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

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-broadcast*95* **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
```

terminal

Configures the Console port on the ASR 5000 SPIO card. This command is not supported 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

```
terminal [ carrierdetect { off | on } | databits { 7 | 8 } | flowcontrol
 { hardware { off | on } | none } | parity { even | none | odd } | speed
 { 115200 | 19200 | 38400 | 57600 | 9600 } | stopbits { 1 | 2 } ]
```

carrierdetect { off | on }

Specifies whether or not the console port is to use Data Carrier Detect (DCD) when connecting to a terminal.

Default: off

off: Do not use DCD.

on: Use DCD.

databits { 7 | 8 }

Specifies the number of data bits used to transmit and receive characters.

Default: **8**

7: Use 7 databits to transmit and receive characters.

8: Use 8 databits to transmit and receive characters.

flowcontrol { hardware { off | on } | none }

Specifies how the flow of data is controlled between the SPIO and a terminal.

Default: **none**

hardware: Enables or disables the use of hardware-based flow control

off: Disables the use of Ready to Send (RTS) and Clear to Send (CTS).

on: Enables the use of Ready to Send (RTS) and Clear to Send (CTS).

none: Disables the use of DCD, RTS and CTS.

parity { even | none | odd }

Specifies the type of error checking used on the port.

Default: none

even - Enables error checking by setting the parity bit to 1 (if needed) making the number of 1s in the data bits even.

none - Disables error checking.

odd - Enables error checking by setting the parity bit to 1 (if needed) making the number of 1s in the data bits odd.

speed { 115200 | 19200 | 38400 | 57600 | 9600 }

Specifies the flow of data in bits per second between the console port and terminal.

Default: **9600**

stopbits { 1 | 2 }

Specifies the number of stop bits between each transmitted character.

Default: **1**

1: Use one stop bit between each transmitted character.

2: Use two stop bits between each transmitted character.

Usage Guidelines Sets the SPIO Console port parameters for communication with the terminal device.

Example

The following command sets the SPIO Console port. The terminal must support these values.

```
terminal carrierdetect off databits 7 flowcontrol hardware on parity even
 speed 115200 stopbits 1
```

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.

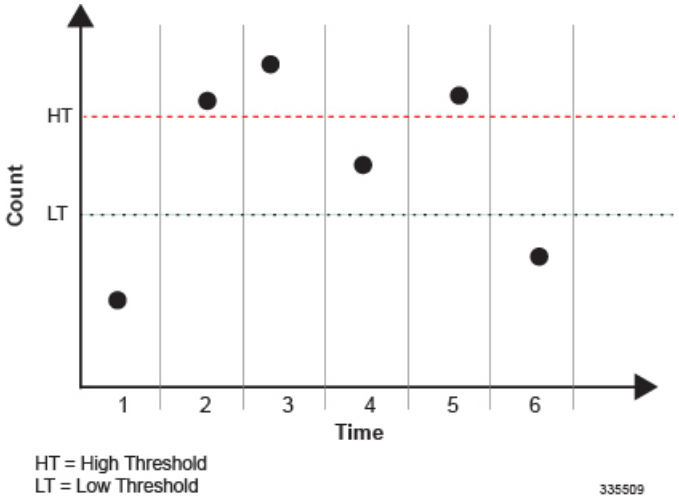
In the example shown in the figure below, this model generates alerts during period 2, 3, and 5 at the point where the count exceeded the high threshold.

- **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 | 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

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 1: 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 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)
```