout_seconds  }
default pws { kill-request-timeout | restart-indication-timeout |
warning-request-timeout }
```

default

Configures the default value to kill request timeout and warning request timeout of public warning system feature.

kill-request-timeout *kill_req_timeout_seconds*

Configures the Kill Request timeout value in seconds.

kill_req_timeout_seconds is an integer from 1 through 65535.

restart-indication-timeout *restart_ind_timeout_seconds*

Configures Restart Indication timeout value in seconds.

restart_ind_timeout_seconds is an integer from 1 through 65535.

warning-request-timeout *warn_req_timeout_seconds*

Configures the Warning request timeout value in seconds.

warn_req_timeout_seconds is an integer from 1 through 65535.

Usage Guidelines

Use this command to set the values for parameters related to public warning system feature for this HeNB-GW Network service.

Example

Following command configures the Warning request timeout value to 100 seconds.

```
pws warning-request-timeout 100
```

s1ap-max-retransmissions

This command configures the number of times node level S1AP message is retransmitted towards MME.

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-henbgw-network-service)#`

Syntax Description

s1ap-max-retransmissions *number_of_retries*
default s1ap-max-retransmissions

default

Configures the default number of S1AP retransmissions for this HeNB-GW Network service configuration. Default number of retransmissions is 4.

number_of_retries

Identifies the number of S1AP retransmissions to be configured. This number must be entered as an integer between 1 and 5.

Usage Guidelines

Use this command to configure the maximum number of Node level S1AP retransmissions for this HeNB-GW Network service.

Caution Configuring s1ap-max-retransmissions to 0 will disable the S1AP retransmission support.

Example

Following command configures default (which is also 4) S1AP retransmission on a specific HeNB-GW Network service.

```
default s1ap-max-retransmissions
```

s1ap-retransmission-timeout

This command configures the timeout interval to support Node Level S1AP retransmissions if there in no response received from the peer (MME).

Product

HeNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HeNBGW-Network Service Configuration

configure > **context** *context_name* > **henbgw-network-service** *service_name*

Entering the above command sequence results in the following prompt:

[*context_name*]*host_name*(**config-henbgw-network-service**)#

Syntax Description

s1ap-retransmission-timeout *number_of_secs*
default s1ap-retransmission-timeout

default

Configures the default S1AP retransmission timeout for this HeNB-GW Network service configuration. Default retransmission timeout is 60 seconds.

number_of_secs

Identifies the number seconds as the S1AP retransmission timeout to be configured. This number must be entered as an integer between 1 and 600.

Usage Guidelines

Use this command to configure the timeout interval to support Node Level S1ap retransmissions for this HeNB-GW Network service.

Example

Following command configures 100 as the S1AP retransmission timeout on a specific HeNB-GW Network service.

```
s1ap-retransmission-timeout 100
```

CHAPTER 32

Hexdump Module Configuration Mode Commands

Command Modes

The Hexdump Module Configuration Mode is used to configure how hexdump records generated from the **monitor subscriber** and **monitor potocol** commands are handled.

Exec > Global Configuration > Context Configuration > Hexdump Module Configuration

configure > **context** *context_name* > **hexdump-module**

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hexdump)#`

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- do show, on page 1007
- end, on page 1008
- exit, on page 1008
- file, on page 1008
- hexdump, on page 1012

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

do show

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character | is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

file

Sets the format and handling characteristics of hexdump files.

Product

ePDG

SaMOG

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Hexdump Module Configuration

configure > context *context_name* **>hexdump-module**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hexdump)#
```

Syntax Description

file [compression { gzip | none } | current-prefix *prefix* **| delete-timeout** *seconds* **| directory** *directory_name* **| exclude-checksum-record | field-separator { hyphen | omit | underscore } | headers | name** *file_name* **| reset-indicator | rotation { num-records** *number* **| tariff-time minute** *minutes* **hour** *hours* **| time** *seconds* **| volume** *bytes* **} | sequence-number { length** *length* **| omit | padded | padded-six-length | unpadded } | storage-limit** *limit* **| time-stamp { expanded-format | rotated-format | unix-format } | trailing-text** *string* **| trap-on-file-delete | xor-final-record] +**

default file [compression | current-prefix | delete-timeout | directory | field-separator | headers | name | reset-indicator | rotation { num-records | tariff-time | time | volume } | sequence-number | storage-limit | time-stamp | trailing-text | trap-on-file-delete]+

default

Configures the default setting for the specified keyword(s).

compression { gzip | none }

Specifies the compressions of hexdump files.

- **gzip**: Enables GNU zip compression of the hexdump file at approximately 10:1 ratio.
- **none**: Disables Gzip compression.

current-prefix *prefix*

Specifies a string to add at the beginning of the hexdump file that is currently being used to store records.

prefix must be an alphanumeric string of 1 through 31 characters. Default: **curr**

delete-timeout *seconds*

Specifies a time period, in seconds, after which the hexdump files are deleted. By default, files are never deleted.

seconds must be an integer from 3600 through 31536000. Default: Disabled

directory *directory_name*

Specifies a subdirectory in the default directory in which to store hexdump files.

directory_name must be an alphanumeric string of 1 through 191 characters. Default: **/records/hexdump**

exclude-checksum-record

Excludes the final record containing #CHECKSUM followed by the 32-bit Cyclic Redundancy Check (CRC) of all preceding records from the hexdump file.

Default: Disabled, a checksum record is included in the hexdump file header.

field-separator { hyphen | omit | underscore }

Specifies the type of separators between two fields of a hexdump file name:

- **hyphen**: Specifies the field separator as a "-" (hyphen) symbol between two fields.
- **omit**: Omits the field separator between two fields.
- **underscore**: Specifies the field separator as an "_" (underscore) symbol between two fields.

headers

Includes a file header summarizing the record layout.

name *file_name*

Specifies a string to be used as the base file name for hexdump files.

file_name must be an alphanumeric string from 1 through 31 characters.

reset-indicator

Specifies the inclusion of the reset indicator counter (value from 0 through 255) in the hexdump file name. The counter is incremented whenever any of the following conditions occur:

- A peer chassis has taken over in compliance with Interchassis Session Recovery (ICSR).
- The sequence number (see **sequence-number** keyword) has rolled over to zero.

rotation { num-records *number* | tariff-time minute *minutes* hour *hours* | time *seconds* | volume *bytes* }

Specifies when to close a hexdump file and create a new one.

- **num-records** *number* : Specifies the maximum number of records that should be added to a hexdump file. When the number of records in the file reaches this value, the file is complete.

  number must be an integer from 100 through 10240. Default: 1024

- **tariff-time minute** *minutes* **hour** *hours* : Specifies to close the current hexdump file and create a new one based on the tariff time (in minutes and hours).

  minutes must be an integer from 0 through 59.

  hours must be an integer from 0 through 23.

- **time** *seconds* : Specifies the period of time to wait (in seconds) before closing the current hexdump file and creating a new one.

  seconds must be an integer from 30 through 86400. Default: 3600

Important It is recommended to set the rotation time to 30 seconds.

- **volume** *bytes* : Specifies the maximum size of the hexdump file (in bytes) before closing it and creating a new one.

bytes must be an integer from 51200 through 62914560. Note that a higher setting may improve the compression ratio when the compression keyword is set to gzip. Default: 102400

sequence-number { length *length* | omit | padded | padded-six-length | unpadded }

Specifies to exclude or include the sequence number with a specified format in the file name.

- **length** *length*: Includes the sequence number with the specified length.

  length must be the file sequence number length with preceding zeroes in the file name, and must be an integer from 1 through 9.

- **omit**: Excludes the sequence number from the file name.
- **padded**: Includes the padded sequence number with preceding zeros in the file name. This is the default setting.
- **padded-six-length**: Includes the padded sequence number with six preceding zeros in the file name.
- **unpadded**: Includes the unpadded sequence number in the file name.

storage-limit *limit*

Files will be deleted when the specified amount of space (in bytes) is reached.

limit must be an integer from 10485760 through 268435456.

time-stamp { expanded-format | rotated-format | unix-format }

Specifies the format of the file creation timestamp to be included in the file name.

- **expanded-format**: Specifies the UTC (Universal Time Coordinated) MMDDYYYYHHMMSS format.
- **rotated-format**: Specifies the time stamp format to YYYYMMDDHHMMSS format.
- **unix-format**: Specifies the UNIX format of *x.y*, where *x* is the number of seconds since 1/1/1970 and *y* is the fractional portion of the current second that has elapsed.

trailing-text *string*

Specifies the inclusion of an arbitrary text string in the file name as an alphanumeric string of 1 through 30 characters.

string must be an alphanumeric string from 1 through 30 characters.

trap-on-file-delete

Instructs the system to send an SNMP notification (trap) when a hexdump file is deleted due to lack of space.

Default: Disabled

xor-final-record

Specifies to insert an exclusive OR (XOR) checksum (instead of a CRC checksum) into the hexdump file header, if the **exclude-checksum-record** is left at its default setting. Default: Disabled

+

More than one of the previous keywords can be entered within a single command.

Usage Guidelines

Use this command to configure hexdump file characteristics.

Example

The following command sets a time-based storage limit of 30 seconds, rotation volume to 51200 bytes and compression to gzip format for hexdump record files:

```
file rotation volume 51200 rotation time 30 compression gzip
```

The following command sets the base file name to *Hexdumpfile*:

```
file name Hexdumpfile
```

hexdump

Sets the method and destination for transferring hexdump files.

Product

ePDG

SaMOG

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > Hexdump Module Configuration

configure > **context** *context_name* >**hexdump-module**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hexdump)#
```

Syntax Description

```
hexdump { purge { storage-limit megabytes | time-limit seconds } [ max-files
 max_records ] | push-interval interval | push-trigger space-usage-percent
trigger_percent | remove-file-after-transfer | transfer-mode { pull [
module-only ] | push primary { encrypted-url | url } url [ secondary {
encrypted-secondary-url | secondary-url } secondary_url ] [ via local-context
 ] [ max-files files ] [ max-tasks max_tasks ] [ module-only ] } |
use-harddisk }
```

```
default hexdump [ purge | push-interval | push-trigger [
space-usage-percent ] | remove-file-after-transfer | transfer-mode [
module-only ] | use-harddisk ] +
```

```
no hexdump [ purge | remove-file-after-transfer | use-harddisk ] +
```

default

Configures the default setting for the specified keyword(s):

- **purge**: Not enabled.

- **push-interval**: 60 seconds
- **push-trigger**: 80 percent
- **remove-file-after-transfer**: Disabled
- **transfer mode**: Push
- **use-harddisk**: Disabled

no

Disables the configured hexdump file storage and processing in this mode:

- **purge**: Disables the deleting of record files on the hard disk based on a storage limit or a time limit.
- **remove-file-after-transfer**: Retains a copy of the file even after it has been pushed or pulled to another server.
- **use-harddisk**: Disables data storage on the system's hard disk.

purge { storage-limit *bytes* | time-limit *seconds* } [max-files *max_records*]

Configures parameters for deleting hexdump records from the hard drive. This command is not enabled by default.

- **storage-limit** *megabytes* : Specifies that hexdump records are to be deleted from the hard drive upon reaching a storage limit defined in megabytes.

  bytes must be an integer from 10 through 143360.

- **time-limit** *seconds* : Specifies that hexdump records are to be deleted from the hard drive upon reaching a time limit defined in seconds.

  seconds must be an integer from 600 through 2592000.

- **max-files** *max_records* : Specifies the maximum number of files to purge. If configured to 0, all records will be purged until the limit is reached.

  max_records must be an integer that is of value 0, or from 1000 through 10000.

push-interval *interval*

Specifies the transfer interval (in seconds) when hexdump files will be pushed to an external file server.

interval must be an integer from 30 through 3600. Default: 60

push-trigger space-usage-percent *trigger_percent*

Specifies the disk space utilization percentage threshold at which an automatic push is triggered and files are transferred to the external server.

trigger_percentage must be an integer from 10 through 80. Default: 80

remove-file-after-transfer

Specifies that the system must delete hexdump files after they have been transferred to the external file server.

Important The **remove-file-after-transfer** keyword must be enabled for hexdump records.

Default: Disabled

transfer-mode { pull [module-only] | push primary { encrypted-url | url } *url* [secondary { encrypted-secondary-url | secondary-url } *secondary_url*] [via local-context] [max-files *files*] [max-tasks *max_tasks*] [module-only] }

Specifies the transfer mode to be used when transferring hexdump files to an external file server.

- **pull**: Specifies that the destination server (external storage) will pull the hexdump files.
- **push**: Specifies that the system will push hexdump files to the destination server. This is the default mode.
- **primary encrypted-url** *url*: Specifies the primary URL location to which the system pushes the files in encrypted format.

  url must be an alphanumeric string of 1 through 8192 characters.
- **primary url** *url*: Specifies the primary URL location to which the system pushes the hexdump files.

  url must be an alphanumeric string of 1 through 1024 characters in the format: *//user:password@host:[port]/direct*.
- **secondary encrypted-secondary-url** *secondary_url*: Specifies the secondary URL location to which the system pushes the files in encrypted format.

  secondary_url must be an alphanumeric string of 1 through 8192 characters.
- **secondary secondary-url** *secondary_url*: Specifies the secondary URL location to which the system pushes the hexdump files.

  secondary_url must be an alphanumeric string of 1 through 1024 characters in the format: *//user:password@host:[port]/direct*.
- **via local-context**: Specifies that the local context, and, subsequently, the SPIO management ports, will be used to pull or push hexdump files.
- **max-files** *files* : Specifies the maximum number of files that can be transferred per push.

  files must be an integer from 4 to 4000.
- **max-tasks** *max_tasks* : Specifies the maximum number of files per push.

  max_tasks must be an integer from 4 through 8.
- **module-only**: Specifies that the transfer of hexdump records is to be applied only to the module type for which the configuration was originally created. If this option is not enabled, the transfer will occur for all record types.

use-harddisk

Specifies that the hard disk drive on the SMC is to be used to store hexdump records.

Important The **use-harddisk** keyword must be enabled for hexdump records.

Default: Disabled

Usage Guidelines

Use this command to configure how the hexdump records are moved and stored. By default, records are stored in the PSC RAM where the CDRMOD instance is running.

The **hexdump use-harddisk** command can be run only in a context where CDRMOD is running. Configuring in any other context will result in failure with the message "Failure: Please Check if CDRMOD is running in this context or not."

If push transfer mode is configured, the server URL to which the hexdump files will be transferred must be specified.

When changing the transfer-mode from pull to push, disable the pull setting before changing the transfer mode to push. The push to server URL must be accessible from the local context. Also, make sure that its base directory contains an **hexdump** subdirectory.

After changing the transfer mode from push to pull, enable pull on the destination server. Any ongoing push activity will continue until all the file transfers are completed. If there is no ongoing push activity at the time of this configuration change, the push-related configuration is nullified immediately.

Example

The following command enables file removal operation after hexdump file transfer.

```
hexdump remove-file-after-transfer
```

CHAPTER 33

HLR Configuration Mode Commands

The HLR Configuration Mode is a sub-mode derived from the MAP Configuration Mode which controls the MAP service configuration. It is the MAP service that provides the application-layer protocol support used to connect the HLR to other nodes in the network such as the SGSN.

Command Modes

The HLR Configuration Mode provides the commands and parameters to configure the home location register (HLR) node that is the database containing the subscriber profile and connection information for a specific GPRS/UMTS core network.

Exec > Global Configuration > Context Configuration > MAP Service Configuration > HLR Configuration

configure > **context** *context_name* > **map-service** *service_name* > **hlr**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-map-service-service_name-hlr)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- acn-version-retention, on page 1017
- do show, on page 1018
- end, on page 1019
- exit, on page 1019
- imsi, on page 1019
- policy routing, on page 1021
- release-compliance, on page 1022

acn-version-retention

This command configures the ACN version retention method.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > MAP Service Configuration > HLR Configuration

configure > **context** *context_name* > **map-service** *service_name* > **hlr**

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-map-service-service_name-hlr)#`

Syntax Description

`acn-version-retention { per-imsi-prefix | per-subscriber }`
`default acn-version-retention`

default

Returns the configuration to the default value: retains the version information per IMSI prefix.

per-imsi-prefix

Retain ACN version information, for communication with the HLR, on a per IMSI prefix basis.

per-subscriber

Retain ACN version information, for communication with the HLR, on a per buscriber basis.

Usage Guidelines

By default, the SGSN sends ACN version 3 SAI (service area identity) to the HLR. If the SGSN receives an error message indicating that the HLR does not support that version, then the SGSN tries again with an ACN version 2 SAI. Next time the SGSN communicates with that HLR, it retains that version information and version persists based on the IMSI prefix.

Use this command to enable the SGSN to retain version according to subscriber.

Example

Configure the SGSN to retain version information according to the IMSI prefix:

`default acn-version-retention`

do show

Executes all **show** commands while in Configuration mode.

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

`do show`

Usage Guidelines

Use this command to run all Exec mode **show** commands while in Configuration mode. It is not necessary to exit the Config mode to run a **show** command.

The pipe character **|** is only available if the command is valid in the Exec mode.

Caution There are some Exec mode **show** commands which are too resource intensive to run from Config mode. These include: **do show support collection**, **do show support details**, **do show support record** and **do show support summary**. If there is a restriction on a specific **show** command, the following error message is displayed:

```
Failure: Cannot execute 'do show support' command from Config mode.
```

end

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

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **end**

Usage Guidelines Return to the Exec mode.

exit

Exits the current configuration mode and returns to the MAP Service configuration mode.

Product SGSN

Privilege Security Administrator, Administrator

Syntax Description **exit**

Usage Guidelines Return to the MAP Service configuration mode.

imsi

This command sets up IMSI (International Mobile Subscriber Identity) -based configuration. The IMSI prefix includes the nobile country code (MCC) and the mobile network code (MNC).

Product SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > MAP Service Configuration > HLR Configuration

configure > **context** *context_name* > **map-service** *service_name* > **hlr**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-map-service-service_name-hlr)#
```

Syntax Description

[no] imsi { any | starts-with *prefix_number* **} { imsi [sgsn-source-address-format point-code-ssn [source-ssn** *ssn* **] | isdn** *isdn_number* **| mobile-global-title** *mgt_number* **[max-gt-address-len** *max_gt_address* **] | point-code** *pt-code* **} }**

no

Removes the imsi-prefix definition from the configuration.

any

Configures acceptance of any IMSI prefix.

start-with *prefix_number*

Selects IMSI prefix-based routing.

prefix_number is a string of up to 15 integers.

imsi

Enables configurable default behavior for routing.

Entering **imsi** with the **any** keyword preserves the default behavior and the E.212 address is used as a destination address and the MAP request will be sent towards the HLR.

If this keyword is not used with the **any** keyword, then the MAP request will be rejected.

isdn *isdn_number*

Defines the E.164 number of the HLR.

isdn_number is a string of integers, up to 15.

mobile-global-title *mgt_number* [max-gt-address-len *max_gt_address_length*]

Defines the mobile global title address that the MCC/MNC portion of the IMSI will be converted to. If the maximum GT address length is specified (optional) and if the length of the MGT string is greater than defined, then the least significant digits will be omitted.

mgt_number is a string of digits, up to 18 digits in length.

max_gt_address is an integer from 1 to 32.

point-code *pt-code* source-ssn *ssn*

Defines the point code for the HLR.

pt-code is a string of digits, up to 11; SS7 format preferred.

sgsn-source-address-format point-code-ssn

Selects HLR call process according to SCCP calling party address of the SGSN. This will be filled at MAP level, including the ITU point code address.

source-ssn *ssn*

Defines the SSN of the source that will be used for the call filtering.

ssn: Must be an integer from 1 to 255.

Usage Guidelines

Routing will be done according to IMSI parameters configured with this command or according to the mobile global title address (replacing the MCC/MNC portion of the IMSI) is so specified.

Example

```
imsi starts-with 3 isdn 123456789 sgsn-source-address-form at point-code-ssn
```

policy routing

This command configures the policy for the routing of MAP messages. If this command is not configured or disabled (with the **default** keyword), then routing is done according to the configuration of the IMSI parameters.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > MAP Service Configuration > HLR Configuration

configure > **context** *context_name* > **map-service** *service_name* > **hlr**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-map-service-service_name-hlr)#
```

Syntax Description

```
policy routing { hlr-isdn | ms-isdn }
default policy routing
no policy routing
```

default

Resets the policy routing to the system default, disabled.

no

Removes the policy routing configuration from the system.

hlr-isdn

Selects HLR-ISDN based routing.

ms-isdn

Selects mobile station (MS)-ISDN based routing.

Usage Guidelines

Use this command to set the policy for routing MAP messages.

Example

```
policy routing hlr-isdn
```

release-compliance

Enables/disables the sending of EPS information in the Update GPRS Location Request message to the HLR.

Product

SGSN

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > MAP Service Configuration > HLR Configuration

configure > **context** *context_name* > **map-service** *service_name* > **hlr**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-map-service-service_name-hlr)#
```

Syntax Description

```
release-compliance release-8
no release-compliance
```

release-compliance release-8

Enables the sending of EPS information in the UGL Request message to the HLR. This setting sets the 3GPP release compliance to *Release 8 and above*.

no release-compliance

Disables the sending of EPS information in the UGL Request message to the HLR. This command sets the 3GPP release compliance setting to *Pre-release 8*. This is the default setting.

Usage Guidelines

Use this command to enable or disable the sending of EPS information in the UGL Request message to the HLR.

Operators can use the **show map-service all** command to view the current 3GPP release compliance setting.

Example

This command enables the sending of EPS information in the UGL Request message to the HLR.

```
release-compliance release-8
```

CHAPTER 34

HNB-GW Global Configuration Mode Commands

Important In Release 20 and later, HNBGW is not supported. Commands in this configuration mode must not be used in Release 20 and later. For more information, contact your Cisco account representative.

The 3G UMTS Home-NodeB Gateway Global Configuration Mode provides the global configurations for multiple HNB-GW services on a chassis to manage the access to the UMTS core network in a 3G UMTS network through a Femto node. This configuration mode is supported from StarOS 14.0 onward.

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- access-control-db, on page 1023
- end, on page 1025
- exit, on page 1025
- paging hybrid-hnb, on page 1025
- paging open-hnb, on page 1027
- sctp, on page 1028
- session-collocation, on page 1030
- tnnsf-timer, on page 1031

access-control-db

Configures the access control database parameters in HNB-GW Global configuration mode to control HNB and UE access to the HNB-GW node.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Syntax Description

```
access-control-db imsi-purge-timeout { immediate | dur }
default access-control-db imsi-purge-timeout
```

default

Sets the default value to HNB-UE access control database on a chassis for HNB-GW Global configuration instance.

The default timeout duration for purging of the IMSI White List from the HNB-GW Access Control database is 24 hours. The HNB-GW service waits for 24 hours after all referenced HNBs have de-registered before purging the records.

immediate

Sets the HNB-GW Global configuration instance to purge the HNB-UE access control database immediately after all referenced HNBs have de-registered.

imsi-purge-timeout *dur*

Sets the timeout duration (in minutes) for the access control database to wait before purging the IMSI values received as a White List from HMS/BAC.

After all HNBs have de-registered, the Access Control database on HNB-GW maintains the IMSI White List received from HMS/BAC during HNB registration procedure for the configured durations before purging the list.

dur is an integer from 1 through 1440.

Usage Guidelines

Use this command to configure the HNB-UE access control database parameters on a chassis for HNB-GW Global configuration instance.

This command sets the timeout duration to maintain the IMSI White List received from HMS/BAC during HNB registration procedure in HNB-GW Global configuration instance for the configured *dur* in minutes after de-registration of all referenced HNBs from HNB-GW node and then purge the database.

Example

Following command sets the HNB-GW Global configuration instance to purge all IMSI records from HNB-UE access control database immediately after all referenced HNBs de-registered from HNB-GW service instance.

```
access-control-db imsi-purge-timeout immediate
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

paging hybrid-hnb

Configures paging optimization parameters for hybrid HNBs connected through Hybrid Access mode in the HNB-GW Global parameter.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Syntax Description

```
paging hybrid-hnb always
paging hybrid-hnb hnb-where-ue-registered [ hnbs-having-imsi-in-whitelist
 ] fallback { always | never |only-if-with-paging-area }
paging hybrid-hnb hnbs-having-imsi-in-whitelist fallback { always | never
 | only-if-with-paging-area }
paging hybrid-hnb never
```

```
paging hybrid-hnb only-if-with-paging-area
default paging hybrid-hnb
```

default

Sets the default behavior of paging optimization configuration for a hybrid HNB while using Hybrid Access mode support.

By default the HNB-GW pages hybrid HNBs only if paging-area IE is received in the paging message.

{ always | never | only-if-with-paging-area }

Sets the HNB-GW Global parameter to page hybrid HNB for a paging message.

always: Sets the system to ALWAYS page the hybrid HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to NEVER page any hybrid HNB.

only-if-with-paging-area: Sets the system to page the hybrid HNBs only when **paging-area** IE is received in paging messages.

hnb-where-ue-registered fallback {always | never | only-if-with-paging-area}

Sets the HNB-GW Global parameter to page hybrid HNB from where the UE is registered.

always: Sets the system to ALWAYS page the hybrid HNBs from where the UE is registered. If the UE is not registered then it pages the hybrid HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to page the hybrid HNBs from where the UE is registered. If the UE is not registered then it NEVER pages any hybrid HNB.

only-if-with-paging-area: Sets the system to ALWAYS page the hybrid HNBs from where the UE is registered. If the UE is not registered then it pages the hybrid HNBs only when **paging-area** IE is received in paging messages.

hnbs-having-imsi-in-whitelist fallback {always | never | only-if-with-paging-area}

Sets the HNB-GW Global parameter to page hybrid HNB where HNB have IMSI in white-list.

always: Sets the system to ALWAYS page Hybrid HNB which have requested IMSI in whitelist. If no such Hybrid HNB is found, then system will page Hybrid HNBs irrespective of presence or absence of **paging-area** IE in paging messages.

never: Sets the system to ALWAYS page Hybrid HNB which have requested IMSI in whitelist. If no such Hybrid HNB is found, then system will NEVER page Hybrid HNBs irrespective of presence or absence of **paging-area** IE in paging messages.

only-if-with-paging-area: Sets the system to ALWAYS page Hybrid HNB which have requested IMSI in whitelist. If no such Hybrid HNB is found, then system will page hybrid HNB only when **paging-area** IE is found in paging messages.

Usage Guidelines

Use this command to configure the paging optimization parameters for hybrid HNBs connected through Hybrid Access mode in HNB-GW Global parameter.

Example

The following command configures the HNB-GW Global parameter to page an hybrid HNB from where the UE is registered and **paging-area** IE is received in paging message:

```
paging hybrid-hnb hnb-where-ue-registered fallback only-if-with-paging-area
```

paging open-hnb

Configures paging optimization parameters for open HNBs connected through Hybrid Access mode in the HNB-GW Global parameter.

Important This command is deprecated from release 16.0.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Syntax Description

```
paging open-hnb [hnb-where-ue-registered fallback] {always | never |
only-if-with-paging-area}
default paging open-hnb
```

default

Sets the default behavior of paging optimization configuration for an open HNB while using Open Access mode support.

By default the HNB-GW pages open HNBs only if paging-area IE is received in the paging message.

{always | never | only-if-with-paging-area}

Sets the HNB-GW Global configuration instance to page open HNB for a paging message.

always: Sets the system to ALWAYS page the open HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to NEVER page any open HNB.

only-if-with-paging-area: Sets the system to page the open HNBs only when **paging-area** IE is received in paging messages.

hnb-where-ue-registered fallback {always | never | only-if-with-paging-area}

Sets the HNB-GW Global configuration instance to page open HNB from where the UE is registered.

always: Sets the system to ALWAYS page the open HNBs from where the UE is registered. If the UE is not registered then it pages the open HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to page the open HNBs from where the UE is registered. If the UE is not registered then it NEVER pages any open HNB.

only-if-with-paging-area: Sets the system to ALWAYS page the open HNBs from where the UE is registered. If the UE is not registered then it pages the open HNBs only when **paging-area** IE is received in paging messages.

Usage Guidelines

Use this command to configure the paging optimization parameters for open HNBs connected through Open Access mode in HNB-GW Global configuration instance.

Example

The following command configures the HNB-GW Global configuration instance to page an open HNB from where the UE is registered and **paging-area** IE is received in paging message:

```
paging open-hnb hnb-where-ue-registered fallback only-if-with-paging-area
```

sctp

Configures the SCTP-related parameters like timeout duration for various timers and cookie life over an IuH interface on a chassis for HNB-GW Global configuration instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Syntax Description

```
sctp { alpha-rto alpha_rto_dur | beta-rto  beta_rto_dur | max-in-strms in_strms
 | max-out-strms  out_strms | max-retx { assoc | init | path } max_retry  }
default sctp { alpha-rto | beta-rto |  max-in-strms | max-out-strms |
max-retx { assoc | init | path } }
```

default

Restores the SCTP parameters to default value in HNB-GW Global configuration instance. Default values for all parameters are as follows:

- **alpha-rto**: 5 seconds
- **beta-rto**: 10 seconds
- **max-in-strms**: 4

- **max-out-strms**: 4
- **max-retx assoc**: 10 retries
- **max-retx init**: 5 retries
- **max-retx path**: 5 retries

alpha-rto *alpha_rto_dur*

Sets the alpha retransmission timeout duration (in seconds) for SCTP association between HNB and HNB-GW as an integer from 0 through 65535. A "zero" value disables the timer in this configuration. Default: 5

beta-rto *beta_rto_dur*

Sets the beta retransmission timeout duration (in seconds) for SCTP association between HNB and HNB-GW an integer from 0 through 65535. A "zero" value disables the timer in this configuration. Default: 10

max-retx { assoc | init | path } *max_retry*

Sets the maximum number of retries allowed in SCTP states for SCTP association between HNB and HNB-GW.

assoc: Sets the maximum number of consecutive retransmissions to its peer is allowed. If the value of this counter exceeds the limit configured with this keyword the HNB-GW considers the peer HNB unreachable and stop transmitting any more data to it. The SCTP association is automatically closed when the peer endpoint becomes unreachable. Default number of attempts *max_retry* for this state is 10.

init: Sets the maximum attempts allowed after T1-init timer expires. If the T1-init timer expires then the HNB-GW retransmits INIT chunk and re-start the T1-init timer without changing state. This is repeated up to the configured times with this configuration. After that, the HNB-GW aborts the initialization process. Default number of attempts *max_retry* for this state is 5.

path: Sets the maximum attempts allowed after T3-rtx timer expires. Each time the T3-rtx timer expires on any address, or when a HEARTBEAT sent to an idle address is not acknowledged within a RTO, the error counter of that destination address incremented. When the value in the error counter exceeds this protocol parameter of that HNB address, the HNB-GW marks the destination transport address as inactive. Default number of attempts *max_retry* for this state is 5.

max_retry is an integer from 0 through 255.

max-in-strms *in_strms*

Sets the maximum number of inward SCTP streams allowed on HNB-GW for an associated HNB in an SCTP association as an integer from 1 through 16. Default: 4

max-out-strms *out_strms*

Sets the maximum number of outgoing SCTP streams allowed from HNB-GW for an associated HNB in an SCTP association as an integer from 1 through 16. Default: 4

Usage Guidelines

Use this command to configure the SCTP protocol messaging and session management parameters in SCTP association between HNB and HNB-GW.

Example

The following command sets the maximum number of inward SCTP streams allowed to *4* on HNB-GW for the SCTP association:

```
default max-in-strms
```

session-collocation

This command is used to enable / disable iu and hnb in same session manager.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnggw-global)#`

Syntax Description

```
[ no | default ] session-collocation { both | iucs | iups }
```

no

Does not allow the enable / disable of the iu and hnb in same session manager.

default

Sets the timer value for enable / disable of the iu and hnb in same session manager.

both

Enables / disables both the iucs and iups with HNB in same session manager .

iucs

Enables / disables both the iucs with HNB in same session manager .

iups

Enables / disables both the iups with HNB in same session manager .

Usage Guidelines

Use this command to enable / disable iu and hnb in same session manager.

Example

The following command enables iucs and hnb in same session manager.

```
session-collocation iucs
```

tnnsf-timer

Configures the NAS Node Selection Function (NNSF) timer (T-NNSF) which is used by the HNB-GW to store the IMSI and the relevant Global-CN-ID in the short term after Paging. This timer is used for Iu-Flex feature support.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-GW Global Configuration

configure > hnbgw-global

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnggw-global)#
```

Syntax Description

tnnsf-timer *dur*
[no | default] tnnsf-timer

no

Disables/removes the configured timer value of NNSF timer (T-NNSF) for HNB-GW Global configuration instance.

default

Sets the timer value of NNSF timer (T-NNSF) for HNB-GW Global configuration instance to default value of 30 seconds.

tnnsf-timer *dur*

Configures the NNSF timer (in seconds) which is used by the HNB-GW to store the IMSI and the relevant Global-CN-ID as an integer from 10 through 60. Default: 30

Usage Guidelines

Use this command to configure the NNSF timer value in seconds for Iu-Flex support.

Whenever the MSC sends the paging request with IMSI, the HNB-GW stores the Global_CN_ID of the node which issued the paging request message for the given IMSI and HNB-GW starts the **tnnsf-timer**. HNBGW stores the mapping of IMSI to Global_CN_ID until the **tnnsf-timer** expires

Example

The following command sets the NNSF timer value to *30* seconds on a chassis for HNB-GW Global configuration instance:

default tnssf-timer

CHAPTER 35

HNB-GW Service Configuration Mode Commands

Important In Release 20 and later, HNBGW is not supported. Commands in this configuration mode must not be used in Release 20 and later. For more information, contact your Cisco account representative.

The 3G UMTS Home-NodeB Gateway Service Configuration Mode manages access to the UMTS core network in a 3G UMTS network through a Femto node.

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- access-control-db, on page 1034
- associate cbs-service, on page 1035
- associate gtpu-service, on page 1036
- associate rtp pool, on page 1037
- authorised-macro-lai macro-info-ie-absent-action, on page 1038
- authorised-macro-lai mcc, on page 1039
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- end, on page 1041
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- hnb override-vsa location-based-service, on page 1042
- hnb-access-mode closed, on page 1043
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• hnb-config-transfer, on page 1048
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• ip iu-qos-dscp, on page 1050
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• sctp checksum-type, on page 1072
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• sctp cookie-life, on page 1074
• sctp heart-beat-timeout, on page 1074
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• security-gateway bind, on page 1078
• sessmgr-to-cbsmgr-pacing-timer, on page 1080
• tnnsf-timer, on page 1080
• ue registration-timeout, on page 1081

access-control-db

Configures the access control database parameters in an HNB-GW service instance to control HNB and UE access to the HNB-GW node.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
access-control-db imsi-purge-timeout { immediate | dur }
default access-control-db imsi-purge-timeout
```

default

Sets the default value to HNB-UE access control database on HNB-GW service instance.

The default timeout duration for purging of the IMSI White List from the HNB-GW Access Control database is 24 hours. The HNB-GW service waits for 24 hours after all referenced HNBs have de-registered before purging the records.

immediate

Sets the HNB-GW service to purge the HNB-UE access control database immediately after all referenced HNBs have de-registered.

imsi-purge-timeout *dur*

Sets the timeout duration (in minutes) for the access control database to wait before purging the IMSI values received as a White List from HMS/BAC.

After all HNBs have de-registered, the Access Control database on HNB-GW maintains the IMSI White List received from HMS/BAC during HNB registration procedure for the configured durations before purging the list.

dur is an integer from 1 through 1440.

Usage Guidelines

Use this command to configure the HNB-UE access control database parameters on HNB-GW service.

This command sets the timeout duration to maintain the IMSI White List received from HMS/BAC during HNB registration procedure in HNB-GW service for the configured *dur* in minutes after de-registration of all referenced HNBs from HNB-GW node and then purge the database.

Example

Following command sets the HNB-GW service instance to purge all IMSI records from HNB-UE access control database immediately after all referenced HNBs de-registered from HNB-GW service instance.

```
access-control-db imsi-purge-timeout immediate
```

associate cbs-service

Configures CBS service for this HNBGW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

associate cbs-service *svc_name*
no associate cbs-service

no

Removes the configured CBS service from this HNB-GW service configuration.

svc_name

Identifies the name of the pre-configured CBS service to associate with an HNB-GW service.

svc_name is an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to configure CBS service for HNB-GW service.

Example

Following command configures CBS service named *cbs_hnb1* with specific HNB-GW service.

associate cbs-service cbs_hnb1

associate gtpu-service

Associates a previously configured GTP-U service to bind the HNB-GW service with an HNB towards the HNB side. A GTP-U service must be configured in Context Configuration mode before using this configuration.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

associate gtpu-service *svc_name*
no associate gtpu-service

no

Removes the associated GTP-U service from this HNB-GW service configuration.

svc_name

Identifies the name of the pre-configured GTP-U service to associate with an HNB-GW service towards the Home-NodeB side.

svc_name is an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to configure GTP-U data plan between HNB-GW service and Home-NodeB. The service defined for GTP-U can be configured in Context configuration mode.

Important

Another GTP-U service can be used to bind the HNB-GW service towards the Core Network and can be configured in HNB-PS Configuration mode. For more information on GTP-U service configuration, refer *GTP-U Service Configuration Mode Commands*.

Example

Following command associates GTP-U service named *gtpu_hnb1* with specific HNB-GW service towards Home-NodeB side.

```
associate gtpu-service gtpu_hnb1
```

associate rtp pool

Associates a previously defined RTP pool (IP pool) with the HNB-GW service. This pool is used by HNB-GW to send an IP address to HNB where HNB uses it to map the RTP streams over Iuh interface. This command is used for RTP stream management on HNB-GW.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
associate rtp pool pool_name
no associate rtp pool
```

no

Removes the associated RTP pool (IP pool) from this HNB-GW service configuration.

pool_name

Specifies the name of the pre-configured RTP IP pool that the HNB-GW uses to assign IP addresses when mapping RTP streams over the Iuh interface.

pool_name is an alphanumeric string of 1 through 31 characters.

Important For IP pool (RTP pool) configuration, refer **ip pool** command in *Context Configuration Mode Commands* chapter.

Usage Guidelines

Use this command to associate an RTP pool (IP Pool) with an HNB-GW service for allotment of RTP IP address to HNB-GW node and send the same to HNB for RTP stream management support. The HNB maps the RTP streams with received IP address(es) while communicating with HNB-GW over Iuh interface where HNB-GW communicates with MSC/VLR through IuCS-over-IP tunnel.

This command is used for RTP stream management on HNB-GW.

Important This command must be used to provide IP address for mapping of RTP streams on Iuh interface between HNB and HNB-GW.

Example

Following command associates RTP pool named *rtp_1* with HNB-GW service for RTP stream end point from Home-NodeB:

```
associate rtp pool rtp_1
```

authorised-macro-lai macro-info-ie-absent-action

This command configures the Action if Macro Coverage information IE is absent in HNB Location Information. The HNB will be accepted for Action Accept and rejected for Action Reject.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
authorised-macro-lai macro-info-ie-absent-action { accept | reject }
default authorised-macro-lai macro-info-ie-ab sent-action
```

default

Sets / Restores default value assigned for the Action if Macro Coverage information IE is absent in HNB Location Information. The default value is reject.

accept

Accepts HNB even if Macro Coverage information IE is absent in HNB Location Information.

reject

Rejects HNB if Macro Coverage information IE is absent in HNB Location Information.

Usage Guidelines

Use this command when Macro Coverage Info IE is absent in HNB Location information.

Example

The following command accepts HNB even if Macro Coverage inforamtion IE is absent in HNB Location Information:

```
authorised-macro-lai macro-info-ie-absent-action accept
```

authorised-macro-lai mcc

This command configures MCC of Pre-Configured macro lai range for HNB Authorisation.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

[no] authorised-macro-lai mcc *mcc* **mnc** *mnc* **lac range** *min* **to** *max*

no

Removes the MCC of Pre-Configured macro lai range for HNB Authorisation.

mcc *mcc*

MCC of Pre-Configured macro lai range for HNB Authorisation.

mcc is a number ranging from 100 through 999.

mnc *mnc*

MNC of Pre-Configured macro lai range for HNB Authorisation.

mnc is a number ranging from 00 through 999.

lac range *min* to *max*

LAC of Pre-Configured macro lai range for HNB Authorisation.

LAC is configured as range, if single lac make min is equal to max.

Macro LAC from*min* to *max* integer values between 0 through 65535.

Usage Guidelines

Use this command to configure the MCC of Pre-Configured macro lai range for HNB Authorisation.

Example

The following command configures the MCC of Pre-Configured macro lai range for HNB Authorisation with mcc *888*, mnc *44* and lac range from *10* to *1000*:

```
authorised-macro-lai mcc 678 mnc 788 lac range 10 to 1000
```

common-plmn

This command configures the Common PLMN along with rnc-id. This enables MOCN.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
common-plmn mcc mcc mnc mnc rnc-id rnc_id
no common-plmn
```

no

Removes the configuration of Common PLMN service.

mcc *mcc*

Configures the MCC of Common PLMN.

mcc is a number ranging from 100 through 999.

mnc *mnc*

Configures the MNC of Common PLMN.

mnc is a number ranging from 00 through 999.

rnc-id *rnc_id*

Configures the RNC-id for this HNBGW service.

rnc_id is a decimal value of integer ranging from 0 through 4095.

Usage Guidelines

Use this command to configure the Common PLMN along with rnc-id to HNB-GW service.

This enables MOCN.

Example

The following command configures Common PLMN with mcc *888*, mnc *44* and rnc-id *66*to HNB-GW service:

```
common-plmn mcc 444 mnc 56 rnc-id 56
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

handin

Allows or disallows the incoming hand-over of an MS in HNB-GW via the Serving Radio Network Subsystem (SRNS) Relocation procedure for the specified packet switched/circuit switched (PS/CS) core network (CN) domain.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

[no | default] handin cn-domain [cs | ps]

no

Disallows the incoming MS hand-over for the particular CN domain via SRNS Relocation procedure in an HNB-GW service instance.

If hand-over is restricted the relocation request will be rejected with rejection cause "Relocation Not Supported In Target RNC Or Target System".

default

Sets the HNB-GW service instance to allow the incoming MS hand-over for the particular CN domain via SRNS Relocation procedure in an HNB-GW service instance.

cs

Sets the HNB-GW service instance to allow the incoming MS hand-over for the CS core network domain via SRNS Relocation procedure in an HNB-GW service instance.

ps

Sets the HNB-GW service instance to allow the incoming MS hand-over for the PS core network domain via SRNS Relocation procedure in an HNB-GW service instance.

Usage Guidelines

Use this command to set HNB-GW service instance for allowing/disallowing incoming hand-over of an MS in HNB-GW via SRNS Relocation procedure for PS or CS core network domain.

If hand-over is restricted the Relocation Request message will be rejected with rejection cause "Relocation Not Supported In Target RNC Or Target System".

Example

The following command configures the HNB-GW service instance to allow hand-over of an MS in HNB-W via SRNS Relocation procedure for PS core network domain:

handin cn-domain ps

hnb override-vsa location-based-service

This command enables / disables overriding of a particular vendor specific attribute of configured location based HNB Service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

`[ no | default ] hnb override-vsa  location-based-service`

no

Disables the overriding of vendor specific attribute for location based service.

default

When set to default, overriding of vendor specific attribute will be disabled.

Usage Guidelines

Use this command to enable / disable overriding of a particular vendor specific attribute of configured location based HNB Service.

Example

The following command enables overriding of a particular vendor specific attribute of configured location based HNB Service. :

`hnb override-vsa location-based-service`

hnb-access-mode closed

This command configures Closed Access Mode for HNB Access Mode Support.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

`hnb-access-mode closed [ max-registered-ue` *`value`* **`]`**
`default hnb-access-mode closed`

default

Sets/Restores the default value assigned for Closed Access Mode.

max-registered-ue*value*

Maximum Registered UEs per Close HNB. Default is 64.

value is an integer ranging from 1 to 1000.

Important Maximum registered UEs depends on the aggregation factor configuration of HNBGW service. If aggregation is enabled then Maximum registered UEs is 1 to 10000 otherwise it is 1 to 1000.

Usage Guidelines Use this to configure Closed Access Mode for HNB Access Mode Support.

Example

Following command configures the Maximum Registered UEs per Close HNB as 15.

```
hnb-access-mode closed max-registered-ue 15
```

hnb-access-mode hybrid

This command configures the Hybrid HNB access mode in HNB-GW service instance and related parameters.

Product HNB-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
hnb-access-mode hybrid [ max-non-access-controlled-ue num ]
{ no | default } hnb-access-mode hybrid
```

no

Disables the Hybrid Access Mode of HNB service.

default

Sets the default configuration of Hybrid Access Mode support. The default value of Maximum Non-Access-Controlled UEs per Hybrid HNB is 64.

By default, HNB-GW allows registration of Non-Access-Controlled UEs per Hybrid HNB and a maximum of 16 UEs can register from a hybrid HNB in an HNB-GW service instance.

max-non-access-controlled-ue *num*

Maximum Non-Access-Controlled UEs per Hybrid HNB.

num is an integer from 0 through 64.

Usage Guidelines Use this command to configure the Hybrid HNB access mode in HNB-GW service instance and related parameters.

Example

The following command configures the Hybrid HNB access mode in HNB-GW service instance and related parameters. :

```
hnb-access-mode hybrid
```

hnb-access-mode mismatch-action

This command configures the mismatch action of HNB access mode in HNB-GW service instance and related parameters.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

```
hnb-access-mode mismatch-action { accept-aaa-value | hnb-reg-rej }
default hnb-access-mode mismatch-action
```

default

Sets the default Hybrid Access Mode of HNB service. The default value of Maximum Non-Access-Controlled UEs per Hybrid HNB is 64.

accept-aaa-value

Supports the Accept AAA value.

hnb-reg-rej

Supports the HNB Registration Reject.

Usage Guidelines

Use this command to configure the mismatch action of HNB access mode in HNB-GW service instance and related parameters.

Example

The following command configures the mismatch action of HNB access mode in HNB Service to Accept AAA value:

```
hnb-access-mode mismatch-action accept-aaa-value
```

hnb-access-mode open

Configures the Open HNB access mode in HNB-GW service instance and related parameters.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
hnb-access-mode open [ max-registered-ue reg_ue_open]
{ no | default } hnb-access-mode open
```

no

Disables Open Access mode support.

If disabled and an Open HNB tries to register, the HNB-GW sends HNB-Registration-Reject message with "OAM Intervention" cause.

Important UE-Reg/CS-Call/PS-Call requests (both existing and future) is allowed from already registered Open HNBs even after operator has disabled the Open Access support. No new Open HNB registration is allowed once operator disables the Open Access support.

default

Sets the default configuration of Open Access mode support.

By default, HNB-GW allows registration of Open HNBs and a maximum of 64 UEs can register from an open HNB in an HNB-GW service instance.

max-registered-ue *reg_ue_open*

Sets the HNB-GW service instance to allow the maximum number of UEs through an open HNB under Open Access mode support.

reg_ue_open defines the maximum number of UEs that can register from an Open HNB as an integer from 1 through 64.

If a UE tries to register from an Open HNB which has already reached to the configured limit configured, the HNB-GW sends HNB-Registration-Reject message with "*ue not allowed in this hnb*" cause in an HNB-GW service instance.

Usage Guidelines

Use this command to configure the HNB-GW service instance for Open Access Mode support and related parameters.

This command enable Open Access mode support to allow the UEs that can register from an Open HNB. If a UE tries to register from an Open HNB with an HNB-GW service instance, which is already reached to the limit configured through **max-registered-ue** *reg_ue_open* the HNB-GW sends HNB-Registration-Reject message with "*ue not allowed in this hnb*" cause.

Important If Operator has reduced the maximum number of UEs allowed per Open HNB during the session, this will not have any effect on already registered UEs/CS-Calls/PS-Calls even if previously configured *reg_ue_open* is beyond the newly configured *reg_ue_open* value. Limits is respected while handling new requests.

Example

The following command configures the HNB-GW service instance to allow 16 UEs to register through an open HNB:

```
hnb-access-mode open max-registered-ue 16
```

hnb-aggregation

This command enables / disables HNB aggregation support for this hnbgw-service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
hnb-aggregation { handin-with-aggregator | max-registered-ues-per-hnb
value } [ -noconfirm ]
[ no | default ] hnb-aggregation handin-with-aggregator [ -noconfirm ]
```

no

Disables the HNB aggregation support for this hnbgw-service.

default

Sets the default value of HNB aggregation support for this hnbgw-service .

handin-with-aggregator

Enables or disables handin with the aggregators.

max-registered-ues-per-hnb

Configures the maximum number of UEs allowed per HNB.

Caution Once set, any change in this configuration will cause all HNBs in this HNBGW service to get disconnected.

value defines the maximum number of UEs allowed per HNB as an integer from 1 through 10000.

Usage Guidelines

Use this command to enable / disable HNB aggregation support for this hnbgw-service.

Example

The following command configures the maximum number of UEs allowed per HNB:

```
hnb-aggregation max-registered-ues-per-hnb 16
```

The following command enables handin with aggregators:

```
hnb-aggregation handin-with-aggregator
```

hnb-config-transfer

This command enables/disables Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

```
[ default | no ] hnb-config-transfer add-inner-ip
```

no

Disables the Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service.

default

Enables the default behavior of Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service. By default it is enabled.

add-inner-ip

Enables/Disables Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service.

Usage Guidelines

Use this command to enable / disable the Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service.

Example

The following command enables the Inclusion of Inner IP Address in HNB Configuration Transfer Response for HNBGW-service:

```
hnb-config-transfer add-inner-ip
```

hnb-identity

Configures and also allows modification to the HNB ID before it is sent to the AAA server for authentation in HNB-GW service instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
[ default | no ] hnb-identity oui discard-leading-char
```

no

Disables discarding of leading character of HNB-id if it contains Organizationally Unique Identifier

default

Enables the default behavior of discarding of leading character of HNB-id if it contains Organizationally Unique Identifier. By default this feature is deactivated.

oui discard-leading-char

This CLI allows to modify the HNB ID before it is sent to the AAA server for authentication. By using this CLI, first character of the HNB-id can be removed if the HNB-id follows the format: '1<OUI>-<SerialNumber>@<realm>'.

Usage Guidelines

Use this command to configure and allow modification to the HNB ID before it is sent to the AAA server for authentation in HNB-GW service instance.

Example

The following command configures the discarding of leading character of HNB-id if it contains Organizationally Unique Identifier:

```
hnb-identity oui discard-leading-char
```

ip iu-qos-dscp

Enables or disables the DSCP marking parameter for data packets carried over over an IuCS/IuPS interface towards MSC/SGSN. By default this command is **Disabled**.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

ip iu-qos-dscp protocol udp payload { gtpu | rtcp | rtp } *dscp_code*
{ default | no } ip iu-qos-dscp protocol udp payload { gtpu | rtcp | rtp }

no

Use this keyword to place the configuration in **pass-through** mode (no marking of DSCP). Use of this keyword is allowed even when there is no previous DSCP parameter set.

Important In this configuration the **no** keyword does not disable or remove a previous configuration.

default

Enables the DSCP marking on HNB-GW and set/restores the QoS parameters to their default setting.

udp payload { gtpu | rtcp| rtp} ***dscp_code***

Specifies the QoS traffic pattern towards MSC/SGSN in SCTP protocol association over IuCS/IuPS interface.

By this keyword the Traffic classes specified by a user based on UDP protocol and GTPU, RTCP, and RTP type of payload identified based on the transport level port numbers.

Default DSCP code in UDP traffic are:

- **GTP-U**: cs1
- **RTCP**: ef
- **RTP**: af41

dscp_code

Specifies the QoS DSCP codes supported for SCTP and UDP traffic and its payloads towards MSC/SGSN over IuCS/IuPS interface.

following type of DSCP codes *dscp_code* are supported over IuH interface:

- **af11**: Marks traffic as Assured Forwarding 11 PHB (high throughput data)
- **af12**: Marks traffic as Assured Forwarding 12 PHB (high throughput data)
- **af13**: Marks traffic as Assured Forwarding 13 PHB (high throughput data)
- **af21**: Marks traffic as Assured Forwarding 21 PHB (low latency data)
- **af22**: Marks traffic as Assured Forwarding 22 PHB (low latency data)
- **af23**: Marks traffic as Assured Forwarding 23 PHB (low latency data)
- **af31**: Marks traffic as Assured Forwarding 31 PHB (multimedia streaming)
- **af32**: Marks traffic as Assured Forwarding 32 PHB (multimedia streaming)
- **af33**: Marks traffic as Assured Forwarding 33 PHB (multimedia streaming)
- **af41**: Marks traffic as Assured Forwarding 41 PHB (multimedia conferencing). This is the default DSCP code for RTP payloads in UDP protocol.
- **af42**: Marks traffic as Assured Forwarding 42 PHB (multimedia conferencing)
- **af43**: Marks traffic as Assured Forwarding 43 PHB (multimedia conferencing)
- **cs1**: Marks traffic with Class Selector 1 (low priority data). This is the default DSCP code for GTP-U payloads in UDP protocol.
- **cs2**: Marks traffic with Class Selector 2 (OAM)
- **cs3**: Marks traffic with Class Selector 3 (broadcast video)
- **cs4**: Marks traffic with Class Selector 4 (real-time interactive)
- **cs5**: Marks traffic with Class Selector 5 (signaling). This is the default DSCP code for all SCTP payloads.
- **cs6**: Marks traffic with Class Selector 6 (network control)
- **df** : Marks traffic as Default Forwarding (best effort: DSCP = 0)
- **ef**: Marks traffic as Expedited Forwarding PHB (telephony). This is the default DSCP code for RTCP payloads in UDP protocol.

Usage Guidelines

Use this command to enable/disable the DSCP marking for data packets over IuCS/PS interface. This command assigns the DSCP levels to specific traffic patterns in order to ensure that the packets are delivered according to the precedence with which they are tagged. The Diffserv markings are applied to the IP header of every subscriber data packet transmitted over IuCS/IuPs interface(s) towards MSC/SGSN.

This command adds DSCP marking on egress traffic going towards CN (CS/PS). To make the configuration **pass-through** mode or not marking DSCP at all in the packets, **no** variant of command is used. Use of **no** is allowed even when there is no previous DSCP configuration done.

Important By default this command is **Disabled**.

Important When DSCP configuration is not specified, the system works in **pass-through** mode and DSCP values in the ingress (from CN) and egress (to HNB) data packets remain unchanged. Multiple traffic classes can share the same code point value.

Following type shown in following tables respectively:

Table 7: Supported DSCP Codes and Service Class

Service Class	DSCP Code	Service Class	DSCP Code
high throughput data	af11 af12 af13	low priority data	cs1
low latency data	af21 af22 af23	OAM	cs2
multimedia streaming	af31 af32 af33	broadcast video	cs3
multimedia conferencing	af41 af42 af43	real-time interactive	cs4
best effort/ default forwarding, value zero	df	Signaling	cs5
telephony	ef	network control	cs6

The DSCP level can be configured for multiple traffic patterns within a single instance of this command.

Example

The following command configures the DSCP code for the SCTP IuCS/IuPS streaming traffic pattern for all payloads to be **ef**:

```
ip iu-qos-dscp protocol sctp payload all ef
```

ip iuh-qos-dscp

Enables or disables the DSCP marking parameter for control and data packets transmitted over an IuH interface towards HNB. By default this command is **Disabled**.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
ip iuh-qos-dscp protocol { sctp payload all | udp payload { gtpu | rtcp
| rtp } } dscp_code
{ default | no } ip iuh-qos-dscp protocol { sctp payload all | udp payload
 { gtpu | rtcp | rtp } }
```

no

Use this keyword to set the configuration in **pass-through** mode. Use of this keyword is allowed even when there is no previous DSCP parameter set.

Important In this configuration the **no** keyword does not disable/remove a previous configuration.

default

Enables the DSCP marking on HNB-GW and set/restores the QoS parameters to its default setting.

sctp payload all *dscp_code*

Specifies the QOS traffic pattern towards HNB in SCTP protocol association over IuH interface.

By this keyword the Traffic classes specified by a user based on SCTP protocol and all type of payload identified based on the transport level port numbers.

By default DSCP codes **cs5** is supported for **all** payloads in SCTP protocol.

udp payload { gtpu | rtcp| rtp} *dscp_code*

Specifies the QOS traffic pattern towards HNB in SCTP protocol association over IuH interface.

By this keyword the Traffic classes specified by a user based on UDP protocol and GTPU, RTCP, and RTP type of payload identified based on the transport level port numbers.

Default DSCP code in UDP traffic are:

- **GTP-U**: cs1
- **RTCP**: ef
- **RTP**: af41

dscp_code

Specifies the QOS DSCP codes supported for SCTP and UDP traffic and its payloads towards HNB over IuH interface.

following type of DSCP codes *dscp_code* are supported over IuH interface:

- **af11**: Marks traffic as Assured Forwarding 11 PHB (high throughput data)
- **af12**: Marks traffic as Assured Forwarding 12 PHB (high throughput data)
- **af13**: Marks traffic as Assured Forwarding 13 PHB (high throughput data)
- **af21**: Marks traffic as Assured Forwarding 21 PHB (low latency data)
- **af22**: Marks traffic as Assured Forwarding 22 PHB (low latency data)
- **af23**: Marks traffic as Assured Forwarding 23 PHB (low latency data)

- **af31**: Marks traffic as Assured Forwarding 31 PHB (multimedia streaming)
- **af32**: Marks traffic as Assured Forwarding 32 PHB (multimedia streaming)
- **af33**: Marks traffic as Assured Forwarding 33 PHB (multimedia streaming)
- **af41**: Marks traffic as Assured Forwarding 41 PHB (multimedia conferencing). This is the default DSCP code for RTP payloads in UDP protocol.
- **af42**: Marks traffic as Assured Forwarding 42 PHB (multimedia conferencing)
- **af43**: Marks traffic as Assured Forwarding 43 PHB (multimedia conferencing)
- **cs1**: Marks traffic with Class Selector 1 (low priority data). This is the default DSCP code for GTP-U payloads in UDP protocol.
- **cs2**: Marks traffic with Class Selector 2 (OAM)
- **cs3**: Marks traffic with Class Selector 3 (broadcast video)
- **cs4**: Marks traffic with Class Selector 4 (real-time interactive)
- **cs5**: Marks traffic with Class Selector 5 (signaling). This is the default DSCP code for all SCTP payloads.
- **cs6**: Marks traffic with Class Selector 6 (network control)
- **df** : Marks traffic as Default Forwarding (best effort: DSCP = 0)
- **ef**: Marks traffic as Expedited Forwarding PHB (telephony). This is the default DSCP code for RTCP payloads in UDP protocol.

Usage Guidelines

Use this command to enable/disable the DSCP marking for control and data packets carried by the IP protocols and their payloads on IuH. This command assigns the DSCP levels to specific traffic patterns in order to ensure that the packets are delivered according to the precedence with which they are tagged. The Diffserv markings are applied to the IP header of every subscriber data packet transmitted over IuH interface(s) towards HNB.

This command adds DSCP marking on egress traffic going towards HNB. To make the configuration **pass-through mode** or not marking DSCP at all in the packets, **no** variant of command is used. Use of **no** is allowed even when there is no previous DSCP configuration done.

Important By default this command is **Disabled**.

Important When DSCP configuration is not specified, system works in **pass-through** mode and DSCP value in the ingress (from CN) and egress (to HNB) control and data packets remain unchanged. Multiple traffic classes can share the same code point value.

Following type shown in following tables respectively:

Table 8: Supported DSCP Codes and Service Class 140

Service Class	DSCP Code	Service Class	DSCP Code
high throughput data	af11	low priority data	cs1
	af12		
	af13		

Service Class	DSCP Code	Service Class	DSCP Code
low latency data	af21 af22 af23	OAM	cs2
multimedia streaming	af31 af32 af33	broadcast video	cs3
multimedia conferencing	af41 af42 af43	real-time interactive	cs4
best effort/ default forwarding, value zero	df	Signaling	cs5
telephony	ef	network control	cs6

The DSCP level can be configured for multiple traffic patterns within a single instance of this command.

Example

The following command configures the DSCP code for the SCTP IuH streaming traffic pattern for all payloads to be **ef**:

```
ip iuh-qos-dscp protocol sctp payload all ef
```

ipsec connection-timeout

This command allows to configure IPSEC tunnel idle time out in hours. Default is 4 hours.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-hnbgw-service)#`

Syntax Description

`{ default | no } ipsec connection-timeout` *`ipsec_connection_timeout`*

default

Sets the default value of idle time out as 4 hours.

no

Disbles IPSEC idle time out.

ipsec_connection_timeout

IPSEC tunnel idle time out in hours between 1 and 48. Default is 4 hours.

Usage Guidelines

Use this command to configure IPSEC tunnel idle timeout in a specific HNB-GW service.

Example

The following command sets IPSEC tunnel idle time out to 3 hours:

```
ipsec connection-timeout 3
```

iurh-handoff

This command enables or disables the Femto To Femto Handover in a specific HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

[no | default]iurh-handoff

default

Sets the default behavior of the Femto To Femto Handover in a specific HNB-GW service. By default, it is disabled.

no

Disables the Femto To Femto Handover option in a specific HNB-GW service.

Usage Guidelines

Use this command to enable or disable the Femto To Femto Handover in a specific HNB-GW service.

Example

The following command sets the default value of Femto To Femto Handover in a specific HNB-GW service :

```
default iurh-handoff
```

iurh-handoff-guard-timer

This command is used to configure the IURH Relocation Guard Timer in a specific HNB-GW service. If F2F handover does not happen within the guard time, the procedure is aborted.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

`[ default ] iurh-handoff-guard-timer` *`timer_seconds`*

default

Sets the default value of IURH Relocation Guard Timer. By default, the IURH Relocation Guard Timer value is 15 seconds.

timer_seconds

timer_seconds is the number of seconds, an integer ranging from 10 to 30.

Usage Guidelines

Use this command to configure the IURH Relocation Guard Timer in a specific HNB-GW service.

Example

The following command sets the default value of the IURH Relocation Guard Timer in a specific HNB-GW service:

`default iurh-handoff-guard-timer` `20`

mocn-max-reroute-attempts

This command configures the maximum number of operators who can be attempted in the reroute procedure.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

mocn-max-reroute-attempts *max_attempts*
default mocn-max-reroute-attempts

default

Sets / Restores default value assigned for maximum number of operators who can be attempted in the reroute procedure. The default value is 4.

max_attempts

max_attempts is an integer ranging from 1 through 8.

Usage Guidelines

Use this command to configure the maximum number of operators who can be attempted in the reroute procedure.

Example

The following command configures the maximum number of operators who can be attempted in the reroute procedure as *5*:

```
mocn-max-reroute-attempts 5
```

mocn-reroute-timeout

This command configures the timeout for the individual reroute procedure with one operator.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

mocn-reroute-timeout *timeout_value*
default mocn-reroute-timeout

default

Sets / Restores default timeout value for the individual reroute procedure with one operator. The default value is 5.

timeout_value

timeout_value is an integer ranging from 1 through 5.

Usage Guidelines

Use this command to configure the timeout for the individual reroute procedure with one operator.

Example

The following command configures the timeout for the individual reroute procedure with one operator. *4*:

```
mocn-reroute-timeout 4
```

paging cs-domain

Configures paging optimization parameters for CS domain in the HNB-GW service instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
paging cs-domain { handle-unknown-imsi { use-cn-paging-area | use-whitelist
 } | phase1 page-last-known-hnb timeout timeout_val1 | phase2
paging-grid-fan-out timeout timeout_val2 | phase3 paging-area-fan-out timeout
 timeout_val3 }
no paging cs-domain { handle-unknown-imsi [ use-cn-paging-area |
use-whitelist ] | phase1 page-last-known-hnb | phase2 paging-grid-fan-out
 | phase3 paging-area-fan-out }
default paging cs-domain { handle-unknown-imsi [ use-cn-paging-area |
use-whitelist ] | phase1 page-last-known-hnb timeout | phase2
paging-grid-fan-out timeout | phase3 paging-area-fan-out timeout }
```

default

Sets the default behavior of paging optimization configuration for the a specific HNB-GW service.

no

Removes paging optimization configuration for an appended option in a specific HNB-GW service.

handle-unknown-imsi

Handles Unknown IMSIs Options.

use-cn-paging-area

Uses paging area provided by Core Network for forwarding the Page Req to all open/hybrid HNBs.

use-whitelist

Uses whitelist of HNBs for forwarding the Page req to all closed/hybrid HNBs.

phase1

Paging Phase1 Configuration - Forwards Page Req to last-known-hnb.

page-last-known-hnb

Page the last known HNB for the call.

timeout*timeout_val1*

Sets the timeout value in seconds for the last-known-hnb paging configuration. It is an integer value ranging from 1 to 30.

phase2

Paging Phase2 Configuration - Forwards Page Req to all HNBs in the Grid of last-known-hnb.

paging-grid-fan-out

Pages the last known paging grid.

timeout_val2

Sets the timeout value in seconds for the grid fan-out paging configuration. It is an integer value ranging from 1 to 30.

phase3

Paging Phase3 Configuration - Forwards Page Req to all HNBs in the LAI of last-known-hnb.

paging-area-fan-out

Pages the last known paging area.

timeout_val3

Sets the timeout value in seconds for the area fan-out paging configuration. It is an integer value ranging from 1 to 30.

Usage Guidelines

Use this command to configure the CS domain paging optimization parameters for a specific HNB-GW service instance.

Example

The following command configures the CS domain paging optimization for grid fan-out timeout as 15 seconds for a specific HNB-GW service :

```
paging cs-domain phase2 paging-grid-fan-out timeout 15
```

paging imsi-purge-timer

Configures paging optimization based on the timer for purging the unregistered IMSIs in the HNB-GW service instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

`paging imsi-purge-timer timeout` *`timeout_val1`*
`default paging imsi-purge-timer timeout`

default

Sets the default value for the IMSI purge timer as 3 hours.

timeout_val1

Sets the timeout value for the IMSI purge timer in hours. It is an integer ranging 1 to 12.

Usage Guidelines

Use this command to configure the timer value for purging the unknown IMSIs for paging optimization configuration in a specific HNB-GW service instance.

Example

The following command configures the IMSI purge timer as 4 hours for a specific HNB-GW service instance:

```
paging imsi-purge-timer timeout 4
```

paging ps-domain

Configures paging optimization parameters for PS domain in the HNB-GW service instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
paging ps-domain { handle-unknown-imsi { use-cn-paging-area | use-whitelist
 } | phase1 page-last-known-hnb timeout timeout_val1 | phase2
paging-grid-fan-out timeout timeout_val2 | phase3 paging-area-fan-out timeout
 timeout_val3 }
no paging ps-domain { handle-unknown-imsi [ use-cn-paging-area |
use-whitelist ] | phase1 page-last-known-hnb | phase2 paging-grid-fan-out
 | phase3 paging-area-fan-out }
default paging ps-domain { handle-unknown-imsi [ use-cn-paging-area |
use-whitelist ] | phase1 page-last-known-hnb timeout | phase2
paging-grid-fan-out timeout | phase3 paging-area-fan-out timeout }
```

default

Sets the default behavior of paging optimization configuration for the a specific HNB-GW service.

no

Removes paging optimization configuration for an appended option in a specific HNB-GW service.

handle-unknown-imsi

Handles Unknown IMSIs Options.

use-cn-paging-area

Uses paging area provided by Core Network for forwarding the Page Req to all open/hybrid HNBs.

use-whitelist

Uses whitelist of HNBs for forwarding the Page req to all closed/hybrid HNBs.

phase1

Paging Phase1 Configuration - Forwards Page Req to last-known-hnb.

page-last-known-hnb

Page the last known HNB for the call.

timeout*timeout_val1*

Sets the timeout value in seconds for the last-known-hnb paging configuration. It is an integer value ranging from 1 to 30.

phase2

Paging Phase2 Configuration - Forwards Page Req to all HNBs in the Grid of last-known-hnb.

paging-grid-fan-out

Pages the last known paging grid.

timeout_val2

Sets the timeout value in seconds for the grid fan-out paging configuration. It is an integer value ranging from 1 to 30.

phase3

Paging Phase3 Configuration - Forwards Page Req to all HNBs in the LAI of last-known-hnb.

paging-area-fan-out

Pages the last known paging area.

timeout_val3

Sets the timeout value in seconds for the area fan-out paging configuration. It is an integer value ranging from 1 to 30.

Usage Guidelines

Use this command to configure the PS domain paging optimization parameters for a specific HNB-GW service instance.

Example

The following command configures the PS domain paging optimization grid fan-out timeout as 20 seconds for a specific HNB-GW service :

```
paging ps-domain phase2 paging-grid-fan-out timeout 15
```

paging open-hnb

Configures paging optimization parameters for open HNBs connected through Open Access mode in the HNB-GW service instance. In this release it is used to configure paging optimization for Open Access mode support only. This command is depricated release 15.0 onwards. Paging optimization can be configured using other **paging** commands available in this chapter.

Important From Release14.0 and onward this command is part of *HNB-Global Configuration Mode*.

Important From Release 16 and later, this command has been deprecated.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
paging open-hnb [hnb-where-ue-registered fallback ] {always | never |
only-if-with-paging-area}
default paging open-hnb
```

default

Sets the default behavior of paging optimization configuration for an open HNB while using Open Access mode support.

By default the HNB-GW pages open HNBs only if paging-area IE is received in the paging message.

{always | never | only-if-with-paging-area}

Sets the HNB-GW service instance to page open HNB for a paging message.

always: Sets the system to ALWAYS page the open HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to NEVER page any open HNB.

only-if-with-paging-area: Sets the system to page the open HNBs only when **paging-area** IE is received in paging messages.

hnb-where-ue-registered fallback {always | never | only-if-with-paging-area}

Sets the HNB-GW service instance to page open HNB from where the UE is registered.

always: Sets the system to ALWAYS page the open HNBs from where the UE is registered. If the UE is not registered then it pages the open HNBs irrespective of **paging-area** IE is received in paging messages.

never: Sets the system to page the open HNBs from where the UE is registered. If the UE is not registered then it NEVER pages any open HNB.

only-if-with-paging-area: Sets the system to ALWAYS page the open HNBs from where the UE is registered. If the UE is not registered then it pages the open HNBs only when **paging-area** IE is received in paging messages.

Usage Guidelines

Use this command to configure the paging optimization parameters for open HNBs connected through Open Access mode in HNB-GW service instance.

Example

The following command configures the HNB-GW service instance to page an open HNB from where the UE is connected and paging-area IE is received in paging message:

```
paging open-hnb hnb-where-ue-registered fallback only-if-with-paging-area
```

radio-network-plmn

Creates, remove and enters the HNB-RN-PLMN Configuration mode. In this mode you can configure various parameters for radio network public mobile land networks (PLMNs). A maximum of 16 radio PLMN-IDs can be configured in an HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
radio-network-plmn mcc mcc_num mnc mnc_num [ -noconfirm ]
no radio-network-plmn mcc mcc_num mnc mnc_num
```

no

Removes the configured radio network PLMN identifier for an HNB-GW service.

Caution Removing the PLMN-ID is a disruptive operation; the HNB-GW service will be re-started.

mcc *mcc_num*

Specifies the mobile country code (MCC) part of radio network PLMN identifier as an integer value from 101 through 998.

mnc *mnc_num*

Specifies the mobile network code (MNC) part of radio network PLMN identifier as a 2- or 3-digit integer from 01 through 998.

-noconfirm

Executes the command without any additional prompt and confirmation from the user.

Usage Guidelines

Use this command to configure the radio network PLMN identifier for an HNB-GW service. This command also creates a configuration mode to configure various parameters for defined radio network PLMN identifier in HNB-GW service.

Caution Changing or removing the PLMN-ID is a disruptive operation; the HNB-GW service will be re-started.

Entering this command results in the following prompt:

```
[context_name]hostname(config-radio-network-plmn)#
```

A maximum of 16 radio network PLMN identifiers are supported for an HNB-GW service.

Example

The following command configures the radio network PLMN identifier with MCC value as *102* and MNC value as *20* for an HNB-GW service:

```
radio-network-plmn mmc 102 mnc 20
```

ranap reset

Configures various Radio Access Network (RAN) Application Part reset procedure parameters in an HNB access network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
ranap reset {ack-timeout timer_value | guard-timeout g_timer | hnbgw-initiated
 | max-retransmissions retries}
default ranap reset {ack-timeout | guard-timeout | hnbgw-initiated |
max-retransmissions }
no ranap hnbgw-initiated
```

default

Resets the RANAP RESET parameters on HNB-GW service instance.

no

Disables the RANAP RESET procedure related parameters in an HNB-GW service instance.

ack-timeout *timer_value*

Sets the timer value (in seconds) to wait for Reset Acknowledge from SGSN/MSC. This is used during HNB-GW initiated RANAP RESET procedure in HNB-GW service instance.

timer_value is an integer value from 5 through 10. Default: 10

guard-timeout *g_timer_value*

Sets the timer value (in seconds) to send Reset Acknowledge to SGSN/MSC. After this duration the HNB-GW sends RESET-ACK to SGSN/MSC. This is used during SGSN/MSC initiated RANAP RESET procedure in HNB-GW service instance.

g_timer_value is an integer value from 5 through 10. Default: 10

hnbgw-initiated

Enables the HNB-GW Initiated RANAP RESET procedures. Default: Disabled

max-retransmission *retries*

Sets the maximum number of retires allowed for transmission of RESET-ACK message to SGSN/MSC. This is used during RANAP RESET procedure in HNB-GW service instance.

retries is an integer value from 0 through 2. When 0 is used retransmission is disabled. Default: 1

Usage Guidelines

Use this command to configure the RANAP RESET procedure related parameters in HNB-GW service.

Example

The following command configures the HNB-GW initiated RANAP RESET Procedure for an HNB-GW service:

```
ranap reset hnbgw-initiated
```

rtcp report

Enables or disables the generation of RTP Control Protocol (RTCP) packet/report types on a per HNB-GW service instance basis. It also sets the time interval in seconds between two consecutive RTCP reports.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
rtcp report interval dur
{ no | default }  rtcp report interval
```

no

Disables the RTCP report generation on HNB-GW service. When RTP configuration is not explicitly mentioned, this is the default behavior.

default

Restores the report interval value to its default value of 5 seconds.

interval *dur*

Sets the time interval (in seconds) between two consecutive RTCP reports as an integer from 5 through 30. Default: 5

Usage Guidelines

Use this command to configure the enabling or disabling of the generation of RTCP packet/ report types on a per HNB-GW service instance basis and sets the specified time interval in seconds between two consecutive RTCP reports.

RTCP enables the receiver to detect if there is any packet loss and needs to compensate for any delay jitter. RTP and RTCP protocols work independently of the underlying Transport layer and Network layer protocols.

Whenever this command is disabled, RTCP report generation stops from the next expiry of the previously configured interval and after enabling, reports are generated only for the calls that established as new calls in the future. For existing calls reports generated as per configuration in place.

RTCP reports are generated for each RAB for RTP received from and sent to IuH interface.

Important The same interval is applicable for all kinds of RTCP packets/ reports across all sessions on an HNB-GW service.

Example

The following command configures the RTCP report generation interval to *15* seconds on an HNB-GW service for RTP stream:

```
rtcp report interval 15
```

rtp address

Configures the Real Time Protocol (RTP) address on HNB-GW used to map RTP streams while HNB-GW connects to MSC/VLR through an IuCSoIP (IuCS-over-IP) tunnel. This command is used for RTP stream management on HNB-GW.

This command is obsolete. Use **ip pool** or **ipv6 pool** command in Context Configuration mode for IP pool configuration for RTP stream management.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
rtp address address
no rtp address
```

no

Removes the RTP IP address association to be used for communication between HNB and HNB-GW while communicating with MSC/VLR -GW through IuCS over IP tunnel.

address *address*

Specifies the IP address of HNB-GW to use as an end point by HNB and HNB maps the RTP streams with this IP address and HNB-GW communicates with MSC/VLR through IuCS-over-IP Tunnel.

address is the same IP address as assigned to HNB-GW to communicate with HNB and must be an IP address in IPv4 or IPv6 notation.

Important This command cannot be entered more than once. Only one RTP IP address can be configured for one HNB-GW service.

Usage Guidelines

Use this command to enable the HNB-GW IP address as RTP IP address and send the same to HNB to map RTP streams while HNB-GW communicates with MSC/VLR through IuCS-over-IP tunnel.

This command is used for RTP stream management on HNB-GW.

Example

The following command sets the RTP IP address *209.165.200.229* on HNB-GW to communicate with HNB while using IuCS-over-IP tunnel with CS network:

```
rtp address 209.165.200.229
```

rtp port

Configures the Real Time Protocol (RTP) port range to listen from HNB while connecting to MSC/VLR through an IuCSoIP (IuCS-over-IP) interface. This command is used for RTP stream management on HNB-GW.

This command is obsolete. Use **ip pool** or **ipv6 pool** command in Context Configuration mode for IP pool configuration for RTP stream management.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
rtp port range port_start to port_end
default rtp port range
```

default

Sets the RTP port range to default range from 16384 to 65535.

port range *range_start* to *range_end*

Specifies the port number range to be used by HNB to map the RTP streams and HNB-GW listen on these ports while communicating with MSC/VLR through IuCS-over-IP tunnel.

range_start must be an integer between 16384 through 65535 and should be less than *range_end*.

range_end must be an integer between 16384 through 65535 and should be more than *range_start*.

Default: port 16384 through 65535

Important This command cannot be entered more than once. Only one range of RTP port can be configured for one HNB-GW service.

Usage Guidelines

Caution This command is NOT active now.

Use this command to assign the RTP port range to be used by HNB to map RTP streams and HNB-GW listen these ports for RTP streams while communicating with MSC/VLR through IuCS-over-IP tunnel.

This command is used for RTP stream management on HNB-GW.

Example

The following command sets the RTP port number *20000* to *21000* on HNB-GW to listen from HNB for RTP streams while connecting with MSC/VLR using IuCS-over-IP tunnel.

```
rtp port range 20000 to 21000
```

rtp mux

Configures the HNB-GW service to allow an Home-NodeB to multiplex multiple RTP streams in one IP packet. This support is provided for RTP stream management feature on HNB-GW.

Product HNB-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

[no | default] rtp mux

default

Sets the multiplexing option to default state of "disabled".

no

Removes the configured option to multiplex multiple RTP stream in one packet by Home-NodeB in HNB-GW configuration.

Usage Guidelines

Use this command to allow an Home-NodeB to multiplex multiple RTP streams in one IP packet. This configuration support is provided for RTP stream management feature on HNB-GW and it is disabled by default.

Example

The following command sets the HNB-GW to allow HNB to multiplex multiple RTP stream in one packet:

rtp mux

sctp bind

Configures the SCTP IP address and port that is used for binding the SCTP socket to communicate with the Home-NodeB over an Iuh interface within an HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

sctp bind { address *IPv4_address* **| port** *port_num* **}**
no sctp bind { address | port }

no

Removes the SCTP binding.

address *IPv4_address*

Specifies the IP address of the HNB-GW Iuh interface in IPv4 dotted-decimal.

port *port_num*

Specifies the SCTP port number to communicate with the Home-NodeBs using Iuh interface as an integer form 1 through 65535.

Usage Guidelines

Use this command to assign the SCTP IP address and port with SCTP socket on HNB-GW to communicate with the Home-NodeB using Iuh interface. This SCTP configuration provides the IP-address and listen port where HNB-GW service shall bind to listen for incoming SCTP associations from HNB.

Example

The following command sets the SCTP port number *999* on HNB-GW to listen from Home-NodeB over Iuh interface:

```
sctp bind port 999
```

The following command sets the SCTP address *209.165.200.229* of HNB-GW to use with Home-NodeB over Iuh interface:

```
sctp bind address 209.165.200.229
```

sctp checksum-type

Configures SCTP checksum-type.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Syntax Description

```
sctp checksum-type { adler32 | crc32 }
default sctp checksum-type
```

default

Sets the SCTP checksum-type.

adler32

Specifies the SCTP checksum-type ADLER32.

crc32

Specifies the SCTP checksum-type CRC32.

Usage Guidelines

Use this command to configure SCTP checksum-type.

Example

The following command sets the SCTP checksum-type to adler32 on HNB-GW:

```
sctp checksum-type adler32
```

sctp connection-timeout

Configures the SCTP connection timeout duration to explicitly remove the SCTP association with a non-responsive HNB in an HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
sctp connection-timeout dur
{ default | no } sctp connection-timeout
```

no

Disables the connection time out configuration on HNB-GW service.

default

Restores the connection timeout duration value to its default value of 10 seconds.

dur

Sets the connection timeout duration (in seconds) after which the association is explicitly removed. In case of an HNB de-registration scenario, the HNB-GW waits for configured amount time before initiating the procedure to clear the SCTP association.

dur is an integer from 5 through 30. Default: 10

Usage Guidelines

Use this command to configure the minimum duration value before removing the SCTP association between a non-responding HNB and HNB-GW. If HNB registration not happened within the configured period after the SCTP association is established then the SCTP association is explicitly removed. In a scenario where an HNB de-registered due to any reason, the HNB-GW waits for the configured amount of time before initiating the procedure to clear the SCTP association.

Example

The following command sets the SCTP connection timeout duration to *15* second on HNB-GW after expiry of which the SCTP association is removed:

```
sctp connection-timeout 15
```

sctp cookie-life

Configures the SCTP valid cookie-life, Min 5000ms and Max 120000ms with granularity of 100ms.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

sctp cookie-life *dur*
default sctp cookie-life

default

Restores the SCTP cookie-life value.

dur

Sets the SCTP cookie-life (in seconds).

dur is an integer from 50 through 1200.

Usage Guidelines

Use this command to configure the SCTP valid cookie-life.

Example

The following command sets the SCTP cookie-life value to 55 on HNB-GW:

```
sctp cookie-life 55
```

sctp heart-beat-timeout

Configures the SCTP heartbeat timer parameters for SCTP connection over an IuH interface in an HNB-GW service instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

sctp heart-beat-timeout *dur*
{ default | no } sctp heart-beat-timeout

no

Disables the heartbeat timer configuration for SCTP over IuH in HNB-GW service instance.

default

Restores the default time out value for heartbeat timer to 30 seconds.

dur

Sets the heartbeat timer timeout duration (in seconds) after which the next heartbeat command is sent to HNB from HNB-GW in SCTP over an IuH interface. In an HNB de-registration scenario, the HNB-GW waits for configured amount time before initiating the procedure to clear the SCTP association.

dur is an integer from 1 through 300. Default: 30

Usage Guidelines

Use this command to configure the minimum duration value before retransmitting the HEARTBEAT chunk to HNB from HNB-GW in SCTP transmission. By default HNB-GW monitors the reachability of the idle HNBs by sending a HEARTBEAT chunk periodically to the HNB address.

Each time the HEARTBEAT timer expires on any address, or when a HEARTBEAT sent to an idle address is not acknowledged within a Retransmission Timeout duration, the error counter of that HNB incremented.

When the value in the error counter exceeds the protocol parameter for maximum retransmission for that destination address, the HNB-GW mark the destination HNB as inactive and a notification is sent to the upper layer.

Example

The following command sets the SCTP HEARTBEAT timeout duration to *15* second on HNB-GW after expiry of which the HNB-GW retransmits the HEARTBAT chunk to HNB over SCTP association:

```
sctp heart-beat-timeout 15
```

sctp mtu-size

This command configures SCTP mtu-size, Min 508 bytes and Max is 65535 bytes with granularity of 1 byte.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
sctp mtu-size { max | min | start }  size
default sctp mtu-size { max | min | start }
```

default

Sets the SCTP mtu-size to its default value.

size

size is an integer from 508 through 65535.

Usage Guidelines

Use this command to configure the SCTP mtu-size.

Example

The following command configures the SCTP mtu-size max value to 555 on HNB-GW:

```
sctp mtu-size max 555
```

sctp rto

This command sets the SCTP Retransmission Timeout value.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
sctp rto { initial initial_value | max max_value | min min_value }
default sctp rto { initial | max | min }
```

default

Sets the SCTP Retransmission Timeout value to default.

initial_value

initial_value is SCTP Retransmission Timeout initial value, which is an integer from 1 through 1200.

max_value

max_value is SCTP Retransmission Timeout max value (Min 500 ms and max 120000 ms with granularity of 100 ms) , which is an integer from 5 through 1200.

min_value

min_value is SCTP Retransmission Timeout max value (Min 100 ms and max 5000 ms with granularity of 100 ms) , which is an integer from 1 through 50.

Usage Guidelines

Use this command to set the SCTP Retransmission Timeout value.

Example

The following command sets the SCTP max Retransmission Timeout value to 555 on HNB-GW:

```
sctp rto max 555
```

sctp sack-frequency

This command configures the SCTP Selective Ack Frequency.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

```
sctp sack-frequency value
default sctp sack-frequency
```

default

Sets the SCTP sack-frequency value to default.

value

Min value is 1 and Max value is 5.

value is an integer from 1 through 5.

Usage Guidelines

Use this command to configure the SCTP Selective Ack Frequency.

Example

The following command configure the SCTP Selective Ack Frequency to 5on HNB-GW:

```
sctp sack-frequency 5
```

sctp sack-period

This command is used to configure SCTP Selective Ack Period in Seconds.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

sctp sack-period *value*
default sctp sack-period

default

Sets the SCTP sack-period value to default.

value

Min 0 ms and Max is 500ms with granularity of 100ms.

value is an integer from 0 through 5.

Usage Guidelines

Use this command to configure the SCTP Selective Ack Period in Seconds.

Example

The following command configures the SCTP Selective Ack Period in Seconds to 5 on HNB-GW:

sctp sack-period 5

security-gateway bind

Binds the SeGW in an HNB-GW service to a logical IP interface serving as an Iuh interface and associates an IPsec IKEv2 crypto-map template.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

security-gateway bind address *IPv4_address* **crypto-template** *cryp_name* **[context** *ctxt_name***]**
no security-gateway bind

no

Removes a previously configured IPSec IP address use for binding the IKEv2 IPSec tunnel (local bind address) to communicate with the Home-NodeBs using Iuh interface.

bind address *IPv4_address*

Specifies the IP address for the Iuh interface for the IPSec tunnel. This is the IP address where the HNB-GW service is bound and that is provided to the Home-NodeB during HNB-GW discovery.

The IP address is expressed in IPv4 dotted-decimal.

crypto-template *cryp_name*

Specifies the Crypto-map template to be used for IPsec IKEv2 tunneling for the interface configured as an Iuh.

cryp_name specifies the name of the pre-configured Crypto-map template which is configured in Crypto-Map Template Configuration mode and associated with the HNB-GW service to create an IPSec tunnel with a Home-NodeB during HNB-GW discovery procedure over an Iuh interface.

context *ctx_name*

Specifies the name of the pre-configured context in which the Security Gateway service is configured. By default this command uses the HNB-GW service context for the security Gateway configuration.

Usage Guidelines

Use this command to associate or tie the HNB-GW service to a specific logical IP address that is used for binding the Iuh socket to communicate with the Home-NodeB using IPSec tunnel. A maximum of one IP address can be configured with this command for one HNB-GW service.

The HNB-GW passes the IP address during setting up the HNB-GW discovery procedure with the Home-NodeB.

Caution This is a critical configuration. The HNB-GW service cannot be started without this configuration. Any change to this configuration would lead to restarting the HNB-GW service and removing or disabling this configuration stops the HNB-GW service.

Example

The following command binds the logical IP interface with the address of *209.165.200.229* to the HNB-GW service using existing IPsec Crypto-Map template *crypto1* to establish IPSec tunnel with Home-NodeB:

```
security-gateway bind address 209.165.200.229 crypto-template crypto1
```

The following command disables a binding that was previously configured:

```
security-gateway bind address 209.165.202.134
```

sessmgr-to-cbsmgr-pacing-timer

This command configures pacing timer value for SABP messages being sent from Sessmgr to CBSmgr. Default value is 100ms.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

sessmgr-to-cbsmgr-pacing-timer *milli_seconds*

milli_seconds

Pacing timer value in miliseconds which is an integer from 10 through 500.

Usage Guidelines

Use this command to configure pacing timer value for SABP messages being sent from Sessmgr to CBSmgr.

Example

The following command sets pacing timer value for SABP messages being sent from Sessmgr to CBSmgr to 50:

```
sessmgr-to-cbsmgr-pacing-timer 50
```

tnnsf-timer

Configures the NAS Node Selection Function (NNSF) timer (T-NNSF) which is used by the HNB-GW to store the IMSI and the relevant Global-CN-ID in the short term after Paging. This timer is used for Iu-Flex feature support.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-hnbgw-service)#
```

Syntax Description

tnnsf-timer *dur*
{ no | default } tnnsf-timer

no

Disables/removes the configured timer value of NNSF timer (T-NNSF) from HNB-GW service instance.

default

Sets the timer value of NNSF timer (T-NNSF) for HNB-GW service instance to default value of 30 seconds.

tnnsf-timer *dur*

Configures the NNSF timer (in seconds) which is used by the HNB-GW to store the IMSI and the relevant Global-CN-ID as an integer from 10 through 60. Default: 30

Usage Guidelines

Use this command to configure the NNSF timer value in seconds for Iu-Flex support.

Whenever the MSC sends the paging request with IMSI, the HNB-GW stores the Global_CN_ID of the node which issued the paging request message for the given IMSI and HNB-GW starts the **tnnsf-timer**. HNBGW stores the mapping of IMSI to Global_CN_ID until the **tnnsf-timer** expires

Example

The following command sets the NNSF timer value to *30* seconds in an HNB-GW service instance:

default tnssf-timer

ue registration-timeout

Configures the UE registration timeout duration to de-register the connected UE from an HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-hnbgw-service)#`

Syntax Description

ue registration-timeout *dur*
{ default | no } ue registration-timeout

no

Disables the UE registration timeout duration and explicitly de-registers UE from the HNB-GW service.

default

Restores the UE registration timeout duration value to its default value of 120 seconds.

dur

Sets the UE registration timeout duration (in seconds) after which the UE is de-registered from HNB-GW. In a scenario when all Iu connections are released for a subscriber, the HNB-GW service de-registers the UE after the configured duration only.

dur is an integer from 60 through 300. Default: 120

Usage Guidelines

Use this command to configure the minimum duration value before de-registering the UE when subscriber fails to establish the Iu connection. If subscriber's Iu session does not established before configured period then UE is de-registered. Also in a scenario where all Iu connections are released for a subscriber, the HNB-GW service waits for configured period before starting UE deregistration procedure.

Example

The following command sets the UE registration timeout duration to *150* second on HNB-GW after expiry of which the UE is de-registered:

```
ue registration-timeout 150
```

CHAPTER 36

HNB-CS Network Configuration Mode Commands

Important In Release 20 and later, HNBGW is not supported. Commands in this configuration mode must not be used in Release 20 and later. For more information, contact your Cisco account representative.

The HNB-CS Network configuration mode provides the commands to create, provide, and manage the circuit switched (CS) network instance allowing the Home Evolved NodeB Gateway (HNB-GW) access with the CS core network in a 3G UMTS network.

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-cs-network-`*`instance_id`*`)#`

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- associate alcap-service, on page 1084
- associate rtp pool, on page 1085
- associate sccp-network, on page 1086
- end, on page 1087
- exit, on page 1087
- global-rnc-id, on page 1088
- iu-rtcp-interval, on page 1089
- map core-network-id, on page 1089
- map idnns, on page 1091
- map lac, on page 1092
- map nri, on page 1093
- msc deadtime, on page 1094
- msc point-code, on page 1096
- nri length, on page 1097
- null-nri, on page 1098

• offload-msc, on page 1099
• ranap reset, on page 1100
• sccp, on page 1101

associate alcap-service

Associates a previously defined Access Link Control Application Part (ALCAP) service with the CS network instance for multiplexing of different users onto one AAL2 transmission path using channel IDs (CIDs). This configuration is provided to support IuCS-over-ATM functionality

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > **cs-network** *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
associate alcap-service svc_name context ctx_name
no associate alcap-service
```

no

Removes the associated ALCAP service from this HNB-CS network instance configuration.

svc_name

Identifies the name of the ALCAP service preconfigured in Context configuration mode to associate with an HNB-CS network instance for multiplexing of different users onto one AAL2 transmission path using channel IDs (CIDs).

svc_name must be a preconfigured ALCAP service.

Only one instance of this command can be configured.

Caution If this CLI is not configured any RAB-ASST-REQ requesting AAL2 connection setup shall be rejected with an appropriate cause.

context*ctx_name*

Specifies the name of the context in which ALCAP service is configured.

ctx_name must be an existing context name in which this ALCAP service is configured.

Usage Guidelines

Use this command to configure IuCS-over-ATM support. This association of ALCAP protocol service configuration in HNB-CS network instance provides multiplexing of different users onto one AAL2 transmission path using channel IDs (CIDs).

Caution If this CLI is not configured any RAB-ASST-REQ message requesting AAL2 connection setup shall be rejected with an appropriate cause.

Important This command must not be used more than once to configure IuCS-over-ATM support.

Example

Following command associates ALCAP service *alcap_svc1* configured in context named *Ctx_alcap1* with specific HNB-CS network instance:

```
associate alcap-service alcap_svc1context ctx_alcap1
```

associate rtp pool

Associates a previously defined RTP pool (IP pool) with the CS network instance to be used for assignment of IP address/port as RTP streams end point address over IuCS interface. This configuration support is provided for RTP stream management feature in an HNB-GW service.

Product HNB-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > HNB-CS Network Configuration

configure > **cs-network** *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
associate rtp pool pool_name context ctx_name
no associate rtp pool
```

no

Removes the associated RTP pool (IP pool) from this HNB-CS network instance configuration.

pool_name

Identifies the name of the RTP IP pool preconfigured in Context configuration mode to associate with an HNB-CS network instance to be used for assignment of IP address/port over the IuCS interface RTP streams.

pool_name must be an existing IP pool name configured in Context configuration mode.

Important For IP pool (RTP pool) configuration, refer *Context Configuration Commands Mode* chapter.

context*ctx_name*

Specifies the name of the context in which RTP pool (IP pool) is configured.

ctx_name must be an existing context name in which this IP pool is configured.

Usage Guidelines

Use this command to associate RTP pool (IP Pool) with an HNB-CS network instance for allotment of IP address/port over IuCS interface for RTP streams across all sessions. A fixed range of RTP ports from 5000 through 65000 shall be used to allocate to RTP stream.

Important This command must be used to provide IP address/port for RTP streams end point address over IuCS interface.

Important This configuration support is provided for RTP stream management feature on an HNB-GW service.

Example

Following command associates RTP pool named *rtp_1* with specific HNB-CS network instance:

```
associate rtp pool rtp_1
```

associate sccp-network

Associates a predefined Signaling Connection Control Part (SCCP) network ID with the CS network instance in order to route the messages towards MSC/VLR over IuCS interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
associate-sccp-network sccp_net_id
no associate-sccp-network
```

no

Removes the associated SCCP network ID from this HNB-CS network instance configuration.

sccp_network_id

Identifies the predefined SCCP network ID to associate with an HNB-CS network instance over IuCS/IuFlex interface to enable connection with MSC/VLR(s).

sccp_network_id must be a predefined SCCP network ID in Global configuration mode.

Usage Guidelines

Use this command to associate a preconfigured SCCP network ID over IuCS interface in HNB-GW service to connect with CS network elements; i.e. MSC.

Important The SCCP network ID must be defined in Global Configuration mode before using it with this command.

Important A single SCCP network configuration instance can not be shared with multiple HNB-CS network instances.

Example

Following command associates SCCP network *2* with specific HNB-CS network instance:

```
associate-sccp-network 2
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

global-rnc-id

Configures the Radio Network Concentrator (RNC) identifier in a Radio Network PLMN associated with HNB-CS network configuration instance. The RNC identifier is provided to the HNB during HNB-REGISTRATION.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

[no] global-rnc-id mcc mcc *mcc_num* **mnc** *mnc_num* **id** *rnc_id* **[common-plmn mcc** *mcc_num* **mnc** *mnc_num* **]**

no

Deletes the RNC, MMC, and MNC information from the HNB-CS Network configuration instance.

mcc *mcc_num*

Specifies the mobile country code (MCC) part of radio network PLMN identifier as an integer value from 100 through 999.

mnc *mnc_num*

Specifies the mobile network code (MNC) part of radio network PLMN identifier as a 2- or 3-digit integer from 00 through 999.

common-plmn mcc *mcc_num* mnc *mnc_num*

Configures the Common PLMN for this CS Network.

mcc *mcc_num* specifies mobile country code (MCC) part of Common PLMN for this CS Network as an integer value from 100 through 999.

mnc *mnc_num* specifies the mobile network code (MNC) part of Common PLMN for this CS Network as an integer value from 00 through 999.

Usage Guidelines

Use this command to configure RNC id to associate Radio Network PLMN which will be sent to HNBs from HNB-GW during HNB-REGISTRATION procedure. Depending upon the requirement the RNC Identifier can be provided at the desired granularity.

Example

The following command configures the HNB-GW service to return an RNC identifier as *102* when an HNB-REGISTRATION request is received with LAC *1*, and RAC *2*:

```
global rnc-id mcc 102 mnc 02 id 2
```

iu-rtcp-interval

This command configures RTCP reporting interval for HNBGW Service on Iu Interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

iu-rtcp-interval *report_generation_interval*
{ default | no } iu-rtcp-interval

default

Sets the default value assigned for reporting interval for HNBGW Service on Iu Interface.

no

Disables RTCP reporting interval for HNBGW Service on Iu Interface.

report_generation_interval

Specifies the RTCP report generation interval as an integer from 5 through 30.

Usage Guidelines

Use this command to configure RTCP reporting interval for HNBGW Service on Iu Interface.

Example

The following command configures RTCP reporting interval for HNBGW Service as 10 seconds:

```
iu-rtcp-interval 10
```

map core-network-id

Maps/associates the CS core network id to a default Mobile Switching Center (MSC) in network using MSC point code in HNB-CS network to allow HNBs to access UMTS network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

map core-network-id *cn_id* **point-code** *msc_point_code*
no map core-network-id *cn_id*

no

Removes the mapping of a CS core network id with particular MSC point code.

cn_id

Specifies the core network identifier configured to represent a UMTS CS core network as an integer from 0 through 4095.

Multiple instance of this command can be mapped with different MSC point code.

point-code *msc_point_code*

Specifies the SS7 address of the default MSC in the CS network in point code value to a configured HNB-CS network instance.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this MSC point code can be mapped with one CS core network id.

Usage Guidelines

Use this command to map a UMTS CS core network identifier with a particular MSC point code.

This command can be entered multiple times with same MSC point code to map with one or more CS core network Id, but a particular core network identifier can be mapped to one MSC only.

This command is instrumental in Iu-Flex functionality, whenever HNB-GW receives RESET/RESET-RES messages from MSC with Global CN-ID information element, the response from HNB-GW is sent to the node configured for that particular Global CN-ID.

If the RESET/RESET-RES messages do not have Global CN-ID IE, then the response of those messages is directed to the default MSC which is configured using **msc point-code** command in this mode.

Example

The following command configures the CS core network identifier *101* with an MSC point code *1.2.3*:

```
map core-network-id 101 point-code 1.2.3
```

The following command configures the CS core network identifier *102* with the same MSC point code *1.2.3*:

```
map core-network-id 102 point-code 1.2.3
```

map idnns

Configures the mapping of Intra-Domain NAS Node Selector (IDNNS) IE received from UE in RUA connect message towards HNB-GW to MSC point code. This is an important configuration for CS network resource sharing over Iu-Flex interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

map idnns range *idnns_start* **to** *idnns_end* **point-code** *msc_point_code* **[backup point-code** *bkup_msc_point_code***]**
no map idnns range *idnns_start* **to** *idnss_end*

no

Removes the entries of mapping of range of IDNNS received from UE with particular MSC point code.

range *idnns_start* to *idnns_end*

Specifies the range of IDNNS received from the UE to map with a particular MSC point code during initial CS core network node selection.

idnns_start is an integer from 0 through 1023 that should be less than *idnns_end*.

idnns_end must be an integer from 0 through 1023 that should be more than *idnns_start*.

The command can be entered more than once to map multiple IDNNS ranges to the same MSC, but overlapping and mapping of the same range to different MSC point codes is not allowed.

point-code *msc_point_code*

Specifies the SS7 address of the MSC in the CS network to map with a range of IDNNS values.

msc_point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

backup point-code *bkup_msc_point_code*

Specifies the SS7 address of the MSC to be used as a backup in the CS network to map with a range of IDNNS values.

bkup_msc_point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Usage Guidelines

Use this command to map a NRI received from UE during initial CS network node selection to MSC point code through NRI range mapping over Iu-Flex interface.

The IDNNS refers to the information element in RUA connect message from UE towards RAN (HNB-GW). In IDNNS IE, if the choice of routing mentioned is other than local P-TMSI, then the value it provides is used against this configuration to map the MSC point code.

If backup MSC point-code is specified, then specified MSC works as backup for the IDNS range configured. This Backup MSC is selected if the mapped MSC for a given IDNNS range is going for offloading using **offload-msc point-code** command.

The command can be entered more than once to map multiple IDNNS ranges to same MSC point code, but overlapping and mapping of same range to different MSC point code is not allowed.

Example

The following command maps the IDNNS range from *101* to *201* with MSC point code *1.2.3* and point code *7.8.9* as backup MSC point code:

```
map nri range 101 to 201 point-code 1.2.3 backup point-code 7.8.9
```

The following command removes all IDNNS range matching entries between *301* to *399* from the configuration:

```
no map idnns range 301 to 399
```

map lac

Configures the mapping of the Location Area Code (LAC) received from UE to an MSC point code. This is an important configuration for CS network resource sharing without Iu-Flex interface configuration.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
map lac range lac_start to lac_end point-code msc_point_code
no map lac range lac_start to lac_end
```

no

Removes the entries of mapping of range of LACs received from UE with particular MSC point code.

range *lac_start* to *lac_end*

Specifies the range of LACs received from UE to map with particular MSC point code during initial CS core network node selection.

lac_start is an integer from 0 through 65535 that should be less than *lac_end*.

lac_end is an integer from 0 through 65535 that should be more than *lac_start*.

The command can be entered more than once to map multiple LAC ranges to same MSC, but overlapping is not allowed.

point-code ***msc_point_code***

Specifies the SS7 address of the MSC in the CS network to map with a range of LAC values.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Usage Guidelines

Use this command to map a LAC, received from UE during HNB registration, for MSC selection over IuCS interface through LAC range mapping with MSC point code.

This configuration is used during initial CS core network node selection when the LAC from the UE is available. This configuration is used when the core network is not using Iu-Flex interface for MSC selection.

The command can be entered more than once to map multiple LAC ranges to same MSC point code.

Important

This command can be used together with Iu-Flex configuration, but MSC selection based on LAC takes place only if Iu-Flex is not configured. If both Iu-Flex and LAC are configured then selection of MSC is based on Iu-Flex configuration only.

Example

The following command maps the LAC range from *20* to *50* with MSC point code *1.2.3*:

```
map lac range 20 to 50 point-code 1.2.3
```

The following command removes all LAC range matching entries between *20* to *50* from the configuration:

```
no map lac range 20 to 50
```

map nri

Configures the mapping of Network Resource Identifier (NRI) sent from UE to the MSC point code. This is an important configuration for CS network resource sharing over Iu-Flex interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > **cs-network** *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
map nri range nri_start to nri_end point-code msc_point_code
no map nri range nri_start to nri_end
```

no

Removes the entries of mapping of range of NRIs received from UE with particular MSC point code.

range *nri_start* to *nri_end*

Specifies the range of NRIs received from UE to map with pa articular MSC point code during initial CS core network node selection.

nri_start is an integer from 0 through 1023 that should be less than *nri_end*.

nri_end is an integer from 0 through 1023 that should be more than *nri_start*.

The command can be entered more than once to map multiple NRI ranges to same MSC, but overlapping is not allowed.

point-code *msc_point_code*

Specifies the SS7 address of the MSC in the CS network to map with a range of NRI values.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Usage Guidelines

Use this command to map a NRI received from UE during initial CS network node selection to MSC point code through NRI range mapping over Iu-Flex interface.

This configuration is used during initial CS core network node selection when the network resource identifier (NRI) from the UE is available. The NRI range is mapped to MSC point code. This configuration is used when the core network uses Iu-Flex interface.

The command can be entered more than once to map multiple NRI ranges to same MSC point code.

It is possible to configure multiple ranges to more than one MSC however this configuration is required only when the CS core network is configured as Multi-Operator Core Network (MOCN).

When the CS core network is not MOCN and one range is mapped to more than one MSC then MSC is selected randomly in a non-predictable manner.

Example

The following command maps the NRI range from *101* to *201* with MSC point code *1.2.3*:

```
map nri range 101 to 201 point-code 1.2.3
```

The following command maps the NRI range from *301* to *399* with MSC point code *1.2.3*:

```
map nri range 301 to 399 point-code 1.2.3
```

The following command removes all NRI range matching entries between *301* to *399* from the configuration:

```
no map nri range 301 to 399
```

msc deadtime

Configures a timer on the HNB-GW to manage MSC availability in a CS core network on receiving of a PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from an SCCP instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

```
msc deadtime { immidiate |dur }
[ no | default ] msc deaddtime
```

no

Marks the peer node (MSC) as always available; it can never be marked down for a specific HNB-CS network instance.

default

Sets the default action for HNB-GW and provisions it as such that the peer node (MSC) is marked down as soon as HNB-GW receives PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP in a specific HNB-CS network instance. Default: Enabled

immidiate

Sets the HNB-GW to mark the peer node (MSC) down immediately and clears all Iu-CS connections towards the MSC. Default: Disabled

dur

Sets the duration (in seconds) for a timer that starts when the HNB-GW receives a PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer MSC. On expiry of this timer the peer MSC is marked as dead and all Iu-CS connections towards that MSC are released.

dur is an integer from 1 through 30.

Only one instance of this command can be configured.

Usage Guidelines

This command is used to configure a timer on HNB-GW to manage MSC availability in a CS core network on receiving of PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP. This configuration plays important role during RANAP reset procedure as well.

Timer value sets the duration in seconds for a timer which started once HNB-GW receives PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer MSC. On expiry of this timer the peer MSC is marked as dead and all Iu-CS connections towards that MSC shall be released.

Important This command can be entered only once. Reentering this command overwrites the previous parameters.

Example

The following command configures the deadtime timer value for *10* seconds on HNB-GW. Once HNB-GW receives PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer MSC the HNB-GW waits for configured period and on expiry of timer it marks the specific MSC as dead:

```
msc deadtime 10
```

msc point-code

Configures the default MSC point-code within an HNB-CS network instance. This command is used when HNB-GW is to be connected to only one MSC with in a CS network or as default MSC for all HNBs connected through specific HNB-CS network instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

[no] msc point-code *point_code*

no

Removes the configured default MSC point code from a specific HNB-CS network instance.

Caution Removing the MSC point code is a disruptive operation and affects all HNB sessions which are connected to particular MSC through an HNB-CS network instance.

msc *point_code*

Specifies the SS7 address of the default MSC in the CS network to this configured HNB-CS network instance.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this command can be configured.

Usage Guidelines

Use this command to configure a default MSC to which HNB connects for CS network access through HNB-GW service.

Point-code is an SS7 address for an element in the SS7 network. Point-codes must be defined in dotted-decimal format in a string of 1 to 11 digits. Format options include:

- 0.0.1 to 7.255.7 for point-code in the ITU range.

- 0.0.1 to 255.255.255 for point-code in the ANSI range.
- 0.0.1 to 15.31.255 for point-code in the TTC Range.
- a string of 1 to 11 digits in dotted-decimal to represent a point-code in a different range.

Important This command can be entered only once. If entered again the previous value shall be overwritten.

Example

The following command configures a default MSC with point code *101.201.101* for HNBs to access CS network through HNB-GW service in this HNB-CS network instance:

```
msc point-code 101.201.101
```

nri length

Configures the network resource identifier (NRI) length in bits to identify a specific MSC serving in a pooled area. At least one NRI value has to be assigned to an MSC serving in a pool. The NRI is coded inside of the temporary mobile subscriber identity (TMSI), located within bits 14 to 23 with an variable length between 0 and 10 bits. Operator needs to set this NRI length to indicates the number of bits that shall be used for the NRI field to set the parameters for Iu-Flex (MSC pooling) functionality.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
nri length nri_value
default nri length
```

default

Sets the NRI length to the default value of 0 and disables the Iu-Flex (MSC pooling) functionality.

nri length *nri_value*

Default: 0

Specifies the number of bits to be used in the P-TMSI (bits 23 to 18) to define the network resource identifier (NRI). The NRI length configuration also sets the maximum size of the pool. If not configured, the NRI length is of zero length.

length is an integer from 1 to 10 that identifies the number of bits. When a non-zero value is configured the CS network is considered to be a pool.

Usage Guidelines

Use this command to enable the Iu-Flex functionality on HNB-GW. This command identifies a unique MSC serving a pooled area for Iu-Flex functionality and at least one NRI value has to assigned to an MSC serving in a pool. It performs MSC pooling/offloading scenario over Iu-Flex interface. The NRI is stored in the bits 14 to 23 of TMSI. The HNB-GW uses a portion of this NRI to set the parameters for Iu-Flex (MSC pooling) functionality.

If more than one NRI is configured, the HNB-GW service does round-robin between the available NRIs when new subscriber(s) (re)connect.

This command must be used in conjunction with **null nri** command to configured MSC pooling/offloading over Iu-Flex interface.

Example

The following command sets the HNB-GW to a bit length of *6* to derive the values from the NRI field (stored in bits 14 to 23 of TMSI) to set the parameters for Iu-Flex (MSC pooling) functionality:

```
nri length 6
```

null-nri

Configures the null NRI for load redistribution in support of Iu-Flex functionality. The NRI value defined with this command must be unique across the pool areas. This null-NRI is used by HNB-GW for load redistribution during MSC offloading.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-cs-network-instance_id)#
```

Syntax Description

```
null-nri null_nri_value
no null-nri null_nri_value
```

no

Disables/removes the configured null-NRI value used for MSC offloading procedure.

null_nri_value

Specifies the null-NRI value to be used by HNB-GW for load re-distribution during MSC offloading as an integer from 0 through 1023.

Without MOCN configuration this value can be entered only once.

For MOCN a unique null-NRI must be assigned to each MOCN operator identified by its PLMN-ID (MCC+MNC).

A 0 (zero) value configured as a null-NRI indicates the keyword is not to be used. There is no default value for this parameter.

Usage Guidelines

Use this command to identify the MSC to be used by HNB-GW for load redistribution during MSC offloading over an Iu-Flex interface.

There is one unique null-NRI in a PLMN supporting pool functionality.

Without MOCN configuration this command can be entered only once. For MOCN a unique null-NRI must be assigned to each MOCN operator identified by its PLMN-ID (MCC+MNC).

Example

The following command sets the null-NRI as *1001* to be used by HNB-GW for load redistribution during MSC offloading:

```
null-nri 1001
```

offload-msc

Provisions the HNB-GW to enable or disable the exclusion of a particular primary MSC node during an NAS Node Selection Function (NNSF) procedure when it needs to be offloaded while using Iu-Flex functionality on the HNB-GW.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

`[ no ] offload-msc point-code` *`msc_point_code`*

no

Removes the specified primary MSC point code from the exclusion list for NNSF function on HNB-GW and re-enables the inclusion of the primary MSC to be considered by HNB-GW.

point-code *msc_point_code*

Specifies the SS7 address of the primary MSC in the CS network to be excluded for NNSF function on HNB-GW when it needs to be offloaded via Iu-Flex functionality.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this primary MSC point code can be mapped with one CS core network id.

Usage Guidelines

Use this command to provision the HNB-GW to enable or disable the exclusion of the primary MSC node when it needs to be offloaded.

When this command is enabled for exclusion of primary MSC node during NNSF function in HNB-GW, the HNB-GW excludes the particular node from being considered.

User can re-enable the inclusion of the primary MSC node to be considered for NNSF functionality by **no offload-msc point-code** command.

Important Offload check is only for the primary point code and NOT for the backup point code.

This command can be used for planned maintenance as well.

Example

The following command configures the HNB-GW to exclude the primary MSC point code *1.2.3* from being considered in NSSF function for Iu-Flex support:

```
offload-msc point-code 1.2.3
```

The following command re-enables the inclusion of MSC point code *1.2.3* from being considered in NSSF function for Iu-Flex support:

```
no offload-msc point-code 1.2.3
```

ranap reset

Configures various Radio Access Network (RAN) Application Part reset procedure parameters for CS network association in an HNB access network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > **cs-network** *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

```
ranap reset {  ack-timeout timer_value | guard-timeout g_timer |
hnbgw-initiated | max-retransmissions  retries | use-actual-plmn  }
default ranap reset { ack-timeout | guard-timeout | hnbgw-initiated |
max-retransmissions  | use-actual-plmn  }
no ranap {  hnbgw-initiated | use-actual-plmn }
```

default

Resets the RANAP RESET parameters in HNB-CS Network configuration instance.

no

Disables the RANAP RESET procedure related parameters in an HNB-CS Network configuration instance.

ack-timeout *timer_value*

Sets the timer value (in seconds) to wait for Reset Acknowledge from MSC. This is used during HNB-GW initiated RANAP RESET procedure in HNB-CS Network configuration instance.

timer_value is an integer value from 5 through 10. Default: 10

guard-timeout *g_timer_value*

Sets the timer value (in seconds) to send Reset Acknowledge to MSC. After this duration the HNB-GW sends RESET-ACK to MSC. This is used during MSC initiated RANAP RESET procedure in HNB-CS Network configuration instance.

g_timer_value is an integer value from 5 through 10. Default: 10

hnbgw-initiated

Enables the HNB-GW Initiated RANAP RESET procedures. Default: Disabled

max-retransmission *retries*

Sets the maximum number of retires allowed for transmission of RESET-ACK message to MSC. This is used during RANAP RESET procedure in HNB-CS Network configuration instance.

retries is an integer value from 0 through 2. When 0 is used retransmission is disabled. Default: 1

use-actual-plmn

Actual PLMN will be sent in RANAP Reset/Reset Resource. By default, Common PLMN will be sent.

Usage Guidelines

Use this command to configure the RANAP RESET procedure related parameters in HNB-CS Network configuration for multiple HNB-GW service support.

Example

The following command configures the HNB-GW initiated RANAP RESET Procedure for an HNB-CS Network configuration instance:

```
ranap reset hnbgw-initiated
```

sccp

Configures Signaling Connection Control Part (SCCP) related parameters for HNB-GW on the circuit switched (CS) network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-CS Network Configuration

configure > cs-network *cs_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-cs-network-instance_id)#`

Syntax Description

[default | no] sccp calling-party-address

default

Restores the configuration to its default setting. By default, the calling party address is not included in the outgoing SCCP CR message.

no

If previously enabled, removes the configuration and restores the default setting.

calling-party-address

Specifies to include the optional calling-party-address IE in the outgoing SCCP CR message.

Usage Guidelines

Use this command to enable HNB-GW to include the optional calling party address in the outgoing Signaling Connection Control Part (SCCP) Connection Request (CR) message on the circuit switched network.

Example

The following command enables the calling party address to be sent in the SCCP CR message:

sccp calling-party-address

CHAPTER 37

HNB-PS Network Configuration Mode Commands

Important In Release 20 and later, HNBGW is not supported. Commands in this configuration mode must not be used in Release 20 and later. For more information, contact your Cisco account representative.

The HNB-PS Network Configuration Mode is used to manage the packet switched (PS) network instance on HNB-GW service to provide HNB access with the PS core network in a 3G UMTS network.

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]`*`host_name`*`(config-ps-network-`*`instance_id`*`)#`

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- associate gtpu-service, on page 1104
- associate-sccp-network, on page 1105
- end, on page 1105
- exit, on page 1106
- global-rnc-id, on page 1106
- map core-network-id, on page 1107
- map idnns range, on page 1108
- map nri range, on page 1110
- nri length, on page 1111
- null-nri, on page 1112
- offload-sgsn, on page 1113
- ranap reset, on page 1114
- sgsn deadtime, on page 1115
- sgsn point-code, on page 1117
- sccp, on page 1118

associate gtpu-service

Associates a previously configured GTP-U service to provide a GTP-U tunnel with an SGSN towards the core network side. A GTP-U service must be configured in Context Configuration mode before using this configuration.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

associate gtpu-service *svc_name* **context** *ctx_name*
no associate gtpu-service

no

Removes the associated GTP-U service from this HNB-GW service configuration.

svc_name

Specifies the name of the preconfigured GTP-U service.

context *ctx_name*

Specifies the name of the context in which the GTP-U service is configured.

Usage Guidelines

Use this command to configure GTP-U data plan tunnel between HNB-GW service and GSNs in core network. The service defined for GTP-U tunnel must be configured in Context configuration mode.

Important Another GTP-U service can be used to bind the HNB-GW service to GTP-U tunnel with HNB in HNB access network and can be configured in HNB-GW Service Configuration mode. For more information on GTP-U service configuration, refer to *GTP-U Service Configuration Mode Commands* chapter.

Example

The following command associates GTP-U service *gtpu_svc1* configured in context named *Ctx_gtpu1* with specific HNB-PS network instance for GTP-U tunnel towards GSN in core network:

```
associate gtpu-service gtpu_svc1 context Ctx_gtpu1
```

associate-sccp-network

Associates a previously defined Signaling Connection Control Part (SCCP) network identifier with the PS network instance in order to route the messages towards the SGSN via the IuPS interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

`associate-sccp-network` *`sccp_net_id`*
`no associate-sccp-network`

no

Removes the associated SCCP network configuration instance from this HNB-PS network instance configuration.

sccp_net_id

Specifies a predefined SCCP network identifier.

Usage Guidelines

Use this command to associate a predefined SCCP network ID with the IuPS interface in HNB-GW service to connect with PS network elements; i.e. SGSN.

Important The SCCP network ID must be defined in Global Configuration mode before using it with this command.

Important A single SCCP network ID can not be shared with multiple HNB-PS network instances.

Example

The following command associates SCCP network ID *2* with specific HNB-PS network instance:

`associate-sccp-network 2`

end

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **end**

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description **exit**

Usage Guidelines Use this command to return to the parent configuration mode.

global-rnc-id

Configures the Radio Network Concentrator (RNC) identifier in a Radio Network PLMN associated with HNB-PS network configuration instance. The RNC identifier is provided to the HNB during HNB-REGISTRATION.

Product HNB-GW

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > HNB-PS Network Configuration

configure > **ps-network** *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description **[no] global-rnc-id mcc** *mcc_num* **mnc** *mnc_num* **id** *rnc_id* **[common-plmn mcc** *mcc_num* **mnc** *mnc_num* **]**

no

Deletes the RNC, MMC, and MNC information from the HNB-PS Network configuration instance.

mcc ***mcc_num***

Specifies the mobile country code (MCC) part of radio network PLMN identifier as an integer value from 100 through 999.

mnc ***mnc_num***

Specifies the mobile network code (MNC) part of radio network PLMN identifier as a 2- or 3-digit integer from 00 through 999.

id ***rnc_id***

Specifies the RNC identifier as an integer from 0 through 4095.

common-plmn mcc ***mcc_num*** **mnc** ***mnc_num***

Configures the Common PLMN for this PS Network.

mcc *mcc_num* configures the MCC of Common PLMN for this PS Network as an integer value from 100 through 999.

mnc *mnc_num* configures the MNC of Common PLMN for this PS Network as a 2- or 3-digit integer from 00 through 999.

Usage Guidelines

Use this command to configure RNC id to associate Radio Network PLMN which will be sent to HNBs from HNB-GW during HNB-REGISTRATION procedure. Depending upon the requirement the RNC Identifier can be provided at the desired granularity.

Example

The following command configures the HNB-GW service to return an RNC identifier as *102* when an HNB-REGISTRATION request is received with LAC *1*, and RAC *2*:

```
global rnc-id mcc 102 mnc 02 id 2
```

map core-network-id

Maps/associates the PS core network identifier to a default SGSN in the network using an SGSN point code to allow HNBs to access the UMTS network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ps-network-instance_id)#
```

Syntax Description

```
map core-network-id cn_id point-code sgsn_point_code
no map core-network-id cn_id
```

no

Removes the mapping of a PS core network id with particular SGSN point code.

cn_id

Specifies the core network identifier configured to represent a UMTS PS core network as n integer from 0 through 4095.

Multiple instance of this command can be mapped with different SGSN point codes.

point-code *sgsn_point_code*

Specifies the SS7 address of the default SGSN in the PS network.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this SGSN point code can be mapped with one PS core network identifier.

Usage Guidelines

Use this command to map a UMTS PS core network identifier with a particular SGSN point code.

This command can be entered multiple times with same SGSN point code to map with one or more PS core network Id, but a particular core network identifier can be mapped to one SGSN only.

This command is instrumental in Iu-Flex functionality, whenever HNB-GW receives RESET/RESET-RES messages from SGSN with Global CN-ID information element, the response from HNB-GW is sent to the node configured for that particular Global CN-ID.

If the RESET/RESET-RES messages do not have Global CN-ID IE, then the response of those messages is directed to the default SGSN which is configured using **sgsn point-code** command in this mode.

Example

The following command configures the PS core network identifier *101* with an SGSN point code *1.2.3*:

```
map core-network-id 101 point-code 1.2.3
```

The following command configures the PS core network identifier *102* with the same SGSN point code *1.2.3*:

```
map core-network-id 102 point-code 1.2.3
```

map idnns range

Configures the mapping of an Intra-Domain NAS Node Selector (IDNNS) IE received from UE in an RUA connect message towards HNB-GW. This is an important configuration for PS network resource sharing over an Iu-Flex interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

map idnns range *idnns_start* **to** *idnns_end* **point-code** *sgsn_point_code* [**backup point-code** *bkup_sgsn_point_code*]
no map idnns range *idnns_start* **to** *idnns_end*

no

Removes the entries of mapping of range of IDNNS received from UE with particular SGSN point code.

range *idnns_start* to *idnns_end*

Specifies the range of IDNNSs received from UE to map with particular SGSN point codes during the initial PS core network node selection.

idnns_start is an integer from 0 through 1023 that should be less than *idnns_end*.

idnns_end is an integer from 0 through 1023 that should be more than *idnns_start*.

The command can be entered more than once to map multiple IDNNS ranges to the same SGSN. However, overlapping and mapping of the same range to different SGSN point codes is not allowed.

point-code *sgsn_point_code*

Specifies the SS7 address of the SGSN in the PS network.

sgsn_point_code is ann SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

backup point-code *bkup_sgsn_point_code*

Specifies the SS7 address of the SGSN to be used as the backup in the PS network.

bkup_sgsn_point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Usage Guidelines

Use this command to map a NRI received from UE during initial PS network node selection to SGSN point code through NRI range mapping over Iu-Flex interface.

The IDNNS refers to the information element in RUA connect message from UE towards RAN (HNB-GW). In IDNNS IE, if the choice of routing mentioned is other than local P-TMSI, then the value it provides is used against this configuration to map the SGSN point code.

If backup SGSN point-code is specified, then specified SGSN works as backup for the IDNS range configured. This Backup SGSN is selected if the mapped SGSN for a given IDNNS range is going for offloading using **offload-sgsn point-code** command.

The command can be entered more than once to map multiple IDNNS ranges to same SGSN point code, but overlapping and mapping of same range to different SGSN point code is not allowed.

Example

The following command maps the IDNNS range from *101* to *201* with SGSN point code *1.2.3* and point code 7.8.9 as backup SGSN point code:

```
map nri range 101 to 201 point-code 1.2.3 backup point-code 7.8.9
```

The following command removes all IDNNS range matching entries between *301* to *399* from the configuration:

```
no map idnns range 301 to 399
```

map nri range

Configures the mapping of the Network Resource Identifier (NRI) received from UE to an SGSN point code. This is an important configuration for PS network resource sharing over Iu-Flex interface.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

map nri range *nri_start* **to** *nri_end* **point-code** *sgsn_point_code*
no map nri range *nri_start* **to** *nri_end*

no

Removes the entries of mapping of range of NRIs received from UE with a particular SGSN point code.

range *nri_start* to *nri_end*

Specifies the range of NRIs received from UE to map with a particular SGSN point code during initial PS core network node selection.

nri_start is an integer from 0 through 1023 that should be less than *nri_end*.

nri_end is an integer from 0 through 1023 that should be more than *nri_start*.

The command can be entered more than once to map multiple NRI ranges to the same SGSN, but overlapping is not allowed.

point-code *sgsn_point_code*

Specifies the SS7 address of the SGSN in the PS network to map with range of NRI values.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Usage Guidelines

Use this command to map a NRI received from UE during initial PS network node selection to SGSN point code through NRI range mapping over Iu-Flex interface.

This configuration is used during initial PS core network node selection when the network resource identifier (NRI) from the UE is available. The NRI range is mapped to SGSN point code. This configuration is used when the core network uses Iu-Flex interface.

The command can be entered more than once to map multiple NRI ranges to same SGSN point code.

It is possible to configure multiple ranges to more than one SGSN however this configuration is required only when the PS core network is configured as Multi-Operator Core Network (MOCN).

When the PS core network is not MOCN and one range is mapped to more than one SGSN then SGSN is selected randomly in a non-predictable manner.

Example

The following command maps the NRI range from *101* to *201* with SGSN point code *1.2.3*:

```
map nri range 101 to 201 point-code 1.2.3
```

The following command maps the NRI range from *301* to *399* with SGSN point code *1.2.3*:

```
map nri range 301 to 399 point-code 1.2.3
```

The following command removes all NRI range matching entries between *301* to *399* from the configuration:

```
no map nri range 301 to 399
```

nri length

Configures the network resource identifier (NRI) length in bits to identify a specific SGSN serving in a pooled area. At least one NRI value must be assigned to an SGSN serving in a pool. The NRI is coded inside of the temporary mobile subscriber identity (TMSI), located within bits 14 to 23 with a variable length between 0 and 10 bits. The operator must set this NRI length to indicates the number of bits that shall be used for the NRI field to set the parameters for Iu-Flex (SGSN pooling) functionality.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ps-network-instance_id)#
```

Syntax Description

```
nri length nri_value
default nri length
```

default

Sets the NRI length to default value of 0 and disables the Iu-Flex (SGSN pooling) functionality.

nri length *nri_length*

Default: 0

Specifies the number of bits to be used in the P-TMS (bits 23 to 18) to define the network resource identifier (NRI). The NRI length configuration also sets the maximum size of the pool. If not configured, the NRI length is set to zero length.

length is an integer from 1 to 10. When a non-zero value is configured the PS network is considered to be a pool. Default: 0

Usage Guidelines

Use this command to enable the Iu-Flex functionality on HNB-GW. This command identifies a unique SGSN serving a pooled area for Iu-Flex functionality and at least one NRI value has to assigned to an SGSN serving in a pool. It performs SGSN pooling/offloading scenario over Iu-Flex interface. The NRI is stored in the bits 14 to 23 of TMSI. The HNB-GW uses a portion of this NRI to set the parameters for Iu-Flex (SGSN pooling) functionality.

If more than one NRI is configured, the HNB-GW service does round-robin between the available NRIs when new subscriber(s) (re)connect.

This command must be used in conjunction with **null nri** command to configured SGSN pooling/offloading over Iu-Flex interface.

Example

The following command sets the HNB-GW to use bit length as *6* to derive the values from the NRI field (stored in the bits 14 to 23 of TMSI) to set the parameters for Iu-Flex (SGSN pooling) functionality:

```
nri length 6
```

null-nri

Configures the null network resource identifier (NRI) for load redistribution in support of Iu-Flex functionality. The NRI value defined with this command must be unique across the pool areas. This null-NRI is used by HNB-GW for load redistribution during SGSN offloading.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

null-nri *null_nri_value*
no null-nri *null_nri_value*

no

Disables/removes the configured null-NRI value used for SGSN offloading procedure.

null_nri_value

Indicates the null-NRI value to be used by HNB-GW for load re-distribution during SGSN offloading as an integer from 0 through 1023.

Without MOCN configuration this value can be entered only once.For MOCN a unique null-NRI must be assigned to each MOCN operator identify by its PLMN-ID (MCC+MNC).

A 0 (zero) value configured as null-NRI indicates the keyword is not to be used. There is no default value for this parameter.

Usage Guidelines

Use this command to identify the SGSN by HNB-GW to be used for load redistribution during SGSN offloading over Iu-Flex interface.

There is one unique null-NRI in a PLMN supporting pool functionality.

Without MOCN configuration this command can be entered only once. In case of MOCN a unique null-NRI must be assigned to each MOCN operator identify by its PLMN-id (MCC+MNC).

Example

The following command sets the null-NRI as *1001* to be used by HNB-GW for load redistribution during SGSN offloading:

```
null-nri 1001
```

offload-sgsn

Enables or disables the exclusion of a specified primary SGSN node during the NAS Node Selection Function (NNSF) procedure when it needs to be offloaded using Iu-Flex functionality.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

[no] offload-sgsn point-code *sgsn_point_code*

no

Removes the specified primary SGSN point code from the exclusion list for NNSF function on HNB-GW and re-enables the inclusion of the primary SGSN node to be considered by HNB-GW.

point-code *sgsn_point_code*

Specifies SS7 address of primary SGSN in PS network having specific point code value to be excluded for NNSF function on HNB-GW when it needs to be offloaded in Iu-Flex functionality.

point_code is an SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this primary SGSN point code can be mapped with one PS core network id.

Usage Guidelines

Use this command to provision the HNB-GW to enable or disable the exclusion of the SGSN node when it needs to be offloaded.

When this command is enabled for exclusion of SGSN node during NNSF function in HNB-GW, the HNB-GW excludes the particular node from being considered.

User can re-enable the inclusion of the SGSN node to be considered for NNSF functionality by **no offload-sgsn point-code** command.

Important The offload check is only for the primary point code and NOT for the backup point code.

This command can be used for planned maintenance as well.

Example

The following command configures the HNB-GW to exclude the primary SGSN point code *1.2.3* from being considered in NSSF function for Iu-Flex support:

```
offload-sgsn point-code 1.2.3
```

The following command re-enables the inclusion of SGSN point code *1.2.3* from being considered in NSSF function for Iu-Flex support:

```
no offload-sgsn point-code 1.2.3
```

ranap reset

Configures various Radio Access Network (RAN) Application Part reset procedure parameters for PS network association in an HNB access network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > **ps-network** *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

```
ranap reset {  ack-timeout timer_value | guard-timeout g_timer |
hnbgw-initiated  | max-retransmissions  retries | use-actual-plmn   }
default ranap reset { ack-timeout |  guard-timeout |  hnbgw-initiated |
max-retransmissions | use-actual-plmn }
no ranap { hnbgw-initiated  | use-actual-plmn  }
```

default

Resets the RANAP RESET parameters in HNB-PS Network configuration instance.

no

Disables the RANAP RESET procedure related parameters in an HNB-PS Network configuration instance.

ack-timeout *timer_value*

Sets the timer value (in seconds) to wait for Reset Acknowledge from SGSN. This is used during HNB-GW initiated RANAP RESET procedure in HNB-PS Network configuration instance.

timer_value is an integer value from 5 through 10. Default: 10

guard-timeout *g_timer_value*

Sets the timer value (in seconds) to send Reset Acknowledge to SGSN. After this duration the HNB-GW sends RESET-ACK to SGSN. This is used during SGSN initiated RANAP RESET procedure in HNB-PS Network configuration instance.

g_timer_value is an integer value from 5 through 10. Default: 10

hnbgw-initiated

Enables the HNB-GW Initiated RANAP RESET procedures. Default: Disabled

max-retransmission *retries*

Sets the maximum number of retires allowed for transmission of RESET-ACK message to SGSN. This is used during RANAP RESET procedure in HNB-PS Network configuration instance.

retries is an integer value from 0 through 2. When 0 is used retransmission is disabled. Default: 1

use-actual-plmn

Actual PLMN will be sent in RANAP Reset/Reset Resource. By default, Common PLMN will be sent.

Usage Guidelines

Use this command to configure the RANAP RESET procedure related parameters in HNB-PS Network configuration for multiple HNB-GW service support.

Example

The following command configures the HNB-GW initiated RANAP RESET Procedure for an HNB-PS Network configuration instance:

```
ranap reset hnbgw-initiated
```

sgsn deadtime

Configures a timer on HNB-GW to manage SGSN availability in a PS core network on receiving of a PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

```
sgsn deadtime { immidiate |dur }
[ no | default ] sgsn deaddtime
```

no

Makes the peer node (SGSN) always available for all HNB-PS network instances.

default

Sets the default action for HNB-GW such that the peer node (SGSN) is marked down as soon as HNB-GW receives a PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP in a specific HNB-PS network instance. Default: Enabled

immidiate

Sets the HNB-GW to mark the peer node (SGSN) down immediately and clears all Iu-PS connections towards the SGSN. Default: Disabled

dur

Sets the duration (in seconds) for a timer which starts once HNB-GW receives a PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer SGSN. On expiry of this timer the peer SGSN is marked as dead and all Iu-PS connections towards that SGSN are released.

dur is tan integer from 1 through 30.

Only one instance of this command can be configured.

Usage Guidelines

This command is used to configure a timer on HNB-GW to manage SGSN availability in a PS core network on receiving of PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP.

Timer value sets the duration in seconds for a timer which started once HNB-GW receives PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer SGSN. On expiry of this timer the peer SGSN is marked as dead and all Iu-PS connections towards that SGSN shall be released.

Important This command can be entered only once. Reentering this command overwrites the previous parameters.

Example

The following command configures the deadtime timer value for *10* seconds on HNB-GW. Once HNB-GW receives PC-STATE-DOWN or SSN-STATE-DOWN (RANAP) indication from SCCP for a peer SGSN the HNB-GW waits for configured period and on expiry of timer it marks the specific SGSN as dead:

```
sgsn deadtime 10
```

sgsn point-code

Configures the default SGSN point-code with the HNB-PS network instance. This command is used when HNB-GW is to be connected to only one SGSN with in a PS network or as the default SGSN for all HNBs connected through specific HNB-PS network instance.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

[no] sgsn point-code *point_code*

no

Removes the configured default SGSN point code from specific HNB-PS network instance.

Caution Removing the SGSN point code is a disruptive operation and affects all HNB sessions which are connected to particular SGSN through an HNB-PS network instance.

point_code

Specifies the SS7 address of the default SGSN in a PS network.

point_code is ann SS7 point code in dotted-decimal ###.###.### or 8-digit decimal ######## format.

Only one instance of this command can be configured.

Usage Guidelines

Use this command to configure a default SGSN to which HNB connects for PS network access through the HNB-GW service.

Point-code is an SS7 address for an element in the SS7 network. Point-codes must be defined in dotted-decimal format in a string of 1 to 11 digits. Format options include:

- 0.0.1 to 7.255.7 for point-code in the ITU range.
- 0.0.1 to 255.255.255 for point-code in the ANSI range.
- 0.0.1 to 15.31.255 for point-code in the TTC Range.
- a string of 1 to 11 digits in dotted-decimal to represent a point-code in a different range.

Important This command can be entered only once. If entered again the previous value shall be overwritten.

Example

The following command configures a default SGSN with point code *101.201.101* for HNBs to access PS network through HNB-GW service in this HNB-PS network instance:

```
sgsn point-code 101.201.101
```

sccp

Configures Signaling Connection Control Part (SCCP) related parameters for HNBGW on the packet switched (PS) network.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > HNB-PS Network Configuration

configure > ps-network *ps_instance*

Entering the above command sequence results in the following prompt:

`[local]host_name(config-ps-network-instance_id)#`

Syntax Description

```
[ default | no ] sccp calling-party-address
```

default

Restores the configuration to its default setting. By default, the calling party address is not included in the outgoing SCCP CR message.

no

If previously enabled, removes the configuration and restores the default setting.

calling-party-address

Specifies to include the optional calling-party-address IE in the outgoing SCCP CR message.

Usage Guidelines

Use this command to enable HNBGW to include the optional calling party address in the outgoing Signaling Connection Control Part (SCCP) Connection Request (CR) message on the packet switched (PS) network.

Example

The following command enables the calling party address to be sent in the SCCP CR message:

```
sccp calling-party-address
```

CHAPTER 38

HNB-RN PLMN Configuration Mode Commands

Important In Release 20 and later, HNBGW is not supported. Commands in this configuration mode must not be used in Release 20 and later. For more information, contact your Cisco account representative.

This HNB Radio Network PLMN configuration mode defines the radio network PLMN parameters related to the HNB-GW connection with a UMTS Femto radio network.

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration > HNB-RN PLMN Configuration

configure > context *context_name* **> hnbgw-service** *service_name* **> radio-network-plmn mcc** *mcc_number* **mnc** *mnc_number*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hnbgw-radio-plmn)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- associate cs-network, on page 1119
- associate ps-network, on page 1120
- authorised-macro-lai, on page 1120
- end, on page 1121
- exit, on page 1121
- rnc-id, on page 1121

associate cs-network

From StarOS Release 14.0 onward this command is deprecated.

associate ps-network

From StarOS Release 14.0 onward this command is deprecated.

authorised-macro-lai

Configures the macro LAI based authorization parameters for this HNB-GW service.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration > HNB-RN PLMN Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name* > **radio-network-plmn mcc** *mcc_number* **mnc** *mnc_number*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hnbgw-radio-plmn)#
```

Syntax Description

authorised-macro-lai { macro-info-ie-absent-action { accept | reject } | mcc *mcc_id* **mnc** *mnc_id* **lac range** *range_from* **to** *range_to* **}**
default authorised-macro-lai macro-info-ie-absent-action
no authorised-macro-lai mcc*mcc_id* **mnc** *mnc_id***lac range** *range_from* **to** *range_to*

default

Configures the default parameters for macro LAI based authorization for the system configuration. Default action is to reject HNB if IE is absent.

no

Deletes the macro LAI based authorization parameters from the system configuration.

mcc-id

Specifies the MCC of pre-configured macro lai range for HNB authorization as a number, ranging from 100..999

mnc-id

Specifies the MNC of pre-configured macro lai range for HNB authorization, ranging from 00..999

lac range

Specifies the LAC of pre-configured macro LAI range for HNB authorization.

range_from

Specifies the LAC range minimum vlaue, which is an integer from 0..65535.

range_to

Specifies the LAC range maximum value, which is also an integer from 0..65535.

Usage Guidelines

Use this command to configure the macro LAI based authorization parameters for an existing HNB-GW service.

Example

The following command configures the default action for macro LAI based authorization for an existing HNB-GW service.

```
default authorised-macro-lai macro-info-ie-absent-action
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
end
```

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines

Use this command to return to the parent configuration mode.

rnc-id

Configures the Radio Network Concentrator (RNC) identifier in a Radio Network PLMN associated with HNB-GW service. The RNC identifier is provided to the HNB during HNB-REGISTRATION.

Product

HNB-GW

Privilege

Security Administrator, Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HNB-GW Service Configuration > HNB-RN PLMN Configuration

configure > **context** *context_name* > **hnbgw-service** *service_name* > **radio-network-plmn mcc** *mcc_number* **mnc** *mnc_number*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hnbgw-radio-plmn)#
```

Syntax Description

[no] rnc-id *rnc_id*

no

Deletes the RNC id from the system configuration.

rnc-id

Specifies the RNC identifier as an integer from 0 through 4095.

Usage Guidelines

Use this command to configure RNC id for Radio Network PLMN which will be sent to HNBs from HNB-GW during HNB-REGISTRATION procedure. Depending upon the requirement the RNC Identifier can be provided at the desired granularity.

Example

The following command configures the HNB-GW service to return an RNC identifier as *102* when an HNB-REGISTRATION request is received:

```
global rnc-id 102
```

CHAPTER 39

HSGW Service Configuration Mode Commands

The HSGW Service Configuration Mode is used to create and manage a configuration allowing the HRPD Serving Gateway (HSGW) to communicate, send and receive call data, and session flows to/from a evolved Access Network/evolved Packet Control Function (eAN/ePCF) in an eHRPD network.

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- a11-signalling-packets, on page 1124
- associate, on page 1125
- bind address, on page 1125
- context-retention-timer, on page 1127
- data-available-indicator, on page 1127
- data-over-signaling, on page 1128
- dns-pgw, on page 1128
- end, on page 1130
- exit, on page 1130
- fqdn, on page 1130
- fragment, on page 1132
- gre, on page 1132
- ip, on page 1135
- lifetime, on page 1137
- max-retransmissions, on page 1138
- mobile-access-gateway, on page 1139
- network-initiated-qos, on page 1139
- plmn id, on page 1140
- policy overload, on page 1141
- profile-id-qci-mapping, on page 1142

• registration-deny, on page 1143
• retransmission-timeout, on page 1144
• rsvp, on page 1145
• setup-timeout, on page 1146
• spi remote-address, on page 1147
• ue-initiated-qos, on page 1149
• unauthorized-flows, on page 1149

a11-signalling-packets

Enables the DSCP marking feature for IP headers carrying outgoing A11-signalling A11 packets (such as RRP, RU, SU).

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
a11-signalling-packets ip-header-dscp value
[ default | no ] a11-signalling-packets ip-header-dscp
```

default

Restores the specified parameter to its default setting of 0x0.

no

Disables the specified functionality.

ip-header-dscp *value*

Configures the QoS Differentiated Services Code Point (DSCP) marking for IP header encapsulation.

value: Represents the DSCP setting as the first six most-significant bits of the ToS field. It can be configured to any hex value from 0x0 through 0x3F. Default is 0x0.

Usage Guidelines

Use this command to enable or disable the DSCP marking feature for IP headers carrying outgoing A11-signalling A11 packets. DSCP marking is disabled by default.

Example

The following command configures the HSGW service to support DSCP marking for IP headers on A11 packets in outgoing A11-signalling traffic:

```
a11-signalling-packets ip-header-dscp 0x21
```

associate

Associates accounting policies and QCI-QoS mapping parameters with this HSGW service.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

```
associate { accounting-policy name | qci-qos-mapping name }
no associate { accounting-policy [ name ] | qci-qos-mapping }
```

no

Removes the specified associated policy or mapping from the service.

accounting-policy *name*

Specifies an existing accounting policy to associate with the HSGW service as an alphanumeric string of 1 through 63 characters.

qci-qos-mapping *name*

Specifies an existing QCI-QoS mapping configuration as an alphanumeric string of 1 through 63 characters.

QCI-QoS mapping is configured through the **qci-qos-mapping** command in the Global Configuration Mode.

Usage Guidelines

Use this command to associate an accounting policy with the HSGW service.

Example

The following command associates an accounting policy named *acct2* to the HSGW service:

```
associate accounting-policy acct2
```

bind address

Binds the service to a logical IP interface serving as the A10 interface and specifies the maximum number of subscribers that can access this service over the configured interface.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
bind address ip_address [ max-subscribers num ]
no bind address
```

no

Removes the interface binding from this service.

address *ip_address*

Specifies the IP address of the A10/A11 interface in IPv4 dotted-decimal notation.

max-subscribers *num*

Specifies the maximum number of subscribers that can access this service on this interface as an integer from 0 through 2500000. Default: 2500000

Important The maximum number of subscribers supported is dependant on the license key installed and the number of active PSCs in the system. A fully loaded system with 13 active PSCs can support 3,000,000 total subscribers. Refer to the license key command and the Usage section (below) for additional information.

Usage Guidelines

Associate the HSGW service to a specific logical IP address. The logical IP address or interface takes on the characteristics of an A10/A11 interface that provides the session connectivity to/from an eAN/PCF. Only one interface can be bound to a service. The interface should be configured prior to issuing this command.

This command also sets a limit as to the number of simultaneous subscribers sessions that can be facilitated by the service/interface at any given time.

When configuring the **max-subscribers** option, be sure to consider the following:

- The total number of A10/A11 interfaces you will configure
- The total number of subscriber sessions that all of the configured interfaces may handle during peak busy hours
- An average bandwidth per session multiplied by the total number of sessions
- The type of physical port (10/100Base-T or 1000Base-Tx) that these interfaces will be bound to

Taking these factors into account and distributing your subscriber session across all available interfaces will allow you to configure your interfaces to optimally handle sessions without degraded performance.

Example

The following command would bind the logical IP interface with the address of *209.165.200.248* to the HSGW service and specifies that a maximum of *200,000* simultaneous subscriber sessions can be facilitated by the interface/service at any given time:

```
bind address 209.165.200.248 max-subscribers 200000
```

context-retention-timer

Configures the maximum number of consecutive seconds that a UE session context (which includes the LCP, authentication and A10 session context for a given UE) is maintained by the HSGW before it is torn down.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

```
context-retention-timer timeout [ sec ]
[ default | no ] context-retention-timer timeout
```

default

Disables the timer.

no

Disables the timer.

timeout [*sec*]

Specifies the amount of time (in seconds) that the session context is maintained before it is disassembled as an integer from 1 through 3600. Default: 60.

In Release 15.0 and later, the maximum value has been increased to 86400 seconds (24 hours).

Usage Guidelines

Use this command to configure a timer to retain session contexts for a specified amount of time before disassembling it.

Example

The following command allows the HSGW to maintain session contexts for *120* seconds before tearing them down:

```
context-retention-timer timeout 120
```

data-available-indicator

Enables sending the Data Available Indicator extension in A10/A11 Registration Reply messages.

Product HSGW

Privilege Administrator

Command Modes Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description **`data-available-indicator`**

Usage Guidelines Use this command to enable the sending of the Data Available Indicator extension in A10/A11 Registration Reply messages.

data-over-signaling

Enables the data-over-signaling marking feature for A10 packets.

Product HSGW

Privilege Administrator

Command Modes Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description **`[ default | no ] data-over-signaling`**

default

Enables the data-over signaling feature for A10 packets.

no

Disables the data-over signaling feature for A10 packets.

Usage Guidelines Use this command to enable or disable the data-over signaling feature for A10 packets.

dns-pgw

Identifies the location of the DNS client to the HSGW service and enables/disables P-GW load balancing using DNS SRV lookup.

Product HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

dns-pgw { context *name* **| selection { topology [weight] | weight } } [default | no] dns-pgw { context | selection { topology [weight] | weight } }**

default

Returns the command to its default setting of the current context.

By default, topology will be enabled and weight will be disabled.

no

Removes the configured DNS client context name or P-GW DNS selection criteria from this service.

context *name*

Specifies an existing context in which the DNS client is configured as an alphanumeric string of 1 through 79 characters.

selection { topology [weight] | weight }

Specifies P-GW DNS selection criteria.

topology: Enables topology selection, which selects a P-GW topologically closer to the HSGW.

topology weight: Enables topology selection with weight.

weight: Enables selection with weight only when both preference values are the same; disables topology selection.

Usage Guidelines

Use this command to identify to the HSGW service the context where the DNS client is configured. The DNS client is used to identify an FQDN for the peer P-GW. This command defaults to the same context as the HSGW service.

In addition, this command enables and disables P-GW load balancing using DNS SRV lookup by defining P-GW DNS selection criteria.

Example

The following command identifies the context where the DNS client is configured as *isp3*:

```
dns-pgw context isp3
```

The following command enables P-GW DNS topology selection with weight:

```
dns-pgw selection topology weight
```

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

fqdn

Configures the Fully Qualified Domain Name (FQDN) for this HSGW service.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > context *context_name* **> hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

fqdn *domain_name*
[default | no] fqdn

default

Returns the command to the default setting of "null".

no

Removes the configured FQDN name from this service.

domain_name

Specifies an FQDN for the HSGW service as an alphanumeric string of 1 through 256 characters.

Important In order to properly interact with other nodes in the network, the FQDN should be 96 alpha and/or numeric characters or less.

Usage Guidelines

Use this command to configure an FQDN for this HSGW service. The FQDN is used when matching a P-GW with an HSGW.

Topology Matching

You may specify which P-GW you wish an HSGW interface to connect with by enabling topology matching within the FQDNs for both the HSGW service and P-GW service. Topology matching selects geographically closer nodes and reduces backhaul traffic for a specified interface.

The following optional keywords enable or disable topology matching when added to the beginning of an FQDN:

- **topon**.<*interface_name*>.

  Beginning an FQDN with **topon** initiates topology matching with available P-GWs in the network. Once this feature is enabled, the rest of the FQDN is processed from right to left until a matching regional designator is found on a corresponding P-GW FQDN.

- **topoff**.<*interface_name*>.

  By default, topology matching is disabled. If you enable topology matching for any interfaces within a node, however, all interfaces not using this feature should be designated with **topoff**.

Example

The following command configures this HSGW service with an FQDN of *abc123.com*:

```
fqdn abc123.com
```

The following command configures this HSGW service with an FQDN that enables topology matching:

```
fqdn topon.<interface_name>.hsgw01.bos.ma.node.epc.mnc<value>.
mcc<value>.3gppnetwork.org
```

Important The associated P-GW service must have a corresponding FQDN similar to the following:

```
topon.<interface_name>.pgw01.bos.ma.node.epc.mnc<value>.mcc<value>.3gppnetwork.org
```

fragment

Enables or disables Point-to-Point Protocol (PPP) payload fragmentation.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

[default | no] fragment ppp-data

default

Returns the command to its default setting of enabled.

no

Disables PPP payload fragmentation.

Usage Guidelines

Use this command to enable or disable PPP payload fragmentation.

gre

Configures Generic Routing Encapsulation (GRE) parameters for the A10 protocol within the HSGW service.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
gre { checksum | checksum-verify | flow control [ action {
disconnect-session | resume-session } ] [ timeout msecs ] + | ip-header-dscp
 value { all-control-packets | setup-packets-only } | reorder-timeout msecs
 | segmentation | sequence-mode { none | reorder } | sequence-numbers |
threegppp2-ext-headers qos-marking }
default gre { checksum | checksum-verify | flow-control | ip-header-dscp
 | reorder-timeout | sequence-mode | sequence-numbers |
threegppp2-ext-headers qos-marking }
```

```
no gre { checksum | checksum-verify | flow-control | ip-header-dscp |
segmentation | sequence-numbers | threegppp2-ext-headers qos-marking }
```

default

Restores the specified parameter to its default setting.

no

Disables the specified functionality.

checksum

Enables the introduction of the checksum field in outgoing GRE packets. Default: disabled

checksum-verify

Enables verification of the GRE checksum (if present) in incoming GRE packets. Default: disabled

flow-control [action { disconnect-session | resume-session }] [timeout *msecs*] +

Default: no GRE flow-control

Enables 3GPP2 GRE flow control which causes the HSGW to send flow control enabled Normal Vendor Specific Extensions (NVSE) in A11 RRPs.

action { disconnect-session | resume-session }:

Default: disconnect-session

Specifies the action to be taken when timeout is reached:

- **disconnect-session**: Ends the session and releases the call.
- **resume-session**: Switches flow control to XON and resumes delivery of packets to the RAN.

timeout *msecs*

Specifies the amount of time (in milliseconds) to wait for an XON indicator from the RAN (after receiving an XOFF). Also sets the action to be taken if the timeout limit is reached.

msecs is an integer from 1 through 1000000. Default: 1000

ip-header-dscp *value* { all-control-packets | setup-packets-only }

Default: Disabled

Configures QoS Differentiated Services Code Point (DSCP) marking for GRE packets.

- *value*: Represents the DSCP setting as the first six most-significant bits of the ToS field. It can be configured to any hexadecimal value from 0x0 through 0x3F.
- **all-control-packets**: Dictates that the DSCP marking is to be provided in all GRE control packets.
- **setup-packets-only**: Dictates that the DSCP marking is to be provided only in GRE setup packets.

reorder-timeout *msecs*

Configures the maximum number of milliseconds to wait before processing reordered out-of-sequence GRE packets as an integer from 0 through 5000. Default: 100

segmentation

Enables GRE Segmentation for the HSGW service. Default: disabled

sequence-mode { none | reorder }

Default: none

Configures handling of incoming out-of-sequence GRE packets.

none: Specifies that sequence numbers in packets are ignored and all arriving packets are processed in the order they arrive.

reorder: Specifies that out of sequence packets are stored in a sequencing queue until one of the conditions is met:

- The reorder timeout occurs: All queued packets are sent for processing and the accepted sequence number is updated to the highest number in the queue.
- The queue is full (five packets): All packets in the queue are sent for processing, the reorder timer is stopped and the accepted sequence number is updated to the highest number in the queue.
- An arriving packet has a sequence number such that the difference between this and the packet at the head of the queue is greater than five. All the packets in the queue are sent for processing, the reorder timer is stopped and the accepted sequence number is updated to the highest number that arrived.
- A packet arrives that fills a gap in the sequenced numbers stored in the queue and creates a subset of packets whose sequence numbers are continuous with the current accepted sequence number. This subset of packets in the queue is sent for processing. The reorder timer continues to run and the accepted sequence number is updated to the highest number in the subset delivered.

sequence-numbers

Enables insertion of GRE sequence numbers in data that is about to be transmitted over the A10 interface. Data coming into the system containing sequence numbers but that is out of sequence is not re-sequenced.

threegppp2-ext-headers qos-marking

When threegppp2-ext-headers qos-marking is enabled and the PCF negotiates capability in the A11 RRQ, the HSGW will include the QoS optional data attribute in the GRE 3gpp2 extension header.

The **no** keyword, enables qos-marking in the GRE header based on the tos value in the header.

Usage Guidelines

Use this command to set GRE parameters for the A10 protocol within the HSGW service.

Example

The following command configures the HSGW service to support the inclusion of GRE sequence numbers in outgoing traffic:

```
gre sequence-numbers
```

ip

Enables the use of Robust Header Compression (RoHC) and enters the HSGW Service ROHC Configuration Mode where RoHC parameters are configured for the service.

Configures the local User Datagram Protocol (UDP) port for the A10/A11 interface IP socket.

Sets the parameters for IP source validation. Source validation is useful if packet spoofing is suspected or for verifying packet routing and labeling within the network. Source validation requires the source address of received packets to match the IP address assigned to the subscriber (either statically or dynamically) during the session.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

```
ip { header-compression rohc | local-port number | source-violation {
clear-on-valid-packet | drop-limit num | period secs | reneg-limit num } }
default ip { header-compression rohc | local-port | source-violation {
drop-limit | period | reneg-limit } }
no ip { header-compression rohc | source-violation clear-on-valid-packet
 }
```

default

Resets the keyword to its default value.

no

header-compression rohc: Removes the RoHC configuration from this service.

ip source-violation clear-on-valid-packet: Disables the ability of the service to reset the reneg-limit and drop-limit counters after receipt of a properly addressed packet.

header-compression rohc

Specifies that Robust Header Compression will be applied to sessions using this service and enters the HSGW Service RoHC Configuration Mode where RoHC parameters are configured.

local-port *number*

Specifies the UDP port number as an integer from 1 through 65535. Default: 699

source-violation { clear-on-valid-packet | drop-limit *num* | period *secs* | reneg-limit *num* }

clear-on-valid-packet

Configures the service to reset the reneg-limit and drop-limit counters after receipt of a properly addressed packet. Default: disabled

drop-limit *num*

Specifies the number of allowed source violations within a detection period before forcing a call disconnect as an integer from 1 through 1000000. If *num* is not specified, the value is set to the default. Default: 10

period *secs*

Specifies the length of time (in seconds) for a source violation detection period to last; drop-limit and reneg-limit counters are decremented each time this value is reached.

The counters are decremented in this manner: reneg-limit counter is reduced by one (1) each time the period value is reached until the counter is zero (0); drop-limit counter is halved each time the period value is reached until the counter is zero (0). If *secs* is not specified, the value is set to the default.

secs is an integer from 1 through1000000. Default: 120

reneg-limit *num*

Sets the number of allowed source violations within a detection period before forcing a PPP renegotiation. If *num* is not specified, the value is set to the default.

num is an integer from 1 through 1000000. Default: 5

Usage Guidelines

Header Compression RoHC: Use this command to specify that sessions using this service will have Robust Header Compression applied and configure parameters supporting RoHC.

Entering this command results in the following prompt:

```
[context_name]hostname(config-ip-header-compression-rohc)#
```

HSGW Service RoHC Configuration Mode commands are defined in the HSGW Service RoHC Configuration Mode Commands chapter.

Local Port: Specify the UDP port that should be used for communications between the Packet Control Function (PCF) and the HSGW.

Important The UDP port setting on the PCF must match the local-port setting for the HSGW service on the system in order for the two devices to communicate.

Source Violation: This function is intended to allow the operator to configure a network to prevent problems such as when a user gets handed back and forth between two HSGWs a number of times during a handoff scenario.

This function operates in the following manner:

When a subscriber packet is received with a source address violation, the system increments both the IP source-violation reneg-limit and drop-limit counters and starts the timer for the IP-source violation period. Every subsequent packet received with a bad source address during the IP-source violation period causes the reneg-limit and drop-limit counters to increment.

For example, if reneg-limit is set to 5, then the system allows 5 packets with a bad source address (source violations), but on the 5th packet, it re-negotiates PPP.

If the drop-limit is set to 10, the above process of receiving 5 source violations and renegotiating PPP occurs only once. After the second 5 source violations, the call is dropped. The period timer continues to count throughout this process.

If the configured source-violation period is exceeded at any time before the call is dropped, the reneg-limit counter is checked. If the reneg-limit counter is greater than zero (0), the reneg-limit is decremented by 1. If the reneg-limit counter equals zero, the drop-limit is decremented by half.

Example

The following command specifies a UDP port of 3950 for the HSGW service to use to communicate with the PCF on the A10/A11 interface:

```
ip local-port 3950
```

The following command sets the drop limit to *15* and leaves the other values at their defaults:

```
ip source-violation drop-limit 15
```

lifetime

Specifies how long an A10 connection can exist before its registration is considered expired.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
lifetime time
[ default | no ] lifetime
```

default

Resets the lifetime value to the default setting of 1800 seconds.

no

Specifies that an A10 connection can exist for an infinite amount of time.

time

Specifies the time (in seconds) that an A10 connection can exist before its registration is considered expired as an integer from 1 through 65534. Default: 1800

Usage Guidelines

Use this command to set a limit to the amount of time that a subscriber session can remain up whether or not the session is active or dormant. If the lifetime timer expires before the subscriber terminates the session, the connection is terminated automatically.

Example

The following command specifies a time of *3600* seconds (1 hour) for subscriber sessions on this HSGW service:

```
lifetime 3600
```

max-retransmissions

Configures the maximum number of times the HSGW service will attempt to communicate with an eAN/PCF before it marks it as unreachable.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
max-retransmissions count
default max-retransmissions
```

default

Resets the maximum number of allowed retransmissions to the default value of 5.

count

Specifies the maximum number of times the HSGW service will attempt to communicate with an eAN/PCF before it marks it as unreachable.

count is an integer from 1 through 1000000. Default: 5

Usage Guidelines

Use this command to limit the number of retransmissions to an eAN/PCF before marking it as unreachable. If the value configured is reached, the call is dropped.

Example

The following command configures the maximum number of retransmissions for the HSGW service to *3*:

```
max-retransmissions 3
```

mobile-access-gateway

Identifies the mobile access gateway (MAG) context through which MIPv6 calls are to be routed.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

mobile-access-gateway context *context_name* **[mag-service** *service_name* **]**
no mobile-access-gateway context

no

Removes the configured MAG context route from this service.

context *context_name* [mag-service *service_name*]

Specifies the name of the context and, optionally, the service through which MIPv6 sessions are to be routed.

context_name is an existing context expressed as an alphanumeric string of 1 through 79 characters.

service_name is an existing MAG service expressed as an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to specify where MIPv6 sessions are routed through this service.

Example

The following command identifies the MAG context *MAG1* as the context through which MIPv6 sessions are to be routed and further narrows the route by specifying the service name (*mag_serv3*):

```
mobile-access-gateway context MAG1 mag-service mag_serv3
```

network-initiated-qos

Enables the use of network initiated QoS functionality.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

[default | no] network-initiated-qos

default

Returns the command to its default setting of enabled.

no

Disables the ability to use network initiated QoS functionality.

Usage Guidelines

Use this command to enable or disable support for network initiated QoS functionality. Network initiated QoS is enabled by default.

When network initiated QoS functionality is enabled, if the vendor specific network control protocol (VSNCP) protocol configuration options (PCO) arrive from the UE with the BCM set, the HSGW CCR-I includes the Network-Request-Support AVP. If the PCRF behavior returns a BCM of MS+NW when this AVP is received, then flows originating from the network (RSVP Resv) would be triggered upon a PCC-Rule install.

plmn id

Configures Public Land Mobile Network identifiers used to determine if a mobile station is visiting, roaming or belongs to this network.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

plmn id mcc *number* **mnc** *number*

mcc *number* mnc *number*

mcc *number*: Specifies the mobile country code (MCC) portion of the PLMN identifier as an integer fromn 100 through 999.

mnc *number*: Specifies the mobile network code (MNC) portion of the PLMN identifier as a 2- or 3-digit integer from 00 through 999.

Usage Guidelines

The PLMN identifier is used to aid the HSGW service in the determination of whether or not a mobile station is visiting, roaming, or home. Multiple P-GW services can be configured with the same PLMN identifier. Up to five PLMN IDs can be configured for each P-GW Service. The configured IDs are used in Diameter-EAP-Request messages (as a Visited-Network-Identifier AVP).

Example

The following command configures the PLMN identifier with an MCC of *462* and MNC of *2*:

```
plmn id mcc 462 mnc 02
```

policy overload

Specifies how an HSGW service should handle overload conditions.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
policy overload { redirect address [ weight weight_num ] [ address2 [ weight
weight_num ] ... address16 [ weight weight_num ] ] | reject [ use reject-code
{ admin-prohibite | insufficient-resources } ] }
default policy overload
no policy overload [ redirect address [ address2 ] ... [ address16 ]
```

default

Returns the command to it default setting of "reject" with the "admin-prohibited" code.

no

Removes a specified "redirect address" from this service.

redirect *address* [weight *weight_num*] [*address2* [weight *weight_num*] ... *address16* [weight *weight_num*]]

This option enables a redirect policy for overloading conditions. When a redirect policy is invoked, the HSGW service rejects new sessions with an A11 Registration Reply Code of 88H (unknown HSGW address) and provides the IP address of an alternate HSGW. This command can be issued multiple times.

address: The IP address of an alternate HSGW expressed in IPv4 dotted decimal notation. Up to 16 IP addresses can be specified either in one command or by issuing the redirect command multiple times. If you try to add more than 16 IP addresses to the redirect policy the CLI issues an error message. If you specify an IP address and weight that already exists in the redirect policy the new values override the existing values.

weight *weight_num*: When multiple addresses are specified, they are selected in a weighted round-robin scheme. Entries with higher weights are more likely to be chosen. If a weight is not specified, the entry is automatically assigned a weight of 1 (default). *weight_num* must be an integer value from 1 through 10.

reject [use reject-code { admin-prohibite | insufficient-resources }]

This option will cause any overload traffic to be rejected. The HSGW sends an A11 Registration Reply Code of 82H (insufficient resources).

use-reject-code admin-prohibited: When this keyword is specified and traffic is rejected, the error code admin prohibited is returned instead of the error code "insufficient resources". This is the default behavior.

use-reject-code insufficient-resources: When this keyword is specified and traffic is rejected, the error code "insufficient resources" is returned instead of the error code admin prohibited.

Usage Guidelines

Policies can be implemented to dictate HSGW service behavior for overload conditions.

The system invokes the overload policy if the number of calls currently being processed exceeds the licensed limit for the maximum number of sessions supported by the system.

The system automatically invokes the overload policy when an on-line software upgrade is started.

Use the **no policy overload** command to delete a previously configured policy. If after deleting the policy setting you desire to return the policy parameter to its default setting, use the **default policy** command.

The chassis is shipped from the factory with the policy options overload disabled

Example

The following command configures the HSGW service to redirect overload traffic to two IPv4 addresses, one priority weighted *1* and the other priority weighted *5*:

```
policy overload redirect 209.165.200.229 weight 1 209.165.201.5 weight 5
```

profile-id-qci-mapping

Associates a configured mapping table for RP QoS Profile ID to LTE QoS Class Index (QCI) mapping with this service.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
profile-id-qci-mapping name
no profile-id-qci-mapping [ name ]
```

no

Removes all profile maps or a specific profile map from this service.

name

Specifies the name of an existing Profile ID - QCI Mapping table to be associated with this service as an alphanumeric string of 1 through 63 characters.

Usage Guidelines

Use this command to associate the HSGW service with a configured Profile ID - QCI Mapping table. The table is configured in the Global Configuration Mode using the **profile-id-qci-mapping-table** command.

Example

The following command associates a Profile ID - QCI Mapping table named *table3* with this service:

```
profile-id-qci-mapping table3
```

registration-deny

Configures parameters related to registration rejection.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
registration-deny { handoff connection-setup-record-absent | newcall
connection-setup-record-absent } [ use-deny-code { poorly-formed-request
 | reason-unspecified } ]
[ default | no ] registration-deny { handoff connection-setup-record-absent
 | newcall connection-setup-record-absent }
```

default | no

Returns the command to its default settings.

handoff connection-setup-record-absent

When enabled, the HSGW denies or discards handoff R-P sessions that do not have an Airlink Connection Setup record in the A11 Registration Request.

Default is disabled. Default HSGW behavior is to accept such requests.

newcall connection-setup-record-absent

When enabled, the HSGW denies or discards new R-P sessions that do not have the Airlink Connection Setup record in the A11 Registration Request.

Default is disabled. Default HSGW behavior is to accept such requests.

use-deny-code { poorly-formed-request | reason-unspecified }

Sets the specified Registration Deny Code when denying a new call or handoff because of a missing connection setup record.

Usage Guidelines

Use this command to configure parameters relating to the rejection of registration requests.

Example

The following command denies registration for registration requests missing the connection setup record and replies with a use deny code of "poorly formed request":

```
registration-deny handoff connection-setup-record-absent use-deny-code
poorly-formed-request
```

retransmission-timeout

Configures the maximum allowable time for the HSGW service to wait for a response from the eAN/PCF before it attempts to communicate with the eAN/PCF again (if the system is configured to retry the PCF), or marks the eAN/PCF as unreachable.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
retransmission-timeout time
[ default | no ] retransmission-timeout
```

default

Resets the timeout setting to the default value of 3.

no

Deletes a previously configured timeout value.

time

Specifies the maximum allowable time (in seconds) for the HSGW service to wait for a response from the eAN/PCF before it: a) attempts to communicate with the eAN/PCF again (if the system is configured to retry the PCF), or b) marks the eAN/PCF as unreachable.

time is an integer from 1 through 1000000. Default: 3

Usage Guidelines

Use the retransmission timeout command in conjunction with the **max-retransmissions** command in order to configure the HSGW service's behavior when it does not receive a response from a particular PCF.

Example

The following command configures a retransmission timeout value of *5* seconds:

```
retransmission-timeout 5
```

rsvp

Configures resource reservation protocol (RSVP) parameters for this HSGW service in support of the network initiated QoS feature.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
rsvp { max-retransmissions count | retransmission-timeout seconds }
[ default | no ] rsvp { max-retransmissions | retransmission-timeout }
```

default

Resets the maximum number of allowed retransmissions to the default value of 5 or the timeout setting to the default value of 3.

no

Disables the feature.

max-retransmissions *count*

Specifies the maximum retransmission count of RP control packets as an integer from 1 through 1000000. Default: 5

retransmission-timeout *seconds*

Specifies the maximum amount of time (in seconds) to allow for retransmission of RP control packets as an integer from 1 through 1000000. Default: 3

Usage Guidelines

Use this command to set RSVP parameters for this HSGW service in support of the network initiated QoS feature.

Example

The following command configures the maximum number of retransmissions to *3*:

```
rsvp max-retransmissions 3
```

setup-timeout

Specifies the maximum amount of time allowed for session setup.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
setup-timeout seconds
[ default| no ] setup-timeout
```

default

Resets the command to the default value of enabled with a timeout of 60 seconds.

no

Disables the feature.

seconds

Specifies the maximum amount of time (in seconds) to allow for setup of a session in this service as an integer from 1 though 1000000. Default: 60

Usage Guidelines

Use this command to set the maximum amount of time allowed for setting up a session.

Example

The following command sets the maximum time allowed for setting up a session to 5 minutes (300 seconds):

```
setup-timeout 300
```

spi remote-address

Configures the security parameter index (SPI) between the HSGW service and the evolved Access Network/evolved Packet Control Function (eAN/ePCF). This command also configures the redirection of calls based on the PCF zone.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hsgw-service)#
```

Syntax Description

```
spi remote-address { pcf_ip_address | ip_addr_mask_combo } spi-number number {
encrypted secret enc_secret | secret secret } [ description string ] [
hash-algorithm { md5 | rfc2002-md5 } ] [ replay-protection { nonce |
timestamp } ] [ timestamp-tolerance tolerance ] [ zone zone_id ]
no spi remote-address pcf_ip_address spi-number number
```

pcf_ip_address | *ip_addr_mask_combo*

pcf_ip_address: Specifies the IP address of the ePCF. *pcf_ip_address* is an IP address expressed in IPv4 dotted decimal notation or IPv6 colon separated notation.

ip_addr_mask_combo: Specifies the IP address and mask bits of the PCF. *ip_addr_mask_combo* must be specified using the form "IP Address/Mask Bits" where the IP address must in IPv4 dotted-decimal or IPv6 colon-separated notation, and the mask bits are a numeric value corresponding to the number of bits in the subnet mask.

spi-number *number*

Specifies the SPI which indicates a security context between the PCF and the HSGW as an integer from 256 through 4294967295.

encrypted secret *enc_secret* | secret *secret*

Configures the shared-secret between the HSGW service and the PCF. The secret can be either encrypted or non-encrypted.

encrypted secret *enc_secret*: Specifies the encrypted shared key (*enc_secret*) between the PCF and the HSGW service. *enc_secret* must be between 1 and 236 alpha and/or numeric characters and is case sensitive.

secret *secret*: Specifies the shared key (secret) between the PCF and the HSGW services. *secret* must be between 1 and 127 alpha and/or numeric characters and is case sensitive.

The **encrypted** keyword is intended only for use by the chassis while saving configuration scripts. The system displays the **encrypted** keyword in the configuration file as a flag that the variable following the **secret** keyword is the encrypted version of the plain text secret key. Only the encrypted secret key is saved as part of the configuration file.

description *string*

This is a description for the SPI expressed as an alphanumeric string of 1 through 31 characters.

hash-algorithm { md5 | rfc2002-md5 }

Specifies the hash-algorithm used between the HSGW service and the PCF. Default: md5

md5: Configures the hash-algorithm to implement MD5.

rfc2002-md5: Configures the hash-algorithm to implement keyed-MD5.

replay-protection { nonce | timestamp }

Specifies the replay-protection scheme that should be implemented by the HSGW service. Default: timestamp

nonce: Configures replay protection to be implemented using NONCE (Number ONCE).

timestamp: Configures replay protection to be implemented using timestamps.

timestamp-tolerance *tolerance*

Specifies the allowable difference (in seconds) between timestamps as an integer from 0 through 65535. If the difference is exceeded, the session will be rejected. If set to 0, timestamp tolerance checking is disabled at the receiving end. Default: 60

zone *zone_id*

Specifies the different PCF zones to configure in HSGW service. Mapping of a zone-number to a set of HSGWs can be done per HSGW service basis.

zone_id is an integer value from 1 through 32. A maximum of 32 PCF zones can be configured for a HSGW service.

Usage Guidelines

An SPI is a security mechanism configured and shared by the PCF and the HSGW service. Please refer to *IETF RFC 2002: IP Mobility Support* for additional information.

Multiple SPIs can be configured if the HSGW service is communicating with multiple eAN/ePCFs.

Important The SPI configuration on the PCF must match the SPI configuration for the HSGW service on the system in order for the two devices to communicate properly.

This command used with the **zone** keyword redirects all calls on the basis of PCF zone to the specific HSGW on the basis of parameters configured using the **policy pcf-zone-match** command.

Example

The following command configures the HSGW service to use an SPI of *256* when communicating with a PCF with the IP address *209.165.201.2*. The key that would be shared between the PCF and the HSGW service is *q397F65*.

```
spi remote-address 209.165.201.2 spi-number 256 secret q397F65
```

The following command creates the configured SPI of *400* for an PCF with an IP address of *209.165.202.128* and zone id as *11*:

```
spi remote-address 209.165.202.128 spi-number 400 zone 11
```

ue-initiated-qos

Configures the HSGW behavior for UE initiated QoS requests.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

[default | no] ue-initiated-qos

default

Returns the HSGW to the default behavior, where UE initiated QoS requests are accepted and forwarded to the PCRF via Gxa interface.

no

Enables rejection of UE initiated QoS request for dedicated bearer in HSGW service. HSGW does not forward the request to the PCRF over Gxa and instead rejects the UE initiated QoS immediately.

Usage Guidelines

Use this command to enable or disable support for UE initiated QoS functionality.

By default, UE initiated QoS requests are accepted and forwarded to the PCRF via Gxa interface. If PCRF rejects the UE initiated QoS, UE request is rejected.

This command allows rejection of UE initiated QoS request for dedicated bearer in HSGW service. HSGW does not forward the request to the PCRF over Gxa and instead rejects the UE initiated QoS immediately.

Example

The following command rejects UE-initiated QoS request for dedicated bearer in HSGW service:

no ue-initiated-qos

unauthorized-flows

Configures the service to wait a specified number of seconds before triggering a QoS update to downgrade an unauthorized flow.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration

configure > **context** *context_name* > **hsgw-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hsgw-service)#`

Syntax Description

`unauthorized-flows qos-update wait-timeout` *`seconds`*
`[ default | no ] unauthorized-flows qos-update wait-timeout`

default

Returns the command to its default setting.

no

Removes the configure wait-timeout setting for this service.

qos-update wait-timeout *seconds*

Specifies the number of seconds to wait before triggering the QoS update to downgrade the unauthorized flow as an integer from 1 through 65534.

Usage Guidelines

Use this command to specific a wait timeout trigger for flows that are unauthorized by policy rules received via the Gxa interface from the PCRF. When the wit timer expires, the HSGW triggers a QoS update to downgrade the unauthorized flow.

Example

The following command configures the HSGW service to apply the wait time of *30* seconds after receiving an flow unauthorized by the PCRF:

```
unauthorized-flow qos-update wait-timeout 30
```

CHAPTER 40

HSGW Service RoHC Configuration Mode Commands

The HSGW Service RoHC Configuration Mode is used to configure Robust Header Compression (RoHC) parameters for the service.

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration > HSGW Service RoHC Configuration

configure > **context** *context_name* > **hsgw-service** *service_name* > **ip header-compression rohc**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ip-header-compression-rohc)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- cid-mode, on page 1151
- end, on page 1152
- exit, on page 1153
- mrru, on page 1153
- profile, on page 1154

cid-mode

This mode allows you to configure options that apply during RoHC compression for the service.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration > HSGW Service RoHC Configuration

configure > **context** *context_name* > **hsgw-service** *service_name* > **ip header-compression rohc**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ip-header-compression-rohc)#
```

Syntax Description

cid-mode { large | small } max-cid *integer*
default cid-mode

default

Reset all options in the RoHC Profile Compression Configuration mode to their default values.

large

Use large packets with optional information for RoHC

small

This is the default packet size.

Use small RoHC packets.

max-cid *integer*

Specifies the highest context ID number to be used by the compressor as an integer from 0 through 15 when small packet size is selected, and 0 through 31 when large packet size is selected. Default: 15

Usage Guidelines

Use this command to set the RoHC packet size and define the maximum

Example

The following command sets large RoHC packet size and sets the maximum CID to *28*:

cid-mode large max-cid 28

The following command sets the cid-mode to the default settings of small packets and max-cid 0:

default cid-mode

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines

Use this command to return to the Exec mode.

exit

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

exit

Usage Guidelines

Use this command to return to the parent configuration mode.

mrru

Specifies the size of the largest reconstructed reception unit that the decompressor is expected to reassemble from segments. The size includes the CRC. If maximum received reconstructed unit (MRRU) is negotiated to be 0, no segment headers are allowed on the channel.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration > HSGW Service RoHC Configuration

configure > **context** *context_name* > **hsgw-service** *service_name* > **ip header-compression rohc**

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-ip-header-compression-rohc)#`

Syntax Description

mrru *num_octets*
default mrru

default

Resets the value of this command to its default setting of 0.

num_octets

Specifies the number of allowed octets for the MRRU as an integer from 0 through 65535. Default: 0

Usage Guidelines

Use this command to set the size, in octets, of the largest reconstructed reception unit that the decompressor is expected to reassemble from segments.

Example

The following command sets the largest reconstructed reception unit to 1024 octets:

mrru 1024

The following command resets the MRRU size to its default of 0 octets:

```
default mrru
```

profile

Specifies the header compression profiles to use. A header compression profile is a specification of how to compress the headers of a specific kind of packet stream over a specific kind of link. At least one profile must be specified.

Product

HSGW

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSGW Service Configuration > HSGW Service RoHC Configuration

configure > **context** *context_name* > **hsgw-service** *service_name* > **ip header-compression rohc**

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-ip-header-compression-rohc)#
```

Syntax Description

```
profile { [ esp-ip ] [ rtp-udp ] [ udp-ip ] [ uncompressed-ip ] }
default profile
```

default

Default: esp-ip rtp-udp udp-ip uncompressed-ip

Returns the RoHC profile configuration to its default setting.

esp-ip

Enables RoHC Profile 0x0003 which is for ESP/IP compression, compression of the header chain up to and including the first ESP header, but not subsequent subheaders.

rtp-udp

Enables RoHC Profile 0x0001 which is for RTP/UDP/IP compression

udp-ip

Enables RoHC Profile 0x0002 which is for UDP/IP compression; compression of the first 12 octets of the UDP payload is not attempted.

uncompressed-ip

Enables RoHC Profile 0x0000 which is for sending uncompressed IP packets.

Usage Guidelines

Use this command to specify the RoHC header compression profiles.

Example

The following command sets the profiles to use as *esp-ip* and *rtp-udp*:

```
profile esp-ip rtp-udp
```

CHAPTER 41

HSS Peer Service Configuration Mode Commands

Command Modes

The HSS Peer Service Configuration Mode is used to create and manage the Home Subscriber Server (HSS) Peer Service.

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Important The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

- auth-request, on page 1157
- diameter hss-dictionary, on page 1158
- diameter hss-endpoint, on page 1159
- diameter suppress, on page 1161
- diameter update-dictionary-avps, on page 1161
- dynamic-destination-realm, on page 1162
- end, on page 1163
- exit, on page 1164
- failure-handling, on page 1164
- request timeout, on page 1167
- zone-code-format, on page 1168

auth-request

Configures the number of authentication vectors the MME/SGSN requests in an Authentication-Information-Request (AIR) message to the HSS for each UE requiring authentication.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hss-peer-service)#`

Syntax Description

auth-request num-auth-vectors *num*
default auth-request num-auth-vectors

num-auth-vectors *num*

Specifies the number of vectors the MME/SGSN is requesting from the HSS as an integer.

num prior to Release 16, the valid range is 1 through 3. Default = 1.

num beginning with Release 16, the valid range is 1 through 5. Default = 1.

Usage Guidelines

Use this command to configure the number of authentication vectors the MME/SGSN requests in an Authentication-Information-Request (AIR) message to the HSS for each UE requiring authentication.

Receiving multiple vectors from the HSS for a given UE helps reduce the number of messages across the diameter connection plus provides the MME/SGSN with additional vectors for the UE in the event that the connection or the HSS id disabled.

Related Commands:

- To view the current number of requested vectors, execute the **show hss-peer-service service name** <*name*> command in the Exec mode.
- To set the minimum number (low watermark) of vectors to be maintained at all times, execute **min-unused-auth-vector** *min_num* command from the call control profile configuration mode. (SGSN only)
- For troubleshooting, check the number of free, used, or in-use vectors displayed in the output of the **show subscribers [gprs-only | sgsn-only] full** command. (SGSN only).

Example

The following command sets the number of requested vectors to 2:

auth-request num-auth-vectors 2

diameter hss-dictionary

Specifies the Diameter Credit Control dictionary for the HSS peer service.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

diameter hss-dictionary { custom1 | standard | standard-r9 } [eir-dictionary { custom1 | custom2 | standard | standard-r9 }]
default diameter hss-dictionary

default

Sets the dictionary to default **standard** for HSS peer service.

custom1

Sets the Diameter dictionary to a customer-specific HSS Diameter dictionary. Default: Disabled

standard

Sets the Diameter dictionary to the standard (3GPP release 8) HSS peer dictionary. Default: Disabled

standard-r9

Sets the Diameter dictionary to the standard HSS peer dictionary for 3GPP release 9. Default: Enabled

eir-dictionary { custom1 | custom2 | standard | standard-r9 }

Specifies that an Equipment Identity Register (EIR) dictionary is to be used in conjunction with the HSS Diameter dictionary.

custom1: Sets the EIR Diameter dictionary to a customer-specific EIR Diameter dictionary.

custom2: Sets 'custom2' as the EIR Diameter dictionary. **custom2** was created for use with the MME's S13 Additional IMEI Check feature.

standard: Sets the EIR Diameter dictionary to the standard HSS peer dictionary.

standard-r9: Sets the EIR Diameter dictionary to the standard HSS peer dictionary for release 9.

Usage Guidelines

Use this command to select the Diameter dictionary and, optionally, the EIR end-point dictionary, for the HSS peer service.

Example

The following command sets the Diameter dictionary to IETF RFC 4006 specific:

```
diameter hss-dictionary standard
```

The following command sets the special 'custom2' dictionary as the EIR dictionary:

```
diameter hss-dictionary standard eir-dictionary custom2
```

diameter hss-endpoint

Associates a preconfigured Diameter origin endpoint with this HSS peer service.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

```
diameter hss-endpoint endpoint_name [ eir-endpoint eir_endpoint_name ] [
auc-endpoint auc_endpoint_name ]
no diameter hss-endpoint
```

no

Removes previously associated Diameter origin endpoint from this HSS peer service.

endpoint_name

Identifies a preconfigured Diameter endpoint specific to the HSS interface. The endpoint must be present in all Diameter messages and is the endpoint that originates the diameter message.

endpoint_name is a preconfigured Diameter endpoint name expressed as an alphanumeric string of 1 through 63 characters.

eir-endpoint *eir_endpoint_name*

Identifies a preconfigured Diameter endpoint specific to the S13 or S13' Equipment Identity Register (EIR) interface.

eir_endpoint_name must be an existing Diameter endpoint expressed as an alphanumeric string of 1 through 63 characters.

auc-endpoint *auc_endpoint_name*

auc-endpoint Including this keyword option enables routing to an authentication center (AuC) as the endpoint in place of the hss-endpoint. If configured, all AIR messages are routed to this AuC-endpoint. If not configured, all AIR messages are sent to the configured HSS endpoint.

auc_endpoint_name Identifies the AuC endpoint and must be a unique endpoint name comprised of a string of 1 to 63 alphanumeric characters.

Usage Guidelines

Use this command to associated a Diameter origin endpoint to create a Diameter-based S6a or S6d (SGSN) interface association in this HSS peer service to provide AAA functionality to the EPS bearer context.

Optionally, use this command to associate a Diameter origin endpoint to create a Diameter-based S13 or S13' (SGSN) interface association in this HSS peer service to provide IMEI query capability between the MME and an EIR.

A second option, the **auc-endpoint** keyword, enables you to use this command to define an authentication center (AuC) as the routing endpoint in place of the hss-endpoint. If configured, all AIR messages are routed to this AuC endpoint. If not configured, all AIR messages are sent to the configured HSS endpoint.

Important The configuration of all endpoints is only valid when all necessary endpoint configuration has been completed. All endpoint listed above must also be defined as valid endpoints using the commands in the Diameter Endpoint configuration mode (refer to the *Diameter Endpoint Configuration Mode Commands* chapter in the *Command Line Interface Reference* manual) for more information on Diameter endpoint configuration parameters.

Example

The following command associates the preconfigured Diameter endpoint *hss_1* with this HSS peer service for HSS interface support.

```
diameter hss-endpoint hss_1
```

The following command enables use of an authentication center (AuC1) in place of an HSS server (HSS1) as an endpoint for Diameter originated messages:

```
diameter hss-endpoint HSS1 auc-endpoint AuC1
```

diameter suppress

Configures the MME to restrict the sending of the Notify-Request-Message to the HSS. By default, the Notify-Request-Message is sent to the HSS.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

```
[ no ] diameter suppress notify-request
```

no

Sets the command to the default value where the Notify-Request-Message is sent to the HSS.

Usage Guidelines

Use this command to restrict the MME from sending the Notify-Request-Message to the HSS. This can be used to control whether handover to non-3GPP access can occur.

diameter update-dictionary-avps

Specifies which release of 3GPP TS 29.272 is to be used for the HSS peer service.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

```
diameter update-dictionary-avps { 3gpp-r10 | 3gpp-r11 | 3gpp-r9 }
no diameter update-dictionary-avps
```

no

Sets the command to the default value where Release 8 ('standard') dictionary is used for backward compatibility of previous releases.

3gpp-r10

Configures the MME /SGSN to signal additional AVPs to HSS in support of Release 10 of 3GPP 29.272.

3gpp-r11

Configures the MME /SGSN to signal additional AVPs to HSS in support of Release 11 of 3GPP 29.272.

Using this keyword is necessary to enable the MME to fully support inclusion of the Additional Mobile Station ISDN (A-MSISDN) flag of the Feature List AVP in Update Location Request (ULR) messages sent over the S6a interface to the HSS at the time a UE Attaches. For more information about supporting A-MSISDN, refer to the information for the **a-msisdn** command in the Call-Control Profile configuration mode.

3gpp-r9

Configures the MME/SGSN to signal Release 9 AVPs to HSS.

Usage Guidelines

Use this command to configure the 3GPP release that should be supported for this HSS peer service.

This command is only applicable for the 'standard' diameter dictionary as defined in the **diameter hss-dictionary** command.

Example

After a command is issued to support the AVPs as defined by the various releases of the 3GPP 29.272 spec, use the following command to disable the support:

```
no diameter update-dictionary-avps
```

dynamic-destination-realm

Enables the MME to construct the destination realm using the MCC and MNC of foreign subscribers.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

[default | no] dynamic-destination-realm

default

Returns the configuration to the default setting, where the MME uses the configured peer realm as the destination realm.

no

Disables the dynamic destination realm configuration. This provides the same behavior as the **default** keyword.

Usage Guidelines

This command configures the MME to derive the EPC Home Network Realm/Domain based on the user's IMSI (MNC and MCC values) and use it as the Destination Realm in all diameter messages.

For a foreign subscriber, the MME does not know the HSS nodes in all the foreign PLMNs. In this case the MME routes S6a/S6d requests directed to foreign PLMNs via a Diameter Routing Agent (DRA) using only the destination realm. The DRA in turn routes the request to the correct HSS based on the destination realm. In order to accomplish this, the MME needs to dynamically construct requests to the DRA/HSS with a Destination Realm representing the foreign PLMN of the UE.

Refer to *Configuring Dynamic Destination Realm Construction for Foreign Subscribers* in Chapter 2 of the *MME Administration Guide* for more information about configuring this feature.

Example

The following command configures the MME to derive the desination realm for foreign subscribers based on the user's IMSI (MNC/MCC).

dynamic-destination-realm

end

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

Product

All

Privilege

Security Administrator, Administrator

Syntax Description

end

Usage Guidelines Use this command to return to the Exec mode.

exit

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

Product All

Privilege Security Administrator, Administrator

Syntax Description

```
exit
```

Usage Guidelines Use this command to return to the parent configuration mode.

failure-handling

Configures failure handling behavior in the event of a failure with the HSS peer service. It also defines the action on various error codes on the Diameter interface during authentication or session activities.

Product MME

SGSN

Privilege Security Administrator, Administrator

Command Modes Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

```
failure-handling { authentication-information-request |
check-identity-request| notify-request | purge-ue-request |
update-location-request } { diameter-result-code start_error_code [ to
end_error_code ] | request-timeout } action { continue | retry-and-terminate
 | terminate }
no failure-handling { authentication-information-request |
check-identity-request | notify-request | purge-ue-request |
update-location-request } diameter-result-code start_error_code [ to
end_error_code ]
default failure-handling { authentication-information-request |
check-identity-request | notify-request | purge-ue-request |
update-location-request } request-timeout
```

no

Removes the preconfigured failure handling procedures for calls in an HSS peer service.

default

Sets the default action for failure handling procedure for calls in an HSS peer service.

For default actions on Diameter result/error codes see the *Usage* section below.

authentication-information-request

Configures the MME-HSS service to handle the failures in an Auth-Information-Request message.

Configures the SGSN-HSS service to handle the failures in an Auth-Information-Request message.

check-identity-request

Configures the MME-HSS service to handle the failures in a Check-Identity-Information-Request message.

Configures the SGSN-HSS service to handle the failures in a Check-Identity-Information-Request message.

notify-request

Configures the MME-HSS service to handle the failures in a Notify-Request message.

This option is not supported on SGSN.

purge-ue-request

Configures the MME-HSS service to handle the failures in a Purge-UE-Request message.

Configures the SGSN-HSS service to handle the failures in a Purge-UE-Request message.

update-location-request

Configures the HSS peer service to handle the failures in an Update-Location-Request message.

diameter-result-code *start_error_code* [to *end_error_code*]

Configures the HSS peer service to handle the failures for various request message having specific single or range of Diameter result codes in a request message.

start_error_code specifies an individual error code for Diameter protocol as an integer from 3000 through 5999. This will be the starting of code if a range of error codes is specified with the optional keyword **to** *end_error_code*.

to *end_error_code* is used to specify a range of error codes to handle by this command. *end_error_code* specifies the end error code for Diameter protocol as an integer from 3000 through 5999.

request-timeout

Configures the HSS peer service to handle the failures for various request messages if response to that message is not received before timeout duration exhausted.

action { continue | retry-and-terminate | terminate }

Specifies the action to be taken on failure of any message as a policy for failure handling.

- **continue**: This option works differently for each system.

For the SGSN: On receipt of any error for MICR session request, the SGSN allows the HSS peer service to continue with the session procedure without any interruption. For all other request/message types, the SGSN behaves as it would if configured for the **retry-and-terminate** option.

For the MME: The MME does not support this option and if **continue** is included in the command, the MME behaves as it would if configured for the **retry-and-terminate** option.

For 12.0 and earlier releases the **continue** option in failure handling *on SGSN* for IMEI procedures has the same behavior as that of the **retry-and-terminate** option.

Important For releases after 14.0, the **continue** option for IMEI procedure *on SGSN* can be configured in case of timeout and error responses requests from HSS so that the requests will be re-tried on a second peer (if configured) and the call is continued. The configuration of **continue** option for IMEI procedure is as follows:

```
configure
 context <name>
 hss-peer-service <name>
 failure-handling check-identity-request request-timeout action continue

 failure-handling check-identity-request diameter-result-code <range1>
to <range2> action continue
 failure-handling check-identity-request diameter-result-code <range1>
action continue
 exit
 exit
 exit
```

- **retry-and-terminate**: On receipt of any error, once the configured condition (either the request timeout or receipt of the specified result code) occurs, the system retries sending the request (AIR/ULR/NOR/PUR/MICR) to another peer that is configured in the same endpoint. If no response is received for AIR or ULR from the second peer, then the system allows the HSS peer service to terminate the session.
- **terminate**: On receipt of any error, once the configured condition (either the request timeout or receipt of the specified result code) is met, the system allows the HSS peer service to immediately terminate the session (AIR/ULR/MICR) without any further action.

Usage Guidelines

Use this command to configure the failure handling behavior in the event of a communication failure with the HSS peer service.

The following are the default actions for Diameter result codes:

- For all protocol error codes 3000 to 3999, the default action is terminate. For all transient error codes 4000, 4001, 4004 to 4180, and 4182 to 4999, the default action is continue.
- For transient error codes 4002, 4003, and 4181, the default action is retry.
- For error code 4001, the default action is terminate.
- For permanent error codes 5000 to 5999, the default action is terminate

Example

The following command will allow HSS peer service to continue if any failure in Auth-Information-Request message occurred with Diameter error code *3050*:

```
failure-handling authentication-information-request diameter-result-code
 3050 action continue
```

request timeout

Configures the application request timeout between the HSS peer service and HSS node. The MME/SGSN waits for this duration before retransmitting the request to corresponding HSS node.

Product

MME

SGSN

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

`[context_name]host_name(config-hss-peer-service)#`

Syntax Description

request timeout *dur*
[no | default] request timeout

no

Disables the configured application request timeout value.

default

Sets the application request time out duration to default value of 300 seconds.

dur

Specifies the application request timeout duration (in seconds) as an integer from 1 through 300. The MME/SGSN will wait for this duration before retrying the request with corresponding HSS. Default: 20

Usage Guidelines

Use this command to set the waiting period for HSS peer service in seconds after which the request is deemed to have failed or system will resend the request.

Example

The following example configures the application request timeout duration to 20 seconds:

```
default request timeout
```

zone-code-format

Configures how the MME must interpret the received zone-code values from the HSS.

Product

MME

Privilege

Administrator

Command Modes

Exec > Global Configuration > Context Configuration > HSS Peer Service Configuration

configure > **context** *context_name* > **hss-peer-service** *service_name*

Entering the above command sequence results in the following prompt:

```
[context_name]host_name(config-hss-peer-service)#
```

Syntax Description

```
zone-code-format  { ascii-string }
[ default ] zone-code-format
```

default

Returns the command to the default setting, where the MME interprets the zone-code as an octet string.

ascii-string

Configures the MME to interpret the zone-code as an ascii string. This option is provided to maintain backward compatibility.

When configured as ascii-string, the MME interprets the received zone-code as an ASCII string (coded in hexadecimal representation) and converts it byte by byte to an integer value. For example, if the HSS sends the zone-code value as 3032, the MME converts this to 02 (ASCII value of 0 in Hex is 0x30, ASCII value of 2 in Hex is 0x32). With this configuration, the MME accepted zone-codes only within the range of 0 to 99.

Usage Guidelines

This new command specifies the format of the zone-code value received from HSS to MME. The MME uses this configuration to interpret and convert the received zone-code value to an integer value and validate it against the list of allowed zone-code configured for the zone-code restriction feature.

By default, the MME interprets the received zone-code value from HSS as a octet-string (2 bytes) which is coded in full hexadecimal representation. The MME converts the entire 2 byte octet string coded in hexadecimal to integer value and it uses the same for validation for zone-code restriction feature. For example, if the HSS sends the zone-code value as 3032, MME converts this to 12338 (which is the equivalent of 0x3032).

Example

The following command configures the HSS Peer Service to interpret the zone-code received from the HSS as an ASCII string.

```
zone-code-format ascii-string
```