SAMSUNG

Ubigate iBG series

Command Reference (VOL.1)

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INTRODUCTION

Purpose

Ubigate iBG™ Command Reference describes how to use the commands required for the operation system.

Document Content and Organization

This manual contains the following command Description and information:

Volume. 1

CHAPTER 1. Command Line Interface

CHAPTER 2. Clear Commands

CHAPTER 3. Configure Command (I)

Volume. 2

CHAPTER 3. Configure Command (II)

Volume. 3

CHAPTER 4. Debug Commands

CHAPTER 5. Show Commands

CHAPTER 6. Exit Commands

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CHAPTER 7. File Commands

CHAPTER 8. Password Commands

CHAPTER 9. Ping Commands

CHAPTER 10. Reboot Commands

CHAPTER 11. Save Commands

CHAPTER 12. Telnet Commands

CHAPTER 13. Test Commands

CHAPTER 14. Trace Commands

CHAPTER 15. Boot Monitor Mode Commands

CHAPTER 16. Hot-Swap Commands

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

NOTE

Indicates additional information as a reference.

Console Screen Output

- The lined box with '`Courier New`' font will be used to distinguish between the main content and console output screen text.
- '**`Bold Courier New`**' font will indicate the value entered by the operator on the console screen.

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Information for Product and Technical Support

For questions regarding the product technical supports:

http://www.samsungnetwork.com

Revision History

EDITION	DATE OF ISSUE	REMARKS
00	09. 2007.	First edition
01	01. 2008.	Modified application model/version information
02	05. 2008.	Added ADSL commands (Chapter 3, 4, 5)
03	08. 2008.	Added SSL-VPN commands
04	06. 2009.	Applied miscellaneous changes

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CHAPTER 1. Command Line Interface

This chapter introduces the command line interface (CLI) hierarchy and the conventions used to describe it. It also introduces the CLI navigation keys and methods, as well as the available help screens.

Command Types

This reference contains two types of commands: transition, or mode change, commands and standard commands.

Transition commands do not affect the system configuration. They are used to gain access to lower- or next-level commands in the CLI hierarchy. Following each transition command is a brief Description, a syntax and usage example, a list of next-level commands, and a list of systems for which the command is applicable.

In certain instances, transition commands will select an interface for configuration and access next-level commands. For example, the configure interface bundle dallas command access the configure interface bundle mode and selects or creates the bundle dallas.

Standard commands are used to configure the system. Following each standard command is a brief Description, a list of parameters and definitions, a syntax and usage example, a list of related commands:, and a list of systems for which the command is applicable.

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Context-Sensitive Commands

Some commands are context-sensitive. Once a module, bundle, or Ethernet port has been selected for configuration, all further configurations apply only to the selected interface. The following table shows a context-sensitive command string for an Orion system. In this example, T1 link 1 remains selected for configuration until you exit from the Router/configure/module/t1# prompt.

Context-Sensitive Command String	Example
Go into the configuration mode.	Router#configure terminal
Specify the type of interface (T1).	Router/configure#module t1
Choose the specific interface (T1 link 1).	Router/configure#module t1 1/0
From now on, all configuration commands are for T1 link 1 until you exit from module configuration or choose another T1 link.	Router/configure/module/t1(1/0)#

NOTE

Command strings that require identification of a specific interface are context-sensitive.

Command Conventions

Each command is briefly described and then followed by the complete syntax, which is essentially a map of the command that shows mandatory and optional parameters. A command example follows, and the systems for which the command applies are listed.
The following tables provide details of the conventions in this guide that are used for syntaxes, examples, and interfaces.

For Syntaxes	What it means
Normal type	Within syntaxes, ‘normal type’ represents required words that must be entered by the user-except when followed by a parameter setting that is enclosed in angled brackets. In that case, only enter the parameter setting enclosed in the angled brackets.

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(Continued)

For Syntaxes	What it means
Normal type	**Example 1**: Normal type only. In this example, the user enters the word or argument (module) appearing in the syntax in 'normal type.' Syntax: Module Command execution: Module **Example 2**: Normal type word or argument that is followed by a second normal type word or argument, which is followed by a parameter setting enclosed in angled brackets. In this example, the user enters the first word or argument 'connections,' appearing in normal type, and then only enters the value '4' of the second word or argument. Syntax: connections <n> Command execution: connections 4 In other words, the first occurrence of 'connections' must be entered because it is not followed by a setting enclosed in angled brackets. The second occurrence of the word 'connections' must NOT be entered because it is followed by a setting enclosed in angled brackets. This value of the setting must be entered to execute the command.
[a | b | c]	Normal brackets '[]' indicate optional keywords or arguments. A vertical bar ' | ' separates individual settings. Example: In this example, the user enters the word 'timeout;' must specify either for 'tcp' or 'udp' for a protocol type; and optionally enters a timeout value 'n.' Syntax: timeout protocol_type <tcp | udp> [seconds <n>] Command execution: timeout udp 3600

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(Continued)

For Syntaxes	What it means
<>	Angled brackets. All parameter settings are enclosed in angled brackets. The user is directed to choose an appropriate setting. In some cases, the parameter name accompanies the required setting.
[]	Optional parameter settings in each the syntax are indicated by normal brackets.

The following tables provide details of the conventions in this guide that are used for examples.

For Syntaxes	What it means
Normal type	Prompts and commands that are part of the main prompt are shown in normal type. Examples:: Router# Router/show#
Bold type	All character strings that a user must enter to execute a command are in bold type. Example: Router# **configure term**

Abbreviated Commands

You may enter commands by typing the first few characters of each word in a command string. The Router system recognizes the unique abbreviated entry and executes the command exactly as if you had entered it fully.
For example, to view the currently running system configuration, you may type **show running-config** at the Router# prompt. You may also type **dis con run** to get the same result. Similarly, you may abbreviate the optional parameter names required by some commands.

For example, a typical entry may be as follows:
mlppp mrru 1600 sequence short seg_threshold 1000 differential_delay 100 discriminator 10.1.100.22

To save time, you may type the following abbreviated string:
mlppp m 1600 seq short seg 1000 diff 100 dis 10.1.100.22

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Command History

The CLI maintains the list of entered commands. You can replay the list of previously executed commands by pressing the up-arrow key. The CLI stores a maximum of 100 commands and can be configured to a smaller value.

CLI Navigation

The **Tab**, **Esc**, and **Ctrl** keys may be used to move backwards or forwards in the CLI, edit entered command strings, or accelerate the command entry process. Global commands, such as **save** and **ping** may be executed from any level in the CLI hierarchy; they allow the user to execute commonly used commands without exiting their current configuration location.

You may use the Tab key to quickly enter each word of a command without typing its full name. For example, to enter the configure command, you may type its first two letters and then press **Tab** to see the entire word. Then, you may specify an item to configure by pressing the **Spacebar** and then pressing **Tab** repeatedly until the desired sub-command appears. Repeat this sequence for each successive sub-command string until the entire command string appears.

You may also use the other keystrokes shown in the followings during command entry. For example, to back up the cursor without deleting any characters, type **Ctrl-B**. To repeat the last command that you entered, type **Ctrl-P**. To go back several commands, type **Ctrl-P** repeatedly until the desired previous command appears. Or, you may go directly back to the main CLI# prompt from anywhere in the command hierarchy by typing **Ctrl-Z**.

```
# help edit
key stroke          -- action
----------          -- -----
TAB                 -- command completion
Esc-B               -- go back one word
Esc-F               -- forward one word
Esc-DEL             -- delete one word left to cursor
BackSpace           -- go back and delete one char
Ctrl-A              -- start of line
Ctrl-B / <-         -- go back one char
Ctrl-D / DEL        -- delete a char
```

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```
-- go up one level if empty command
Ctrl-E              -- end of line
Ctrl-F / ->       -- forward one char
Ctrl-K              -- delete line ahead of cursor
Ctrl-L              -- refresh line
Ctrl-N / DN ARROW   -- next command in history
Ctrl-P / UP ARROW   -- previous command in history
Ctrl-U              -- delete entire line
Ctrl-W              -- delete one word left to cursor
#
```

Command Help

Command help is available for navigating the CLI command hierarchy and for assistance with specific commands. You may obtain help by using one of the three commands described below.

Help

Type **help** at the main CLI prompt to see the basic Router system help information. Or, type **help** followed by a command name to view information about that command. The following 1 shows the help screen.

```
# help
?               -- show commands under this tree
exit [level]    -- exit(level nos) from the current tree
                -- 'exit' from "top level" terminates
CLI Ctrl-Z      -- exit to top level
tree            -- show tree under current node
type 'help edit' to see editing features
type 'help <cmd>' to get help for that command#
```


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Tree

You may view a tree that shows all CLI commands, or a tree that shows only the commands associated with the current command mode (or the routing mode for example). The following shows two command tree examples. If you type **tree** at the main (Router# or equivalent) prompt, the entire list of system commands appears. If you type **tree** within a command mode, such as Router/clear# **tree**, the commands associated with this command mode are showed.

```
# tree
xcli
|-- ping
|-- clear
| |-- cfg_file
| |-- arp
| |-- cfg_log
| |-- command_log
| |-- snmp_stats
| |-- counters
| |   |-- all
| |   |-- ethernet
| |   |-- ethernets
| |   |-- bundle
| |   |-- bundles
| |   |-- avc
| |   |-- avcs
| |   |-- tunnel
| |   |-- tunnels
| |-- interface
| |   |-- all
| |   |-- ethernet
Press any key to continue(q : quit) :
```

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Help Screen

To view help information for a command category, specific command, or a parameter, type the associated word and a question mark (?). For example, if you type a question mark at the main command prompt, the system command categories appear. The following shows a show of these top-level commands.

```
# ?
NAME
   xcli      -- This is root and not a command
SYNTAX
   COMMANDS <cr>
DESCRIPTION
   COMMANDS  -- Any of the following commands can be used

   clear     -- access clear commands
   configure -- configure from(flash/network/terminal)
   debug     -- accesses debug commands
   file      -- access file commands
   password  -- Change the user password
   ping      -- invoke ping
   reboot    -- reboot the system
   save      -- save configuration to(local / network)
   show      -- access show commands
   ssh       -- OpenSSH SSH client (remote login)
   telnet    -- open a telnet connection
   test      -- access test commands
   trace     -- trace route to destination address or host name
   #
```

NOTE

The default parameters for specific commands appear in parenthesis.

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Global Commands

All **show**, **ping**, and **save** commands are available from any level of the CLI. For example, the global **show** commands allow the user to view current configuration settings, alarms, or tests without exiting the configure mode. In the following, a user has showed a bundle summary while configuring a new bundle.

Similarly, the **ping** and **save** commands are available at any level of the CLI command. The **ping** command verifies connectivity between the Router system and other network hosts; access to the **save** commands from anywhere in the CLI ensures that your configurations may be saved periodically.

```
#Router/file# ls

WARNING :
Do not remove Compact Flash or reboot during this process

Contents of /cf0:
  size       date       time         name
--------    ------      -----    ----------
15733724  FEB-04-2006  13:51:22  iBG3026_Advanced_1.0.0.Z
    1908  FEB-01-2006  11:56:18  system.cfg
    2918  FEB-05-2004  07:12:30  oldsystem.cfg

Total bytes: 15739512
Bytes Free on /cf0: 48322560

#Router#show configuration
   : Select type of 'configuration'(Hit Tab)
#Router#show running-config
Please wait… (up to minute)

spanning-tree mst config
  exit mst
interface Ethernet 0/0
  ip address 90.90.90.2 255.255.255.0
  qos
 . . .
```

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Privilege Levels

The CLI supports four levels of privileges. PRIVILEGE_ADMIN is the highest and PRIVILEGE_NORMAL being lowest. The order of privileges is below:

1 PRIVILEGE_ADMIN	1 Highest level
2 PRIVILEGE_CONFIGURE	2
3 PRIVILEGE_TEST	3
4 PRIVILEGE_NORMAL	4 Lowest level

Mode Independent Commands

CLI supports omnipresent commands, that is, commands that can be executed at any level. These commands include:

- show
- clear
- save
- ping
- telnet
- trace

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CHAPTER 2. Clear Commands

Use the **clear** commands to clear counters, files, logs, statistics, tables, and other data stored by Router systems. The **clear** command clears data for both logical and physical interfaces as well as system features such as IP multiplexing, packet filtering, QoS, SNMP, and VLAN forwarding.

2.1 clear arp

This command clears entries from the address resolution protocol (ARP) table. Permanent ARP entries are not flushed. After the ARP table is cleared, the system automatically adds new entries as it learns the IP and MAC addresses of connected network hosts.

syntax

arp

default

None.

example

```
Router/clear# arp
```

The example above clears the ARP table. To view the contents of the ARP table before or after clearing, use the show arp command.

related commands

show arp

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applicable models/versions

All models.

command modes

Router/clear

2.2 clear bgp ASN

Use this command to reset a BGP connection for all peers in a specified ASN (Autonomous System Number).

syntax

bgp ASN [in|out|SOFT[in|out]]

Parameter	Description
ASN	<1-65535> Specifies the AS Number for which all routes will be cleared. The range is <1-65535>
SOFT[in|out]	soft reconfiguration of both incoming and outgoing routes for the AS

default

None.

example

```
Router/clear# bgp 100
Router/clear# bgp 100 soft in
Router/clear# bgp ipv6 100 soft in
```

related commands

show bgp

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.3 clear bgp X:X::X:X

Use this command to reset a BGP connection for a specific IP address.

syntax

bgp A.B.C.D [in|out|SOFT]

Parameter	Description
X:X::X:X	Specifies the IPv6 address of the BGP route to be cleared
in	soft reconfiguration inbound update for the route address
out	soft reconfiguration outbound update for the route address
SOFT	soft [in|out] soft reconfiguration inbound | outbound update for the route address

default

None.

example

```
Router/clear# bgp 3ffe::12 soft out
Router/clear# bgp ipv6 3ffe::10 in
```

related commands

clear bgp all, show bgp

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.4 clear bgp all

Use this command to clear the BGP connection of all peers or a specified IPv4 or IPv6 peer.

syntax

bgp all [in|out|SOFT]

Parameter	Description
all	clears both incoming and outgoing bgp routes.
in	Indicates that incoming advertised routes will be cleared.
out	Indicates that outgoing advertised routes will be cleared.
SOFT	soft [in|out] Indicates that both incoming and outgoing routes will be cleared.

default

None.

example

```
Router/clear# bgp all
Router/clear# bgp all in
Router/clear# bgp all soft out
```

related commands

show ip bgp

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.5 clear bgp external

Use this command to reset all external BGP connections.

syntax

bgp external [in|out|SOFT[in|out]]

Parameter	Description
external	Clears all external peers' routes.
in	Incoming advertised routes will be cleared.
out	Outgoing advertised routes will be cleared.
SOFT[in|out]	Soft reconfiguration incoming and/or outgoing routes.

default

None.

example

```
Router/clear# bgp external out
```

related commands

clear bgp all

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.6 clear bgp peer-group

Use this command to reset BGP connections for all members of a peer group.

syntax

bgp peer-group pg-name <pg_name> [in|out|SOFT[in|out]]

Parameter	Description
pg-name	Specifies the name of the peer group for which members' routes will be cleared
in	Indicates that incoming advertised routes will be cleared
out	Indicates that outgoing advertised routes will be cleared
SOFT[in|out]	soft reconfiguration of incoming and | or outgoing routes

default

None.

example

```
Router/clear# bgp peer-group Peer1 out
```

related commands

clear bgp all

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.7 clear call voice

Use this command to clear a voice call.

syntax

clear call voice { all | h323 | id < *call context identifier*> | pots | sip | voip }

Parameter	Description
All	Clear all voice calls
H323	Clear all h323 voice calls
ID	Clear only calls with a specific ID
Pots	Clear all pots voice calls
Sip	Clear all sip voice calls
voip	Clear all voip (h323/sip) voice calls

example

The following command is used to clear all voice calls.

```
Router# clear all voice calls
```

applicable models/versions

All models.

command modes

Any command mode

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2.8 clear call-admission threshold

Use this command to reset the call-admission threshold statistics data.

syntax

clear call-admission threshold {stats | total-calls [<value>] | interface <interface name> <interface number> int-calls total-calls [<value>]}

Parameter	Description
Stats	Reset all call threshold statistics data.
Total-calls	Call count is reset when the call volume reaches the <value>.
<value>	Call volume - Range 0~10000 - Default 0
Interface	Call count statistics are reset when the call volume is reached for interface.
Interface name	Interface name or type. ex) ethernet
Interface number	Interface number for interface name
Int-calls	Call count for interface
Value	Call volume for interface

example

The following command is used to clear the call threshold statistics.

```
Router# clear call-admission threshold stats

The following command is used to clear the all call volume.
Router# clear call-admission threshold total-calls

The command is used to trigger clearing when the call count
of ethernet interface 0/4 reaches 3000.
Router# clear call-admission threshold interface ethernet
0/4 int-calls total-calls 3000
```


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related commands

call-admission threshold, show call-admission threshold

applicable models/versions

All models.

command modes

Any command mode.

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2.9 clear call-admission treatment stats

Use this command to reset the call-admission treatment statistics data.

syntax

clear call-admission treatment stats

example

The following command is used to clear the treatment statistics.

```
Router# clear call-admission treatment stats
```

related commands

call-admission treatment on, call-admission treatment action, call-admission treatment cause-code, call-admission treatment isdn-reject, show call-admission treatment

applicable models/versions

All models.

command modes

Any command mode.

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2.10 clear cfg_file

This command clears the configuration file. The default configuration file is system.cfg.

syntax

cfg_file [filename]

default

None.

example

```
Router/clear# cfg_file backup.cfg
```

related commands

show running-config, show startup-config

applicable models/versions

All models.

command modes

Router/clear

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2.11 clear cfg_log

This command clears the system configuration log.
The configuration log stores a history of system configuration events; it also records the use of either the **save local** or **save network** commands.

syntax

cfg_log

default

None.

example

```
Router/clear# cfg_log
```

related commands

configure network, show configuration log, show running-config, show startup-config, save local

applicable models/versions

All models.

command modes

Router/clear

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2.12 clear command_log

This command clears all information in the command log.

syntax

command_log

default

None.

example

```
Router/clear# command_log
```

related commands

show system logging commandLog

applicable models/versions

All models.

command modes

Router/clear

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2.13 clear counters

This command resets the specified interface counter(s).

syntax

counters <all | avc <avc name>| avcs | bundle bundle_name <bundle name>| bundles | ethernet ethernet_slot_port <slot/port>| ethernets | tunnel tunnel_name <tunnel name> | tunnels>

Parameter	Description
all	Resets all the interface counters.
avc	Resets the DTE-to-DTE MFR aggregated virtual circuit (AVC) interface.
avcs	Resets all of the DTE-to-DTE MFR aggregated virtual circuit (AVC) interfaces.
bundle	Resets the counters of the specified bundled interface.
bundles	Resets the counters of all of the bundled interfaces.
ethernet	Resets the counters for the specified Ethernet slot and port.
ethernets	Resets the counters for all Ethernet interfaces.
tunnel	Resets the counters for the specified tunnel interface.
tunnels	Resets the counters for all of the tunnel interfaces.

default

None.

example

```
Router/clear# counters all
```

related commands

clear counters all, clear counters bundle, clear counters ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.14 clear counters all

This command clears all of the counters.

syntax

counters all

default

None.

example

```
Router/clear# counters all
```

related commands

clear counters tunnel, clear counters bundle, clear counters ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.15 clear counters avc

This command clears all of the counters for every CVC in the AVC and the counters for the AVC itself.

syntax

counters avc avc_name <*name*> dlci <n>

Parameter	Description
avc_name	The name of the aggregated virtual circuit (AVC).
dlci	DLCI number of the AVC to be cleared. The range is 16-1022.

default

None.

example

```
Router/clear# counters avc frame01 100
```

related commands

clear counters avcs, clear counters bundle, clear counters bundles, clear counters Ethernet, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.16 clear counters avcs

This command clears all of the counters for every CVC in all of the AVCs.

syntax

counters avcs

default

None.

example

```
Router/clear# counters avcs
```

related commands

clear counters avc, clear counters bundle, clear counters bundles, clear counters Ethernet, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.17 clear counters bundle

This command clears counters on a specific bundle.

syntax

counters bundle bundle_name <*name*>

Parameter	Description
bundle_name	Bundle on which transmission counters will be cleared.

default

None.

example

```
Router/clear# counters bundle Superior
```

The example above clears the counters on the bundle Superior. To view bundle configuration and status before or after clearing counters, use the show interface bundle command.

related commands

clear counters avc, clear counters bundles, clear counters Ethernet, show interface bundle, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.18 clear counters bundles

This command clears the counter on all interface bundles.

syntax

counters bundles

default

None.

example

```
Router/clear# counters bundles
```

related commands

clear counters avc, clear counters bundle, clear counters Ethernet, show interface bundles, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.19 clear counters Ethernet

This command clears the counters on an Ethernet port.

syntax

counters ethernet ifnum <slot/port>

Parameter	Description
ifnum	Ethernet slot/port on which counters will be cleared.

default

None.

example

```
Router/clear# counters ethernet 0/2
```

The example above clears the counters on Ethernet slot 0 port 2. To view port configuration and status before or after clearing counters, use the show interface ethernets command.

related commands

clear counters avc, clear counters bundle, clear counters bundles, show interface ethernet, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.20 clear counters Ethernets

This command clears the counters on all Ethernet ports.

syntax

counters ethernets

default

None.

example

```
Router/clear# counters ethernets
```

The example above clears the counters on all Ethernet ports. To view port configuration and status before or after clearing counters, use the show interface ethernets command.

related commands

clear counters avc, clear counters bundle, clear counters bundles, show interface ethernet, clear counters tunnel, clear counters tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.21 clear counters tunnel

This command clears all of the counters for the specified tunnel.

syntax

counters tunnel tunnel_name <*tunnel_name*>

Parameter	Description
tunnel_name	The name of the tunnel (up to eight characters).

default

None.

example

```
Router/clear# counters tunnel main
```

related commands

clear counters avcs, clear counters bundle, clear counters bundles, clear counters Ethernet

applicable models/versions

All models.

command modes

Router/clear

© SAMSUNG Electronics Co., Ltd.

2.22 clear counters tunnels

This command clears all of the counters for every tunnel.

syntax

counters tunnels

default

None.

example

```
Router/clear# counters tunnels
```

related commands

clear counters avcs, clear counters bundle, clear counters bundles, clear counters Ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.23 clear crypto ca certificates

This command clears either certificate for the specified serial number or both CA and self certificates for the specific CA server.

syntax

crypto ca certificates <serialnumber s_number <n> | ca-name ca_name <name>>

Parameter	Description
s_number	clear the certificate for this serial number
ca_name	clears both ca certificate and self certificate for this CA server.

default

None.

example 1

```
Router/clear# crypto ca certificates  serialnumber
61684B76000000000053
```

example 2

```
Router/clear# crypto ca certificates ca-name win2003
```

related commands

show crypto ca certificates all configure crypto ca.

applicable models/versions

All models

command modes

Router/clear

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2.24 clear crypto ca crl

This command clears certificate revocation list for specified CA server.

syntax

crypto ca crl [ca-name ca_name <name>]

Parameter	Description
ca_name	clear CRL (Certificate Revocation List) for this CA server.

default

None.

example

```
Router/clear# crypto ca crl ca-name win2003
```

related commands

show crypto crl all configure crypto crl

applicable models/versions

All models

command modes

Router/clear

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2.25 clear crypto ca key

This command clears the private key for specified key-id.

syntax

crypto ca key key-id key_id <value>

Parameter	Description
key_id	Specifies key identifier

default

None.

example

```
Router/clear# crypto ca key key-id key1
```

related commands

None.

applicable models/versions

All models

command modes

Router/clear

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2.26 clear crypto ike sa

This command clears either SA entries for a specified policy or all SA entries.

syntax

crypto ike sa <all | policy_name <policy-name>>

Parameter	Description
all	clears all IKE SA information.
policy_name	Specifes a policy name.

default

None.

example 1

```
Router/clear# crypto ike sa all
```

example 2

```
Router/clear# crypto ike sa ike7
```

related commands

clear crypto ipsec sa all, clear crypto ipsec sa ipsec7

applicable models/versions

All models.

command modes

Router/clear

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2.27 clear crypto ipsec sa

This command clears either IPsec SA entries for a specified policy or all IPSec SA entries.

syntax

crypto ipsec sa <all | policy_name <policy-name>>

Parameter	Description
policy_name	specifies a policy name
all	clears all IPSec SA entries.

default

None.

example 1

```
Router/clear# crytpo ipsec sa all
```

example 2

```
Router/clear# crytpo ipsec sa ipsec7
```

related commands:
clear crypto ike sa all, clear crypto ike sa ike7

applicable models/versions

All models.

command modes

Router/clear

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2.28 clear crypto statistics

This command clears all the crypto counters.

syntax

crypto statistics

default

None.

example

```
Router/clear# crypto statistics
```

related commands

show crypto statistics

applicable models/versions

All models.

command modes

Router/clear

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2.29 clear event_history

This command clears all the event history tables.

syntax

clear event_history

default

None.

example

```
Router# clear event_history

WARNING: Do you want to clear event history table?

Press 'y' to continue: y
```

related commands

configure event event_history, show event event_history

applicable models/versions

All models.

command modes

Router

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2.30 clear firewall statistics

This command clears the firewall statistics.

syntax

clear firewall statistics

default

None.

example

To clear the firewall statistics

```
Router# clear firewall statistics
```

related commands

show firewall statistics

applicable models/versions

All models.

command modes

Router/clear

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2.31 clear firewall connection

This command clears pre-established firewall connections, all or selectively.

syntax

clear firewall connection [all] [map map_name <map>] [srcip src_ip <ip_address>] [destip dest_addsss <ip_address>] [srcport src_port<1-65535>] [destport dest_port <1-65535>] [protocol protocol_name<protocoltype>]

Parameter	Description
all	Clear all firewall connections
map_name	Map name or self for self connection
src_ip	Specific source IP address
dest_ip	Specific destination IP address
src_port	Source port number <1 -65535>
dest_port	Destination port number <1 -65535>
Protocol_type	Protocol type (tcp/udp/icmp/ah/esp/gre/any)

default

None.

example

To clear all firewall connections

```
Router# clear firewall connection
```

related commands

show firewall connection
clear firewall statistics
clear firewall nat-translation

applicable models/versions

All models.

command modes

Router/clear

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2.32 clear firewall nat-translations

This command clears nat-enabled connections, all or selectively.

syntax

clear firewall nat-translations <all> |] [map map_name <map>] [srcip src_ip <ip_address>] [destip dest_address <ip_address>] [srcport src_port<1-65535>] [destport dest_port <1-65535>] [natip nat_ip_address<ip_address>][natport nat_port<1-65535>][protocol protocol_name<protocoltype>]

Parameter	Description
all	Clear all firewall nat-translation connections
map_name	Map name or self for self connection
src_ip	Specific source IP address
dest_ip	Specific destination IP address
drc_port	Source port number <1 -65535>
nat_ip_address	Nat-enabled IP address
nat_port	Nat-enabled port number<1 -65535>
protocol_name	Protocol type (tcp/udp/icmp/ah/esp/gre/any)

default

None.

example

To clear all firewall nat-translation connections

```
Router# clear firewall nat-translations all
```

related commands

show firewall nat-translations
clear firewall connection
clear firewall statistics

© SAMSUNG Electronics Co., Ltd.

applicable models/versions

All models.

command modes

Router/clear

2.33 clear fr invarp

This command clears inverse ARP data for all PVCs, PVCs on a specified bundle, or single PVCs.

syntax

fr invarp <bundle-name <*name*> [dlci dlci-id <n>] | all>

Parameter	Description
all	Clears inverse ARP data for all PVCs.
bundle-name	Specifies the name of the interface bundle.
dlci-id	DLCI number of frame relay PVC.

default

None.

example

Router/clear# fr invarp TNET dlci 128

related commands

clear fr lmistats, clear fr vcstats, show fr invarp, show fr invarp_int

applicable models/versions

All models

command modes

Router/clear

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2.34 clear fr lmistats

This command clears lmi (Local Management Interface) statistics from a configured bundle. LMI acts as management protocol between DTE and DCE.

syntax

fr lmistats bundle-name <bundle_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle.

default

None.

example

```
Router/clear# fr lmistats TNET
```

related commands

clear fr vcstats, show fr invarp, show fr invarp_int

applicable models/versions

All models

command modes

Router/clear

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2.35 clear fr vcstats

This command clears PVC statistics from a configured bundle.

syntax

fr vcstats bundle-name <bundle_name> dlci-id <n> [stat-type <n>]

Parameter	Description
bundle-name	Specifies the name of the interface bundle.
dlci-id	DLCI number of frame relay PVC.
stat-type	Type of statistics 1 → RXMON 2 → INJECT 3 → 1490 4 → all (default)

default

None.

example

```
Router/clear# fr vcstats Boston 22 3
```

related commands

clear fr vcstats, show fr invarp, show fr invarp_int

applicable models/versions

All models

command modes

Router/clear

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2.36 clear gmrp statistics

This command clears GMRP statistics for a given VLAN or all the VLANs configured on the Layer-2 switch.

syntax

gmrp statistics <all|vlanid VLAN-ID <n>> bridge 1

Parameter	Description
all	Clears GMRP statistics for all the VLANs. The default is for all the configured VLANs
VLAN-ID	Clear GMRP statistics for the particular VLAN_ID (vlanid <1 to 4094>).

default

None.

example

This example shows how to clear the GMRP statistics for a given VLAN 12.

```
Router/clear# gmrp statistics vlanid 12 bridge 1
Router/clear# gmrp statistics all bridge 1
```

related commands

show gmrp configuration, show gmrp machine, show gmrp statistics

applicable models/versions

All models.

command modes

Router/clear

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2.37 clear interface

This command accesses next-level commands for clearing counters on bundles, Ethernet ports, avc interfaces and tunnel interfaces.
The counters store data such as the number of packets and bytes sent and received, error packets received, collisions, and up/down states.

syntax

interface

default

None.

example

```
Router/clear# interface
```

next-level commands

clear interface all, clear counters avc, clear counter avcs, clear counters bundle, clear counters bundles, clear counter ethernet, clear counter Ethernets, clear counter tunnel, clear counter tunnels

related commands

show interface avc, show interface bundle

applicable models/versions

All models.

command modes

Router/clear

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2.38 clear interface all

This command accesses next-level commands for clearing counters on all bundles and all Ethernet ports.
The counters store data such as the number of packets and bytes sent and received, error packets received, collisions, and up/down states.

syntax

interface all

default

None.

example

```
Router/clear# interface all
```

related commands

clear interface avc(s), clear interface bundle(s), clear interface ethernet(s), clear interface tunnel(s)

applicable models/versions

All models.

command modes

Router/clear

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2.39 clear interface avc

This command clears all of the counters for every CVC in the AVC and the counters for the AVC itself.

syntax

interface avc avc_name <*name*> dlci <n>

Parameter	Description
avc_name	The name of the aggregated virtual circuit (AVC).
dlci	DLCI number of the AVC.

default

None.

example

```
Router/clear# interface avc frame01 100
```

related commands

clear interface avc(s), clear interface bundle(s), clear interface tunnel(s), clear interface ethernet(s)

applicable models/versions

All models.

command modes

Router/clear

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2.40 clear interface avcs

This command clears all of the counters for every CVC in all of the AVCs.

syntax

interface avcs

default

None.

example

```
Router/clear# interface avcs
```

related commands

clear interface avc (s), clear interface bundle (s), clear interface tunnel (s), clear interface ethernet (s)

applicable models/versions

All models.

command modes

Router/clear

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2.41 clear interface bundle

This command clears counters on a specific bundle.

syntax

interface bundle bundle_name <*name*>

Parameter	Description
bundle_name:	Bundle on which counters will be cleared

default

None.

example

```
Router/clear# interface bundle Superior
```

The example above clears the counters on the bundle Superior. To view bundle configuration and status before or after clearing counters, use the show interface bundle command.

related commands

clear interface avc (s), clear interface bundles, clear interface ethernet (s), clear interface tunnel (s), show interface bundle

applicable models/versions

All models.

command modes

Router/clear

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2.42 clear interface bundles

This command clears the transmission counter on all interface bundles.

syntax

interface bundles

default

None.

example

```
Router/clear# interface bundles
```

related commands

clear interface avc (s), clear interface bundle, clear interface ethernet (s), clear interface tunnel (s), show interface bundles

applicable models/versions

All models.

command modes

Router/clear

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2.43 clear interface ethernet

This command clears the counters on an Ethernet port.

syntax

interface ethernet ifnum <slot/port>

Parameter	Description
ifnum	Ethernet slot/port on which counters will be cleared

default

None.

example

```
Router/clear# interface ethernet 2/0
```

The example above clears the counters of Ethernet port 0 in slot 2. To view port configuration and status before or after clearing counters, use the show interface ethernet command.

related commands

clear interface avc, clear interface bundle, clear interface bundles, show interface ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.44 clear interface ethernets

This command clears the counters on all Ethernet ports.

syntax

interface ethernets

default

None.

example

```
Router/clear# interface ethernets
```

The example above clears the counters on all Ethernet ports. To view port configuration and status before or after clearing counters, use the show interface ethernets command.

related commands

clear interface avc (s), clear interface bundle (s), clear interface tunnel (s), show interface ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.45 clear interface pppofr

This command clears counters on a specific pppofr interface.

syntax

interface pppofr pppofr_name <*name*>

Parameter	Description
pppofr_name:	pppofr interface on which counters will be cleared

default

None.

example

```
Router# clear interface pppofr pppofr1
```

The example clears the counters on pppofr pppofr1. To view pppofr configuration and status before or after clearing counters, use the 'show interface pppofr' command.

related commands

clear interface avc(s), clear interface bundles, clear interface Ethernet(s), clear interface tunnel(s), show interface pppofr, show interface pppofrs

applicable models/versions

All models.

command modes

Router/clear

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2.46 clear interface tunnel

This command resets the specified tunnel interface counters to zero.

syntax

interface tunnel tunnel_name <name>

Parameter	Description
tunnel_name	Specifies the name of the tunnel.

default

None.

example

```
host/clear# interface tunnel main
```

related commands

clear interface tunnels

applicable models/versions

All models.

command modes

Router/clear

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2.47 clear interface tunnels

This command resets the all of the tunnel interfaces counters to zero.

syntax

interface tunnels

default

None.

example

```
host/clear# interface tunnels
```

related commands

clear interface tunnel

applicable models/versions

All models.

command modes

Router/clear

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2.48 clear access-list ip counters

This command clears counters for specific or all filtering rule sets.

syntax

counters rule-name <rulelist_name>

Parameter	Definition
rule-name	Specifies access list name or all

default

None.

example

```
Router/clear/access-list/ip# counters Filter01
Router/clear/access-list/ip# counters all
```

related commands

show access-list ip list-rules, show access-list ip list-stats

applicable models/versions

All models.

command modes

Router/clear/access-list/ip/

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2.49 clear access-list ip statistics

This command clears the packet filter statistics for an Ethernet port, bundle or PVC.
You may also clear the statistics for all interfaces if necessary.

syntax

statistics <interface-type <interface-type> | all>

Parameter	Definition
interface-type	Specifies interface type: Ethernet, bundle name, bundle name: PVC number
all	Clears all filtering statistics

default

None.

example

```
Router/clear/access-list/ip# statistics Filter01
Router/clear/access-list/ip# statistics all
```

related commands

show access-list ip lists-rules, show access-list ip list-stats

applicable models/versions

All models.

command modes

Router/clear/ip/access-list

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2.50 clear access-list ipv6 counters

This command clears counters for specific or all filtering rule sets.

syntax

counters rule-name <rulelist_name>

Parameter	Definition
rule-name	Specifies access list name or all.

default

None.

example

```
Router/clear/access-list/ipv6# counters Filter01
Router/clear/access-list/ipv6# counters all
```

related commands

show access-list ipv6 list-rules, show access-list ipv6 list-stats

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear/access-list/ipv6/

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2.51 clear access-list ipv6 statistics

This command clears the packet filter statistics for an Ethernet port, bundle or PVC.
You may also clear the statistics for all interfaces if necessary.

syntax

statistics <interface-type <interface-type> | all>

Parameter	Definition
interface-type	Specifies interface type: Ethernet, bundle name, bundle name: PVC number.
all	Clears all filtering statistics.

default

None.

example

```
Router/clear/access-list/ipv6# statistics Filter01
Router/clear/access-list/ipv6# statistics all
```

related commands

show access-list ipv6 lists-rules, show access-list ipv6 list-stats

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear/ipv6/access-list

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2.52 clear ip bgp all

Use this command to clear the BGP connection of all peers or a specified IPv4.

syntax

ip bgp all [in|out|SOFT]

Parameter	Description
all	clears both incoming and outgoing bgp routes
in	Indicates that incoming advertised routes will be cleared.
out	Indicates that outgoing advertised routes will be cleared
SOFT	soft [in|out] Indicates that both incoming and outgoing routes will be cleared

default

None.

example

```
Router/clear# ip bgp all
Router/clear# ip bgp all in
Router/clear# ip bgp all soft out
```

related commands

show ip bgp

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.53 clear ip bgp A.B.C.D

Use this command to reset a BGP connection for a specific IP address.

syntax

ip bgp A.B.C.D [in|out|SOFT]

Parameter	Description
A.B.C.D	Specifies the IPv4 address of the BGP route to be cleared
in	soft reconfig inbound update for the route address
out	soft reconfig outbound update for the route address
SOFT	soft [in|out] soft reconfig inbound | outbound update for the route address

default

None.

example

```
Router/clear# ip bgp 10.10.0.12 soft out
Router/clear# ip bgp 10.10.0.10 in
```

related commands

clear ip bgp all, show ip bgp

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.54 clear ip bgp ASN

Use this command to reset a BGP connection for all peers in a specified ASN (Autonomous System Number).

syntax

ip bgp ASN [in|out|SOFT[in|out]]

Parameter	Description
ASN	<1-65535> Specifies the AS Number for which all routes will be cleared. The range is <1-65535>
SOFT[in|out]	soft reconfig of both incoming and outgoing routes for the AS

default

None.

example

```
Route/clearr# ip bgp 100
Router/clear# ip bgp 100 soft in
```

related commands

show ip bgp

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.55 clear ip bgp dampening

Use this command to clear the BGP route dampening information and unsuppress the suppressed routes.

syntax

ip bgp dampening [A.B.C.D | A.B.C.D/M]

Parameter	Description
A.B.C.D	Specifies the IPv4 address for which BGP dampening is to be cleared
A.B.C.D/M	Specifies the IPv4 address with mask for which BGP dampening is to be cleared

default

None.

example

```
Router/clear# ip bgp dampening 10.10.0.121
```

related commands

clear bgp all, show ip bgp dampening

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.56 clear ip bgp external

Use this command to reset all external BGP connections.

syntax

ip bgp external [in|out|SOFT[in|out]]

Parameter	Description
external	Clears all external peers' routes
in	incoming advertised routes will be cleared
out	outgoing advertised routes will be cleared.
SOFT[in|out]	soft reconfiguration incoming and/or outgoing routes

default

None.

example

```
Router/clear# ip bgp external out
```

related commands

clear ip bgp all

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.57 clear ip bgp flap-statistics

Use this command to clear the BGP route flap statistics.

syntax

ip bgp flap-statistics [A.B.C.D | A.B.C.D/M]

Parameter	Description
A.B.C.D	Specifies the IPv4 address for which BGP flap statistics is to be cleared
A.B.C.D/M	Specifies the IPv4 address with mask for which BGP flap statistics is to be cleared

default

None.

example

```
Router/clear# ip bgp flap-statistics 10.10.0.121
```

related commands

clear ip bgp all

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.58 clear ip bgp ipv6 dampening

Use this command to reset all dampened BGP routes under the specified address family.

syntax

ip bgp ipv6 unicast dampening [A.B.C.D | A.B.C.D/M]

Parameter	Description
A.B.C.D	IP prefix address
M	Subnet Mask Length

default

None.

example

```
Router/clear# ip bgp ipv6 unicast dampening 1::0
```

related commands

clear bgp all, show ip bgp dampening

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.59 clear ip bgp ipv6 flap-statistics

Use this command to clear the flap count and history duration for all the prefixes under the specified address family.

syntax

ip bgp ipv6 unicast flap-statistics [A.B.C.D | A.B.C.D/M]

Parameter	Description
A.B.C.D	IP prefix address
M	Subnet Mask Length

default

None.

example

```
Router/clear# ip bgp ipv6 unicast flap-statistics 1::0
```

related commands

clear ip bgp all

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.60 clear ip bgp peer-group

Use this command to reset BGP connections for all members of a peer group.

syntax

ip bgp peer-group pg-name <pg_name> [in|out|SOFT[in|out]]

Parameter	Description
pg-name	Specifies the name of the peer group for which members' routes will be cleared.
in	Indicates that incoming advertised routes will be cleared.
out	Indicates that outgoing advertised routes will be cleared.
SOFT[in|out]	soft reconfiguration of incoming and | or outgoing routes

default

None.

example

```
Router/clear# ip bgp peer-group Peer1 out
```

related commands

clear ip bgp all

applicable models/versions

iBG2016 and iBG3026/all versions.

command modes

Router/clear

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2.61 clear ip dhcps bindings

This command clears DHCP server binding data from the system.

syntax

bindings

default

None.

example

```
Router/clear/ip/dhcps# bindings
```

related commands

clear ip dhcps statistics, show ip dhcps bindings

applicable models/versions

All models.

command modes

Router/clear/ip/dhcps

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2.62 clear ip dhcps statistics

This command clears DHCP server statistics from the system.

syntax

statistics

default

None.

example

```
Router/clear/ip/dhcps# statistics
```

related commands

clear ip dhcps bindings, show ip dhcps statistics

applicable models/versions

All models.

command modes

Router/clear/ip/dhcps

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2.63 clear ip dvmrp all

Use this command to flush DVMRP all state.

syntax

ip dvmrp all

default

None.

example

```
Router/clear# ip dvmrp all
```

related commands

None.

applicable models/versions

All models

command modes

Router/clear

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2.64 clear ip dvmrp prune A.B.C.D/M

Use this command to flush DVMRP prune state with the matching input prefix.

syntax

ip dvmrp prune <A.B.C.D/M>

Parameter	Description
A.B.C.D/M	The prefix of addresses to be flushed.

default

None.

example

```
Router/clear# ip dvmrp prune 225.5.5.5/8
```

related commands

clear ip dvmrp prune all

applicable models/versions

All models.

command modes

Router/clear

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2.65 clear ip dvmrp prune all

Use this command to flush all DVMRP prune states.

syntax

ip dvmrp prune all

default

None.

example

```
Router/clear# ip dvmrp prune all
```

related commands

clear ip dvmrp prune A.B.C.D/M

applicable models/versions

All models

command modes

Router/clear

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2.66 clear ip dvmrp prune group

Use this command to flush DVMRP prune states which have matching group.

syntax

ip dvmrp prune group <A.B.C.D>

Parameter	Description
A.B.C.D	The prefix of addresses to be flushed.

default

None.

example

```
Router/clear# ip dvmrp prune group 225.4.5.5
```

related commands

ip dvmrp prune all

applicable models/versions

All models

command modes

Router/clear

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2.67 clear ip dvmrp route

Use this command to flush a DVMRP route entry and its corresponding prune states with the input prefixes or all entries.

syntax

ip dvmrp route <A.B.C.D/M | all>

Parameter	Description
A.B.C.D/M	Specifies the network prefix to be flushed.
all	All flushes all the routes.

default

None.

example

```
Router/clear# ip dvmrp route 5.5.5.5/8
Router/clear# ip dvmrp route all
```

related commands

show ip dvmrp route all

applicable models/versions

All models

command modes

Router/clear

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2.68 clear ip igmp group

This command clears all the groups if no optional parameters are specified. With the interface name specified, clears the groups identified from that particular interface. With the group address specified, clears the group regardless of the interface where the information came:

syntax

ip igmp group <all | A.B.C.D [interface_name <IF_Name>]>

Parameter	Description
interface_name	Specifies the name of the interface, for example ethernet1/1.
A.B.C.D	Multicast group address specifies the group address.

default

None.

example

```
Router/clear# ip igmp group 225.1.1.1 ethernet1/1
Router/clear# ip igmp group 225.1.1.1
```

related commands

clear ip igmp interface, show ip igmp groups

applicable models/versions

All models

command modes

Router/clear.

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2.69 clear ip igmp interface

Use this command to clear IGMP interface entries.

syntax

ip igmp interface interface_name <IF_Name>

Parameter	Description
interface_name	Specifies the name of the interface, for example ethernet1/1.

default

None.

example

```
Router/clear# ip igmp interface ethernet1/1
```

related commands

show ip igmp interface

applicable models/versions

All models

command modes

Router/clear

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2.70 clear ip mroute

Use this command to delete all multicast routes.
When you use this command, the MRIB clears the multicast route entries in its multicast route table, and removes the entries from the multicast forwarder. The MRIB sends a clear message to the multicast protocols. Each multicast protocol has its own clear multicast route command. The protocol-specific clear command clears multicast routes from the protocol, and also clears the routes from the MRIB.

syntax

clear ip mroute <all | A.B.C.D [W.X.Y.Z]>

Parameter	Description
all	Deletes all multicast routes
A.B.C.D	Specifies group IP Address
W.X.Y.Z	Specifies source IP Address

default

None.

example

```
Router/clear# clear ip mroute 225.1.1.1 3.3.3.3
Router/clear# clear ip mroute all
```

related commands

show ip mroute

applicable models/versions

All models

command modes

Router/clear

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2.71 clear ip ospf process

Use this command to clear and restart the OSPF routing process. Specify the Process ID to clear one particular OSPF process. When no Process ID is specified, this command clears all running OSPF processes.

syntax

ip ospf <PROCESSID <n> process | process>

Parameter	Description
PROCESSID	Specifies the Routing Process ID, valid range is 1-65535.

default

None.

example

```
Router/clear# ip ospf 1 process
Router/clear# ip ospf process
```

related commands

clear ip route kernel

applicable models/versions

All models.

command modes

Router/clear

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2.72 clear ipv6 ospf process

Use this command to clear and restart the OSPFv3 routing process. Specify the tag to clear one particular OSPFv3 process. When no tag is specified, this command clears all running OSPFv3 processes.

syntax

ipv6 ospf <tag tag <n> process | process>

Parameter	Description
tag	Specifies the Routing tag.

default

None.

example

```
Router/clear# ipv6 ospf tag test process
Router/clear# ipv6 ospf process
```

related commands

clear ip route kernel

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear

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2.73 clear ip pim sparse-mode bsr-rp-set all

Use this command to free all RP sets learned through the PIMv2 Bootstrap Router (BSR).

syntax

ip pim sparse-mode bsr-rp-set all

default

None.

example

```
Router/clear# ip pim sparse-mode bsr-rp-set all
```

related commands

show ip pim sparse-mode bsr-router

applicable models/versions

All models

command modes

Router/clear

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2.74 clear ip prefix-list

Use this command to clear the prefix list entries.

syntax

ip prefix-list [prefix-name <prefix_name> A.B.C.D/M]

Parameter	Description
prefix-name	Name of a prefix list.
A.B.C.D/M	IP address with mask for the prefix list.

default

None.

example

```
Router/clear# ip prefix-list
Router/clear# ip prefix-list aaa 10.10.0.98/8
```

related commands

show ip prefix-list summary, show ip prefix-list detail

applicable models/versions

All models.

command modes

Router/clear

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2.75 clear ip rip route

Use this command to clear specific data from the RIP routing table.
Using this command with the all parameter, clears the RIP table of all the routes. If you do not want that your RIP network to be deleted, use the redistribute connected command and make the RIP network a connected route. Now, to delete the RIP routes learned from neighbor and also keep the RIP network intact, use the rip (clear ip rip route rip) parameter with this command.

syntax

ip rip route <A.B.C.D/M | all | bgp | connected | ospf | rip | static>

Parameter	Description
A.B.C.D/M	Removes entries which exactly match this destination address from RIP routing table.
static	Removes static entries from the RIP routing table.
connected	Removes entries for connected routes from the RIP routing table.
rip	Removes only RIP routes from the RIP routing table.
ospf	Removes only OSPF routes from the RIP routing table.
bgp	Removes only BGP routes from the RIP routing.
all	Clears the entire RIP routing table.

default

None.

example

```
Router/clear# ip rip route 10.0.0.0/8
Router/clear# ip rip route ospf
```

related commands

show ip rip

applicable models/versions

All models.

command modes

Router/clear

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2.76 clear ipv6 rip route

Use this command to clear specific data from the RIPng routing table.
Using this command with the all parameter, clears the RIPng table of all the routes. If you do not want your RIPng network to be deleted, use the redistribute connected command and make the RIPng network a connected route. To delete the RIPng routes learned from neighbor and also keep the RIPng network intact, use the RIP (clear IPv6 RIP route RIP) parameter with this command.

syntax

ipv6 rip route <X:X::X:X/M | all | bgp | connected | ospf | rip | static>

Parameter	Description
X:X::X:X/M	Removes entries which exactly match this destination address from RIPng routing table.
static	Removes redistributed static entries from the RIPng routing table.
connected	Removes redistributed connected routes from the RIPng routing table.
rip	Removes RIPng routes from the RIPng routing table.
ospf	Removes redistributed OSPFv3 routes from the RIPng routing table.
bgp	Removes redistributed BGP4+ routes from the RIPng routing table.
all	Clears the entire RIPng routing table.

default

None.

example

```
Router/clear# ipv6 rip route 3ffe:ffff::/16
Router/clear# ipv6 rip route ospf
```

related commands

show ipv6 rip

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear

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2.77 clear ip route kernel

This command clears stale kernel route.

syntax

ip route kernel

default

None.

example

```
Router/clear# ip route kernel
```

related commands

show ip route kernel

applicable models/versions

All models.

command modes

Router/clear/ip

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2.78 clear ip rtp

This command accesses next-level commands to clear RTP counters and tables.

syntax

ip rtp [rxtable|statistics|tables|txtable]

Parameter	Description
rxtable	rtp receive table.
statistics	rtp statistics
tables	rtp transmit and receive tables.
txtable	rtp transmit table.

default

None.

example

```
Router/clear/ip# ip rtp
```

related commands

clear ip rtp statistics, clear ip rtp tables, clear ip rtp txtable, clear ip rtp statistics

applicable models/versions

All models.

command modes

Router/clear

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2.79 clear ip rtp rxtable

This command clears the RTP receive table for the specified bundle.

syntax

rxtable bundle-name <b_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle name

default

None.

example

```
Router/clear/ip/rtp# rxtable wan1
```

related commands

clear ip rtp statistics, clear ip rtp tables, clear ip rtp txtable

applicable models/versions

All models.

command modes

Router/clear/ip/rtp

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2.80 clear ip rtp statistics

This command clears the RTP statistics for the specified bundle.

syntax

statistics bundle-name <b_name> [dlcl-number <n>]

Parameter	Description
bundle-name	Specifies the name of the interface bundle name
dlci-number	DLCI number for frame relay PVC

default

None.

example

```
Router/clear/ip/rtp# statistics wan1
Router/clear/ip/rtp# statistics wan1 100
```

related commands

clear ip rtp rxtable, clear ip rtp tables, clear ip rtp txtable

applicable models/versions

All models.

command modes

Router/clear/ip/rtp

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2.81 clear ip rtp tables

This command clears both the RTP receive and transmit tables for the specified bundle for the specified bundle.

syntax

tables bundle-name <b_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle name

default

None.

example

```
Router/clear/ip/rtp# tables wan1
```

related commands

clear ip rtp rxtable, clear ip rtp statistics, clear ip rtp txtable

applicable models/versions

All models.

command modes

Router/clear/ip/rtp

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2.82 clear ip rtp txtable

This command clears the RTP transmit table for the specified bundle.

syntax

txtable bundle-name <b_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle name

example

```
Router/clear/ip/rtp# txtable wan1
```

related commands

clear ip rtp rxtable, clear ip rtp statistics, clear ip rtp tables

applicable models/versions

All models.

command modes

Router/clear/ip/rtp

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2.83 clear ip ssh session

This command clears a specific SSH client session.

syntax

ip ssh session [session_number <n>]

Parameter	Description
session_number	The identification number of a particular SSH session to clear.

default

None.

example

```
Router/clear#ip ssh session 2
```

related commands

clear ip ssh sessions, show ip ssh session, show ip ssh sessions

applicable models/versions

All models.

command modes

Router/clear

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2.84 clear ip ssh sessions

This command clears all SSH client sessions.

syntax

ip ssh sessions

default

None.

example

```
Router/clear# ip ssh sessions
```

related commands

clear ip ssh session, show ip ssh session, show ip ssh sessions

applicable models/versions

All models.

command modes

Router/clear

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2.85 clear ipv6 neighbors

This command deletes all the entries in the neighbor discovery cache.

syntax

neighbors

default

None.

example

```
Router/clear/ipv6# neighbors
```

related commands

ipv6 neighbors, show ipv6 neighbors.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear/ipv6

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2.86 clear ipv6 prefix-list

Use this command to clear the prefix list entries related to IPv6.

syntax

ipv6 prefix-list [prefix-name <prefix_name> X:X::X:X/M]

Parameter	Description
prefix-name	Name of a prefix list.
A X:X::X:X/M	IPv6 address with mask for the prefix list.

default

None.

example

```
Router/clear# ipv6 prefix-list
Router/clear# ipv6 prefix-list aaa 1000:1001::2/64
```

related commands

show ipv6 prefix-list summary, show ipv6 prefix-list detail

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear

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2.87 clear ipv6 route kernel

This command clears the stale ipv6 route kernel.

syntax

ipv6 route kernel

default

None.

example

```
Router/clear# ipv6 route kernel
```

related commands

show ipv6 route kernel

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear

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2.88 clear ipv6 mroute

Use this command to delete all multicast routes related IPv6.
When you use this command, the MRIB clears the multicast route entries in its multicast route table, and removes the entries from the multicast forwarder. The MRIB sends a clear message to the multicast protocols. Each multicast protocol has its own clear multicast route command. The protocol-specific clear command clears multicast routes from the protocol, and also clears the routes from the MRIB.

syntax

clear ipv6 mroute <all | A:B::C:D [W:X::Y:Z]>

Parameter	Description
all	Deletes all multicast routes
A:B::C:D	Specifies group IP Address
W:X::Y:Z	Specifies source IP Address

default

None.

example

```
Router/clear# clear ipv6 mroute all
```

related commands

show ipv6 mroute

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/clear

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2.89 clear isdn bri-statistics

Use this command to reset ISDN BRI counters. You can check the reset information by the show isdn bri-statistics command.

syntax

isdn bri_statistics bundle-name<b_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle name

default

None.

example

```
Router/clear# isdn bri_statistics wan1
```

related commands

show isdn bri_statistics

applicable models/versions

Requires ISDN module.

command modes

Router/clear

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2.90 clear isdn pri-statistics

Use this command to reset ISDN PRI counters. You can check the reset information by the show isdn pri-statistics command.

syntax

isdn pri-statistics bundle-name<b_name>

Parameter	Description
bundle-name	Specifies the name of the interface bundle name

default

None.

example

```
Router/clear# isdn pri-statistics wan1
```

related commands

show isdn pri_statistics

applicable models/versions

Requires ISDN module.

command modes

Router/clear

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2.91 clear lacp

Use this command to clear all counters of all present Link Aggregation Control Protocol (LACP) aggregators or the given LACP aggregator.

syntax

lacp <Channel-group <n> counters | counters>

Parameter	Description
Channel-group	Specifies the channel-group number. Valid range is 1-65535.
counters	Specifies the Link Aggregation Control Protocol Counters

default

None.

example

```
Router/clear# lacp 1 counters
Router/clear# lacp counters
```

related commands

show lacp-counter
show etherchannel

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/clear

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2.92 clear mac address-table dynamic

Use this command to clear the filtering database of all entries learned through bridge operation, or clear filtering database entries learned through bridge operation for a given MAC address, interface, or VLAN.

syntax

mac address-table dynamic <address mac-address <MAC_address> bridge 1 | bridge 1 | interface if-name <IF_name> bridge 1>

Parameter	Description
bridge	bridge instance. Valid range is 1.
if-name	When filtering database entries are cleared based on an interface name.
mac-address	Filtering database entries for the given MAC address.

default

None.

example

This example shows how to clear all filtering database entries configured through CLI.

```
Router/clear# mac address-table dynamic bridge 1
Router/clear# mac address-table dynamic address 020202020202
bridge 1
Router/clear# mac address-table dynamic ethernet0/0 bridge 1
```

related commands

None

applicable models/versions

All models.

command modes

Router/clear

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2.93 clear module

This command accesses commands for clearing interface card statistics. Depending on the system, one or more of the following interfaces types may be cleared: T1, E1, or channelized T3.

syntax

module

default

None.

example

```
Router/clear# module
```

related commands

clear module ct3_userstats, clear module e1_userstats, clear module t1_userstats, clear module t3_userstats

applicable models/versions

All models.

command modes

Router/clear

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2.94 clear module ct3_userstats

This command clears statistics from an entire CT3 interface or from specified T1 slot|subslot|ports (one or more) within a specified CT3 interface.

syntax

ct3_userstats t3_identifier <slot/port:1-28>

Parameter	Description
t3_identifier	CT3 interface slot, port number, and individual T1 channel within CT3

NOTE

There are 29 sets of statistics for a CT3 interface: one for the CT3 interface plus an additional 28-one for each individual T1 slot|subslot|port within the CT3 interface. You can clear statistics for the CT3 interface or specified T1 slot|subslot|ports within a CT3 interface. You cannot specify a range of T1 lines to clear, they must be individually cleared.

default

None.

example 1

```
Router/clear/module# ct3_userstats 1/0
```

This example clears statistics from CT3 interface 1.

example 2

```
Router/clear/module# ct3_userstats 2/0:28
```

This example clears statistics from T1 slot 28 in CT3 interface 2.

To show statistics before or after clearing them, use the show module userstats ct3 command.

related commands

clear module t1_userstats, clear module t3_userstats, show module userstats ct3

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applicable models/versions

All versions.

command modes

Router/clear/module

2.95 clear module e1_userstats

This command clears statistics on one or more E1 slot/port or slot|subslot|ports.

syntax

e1_userstats e1_identifier <slot/subslot/port>

Parameter	Description
e1_identifier	E1 slot|subslot|port(s) for which user statistics will be cleared.

default

None.

example

```
Router/clear/module# e1_userstats 2/0
Router/clear/module# e1_userstats 0/2/1
```

To show statistics before or after clearing them, use the **show module userstats e1** command.

related commands

show module userstats e1

applicable models/versions

All models.

command modes

Router/clear/module

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2.96 clear module t1_userstats

This command clears statistics on one or more T1 slot|subslot|ports.

syntax

t1_userstats t1_identifier <slot/subslot/port>

Parameter	Description
t1_identifier	T1 slot|subslot|port(s) for which user statistics will be cleared.

default

None.

example

```
Router/clear/module# t1_userstats 0/0/0
```

The example above clears statistics from T1 slots 0 subslot 0 port 0. To show clear module t1_userstats statistics before or after clearing them, use the show module userstats t1

related commands

clear module ct3_userstats, clear module t3_userstats, show module userstats t1

applicable models/versions

All models.

command modes

Router/clear/module

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2.97 clear module hssi_userstats

This command clears statistics of the HSSI module.

syntax

hssi_userstats slot_port < slot/port >

Parameter	Description
slot_port	To specify clearing statistics HSSI module by slot and port number (1/0, 2/0)

default

None.

example

```
Router/clear/module# hssi_userstats 1/0
```

The example above clears statistics from hssi slots 1 port 0. To show statistics before or after clearing them, use the **show module userstats hssi.**

related commands

clear module hssi_userstats, show module userstats hssi

applicable models/versions

All versions.

command modes

Router/clear/module

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2.98 clear module serial_userstats

This command clears statistics of the serial module.

syntax

serial_userstats slot_port < slot/port >

Parameter	Description
slot_port	To specify clearing statistics Serial module by slot (1, 2) and port number (0 -3)

default

None.

example

```
Router/clear/module# serial_userstats 2/0
```

The example above clears statistics from serial slots 2 port 0. To show statistics before or after clearing them, use the **show module userstats serial.**

related commands

clear module serial_userstats, show module userstats serial

applicable models/versions

All models.

command modes

Router/clear/module

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2.99 clear qos bundle

This command clears QoS statistics for the specified bundle, except for a frame relay bundle.

syntax

qos bundle bundle_name <b_name>

Parameter	Description
bundle_name	Name of bundle on which QoS statistics will be cleared for all classes

default

None.

example

```
Router/clear# qos bundle Dallas
```

related commands

clear qos ethernet, clear qos tunnel

applicable models/versions

All models.

command modes

Router/clear

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2.100 clear qos crypto

This command clears QoS information for crypto.

syntax

qos crypto [class class_name <c_name>]

Parameter	Description
class_name	Class on which QoS statistics will be cleared.

default

None.

example

```
Router/clear# qos crypto
Router/clear# qos crypto Dallas
```

related commands

clear qos bundle, clear qos ethernet, clear qos bundle

applicable models/versions

All models.

command modes

Router/clear

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2.101 clear qos ethernet

This command clears the traffic statistics for the specified Ethernet interface.

syntax

qos ethernet slot/port <n/n>

Parameter	Description
slot/port	Interface slot and port on which QoS statistics will be cleared for all classes.

default

None.

example

```
Router/clear# qos ethernet 1/1
```

related commands

clear qos bundle, clear qos tunnel

applicable models/versions

All models.

command modes

Router/clear

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2.102 clear qos policy-counters

This command clears QoS statistics for specified policy.

syntax

qos policy-counters policy_name <p_name>

Parameter	Description
policy_name	Policy on which QoS statistics will be cleared.

default

None.

example

```
Router/clear# qos policy-counters map1
```

related commands

clear qos ethernet

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/clear

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2.103 clear qos tunnel

This command clears the traffic statistics for the specified tunnel.

syntax

qos tunnel tunnel_name <t_name>

Parameter	Description
tunnel name	Tunnel on which QoS statistics will be cleared for all classes.

default

None.

example

```
Router/clear# qos tunnel SrcOne
```

related commands

clear qos bundle, clear qos ethernet

applicable models/versions

All models.

command modes

Router/clear

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2.104 clear qos vlan

This command clears QoS information for specified VLAN.

syntax

qos vlan vlan_name <v_name>

Parameter	Description
vlan_name	Vlan on which shows QoS information. It combines bridge group number and vlan id value.

default

None.

example

```
Router/clear# qos vlan vlan1.400
```

related commands

clear qos bundle, clear qos ethernet, clear qos bundles

applicable models/versions

All models.

command modes

Router/clear

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2.105 clear snmp_stats

This command clears SNMP statistics.

syntax

snmp_stats

default

None.

example

```
Router/clear# snmp_stats
```

The example above clears all system SNMP statistics. To view the current SNMP statistics before clearing them, use the **show snmp status** commands.

related commands

show snmp status

applicable models/versions

All models.

command modes

Router/clear

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2.106 clear spanning-tree

Use this command to clear the detected protocols for a specific bridge or interface.

syntax

spanning-tree detected protocols <bridge 1| interface if_name <if-name>>
where bridge specifies the number of the bridge group on which protocols have to be cleared.
IFNAME specifies the name of the interface on which protocols have to be cleared.

Parameter	Description
bridge	Specifies the number of the bridge group on which protocols have to be cleared.
If_name	Specifies the name of the interface on which protocols have to be cleared.

default

None.

example

```
Router/clear# spanning-tree detected protocols bridge_1
Router/clear# spanning-tree detected protocols interface
ethernet3/0
```

related commands

show spanning-tree

applicable models/versions

All models.

command modes

Router/clear

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2.107 clear ssl-vpn sessions

This command clears all the active SSL VPN login sessions for a domain or a group or a user.

syntax

ssl-vpn sessions {all_domain | domain_name <domain_name> [group_name <group_name>] [user_name <user_name>] }

Parameter	Description
domain_name	Domain name for which sessions needs to be cleared
group_name	Group name for which sessions needs to be cleared
user_name	User name for which sessions needs to be cleared

default

None

example

```
Router/clear# ssl-vpn sessions all_domain
Router/clear# ssl-vpn sessions domain_name finance-domain
Router/clear# ssl-vpn sessions domain_name finance-domain
group_name acct-group
Router/clear# ssl-vpn sessions domain_name finance-domain
group_name acct-group user_name acct1
```

related commands

show ssl-vpn sessions.

applicable models/versions

All models

command modes

Router/clear

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2.108 clear ssl-vpn stats

This command clears SSL VPN statistics information for all domains or a specified domain.

syntax

ssl-vpn stats domain <domain_name>

Parameter	Description
domain_name	Domain name for which statistics information needs to be cleared (‘all’ for all domains)

default

None

example

```
Router/clear# ssl-vpn stats domain all
Router/clear# ssl-vpn stats domain AD-domain
```

related commands

show ssl-vpn stats.

applicable models/versions

All models

command modes

Router/clear

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2.109 clear statistics all

This command initializes overall statistics (call, protocol and dial-peer statistics) system information.

syntax

clear statistics all

default

None

example

```
clear statistics all
```

related commands

show statistics call, show statistics pots-call, show statistics voip-call

applicable models/versions

All models.

command modes

any configuration mode

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2.110 clear statistics call

This command initializes overall system call statistics information.

syntax

clear statistics call

default

None

example

```
clear statistics call
```

related commands

show statistics call, show statistics pots-call, show statistics voip-call

applicable models/versions

All models.

command modes

any configuration mode

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2.111 clear statistics dial-peer-voice

This command initializes dial-peer statistics. Statistics information comes with each dial-peer information from the 'show dial-peer voice all' command.

syntax

clear statistics dial-peer-voice <dial-peer-id>

Parameter	Description (without Parameter, no table)
dial-peer-id	Dial peer ID

default

None

example

```
clear statistics dial-peer-voice 10
```

related commands

show dial-peer voice

applicable models/versions

All models.

command modes

any configuration mode

clear statistics h323-protocol

Initialize statistics information on H.323 protocol.

syntax

clear statistics h323-protocol

example

```
clear statistics h323-protocol
```


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related commands

show statistics h323-protocol

applicable models/versions

All models.

command modes

any configuration mode

2.112 clear statistics sip-protocol

This command initializes statistics information on SIP protocol.

syntax

clear statistics sip-protocol

default

None

example

```
clear statistics sip-protocol
```

related commands

show statistics sip-protocol

applicable models/versions

All models.

command modes

any configuration mode

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2.113 clear syslog_buffer

This command clears the contents of syslog buffer.

syntax

syslog_buffer

default

None.

example

```
Router/clear# syslog_buffer
```

related commands

configure system logging buffered, show system logging buffered

applicable models/versions

All models.

command modes

Router/clear

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2.114 clear login_session

This command clears an outside Telnet or SSH connection.

syntax

login_session seqNo <n>

Parameter	Description
seqNo	Telnet or SSH session sequence number The range is 1-21. Use the show users command to see a Telnet or SSH session sequence number.

default

None.

example

```
Router/clear# login_session 6
```

related commands

show users

applicable models/versions

All models.

command modes

Router/clear

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2.115 clear login_sessions

This command clears all Telnet and SSH connections.

syntax

login_sessions

default

None.

example

```
Router/clear# login_sessions
```

related commands

show users

applicable models/versions

All models.

command modes

Router/clear

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2.116 clear verify_list

This command deletes the hash values in verification list. The files in the list are object to be verified later by comparing with calculated value (SHA_1 hash value) at that time. To add a file and its SHA_1 value into the list, use the **verify** command.

syntax

verify_list <*file_name*>

Parameter	Description
File_name	The file name to be deleted from the verification list. If 'all' is entered.

default

None.

example

```
Router/clear# verify_list  /cf0/system.cfg
Deleted signature of this file.
```

related commands

verify, show verify_list

applicable models/versions

All models/SNOS v2.1 or higher.

command modes

Router/clear

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2.117 clear vrrp

This command clears vrrp statistics.

syntax

vrrp [group group number <n> | interface slot/port <n/n>]

Parameter	Description
group_number	The vrrp group for which statistics will be cleared. The range is 1-255; the default is all groups.
Interface	Specifies the ethernet interface by slot and port.

default

None.

example

```
Router/clear# vrrp group 10
Router/clear# vrrp interface ethernet1/0
```

related commands

clear vrrp group, clear vrrp interface, show vrrp

applicable models/versions

All models.

command modes

Router/clear

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CHAPTER 3. Configure Command (I)

Use the **configure** commands to configure an iBG router. You also can use these commands to subsequently change a system that has been previously configured.
Before configuring a system, specify the source from which it will be configured. To do this, go to the main CLI prompt and enter one of the commands described below.

configure flash

Use the **configure flash** command to set the Router system parameters from a configuration file stored in the flash memory. This method is useful if the system configuration differs from the configuration file in flash memory and you want to restore the flash configuration. It is recommended that all configuration files have a .CFG extension.

syntax

configure flash

example

```
Router# configure flash
```

At the main CLI prompt, type configure flash and press Return. Then, type the desired configuration file name (with a .cfg extension) and press Return, as shown in the example below.

```
Router# configure flash
filename(path): test.cfg
```

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applicable models/versions

All models

command modes

Router

configure network

Sets the Router system parameters from a configuration file on a network server. This method downloads files via the TFTP protocol, then executes the commands from that file without operator intervention. Use the **configure network** command if you want to configure one or more Router systems with the same configuration. This command supports the option for **secure ftp (sftp)** on downloading the configuration file from a remote server.

syntax

configure network

example

```
Router# configure network
```

After you enter the configure network command, press Return, follow the prompt (as shown below), and enter the configuration file path information. The default option for the type is tftp protocol.

```
host: Fremont01
type(t:tftp, s:sftp): tftp
file name(path): /networks/system01.cfg
```

applicable models/versions

All models

command modes

Router

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configure terminal

From a workstation or Telnet session connected to a Router system, configure terminal accesses all configure commands for setting all system parameters.

syntax

configure terminal

example

```
Router# configure terminal
```

applicable models/versions

All models

command modes

Router

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3.1 header

Adds descriptive information to the top of the configuration file. Use the command **save local** after typing in the desired information.

syntax

header ‘string <string>’

Parameter	Description
string	Descriptive information 80 character (maximum) string enclosed in quotation marks

default

None.

example

```
Router/configure# header ‘This file was originally activated
on 02/04/2006.’
```

applicable models/versions

All models.

command modes

Router/configure

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3.2 secure_passwords

This command specifies that passwords stored in the configuration file be encrypted.

syntax

secure_passwords

example

```
Router/configure# secure_passwords
```

applicable models/versions

All models.

command modes

Router/configure

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3.3 aux

This command accesses next-level commands for configuring the Auxiliary port.

The auxiliary port is a RS-232 serial port. The physical difference from the console port is that the Auxiliary port supports modem control.

The Auxiliary port can serve two services, Console and Reverse Telnet.
You can select the service with ‘service’ command.

Reverse Telnet makes the connection between the IP port and the serial port. With Reverse Telnet, you can manage a device which is connected with the Auxiliary port. For example, suppose that a modem is connected through the Auxiliary port. If you telnet to the Reverse Telnet port, your telnet terminal and the modem is connected. Any input on your terminal is forwarded to the modem. The output of the modem is then displayed on your terminal.

If the console is served and a modem is initialized properly, you can access the console service remotely through the modem. You can initialize the modem with the ‘init_modem’ command or the Reverse Telnet service.

3.3.1 baud_rate

This command sets the baud rate of the Auxiliary port.

syntax

baud_rate baud rate <9600 | 19200 | 38400 | 57600 | 115200>

Parameter	Description
baud rate	9600 | 19200 | 38400 | 57600 | 115200 (default is 19200)

example

```
Router/configure/aux# baud_rate 9600
```


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related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux baud_rate

3.3.2 parity

This command sets the parity of the Auxiliary port.

syntax

parity parity <none | odd | even>

Parameter	Description
parity	none | odd | even (default is none)

example

```
Router/configure/aux# parity even
```

related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux parity

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3.3.3 data_bits

This command sets the data bits of the Auxiliary port.

syntax

data_bits data bits <7 | 8>

Parameter	Description
data bits	7 | 8 (default is 8)

example

```
Router/configure/aux# data_bits 7
```

related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux data_bits

3.3.4 stop_bits

This command sets the stop bits of the Auxiliary port.

syntax

stop_bits stop bits <1 | 2>

Parameter	Description
stop bits	1 | 2 (default is 1)

example

```
Router/configure/aux# stop_bits 2
```


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related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux stop_bits

3.3.5 flow_control

This command sets the flow control of the Auxiliary port.

syntax

flow_control flow control type <none | software | hardware>

Parameter	Description
flow control type	none | software | hardware (default: none)

example

```
Router/configure/aux# flow_control hardware
```

related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux flow_control

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3.3.6 service

This command sets the service to run on the Auxiliary port. Only one service can run at a time. So if other services are running, it will be aborted.

syntax

service service <none | console | reverse_telnet>

Parameter	Description
none	Exit service
console	Run the console and exit other running service like a reverse telnet.
reverse_telnet	Run the reverse telnet and exit other running service like a console.

example

```
Router/configure/aux# service reverse_telnet
```

related commands

show aux, configure/aux baud_rate, configure/aux parity, configure/aux data_bits, configure/aux stop_bits, configure/aux flow_control, configure/aux reverse_telnet_port, configure/aux service, configure/aux init_modem

applicable models/versions

All models.

command modes

Router/configure/aux service

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3.3.7 reverse_telnet_port

This command sets the Reverse Telnet port of the Auxiliary port.

syntax

reverse_telnet_port port <2000-65535>

Parameter	Description
port number	2000-65535 (default: 2001)

example

```
Router/configure/aux# reverse_telnet_port 2002
```

related commands

show aux, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux reverse_telnet_port

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3.3.8 init_modem

This command sets a modem with the specified initialization string. A modem must first be connected with the Auxiliary port when this command is executed.

The modem Initialization string is a combination of modem commands. Modem commands are various and not unified. So it is possible that the default initialization string will not work well. If you need more information about modem initialization, you should refer to the modem manuals.

The default behavior is ‘no init_modem’

syntax

init_modem <modem_initialization_string>
no init_modem

Parameter	Description
Modem_initial_string	This string consists of AT command combination. Refer to the manuals of modem which you have

example

```
Router/configure/aux# init_modem ATAS0=1Q1E0
Router/configure/aux# no init_modem
```

related commands

show aux, configure/aux baud_rate, configure/aux parity, configure/aux data_bits, configure/aux stop_bits, configure/aux flow_control, configure/aux service

applicable models/versions

All models.

command modes

Router/configure/aux init_modem

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3.4 qos

This command configures QoS related global parameters.

syntax

qos

example

```
Router/configure# qos
```

related commands

configure qos add_class class_name parent, configure qos historical_stats, configure qos REM configure qos REM_

applicable models/versions

All models.

command modes

Router/configure

3.4.1 auto qos

This command provides interface specific QoS parameters. The appropriate QoS feature, namely CBQ (shaping) or Policing, and direction will be selected based on the interface type. For WAN interfaces the CBQ feature is selected for the outbound direction. For LAN interfaces, the policing (SRTCM) feature is selected for the inbound direction. No other combinations of interfaces, feature, and direction are allowed for auto QoS configuration.

In the SW QoS support, the auto QoS parameters are defined such it should provide differentiated treatment for voice/RTP traffic, and the rest. In the hierarchical flow classification mechanism we should define QoS policy classes to identify the voice traffic.

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The auto QoS parameters are now defined as follows.

- Three policy-classes for WAN interfaces and six policy classes for LAN interfaces as shown in the diagram(s), with assigned classification keys.
- For WAN interfaces, policy classes are defined in the outbound direction with CBQ parameter specification, as shown in the diagram figure 3.1.
- For LAN interfaces, policy classes are defined in the inbound direction with policing parameter specification for SRTCM, as shown in the diagram figure 3.2.

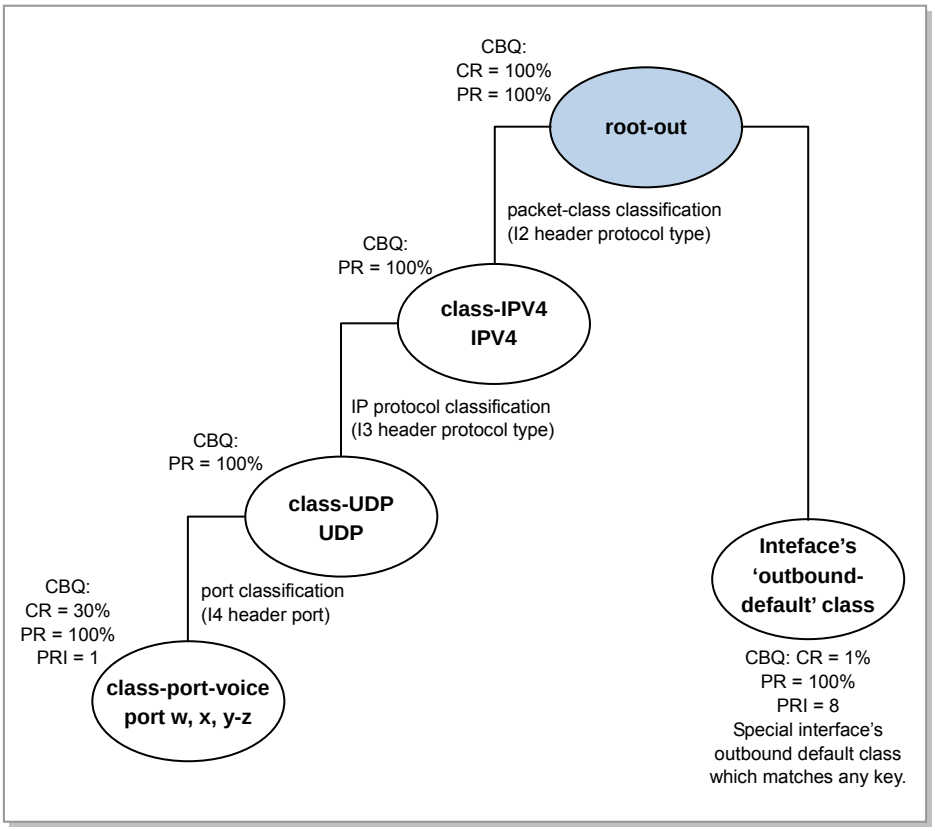

Figure 3.1 Auto QoS Parameter Definition for WAN Interfaces

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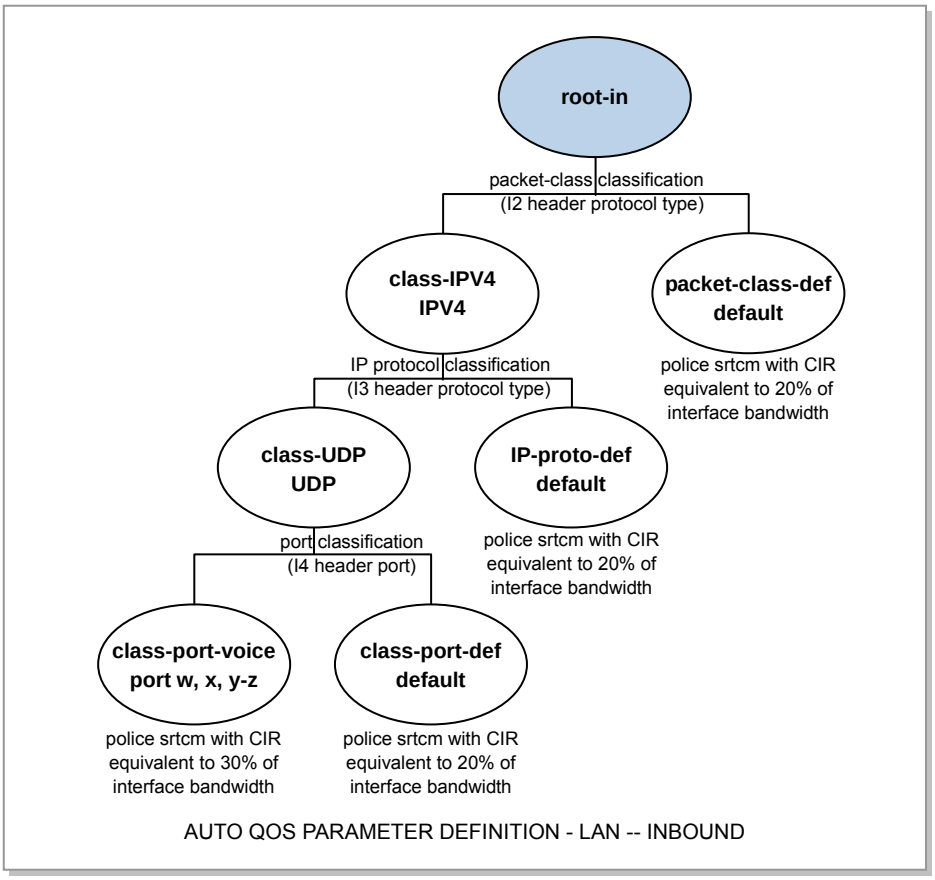

Figure 3.2 Auto QoS Parameter Definition for LAN Interfaces

syntax

[no]auto-qos

default

no auto-qos

example

In the following example, provides interface specific QoS parameters

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# auto-qos
```

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related commands

None.

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

3.4.2 disable-qos

This command disables QoS features with different actions based on interface type.

QoS supported interfaces can be divided to following groups based on CBQ and WRED/DS-RED support…

- CBQ-Enabled Group (WAN and Crypto Interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration except enabling interface WRED if it was disabled. Traffic through this group bypass without influence of QoS features configured in this group.
  When disable QoS is taken off from the interface and interface still remembers that WRED is enabled because of disable QoS process, the interface WRED state must re-instated as it was before disable QoS. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled
- Non-CBQ-Enabled Group (Tunnel, Ethernet, and VLAN interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration. Traffic through this group bypass without influence of QoS features configured in this group. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled

syntax

[no]disable-qos

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default

no disable-qos

example

In the following example, disables QoS features.

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# disable-qos
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos

3.4.3 REM

This command adds comments at the beginning of qos configuration.

syntax

REM comment <‘word’>

Parameter	Description
comment	Comments for the QoS. Valid length 80.

default

None.

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example

In the following example, add comments

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# REM 'voice class Description'
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos

3.4.4 policy-map

QoS related policies are defined under the QoS context <configure/qos>.
A QoS policy map is created or deleted using this command. Each QoS policy is identified using a name. If a policy map is deleted, all the classes associated with that map will be automatically removed.

syntax

policy-map policy_name<name>
no policy-map policy_name<name>

Parameter	Description
policy_name	Specify the name of the policy.

example

To configure the QoS Policy. enter:

```
Router/configure/qos# policy-map policy1
```


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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

configure qos policy-map policy-class

A class is created or deleted using this command. A class is used to group all the rules that have a common action. If a policy map is deleted, all the classes associated with that map will be automatically removed. And a class can be deleted even if the policy containing the class, remains mapped to an interface.

syntax

policy-class policy_class_name<name>
no policy-class policy_class_name<name>

Parameter	Description
policy_class_name	Specify the name of the class.

example

```
Router/configure/qos/policy-map policy-class# policy-class
class1
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map

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configure qos policy-map policy-class police

Policing will be configured and enabled within each traffic class. A command mode called ‘police’ will be created under ‘class’. Under the ‘police’ mode, there will be commands for ‘srTCM’ and ‘trTCM’.

syntax

police

example

```
Router/configure/qos/policy-map policy1/policy-class class1#
police
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

configure qos policy-map policy-class police srtcm

The command configures srTCM for a class. The srTCM algorithm uses single rate CIR, and two burst sizes, i.e., CBS, and EBS. The srTCM policing can be configured for a class. Only ‘cir’ is mandatory. The rest of the parameters are optional.

syntax

srtcm cir_value<3-85300000> [cbs cbs_value<1-100000>] [ebs ebs_value <1-100000>]

Parameter	Description
cir_value	Committed Information Rate (cir) will be specified in kbps
cbs_value	Committed Burst Size (cbs) will be specified in bytes.
ebs_value	Excess Burst Size (ebs) will be specified in bytes.

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example

```
Router/configure/qos/policy-map policy1/policy-class
class1/police# srtcm 5000 cbs 300 ebs 400
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

configure qos policy-map policy-class police trtcm

The command configures trTCM for a class. The trTCM algorithm uses two rates CIR and PIR, and two burst sizes, CBS and PBS. The trTCM is typically implemented using two token buckets of size CBS, and PBS.
The trTCM policing can be configured for a traffic class. Only ‘cir’ and ‘pir’ are mandatory. The rest of the parameters are optional.

syntax

trtcm cir_value<3-85300000> pir_value<3-85300000> [cbs cbs_value< 1-100000>] [pbs pbs_value<1-100000>]

Parameter	Description
cir_value	Committed Information Rate (cir) will be specified in kbps
pir_value	Peak Information Rate (pir) will be specified in kbps
cbs_value	Committed Burst Size (cbs) will be specified in bytes.
pbs_value	Peak Burst Size (pbs) will be specified in bytes.

example

```
Router/configure/qos/policy-map policy1/policy-class
class1/police# trtcm 5000 7000 cbs 300 pbs 400
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

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configure qos policy-map policy-class police mark-up-dscp

A policer can be configured to re-mark a packet based on its conformance level and pre-COS attributes assigned to it. Re-marking will be based on ‘l2’ for non-IP packets and ‘l3’ for ip packets. This command is used to enable or disable remarking of up (user priority) so that this field is mapped to dscp field in l3 header.

syntax

mark-up-dscp
no mark-up-dscp

default

enable

example

The mark-up-dscp status is enabled.

```
Router/Configure/qos/policy-map policy1/policy-class class1#
mark-up-dscp
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

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configure qos policy-map policy-class police red-drop

All the policing and accounting related configurations are done within the context of a class. If a class is deleted, the associated policer configuration is removed from the related L3 LAN module such as LMP20.

syntax

red-drop
no red-drop

default

disable

example

```
Router/Configure/qos/policy-map policy1/policy-class
class1/police# red-drop
Router/Configure/qos/policy-map policy1/policy-class
class1/police# no red-drop
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

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configure qos policy-map policy-class police color-aware

A policer can be configured to remark a packet based on its conformance level and pre-COS attributes assigned to it. Remarking will be based on ‘l2’ for non-IP packets and ‘l3’ for ip packets.

syntax

color-aware
no color-aware

default

disable

example

```
configure/qos/policy-map policy1/policy-class class1/police#
color-aware
configure/qos/policy-map policy1/policy-class class1/police#
no color-aware
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

configure qos policy-map policy-class police billing

This command enables or disables global billing.

syntax

billing enable
no billing enable

default

disable

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example

```
Router/configure/policy-map policy1/policy-class class1#
billing enable
Router/configure/policy-map policy1/policy-class class1# no
billing enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

configure qos policy-map policy-class police police

This command enables or disables policing for a policy class.

syntax

police enable
no police enable

example

```
Router/configure/qos/policy-map policy1/policy-class class1#
police enable
Router/configure/qos/policy-map policy1/policy-class class1#
no police enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class/police

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configure qos policy-map policy-class match

Once a class is created, matching rules can be added to and deleted from the class. Each rule can have multiple matching fields and operations. When a class is deleted all the rules attached to that class are deleted. Each rule contains a set of match fields, matching criteria and match values. Rules are created within a class context. Within a single rule a particular match field cannot be specified more than once. Support for Ipv6 will be provided later.

syntax

match packet_class<ipv4 | ethernet> [src-ip | dest-ip ip_addr<A.B.C.D>] [src-mac | dest-mac mac_addr<A:B:C:D:E:F>] [src-port | dest-port port_value<0-65535>] [ip-proto ip_protocol<1-255>] [vlan-id id_num<2-4095>] [dscp dscp_value<0-63>] [tos tos_value<0-255>] [ether-type type_value<value>] [user-priority user_priority_value<0-7>] [precedence precedence_value<0-2>]

no match packet_class<ipv4 | ethernet> [src-ip | dest-ip ip_addr<A.B.C.D>] [src-mac | dest-mac mac_addr<A:B:C:D:E:F>] [src-port | dest-port port_value<0-65535>] [ip-proto ip_protocol<1-255>] [vlan-id id_num<2-4095>] [dscp dscp_value<0-63>] [tos tos_value<0-255>] [ether-type type_value<value>] [user-priority user_priority_value<0-7>] [precedence precedence_value<0-2>]

Parameter	Description
ipv4	IPv4 packet type
ethernet	Ethernet packet type
src-mac	Src MAC, exact value/range/exclude (E.g., match ipv4/ethernet src-mac 00:01:02:03:04:05)
dest-mac	Dest MAC, exact value/range/exclude (E.g., match ipv4/ethernet dst-mac exclude-00:01:02:03:04:05)
ether-type	Ethernet protocol type, exact value/exclude (E.g., match ipv4/ethernet ether-type 0x0807)
user-priority	802.1p COS user priority, exact value/exclude (E.g., match ipv4/Ethernet user-priority 6)
vlan-id	VLAN Id, exact value/range/exclude (E.g., match ipv4/ethernet vlan-id 1000-2000)

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(Continued)

Parameter	Description
src-ip	Src IP, exact value/range/masked/exclude (E.g., match ipv4 src-ip x.x.x.x-y.y.y.y)
dest-ip	Dest IP, exact value/range/masked/exclude (E.g., match ipv4 dest-ip 1.2.3.4/24)
ip-proto	IP protocol, exact value/range/exclude (E.g., match ipv4 ip-proto 10)
src-port	Source TCP/UDP port, exact value/range/exclude/>=/<= (E.g., match ipv4 src-port lte-1000)
dest-port	Destination TCP/UDP port, exact value/range/exclude/>=/<= (E.g., match ipv4 dest-port exclude-1000)
dscp	DSCP value, exact value/range/exclude (E.g., match ipv4 dscp 30)
tos	IP ToS value, exact value/range/exclude (E.g., match ipv4 tos 10)
precedence	IP precedence value, exact value/range/exclude (E.g., match ipv4 precedence 2)

example

```
Router/configure/qos/policy-map policy1/policy-class class1#
match ipv4 src-ip 10.10.10.1-10.10.10.20
Router/configure/qos/policy-map policy1/policy-class class1#
match ethernet src-mac 00:12:34:56:78:9a
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

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configure qos policy-map policy-class mark-outq

This command configures outq value. A QoS policy is a set of rules and associated actions, used to provide specific QoS treatment to a selected set of traffic flows. The selected set of traffic can be directed to one of the available eight queues.

syntax

mark-outq outq_value<1-8>
no mark-outq outq_value<1-8>

example

Configure the outq (1-8) value using the following command,

```
Router/configure/qos/policy-map policy1/policy-class class1#
mark-outq 1
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

configure qos policy-map policy-class mark-up

This command configures user priority value. A QoS policy is a set of rules and associated actions, used to provide specific QoS treatment to a selected set of traffic flows. The selected set of traffic can be marked with the user priority value specified.

syntax

mark-up up_value<0-7>
no mark-up up_value<0-7>

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example

Configure the UP (0-7) value using the following command,

```
Router/configure/qos/policy-map policy1 /policy-class
class1# mark-up 2
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

configure qos policy-map policy-class mark-dscp

This command configures dscp value. A QoS policy is a set of rules and associated actions, used to provide specific QoS treatment to a selected set of traffic flows.
The selected set of traffic can be marked with the dscp value specified.

syntax

mark-dscp dscp_value<0-63>
no mark-dscp dscp_value<0-63>

applicable for both IP and non-IP packets

example

Configure the dscp (0-63) value using the following command,

```
Router/configure/qos/policy-map policy1/policy-class class1#
mark-dscp 20
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

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configure qos policy-map policy-class mark-dp

This command configures drop precedence value. A QoS policy is a set of rules and associated actions, used to provide specific QoS treatment to a selected set of traffic flows. The selected set of traffic can be marked with the dp value specified

syntax

mark-dp dp_value <0-2>
no mark-dp dp_value <0-2>

example

```
Router/configure/qos/policy-map policy1/policy-class class1#
mark-dp 2
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

configure qos policy-map policy-class pbr-redirect

This command provides support for PBR redirection related configuration. The PBR redirection action can be specified for each policy class. The PBR redirection action includes configuring either next-hop IP address or interface. This command details for configuring PBR redirect action command.

syntax

pbr-redirect [next-hop ip_addr<A.B.C.D> | lsp MPLS_LSP_interface_name<name>]

no pbr-redirect [next-hop ip_addr<A.B.C.D> | lsp MPLS_LSP_interface_name<name>]

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example

Configure the pbr redirect using the following command,

```
router/configure/qos/policy_test/class_test/# pbr-redirect
nexthop 10.203.121.10
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

configure qos policy-map policy-class flow-rate-monitoring

Flow rate monitoring can be enabled/disabled for a class.

syntax

flow-rate-monitoring enable

no flow-rate-monitoring enable

example

```
router/configure/qos/policy_test/class_test/# flow-rate-
monitoring enable
router/configure/qos/policy_test/class_test/# no flow-rate-
monitoring enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/policy-map/policy-class

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3.4.5 police

This command configures policing based remarking tables. CoS remarking involves the marking of one or more CoS attributes associated with a packet based on the conformance level and the CoS attributes assigned to it by the previous stages. The remarking can be based on DSCP (l3-cos-map) or UP/TC (l2-cos-map).

syntax

police

example

```
Router/configure/qos# police
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

configure qos police l2-cos-map

The L2 CoS based remarking table can be configured system wide using the following command. The l2 CoS remarking table uses the initial marked user priority or internal traffic class and conformance level. This table has 24 entries (8 UP/TC and 3 conformance levels).

syntax

l2-cos-map user_prioirity<0-7> color_value<green | yellow | red> [mark-dscp dscp_value<0-63>] [mark-dp dp_value<0-2>] [mark-up up_value<0-7>]

no l2-cos-map user_prioirity<0-7> color_value<green | yellow | red> [mark-dscp dscp_value<0-63>] [mark-dp dp_value<0-2>] [mark-up up_value<0-7>]

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example

```
Router/configure/qos/police# l2-cos-map 7 green mark-dscp 54
mark-dp 2
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/police

configure qos police l3-cos-map

The L3 CoS based remarking table can be configured system wide. The l3 CoS remarking table uses the initial marked DSCP and conformance level for remarking the CoS attributes. This table has 192 entries (64 DSCP and 3 confromance levels).

syntax

l3-cos-map dscp_value<0-63> color_value<green | yellow | red> [mark-dscp dscp_value<0-63>] [mark-dp dp_value<0-2>] [mark-up up_value<0-7>]

no l3-cos-map dscp_value<0-63> color_value<green | yellow | red> [mark-dscp dscp_value<0-63>] [mark-dp dp_value<0-2>] [mark-up up_value<0-7>]

example

```
Router/configure/qos/police# l3-cos-map 54 yellow mark-up 5
mark-dp 1
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/police

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3.4.6 historical-stats

This command accesses next-level commands for configuring historical-stats.

syntax

historical-stats

default

None.

example

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# historical-stats
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos

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configure qos historical-stats sample-interval

This command configures the length of the historical statistics sample interval.

syntax

sample-interval interval<5 | 10 | 15>

Parameter	Description
interval	Sample interval length (5, 10 or 15 minutes)

default

None.

example

In the following example, configure 10 minutes sample-interval

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# historical-stats
Router/configure/qos/historical-stats# sample-interval 10
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos/historical-stats

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configure qos historical-stats upload

This command configures and enables uploading of historical statistics.

syntax

upload [interval interval<1-4> | file-id file_name<name>]

Parameter	Description
interval	Upload interval (1, 2, 3 or 4 hours)
file_name	Upload file ID

default

None.

example

In the following example, configure 1 hour upload interval

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# historical-stats
Router/configure/qos/historical-stats# upload interval 1
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos/historical-stats

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configure qos historical-stats ftp-parameters

This command sets the FTP parameters related to historical statistics upload.

syntax

ftp-parameters

primary_ftp_server <ip_address>
seconfdary_ftp_server <ip_address>
ftp_user_name <name>
ftp_password <password>

Parameter	Description
primary_ftp_server	IP address
secondary_ftp_server	IP address
ftp_user_name	Name
ftp_password	Password

default

None.

example

In the following example, configure ftp-parameters

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# historical-stats
Router/configure/qos/historical-stats# ftp-parameters
Primary Ftp Server: 11.11.11.11
Secondary Ftp Server: 11.11.11.12
Ftp user name: common
Ftp password: 1234
```

related commands

None.

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos/historical-stats

3.4.7 policing

This command enables or disables global policing.

syntax

ing enable
no policing enable

example

```
Router/configure/qos# policing enable
Router/configure/qos# no policing enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

3.4.8 billing

Billing can be enabled or disabled on system with using the following command.

syntax

billing enable
no billing enable

default

disable

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example

```
Router/Configure/qos# billing enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

3.4.9 conformance-counter

Conformance counters can be enabled or disabled on system with using the following command.

syntax

conformance-counter enable
no conformance-counter enable

default

disable

example

```
Router/configure/qos# conformance-counter enable
Router/configure/qos# no conformance-counter enable
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

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3.4.10 REM_

This command adds comments at the end of qos confgiuration.

syntax

REM_ comment <word>

Parameter	Description
comment	Comments for the QoS. Valid length 80.

default

None.

example

In the following example, add comments

```
Router# configure terminal
Router/configure# qos
Router/configure/qos# REM_ 'voice class Description'
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/qos

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3.4.11 map-up-to-outq

Use this command to configure the global UP-to-TC mapping table.

syntax

map-up-to-outq user_priority_value<0-7> outq_value<1-8>

example

```
Router/configure/qos# map-up-to-outq 2 output-queue 7
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

3.4.12 map-up-to-outq-LFP

Use this command to configure the global UP-to-TC mapping table.

syntax

map-up-to-outq user_priority_value<0-7> outq_value<1-8>

example

```
Router/configure/qos# map-up-to-outq-LFP 2 output-queue 7
```

applicable models/versions

iBG2016 with LFP-20

command modes

Router/configure/qos

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3.4.13 map-outq-to-up

Use this command to configure the global TC-to-UP mapping table.

syntax

map-outq-to-up outq_value<1-8> user_priority_value<0-7>

example

```
Router/configure/qos# map-outq-to-up 2 user-priority 3
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

3.4.14 map-up-to-dp

Use this command to configure the global UP-to-DP mapping table.

syntax

map-up-to-dp user_priority_value<0-7> drop_precedence_value<0-2>

example

```
Router/configure/qos# map-up-to-dp 3 drop-precedence 1
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos

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3.4.15 qos-congestion-set

Use this command to configure congestion management profiles.

syntax

qos-congestion-set congestion_profile<1-4>

example

```
Router/configure/qos# qos-congestion-set 2
Router/configure/qos/qos-congestion-set 2#
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

configure/qos

configure qos qos-congestion-set red

This command configures which congestion set parameters must be used for Ethernet LAN module port associating with this physical port. Let you configure the one set of WRED parameters. There are 4 such sets available in Ethernet LAN modules such as LMG20.
These four sets are configured for all LAN modules configured in the system.

syntax

red outq<1-8> drop_precedence<0-2> maxTh threshold_value<1-4096> minTh threshold_value<1-4096> mpd mpd_value<0-10>

Parameter	Description
maxTh	Maximum threshold of the output queue
minTh	Minimum threshold of the output queue
mpd	The mark probability denominator. It is the exponent factor in maximum probability calculation with expression 1/2n

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example

Set the RED minimum avg queue length threshold, maximum avg queue length threshold, maximum drop probability and queue (1-8) and drop precedence (0-2) using the following command example:

```
Router/configure/qos# qos-congestion-set 1
Router/configure/qos/qos-congestion-set 1# red 1 2 minth 30
maxth 60 mpd 4
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/qos-congestion-set

configure qos qos-congestion-set red-ewma-wt

This command configures EWMA weight for egress queues.

syntax

red-ewma-wt outq<1-8> ewma_factor<number>

Parameter	Description
Ewma_factor	EWF or WRED weighting factor used in average queue size calculation

example

```
Router/configure/qos# qos-congestion-set 1
Router/configure/qos/qos-congestion-set 1# red-ewma-wt 1 5
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/qos/qos-congestion-set

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3.4.16 clone-policy-map

This command clones the policy map using the source policy map.

syntax

clone-policy-map destination_policy_map<name>
source_policy_map<name>

example

```
Router/configure/qos# clone-policy-map p1 p2
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

configure/qos

3.4.17 flow-rate-monitoring

Flow rate sampling using the billing counters associated with a policer that can be configured for a policy. The average flow rate calculation will be done based on the moving average of the flow rate at every sampling interval.

syntax

clone-policy-map destination_policy_map<name>
source_policy_map<name>

Parameter	Description
sampling-interval	Sampling interval for flow rate monitoring in seconds.
sampling-period	Sampling period for flow rate monitoring in seconds.

example

```
Router/configure/qos# flow rate-monitoring sampliing-
interval 20 sampling-period 300
```

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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

default

Flow rate sampling status is non-active.
Flow rate sampling interval: 60 seconds
Flow rate sampling period: 600 seconds

command modes

configure/qos

3.4.18 enable-flow-rate-sampling

This command starts/stops flow rate sampling process.

syntax

enable-flow-rate-sampling
no enable-flow-rate-sampling

example

```
Router/configure/qos# enable-flow-rate-sampling
Router/configure/qos# no enable-flow-rate-sampling
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

configure/qos

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3.4.19 map-dscp-to-outq

Use this command to configure the global DSCP-to-TC mapping table.

syntax

map-dscp-to-outq dscp_value<0-63> outq_value<0-3>

example

```
Router/configure/qos# map-dscp-to-outq 2 output-queue 3
```

applicable models/versions

iBG2006, iBG2016 with LFP-20

command modes

Router/configure/qos

3.4.20 queue-mode

Use this command to configure the outbound queuing mode. Default queuing mode is WRR.

syntax

queue-mode value<spq/wrr>

example

```
Router/configure/qos# queue-mode spq
```

applicable models/versions

iBG2006, iBG2016 with LFP-20

command modes

Router/configure/qos

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3.5 module

This command accesses next-level commands for configuring interface ports.

syntax

module

example

```
Router/configure# module
```

related commands

configure module ct3 configure module e1 configure module t1 configure module t3 configure module adsl

applicable models/versions

All models.

command modes

Router/configure

3.5.1 module t1

This command accesses next-level commands for selecting a T1 link for configuration.
To select multiple contiguous T1 links for configuration, type **t1 n-n** (where **n-n** is the range of T1s to be configured).
parameterDescription
<slot/subslot/port> Number of the T1 WAN link to be configured. The range is 1-16, depending on the system model.

syntax

module t1 <slot/subslot/port> <n>

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example

```
Router/configure# module t1 1
```

applicable models/versions

T1 modules

command modes

Router/configure/module

configure module t1 alarms

This command accesses next-level commands for configuring alarm reporting on a T1 link.

syntax

alarms

example

```
Router/configure/module/t1 0/0/0# alarms
```

related commands

configure module t1 alarms thresholds, configure module t1 alarms hierarchy

applicable models/versions

T1 modules

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configure module t1 alarms hierarchy

This command enables and disables the hierarchy for showing RLOS and RLOF on a T1 link.

Users may select an individual T1 or a range of T1s when using this command.

syntax

alarms hierarchy

example

```
Router/configure/module/t1 0/0/0# alarms hierarchy
```

To view the alarms hierarchy once it has been set, use the **show module configuration** command. The show will indicate either ‘True’ or ‘False’. True means that RLOS is RLOS only; False means that RLOS is RLOS plus RLOF.

related commands

configure module t1 alarms thresholds

applicable models/versions

T1 modules

configure module t1 alarms thresholds

This command accesses next-level commands for configuring alarm thresholds. If a user-defined threshold is exceeded, the system reports an alarm. These alarms indicate the possible deterioration of an associated T1link.

syntax

thresholds

example

```
Router/configure/module/t1 0/0/0/alarms# thresholds
```


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related commands

configure module t1 alarms thresholds user

related commands

configure module t1 alarms hierarchy

applicable models/versions

T1 modules

configure module t1 alarms thresholds user

This command sets the T1 user statistic alarm thresholds.
When thresholds are exceeded, the system generates alarms that indicate the possible deterioration of a T1 link. Refer to the following parameters to determine the specific T1 data type that needs to be configured. You can define one alarm threshold for each parameter.

syntax

user number<1-10> variable<ses | es | bes | uas | eev | lofc | css | oof | crc | bpv> interval <1-65535> rising_threshold <0-2147483647> falling_threshold <0-2147483647> sample_type [<absolute | delta>]

Parameter	Description
number	Statistic alarm threshold number The range is 1-10.
variable	Variable on which a threshold is to be configured. - ses: Threshold for Severely Errored Seconds - es: Threshold for Errored Seconds - bes: Threshold for Bursty Errored Seconds - uas: Threshold for Unavailable Seconds - eev: Threshold for Excessive Error Violation Seconds - lofc: Threshold for Loss-of-Frame Counts - css: Threshold for Controlled Slip Seconds - oof: Threshold for Out-of-Frame Seconds - crc: Threshold for CRC-6 errors - bpv: Threshold for Bipolar Violations

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(Continued)

Parameter	Description
interval	Sampling interval, in seconds. The range is 1-65535.
rising_threshold	Number of errored seconds or events which, if exceeded during any sampling interval, results in a rising alarm. The range is 0-2147483647.
falling_threshold	Minimum number of errored seconds or events below which a falling alarm is reported. This alarm is reported if a rising alarm was previously reported and the number of errored seconds or events subsequently dropped below this minimum threshold. The falling threshold value must be less than the rising threshold value above. The range is 0-2147483647.
sample_type	Method of sampling, as follows: - absolute: The errored second or event count is compared directly to the specified threshold values, and the appropriate alarm type (rising or falling) is reported. - delta: The errored second or event count is compared to the difference between the rising and falling thresholds above, and a rising alarm is reported if the actual error count exceeds that difference. This is the default setting if you do not specify a sampling type.

example

```
Router/configure/module/t1 1-3/alarms/thresholds# user 1 ses
300 50 30
```

In this example, the monitored parameter is the number of Severely Errored Seconds that occur. The sampling interval is set to 300 seconds (5 minutes). The rising alarm threshold is 50 SES and the falling alarm threshold is 30 SES.

Delta sampling is used (by default), in which a rising alarm is reported if the SES count increases by 20 (50-30 = 20) during any sampling interval. Similarly, a falling alarm is reported if the SES count decreases by 20 during any interval.

applicable models/versions

T1 modules

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configure module t1 circuit_Id

This command specifies an optional circuit name to the T1 channel.

syntax

circuit_Id circuit_Id <*name*>

Parameter	Description
circuit_Id	Optional circuit name for the T1 channel.

example

```
Router/configure/module/t1 0/0/0# circuit_Id Main01
```

related commands

configure module t1 alarms, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linemode

applicable models/versions

T1 modules

configure module t1 clock_source

This command specifies a network timing source for a T1 link.

syntax

clock_source clock_source <internal | line>

Parameter	Description
clock_source	The desired clock source - internal: Router system's internal clock (default). - line: Clock recovered from the incoming T1 signal (loop timing).

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example

```
Router/configure/module/t1 0/0/0# clock_source line
```

related commands

configure module t1 alarms, configure module t1 circuit_Id, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linemode

applicable models/versions

T1 modules

configure module t1 contactInfo

This command specifies a person to contact for information regarding the T1 link.

syntax

contactInfo contactinfo <*name*>

Parameter	Description
contactinfo	contactInfo Person to contact for information

example

```
Router/configure/module/t1 0/0/0# contactInfo James Smith
```

related commands

configure module t1 alarms, configure module t1 circuit_Id, configure module t1 clock_source, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linemode

applicable models/versions

T1 modules

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configure module t1 Description

This command describes the T1 interface.

syntax

Description *Description <name>*

Parameter	Description
Description	Describes or names the T1 interface

example

```
Router/configure/module/t1 0/0/0# Description xyzInc
```

related commands

configure module t1 alarms, configure module t1 circuit_Id, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 enable, configure module t1 framing, configure module t1 linemode

applicable models/versions

T1 modules

configure module t1 enable

This command places a T1 link in service and allows the link to transmit and receive data.

To take a T1 link out of service, type **no enable** at the configure/module/t1 prompt. This action sends an all-ones Alarm Indication Signal (AIS) to the far end and places the link out of service.

To verify the in-service or out-of-service status of a T1 channel, use the **show module configuration t1** command.

syntax

enable

no enable

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example

```
Router/configure/module/t1 0/0/0# enable
```

related commands

configure module t1 alarms, configure module t1 circuit_Id, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 framing, configure module t1 linemode

applicable models/versions

T1 modules

configure module t1 framing

This command sets the framing mode for a T1 link. The standard frame is 193bits long (1 Framing bit +24 8bit timeslots). Each timeslot is scanned at a rate of 8000 times per second (as in D4/SF). The line rate is 1.544MBPS supporting a data 'payload' of 1.536 MBPS.

syntax

framing framing <esf | d4>

Parameter	Description
framing	t1 framing mode setting - esf: Extended Super Frame framing format for T1 (default) - d4: Super Frame framing format for T1

example

```
Router/configure/module/t1 0/0/0# framing d4
```

related commands

configure module t1 alarms, configure module t1 circuitID, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 linecode, configure module t1 linemode, configure module t1 yellow_alarm

applicable models/versions

T1 modules

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configure module t1 linecode

This command sets the type of line coding for a T1 link. B8ZS (bipolar 8-zero substitution, also called *binary 8-zero substitution*, *clear channel*, and *clear 64*) is an encoding method used on T1 circuits that inserts two successive ones of the same voltage-referred to as a *bipolar violation*-into a signal whenever eight consecutive zeros are transmitted. AMI (Alternate Mark Inversion) is a synchronous clock encoding technique which uses bipolar pulses to represent logical 1 value.

syntax

linecode linecode <b8zs | ami>

Parameter	Description
linecode	t1 linecode setting - b8zs: linecode for T1 (default) - ami: linecode for T1

example

```
Router/configure/module/t1 0/0/0# linecode b8zs
```

related commands

configure module t1 alarms, configure module t1 circuitID, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linemode, configure module t1 yellow_alarm

applicable models/versions

T1 modules

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configure module t1 linemode

This command accesses next-level commands for defining the type of T1 WAN interface and setting the T1 signal level accordingly.

syntax

linemode

example

```
Router/configure/module/t1 0/0/0# linemode
```

related commands

configure module t1 linemode csu configure module t1 linemode dsx configure module t1 alarms, configure module t1 circuitID, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linecode, configure module t1 yellow_alarm

applicable models/versions

T1 modules

configure module t1 linemode csu

This command sets the amount of T1 line build-out for a CSU interface.

syntax

csu lbo <db_zero | db7_5 | db15 | db22_5>

Parameter	Description
lbo	t1 csu Line build out - db_zero: Configure LBO for zero db (default) - db7_5: Configure LBO for 7.5 db - db15: Configure LBO for 15 db - db22_5: Configure LBO for 22.5 db

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example

```
Router/configure/module/t1 0/0/0/linemode# csu db15
```

related commands

configure module t1 linemode dsx

applicable models/versions

T1 modules

configure module t1 linemode dsx

This command sets the amount of T1 signal equalization based on the cabling distance to the DSX cross-connect.

syntax

dsx cable_length <1 | 2 | 3 | 4 | 5>

Parameter	Description
cable_length	Cabling distance to DSX bay, as follows: - 1: 0-133 feet - 2: 133-266 feet - 3: 266-399 feet - 4: 399-533 feet - 5: 533-655 feet

example

```
Router/configure/module/t1 0/0/0/linemode# dsx 2
```

related commands

configure module t1 linemode csu

applicable models/versions

T1 modules

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configure module t1 loopback_framing

This command sets the amount of T1 signal equalization based on the cabling distance to the DSX cross-connect.

syntax

loopback_framing loopback_framing <overwrite | insert>

Parameter	Description
Loopback_framing	When the inband insertion gaps the data to the inband code detector (IBCD) block during the framing bit. This allows the IBCD to be used to detect an idle code that is inserted only in the payload of the receive DS1 PCM stream:
	overwrite: overwriting of framing for in-band loopcode for T1 insert: insertion of framing for in-band loopcode for T1

example

```
Router/configure/module/t1 0/0/0# loopback_framing overwirte
```

related commands

None.

applicable models/versions

T1 modules

configure module t1 name

This command configures the name an T1 WAN interface.

syntax

name name <*name*>

Parameter	Description
name	Describes or names the T1 interface

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example

```
Router/configure/module/t1 0/0/0# name abclnc
```

applicable models/versions

T1 modules

configure module t1 yellow_alarm

This command sets the yellow alarm operation on a T1 link. Alarm indicating that the remote end of the facility is not receiving a signal. In order for a device to declare a remote alarm, it must be receiving the alarm signal from the remote equipment.

syntax

yellow_alarm yellow_alarm <generate | detect | gen_det | disable>

Parameter	Description
yellow_alarm	Type of yellow alarm operation - generate: Generate and send yellow alarms to network. - detect: Detect incoming yellow alarms from network. - gen_det: Generate and detect yellow alarms. - disable: Disable yellow alarm generator and detector.

example

```
Router/configure/module/t1 0/0/0# yellow_alarm gen_det
```

related commands

configure module t1 alarms, configure module t1 circuitID, configure module t1 clock_source, configure module t1 contactInfo, configure module t1 Description, configure module t1 enable, configure module t1 framing, configure module t1 linecode, configure module t1 linemode

applicable models/versions

T1 modules

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configure module t1 cas-ds0-group

Use this command to enable voice mode on a module and assign the number of the voice channel group to be used. Use the no form of this command to disable this function.

syntax

cas-ds0-group number <0-23>
no cas-ds0-group number <0-23>

Parameter	Description
number	configure T1 ds0 CAS Signalling Group The range is 0-23

Use this command to change the voice mode on the module. When you use this command, you cannot make any data interface bundle on this module.

default

Node

example

In the following example, interface module t1 0/0/0 is configured voice mode and assign the number is specified as 0. This number is used to group name to add some number of ds0 channel for voice port. After use this command, you can use the voice functionality on this group.

```
Router# configure terminal
Router/configure# module t1 0/0/0
Router/configure/module/t1 <0/0/0># cas-ds0-group 0
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/module

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3.5.2 module e1

This command accesses next-level commands for selecting an E1 link for configuration.

syntax

module e1 number <slot/subslot/port>

Parameter	Description
number	<slot/subslot/port> Number of the E1 WAN - Mini module: slot/subslot/number - Network module: slot/port

example

```
Router/configure# module e1 0/0/0
```

related commands

configure module e1 alarms, configure module e1 circuitID, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

configure module e1 alarms

This command accesses next-level commands for configuring alarm thresholds on an E1 link.

syntax

alarms

example

```
Router/configure/module/e1 0/0/0# alarms
```

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related commands

configure module e1 alarms thresholds

applicable models/versions

E1 modules

configure module e1 alarms hierarchy

This command enables and disables the hierarchy for showing RLOS and RLOF on a E1 link.
Users may select an individual E1 or a range of E1s when using this command.

syntax

alarms hierarchy

example

```
Router/configure/module/e1 0/0/0# alarms hierarchy
```

To view the alarms hierarchy once it has been set, use the **show module configuration** command. The show will indicate either ‘True’ or ‘False’. True means that RLOS is RLOS only; False means that RLOS is RLOS plus RLOF.

related commands

configure module e1 alarms thresholds

applicable models/versions

E1 modules

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configure module e1 alarms thresholds

This command accesses next-level commands for configuring alarm thresholds. If a user-defined threshold is exceeded, the system reports an alarm. These alarms indicate the possible deterioration of an associated E1 link.

syntax

thresholds

example

```
Router/configure/module/e1 0/0/0/alarms# thresholds
```

related commands

configure module e1 alarms thresholds user

applicable models/versions

E1 modules

configure module e1 alarms thresholds user

This command sets the E1 user statistic alarm thresholds.
When thresholds are exceeded, the system generates alarms that indicate the possible deterioration of an E1 link. Refer to the following parameters to determine the specific E1 data type that needs to be configured. You can define one alarm threshold for each parameter.

syntax

user number<1-10> variable<ses |es | bes | uas | eev | lofc |css |oof | crc | bpv> interval <1-65535> rising_threshold<0-2147483647> falling_threshold<0-2147483647> sampling_type [<absolute | delta>]

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Parameter	Description
number	Statistic alarm threshold number (1-10).
variable	Variable on which a threshold is to be configured - ses:Threshold for Severely Errored Seconds - es: Threshold for Errored Seconds - bes:Threshold for Bursty Errored Seconds - uas:Threshold for Unavailable Seconds - eev:Threshold for Excessive Error Violation Seconds - lofc:Threshold for Loss-of-Frame Counts - css:Threshold for Controlled Slip Seconds - oof:Threshold for Out-of-Frame Seconds - crc:Threshold for CRC-6 errors - bpv:Threshold for Bipolar Violations
interval	Sampling interval, in seconds. The range is 1-65535.
rising_threshold	Number of errored seconds or events which, if exceeded during any sampling interval, results in a rising alarm. The range is 0-2147483647.
falling_threshold	Minimum number of errored seconds or events below which a falling alarm is reported. This alarm is reported if a rising alarm was previously reported and the number of errored seconds or events subsequently dropped below this minimum threshold. The falling threshold value must be less than the rising threshold value above. The range is 0-2147483647.
sampling_type	Method of sampling, as follows: - absolute: The errored second or event count is compared directly to the specified threshold values, and the appropriate alarm type (rising or falling) is reported. - delta: The errored second or event count is compared to the difference between the rising and falling thresholds above, and a rising alarm is reported if the actual error count exceeds that difference. This is the default setting if you do not specify a sampling type

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example

```
Router/configure/module/e1 0/0/0/alarms/thresholds# user 1
ses 300 50 30
```

In this example, the monitored parameter is the number of Severely Errored Seconds that occur. The sampling interval is set to 300 seconds (5 minutes). The rising alarm threshold is 50 SES and the falling alarm threshold is 30 SES. Delta sampling is used (by default), in which a rising alarm is reported if the SES count increases by 20 (50-30 = 20) during any sampling interval. Similarly, a falling alarm is reported if the SES count decreases by 20 during any interval.

applicable models/versions

E1 modules

configure module e1 circuit_Id

This command specifies an optional circuit name to the E1 channel.

syntax

circuit_Id circuit_Id <*name*>

Parameter	Description
circuit_Id	Optional circuit name for the E1 channel.

example

```
Router/configure/module/e1 0/0/0# circuit_Id Main01
```

related commands

configure module e1 alarms, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

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configure module e1 clock_source

This command specifies a network timing source for an E1 link.

syntax

clock_source clock_source <internal | line>

Parameter	Description
clock_source	The desired clock source - internal: Router system's internal clock (default). - line: Clock recovered from the incoming E1 signal (loop timing).

example

```
Router/configure/module/e1 0/0/0# clock_source line
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

configure module e1 contactInfo

This command specifies a person to contact for information regarding the E1 link.

syntax

contactInfo contactinfo <*name*>

Parameter	Description
contactinfo	contactInfo Person to contact for information

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example

```
Router/configure/module/e1 0/0/0# contactInfo James Smith
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 clock_source, configure module e1 description, configure module e1 enable, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

configure module e1 Description

This command describes the E1 interface.

syntax

Description *Description* <*name*>

Parameter	Description
Description	Describes or names the E1 interface

example

```
Router/configure/module/e 0/0/0# Description xyzInc
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 clock_source, configure module e1 contactInfo,configure module e1 enable, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

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configure module e1 enable

This command places an E1 link in service and allows the link to transmit and receive data.

To take an E1 link out of service, type **no enable** at the configure/module/e1 prompt. This action sends an all-ones Alarm Indication Signal (AIS) to the far end and places the link out of service.

To verify the in-service or out-of-service status of an E1 channel, use the **show module configuration e1** command.

syntax

enable

no enable

example

```
Router/configure/module/e1 0/0/0# enable
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 framing, configure module e1 linemode

applicable models/versions

E1 modules

configure module e1 framing

This command sets the framing mode for an E1 link. The standard frame is 32 timeslots, with each timeslot consisting of an 8-bit byte. A multi-frame consists of 16 frames, numbered zero to fifteen.

syntax

framing framing <crc | non_crc | disable>

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Parameter	Description
framing	crc (default): Sets the framing to CRC. Standard CRC-4 error detection as defined by ITUT - non_crc: Sets the framing to non-CRC. - disable: Disables framing.

example

```
Router/configure/module/e1 0/0/0# framing non_crc
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing

applicable models/versions

E1 modules

configure module e1 linecode

This command sets the type of line coding for a E1 link. The HDB3 code is a bipolar signaling technique (i.e. relies on the transmission of both positive and negative pulses). AMI (Alternate Mark Inversion) is a synchronous clock encoding technique which uses bipolar pulses to represent logical 1 values.

syntax

linecode linecode <hdb3 | ami>

Parameter	Description
linecode	E1 linecode setting - hdb3: linecode for e1 (default) - ami: linecode for E1

example

```
Router/configure/module/e1 0/0/0# linecode hdb3
```

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related commands

configure module e1 alarms, configure module e1 circuitID, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing, configure module e1 linemode, configure module e1 yellow_alarm

applicable models/versions

E1 modules

configure module e1 linemode

This command configures the linemode for an E1 WAN interface.

syntax

linemode linemode <short_haul | long_haul>

Parameter	Description
linemode	- short_haul (default): Operations for short haul - long_haul: Operations up to for long haul

example

```
Router/configure/module/e1 0/0/0# linemode short_haul
```

related commands

configure module e1 alarms, configure module e1 circuit_Id, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing

applicable models/versions

E1 modules

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configure module e1 name

This command configures the name an E1 WAN interface.

syntax

name name <*name*>

Parameter	Description
name	Describes or names the E1 interface

example

```
Router/configure/module/e1 0/0/0# name abcInc
```

applicable models/versions

E1 modules

configure module e1 yellow_alarm

This command sets the yellow alarm operation on a E1 link.
Alarm indicating that the remote end of the facility is not receiving a signal.
In order for a device to declare a remote alarm, it must be receiving the alarm signal from the remote equipment.

syntax

yellow_alarm yellow_alarm <generate | detect | gen_det | disable>

Parameter	Description
yellow_alarm	Type of yellow alarm operation - generate: Generate and send yellow alarms to network. - detect: Detect incoming yellow alarms from network. - gen_det: Generate and detect yellow alarms. - disable: Disable yellow alarm generator and detector.

example

```
Router/configure/module/e1 0/0/0# yellow_alarm gen_det
```

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related commands

configure module e1 alarms, configure module e1 circuitID, configure module e1 clock_source, configure module e1 contactInfo, configure module e1 Description, configure module e1 enable, configure module e1 framing, configure module e1 linecode, configure module e1 linemode

applicable models/versions

E1 modules

configure module e1 cas-ds0-group

Use this command to enable voice mode on a module and assign the number of the voice channel group to be used. Use the no form of this command to disable this function.

syntax

cas-ds0-group number <0-30>
no cas-ds0-group number <0-30>

Parameter	Description
number	configure E1 ds0 CAS Signaling Group The range is 0-30

Use this command to change the voice mode on the module. When you use this command, you cannot make any data interface bundle on this module.

default

None

example

In the following example, interface module e1 0/0/0 is configured voice mode and assign the number is specified as 0. This number is used to group name to add some number of ds0 channel for voice port. After use this command, you can use the voice functionality on this group.

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```
Router# configure terminal
Router/configure# module e1 0/0/0
Router/configure/module/e1 <0/0/0># cas-ds0-group 0
```

related commands

None.

applicable models/versions

None.

command modes

Router/configure/module

3.5.3 ct3

This command accesses next-level commands for configuring a CT3 interface.

syntax

module ct3 ct3_slot<1/0| 2/0>

Parameter	Description
ct3_slot	CT3 WAN link to be configured

default

None.

example

```
Router/configure# module ct3 1/0
```

related commands

configure module ct3 alarms, configure module ct3 cable_length, configure module ct3 clock_source, configure module ct3 enable, configure module ct3 fdl, configure module ct3 framing, configure module ct3 t1

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applicable models/versions

All versions.

command modes

Router/configure

configure module ct3 framing

This command configures either C-bit or M13 framing for the CT3 link. Contact your carrier to determine the appropriate setting.

syntax

framing framing_format <c_bit | m13>

Parameter	Description
Framing_format - c_bit - m13	Framing format for CT3 - C-BIT framing format for CT3 (default) - M13 framing format for CT3

default

c_bit

example

```
Router/configure/module/ct3(1/0)# framing m13
```

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 cable_length

This command sets the CT3 link transmit signal build-out.
This setting conditions the outgoing signal according to the cabling distance to the external CT3 device.

syntax

cable_length cable_length <1 | 2>

Parameter	Description
cable_length	Length of connection cable. Use 1 for 0-225 feet, or 2 for 226-450 feet

default

1 for 0-225 feet

example

```
Router/configure/module/ct3(1/0)# cable_length 1
```

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 clock_source

This command defines the network timing source for a CT3 WAN link.

syntax

clock_source clock_source<internal | line>

Parameter	Description
clock_source - internal - line	CT3 clock source - Clock generated by the Router system - Clock signal recovered from the incoming CT3 signal. Use this setting if the system will be loop-timed from the far-end CT3 system.

default

internal

example

```
Router/configure/module/ct3(1/0)# clock_source line
```

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 t1

This command sets the operating parameters for the T1 channels of a CT3 link.

syntax

t1 channel_no <n> [framing <esf | d4>] [linecode <b8zs | ami>] [clocksource <internal | line>] [yellowalarm <generate | detect | gen_det | disable>] [circuitId <string>] [contactInfo <name>] [Description <string>]

Parameter	Description
channel_no	T1 channel to be configured (1-28).
framing - esf - d4	Framing format for the t1 channel within ct3 - Extended Super Frame framing format (default) - Super Frame framing format
line code - b8zs - ami	Line coding for the t1 channel within ct3 - B8ZS line coding (default) - AMI line coding
clock source - internal - line	Transmit clock source for the t1 channel within ct3 - Local system's internal clock input (default) - Network clock source input
yellowalarm - generate - detect - gen_det - disable	Yellow alarm configuration for the t1 channel within ct3 - Generate and send yellow alarm to far end - Detect incoming yellow alarms from far end - Generate and detect yellow alarms - Yellow alarm transmission disabled (default)
Parameter	Description
circuitId	Optional circuit name for the T1 channel
contactInfo	Optional person to contact for information
Description	Optional Description of the T1 channel

default

esf b8zs internal disable

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example

```
Router/configure/module/ct3(1/0)# t1 4 esf b8zs line gen_det
circuitId Main01 contactInfo JamesSmythe Description
SJ_to_Fremont
```

In this example, T1 channel 4 is set up for ESF framing, B8ZS line coding, external clocking, and yellow alarm generation and detection.
The last three fields (circuit ID, contact information, and Description) are optional, and their keywords must precede the data. Also, these entries must be enclosed in quotation marks. In the example given, the circuit ID is main01, the person to contact is JamesSmythe, and the Description indicates the circuit path. To see a list of configurable T1 parameters, type a question mark (?) after entering the T1 number in the command string.

related commands

None.

applicable models/versions

All versions.

configure module ct3 fdl

This command configures the Facilities Data Link (FDL) of individual ESF-framed T1 channels on a T3 link.
For each T1, you must specify the type of data to be transmitted over the FDL, and the type of external device to which the T1 is connected.
Before using this command, be sure to set the framing mode on each desired T1 to ESF using the **configure module ct3 t1** command.

syntax

fdl channel_no <n> fdl_type <ansi | att | ansi_att> [c_d_su <csu | dsu | csu_dsu>]

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Parameter	Description
channel_no	T1 channel to be configured (1-28).
fdl_type - ansi_only - att_onlyl - ansi_att	FDL data format. - Only ANSI T1.403 support for T1 FDL channel - Only AT & T TR54016 support for T1 FDL channel - Both ANSI & AT & T support for T1 FDL channel (default)
c_d_su - csu - dsu - csu_dsu	Configure CSU-DSU (default is csu_dsu) - Channel Service Unit type - Data Service Unit type - Combined CSU/DSU type (default)

default

ansi_att csu_dsu

example

```
Router/configure/module/ct3(2/0)# fdl 1 ansi_att csu
```

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 enable

This command enables and disables T1 channels on a CT3 interface.
To verify the in-service or out-of-service status of a T1 channel, use the **show module configuration ct3 t1** command.

syntax

enable t1_identifier <n>
no enable t1_identifier <n>

Parameter	Description
t1_identifier	<n> specifies that T1 channel(s) to be enabled (1-28)

default

None.

example

```
Router/configure/module/ct3(1/0# enable 2
```

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 alarms

This command accesses next-level commands for alarm reporting configuration on a CT3.

syntax

alarms

default

None.

example

```
Router/configure# module ct3 1/0
Router/configure/module/ct3(1/0)# alarms
```

related commands

configure module ct3 alarms hierarchy, configure module ct3 alarms thresholds, configure module ct3 alarms thresholds user

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

configure module ct3 alarms thresholds

This command accesses next-level commands for setting alarm thresholds on a Router system.
When a user-defined threshold is exceeded, the system reports an alarm. These alarms indicate the possible deterioration of the associated CT3 or CT3/T1 interfaces.

syntax

thresholds

© SAMSUNG Electronics Co., Ltd.

default

None.

example

```
Router/configure/module/ct3(1/0)/alarms# thresholds
```

related commands

configure module ct3 alarms thresholds user

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

configure module ct3 alarms thresholds user

This command sets the alarm thresholds for the CT3 and CT3 T1 user statistics gathered by the Router system.
Each system gathers seven types of user statistics for a CT3 WAN link, and you can set a separate alarm threshold for each type of statistic. Each system also gathers 10 types of user statistics for every T1 channel of a CT3 link.
To show the current user statistic alarm threshold settings, use the show module thresholds ct3 command.

To view the user statistic alarms in progress, use the show module alarms ct3 command.
To view the actual user statistics, use the show module userstats ct3 command.

syntax

user <1-10> [<lcv | fbe | pbe | cpbe | febe | exz | cofa>] | [<ses | es | bes | uas | eev | lofc | css | oof | crc | bpv>] <1-65535> <0-2147483647> <0-2147483647> [<absolute | delta>] [t1 <1-28>]

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Parameter	Description
T3 data type - lcv - fbe - pbe - cpbe - febe - exz - cofa	Type of T3 user data to be monitored - Line Coding Violations - Framing Bit Error Events - P-Bit Error events - CP-Bit Error events - Far-End Block Error events - Excessive-Zero counts - Change-of-Frame Alignment events
T1 data type - ses - es - bes - uas - eev - lofc - css - oof - crc - bpv	Type of T1 user data to be monitored - Severely Errored Seconds - Errored Seconds - Bursty Errored Seconds - Unavailable Seconds - Excessive Error violation Seconds - Loss-of-Frame Counts - Controlled Slip Seconds - Out-of-Frame Seconds - CRC-6 errors - Bipolar Violations
sample interval	Sampling interval in seconds (1-65535)
rising threshold	Number of errored seconds of events which, if exceeded during any sampling interval, results in a rising alarm. The range is 1-2147483647
falling threshold	Minimum number of errored seconds or events below which a falling alarm is reported. This alarm is reported if a rising alarm was previously reported and the number of errored seconds or events subsequently dropped below this minimum threshold. The failing threshold value must be less than the rising threshold value above. The range is 1-2147483647
sampling type - absolute - delta	Method of sampling - The errored second or event count is compared directly to the specified threshold values, and the appropriate alarm type (rising or falling) is reported. - The errored second or event count is compared to the difference between The rising and falling thresholds above and a rising alarm is reported if the actual error count exceeds that difference. This is the default setting if you do not specify a sampling type.
t1	The T1 channels to which the alarm threshold applies (1-28). This entry is required only when setting T1 user alarm thresholds.

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default

None.

example

```
a  Router/configure/module/ct3(1/0)/alarms/thresholds# user
1 lcv 300 50 25 absolute
b  Router/configure/module/ct3(1/0)/alarms/thresholds# user
1 ses 300 50 25 t1 4 absolute
```

In example **a**, the data is the LCVs that occur. The sampling interval is 300 seconds (5 minutes), the rising alarm threshold is 50 LCVs, and the falling alarm threshold is 25 LCVs. Absolute sampling is used, in which a rising alarm is reported if the LCV count exceeds 50 during any sampling interval. A falling alarm is also reported if the LCV count subsequently falls back below 25 during that interval.
Example **b** is a similar scenario for SES events on T1 number 4 on the CT3 link.

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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configure module ct3 alarms hierarchy

This command enables and disables the hierarchy for showing RLOS and RLOF on a CT3 T1 channel.

syntax

alarms hierarchy channel_no <1-28>
no alarms hierarchy channel_no <1-28>

Parameter	Description
channel_no	Specifies that t1 channel that is between 1 and 28

default

None.

example

```
Router/configure# module ct3(1/0)
Router/configure/module/ct3(1/0)# alarms hierarchy 3
```

In this example, the alarms hierarchy will be set for T1 3 on the CT3 link. To verify that the alarms has been enabled or disabled, use the show module configuration command. The show will indicate either ‘True’ or ‘False.’ ‘True’ means that RLOS is RLOS only; ‘False’ means that RLOS is RLOS plus RLOF.

related commands

None.

applicable models/versions

All versions.

command modes

Router/configure/module/ct3

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3.5.4 hssi

This command specifies a HSSI (High Speed Serial Interface) and accesses next-level commands for configuring its components.

syntax

module hssi slot_port <slot/port>

Parameter	Description
slot _port	To specify the HSSI module by slot and port number (1/0, 2/0)

default

None.

example

```
Router/configure# module hssi 1/0
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module

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configure module hssi clock_source

This command defines the clock source used by the HSSI. HSSI module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/hssi(1/0)# clock_source internal
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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configure module hssi clock_rate

This command sets the clock rate between 56,000Hz and 52,000,000Hz of the HSSI module.

syntax

clock_rate clock_range <56000-52000000>

Parameter	Description
clock_range	Valid clock rate range for HSSI between 56000 and 52000000 (Hz)

Following are the standard clock rates (Hz):
56000, 64000, 64158, 128316, 256633, 384000, 512000, 518400, 1524705, 1536000, 1544000, 2048000, 2073600, 6312000, 10000000, 12960000, 20000000, 25920000, 30000000, 34368000, 44736000, 51840000, 52000000

default

None.

example

```
Router/configure/module/hssi(1/0)# clock_rate 51840000
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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configure module hssi crc

This command configure CRC (cyclic redundancy check) on the HSSI.
The HSSI module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/hssi(1/0)# crc 16
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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configure module hssi mode

This command configures operation mode of the HSSI module.

syntax

mode <dce| dte>

Parameter	Description
dce	DCE mode setting
dte	DTE mode setting

default

None.

example

```
Router/configure/module/hssi(1/0)# mode dce
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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configure module hssi data_mode

This command configures the data mode of HSSI module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/hssi(1/0)# data_mode inverted
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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configure module hssi name

This command specifies the link name of HSSI module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <link name>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of HSSI (string length: 16 characters)

default

None.

example

```
Router/configure/module/hssi(1/0)# name route_hssi
Router/configure/module/hssi(1/0)# no name route_hssi
```

related commands

module hssi, module hssi clock_source, module hssi clock_rate, module hssi crc, module hssi mode, module hssi data_mode, module hssi name

applicable models/versions

All versions.

command modes

Router/configure/module/hssi

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3.5.5 serial

This command specifies a Serial and configures serial interface and components.

syntax

module serial slot_port <slot/port>

Parameter	Description
slot _port	To specify the Serial module by slot (1-2) and port number (0-3)

default

None.

example

```
Router/configure# module serial 2/0
```

related commands

module serial, module serial clock_source, module serial clock_rate, module serial crc, module serial mode, module serial data_mode, module serial name

applicable models/versions

All models.

command modes

Router/configure/module

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configure module serial mode

This command configures mode of operation for serial interface.

syntax

mode serial_interface <X.21 | V.35 | S232 | S449 | S530 | S530A>

Parameter	Description	
serial_interface	X.21	X.21 mode of operation
	V.35	V.35 mode of operation
	S232	232 mode of operation
	S449	449 mode of operation
	S530	530 mode of operation
	S530A	530A mode of operation

default

None.

example

```
Router/configure/module/serial(2/0)# mode V.35
```

related commands

module serial, module serial mode, module serial S530A, module serial v35, module serial S232, module serial S449, module serial S530, module serial S530A

applicable models/versions

All models.

command modes

Router/configure/module

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configure module serial x21

This command configures X.21 interface and its components.

syntax

x21

default

None.

example

```
Router/configure/module/serial(2/0)# x21
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial x21 clock_rate

This command sets the clock rate between 1,200Hz and 8,000,000Hz of the serial X.21 module.

syntax

clock_rate clock_range <1200-8000000>

Parameter	Description
clock_range	Valid clock rate range for Serial X.21 between 1200 and 8000000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000, 256000, 384000, 500000, 512000, 768000, 800000, 1000000, 2000000, 4000000, 8000000

default

None.

example

Router/configure/module/serial/(2/0)/x21# **clock_rate 1000000**

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 crc

This command configures CRC (cyclic redundancy check) on the Serial X.21 module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/x21#crc 16
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 mode

This command configures operation mode of the Serial X.21 module.

syntax

mode <dce| dte>

Parameter	Description
dce	DCE mode setting
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/x21# mode dce
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 flow_control

This command configures the hardware flow control for Serial X.21 module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/x21# flow_control on
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 clock_source

This command defines the clock source used by the Serial X.21 module. Serial X.21 module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/x21# clock_source
internal
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 data_mode

This command configures the data mode of Serial X.21 module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/x21# data_mode inverted
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/x21

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configure module serial x21 name

This command specifies the link name of Serial X.21 module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <link name>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of Serial X.21 (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/x21# name serial_x21
Router/configure/module/serial/(2/0)/x21# no name serial_x21
```

related commands

module serial, module serial mode, module serial x21, module serial x21 clock_rate, module serial x21 clock_source, module serial x21 clock_rate, module serial x21 crc, module serial x21 mode, module serial x21 data_mode, module x21 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/x21

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configure module serial v35

This command configures V.35 interface and its components.

syntax

v35

default

None.

example

```
Router/configure/module/serial(2/0)# v35
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial v35 clock_rate

This command sets the clock rate between 1,200Hz and 8,000,000Hz of the serial V.35 module.

syntax

clock_rate clock_range <1200-8000000>

Parameter	Description
clock_range	Valid clock rate range for Serial V.35 between 1200 and 8000000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000, 256000, 384000, 500000, 512000, 768000, 800000, 1000000, 2000000, 4000000, 8000000

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# clock_rate 1000000
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 crc

This command configures CRC (cyclic redundancy check) on the Serial V.35 module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/v35#crc 16
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 mode

This command configures operation mode of the Serial V.35 module.

syntax

mode <dce| dte>

Parameter	Description
dce	DCE mode setting
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# mode dce
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 flow_control

This command configures the hardware flow control for Serial V.35 module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# flow_control on
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 clock_source

This command defines the clock source used by the Serial V.35 module. Serial V.35 module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# clock_source
internal
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 data_mode

This command configures the data mode of Serial V.35 module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# data_mode inverted
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial v35 name

This command specifies the link name of Serial V.35 module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <link name>
no name link_name <link name>

Parameter	Description
link name	Specify the link name of Serial V.35 (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/v35# name serial_v35
Router/configure/module/serial/(2/0)/v35# no name serial_v35
```

related commands

module serial, module serial mode, module serial v35, module serial v35 clock_rate, module serial v35 clock_source, module serial v35 clock_rate, module serial v35 crc, module serial v35 mode, module serial v35 data_mode, module v35 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/v35

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configure module serial S232

This command configures RS232 interface and its components.

syntax

S232

default

None.

example

```
Router/configure/module/serial(2/0)# S232
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial S232 clock_rate

This command sets the clock rate between 1,200Hz and 250,000Hz of the serial RS232 module.

syntax

clock_rate clock_range <1200-250000>

Parameter	Description
clock_range	Valid clock rate range for Serial RS232 between 1200 and 250000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# clock_rate 192000
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S232

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configure module serial S232 crc

This command configures CRC (cyclic redundancy check) on the Serial RS232 module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# crc 16
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S232

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configure module serial S232 mode

This command configures operation mode of the Serial RS232 module.

syntax

mode <dce| dte>

Parameter	Description
dce	DCE mode setting
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# mode dce
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S232

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configure module serial S232 flow_control

This command configures the hardware flow control for Serial RS232 module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# flow_control on
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S232

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configure module serial S232 clock_source

This command defines the clock source used by the Serial RS232 module. Serial RS232 module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# clock_source internal
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S232

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configure module serial S232 data_mode

This command configures the data mode of Serial RS232 module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# data_mode inverted
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S232

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configure module serial S232 name

This command specifies the link name of Serial RS232 module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <*link name*>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of Serial RS232 (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/S232# name serial_S232
Router/configure/module/serial/(2/0)/S232# no name serial_S232
```

related commands

module serial, module serial mode, module serial S232, module serial S232 clock_rate, module serial S232 clock_source, module serial S232 clock_rate, module serial S232 crc, module serial S232 mode, module serial S232 data_mode, module S232 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S232

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configure module serial S449

This command configures RS449 interface and its components.

syntax

S449

default

None.

example

```
Router/configure/module/serial(2/0)# S449
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial S449 clock_rate

This command sets the clock rate between 1,200 Hz and 8,000,000 Hz of the serial RS449 module.

syntax

clock_rate clock_range <1200-8000000>

Parameter	Description
clock_range	Valid clock rate range for Serial RS449 between 1200 and 8000000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000, 256000, 384000, 500000, 512000, 768000, 800000, 1000000, 2000000, 4000000, 8000000

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# clock_rate 1000000
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S449

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configure module serial S449 crc

This command configures CRC (cyclic redundancy check) on the Serial RS449 module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# crc 16
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S449

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configure module serial S449 mode

This command configures operation mode of the Serial RS449 module.

syntax

mode <dce| dte>

Parameter	Description
dce	DCE mode setting
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# mode dce
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S449

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configure module serial S449 flow_control

This command configures the hardware flow control for Serial RS449 module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# flow_control on
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S449

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configure module serial S449 clock_source

This command defines the clock source used by the Serial RS449 module. Serial RS449 module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# clock_source
internal
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S449

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configure module serial S449 data_mode

This command configures the data mode of Serial RS449 module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# data_mode inverted
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S449

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configure module serial S449 name

This command specifies the link name of Serial RS449 module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <link name>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of Serial RS449 (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/S449# name serial_S449
Router/configure/module/serial/(2/0)/S449# no name
serial_S449
```

related commands

module serial, module serial mode, module serial S449, module serial S449 clock_rate, module serial S449 clock_source, module serial S449 clock_rate, module serial S449 crc, module serial S449 mode, module serial S449 data_mode, module S449 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S449

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configure module serial S530

This command configures RS530 interface and its components.

syntax

S530

default

None.

example

```
Router/configure/module/serial(2/0)# S530
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial S530 clock_rate

This command sets the clock rate between 1,200 Hz and 8,000,000 Hz of the serial RS530 module.

syntax

clock_rate clock_range <1200-8000000>

Parameter	Description
clock_range	Valid clock rate range for Serial RS530 between 1200 and 8000000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000, 256000, 384000, 500000, 512000, 768000, 800000, 1000000, 2000000, 4000000, 8000000

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# clock_rate
1000000
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S530

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configure module serial S530 crc

This command configures CRC (cyclic redundancy check) on the Serial RS530 module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# crc 16
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530

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configure module serial S530 mode

This command configures operation mode of the Serial RS530 module.

syntax

mode <dte>

Parameter	Description
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# mode dte
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530

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configure module serial S530 flow_control

This command configures the hardware flow control for Serial RS530 module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# flow_control on
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530

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configure module serial S530 clock_source

This command defines the clock source used by the Serial RS530 module. Serial RS530 module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# clock_source
internal
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models

command modes

Router/configure/module/serial/S530

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configure module serial S530 data_mode

This command configures the data mode of Serial RS530 module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# data_mode inverted
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530

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configure module serial S530 name

This command specifies the link name of Serial RS530 module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <*link name*>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of Serial RS530 (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/S530# name serial_S530
Router/configure/module/serial/(2/0)/S530# no name
serial_S530
```

related commands

module serial, module serial mode, module serial S530, module serial S530 clock_rate, module serial S530 clock_source, module serial S530 clock_rate, module serial S530 crc, module serial S530 mode, module serial S530 data_mode, module S530 serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530

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configure module serial S530A

This command configures RS530A interface and its components.

syntax

S530A

default

None.

example

```
Router/configure/module/serial(2/0)# S530A
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial

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configure module serial S530A clock_rate

This command sets the clock rate between 1,200Hz and 8,000,000Hz of the serial RS530A module.

syntax

clock_rate clock_range <1200-8000000>

Parameter	Description
clock_range	Valid clock rate range for Serial RS530A between 1200 and 8000000 (Hz)

Following are the standard clock rates (Hz):
1200, 2400, 4800, 9600, 14400, 19200, 28800, 32000, 38400, 56000, 57600, 64000, 72000, 115200, 125000, 128000, 148000, 192000, 250000, 256000, 384000, 500000, 512000, 768000, 800000, 1000000, 2000000, 4000000, 8000000

default

None.

example

```
Router/configure/module/serial(2/0)/S530A# clock_rate 1000000
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A crc

This command configures CRC (cyclic redundancy check) on the Serial RS530A module. The Serial module uses a 32-bits crc by default; it also supports a 16-bit crc.

syntax

crc crc_bit <16 | 32>

Parameter	Description
crc_bit	There are two kinds of crc bits. One is 16 bit CRC and another is 32 bit

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# crc 16
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A mode

This command configures operation mode of the Serial RS530A module.

syntax

mode <dte>

Parameter	Description
dte	DTE mode setting

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# mode dte
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A flow_control

This command configures the hardware flow control for Serial RS530A module.

syntax

flow_control <on | off>

Parameter	Description
on	Hardware flow control on
off	Hardware flow control off

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# flow_control on
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A clock_source

This command defines the clock source used by the Serial RS530A module. Serial RS530A module can clock system's internal clock or recovered from the line clock.

syntax

clock_source <internal | line>

Parameter	Description
internal	local clock
line	Network clock

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# clock_source
internal
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A data_mode

This command configures the data mode of Serial RS530A module.

syntax

data_mode <normal | inverted>

Parameter	Description
normal	Normal Data
inverted	Inverted Data

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# data_mode inverted
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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configure module serial S530A name

This command specifies the link name of Serial RS530A module. The MAX string length of link name is 16 characters. To disable link name, use the no name command.

syntax

name link_name <link name>
no name link_name <link name>

Parameter	Description
link_name	Specify the link name of Serial RS530A (string length: 16 characters)

default

None.

example

```
Router/configure/module/serial/(2/0)/S530A# name serial_S530A
Router/configure/module/serial/(2/0)/S530A# no name
serial_S530A
```

related commands

module serial, module serial mode, module serial S530A, module serial S530A clock_rate, module serial S530A clock_source, module serial S530A clock_rate, module serial S530A crc, module serial S530A mode, module serial S530A data_mode, module S530A serial name

applicable models/versions

All models.

command modes

Router/configure/module/serial/S530A

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3.5.6 adsl

This command accesses next-level commands for selecting an ADSL link for configuration.

syntax

module adsl port_num <slot/sub_slot/port>

parameter	Description
port_num	Port number of ADSL link. The format is *x/y/z*.

default

None.

example

```
Router/configure# module adsl 0/0/0
```

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure

© SAMSUNG Electronics Co., Ltd.

configure module adsl operating_mode

This command configures the connection type to link with CO. Ubigate iBG routers support four modes (adsl, adsl2, adsl2p and auto) for encapsulation mode.

syntax

operating_mode type <adsl | adsl2 | adsl2p | auto>

parameter	Description
type	auto: Mode will be trained to the highest possible allowed by peer DSLAM. adsl: force into G.dmt mode. adsl2: force into G.992.3 mode. adsl2p: force into G.992.5 mode.

default

auto.

example

```
Router/configure/module/adsl (0/0/0)# operating_mode auto
```

related commands

configure module adsl pvc, show module configuration adsl

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

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configure module adsl oam_loopback

This command configures parameters related to OAM management for an ATM PVC. OAM loopback cells are traditionally used to verify the intergrity of a virtual path or virtual circuit between nodes in an ATM network. For a CPE ADSL device, OAM loopback provides a valuable data for diagnosing problems with the DSL line at the ATM layer. ATM layer problems such as incorrect virtual path and circuit configuration and lost and corrupted ATM cells can be quickly detected by initiating an F5 end-to-end loopback (also known as ATM ping) to the DSLAM and having the DSLAM respond by looping back the OAM cells. By ruling out problems in the ATM layer using this method, one can then focus on examining higher layer protocols and other configurations to isolate the remaining problems. To verify the result of an F5 OAM loopback, use the **show adsl oam_loopback** command.

syntax

oam_loopback vpi <n> vci <n> interval time <n> tx_cells number <n>

parameter	Description
vpi	Virtual path identifier, the range is from 0 to 127.
vci	Virtual channel identifier, the range is from 1 to 65534.
time	Interval (in ms) between two consecutive F5 loopback cells, the range is from 300 to1000. (default: 600ms)
number	Number of TX cells, the range is from 1 to 10. (default: 5)

default

None.

example

```
Router/configure/module/adsl (0/0/0)# oam_loopback 0 35
Router/configure/module/adsl (0/0/0)# oam_loopback 0 35
tx_cells 7
Router/configure/module/adsl (0/0/0)# oam_loopback 0 35
interval 800
```

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related commands

configure module adsl pvc, show module configuration adsl, show adsl oam_loopback

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

configure module adsl reset-link

This command configures the system to bring down the ADSL link.

syntax

reset-link

default

None.

example

```
Router/configure/module/adsl (0/0/0)# reset-link
```

related commands

configure module adsl pvc, show module configuration adsl, show adsl status

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

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configure module adsl reboot

This command configures the system to reboot the ADSL module.

syntax

reboot

default

None.

example

```
Router/configure/module/adsl (0/0/0)# reboot
```

related commands

configure module adsl pvc, show module configuration adsl, show adsl status

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

© SAMSUNG Electronics Co., Ltd.

configure module adsl update

This command configures the system to update the module with new firmware. If a new firmware file for ADSL module is stored on the compact flash memory, this command makes ADSL module update the firmware by downloading a new file from the compact flash in the main board and restart itsef with the new firmware. After firmware has been updated successfully, the sysem will be ready for service. You can verify the updated ADSL firmware version using the **show adsl status** command.

syntax

update file_path_name <string>

parameter	Description
file_path_name	File name, including full path, of the firmware to be downloaded

default

None.

example

```
Router/configure/module/adsl (0/0/0)# update
/cf0/adsl_1.0.0.A.Z
```

related commands

configure module adsl pvc, show module configuration adsl, show adsl status

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

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configure module adsl pvc

This command creates a permanent virtual circuit (PVC) on the ADSL module. To remove a PVC, use the no form of this command.

syntax

[no] pvc vpi <n> vci <n> [encap mode <llc | vcmux>][qos_mode type<ubr | cbr|vbr-rt|vbr-nrt|ubr-plus>][pcr pcr_num][cdv cdv_num][mcr mcr_num][scr scr_num][mbs mbs_num]

parameter	Description
vpi	Virtual path identifier, the range is from 0 to 127.
vci	Virtual channel identifier, the range is from 1 to 65534.
mode	The encapsulation can be configured to LLC/SNAP or VCMUX.
type	ADSL module supports the following ATM QoS traffic class types per PVC: - UBR: Unspecified Bit Rate. - CBR: Constant Bit Rate. - VBR-rt: Variable Bit Rate real-time. - VBR-nrt: Variable Bit Rate non-real-time - BR+: This is a special service class derived from UBR.
pcr_num	Peak Cell Rate. This parameter is configured in cells/s. The default is 4000.
cdv_num	Cell Delay Variation. The value is specified in ms to specify the maximum allowed jitter. The default is 10ms.
mcr_num	Minimum Cell Rate. This parameter is configured in cells/s.
scr_num	Sustainable Cell Rate. This parameter is configured in cells/s.
mbs_num	Maximum Burst Size. This parameter is configured in number of cells.

default

None.

example

```
Router/configure/module/adsl (0/0/0)# pvc 0 35
Router/configure/module/adsl (0/0/0)# no pvc 0 35
```

related commands

© SAMSUNG Electronics Co., Ltd.

show adsl pvcs, show module configuration adsl, show adsl status

applicable models/versions

iBG 2006, iBG2016, iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/module/adsl

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3.6 fr

This command accesses next-level commands for configuring frame relay operation.

NOTE

This command is transition command, need to next level command

syntax

None.

example

None.

related commands

fr invarp, fr mfr_e2e_enhanced

applicable models/versions

All models.

command modes

Router/configure

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3.6.1 invarp

This command configures the Inverse ARP polling timer interval. This is how often the system will poll other frame relay devices for checking peer IP.

syntax

fr invarp interval_time <30-300>

Parameter	Description
Interval_time	Polling timer interval value from 30 to 300 seconds.

default

30 seconds

example

```
Router/configure# fr invarp 50
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.6.2 mfr_e2e_enhanced

This command switches the system from MFR End-to-End standard FRF.15 mode (default) to MFR End-to-End Router enhanced FRF.15 mode.
Use of this command automatically applies the settings to all existing AVCs without rebooting the system. However, if the settings are saved, they will be used the next time that the system is rebooted.
Enhanced mode calculates differential delay between CVCs; those with unacceptable delay are taken out of active data transfer, thus improving overall throughput of the AVC. Also, end-to-end keepalive messages are sent per CVC, thus helping to maintain the VC integrity across both ends. Keepalive messages also detect software/hardware loopbacks.

syntax

fr mfr_e2e_enhanced
no fr mfr_e2e_enhanced

default

standard FRF.15 mode

example

```
Router/configure# fr mfr_e2e_enhanced
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.7 dot1x

This command accesses next-level commands for globally configuring IEEE 802.1x authentication on the switch. To view the IEEE 802.1x parameters before or after configuring them, use the appropriate **show dot1x** commands.

syntax

dot1x

example

```
Router/configure# dot1x
```

related commands

dot1x system-auth-ctrl, dot1x port-control

applicable models/versions

All models.

command modes

Router/configure

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3.7.1 dot1x system-auth-ctrl

Use this command to globally enable IEEE 802.1x authentication on the switch. By default, authentication is disabled. Use dot1x port-control command with this command to enable IEEE 802.1x authentication on a specific interface.

syntax

dot1x system-auth-ctrl
no dot1x system-auth-ctrl

example

```
Router# configure terminal
Router/configure# dot1x system-auth-ctrl
```

related commands

dot1x port-control

applicable models/versions

All models.

command modes

Router/configure

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3.8 port-channel

3.8.1 port-channel load-balance

Use this command to globally configure the load balancing mechanism used for EtherChannels which are source/destination MAC address, source/destination IP address or source/destination TCP/UDP ports.

syntax

port-channel load-balance <src-dst-mac | src-dst-ip | src-dst-port> >

Parameter	Description
src-dst-mac	Source and Destination Mac address based load balancing
src-dst-ip	Source and Destination IP address based load balancing
src-dst-port	Source and Destination TCP/UDP port based load balancing

example

```
Router# configure terminal
Router/configure# port-channel load-balance src-dst-ip
```

related commands

show etherchannel
show etherchanel load-balance

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.9 aaa

This command accesses next-level commands to configure parameters for Authentication, Authorization, and Accounting (AAA).

syntax

aaa

example

```
Router/configure# aaa
```

related commands

configure aaa accounting, configure aaa authentication, configure aaa authorization, configure aaa enable, configure aaa radius, configure aaa tacacs

applicable models/versions

All models.

command modes

Router/configure

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3.9.1 accounting

This command accesses next-level commands to configure accounting method list. This command cannot be used as stand-alone and should be used to be combined with the next-level commands.

syntax

accounting

example

```
Router/configure/aaa# accounting
```

related commands

configure aaa accounting commands, configure aaa accounting network, configure aaa accounting exec, configure aaa accounting system, configure aaa accounting update periodic, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting commands

This command configures a list of accounting methods for commands. If this list is configured as ‘start_stop’, both accounting start and stop packets are sent to accounting server for all commands. Accounting server is automatically selected according to user’s login method. If a user logs in using radius server, all accounting packets are sent to radius server. Therefore, no accounting packet is generated for users who log to use local database. Only tacacs login session sends commands accounting packets using this list.

syntax

accounting commands list_name <list_name | default> method_list <list>
no accounting commands list_name <list_name | default> method_list <list>

Parameter	Description
list_name	The name of the commands accounting list, either a character string or the word default.
method_list	If list_name is default, all interfaces use this method list without further configuration. A one accounting method can be configured. Possible values are start_stop, stop_only, wait_start, and none.

example

```
Router/configure/aaa# accounting commands default start_stop
```

related commands

configure aaa accounting exec, configure aaa accounting network, configure aaa accounting system, configure aaa accounting update periodic, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting network

This command configures a list of accounting methods for network-related service. If this list is configured as ‘start_stop’, both accounting start and stop packets are sent to accounting server for all network-related services. network-related service includes user login and logout. Accounting server is automatically selected to user’s authentication method. Therefore, no accounting packet is generated for users who log to use local database. Accounting server can be tacacs or radius.

syntax

accounting network list_name <list | default> method_list<list>
no accounting network list_name <list | default> method_list<list>

Parameter	Description
list_name	The name of the network accounting list, either a character string or the word default.
method_list	If list_name is default, all interfaces use this method list without further configuration. A one accounting method can be configured. Possible values are start_stop, stop_only, wait_start, and none.

example

```
Router/configure/aaa# accounting network default start_stop
```

related commands

configure aaa accounting commands, configure aaa accounting exec, configure aaa accounting system, configure aaa accounting update periodic, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting exec

This command configures a list of accounting methods for exec shell session. If this list is configured as 'start_stop', both accounting start and stop packets are sent to accounting server for all exec shell session. If a user logs in using radius server, all accounting packets are sent to radius server. Therefore, no accounting packet is generated for users who log to use local database. Accounting server can be tacacs or radius.

syntax

accounting exec list_name <list_name | default> method_list <list>
no accounting exec list_name <list_name | default> method_list <list>

Parameter	Description
list_name	The name of the exec accounting list, either a character string or the word default.
method_list	If list_name is default, all interfaces use this method list without further configuration. A one accounting method can be configured. Possible values are start_stop, stop_only, wait_start, and none.

example

```
Router/configure/aaa# accounting exec default start_stop
```

related commands

configure aaa accounting commands, configure aaa accounting network, configure aaa accounting system, configure aaa accounting update periodic, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting system

This command configures a list of accounting methods for system event. If this list is configured as 'start_stop', both accounting start and stop packets are sent to accounting server for all system event. System event includes critical system alarms. If a user logs in using radius server, all accounting packets are sent to radius server. Therefore, no accounting packet is generated for users who log to use local database. Accounting server can be tacacs or radius.

syntax

accounting system list_name <list_name | default> method_list <list>
no accounting system list_name <list_name | default> method_list <list>

Parameter	Description
list_name	The name of the system accounting list, either a character string or the word default.
method_list	If list_name is default, all interfaces use this method list without further configuration. A one accounting method can be configured. Possible values are start_stop, stop_only, wait_start, and none.

example

```
Router/configure/aaa# accounting system default start_stop
```

related commands

configure aaa accounting commands, configure aaa accounting network, configure aaa accounting exec, configure aaa accounting update periodic, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting update periodic

This command configures periodic update as accounting update method. There are two types of supported update methods. The one is periodic update and the other is newinfo update. The commands, 'configure aaa accounting update periodic' and 'configure aaa accounting update newinfo', are mutually exclusive.

So, if you configure update periodic update and then configure newinfo update again without deleting the previous setting, the update configuration is configured as the last setting, which is newinfo update in this case. If you configure periodic update value to 3, radius or tacacs client gathers all login user information and sends packet to radius or tacacs server for every 3 minutes. The server is determined by login method. For example, if a user logs in a router using radius server, the periodic update information is sent to radius server.

syntax

accounting update periodic period <1-5>
no accounting update periodic period <1-5>

Parameter	Description
period	Period is update interval value. The unit is minute and the value is between 1 and 5.

example

Router/configure/aaa# accounting update periodic 3

related commands

configure aaa accounting commands, configure aaa accounting network, configure aaa accounting exec, configure aaa accounting system, configure aaa accounting update newinfo

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa accounting update newinfo

This command configures newinfo update as accounting update method.
If a new event such as user login and logout has occurred on the system, the information regarding this event is sent to a radius or tacacs server. The server is determined by login method. For example, if a user logs in a router using radius server, the newinfo update information is sent to radius server.

syntax

no accounting update newinfo
accounting update newinfo

example

```
Router/configure/aaa# accounting update newinfo
```

related commands

configure aaa accounting commands, configure aaa accounting network, configure aaa accounting exec, configure aaa accounting system, configure aaa accounting update periodic

applicable models/versions

All models.

command modes

Router/configure/aaa

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3.9.2 authentication

This command accesses next-level commands to configure authentication method list. This command cannot be used as stand-alone and should be used to be combined with the next-level commands.

syntax

authentication

example

```
Router/configure/aaa# authentication
```

related commands

configure aaa authentication login, configure aaa authentication protocols

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa authentication login

This command defines a list of authentication methods for login. If nothing is configured for login, local database is used for login. The database is stored in NVRAM (Non-Volatile RAM). If both login method and protocol method are configured and aaa is enabled, the authentication login method is used for login procedure. Tacacs, radius, local, and none methods are available for login. This login method can be configured for each specific interface using 'configure interface ethernet/bundle/console aaa authentication' command.

syntax

no authentication login list_name <name | default> method_list <list>
authentication login list_name <name | default> method_list <list>

Parameter	Description
list_name	The name of the login authentication list, either a character string or the word default. If list_name is default, all interfaces use this method list without further configuration.
method_list	A list of up to three authentication values, separated by slashes (/), indicating the order in which the methods are used for login on an interface. Possible values are tacacs, radius, local, and none.

example

```
Router/configure/aaa# authentication login default
tacacs/radius/local
```

related commands

configure aaa authentication protocols

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure aaa authentication protocols

This command defines a list of authentication protocols for login. If either login method or protocol method is not configured, local database is used for login. For telnet login with radius login method, only pap protocol is valid. Additionally, only ASCII protocol is valid for telnet login with local login method. For telnet login with tacacs login method, all protocols are valid.

syntax

no authentication protocol list_name <name | default> protocol_list <list>
authentication protocol list_name <name | default> protocol_list <list>

Parameter	Description
list_name	The name of the protocol list, either a character string or the word default. If list_name is default, all interfaces use this protocol list without further configuration.
protocol_list	A list of up to three protocol values, separated by slashes (/), indicating the order in which the protocols are used for login on an interface. Possible values are pap and ASCII.

example

```
Router/configure/aaa# authentication protocol default
pap/ascii
```

related commands

configure aaa authentication login

applicable models/versions

All models.

command modes

Router/configure/aaa

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3.9.3 authorization

This command accesses next-level commands to configure authorization method list. This command cannot be used as stand-alone and should be used to be combined with the next-level commands. The current valid next-level command is only ‘commands’.

syntax

authorization

example

```
Router/configure/aaa# authorization
```

related commands

configure aaa authorization commands

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure authorization commands

This command configures a list of authorization methods for commands.
If this list is configured as ‘tacacs’, all commands should be authorized by a configured tacacs server.

syntax

no authorization commands list_name <name | default> method_list <list>
authorization commands list_name <name | default> method_list <list>

Parameter	Description
list_name	The name of the commands authorization list, either a character string or the word default. If list_name is default, all interfaces use this method list without further configuration.
method_list	A list of up to two authorization values, separated by slashes (/), indicating the order in which the methods are used for commands authorization on an interface. Possible values are tacacs, local, and none.

example

Router/configure/aaa# authorization commands tacacs/local

applicable models/versions

All models.

command modes

Router/configure/aaa

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3.9.4 tacacs

This command accesses next-level commands to configure tacacs+ protocol.

syntax

tacacs

example

```
Router/configure/aaa# tacacs
next-level commands
configure aaa tacacs primary_server
configure aaa tacacs retries
configure aaa tacacs secondary_server
configure aaa tacacs server_port
configure aaa tacacs shared_key
configure aaa tacacs time_out
```

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure tacacs primary_server

This command configures the IP address of the primary tacacs+ server. A primary tacacs+ server or backup server must be configured to enable tacacs+ service.

syntax

no primary_server ipaddress <address>
primary_server ipaddress <address>

Parameter	Description
ipaddress	The IP address of the primary tacacs+ server.

example

```
Router/configure/aaa/tacacs# primary_server 142.134.14.100
```

related commands

configure aaa tacacs retries, configure aaa tacacs secondary_server, configure aaa tacacs server_port, configure aaa tacacs shared_key, configure aaa tacacs time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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configure tacacs secondary_server

This command configures the IP address of the secondary tacacs+ server.

syntax

no secondary_server ipaddress <address>
secondary_server ipaddress <address>

Parameter	Description
ipaddress	The IP address of the secondary tacacs+ server.

example

```
Router/configure/aaa/tacacs# secondary_server 144.120.45.28
```

related commands

configure aaa tacacs primary_server, configure aaa tacacs retries, configure aaa tacacs server_port, configure aaa tacacs shared_key, configure aaa tacacs time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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configure tacacs shared_key

This command configures a secret key used by both the tacacs+ client and server. The key is limited to a maximum of 48 characters.

syntax

no shared_key key <string>
shared_key key <string>

Parameter	Description
Key	The secret key character string.

example

```
Router/configure/aaa/tacacs# shared_key ax17bfe
```

related commands

configure aaa tacacs primary_server, configure aaa tacacs retries, configure aaa tacacs secondary_server, configure aaa tacacs server_port, configure aaa tacacs time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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configure tacacs retries

This command configures the maximum number of client attempts to communicate with the tacacs+ server.

syntax

no retries *retries* <n>
retries *retries* <n>

Parameter	Description
retries	Specifies the number of retries. The number of attempts to contact the server. The range is 1-5. The default is 3.

default

3

example

```
Router/configure/aaa/tacacs# retries 5
```

related commands

configure aaa tacacs primary_server, configure aaa tacacs secondary_server, configure aaa tacacs server_port, configure aaa tacacs shared_key, configure aaa tacacs time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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configure tacacs time_out

This command configures the maximum wait time for a tacacs+ server response. The maximum timeout value is 300.

syntax

no time_out seconds <n>
time_out seconds <n>

Parameter	Description
seconds	The maximum number of seconds to wait for a response from the tacacs+ server.

default

8

example

```
Router/configure/aaa/tacacs# time_out 30
```

related commands

configure aaa tacacs primary_server, configure aaa tacacs retries, configure aaa tacacs secondary_server, configure aaa tacacs server_port, configure aaa tacacs shared_key

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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configure tacacs server_port

This command configures the port on the tacacs+ server.

syntax

no server_port port <1-65535>
server_port port <1-65535>

Parameter	Description
port	The port on the tacacs+ server.

default

49

example

```
Router/configure/aaa/tacacs# server_port 6234
```

related commands

configure aaa tacacs primary_server, configure aaa tacacs retries, configure aaa tacacs secondary_server, configure aaa tacacs shared_key, configure aaa tacacs time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/tacacs

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3.9.5 enable

This command globally enables the Authentication, Authorization, and Accounting (AAA) mechanism. If aaa is not enabled, local database is always used for login.

syntax

no enable
enable

default

aaa is disabled

example

```
Router/configure/aaa# enable
```

applicable models/versions

All models.

command modes

Router/configure/aaa

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3.9.6 radius

This command accesses next-level commands to configure Remote Authentication Dial In User Service (RADIUS) protocol.

syntax

radius

example

```
Router/configure/aaa# radius

next-level commands
configure aaa radius acct_port
configure aaa radius auth_port
configure aaa radius primary_server
configure aaa radius retries
configure aaa radius secondary_server
configure aaa radius shared_key
configure aaa radius src_address
configure aaa radius time_out
```

applicable models/versions

All models.

command modes

Router/configure/aaa

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configure radius primary_server

This command configures the IP address of the primary RADIUS server. A primary RADIUS server or secondary RADIUS server must be configured to enable RADIUS functionality.

syntax

no primary_server ipaddress <address>
primary_server ipaddress <address>

Parameter	Description
ipaddress	This is ip address for radius primary server.

example

```
Router/configure/aaa/radius# primary_server 142.134.14.100
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius retries, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius src_address, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius secondary_server

This command configures the IP address of the secondary RADIUS server. A primary RADIUS server or secondary RADIUS server must be configured to enable RADIUS functionality. If there is no response from primary RADIUS server or primary server is not configured, the secondary RADIUS server is used for radius login.

syntax

no secondary_server ipaddress <address>
secondary_server ipaddress <address>

Parameter	Description
ipaddress	This is ip address for radius secondary server.

example

```
Router/configure/aaa/radius# secondary_server 144.120.45.28
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius primary_server, configure aaa radius retries, configure aaa radius shared_key, configure aaa radius src_address, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius src_address

This command configures RADIUS NAS IP address. This value is used for RADIUS NAS IP address field in RADIUS attributes. If it is not configured, NAS IP is same as the RADIUS client's address.

syntax

no src_address ipaddress <address>
src_address ipaddress <address>

Parameter	Description
ipaddress	This is ip address for radius NAS ip address. It is used for radius packet's NAS IP address field in radius attributes.

example

```
Router/configure/aaa/radius# src_address 156.324.1.2
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius primary_server, configure aaa radius retries, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius auth_port

This command configures the port number used by the RADIUS server for authentication. If you use 'no' command, the authentication port value is changed to default value, 1812.

syntax

no auth_port portnumber <n>
auth_port portnumber <n>

Parameter	Description
portnumber	The authentication port The default is 1812. It is the value between 1 and 65535.

default

1812

example

```
Router/configure/aaa/radius# auth_port 124
```

related commands

configure aaa radius acct_port, configure aaa radius primary_server, configure aaa radius retries, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius src_address, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius acct_port

This command configures the port used by the RADIUS server for accounting.

syntax

no acct_port portnumber <n>
acct_port portnumber <n>

Parameter	Description
portnumber	The accounting port number. The default is 1813.

example

```
Router/configure/aaa/radius# acct_port 124
```

related commands

configure aaa radius primary_server, configure aaa radius retries, configure aaa radius authe_port, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius shared_key

This command configures a secret key used by both the RADIUS client and server. The key is limited to a maximum of 48 characters. If you use 'no' command, shared key is changed to default value, 'testing123'.

syntax

no shared_key key <string>
shared_key key <string>

Parameter	Description
key	This is shared key string. It is used for encryption key shared between the radius server and client. The default value is 'testing123'.

default

testing123

example

```
Router/configure/aaa/radius# shared_key ax17bfe
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius primary_server, configure aaa radius retries, configure aaa radius secondary_server, configure aaa radius src_address, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius time_out

This command configures the maximum wait time for a server response. The maximum time out value is 100 seconds. If maximum wait time has passed, retransmission occurs.

syntax

no time_out seconds <n>
time_out seconds <n>

Parameter	Description
seconds	This is a waiting time before retransmitting a radius packet.

default

8

example

```
Router/configure/aaa/radius# time_out 30
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius primary_server, configure aaa radius retries, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius src_address

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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configure radius retries

This command configures the number of radius client retransmission number to communicate with the RADIUS server. If there is no response for a RADIUS request, RADIUS client resends the same packet for the retransmission times. Telnet login attempts are 3. Therefore, total retransmission number is 3 * retransmission times for one telnet login session. If you use 'no' command, the retries value is changed to default value, 3.

syntax

no retries retransmission <n>
retries retransmission <n>

Parameter	Description
retransmission	The number of retransmission to contact the server for one request packet. The range is 1-5. The default value is 3.

default

3

example

```
Router/configure/aaa/radius# retries 5
```

related commands

configure aaa radius acct_port, configure aaa radius auth_port, configure aaa radius primary_server, configure aaa radius secondary_server, configure aaa radius shared_key, configure aaa radius src_address, configure aaa radius time_out

applicable models/versions

All models.

command modes

Router/configure/aaa/radius

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3.9.7 activeDir

This command accesses the next-level commands to configure active directory server.

syntax

activeDir

example

```
Router/configure/aaa# activeDir
```

applicable models/versions

All models

command modes

Router/configure/aaa

Configure activeDir ad_realm

This command configures the realm name (domain name) of the active directory server. An ad_realm and ad_server must be configured to enable active directory service.

syntax

ad-realm < realm_name >

Parameter	Description
realm_name	The realm name (domain name) of the active directory server.

example

```
Router/configure/aaa/activeDir# ad-realm test.com
```

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related commands

configure aaa activeDir ad-server, configure aaa activeDir cifspath.

applicable models/versions

All models

command modes

Router/configure/aaa/activeDir

Configure activeDir ad_server

This command configures the active directory server IP address.

syntax

ad-server < ad_server_address_name >

Parameter	Description
ad_server_address_name	The IP address of the active directory server.

example

```
Router/configure/aaa/activeDir# ad_server 20.20.20.20
```

related commands

configure aaa activeDir ad-realm, configure aaa activeDir cifspath.

applicable models/versions

All models

command modes

Router/configure/aaa/activeDir

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Configure activeDir cifspath

This command configures ad server CIFS path.

syntax

cifspath < cifs_path >

Parameter	Description
cifs_path	The cifs path for ad server.

example

```
Router/configure/aaa/activeDir# cifs-path \\shared-folder
```

related commands

configure aaa activeDir ad-server, configure aaa activeDir ad-realm.

applicable models/versions

All models

command modes

Router/configure/aaa/activeDir

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3.9.8 ntlm-conf

This command accesses the next-level commands to configure ntlm server.

syntax

ntlm-conf

example

```
Router/configure/aaa# ntlm-conf
```

applicable models/versions

All models

command modes

Router/configure/aaa

Configure ntlm-conf ntlmdomain

This command configures the ntlm server domain name. An ntlmserver and ntlmdomain must be configured to enable ntlm service.

syntax

ntlmdomain < ntlm_domain_name >

Parameter	Description
ntlm_domain_name	The domain name of the ntlm server.

example

```
Router/configure/aaa/ntlm-conf# ntlmdomain test.com
```

related commands

configure aaa ntlm-conf ntlmserver, configure aaa ntlm-conf cifspath.

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applicable models/versions:

All models

command modes

Router/configure/aaa/ntlm-conf

Configure ntlm-conf ntlmserver

This command configures ntlm server IP address.

syntax

ntlmserver < ntlm_server_address_name >

Parameter	Description
ntlm_server_address_name	The IP address of the ntlm server.

example

```
Router/configure/aaa/ntlm-conf# ntlmserver 20.20.20.20
```

related commands

configure aaa ntlm-conf ntlmdomain, configure aaa ntlm-conf cifspath.

applicable models/versions

All models

command modes

Router/configure/aaa/ntlm-conf

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Configure ntlm-conf cifspath

This command configures ntlm server CIFS path.

syntax

cifspath < cifs_path >

Parameter	Description
cifs_path	The cifs path for ntlm server.

example

```
Router/configure/aaa/ntlm-conf# cifs-path \\shared-folder
```

related commands

configure aaa ntlm-conf ntlmdomain, configure aaa ntlm-conf ntlmserver.

applicable models/versions

All models

command modes

Router/configure/aaa/ntlm-conf

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3.9.9 ldap-conf

This command accesses next-level commands to configure ldap server.

syntax

ldap-conf

example

```
Router/configure/aaa# ldap-conf
next-level commands
configure aaa ldap-conf base-dn
configure aaa ldap-conf ldap-server
```

applicable models/versions

All models

command modes

Router/configure/aaa

Configure ldap-conf base-dn

This command configures the ldap server domain name. A base-dn and ldap-server must be configured to enable ldap service.

syntax

base-dn < base_dn_name >

Parameter	Description
base_dn_name	The domain name of the ldap server.

example

```
Router/configure/aaa/ldap-conf# base-dn “test.samsung.com”
```

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related commands

configure aaa ldap-conf ldap-server.

applicable models/versions

All models

command modes

Router/configure/aaa/ntlm-conf

Configure ldap-conf ldap-server

This command configures the ldap server IP address.

syntax

ldap-server < ldap_server_address_name >

Parameter	Description
ldap_server_address_name	The IP address of the ldap server.

example

```
Router/configure/aaa/ldap-conf# ldap-server 20.20.20.20
```

related commands

configure aaa ldap-conf base-dn.

applicable models/versions

All models

command modes

Router/configure/aaa/ldap-conf

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3.10 firmware_params

This command accesses next-level commands to configure parameters for downloading a SNOS image using tftp.

syntax

firmware_params

example

```
Router/configure# firmware_params

next-level commands
configure firmware_params filename
configure firmware_params sipaddress
configure firmware_params tftp-server
configure firmware_params start-download
```

applicable models/versions

All models.

command modes

Router/configure

configure firmware_params filename

This command configures a file name of SNOS image to download. This is a mandatory parameter for starting operation.

syntax

no filename filename <string>
filename filename <string>

Parameter	Description
filename	Specifies a filename of SNOS image.

default

none (empty)

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example

```
Router/configure/firmware_params# filename
iBG_Advanced_1.0.0.Z
```

related commands

configure firmware_params sipaddress, configure firmware_params start-download, configure firmware_params tftp-server

applicable models/versions

All models.

command modes

Router/configure/firmware_params

configure firmware_params sipaddress

This command configures a source IP address which will be configured on sending packets. It's an optional parameter.

syntax

no sipaddress ip_address <ipaddress>
sipaddress ip_address <ipaddress>

Parameter	Description
sipaddress	Specifies source ip address which will be configured on sending packets. Must be from one of the configured interfaces.

default

any (INADDR_ANY)

example

```
Router/configure/firmware_params# sipaddress 10.1.1.1
```


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related commands

configure firmware_params filename, configure firmware_params start-download, configure firmware_params tftp-server

applicable models/versions

All models.

command modes

Router/configure/firmware_params

configure firmware_params tftp-server

This command configures a TFTP server address which has a SNOS image. This is a mandatory parameter for starting operation.

syntax

no tftp-server address <ipaddress>
tftp-server address <ipaddress>

Parameter	Description
Address	Specifies ip address or host name of TFTP server which has a SNOS image file.

default

none (empty)

example

```
Router/configure/firmware_params# tftp-server 90.1.1.1
```

related commands

configure firmware_params filename, configure firmware_params start-download, configure firmware_params sipaddress

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applicable models/versions

All models.

command modes

Router/configure/firmware_params

configure firmware_params start-download

This command downloads the configured SNOS image file from remote TFTP server to local compact flash memory.

syntax

start-download

example

```
Router/configure/firmware_params# filename
iBG_Advanced_1.0.0.Z
Router/configure/firmware_params# tftp-server 90.90.1.242
Router/configure/firmware_params# start-download
Continue with the download ? (y/n) : y
getting firmware from 90.90.1.242:iBG_Advanced_1.0.0.Z to
/cf0/iBG_Advanced_1.0.0.Z
Transfer complete: 16345500 bytes

To download firmware is successful
```

related commands

configure firmware_params filename, configure firmware_params tftp-server, configure firmware_params sipaddress

applicable models/versions

All models.

command modes

Router/configure/firmware_params

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3.11 boot_params

This command configures the booting related parameters.
The system stores and executes images in the order in which you added them to the boot parameter. If you want to change the order in which images are tried at startup, you can either prepend and clear images from the boot parameter to attain the desired order or you can clear the entire boot parameter and then redefine the list in the desired order.
This command requires system rebooting. But, An user can decide the system reboot.

syntax

boot_params

All parameters will be entered interactively. The parameters on each field will be displayed the values typed at previous time.

Parameter	Description
Boot dev	Device type to get the SNOS image file
Boot file name	Path name and file name. Don't need to prefix the device name
Server name	Server name (FTP or TFTP server)
Server IP address	IP address of the server
My IP address	IP address of this Router
My subnet mask	Subnet mask for this Router (use following form: 255.255.255.0)
Gateway IP address	Gateway ip address for this Router
User name	Login id to log on the server
Password	Password to log on the server for FTP server connection
Checksum enable	Flag for checksum of loaded SNOS image If you select 1, then it skips checking checksum values for the image.
Show header enable	Flag for showing header information of loaded SNOS image. If you select 1, then it will be displayed each header information of the image.

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(Continued)

Parameter	Description
Save bootrom image	Option for booting ROM update 0: auto update (The Router will update automatically based on version of booting ROM) 1: update only normal image part 3: force not to update booting ROM
Golden boot auto sync	This parameter should be set to update golden boot rom. This parameter is offered only when golden boot rom needs to be updated, which is specified in the release notes. 0: disable 1: enable
Save Diag Flag	Flag to boot up to diagnostic mode

example

```
Router/configure# boot_params
```

NOTE

Configuration changes not yet saved!

```
Boot dev  [ftp,active-ftp,tftp,cf0,usb0]: ftp
Boot file name     : ftpboot fullpath name
Server name        : ftpserver
Server IP addreess : 90.90.90.240
My IP addreess     : 90.90.90.27
My subnet mask     : 255.255.255.0
Gateway IP address : your_gateway_ipaddress
User name          : mylogin
Password           : mypassword
Checksum enable    [0:Check, 1:Skip]: 1
Show header enable [0:Disable,1:Enable]: 0
Save bootrom image [0:AutoUpdate,1:NormalBTupd,3:NoUpd]: 0
Golden boot autosync [0 : disable, 1 : enable] : 0
Save Diag Flag  [0:Normal mode,1:Diag mode]: 0

Boot parameters were changed.
Do you want to save the changed parameter(s) and reboot:
(Y/N) ? : y
*Jan 01,2000,12:04:48: #PLATFORM-emergency: User types
reboot CLI command,the system will be rebooted.
```


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```
WARNING : Configuration changes not yet saved !
Do you wish to save the current configuration? (y/n): y
WARNING :
Do not remove Compact Flash or reboot during this process
Saving current system configuration.
Please wait... (up to a minute)
4303
```

related commands

show boot_params

applicable models/versions

Certain models do not have partial fields.
iBG 3026 and iBG1000 provide full options. iBG 2016 and iBG2006 do not offer network related options.

command modes

Router/configure/boot_params

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3.12 spanning-tree

This command is pre-command to enter MSTP Configuration Mode and must be followed by 'mst configuration' to execute the command.

3.12.1 mst configuration

This command is used to enter MSTP Configuration Mode in which commands configure MSTP related global parameters. MSTP enables VLANs to be grouped into a spanning-tree instance, with each instance having a spanning-tree topology independent of other spanning-tree instances. System using MSTP can provide multiple forwarding paths for data traffic, enables load balancing, and reduces the number of spanning-tree instances required to support a large number of VLANs.
The system running MSTP supports a built-in protocol migration mechanism that enables it to interoperate with legacy 802.1D (STP) and 802.1w (RSTP).

syntax

spanning-tree mst configuration

example

```
Router/configure# spanning-tree mst configuration
Router/configure/spanning-tree/mst#
```

related commands

configure spanning-tree mst bridge instance vlan, configure spanning-tree mst bridge region, configure spanning-tree mst bridge revision

applicable models/versions

All models.

command modes

Router/configure

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configure spanning-tree mst bridge instance

Use this command to create an instance of a VLAN. The VLANs must be created before being associated with an MST instance (MSTI). If the VLAN range is not specified, the MSTI is created without the binding to VLANs.

syntax

bridge *BRIDGEID <1-1>* instance *INSTANCE_ID*<1-15> [vlan *VLAN_ID*<1-4094>]
no bridge *BRIDGEID <1-1>* instance *INSTANCE_ID*<1-15> [vlan *VLAN_ID*<1-4094>]

Parameter	Description
BRIDGEID	Specify the bridge group ID. Bridge ID 1 is only allowed in the current version.
INSTANCE_ID	Specify the instance ID. Instance 0 is used for the internal spanning tree (IST) and created automatically. All other MST instances are numbered from 1 to 15.
VLAN_ID	Specify a VLAN ID to be associated to the instance

related commands

show spanning-tree mst config, show spanning-tree mst, show spanning-tree mst detail

example

```
Router# configure terminal
Router/configure# bridge 1 protocol mstp
Router/configure# spanning-tree mst configuration
Router/configure/spanning-tree/mst# bridge 1 instance 2 vlan 30
```

applicable models/versions

All models.

command modes

MSTP Configuration Mode:
Router/configure/spanning-tree/mst

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configure spanning-tree mst bridge region

Use this command to change the name of an MST region. The switches with same MST configuration information reside in the same region.
The configuration includes the name of the region, the revision number, and the MST VLAN-to-instance assignment map which is known as Configuration Digest.

syntax

bridge BRIDGEID <1-1> region REGION_NAME <name>
no bridge BRIDGEID <1-1> region REGION_NAME <name>

Parameter	Description
BRIDGEID	Specify the BridgeGroup_ID
REGION_NAME	Specify the name of the region

example

```
Router# configure terminal
Router/configure# spanning-tree mst configuration
Router/configure/spanning-tree/mst# bridge 1 region MYREGION
```

related commands

show spanning-tree mst config

applicable models/versions

All models.

command modes

MSTP Configuration Mode:
Router/configure/spanning-tree/mst

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configure spanning-tree mst bridge revision

Use this command to specify the configuration revision number. The default value of revision number is 0. The switches with same MST configuration information reside in the same region. The configuration includes the name of the region, the revision number, and the MST VLAN-to-instance assignment map which is known as Configuration Digest.

syntax

bridge BRIDGEID <1-1> revision REVISION_NUM <0-255>

Parameter	Description
BRIDGEID	Specify the BridgeGroup_ID
REVISION_NUM	Revision number

example

```
Router# configure terminal
Router/configure# spanning-tree mst configuration
Router/configure/spanning-tree/mst# bridge 1 revision 25
```

related commands

show spanning-tree mst config

applicable models/versions

All models.

command modes

MSTP Configuration Mode:
Router/configure/spanning-tree/mst

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3.13 vlan

This command is a transit command to enter VLAN Database Mode in which a VLAN can be created and deleted or some information about VLAN can be modified. This command is also used a pre-command to configure Protocol and Subnet based VLAN. This command must be followed by ‘database’ to enter VLAN Database Mode or followed by ‘classifier’ to configure a classifier for Protocol and Subnet based VLAN.

3.13.1 database

This command is mode change command. Use this command to enter the VLAN configuration mode.

syntax

vlan database

example

Use this command to enter the VLAN configuration mode, and add, delete, or modify values associated with a single VLAN

```
In the following example, note the change to VLAN
configuration mode from Configure mode:
Router# configure terminal
Router/configure# vlan database
Router/configure/vlan/database#
```

related commands

configure vlan database vlan bridge, configure vlan database vlan mtu bridge

applicable models/versions

All models

command modes

Router/configure

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configure vlan database vlan bridge

This command creates or deletes a VLAN on a bridge basis. Specifying the disable state causes all forwarding over the specified VLAN ID on the specified bridge to cease. Specifying the enable state allows forwarding of frames on the specified VLAN-aware bridge.

syntax

vlan VLANID <2-4094> bridge *BRIDGEID* <1-1> [name VLAN_NAME<name>]
no vlan VLANID <2-4094> bridge *BRIDGEID* <1-1> [name VLAN_NAME <name>]

Parameter	Description
VLANID	The VID of the VLAN that will be enabled or disabled on the bridge <2-4094>.
BRIDGEID	The ID of the bridge-group on which the VLAN will be affected
VLAN_NAME	The ASCII name of the VLAN. Maximum length: 16 characters

example

```
Router# configure terminal
Router/configure# vlan database
Router(config-vlan)# vlan 45 bridge 1 name vlan2
```

related commands

None.

applicable models/versions

All models

command modes

VLAN Database Mode:
Router/configure/vlan/database

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configure vlan database vlan mtu bridge

Use this command to set the Maximum Transmission Unit (MTU) for a specified VLAN. Any packet with a size greater than the configured MTU is discarded.
Use the no form of this command to reset the MTU configuration for the VLAN.

syntax

vlan VLANID <2-4094> mtu MTU_VALUE<value> bridge BRIDGE_NAME <name>
no vlan VLANID <2-4094> mtu MTU_VALUE<value> bridge BRIDGE_NAME <name>

Parameter	Description
VLANID	The ID of the VLAN for which the MTU has to be set.
MTU_VALUE	The value of the Maximum Transmission Unit
BRIDGE_NAME	The name of the bridge on which VLAN is configured

example

```
Router/configure/vlan/database# vlan 2 mtu 1024 bridge 1
```

related commands

None.

applicable models/versions

All models.

command modes

VLAN Database Mode:
Router/configure/vlan/database

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3.13.2 classifier

This command is a transit command to configure Protocol and Subnet based VLAN. This command must be followed by ‘rule’ or ‘group’ to execute the command.

configure vlan classifier rule ipv4 vlan

Use this command to create an IPv4 subnet-based VLAN classifier rule and map it to a specific VLAN.

syntax

vlan classifier rule RULE_NUM<1-256> ipv4 IP_SUBNET<A.B.C.D/M> vlan VLANID<2-4000>
no vlan classifier rule RULE_NUM<1-256> ipv4 IP_SUBNET<A.B.C.D/M> vlan VLANID<2-4000>

Parameter	Description
RULE_NUM	VLAN classifier rule id
IP_SUBNET	IP Subnet
VLANID	VLAN to which an untagged packet is mapped.

example

If the source IP address matches the IP subnet specified in the VLAN classifier rule, the received packets are mapped to the specified VLAN.

```
Router# configure terminal
Router/configure# vlan classifier rule 3 ipv4 3.3.3.3/8 vlan 5
```

related commands

vlan classifier group add rule, vlan classifier group delete rule

applicable models/versions

All models.

command modes

Router/configure

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configure vlan classifier rule protocol encap

Use this command to create a protocol type-based VLAN classifier rule, and map it to a specific VLAN.

syntax

vlan classification rule RULE_NUM<1-256> protocol PROTOCOL encap ENCAP vlan VLANID<2-4000>

Parameter	Description
RULE_NUM	VLAN classifier rule id
PROTOCOL	Type of protocol <0-65535> specific ethernet type in decimal notation ip IPV4 ipv6 IPV6 mpls MPLS arp ARP rarp Reverse ARP vlan-tagged 802.1q VLAN tag appletalk APPLETALK ipx IPX pppdiscovery PPPoE Discovery pppsession PPPoE Session
ENCAP	Type of encapsulation ethv2 Ethernet Type II llcsnap LLC SNAP nollcsnap NO LLC SNAP
VLANID	VLAN to which an untagged packet is mapped.

example

If the protocol type matches the protocol specified in the VLAN classifier rule, the received packets are mapped to the specified VLAN.

```
Router# configure terminal
Router/configure# vlan classifier rule 12 protocol arp encap
ethv2 vlan 10
```


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related commands

vlan classifier group add rule, vlan classifier group delete rule

applicable models/versions

All models.

command modes

Router/configure

configure vlan classifier group (add | delete) rule

Use this command to bind or unbind rules and groups. When you bind some rules into a group, the group is automatically created. Group 1 can be used for IP Subnet Based Rule globally. Other Groups can be used for Protocol Based Rules.

syntax

vlan classifier group GROUP_NUM<1-16> add rule RULE_NUM<1-256>
vlan classifier group GROUP_NUM<1-16> delete rule RULE_NUM<1-256>
vlan classifier group GROUP_NUM<1-16> delete rule all

Parameter	Description	
GROUP_NUM	<1-16>	GROUP ID
RULE_NUM	<1-256>	Rule ID to be added to or deleted from the Group
	all	All rules are detached and the group is deleted

example

```
Router# configure terminal
Router/configure# vlan classifier group 1 add rule 3
```

related commands

vlan classifier rule ipv4 vlan, vlan classifier rule proto encap vlan

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applicable models/versions

All models.

command modes

Router/configure

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3.14 access-list

3.14.1 access-list ip

This command accesses commands for creating and modifying IP packet filtering rule sets. After creating a new rule set, you can apply it to the WAN bundles and Ethernet ports of the system, using such as configure access-group, configure interface bundle access-group, or configure interface Ethernet access-group commands.

syntax

access-list ip list_name<name>
no access-list ip list_name<name>

Parameter	Description
List_name	Access list name

default

Disabled (no)

example

```
router# configrue terminal
router/configure# access-list ip list1
```

related commands

access-list ip add, access-list ip delete, access-list ip insert, access-group

applicable models/versions

All models.

command modes

Router/configure/ip

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configure access-list ip add

This command adds a rule to the current filter rule list.
Each rule is added with an identifying line number for future insertion or deletion.

syntax

add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

no add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
rul_action	permit rule or deny rule
Protocol	ip protocol-tcp/udp/icmp/ip/igmp or 0-255
Source	ip src address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
Destination	ip dst address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255

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(Continued)

Parameter	Description
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	ip precedence, 0-7
tos_value	ip type of service, 0-15
dscp_value	ip differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ip fragments'
logging	logging on/off (default: off)
Expire_time	rule expiry time (seconds)

default

Disabled (no)

example

```
router# configure terminal
router/configure# access-list ip list1
router/configure/access-list ip list1# add permit tcp any any
router/configure/access-list ip list1# add permit tcp
10.1.3.9/24 10.1.100.46 255.255.255.0 dport =23 flags
established log on
```

related commands

delete, insert

applicable models/versions

All models.

command modes

Router/configure/ip/access-list

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configure access-list ip insert

This command inserts a new rule into an existing filtering rule set.
This command lets you enter a rule in the middle of an existing set of rules by specifying a line number location.

syntax

insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

no insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
line_num	The rule line number to insert a rule
rul_action	permit rule or deny rule
Protocol	ip protocol-tcp/udp/icmp/ip/igmp or 0-255
Source	ip src address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
Destination	ip dst address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2

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(Continued)

Parameter	Description
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	ip precedence, 0-7
tos_value	ip type of service, 0-15
dscp_value	ip differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ip fragments'
logging	logging on/off (default: off)
Expire_time	rule expiry time (seconds)

default

Disabled (no)

example

```
router#configure terminal
router/configure# access-list ip list1
router/configure/access-list ip list1# add permit tcp any
any
router/configure/access-list ip list1# insert 1 permit tcp
10.1.3.9/24 10.1.100.46 255.255.255.0 dport =23 flags
established log on
```

related commands

add, delete

applicable models/versions

All models.

command modes

Router/configure/access-list ip <list>

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configure access-list ip delete

This command deletes a rule from an IP packet filtering rule set.
You must know the line number of the rule to delete it. To show the rules currently stored in a rule set before or after deleting them, use the show access-list ip filter_list command. When you delete a rule, the line numbers of successive rules in the list are revised accordingly.

syntax

delete line_num<num>

Parameter	Description
Line_num	The line number of the rule to delete

default

Disabled (no)

example

```
router# configure terminal
router/configure # access-list ip list1
router/configure/access-list ip list1# delete 1
```

related commands

add, insert

applicable models/versions

All models.

command modes

Router/configure/access-list ip <list>

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3.14.2 access-list ipv6

This command accesses commands for creating and modifying IPv6 packet filtering rule sets. After creating a new rule set, you can apply it to the WAN bundles and Ethernet ports of the system, using such as configure access-group, configure interface bundle access-group, or configure interface Ethernet access-group commands.

syntax

access-list ipv6 list_name<name>
no access-list ipv6 list_name<name>

Parameter	Description
List_name	Access list name

default

Disabled (no)

example

```
router# configrue terminal
router/configure# access-list ipv6 list1
```

related commands

access-list ipv6 add, access-list ipv6 delete, access-list ipv6 insert, access-group

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6

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configure access-list ipv6 add

This command adds a rule to the current filter rule list. Each rule is added with an identifying line number for future insertion or deletion.

syntax

add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IPv6 address> [/ wildcard<wildcard>] | any destination<IPv6 address>
[/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

no add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IPv6 address> [/ wildcard<wildcard>] | any destination<IPv6 address>
[/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
rul_action	permit rule or deny rule
Protocol	Ipv6 protocol-tcp/udp/icmp/ipv6/igmp or 0-255
Source	ipv6 src address: x:x:x:x:x:x:x:x or x:x:x:x:x:x:x:x/0-128 or any
Destination	ipv6 dst address: x:x:x:x:x:x:x:x or x:x:x:x:x:x:x:x/0-128 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255

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(Continued)

Parameter	Description
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	Ipv6 precedence, 0-7
tos_value	Ipv6 type of service, 0-15
dscp_value	Ipv6 differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ipv6 fragments'
logging	logging on/off (default: off)
Expire_time	Rule expiry time (seconds)

default

Disabled (no)

example

```
router# configure terminal
router/configure# access-list ipv6 list1
router/configure/access-list ipv6 list1# add permit tcp any
any
router/configure/access-list ipv6 list1# add permit tcp
2001::1/32 2002::2/32 dport =23 flags established log on
```

related commands

delete, insert

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/access-list/ipv6

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configure access-list ipv6 insert

This command inserts a new rule into an existing filtering rule set.
This command lets you enter a rule in the middle of an existing set of rules by specifying a line number location.

syntax

insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IPv6 address> [/ wildcard<wildcard>] | any destination<IPv6 address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

no insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IPv6 address> [/ wildcard<wildcard>] | any destination<IPv6 address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
line_num	The rule line number to insert a rule
rul_action	permit rule or deny rule
Protocol	Ipv6 protocol-tcp/udp/icmp/ipv6/igmp or 0-255
Source	ipv6 src address: x:x:x:x:x:x:x:x or x:x:x:x:x:x:x:x/0-128 or any
Destination	ipv6 dst address: x:x:x:x:x:x:x:x or x:x:x:x:x:x:x:x/0-128 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2

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(Continued)

Parameter	Description
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	Ipv6 precedence, 0-7
tos_value	Ipv6 type of service, 0-15
dscp_value	Ipv6 differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ipv6 fragments'
logging	logging on/off (default: off)
Expire_time	rule expiry time (seconds)

default

Disabled (no)

example

```
router#configure terminal
router/configure# access-list ipv6 list1
router/configure/access-list ipv6 list1# add permit tcp any
any
router/configure/access-list ipv6 list1# insert 1 permit tcp
2001::1/32 2002::1/32 dport =23 flags established log on
```

related commands

add, delete

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/access-list ipv6 <list>

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configure access-list ipv6 delete

This command deletes a rule from an IPv6 packet filtering rule set.
You must know the line number of the rule to delete it. To show the rules currently stored in a rule set before or after deleting them, use the show access-list ipv6 filter_list command. When you delete a rule, the line numbers of subsequent rules in the list are revised accordingly.

syntax

delete line_num<num>

Parameter	Description
Line_num	The line number of the rule to delete

default

Disabled (no)

example

```
router# configure terminal
router/configure# access-list ipv6 list1
router/configure/access-list ipv6 list1# delete 1
```

related commands

add, insert

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/access-list ipv6 <list>

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3.14.3 access-list mac

Use this command to create/modify mac access list. MAC filtering feature can be supported on LAN Module. IP access-list and access-list mac can be attached to interface mutual exclusively. Only ingress filtering functionality is supported. Firewall and ACL will be largely mutually exclusive on a per interface basis. However, L2 ACL may co-exist with the firewall.

NOTE

Mac ACL is not supported on iBG2006.

syntax

access-list mac filter_name<name>
no access-list mac filter_name<name>

Parameter	Description
filter_name	The name of filter rule list

default

Disabled (no)

example

```
Router# configure terminal
router/configure# access-list mac_acl
```

related commands

access-list ip, access-list mac add, access-list mac delete, access-list mac insert

applicable models/versions

All models.

command modes

Router/configure

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configure access-list mac add

This command adds a MAC ACL rule to the current filter rule list.

syntax

add action <permit|deny> source<mac_address> | any destination<mac_address> | any [smask src_addr_mask <mask>] [dmask dst_addr_mask <mask>] [ethertype ethertype<n>|arp | aarp | ppp] [vlan vlan<0-4095>] [cos cos<0-7>]

Parameter	Description
Action	If a packet and a rule statement match, it permit or deny the packet.
Source	mac source address: a.b.c or any
Destination	mac destination address: a.b.c or any
Smask	mac source mask: a.b.c
Dmask	Mac destination mask: a.b.c
ethertype	arp/aarp/ppp/or Ethernet Type number in hex * 0x0800 is not supported. Use ip access-list.
vlan	Vlan id, 0-4095
cos	Cos vlaue, 0-7

default

Disabled (no)

example

```
router/configure# access-list mac macl
router/configure/access-list mac macl# add deny
0000.4700.0011 any smask ffff.ffff.ffff
router/configure/access-list/mac macl# add deny any any
ethetype arp
router/configure/access-list/mac macl# add deny any any cos 5
router/configure/access-list/mac macl# add deny any any vlan
100
router/configure/access-list/mac macl# add permit any any
```


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related commands

delete, insert

applicable models/versions

All models.

command modes

Router/configure/access-list mac

configure access-list mac insert

This command inserts a L2 rule to current rule list. Rule line numbers are re-numbered after insert a rule.

syntax

insert rule_line_no<n> action <permit|deny> source <mac_address>|any destination <mac_address>|any [smask src_addr_mask<mask>] [dmask dst_addr_mask<mask>] [ethertype ethertype<n>|arp | aarp | ppp] [vlan vlan<0-4095>] [cos cos<0-7>]

Parameter	Description
rule_line_no	Rule line number to insert into
Action	If a packet and a rule statement match, it permit or deny the packet.
Source	mac source address: a.b.c or any
Destination	mac destination address: a.b.c or any
Smask	mac source mask: a.b.c
Dmask	Mac destination mask: a.b.c
ethertype	Arp/aarp/ppp/or Ethernet Type number in hex * 0x0800 is not supported. Use ip access-list.
vlan	Vlan id, 0-4095
cos	Cos vlaue, 0-7

default

Disabled (no)

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example

```
router/configure/access-list/mac macl# add permit any any
router/configure/access-list/mac macl# insert 1 deny any any
vlan 100
router/configure/access-list/mac macl# insert 1 deny any any
cos 5
router/configure/access-list/mac macl# insert 1 deny any any
ethetype arp
router/configure/access-list/mac macl# insert 1 deny
0000.4700.0011 any smask ffff.ffff.ffff
```

related commands

add, delete

applicable models/versions

All models.

command modes

Router/configure/access-list mac

configure access-list mac delete

This command deletes a rule from an MAC filtering rule set. Rule line numbers are re-numbered after delete a rule.

syntax

delete rule_line_no <n>

Parameter	Description
Rule_line_no	rule number which a rule to be deleted

default

Disabled (no)

example

```
Router/configure/access-list/mac macl # delete 3
```


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related commands

add, insert

applicable models/versions

All models.

command modes

Router/configure/access-list mac

3.14.4 access-list routing

Use the access-list command to configure an access list for filtering packets.

Access lists filter network traffic by controlling whether routed packets are forwarded or blocked at the router's interfaces. Your router examines each packet to determine whether to forward or drop the packet, on the basis of the criteria you specified within the access lists.
Access list criteria could be the source address of the traffic, the destination address of the traffic, the upper-layer protocol, or other information. Note that sophisticated users can sometimes successfully evade or fool basic access lists because no authentication is required.

An access list is a sequential list consisting of at least one permit statement and possibly one or more deny statements that apply to IP addresses and possibly upper-layer IP protocols. The access list has a name by which it is referenced. Many software commands accept an access list as part of their syntax.
An access list can be configured and named, but it is not in effect until the access list is referenced by a command that accepts an access list. Multiple commands can reference the same access list. An access list can control traffic arriving at the router or leaving the router, but not traffic originating at the router.

The main result from the evaluation of an access list is a yes or no answer an ACL either permits or denies input data. Applied to redistribution, an ACL determines if a particular route can (route matches ACLs permit statement) or can not (matches deny statement) be redistributed.
The switch stops checking the access list after a match occurs. Each ACL ends with an implicit deny statement.

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NOTE

This command is applicable on configure mode.

syntax

access-list routing listname <string> deny <[ipaddress <ipaddress> [exact-match]] | any>
no access-list routing listname <string> deny <[ipaddress <ipaddress> [exact-match]] | any>
access-list routing listname <string> permit <[ipaddress <ipaddress> [exact-match]] | any>
no access-list routing listname <string> permit <[ipaddress <ipaddress> [exact-match]] | any>
access-list routing listname <string> remark line <string>
no access-list routing listname <string> remark line <string>

Parameter	Description
listname	access-list name
ipaddress	An IP address.
any	Allows any IP address or prefix to match.
exact-match	Specifies exact matching of prefixes
line	Multi-line, access-list entry comment up to 100 characters.

examples

```
Router# configure terminal
Router/configure# access-list routing mylist permit any
Router/configure# access-list routing mylist deny
10.10.0.72/24 exact-match
```

related commands

show access-list routing list

applicable models/versions

All models.

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command modes

Router/configure

access-list routing standard

Use the access-list routing standard command to configure an access list for filtering packets. standard access-list supports the filtering which is specified by destination.

NOTE

This command is applicable on configure mode.

syntax

access-list routing standard_num <n> deny <address <a.b.c.d> [wildcard <a.b.c.d>] | any | host addres <a.b.c.d>>
no access-list routing standard_num <n> deny <address <a.b.c.d> [wildcard <a.b.c.d>] | any | host addres <a.b.c.d>>
access-list routing standard_num <n> permit <address <a.b.c.d> [wildcard <a.b.c.d>] | any | host addres <a.b.c.d>>
no access-list routing standard_num <n> permit <address <a.b.c.d> [wildcard <a.b.c.d>] | any | host addres <a.b.c.d>>
access-list routing standard_num <n> remark line <string>
no access-list routing standard_num <n> remark line <string>

Parameter	Description
Standard_num	access-list number. range is <1-99> or <1300-1999> (expanded range).
address	An IP address.
wildcard	wildcard mask to specify which part of A.B.C.D is ignored. It works as a reverse address mask, e.g., 0.0.0.255 means you permit or deny the route which matches the first 24 bits, A.B.C.D.
line	Multi-line, access-list entry comment up to 100 characters.

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examples

```
Router# configure terminal
Router/configure# access-list routing 67 deny 1.1.1.0
0.0.0.255
Router/configure# access-list routing 1332 permit any
```

related commands

show access-list routing list

applicable models/versions

All models.

command modes

Router/configure

3.14.5 access-list routing-ipv6

Use the access-list command to configure an access list for filtering packets.

Access lists filter network traffic by controlling whether routed packets are forwarded or blocked at the router's interfaces. Your router examines each packet to determine whether to forward or drop the packet, on the basis of the criteria you specified within the access lists.
Access list criteria could be the source address of the traffic, the destination address of the traffic, the upper-layer protocol, or other information. Note that sophisticated users can sometimes successfully evade or fool basic access lists because no authentication is required.

An access list is a sequential list consisting of at least one permit statement and possibly one or more deny statements that apply to IPv6 addresses and possibly upper-layer IPv6 protocols. The access list has a name by which it is referenced. Many software commands accept an access list as part of their syntax.
An access list can be configured and named, but it is not in effect until the access list is referenced by a command that accepts an access list. Multiple commands can reference the same access list. An access list can control traffic arriving at the router or leaving the router, but not traffic originating from the router.

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The main result from the evaluation of an access list is a yes or no answer An ACL either permits or denies input data. Applied to redistribution, an ACL determines if a particular route can (route matches ACLs permit statement) or cannot (matches deny statement) be redistributed.
The switch stops checking the access list after a match occurs. Each ACL ends with an implicit deny statement.

NOTE

This command is applicable in configure mode.

syntax

access-list routing-ipv6 listname <string> deny <[ipv6address <ipv6address> [exact-match]] | any>
no access-list routing-ipv6 listname <string> deny <[ipv6address <ipv6address> [exact-match]] | any>
access-list routing-ipv6 listname <string> permit <[ipv6address <ipv6address> [exact-match]] | any>
no access-list routing-ipv6 listname <string> permit <[ipv6address <ipv6address> [exact-match]] | any>
access-list routing-ipv6 listname <string> remark line <string>
no access-list routing-ipv6 listname <string> remark line <string>

Parameter	Description
listname	access-list name
Ipv6address	An IPv6 address (X:X::X:X/M).
any	Allows any IPv6 address or prefix to match.
exact-match	Specifies exact matching of prefixes
line	Multi-line, access-list entry comment up to 100 characters.

examples

```
Router# configure terminal
Router/configure# access-list routing-ipv6 mylist permit any
Router/configure# access-list routing-ipv6 mylist deny
10:10::72/64 exact-match
```

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.15 interface

This command accesses next level commands for configuring AVCs, WAN bundles, and Ethernet port for operation.
Sub-interface can be specified.

syntax

interface

default

None.

example

```
Router/configure# interface ethernet 0/1
Router/configure/interface/ethernet(0/1)# ip address
10.1.1.2 255.255.255.0
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.15.1 interface ethernet

This command accesses next level commands for configuring an Ethernet port. To view the current configuration of an Ethernet port, use the **show interface ethernet** command. To view a summary of information for all Ethernet ports, use the **show interface ethernets** command.

syntax

interface ethernet ethernet_identifier <slot/port>

Parameter	Description
ethernet_identifier	Number of the Ethernet slot and port to be configured.

default

None.

example

```
Router/configure# interface ethernet 0/1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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configure interface ethernet REM

This command adds comments at the beginning.

syntax

REM ‘comment <word>’

Parameter	Description
comment	Comments for the Ethernet. Valid length 80.

default

None.

example

In the following example, add comments

```
Router# configure terminal
Router/configure# interface ethernet 0/1
Router/configure/interface/Ethernet(0/1)# REM ‘begin comment
here’
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface

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configure interface ethernet REM_

This command adds comments at the end.

syntax

REM ‘comment <word>’

Parameter	Description
comment	Comments for the Ethernet. Valid length 80.

default

None.

example

In the following example, add comments

```
Router# configure terminal
Router/configure# interface ethernet 0/1
Router/configure/interface/Ethernet(0/1)# REM ‘end comment
here’
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface

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configure interface ethernet Description

This command provides a brief Description for an Ethernet port.
The descriptive string, enclosed in quotation marks, can have up to 15 characters.

syntax

Description [descr descr_string<string>]

Parameter	Description
descr_string	Use up to 15 characters; enclose in quotation marks.

default

Disabled (no)

example

To configure Description for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet(2/0)# Description "Main
LAN"
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (slot/port)

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configure interface ethernet speed

This command configures the speed and operating mode of an Ethernet port. If it configures a ‘auto’ mode, it will configure a speed and duplex in system, automatically. If it uses no command, mtu is setting to default value, ‘auto’.

syntax

speed [speed_num<10 | 100 | 1000 | auto>] mode [duplex_mode <half_duplex | full_duplex>]
no speed [speed_num<10 | 100 | 1000 | auto>] mode [duplex_mode <half_duplex | full_duplex>]

Parameter	Description
speed_num	Ethernet speed (10, 100, 1000 Mbps, or auto to automatically adjust to the current Ethernet speed). The default is auto
deuplex_mode	You choose one between Full-duplex (two-way transmission) and half-duplex (one-way transmission). The default is full-duplex. Enter this parameter only if you set speed to 10 or 100 or 1000 Mbps. If you choose a ‘auto’, it doesn’t need to choose one in any more.

default

Disabled (no)

example

```
To configure speed and duplex mode for 2/0 port of Ethernet
interface, enter:
Router/configure/interface/ethernet(2/0)# speed 1000 mode
full_duplex
Router/configure/interface/ethernet(2/0)# speed auto
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (slot/port)

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configure interface ethernet ip address

This command assigns an IP address and subnet mask to the Ethernet port. Subnet mask can be supplied in ether dotted-string format or subnet mask length.

syntax

ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>
no ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>

Parameter	Description
ip_address	IP address in dotted-string format
netmask	Subnet mask in dotted-string format Length of subnet mask in integer. Range should be 0~32

default

None.

example

```
Router/configure/interface/ethernet 1/0# ip address
10.1.100.21 255.255.0.0
Router/configure/interface/ethernet 1/0# ip address
20.1.100.21 24
Router/configure/interface/ethernet 1/0# ip address
20.1.100.21/16
```

related commands

configure interface ethernet ip access-group configure interface ethernet ip broadcast configure interface ethernet ip multicast configure interface ethernet ip proxy_arp

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet ip dvmrp enable

Use this command to enable DVMRP on the current interface. Use the no parameter to disable DVMRP on the interface.

syntax

ip dvmrp enable
no ip dvmrp enable

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet(0/2)# ip dvmrp enable
```

related commands

interface ethernet ip dvmrp metric, interface ethernet ip dvmrp out-report-delay, interface ethernet ip dvmrp reject-non-pruners

applicable models/versions

All models.

command modes

Router/configure/interface/Ethernet (0/2)
Router/configure/interface/bundle WAN1/fr/pvc 100
Router/configure/interface/bundle

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configure interface ethernet ip dvmrp metric

Use this command to assign a metric value (other than the default: 1) to the current interface. When the metric is changed through this command, DVMRP daemon sends flash route updates to expedite route convergence. Use the no parameter to unset the DVMRP route metric value on the interface.

syntax

ip dvmrp metric metric_value <n>
no ip dvmrp metric_value <n>

Parameter	Description
metric_value	DVMRP route metric. The range is 1-31.
	Default value is 1.

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet(0/2)# ip dvmrp metric 3
```

related commands

interface ethernet ip dvmrp enable, interface ethernet ip dvmrp out-report-delay, interface ethernet ip dvmrp reject-non-pruners

applicable models/versions

All models.

command modes

Router/configure/interface/Ethernet (0/2)
Router/configure/interface/bundle WAN1/fr/pvc 100
Router/configure/interface/bundle

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configure interface ethernet ip dvmrp output-report-delay

Use this command to adjust the delay (in seconds) in sending DVMRP reports and to specify valid burst sizes. Use the no parameter to disable the output-report-delay configuration on the interface.

syntax

ip dvmrp out-report-delay report_delay_value <n> [burst_size_value <n>]
no ip dvmrp out-report-delay report_delay_value <n> [burst_size_value <n>]

Parameter	Description
report_delay_value	Report delay. The range is 1-5.
burst_size_value	the number of packets sent on each burst, 1-65535

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet(0/2)# ip dvmrp out-
report-delay 3 1024
```

related commands

interface ethernet ip dvmrp enable, interface ethernet ip dvmrp metric, interface ethernet ip dvmrp reject-non-pruners

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(0/2)
Router/configure/interface/bundle WAN1/fr/pvc 100
Router/configure/interface/bundle

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configure interface ethernet ip dvmrp reject-non-pruners

Use this command to disable the peering with non pruning/grafting DVMRP neighbors. Use the no parameter to enable peering.

syntax

ip dvmrp reject-non-pruners
no ip dvmrp reject-non-pruners

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet(0/2)# ip dvmrp reject-
non-pruners
```

related commands

interface ethernet ip dvmrp enable, interface ethernet ip dvmrp out-report-delay, interface ethernet ip dvmrp metric

applicable models/versions

All models.

command modes

Router/configure/interface/Ethernet (0/2)
Router/configure/interface/bundle WAN1/fr/pvc 100
Router/configure/interface/bundle

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configure interface ethernet ip unreachables

Use this command to enable the interface to reply ICMP Unreachable Error messages. iBG will send an ICMP Unreachable Error message in response to a packet that iBG does not maintain the proper forwarding information corresponding to the destination IP address of it. This functionality is enabled by default.

syntax

ip unreachables
no ip unreachables
'no' keyword disables the interface from sending ICMP Unreachable Error messages. 'show interface ethernet' command of the disabled interface shows that ICMP Unreachable is disabled on the interface

default

Enabled

example

In the following example, interface ethernet 0/0 is enabled to reply ICMP Unreachable Error messages.

```
Router# configure terminal
Router/configure# interface ethernet 0/0
Router/configure/interface/ethernet <0/0># ip unreachables
```

related commands

ip redirects

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet ip redirects

Use this command to enable the interface to reply ICMP Redirect messages. iBG will send ICMP Redirect message in response to a packet that iBG maintains a better next-hop than iBG itself for the destination IP address of it. This functionality is enabled by default.

syntax

ip redirects
no ip redirects

'no' keyword disables the interface from sending ICMP Redirect messages. 'show interface ethernet' command of the disabled interface shows that ICMP Redirect is disabled on the interface

default

Enabled

example

In the following example, interface ethernet 0/0 is enabled to reply ICMP Redirect messages.

```
Router# configure terminal
Router/configure# interface ethernet 0/0
Router/configure/interface/ethernet <0/0># ip redirects
```

related commands

ip unrechables

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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VRRP

Typically, end hosts are connected to the enterprise network through a single router (first-hop router) that is in the same Local Area Network (LAN) segment. The most popular method of configuration is for the end hosts to statically configure this router as their default gateway. This minimizes configuration and processing overhead. The main problem with this configuration method is that it produces a single point of failure if this first-hop router fails.

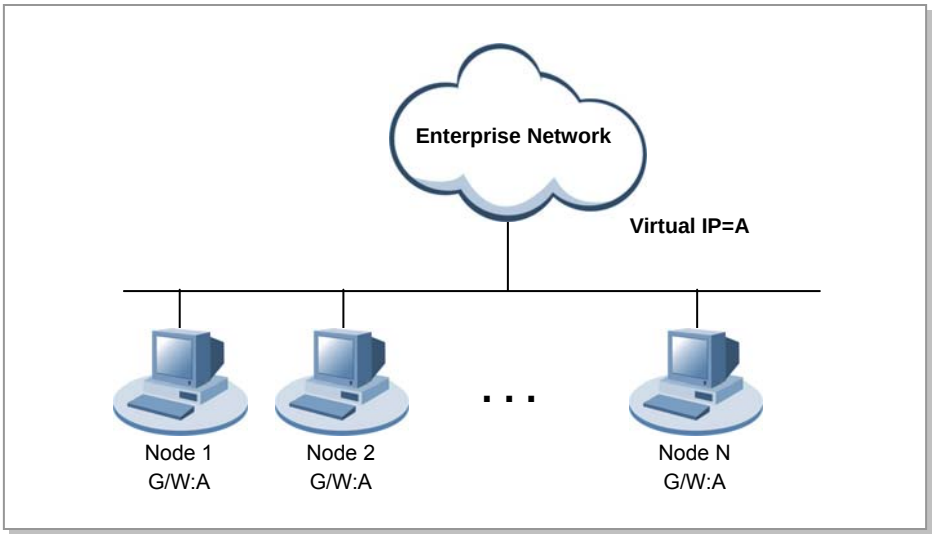

Figure 3.3 Single router network

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The Virtual Router Redundancy Protocol attempts to solve this problem by introducing the concept of a virtual router composed of two or more VRRP routers on the same subnet. The concept of a virtual IP address is also introduced, which is the address that end hosts configure as their default gateway. Only one of the routers (called the Master) forwards packets on behalf of this IP address. In the event that the Master router fails, one of the other routers (Backups) assumes forwarding responsibility for it.

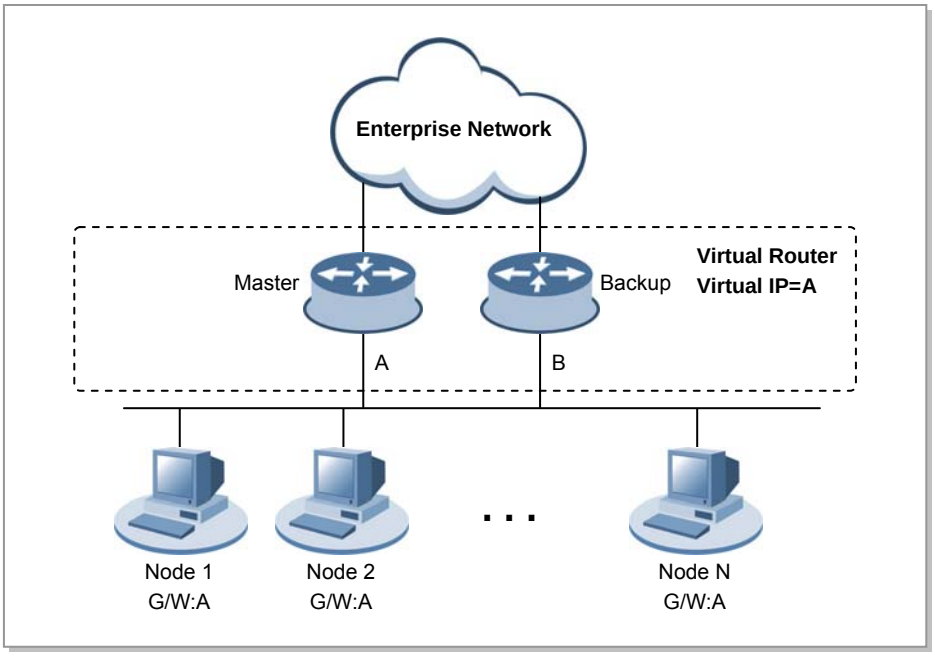

Figure 3.4 Basic VRRP network

At first glance, the configuration outlined in might not seem very useful because it doubles the cost, and leaves one router idle at all times.
This, however, can be avoided by creating two virtual routers, and splitting the traffic between them.

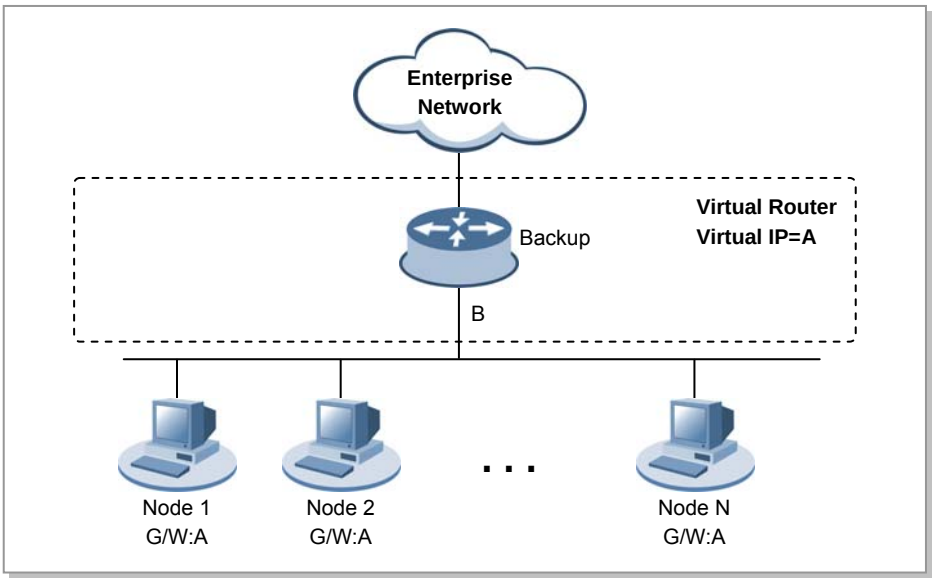

Figure 3.5 Master VRRP router fail case

configure interface ethernet vrrp

This command configures a VRRP group for an Ethernet interface.

syntax

vrrp group <n>
no vrrp group <n>

Parameter	Description
group	Specify the Group number for VRRP. The range is 1-255.

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet(0/2)# vrrp 10
```


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related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/Ethernet (0/2)

configure interface ethernet vrrp ipaddr

Use this command to configure ip addresses associated with this virtual router

syntax

ipaddr <ip_address>
no ipaddr <ip_address>

Parameter	Description
ip_address	Specifies the Virtual IP address. (A.B.C.D) of each VRRP group.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10# ipaddr
10.10.10.50
```

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related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

configure interface ethernet vrrp authentication

This command configures the VRRP authentication information.

Once configured, all outgoing VRRP packets will have this authentication information and all packets received will be authenticated using this information.

syntax

authentication auth_string <auth_string>
no authentication auth_string <auth_string>

Parameter	Description
auth_string	Authentication string Enter a word (maximum of eight characters).

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10#
authentication SAMSUNG
```


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related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

configure interface ethernet vrrp Description

Use this command to add a Description tag to a virtual router instance. Use the no form of this command to remove a Description. It should be delimited by quotation mark (‘…’).

syntax

Description <‘desc_string’>
no Description <‘desc_string’>

Parameter	Description
desc_string	Description string describing group.
	Enter a string up to 80 characters within quotation marks.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10

Router/configure/interface/ethernet(0/2)/vrrp 10#
Description ‘TEST configuration for VR’
```

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related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

configure interface ethernet vrrp preempt

Use this command to configure preempt mode. If set to true, the highest priority backup will ALWAYS be the master when the default Master is unavailable. If set to false, a higher priority backup will not preempt a lower priority backup who is acting as Master. Default is true.

syntax

Preempt
no preempt

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10# preempt
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

configure interface ethernet vrrp advertisement-interval

Use this command to the advertisement interval of the virtual router. This is the length of time, in seconds, between each advertisement sent from the Master to its backup (s).

syntax

advertisement-interval adv_intval <n>
no advertisement-interval adv_intval <n>

Parameter	Description
adv_interval	Specifies the advertisement interval in seconds. The range is 1-255. Default advertisement interval is 1 second.

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10#
advertisement_interval 20
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

configure interface ethernet vrrp learn_adv_internal

This command configures the backup router to learn the advertisement interval from the master.

syntax

learn_adv_interval
no learn_adv_interval

examples

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10#
learn_adv_interval
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable. interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

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configure interface ethernet vrrp priority

Use this command to configure the VRRP router priority within the virtual router. The highest priority router is always Master.

syntax

priority priority_value <n>
no priority priority_value <n>

Parameter	Description
priority_value	It is a priority for the master router, use 255 for this parameter; otherwise use any number from the range <1-254>. Default values for priority are: master router= 255; backup =100

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10# priority 130
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (0/2)/vrrp 10

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configure interface ethernet vrrp track

Use this command to configure tracked interface and track priority

syntax

track interface_name track_priority <n>
no track interface_name track_priority <n>

Parameter	Description
interface_name	Interface name (E.g., ethernet(0/0), ethernet1, or bundle name)
track_priority	Track priority. The range is 1-254.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10# track WAN-1 80
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(0/2)/vrrp 10

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configure interface ethernet vrrp enable

Use this command to enable the VRRP session on the router. In other words, it will begin participating in virtual routing.

syntax

enable
no enable

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Configuring existing Ethernet interface
Router/configure/interface/ethernet(0/2)# vrrp 10
Router/configure/interface/ethernet(0/2)/vrrp 10# enable
```

related commands

interface ethernet vrrp advertisement_interval, interface ethernet vrrp authentication, interface ethernet vrrp Description, interface ethernet vrrp enable, interface ethernet vrrp ipaddr, interface ethernet vrrp learn_adv_internal, interface ethernet vrrp preempt, interface ethernet vrrp priority, interface ethernet vrrp track

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(0/2)/vrrp 10

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configure interface ethernet dhcp_relay server_address

This command configures the DHCP server address to forward DHCP packets. The no form of this command unconfigures the DHCP server address. If relay agent is configured in at least one interface, the DHCP relay functionality is enabled. Conversely, if all relay agents are unconfigured, the DHCP relay functionality is disabled.

syntax

dhcp_relay server_address server_address <ip_address>
no dhcp_relay server_address server_address <ip_address>

Parameter	Description
server_address <ip_address>	IP address of DHCP server

example

This example configures the DHCP server IP address 120.5.4.3 for relayed dhcp packets on Ethernet 0/2

```
Router/configure/interface/ethernet(0/2)# dhcp_relay
server_address 120.5.4.3
```

related commands

configure interface ethernet dhcp_relay gateway_address

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/vlan

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configure interface ethernet dhcp_relay gateway_address

This command configures the 'giaddr' field of DHCP relayed packets. If not specified, the 'giaddr' field is marked with the IP address of interface. The no form of this command removes the gateway address.

syntax

dhcp_relay gateway_address gateway_address <ip_address>
no dhcp_relay gateway_address gateway_address <ip_address>

Parameter	Description
gateway_address <ip_address>	IP address of gateway (for filling 'giaddr' filed)

example

This example configures the gateway IP address 100.4.3.2 for relayed DHCP packets on Ethernet 0/2

```
Router/configure/interface/ethernet(0/2)# dhcp_relay
gateway_address 100.4.3.2
```

related commands

configure interface ethernet dhcp_relay server_address

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/vlan

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configure interface ethernet ipv6 dhcp server

This command enables the DHCPv6 client on this interface and configures the static prefix pool name. Use the no form of this command to disable the DHCPv6 server.

syntax

ipv6 dhcp server pool_name<name> preference vlaue<n> rapid-commit
no ipv6 dhcp server pool_name<name> preference vlaue<n> rapid-commit

Parameter	Description
pool_name<name>	Static prefix pool to be used.
preference value<n>	Preference option value. The range is 0- 255 and the default value is 0.
rapid-commit	Rapid-commit option.

example

```
This example configures the DHCPv6 server on Ethernet 0/2
Router/configure/interface/ethernet(0/2)# ipv6 dhcp_server
pool1
```

related commands

configure interface ethernet ipv6 dhcp client, configure interface ethernet ipv6 dhcp relay, show ipv6 dhcp interface, show ipv6 dhcp duid, show ipv6 dhcp pool, show ipv6 dhcp binding.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle
Router/configure/interface/tunnel
Router/configure/interface/vlan

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configure interface ethernet ipv6 dhcp client

This command enables the DHCPv6 client on this interface and configures the prefix name to be given for the prefixes from DHCPv6 server. Use the no form of this command to disable the DHCPv6 client.

syntax

ipv6 dhcp client pd pdname<name> rapid-commit
no ipv6 dhcp client pd pdname<name> rapid-commit

Parameter	Description
pd pdname<name>	Prefix name to be given for the prefixes.
rapid-commit	Rapid-commit option.

example

```
This example configures the DHCPv6 client on Ethernet 0/2
Router/configure/interface/ethernet(0/2)# ipv6 dhcp_client
pd pd1
```

related commands

configure interface ethernet ipv6 dhcp server, configure interface ethernet ipv6 dhcp relay, show ipv6 dhcp interface, show ipv6 dhcp duids.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle
Router/configure/interface/tunnel
Router/configure/interface/vlan

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configure interface ethernet ipv6 dhcp relay

This command enables the DHCPv6 relay agent on this interface to listen for client messages and configures the DHCPv6 server address to forward DHCPv6 packets. Use the no form of this command to disable the DHCPv6 relay agent.

syntax

ipv6 dhcp relay server-ipv6 server_address<ipv6_address>
interface_name<name>
no ipv6 dhcp relay server-ipv6 server_address<ipv6_address>
interface_name<name>

Parameter	Description
server_address <ipv6_address>	IPv6 address of DHCPv6 server
interface_name<name>	interface name mandatory if the server address is LinkLocal, otherwise not used.

example

```
This example configures the DHCPv6 server IP address 2000::1
for relayed dhcp packets on Ethernet 0/2
Router/configure/interface/ethernet(0/2)# ipv6 dhcp_relay
server-ipv6 2000::1
```

related commands

configure interface ethernet ipv6 dhcp server, configure interface ethernet ipv6 dhcp client, show ipv6 dhcp interface

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle
Router/configure/interface/tunnel
Router/configure/interface/vlan

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configure interface ethernet aaa

This command configures aaa related method list for Ethernet interface. This command cannot be used stand-alone and should be used to be combined with the next-level commands.

syntax

aaa

example

```
Router/configure# interface ethernet 1/2
Router/configure/interface/ethernet(1/2)# aaa
```

related commands

configure interface ethernet aaa accounting, configure interface ethernet aaa authentication, configure interface ethernet aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet aaa accounting

This command is used to configure accounting list for Ethernet interface. This command has four parameters, which are commands, exec, network and system method lists.

syntax

no accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>
accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>

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Parameter	Description
clist_name	Valid commands list name.
elist_name	Valid exec list name.
nlist_name	Valid network list name.
slist_name	Valid system list name.

example

```
Router/configure# aaa
Router/configure/aaa# accounting commands eth1 start_stop
Router/configure/aaa# accounting exec eth1stop_only
Router/configure/aaa# accounting network eth1 wait_start
Router/configure/aaa# accounting system eth1 none
Router/configure/aaa# exit
Router/configure# interface ethernet 0/4
Router/configure/interface/ethernet(0/4)# aaa
Router/configure/interface/ethernet(0/4)/aaa# accounting
command eth1 network eth1
```

related commands

configure interface ethernet aaa authentication, configure interface ethernet aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/aaa

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configure interface ethernet aaa authentication

This command is used to configure authentication login and protocol list name for Ethernet interface for login. If interface specific authentication list is not configured, default authentication login and protocol list is used for login.

syntax

no authentication login_method <list> protocol_method <list>
authentication login_method <list> protocol_method <list>

Parameter	Description
login_method	Valid login list name which is already configured in aaa authentication list
protocol_method	Valid protocol list name which is already configured in aaa authentication list.

example

```
Router/configure# aaa
Router/configure/aaa# authentication login ether
tacacs/radius/local
Router/configure/aaa# authentication protocol ether
pap/ascii
Router/configure/aaa# exit
Router/configure# interface ethernet 0/4
Router/configure/interface/ethernet(0/4)# aaa
Router/configure/interface/ethernet(0/4)/aaa# authentication
login ether ether
```

related commands

configure interface ethernet aaa authentication, configure interface ethernet aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/aaa

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configure interface ethernet aaa authorization

This command is used to configure authorization commands list for Ethernet interface. If interface specific authorization commands list is not configured, default list is used for authorization.

syntax

no authorization command_list <list_name>
authorization command_list <list_name>

Parameter	Description
command_list	Valid command list name which is already configured in aaa authorization list

example

```
Router/configure# aaa
Router/configure/aaa# authorization commands ether
tacacs/radius/local
Router/configure/aaa# exit
Router/configure# interface ethernet 0/4
Router/configure/interface/ethernet(0/4)# aaa
Router/configure/interface/ethernet(0/4)/aaa# authorization
ether
```

related commands

configure interface ethernet aaa authentication, configure interface ethernet aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/aaa

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configure interface ethernet track

This command accesses next-level commands for configuring tracking parameters.

syntax

track

example

```
configure/interface/ethernet 1/0# track
```

related commands

configure interface ethernet track hold_down configure interface ethernet track interface

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet track hold_down

This command configures the hold down time for the tracking interface.

syntax

track hold_down [down_time <d_time>]

Parameter	Description
down_time	Interval in seconds The range is 1-100; the default is 5.

example

```
configure/interface/ethernet 1/0# track hold_down 60
```

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related commands

configure interface ethernet track interface

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet track interface

This command configures tracking on the interface.

syntax

track interface bundle_name <b_name>

Parameter	Description
bundle_name	Name of bundle to be tracked

example

```
configure/interface/ethernet 1/0# track interface wan1
```

related commands

configure interface ethernet track hold_down

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet crypto

This command configures the network type for the specified Ethernet interface There is no default for this command.

syntax

crypto network_type <trusted | untrusted>
no crypto network_type <trusted | untrusted>

Parameter	Description
network_type	-
trusted	Interface is part of a trusted network
untrusted	Interface is part of a untrusted network

example

```
Router/configure/interface/ethernet 1/0# crypto trusted
```

applicable models/versions

All models.

configure interface ethernet shutdown

This command shuts down an Ethernet port. This command disables traffic on the port and retains the port's current configuration and statistics. It also disconnects all Telnet users from the system. To restore the port after shutting it down, log into the system from the RS-232 console port and type no Ethernet shutdown at the Router/configure/interface Ethernet (slot/port) prompt.

syntax

shutdown
no shutdown

default

Disabled (no)

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example

To configure shutdown for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet 2/0# shutdown
Router/configure/interface/ethernet 2/0# no shutdown
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet (slot/port)

configure interface ethernet access-group

Use this command to apply an access list to an interface to filter incoming, outgoing packets. Use the no form of this command to disable an access group.

syntax

access-group direction<in|out> rule<ip|mac|ipv6> acl_name<name>
no access-group direction<in|out> rule<ip|mac|ipv6> acl_name<name>

Parameter	Description
direction	for inbound/outbound packets
rule	Ip: IPv4 Ruleset, Mac: Mac Ruleset ipv6:IPv6 Ruleset
Acl_name	Access list name

default

Disabled (no)

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example

```
router# configure terminal
router/configure# interface ethernet 0/2
router/configure/interface ethernet(0/2)# access-group in ip
rule1
```

related commands

configure access-group

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet switchport

Use this command to set the switching characteristics of the Layer-2 protocols on the interface.
Use the no form of this command to revert to the default behavior.

syntax

switchport
no switchport

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# switchport
```

related commands

None.

applicable models/versions

All models.

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command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet switchport access

Use this command to set VLAN to be accessed port. This command accesses next-level commands for configuring VLANs as access.

syntax

switchport access

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport access
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport access vlan

Use this command to change the default VLAN on the current interface.
Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.

syntax

switchport access vlan VLANID <2-4094>
no switchport access vlan VLANID <2-4094>

Parameter	Description
VLANID	The default VLAN ID for the specified interface (PVID)

default

1 (no)

example

This example shows the steps of a typical VLAN session, creating and destroying a VLAN. Router# configure terminal

```
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  switchport
access vlan 3
```

related commands

show vlan brief

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet switchport hybrid

Use this command to set VLAN to be hybrid port. This command accesses next-level commands for configuring VLAN as hybrid.

syntax

switchport hybrid

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport hybrid
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

configure interface ethernet switchport hybrid allowed

Use this command to allow specific or all VLANs to be hybrid. This command sets the VLANs that will Xmit/Rx through the Layer2 interface.

syntax

switchport hybrid allowed

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport hybrid
allowed
```


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related commands

None.

applicable models/versions

All modes.

command modes

Router/configure/interface/ethernet(1/0)

configure interface ethernet switchport hybrid allowed vlan

Use this command to set the switching characteristics of the Layer-2 interface to hybrid. Both tagged and untagged frames will be classified over hybrid interfaces.
Use the no form of this command to turn off allowed hybrid switching.

syntax

switchport hybrid allowed vlan all
switchport hybrid allowed vlan none
switchport hybrid allowed vlan add VLANID<2-4096> [egress-tagged enable | disable]
switchport hybrid allowed vlan remove VLANID

Parameter	Description
VLANID	The default VLAN ID for the specified interface
enable	Enable the egress tagging for the outgoing frames
disable	Disable the egress tagging for the outgoing frames

For a VLAN range, specify two VLAN numbers: lowest, then highest number in the range, separated by a hyphen. For a VLAN list, specify the VLAN numbers separated by commas. Do not enter spaces between hyphens or commas when setting parameters for VLAN ranges or lists.

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example

The following shows adding a single VLAN to the member set.

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# switchport hybrid
allowed vlan add 2 egress-tagged enable
```

The following shows adding a range of VLANs to the member set.

```
Router/configure/interface/ethernet(2/0)# switchport
hybrid allowed vlan add 2-4 egress-tagged enable
```

The following shows adding a list of VLANs to the member set.

```
Router/configure/interface/ethernet(2/0)# switchport
hybrid allowed vlan add 2,3,4 egress-tagged enable
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet switchport mode

Use this command to set the mode of the Layer2 interface. This step accesses next-level commands for configuring access or hybrid or trunk connection.

syntax

switchport mode

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport mode
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport mode access

Use this command to set the switching characteristics of the Layer-2 interface as access. Access ports can accept untagged frames for the compatibility with legacy Ethernet packet.
Use the no form of this command to reset the mode of the Layer-2 interface to access (default).

syntax

switchport mode access
no switchport mode access

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport mode
access
```

related commands

None.

applicable models/versions

All modes.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport mode access vlan-stacking

Use this command to enable VLAN stacking on an interface. The interface should already be in access mode for this command to work.
Use no parameter with this command to disable VLAN stacking on an interface.

syntax

switchport mode access vlan-stacking
no switchport mode access vlan-stacking

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  switchport
mode access vlan-stacking
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet switchport mode hybrid

Use this command to set the switching characteristics of the Layer-2 interface as hybrid. Hybrid ports can accept untagged and tagged frames for the compatibility with legacy Ethernet packet.
Use the no form of this command to reset the mode of the Layer-2 interface to access (default).

syntax

switchport mode hybrid
no switchport mode hybrid

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport mode
hybrid
```

related commands

None.

applicable models/versions

All model.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport mode trunk

Use this command to set the switching characteristics of the Layer-2 interface as trunk. Trunk ports can also accept untagged frames for the compatibility with legacy Ethernet packet.
Use the no form of this command to reset the mode of the Layer-2 interface to access (default).

syntax

switchport mode trunk
no switchport mode trunk

default

Access mode.

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  switchport
mode trunk ingress-filter enable
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet switchport trunk

Use this command to set VLAN to be trunk port. This command accesses next-level commands for configuring VLAN as trunk.

syntax

switchport trunk

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport trunk
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport trunk allowed

Use this command to allow specific or all VLANs to be trunk. This command sets the VLANs that will Xmit/Rx through the Layer2 interface.

syntax

switchport trunk allowed

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport trunk
allowed
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport trunk allowed vlan

Use this command to set the switching characteristics of the Layer-2 interface to trunk. The all parameter indicates that any VLAN ID is part of its port's member set. The none parameter indicates that no VLAN ID is configured on this port. The add and remove parameters will add and remove VLAN IDs to/from the port's member set.
Use the no form of this command to remove all VLAN IDs configured on this port.

syntax

switchport trunk allowed vlan all
no switchport trunk allowed vlan all

switchport trunk allowed vlan none
no switchport trunk allowed vlan none

switchport trunk allowed vlan add VLANID <2-4094>
no switchport trunk allowed vlan add VLANID <2-4094>

switchport trunk allowed vlan remove VLANID <2-4094>
no switchport trunk allowed vlan remove VLANID <2-4094>

switchport trunk allowed vlan except VLANID <2-4094>
no switchport trunk allowed vlan except VLANID <2-4094>

Parameter	Description
none	Allow no VLANs to transmit and receive through the Layer-2 interface.
add	Add a VLAN to transmit and receive through the Layer-2 interface
remove	Remove a VLAN from transmit and receive through the Layer-2 interface
except	All VLANs, except the VLAN for which the ID is specified, are part of its ports member set
VLANID	The ID of the VLAN or VLANs that will be added to, or removed from, the Layer-2 interface. A single VLAN, VLAN range, or VLAN list can be set. For a VLAN range, specify two VLAN numbers: lowest, then highest number in the range, separated by a hyphen. For a VLAN list, specify the VLAN numbers separated by commas.

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Do not enter spaces between hyphens or commas when setting parameters ranges or lists.

example

The following shows adding a single VLAN to the port's member set.

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  switchport
trunk allowed vlan add 2
```

The following shows adding a range of VLANs to the port's member set.

```
Router/configure/interface/ethernet(2/0)#  switchport trunk
allowed vlan add 2-4
```

The following shows adding a list of VLANs to the port's member set.

```
Router/configure/interface/ethernet(2/0)#  switchport trunk
allowed vlan add
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet switchport trunk native

Use this command to set the native VLAN for classifying untagged traffic through the layer2 interface.

syntax

switchport trunk native

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# switchport trunk
native
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(1/0)

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configure interface ethernet switchport trunk native vlan

Use this command to configure native VLANs for this port. The native VLAN is used for classifying the incoming untagged packets.
Use the no form of this command to revert the native VLAN to the default VLAN ID 1.

syntax

switchport trunk native vlan VLANID<2-4094>
no switchport trunk native vlan VLANID<2-4094>

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  switchport
trunk native vlan 2
```

related commands

None.

applicable models/versions

All models

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet vlan

Use this command to access next-level commands for configuring classifier activate group.

syntax

vlan

example

```
Router/configure# interface ethernet 1/0
Router/configure/interface/ethernet(1/0)# vlan
```

related commands

None.

applicable models/versions

All models

command modes

Router/configure/interface/ethernet(1/0)

configure interface ethernet vlan classifier activate

Use this command to bind or unbind a rule group to the specific interface. Only access port can be bind on the Subnet/Protocol classifier. If the access port is bind to Subnet/Protocol classifier, the port can be the member of multiple VLAN like Trunk port.

syntax

vlan classifier activate GROUP_NUM<1-16>
no vlan classifier activate GROUP_NUM<1-16>

Parameter	Description
GROUP_NUM	Vlan classifier Group ID

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example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  vlan
classifier activate 1
```

related commands

None.

configure interface ethernet spanning-tree force-version

Use this command to specify the version for the interface. A version identifier of less than a value of 2 enforces the spanning tree protocol to the legacy version like STP, RSTP. Although the command supports an input range of 0-3, for RSTP, the valid range is 0-2. Use the no form of this command to set the default protocol version.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

spanning-tree force-version *VERSION* <0-3>
no spanning-tree force-version *VERSION* <0-3>

Parameter	Description
VERSION	Version identifier. (0-STP, 1- Not supported, 2 -RSTP, 3 -MSTP)

example

Set the value to enforce the spanning tree protocol:

```
To configure ‘spanning-tree force-version’ in an Ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# spanning-tree
force-version 2
```

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```
To configure ‘spanning-tree force-version’ in a bundle
interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# spanning-tree
force-version 2
```

Set the default protocol version:

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure(2/0)# no spanning-tree force-version
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/Ethernet
Router/configure/interface/bundle

configure interface ethernet spanning-tree link-type

Use this command to enable or disable point-to-point or shared link types. Point-to-point link setting can enable the rapid port state transition.

The RSTP provides for rapid recovery of connectivity following the failure of a switch, a switch port, or a LAN. It provides rapid convergence for edge ports, new root ports, and ports connected through point-to-point links as follows:
Edge ports - If you configure a port as an edge port on an RSTP switch by using the spanning-tree portfast interface configuration command, the edge port immediately transitions to the forwarding state. An edge port is the same as a Port Fast-enabled port, and you should enable it only on ports that connect to a single end station.
Root ports - If the RSTP selects a new root port, it blocks the old root port and immediately transitions the new root port to the forwarding state.

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Point-to-point links - If you connect a port to another port through a point-to-point link and the local port becomes a designated port, it negotiates a rapid transition with the other port by using the proposal-agreement handshake to ensure a loop-free topology.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

spanning-tree link-type LINKTYPE <point-to-point | shared>

Parameter	Description
LINKTYPE	point-to-point: enable rapid transition shared: disable rapid transition

example

```
To configure ‘spanning-tree link-type’ in an ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# spanning-tree
link-type point-to-point
```

```
To configure ‘spanning-tree link-type’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# spanning-tree link-
type point-to-point
```

related commands

None.

applicable models/versions

All models.

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command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet spanning-tree portfast

Use this command to enable rapid transitions. Port Fast immediately brings an interface configured as an access or trunk port to the forwarding state from a blocking state, bypassing the listening and learning states. You can use Port Fast on interfaces connected to a single host. Port Fast is same as Edge Port. Use the no form of this command to disable rapid transitions.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

(no) spanning-tree portfast

example

```
To configure ‘spanning-tree portfast’ in an Ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# spanning-tree
portfast
```

```
To configure ‘spanning-tree portfast’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# spanning-tree
portfast
```

related commands

None.

applicable models/versions

All models

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command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet spanning-tree portfast bpdu-filter

Use this command to set portfast BPDU filter for the port. Use the no form of this command to revert the port BPDU filter value to default. Enabling portfast prevents the interface from sending or receiving BPDUs.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

spanning-tree portfast bpdu-filter VALUE<enable|disable|default>

Parameter	Description
VALUE	The parameter for bpdu-filter. Enable means BPDU to be filtered in both direction (tx and rx).

default

Disable

usage

Use this command to set the BPDU-filter value for individual ports.
When the enable or disable parameter is used with this command, this configuration takes precedence over bridge configuration. However, when the default parameter is used with this command, the bridge level BPDU-filter configuration takes effect for the port. Use the bridge spanning-tree portfast bpdu-filter command to configure the BPDU filter feature on a bridge.
Use the show spanning tree command to show administratively configured, and currently running values, of the bpdu-filter parameter for the bridge and port.

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example

```
To configure ‘spanning-tree portfast bpdu-filter’ in an
ethernet interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# spanning-tree
portfast bpdu-filter enable
```

```
To configure ‘spanning-tree portfast bpdu-filter’ in a
bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# spanning-tree
portfast bpdu-filter enable
```

related commands

bridge spanning-tree portfast bpdu-filter, show spanning-tree mst detail

applicable models/versions

All models

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet spanning-tree portfast bpdu-guard

Use this command to enable or disable the BPDU Guard feature on a port. Use the no form of this command to set the BPDU Guard feature on a port to default. Receiving a BPDU on a Port Fast and BPDU guard-enabled interface signals an invalid configuration, such as the connection of an unauthorized device, and the BPDU guard feature puts the interface in the error-disabled state. The BPDU guard feature provides a secure response to invalid configurations because you must manually put the interface back in service. Use the BPDU guard feature in a service-provider network to prevent an access port from participating in the spanning tree.

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This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

spanning-tree portfast bpdu-guard VALUE<enable|disable|default>

Parameter	Description
VALUE	The parameter for bpdu-filter as enable or disable or default

usage

This command supersedes the bridge level configuration for the BPDU Guard feature. When the enable or disable parameter is used with this command, this configuration takes precedence over bridge configuration. However, when the default parameter is used with this command, the bridge level BPDU-Guard configuration takes effect. Use the bridge spanning-tree portfast bpdu-guard command to configure the BPDU Guard feature on a bridge.
Use the show spanning-treecommand to show the bridge and port configurations for the BPDU Guard feature. It shows both the administratively configured and currently running values of bpdu-guard.

example

```
To configure ‘spanning-tree portfast bpdu-guard’ in an
ethernet interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# spanning-tree
portfast bpdu-guard enable
```

```
To configure ‘spanning-tree portfast bpdu-guard’ in a
bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# spanning-tree
portfast bpdu-guard enable
```

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related commands

bridge spanning-tree portfast bpdu-guard, show spanning-tree mst detail

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet bridge-group

Use this command to bind an interface with a bridge specified by the parameter. When the interface joins a bridge group by this command, Layer2 protocol and functional commands can be configured on the interface. The interface is getting to a member of Default VLAN (ID=1) and Spanning-tree protocol runs on the interface automatically when the interface is assigned to a bridge group.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

(no) bridge-group BridgeGroup_ID <1-1>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID

example

```
To configure ‘bridge-group’ in an Ethernet interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 1
```

```
To configure ‘bridge-group’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# bridge-group 1
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet bridge-group path-cost

Use this command to set the cost of a path for a port associated with a bridge-group. The MSTP path cost default value is derived from the media speed of an interface. If a loop occurs, the MSTP uses cost when selecting an interface to put in the forwarding state. You can assign lower cost values to interfaces that you want selected first and higher cost values that you want selected last. If all interfaces have the same cost value, the MSTP puts the interface with the lowest interface number in the forwarding state and blocks the other interfaces.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

bridge-group BridgeGroup_ID <1-1> path-cost PATHCOST<1-200000000>
no bridge-group BridgeGroup_ID <1-1> path-cost PATHCOST<1-200000000>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID
PATHCOST	The path cost to be assigned to the interface with the bridge group

default

The default value is derived from the media speed of an interface.

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example

```
To configure ‘bridge-group path-cost’ in an ethernet
interface
Router# configure terminal
Router/configure# interface Ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 1
path-cost 120
```

```
To configure ‘bridge-group path-cost’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# bridge-group 1
path-cost 120
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet bridge-group priority

Use this command to set the port priority for the interface in a bridge. If a loop occurs, the MSTP uses the port priority when selecting an interface to put into the forwarding state. You can assign higher priority values (lower numerical values) to interfaces that you want selected first and lower priority values (higher numerical values) that you want selected last. If all interfaces have the same priority value, the MSTP puts the interface with the lowest interface number in the forwarding state and blocks the other interfaces.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

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syntax

bridge-group BridgeGroup_ID <1-1> priority PRIORITY<0-240>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID
PRIORITY	The priority to be assigned for the port in a group

default

The default priority is 1.

example

```
To configure ‘bridge-group priority’ in an ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 4
priority 100
```

```
To configure ‘bridge-group priority’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# bridge-group 4
priority 100
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet bridge-group instance

Use this command to assign a Multiple Spanning Tree instance to a port. When the VLAN membership of an interface changes and the VLAN is assigned to an instance, the interface must be assigned to the instance. Unless, looping can be occurred. To support user flexibility, an interface is assigned to an instance manually with this command in the current version. If automatic assignment is supported, this command will be deleted.
Use the no form of this command to remove the instance.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID<1-16>
no bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID<1-16>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID
INSTANCE_ID	Specify the instance ID

example

```
To configure ‘bridge-group instance’ in an Ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 4
instance 3
```

```
To configure ‘bridge-group instance’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# bridge-group 4
instance 3
```

related commands

configure spanning-tree mst bridge instance, show spanning-tree mst detail

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet bridge-group instance path-cost

Use this command to set the cost of a path for an interface associated with an instance. Use the no form of this command to restore the default cost value of the path. The MSTP path cost default value is derived from the media speed of an interface. If a loop occurs, the MSTP uses cost when selecting an interface to put in the forwarding state. You can assign lower cost values to interfaces that you want selected first and higher cost values that you want selected last. If all interfaces have the same cost value, the MSTP puts the interface with the lowest interface number in the forwarding state and blocks the other interfaces.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID path-cost PATH_COST<1-200000000>
no bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID path-cost PATH_COST<1-200000000>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID
INSTANCE_ID	Specify the instance ID
PATH_COST	Specify the cost of path. (a lower path-cost indicates a greater likelihood of the specific interface becoming a root)

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default

The default value is derived from the media speed of an interface

example

```
To configure ‘bridge-group instance’ in an ethernet
interface
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 1
instance 3 path-cost 1000
```

```
To configure ‘bridge-group instance’ in a bundle interface
Router# configure terminal
Router/configure# interface bundle T1PPP
Router/configure/interface/bundle T1PPP# bridge-group 1
instance 3 path-cost 1000
```

related commands

configure interface ethernet bridge-group instance, show spanning-tree mst detail, configure spanning-tree mst bridge instance

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

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configure interface ethernet bridge-group instance priority

Use this command to set the port priority for the interface in the instance.
Use the no form of this command to restore the default priority value. If a loop occurs, the MSTP uses the port priority when selecting an interface to put into the forwarding state. You can assign higher priority values (lower numerical values) to interfaces that you want selected first and lower priority values (higher numerical values) that you want selected last.
If all interfaces have the same priority value, the MSTP puts the interface with the lowest interface number in the forwarding state and blocks the other interfaces.

This command can be used in the interface to be set as a switchport and to support spanning-tree-protocol.

syntax

bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID priority PRIORITY<0-240>
no bridge-group BridgeGroup_ID <1-1> instance INSTANCE_ID priority PRIORITY<0-240>

Parameter	Description
BridgeGroup_ID	Specify the bridge group ID
INSTANCE_ID	Specify the instance ID
PRIORITY	Specify the port priority. (a lower priority indicates greater likelihood of the interface becoming a root)

default

The default value of port priority for each instance is 128.

Usage

The Multiple Spanning Tree Protocol uses port priority as a tiebreaker to determine which port should forward frames for a particular instance on a LAN, or which port should be the root port for an instance. A lower value implies a better priority. In the case of the same priority, the interface index will serve as the tiebreaker, with the lower-numbered interface being preferred over others. The permitted range is 0-240. The priority values can only be set in increments of 16.

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example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 4
instance 3 priority 120
```

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# bridge-group 4
instance 3 priority 120
```

related commands

configure interface ethernet bridge-group instance, show spanning-tree mst detail, configure spanning-tree mst bridge instance

applicable models/versions

All models

command modes

Router/configure/interface/ethernet
Router/configure/interface/bundle

configure interface ethernet qos

This command accesses next-level commands for configuring Quality of Service (QoS) on the Ethernet interface.

syntax

qos

default

None.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet
Router/configure/interface vlan

configure interface ethernet qos add-policy-class

This command creates a new QoS class.
The class-name and parent parameters must be entered.

syntax

add-policy-class class-name<name> parent<root-in | root-out>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.
parent	Name of the parent class; QoS classes are defined hierarchically. To add to the root, specify either root-in or root-out.

default

None.

example

In the following example, interface ethernet 0/2 is configured to create class1 class under root-in class

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# add-policy-
class class1 root-in
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

configure interface ethernet qos policy-class

This command accesses next-level commands to modify parameters of this traffic class. From this command user configures classification type, marking, CBQ parameters and etc.

syntax

policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, enter class1 policy mode.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

configure interface ethernet qos auto-qos

This command provides interface specific QoS parameters. The appropriate QoS feature, namely CBQ (shaping) or Policing, and direction will be selected based on the interface type. For LAN interfaces, the policing (SRTCM) feature is selected for the inbound direction. No other combinations of interfaces, feature, and direction are allowed for auto QoS configuration.

In the SW QoS support, the auto QoS parameters are defined such it should provide differentiated treatment for voice/RTP traffic, and the rest. In the hierarchical flow classification mechanism we should define QoS policy classes to identify the voice traffic.

The auto QoS parameters are now defined as follows.

- Three policy-classes for WAN interfaces and six policy classes for LAN interfaces as shown in the diagram (s), with assigned classification keys.
- For LAN interfaces, policy classes are defined in the inbound direction with policing parameter specification for SRTCM, as shown in the diagram figure 3.6.

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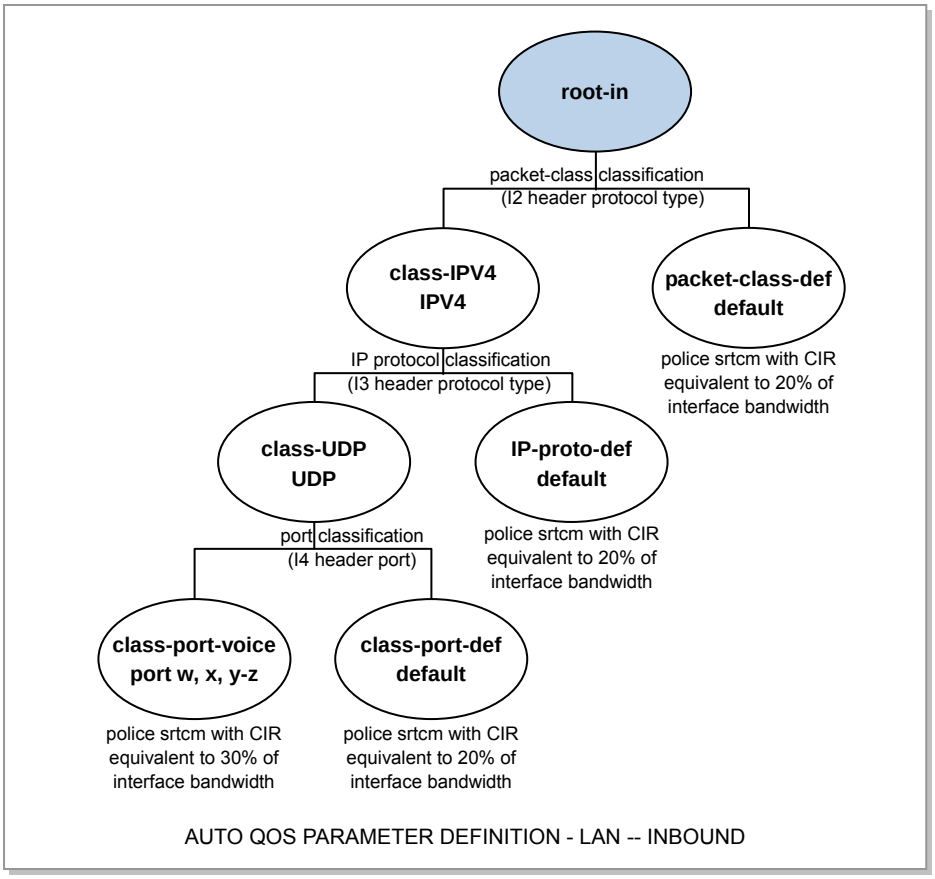

Figure 3.6 Auto QoS Parameter Definition for LAN Interfaces

syntax

[no]auto-qos

default

no auto-qos

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example

In the following example, provides interface specific QoS parameters

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# auto-qos
```

related commands

None.

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface/ethernet/qos

configure interface ethernet qos disable-qos

This command disables QoS features with different actions based on interface type.

QoS supported interfaces can be divided to following groups based on CBQ and WRED/DS-RED support…

- CBQ-Enabled Group (WAN and Crypto Interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration except enabling interface WRED if it was disabled. Traffic through this group bypass without influence of QoS features configured in this group.
  When disable QoS is taken off from the interface and interface still remembers that WRED is enabled because of disable QoS process, the interface WRED state must re-instated as it was before disable QoS. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled

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- Non-CBQ-Enabled Group (Tunnel, Ethernet, and VLAN interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration. Traffic through this group bypass without influence of QoS features configured in this group. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled

syntax

[no]disable-qos

default

no disable-qos

example

In the following example, disables Qos features.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# disable-qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

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configure interface ethernet qos policy-class police

This command accesses next-level commands for configuring police. From this command user configures single rate tree color marking (srtcm), two rate three color marking (trtcm) and color-aware mode.

syntax

police

default

None.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1#police
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class police srtcm

This command configures traffic policing (srtcm) related parameters. Valid cbs and ebs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

srtcm committed_rate<value> cbs cbs_rate<value> ebs ebs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action <permit | drop | mark-dscp-<value>>
no srtcm committed_rate<value> cbs cbs_rate<value> ebs ebs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action <permit | drop | mark-dscp-<value>>

Parameter	Description
committed_rate	Committed rate in Kbits.
cbs_rate	Committed burst in Kbits.
ebs_rate	Excess burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

Node

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example

In the following example, class1 is configured to committed-rate 100, cbs 100, ebs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
```

```
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# police
Router/configure/interface/ethernet 0/2/qos/policy-class
class1/police# srtcm 100 cbs 100 ebs 200 green-action permit
yellow-action mark-dscp-20 red-action drop
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class class1/police
Router/configure/interface/vlan/qos/policy-class class1/police

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configure interface ethernet qos policy-class police trtcm

This command configures traffic policing (trtcm) related parameters. Valid cbs and pbs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>
no trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

Parameter	Description
committed_rate	Committed rate in Kbits.
peak_rate	Peak rate in Kbits
cbs_rate	Committed burst in Kbits.
pbs_rate	Peak burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

None.

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example

In the following example, class1 is configured to committed-rate 100, peak-rate 200, cbs 100, pbs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# police
Router/configure/interface/ethernet 0/2/qos/policy-class
class1/police# trtcm 100 200 cbs 100 pbs 200 green-action
permit yellow-action mark-dscp-20 red-action drop
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class/police
Router/configure/interface/vlan/qos/policy-class/police

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configure interface ethernet qos policy-class police color-aware

This command enables the metering to run in color aware mode. Color-aware mode allows user to police traffic according to the color classification of a packet.

syntax

color-aware
no color-aware

default

no color-aware

example

In the following example, class1 is configured to color-aware mode.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# police
Router/configure/interface/ethernet 0/2/qos/policy-class
class1/police# color-aware
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class/police
Router/configure/interface/vlan/qos/policy-class/police

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configure interface ethernet qos policy-class match-access-list

This command is used to specify an access-list as a match criteria of a qos class. The specified access-list must be created before being added as a match criteria. Only one access-list can be used in a class.

syntax

match-access-list acl_name<name>

Parameter	Description
acl_name	access-list name or 'default'

default

None.

example

In the following example, class1 is configured to match access-list

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-access-list acl1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class match-control-packet

Traffic generated by the router (eg. control packets) represents a special case for outbound QoS service policies. Some locally generated traffic should be treated as any other user traffic, and the QoS system should apply the configured QoS mechanisms to this traffic. An example of such traffic is performance probes that are designed to measure the behavior incurred by packets of a given class. Other locally generated traffic, particularly Layer 2 keepalives and routing protocol messages, are vital to the basic functioning of the router and should not be subject to some QoS features.

syntax

match-control-packet type_name<name>

Parameter	Description
type_name	packet type name ‘control’ or ‘default’

default

None.

example

In the following example, class1 is configured to match control packet

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-control-packet control
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-packet-class

This command matches layer 2 header protocol type to this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6) or hex-value.

syntax

match-packet-class type_name<name>

Parameter	Description
type_name	Layer 2 header protocol type name or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6} -or- <hex-value(xxxx)>.

default

None.

example

In the following example, class1 is configured to match ipv4 packet

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-packet-class ipv4
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-src-ip

This command matches source IP address or subnet to this class. If optional netmask parameter is configured, matching source IP address can be multiple IP addresses.

syntax

match-src-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 source IP address

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-src-ip 11.11.11.11
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-dest-ip

This command matches destination IP address or subnet to this class. If optional netmask parameter is configured, matching destination IP address can be multiple IP addresses.

syntax

match-dest-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 dest IP address

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-dest-ip 11.11.11.11
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-src-port

This command matches TCP/UDP source ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., match-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 source port

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-src-port 10000
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-dest-port

This command matches TCP/UDP destination ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., match-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 destination port.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-dest-port 10000
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-vlan-id

This command matches VLAN IDs to this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

match-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to match 10 VLAN ID

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-vlan-id 10
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-dscp

This command matches DiffServ Code Points (DSCP) to this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

match-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to match 60 diffserv codepoint.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-dscp 60
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-precedence

This command matches IP precedence to this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

match-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to match 6 IP precedence.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-precedence 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-tos

This command matches IP Type Of Service (TOS) field to this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

match-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to match 6 IP tos.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-tos 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-user-priority

This command matches 802.1p priority values to this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

match-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-user-priority 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-protocol

This command matches IP header protocol type to this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

match-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF } -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to match 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-protocol 17
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-exp

This command matches EXPerimental (EXP) bits of MPLS header to this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

match-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-exp 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-src-ipv6

This command matches source IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching source IPv6 address can be multiple IPv6 addresses.

syntax

match-src-ipv6 ipv6_address<ipv6_address> prefixlen[value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or ‘default’ (E.g., match-src-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

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example

In the following example, class1 is configured to match 1111::1111 source IPv6 address.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-src-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class match-dest-ipv6

This command matches dest IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching destination IPv6 address can be multiple IPv6 addresses.

syntax

match-dest-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-dest-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 destination IPv6 address

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-dest-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-flow-label

This command matches IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

match-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to match 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class match-traffic-class

This command matches traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

match-traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to match 60 traffic class

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# match-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos policy-class mark-dscp

This command marks packets with DiffServ Code Point (DSCP). Valid DSCP ranges are from 0 to 63. DSCP values parameter can not be a range.

syntax

mark-dscp codepoint<0-63>

Parameter	Description
codepoint	Mark packets with DiffServ Codepoint. Valid: 0-63, ef, af and cs code points

default

None.

example

In the following example, class1 is configured to mark 6 Diffserv codepoint.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# mark-dscp 6
```

related commands

None.

applicable models/versions

All models.

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command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

configure interface ethernet qos map-dscp-outq

This command enables/disables the rule to map DSCP to output queue on the corresponding interface.

syntax

map-dscp-out
no map-dscp-out

Parameter	Description
map-dscp-out	enable/disable the rule to map DSCP to output queue on the corresponding interface

default

None.

example

```
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# map-dscp-outq
```

related commands

Router/configure/qos# map-dscp-to-outq

applicable models/versions

iBG2016 with LFP-20, iBG2006

command modes

Router/configure/interface/ethernet/qos/

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configure interface ethernet qos map-up-outq

This command enables/disables the rule to map User-Priority (UP) to output queue on the corresponding interface.

syntax

map-up-outq
no map-up-outq

Parameter	Description
map-dscp-out	enable/disable the rule to map User-priority to output queue on the corresponding interface

default

None.

example

```
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# map-up-outq
```

related commands

Router/configure/qos# map-up-to-outq-LFP

applicable models/versions

iBG2016 with LFP-20, iBG2006

command modes

Router/configure/interface/ethernet/qos/

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configure interface ethernet qos policy-class mark-precedence

This command marks packets with IP precedence value. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can not be a range.

syntax

mark-precedence precedence_value<0-7>

Parameter	Description
precedence_value	Mark packets with precedence value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 precedence value.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# mark-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class mark-qos-priority

This command sets outgoing LAN interface output queue of Ethernet LAN modules such as LMG20 without modifying packet by priority value. Priority value ranges are from 0 to 7.
The higher priority value is, priority is the higher.

syntax

[no]mark-qos-priority priority_value<0-7>

Parameter	Description
priority_value	Mark packets with priority value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 7 priority value.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# mark-qos-priority 7
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class mark-user-priority

This command marks packets with 802.1p value. Valid 802.1p ranges are from 0 to 7. 802.1p values parameter can not be a range.

syntax

mark-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	Mark packets with 802.1p value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 802.1p value.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# mark-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class pbr-redirect

This command configures policy based routing (pbr). Valid mode parameter is nexthop ip/ipv6 address and lsp.

syntax

pbr-redirect mode<nexthop address | lsp interface_name>
no pbr-redirect mode< nexthop address | lsp interface_name >

Parameter	Description
mode	Nexthop, lsp, Egress interface
address_or_interface	Nexthop IP/IPv6 address MPLS LSP interface name

default

None.

example

In the following example, class1 is configured to redirect **2222::2222** nexthop.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# pbr-redirect nexthop 2222::2222
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-packet-class

This command deletes layer 2 header protocol type from this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

delete-packet-class protocol_type<name>

Parameter	Description
protocol_type	Layer 2 header protocol type value or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to delete ipv4 packet

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-packet-class ipv4
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-ip

This command deletes source/destination IP address or subnet from this class. If optional netmask parameter is configured, deleting source/destination IP address can be multiple IP addresses.

syntax

delete-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source/Dest IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to delete 11.11.11.11 IP address

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-src-port

This command deletes TCP/UDP source ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., delete-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 source port

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-src-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/etherne/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-dest-port

This command deletes TCP/UDP destination ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., delete-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 destination port

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-dest-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/etherne/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-vlan-id

This command deletes VLAN IDs from this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

delete-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to delete 10 VLAN ID

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-vlan-id 10
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-dscp

This command deletes DiffServ CodePoints from this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

delete-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to delete 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-dscp 60
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-precedence

This command deletes IP precedence from this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

delete-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to delete 6 IP precedence

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-tos

This command deletes IP TOS field from this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

delete-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to delete 6 IP tos

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-tos 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-user-priority

This command deletes 802.1p priority values from this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

delete-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-protocol

This command deletes IP header protocol type from this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

delete-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF MPLS} -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to delete 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-protocol 17
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-exp

This command deletes EXPerimental (EXP) bits of MPLS header from this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

delete-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-exp 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/etherne/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-control-packet

This command deletes control-packet from this class.

syntax

delete-control-packet type_name<name>

Parameter	Description
type_name	Packet type name ‘control’ or ‘default’.

default

None.

example

In the following example, class1 is configured to delete control packet

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-control-packet control
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-ipv6

This command deletes source/destination IPv6 address or subnet from this class. If optional prefixlen parameter is configured, deleting source/destination IPv6 address can be multiple IPv6 addresses.

syntax

delete-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source/Dest IPv6 addr/range/subnet or 'default' (E.g., delete-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to delete 1111::1111 IPv6 address

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-flow-label

This command deletes IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

delete-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to delete 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos policy-class delete-traffic-class

This command deletes traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

delete -traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to delete 60 traffic class

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# policy-class
class1
Router/configure/interface/ethernet 0/2/qos/policy-class
class1# delete-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/qos/policy-class
Router/configure/interface/vlan/qos/policy-class

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configure interface ethernet qos delete-policy-class

This command deletes specific class on the Ethernet interface. The class-name must be entered.

syntax

delete-policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, class1 is deleted.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# delete-policy-
class class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

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configure interface ethernet qos delete-all

This command deletes all classes on the Ethernet interface.

syntax

delete-all

default

None.

example

In the following example, all classes are deleted.

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# delete-all
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

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configure interface ethernet qos enable

This command enables/disables a QoS feature on this interface. CBQ, Policing, monitoring and PBR can be enabled. Valid traffic direction parameter is outbound or inbound.

syntax

enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>
no enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>

Parameter	Description
cbq	Enable CBQ on the interface.
policing	Enable policing on the interface
monitoring	Enable monitoring only
pbr	Enable Policy Based Routing
traffic	Outbound traffic Inbound traffic

default

None.

example

In the following example, ethernet 0/2 is configured to enable pbr.inbound traffic

```
Router# configure terminal
Router/configure# interface ethernet 0/2
Router/configure/interface/ethernet 0/2# qos
Router/configure/interface/ethernet 0/2/qos# enable pbr
inbound
```

related commands

None.

applicable models/versions

All models.

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command modes

Router/configure/interface/ethernet/qos
Router/configure/interface/vlan/qos

configure interface ethernet qos tx-descriptor-limit

Configure per port transmit descriptor limit

syntax

tx-descriptor-limit limit_value<0-4000>

example

```
Router/configure/interface/Ethernet 2/0/qos# tx-descriptor-
limit 50
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos xon-threshold

Buffer management parameters can be configured per interface. This allows the user to configure the threshold for generating 802.3x XON packets. If the total numbers of available receive buffers falls below this value, an 802.3x XON packet will be sent out of the specified interface in regular intervals

syntax

xon-threshold threshold_value<0-4000>

example

Configure the xon threshold value using the following command example.

```
Router/configure/interface/ethernet1/0/qos# xon-threshold 2000
```

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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos xoff-threshold

Buffer management parameters can be configured per interface. This allows the user to configure the threshold for generating 802.3x XOFF packets. If the total number of available receive buffers exceeds this value, an 802.3x XOFF packet will be sent out of the specified interface in regular intervals

syntax

xoff-threshold threshold_value<0-4000>

example 1

Give the xoff threshold value (0-4000) using the following command

example 2

```
Configure/interface<if-name>/qos# xoff-threshold 2000
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

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configure interface ethernet qos rx-buffers-limit

Configure per port receive buffers limit

syntax

rx-buffers-limit threshold_value<0-4000>

example 1

Give the rx-buffers-limit value (0-4000) using the following command.

example 2

```
Configure/interface<if-name>/qos# rx-buffers-limit 2000
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos override-outq

The following command is used to configure Traffic Class for an interface, which override the TC attribute for all packets ingress through that interface. The default behavior is ‘no override’.

syntax

override-outq outq<1-8>
no override-outq outq<1-8>

default

disable

example

```
Router/configure/interface/ethernet 1/1/qos# override-outq 4
Router/configure/interface/ethernet 1/1/qos# no override-outq 4
```

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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface/Ethernet/qos

configure interface ethernet qos mark-up

Configure port based user priority for non tagged packets.

syntax

mark-up up_value<0-7>
no mark-up up_value<0-7>

example

```
Router/configure/interface/ethernet 1/1/qos# mark-up 5
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface Ethernet/qos

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configure interface ethernet qos qos-congestion-map

This section describes the available CLI commands to configure WRED congestion avoidance attributes via global QoS context configure/qos.

syntax

qos-congestion-map congestion_set<1-4>

example

```
Router/configure/interface/ethernet 2/0/qos# qos-congestion-
map 3
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos red

Enable/Disable RED on a port

syntax

red enable
no red enable

default

disable

example

```
Router/configure/interface/ethernet 2/0/qos# red enable
Router/configure/interface/ethernet 2/0/qos# no red enable
```

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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos queue-discipline

The available CLI commands configure queuing, scheduling, and Shaping attributes of the Ethernet LAN module ports via corresponding oversubscribed interface/ports CLI context.

syntax

queue-discipline outq<1-8>

example

```
Router/configure/interface/Ethernet 2/0/qos# queue-discipline 7
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

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configure interface ethernet qos queue-discipline spq

SPQ queue are scheduled for transmission unless high priority queue(s) has traffic. By default all 8 queues on PCI interface should be SPQ mode.

syntax

spq

example

```
Router/configure/interface/ethernet 2/0/qos/queue-discipline
7# spq
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos queue-discipline wrr

The available CLI commands configure queuing, scheduling, and Shaping attributes of the Ethernet LAN module ports via corresponding oversubscribed interface/ports CLI context.

syntax

wrr wrr_value<1-255>

example

```
Router/configure/interface/Ethernet 2/0/qos/queue-discipline
7# wrr 10
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

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configure interface ethernet qos queue-tx-descr-limit

Configure the per queue transmit descriptors limit for a port

syntax

queue-tx-descr-limit outq<1-8> tx_descriptor_limit<0-4000>

example

```
Router/configure/interface ethernet/qos# queue-tx-descr-
limit 5 300
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos port-shaping

Port shaping limits the packet transmission within a maximum rate and burst size. The Ethernet LAN modules such as LMG20 support traffic shaping using token bucket algorithm. The shaping is supported on per port. The shaping can be enabled independently for port. When shaping enabled, a scheduled packet is transmitted if it conformance to shaper attributes otherwise packet is no transmitted. Shaping parameters include a rate (kbps) and a token bucket size (KB).

syntax

port-shaping token-bucket-size token_bucket_size<4-16000> token-refill-rate-in-kbps token_refill_rate<650-1300000>
no port-shaping token-bucket-size token_bucket_size<4-16000> token-refill-rate-in-kbps token_refill_rate<650-1300000>

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Parameter	Description
token_bucket_size	per port, and per queue attribute, which indicates maximum amount token held by token bucket. Valid range is 4 KB → 16 MB and in steps of 4 KB
token_refil_rate	per port, and per queue attribute, which indicates number of tokens must be added to token bucket counter in each token refill period subjecting to token bucket size. Valid range is 650 → 1300000.

default

Disable

example 1

Set the port shaping parameters for an interface using the following command

example 2

```
Router/Configure/interface/ethernet 1/0/qos# port-shaping
token_bucket_size 4 token_refil_rate  650
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

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configure interface ethernet qos queue-shaping

Queue shaping limits the packet transmission within a maximum rate and burst size. The Ethernet LAN modules such as LMG20 support traffic shaping using token bucket algorithm. The shaping is supported on per egress queue. The shaping can be enabled independently for egress queue. When shaping enabled, a scheduled packet is transmitted if it conformance to shaper attributes otherwise packet is no transmitted. Shaping parameters include a rate (kbps) and a token bucket size (KB)

syntax

queue-shaping outq<1-8> token-bucket-size token_bucket_size<4-16000> token-refill-rate-in-kbps token_refill_rate<650-1300000>
no queue-shaping outq<1-8> token-bucket-size token_bucket_size<4-16000> token-refill-rate-in-kbps token_refill_rate<650-1300000>

Parameter	Description
token_bucket_size	per port, and per queue attribute, which indicates maximum amount token held by token bucket. Valid range is 4 KB → 16 MB and in steps of 4 KB
token_refil_rate	per port, and per queue attribute, which indicates number of tokens must be added to token bucket counter in each token refill period subjecting to token bucket size. Valid range is 650 → 1300000

default

disable

example 1

Set the port shaping parameters for an interface using the following command

example 2

```
Router/Configure/interface/ethernet 1/0/qos# queue-shaping
token_bucket_size 4 token_refil_rate 650
```


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applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet qos mark-dscp

Configure port based DSCP for both IP and non IP packets

syntax

mark-dscp
no mark-dscp

default

enable

example

```
Router/Configure/interface/ethernet 1/0/qos# mark-dscp
Router/Configure/interface/ethernet 1/0/qos# no mark-dscp
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

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configure interface ethernet qos service-policy-input

The QoS policy can be assigned to a port. A QoS policy takes effect only after it is mapped to an interface through the following command. When the last interface-policy mapping for a QoS policy is deleted, the entire related configuration for the Ethernet LAN modules is removed. However the QoS module maintains the policy configuration in its database.

syntax

service-policy-input policy_map_name<name>
no service-policy-input policy_map_name<name>

example

```
Router/configure/interface/Ethernet1/0/qos# service-policy-
input policy1
```

applicable models/versions

iBG2016 and iBG3026 (except for LFP-20)

command modes

Router/configure/interface ethernet/qos

configure interface ethernet dot1x max-req

Use this command to set the maximum EAP-request/identity attempts to the supplicant before restarting the authentication process.

syntax

dot1x max-req attemps <1-10>

Parameter	Description
attemps	Maximum number of failed EAP-request/identity sent to supplicant before restarting the authentication process. The default number is 2.

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example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x max-req 4
```

related commands

dot1x port-control

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet dot1x port-control

Use this command to enable IEEE 802.1x authentication on the port. Use the no form of this command to remove a port from the 802.1x management. The IEEE 802.1x enabled port is initially in unauthorized state, and will be put into authorized state if the authentication process between the supplicant and the authentication server is successful.

syntax

dot1x port-control port_control_mode <auto|force-authorized|force-unauthorized>
no dot1x port-control port_control_mode <auto|force-authorized|force-unauthorized>

Parameter	Description	
port_control_mode	auto	Enable IEEE 802.1x authentication on the port
	force-authorized	Force a port to an authorized state
	force-unauthorized	Force a port to an unauthorized state

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example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x port-control
auto
```

related commands

dot1x system-auth-ctrl

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet dot1x reauthentication

Use this command to enable period reauthentication on a port. This feature is disabled by default. The IEEE 802.1x enabled port will periodically be put into unauthorized state and reauthenticated every re-authperiod.

syntax

dot1x reauthentication
no dot1x reauthentication

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x
reauthentication
```

related commands

dot1x port-control

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applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

configure interface ethernet dot1x reauthentication now

Use this command to execute reauthentication on a running port. The IEEE 802.1x enabled port is put into an unauthorized state and then reauthenticated immediately.

syntax

dot1x reauthentication now

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x
reauthentication now
```

related commands

dot1x port-control

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet

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configure interface ethernet dot1x initialize

Use this command to execute reinitialization and reauthentication on a selected port. The IEEE 802.1x enabled port is disconnected and put into an unauthorized state and reauthenticated immediately.

syntax

dot1x initialize

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x initialize
```

related commands

dot1x port-control

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet

configure interface ethernet dot1x timeout

This command accesses next-level commands for configuring dot1x timeout parameters. To view the dot1x parameters before or after configuring them, use the appropriate show dot1x commands.

syntax

dot1x timeout

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x timeout
```


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related commands

dot1x timeout re-authperiod, dot1x timeout server-timeout, dot1x timeout supp-timeout, dot1x timeout tx-period

applicable models/versions

All models.

configure interface ethernet dot1x timeout re-authperiod

Use this command to set the interval between reauthorization attempts. This command affective on the switch only if periodic dot1x reauthentication is enabled.

syntax

dot1x timeout re-authperiod seconds<1-4294967295>

Parameter	Description
seconds	<1-4294967295> Specify the seconds between reauthorization attempts. The default time is 3600 seconds

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x timeout re-
authperiod 25
```

related commands

dot1x timeout re-authperiod, dot1x timeout server-timeout, dot1x timeout supp-timeout, dot1x timeout tx-period

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet dot1x timeout server-timeout

Use this command to set the authentication sever response timeout. It is recommended by IEEE 802.1x standard to configure this timer value longer than the longest time that the higher layer would take to exhaust all of its retries to the authentication server with its current timeout period.

syntax

dot1x timeout server-timeout seconds <1-65535>

Parameter	Description
seconds	<1-65535> Specify the authentication server response timeout. The default timeout is 30 seconds.

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x timeout
server-timeout 40
```

related commands

dot1x timeout re-authperiod, dot1x timeout server-timeout, dot1x timeout supp-timeout, dot1x timeout tx-period

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet dot1x timeout supp-timeout

Use this command to set the interval for a supplicant to respond. This timer value is used to determine how long to wait for a supplicant to respond to an EAP request from the authenticator.

syntax

dot1x timeout supp-timeout seconds<1-65535>

Parameter	Description
seconds	<1-65535> Specify the supplicant response timeout. The default timeout is 30 seconds.

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x timeout
supp-timeout 40
```

related commands

dot1x timeout re-authperiod, dot1x timeout server-timeout, dot1x timeout supp-timeout, dot1x timeout tx-period

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet dot1x timeout tx-period

Use this command to set the interval between successive EAP-request/identity frames sent from the switch to the supplicant.

syntax

dot1x timeout tx-period seconds<1-65535>

Parameter	Description
seconds	Specify the number of seconds between successive EAP-request/identity frames. The default timeout period is 30 seconds.

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x timeout tx-
period 34
```

related commands

dot1x timeout re-authperiod, dot1x timeout server-timeout, dot1x timeout supp-timeout, dot1x timeout tx-period

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet dot1x quiet-period

Use this command to set the quiet-period time interval. Use the no form of this command to set the configured quiet period to the default. When a switch cannot authenticate a client, the switch remains in HELD state for a quiet-period interval of time, then attempts to acquire supplicant again.

syntax

dot1x quiet-period quiet_period <1-65535>
no dot1x quiet-period quiet_period <1-65535>

Parameter	Description
quiet_period	<1-65535> Seconds between the retrial of authentication after an authentication failure.

example

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)# dot1x quiet-period 200
```

related commands

dot1x port-control

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface ethernet flowcontrol

Use this command to enable flow control, and configure the flow control mode for the port.

syntax

flowcontrol
no flowcontrol

example

Flow control enables connected Ethernet ports to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion, and cannot receive any more traffic, it notifies the other port to stop sending until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. On receiving a pause frame, the remote device stops sending data packets, which prevents loss of data packets during the congestion period.

```
Router# configure terminal
Router/configure# interface ethernet 2/0
Router/configure/interface/ethernet(2/0)#  flowcontrol
```

related commands

None.

applicable models/versions

All models

command modes

Router/configure/interface/ethernet

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configure interface ethernet mirror interface

Use this command to define a mirror source port and its direction.
This command must be run separately for each source port. Use the no form of this command to disable port mirroring by the destination port on the specified source port.
Our system has a limitation for port-mirroring. First, In LMG20 and LMG44 and LMGP-44 module, It isn't configured only transmit mode. But It is possible to configure receive and both mode. Second, System wide, we can have only one Ingress Analyzer port and one Egress Analyzer port. This means that if direction 'both' is used for any mirror configuration, Ingress and Egress Analyzer port will be same throughout the system.

syntax

mirror interface [slot_port <ethernet (slot)/(port)>] direction [direction_info <both | receive | transmit>]
no mirror interface [slot_port <ethernet (slot)/(port)>] direction [direction_info <both | receive | transmit>]

Parameter	Description
Slot/port	Name of the Source interface to be used. For example, etherent1/5
Direction_info	You must choose one among 'both', 'receive', and 'transmit'. - both: Specifies mirroring of traffic in both directions. - receive: Specifies mirroring of received traffic. - transmit: Specifies mirroring of transmitted traffic.

default

Disabled (no)

example

To configure 'both mode' mirror for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet(2/0)# mirror interface
ethernet1/5 direction both
Router/configure/interface/ethernet(2/0)# no mirror
interface ethernet1/5 direction both
```

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To configure ‘receive mode’ mirror for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet(2/0)# mirror interface
ethernet1/5 direction receive
Router/configure/interface/ethernet(2/0)# no mirror
interface ethernet1/5 direction receive
```

To configure ‘transmit mode’ mirror for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet(2/0)# mirror interface
ethernet1/5 direction transmit
Router/configure/interface/ethernet(2/0)# no mirror
interface ethernet1/5 direction transmit
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(slot/port)

configure interface ethernet storm-control

It uses the command to prevent from storming packet in switch port.
This command has 3 types, such as broadcast, dlf, multicast. Use the no form of this command to disable storm-control.

syntax

storm-control [type type_cmd<broadcast | dlf | multicast>] [level level_num<0.00 to 100.00>]
no storm-control [type type_cmd<broadcast | dlf | multicast>] [level level_num<0.00 to 100.00>]

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Parameter	Description
type_cmd	Select to prevent from type of packets. And then enter a string, such as ‘broadcast’, ‘dlf’, ‘multicast’. For example, If you select ‘broadcast’, It will be prevented from broadcast traffic along level in selected switch port.
type_cmd	* dlf (:destination lookup failure) When a DLF occurs, the switch will forward the packet to all ports that are in the same VLAN as the ingress port. In this case, the switch is configured with only one VLAN, so the DLF packet will be flooded to all ports.
level_num	an floating-point number (0.00 to 100.00), down to two decimal places.

example

To configure broadcast traffic for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet 2/0# storm-control
braocast level 1.22
```

To configure multicast traffic for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet 2/0# storm-control dlf
level 1.22
```

To configure dlf traffic for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet 2/0# storm-control
multicast level 1.22
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface ethernet(slot/port)

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configure interface ethernet mtu

This command configures the mtu for an Ethernet interface. When a frame size larger than 1500 is configured, the system must be rebooted for the change to take effect. For a frame size smaller than 1500, rebooting is not required for the change to take effect. Jumbo frames are Ethernet frames used to efficiently transfer bulk data. Both ends must support and be configured for jumbo frames to use them. If it uses no command, mtu is setting to default value (1500).

syntax

mtu [mtu_size<64-9216>]
no mtu [mtu_size<64-9216>]

Parameter	Description
mtu_size	an unsigned number of mtu size 64 to 9216 (default= 1500). If you want to use a value of more than 1500, it must install a 1G memory card in system.

default

Disabled (no)

example

To configure mtu size for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet(2/0)# mtu 1300
```

If it is a 1G memory in system and sets to support a jumbo-frame, enter:

```
Router/configure/interface/ethernet(2/0)# mtu 8000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(slot/port)

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configure interface ethernet channel-group

This command configures Layer2 EtherChannels which is one logical interface to provide fault-tolerant and increased bandwidth. Prior to use this command, the Ethernet interface should be configured as the switchport.

syntax

channel-group [group_number <1-65535>] mode [group_mode <active | passive | static>]

Parameter	Description
group_numer	the value for the EtherChannel aggregator. Each EtherChannel can have up to eight Ethernet interface.
group_mode	For mode, one of these keywords can be used: active: Configure the Ethernet interface as the channel-group member with LACP active mode. It is synchronized up only if an LACP parter is detected and the proper messages are exchanged. This interface starts negotiations with other interfaces by sending LACP packets. Passive: Configure the Ethernet interface as the channel-group member with LACP passive mode. It is synchronized up only if an LACP parter is detected and the proper messages are exchanged. This interface responds to LACP packets that it receives, but does not start LACP packet negotiation. Static: Forces the interface into the synchronized-up state without LACP. This interface joined the channel-group and is enabled to forward the data packet.

example

To configure a channel-group 10 with the active mode for 2/0 port of Ethernet interface, enter:

```
Router/configure/interface/ethernet 2/0# channel-group 10
mode active
```

related commands

show etherchannel
show etherchannel detail.

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applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/configure/interface ethernet (slot/port)

configure interface ethernet connect-dsl

Use this command to configure an Ethernet interface to be connected with the specified ADSL module. Only mainboard ethernet ports can be used for this purpose. To remove the configuration, use the no form of this command.

syntax

[no] connect-dsl slot_num < slot/sub_slot>

Parameter	Description
slot_num	Slot number of ADSL module. Specified in slot number/sub slot number.

default

Disabled (no)

example

```
router/configure/interface ethernet(0/2)# connect-dsl 0/0
```

related commands

configure module adsl, show adsl status

applicable models/versions

iBG 2006, iBG2016 and iBG 3026/SNOS v2.2 or higher.

command modes

Router/configure/interface/ethernet

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3.15.2 bundle

Creates bundle which is Database for WAN Interface and is first step to configure what you want on the bundle.

syntax

interface bundle if_string <name>
no interface bundle if_string <name>

Parameter	Description
If_string	Bundle name, max 8 characters

default

None.

example

```
Router/configure# interface bundle wan0
configuring new WAN bundle interface wan0
Router/configure/interface/bundle wan0# exit
Router/configure# interface bundle wan0
configuring existing WAN bundle interface wan0
```

related commands

All commands under bundle node.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle REM

This command is to add comments at the beginning of syntax.

syntax

REM comment_string <comment>
no REM comment_string <comment>

Parameter	Description
Comment_string	comments for the bundle-max len 80 to enter quoted strings, use “” as delimiter

default

None.

example

```
Router/configure/interface/bundle wan0# REM "This bundle is
for demo"
```

related commands

REM_

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle link t1

This command is to add a t1 link (can be fractional) to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert T1 card into system, you are not able to enter this command and not shown to you.

syntax

link t1 link_spec <slot/subslot/port>

Parameter	Description
Link_spec	list of T1 numbers or T1 number: list of timeslots

default

None.

example

```
Router/configure/interface/bundle wan0# link t1 0/1/0:1-10
Router/configure/interface/bundle wan0# link t1 0/1/0:11
Router/configure/interface/bundle wan0# link t1 2/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

NOTE

This command cannot be shown if T1 card is not inserted.

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configure interface bundle link e1

This command is to add an E1 link (can be fractional) to bundle.
This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert E1 card into system, you are not able to enter this command and not shown to you.

syntax

link e1 link_spec <slot/subslot/port>

Parameter	Description
Link_spec	list of E1 numbers or E1 number: list of timeslots

default

None.

example

```
Router/configure/interface/bundle wan0# link e1 0/1/0:1-10
Router/configure/interface/bundle wan0# link e1 0/1/0:11
Router/configure/interface/bundle wan0# link e1 2/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

NOTE

This command cannot be shown if E1 card is not inserted.

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configure interface bundle link bri

This command is to add a bri link (can be fractional) to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert ISDN BRI card into system, you are not able to enter this command and not shown to you.

syntax

link bri link_spec <slot/subslot/port>

Parameter	Description
Link_spec	slot/subslot/port:links links=1 (64Kbps) or 2 (128kbps)

default

None.

example

```
Router/configure/interface/bundle BRI# link bri 0/2/0:1
Router/configure/interface/bundle BRI# link bri 0/2/1:2
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle link pri_t1

This command is to add a ISDN PRI link (can be fractional) to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert T1 card into system, you are not able to enter this command and not shown to you.

syntax

link pri_t1 link_spec <slot/subslot/port>

Parameter	Description
Link_spec	list of ISDN PRI T1 numbers or ISDN PRI T1 number: list of timeslots

default

None.

example

```
Router/configure/interface/bundle wan0# link pri_t1 0/1/0:1-10
Router/configure/interface/bundle wan0# link pri_t1 0/1/0:11
Router/configure/interface/bundle wan0# link pri_t1 2/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

NOTE

ISDN PRI T1 and general T1 are based on same H/W. It's handled differently by S/W.

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configure interface bundle link pri_e1

This command is to add a ISDN PRI E1 link (can be fractional) to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert E1 card into system, you are not able to enter this command and not shown to you.

syntax

link pri_e1 link_spec <slot/subslot/port>

Parameter	Description
Link_spec	list of ISDN PRI E1 numbers or PRIET1 number: list of timeslots

default

None.

example

```
Router/configure/interface/bundle wan0# link pri_e1 0/1/0:1-10
Router/configure/interface/bundle wan0# link pri_e1 0/1/0:11
Router/configure/interface/bundle wan0# link pri_e1 2/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

NOTE

ISDN PRI E1 and general E1 are based on same H/W. It's handled differently by S/W.

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configure interface bundle link ct3

This command is to add a channelized t1 link (can be fractional) or multiple t1 links inside ct3 link to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert CT3 card into system, you are not able to enter this command and not shown to you.

syntax

link ct3 link_spec <slot/subslot/port>

Parameter	Description
Link_spec	slot/subslot/port:links links=1 (64Kbps) or 2 (128kbps)

default

None.

example

```
Router/configure/interface/bundle BRI# link ct3 2/0
Router/configure/interface/bundle BRI# link ct3 2/0-28
Router/configure/interface/bundle BRI# link ct3 2/1:1
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle link hssi

This command is to add a HSSI link to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert HSSI card into system, you are not able to enter this command and not shown to you.

syntax

link hssi link_spec <slot/subslot/port>

Parameter	Description
Link_spec	hssi interface number

default

None.

example

```
Router/configure/interface/bundle wan1# link hssi 2/0
Router/configure/interface/bundle wan1# link hssi 1/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle link serial

This command is to add a serial link to bundle. This command is dynamically updated according to card type inserted while system is bringing up. If you didn't insert SERIAL card into system, you are not able to enter this command and not shown to you. There are several serial related modes. For more detail information, refer to 'module configuration serial' section.

syntax

link serial link_spec <slot/subslot/port>

Parameter	Description
Link_spec	list of Serial numbers in slot/port format. eg serial 1/1 or serial 1/1-2

default

None.

example

```
Router/configure/interface/bundle wan1# link serial 1/0
```

related commands

interface bundle <bundle name>, encapsulation, module configuration link_spec<slot/port>, show interface bundle <bundle name>, show interface bundles, show interface bundle all, show module configuration module<type>, show chassis

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle Description

This command is to add a Description to the bundle. To enter quoted strings, use ‘"’ as delimiter.

syntax

Description comment_string <comment>

Parameter	Description
Comment_string	Description for the bundle-max len 25

default

None.

example

```
Router/configure/interface/bundle wan1# Description "test
comment"
bundle wan1: Description set to test comment
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle contact

This command specifies a person to be contacted regarding the bundle.
This command entry must be enclosed in quotation marks.

syntax

contact contact_string <contact_name>

Parameter	Description
Contact_string	Contact Name of the person to be contacted Use up to 15 characters; enclosed in quotation marks.

default

None.

example

```
Router/configure/interface/bundle wan1# contact
"administrator"
bundle wan1: contact set to administrator
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle encapsulation

This command selects the type of protocol encapsulation for a bundle.
This entry is required for all bundles. Use the configure interface bundle hdlc command to set the HDLC parameters for a fractional T1 or E1 or single-link bundle.
Use the configure interface bundle ppp command to set up PPP parameters on a fractional, single-link, or multilink bundle. If you choose PPP on a multilink bundle, the Router system activates MLPPP.

You can then complete the configuration of the MLPPP parameters by using the configure interface bundle mlppp command.
Use the configure interface bundle fr command to set up FR parameters for a fractional, single link, or multilink bundle.
To verify bundle encapsulation settings, use the show interface bundle command.

NOTE

If the bundle encapsulation is changed on an existing bundle, all packet filter, DoS, QoS, and NAT configuration for that bundle will be lost. For this reason, the user is prevented from changing bundle encapsulation. To achieve the desired changes, the user is required to delete the existing bundle and then reconfigure a new bundle with the desired encapsulation, packet filters, DoS, QoS, and NAT parameters

syntax

interface encapsulation encap_type [ppp | hdlc | frelay | mlppp]

Parameter	Description	
Encap_type	ppp	ppp
	hdlc	hdlc
	frelay	frame relay
	mlppp	multilink ppp

default

None.

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example

```
Router/configure/interface/bundle wan1# encapsulation ppp
Router/configure/interface/bundle wan1# encapsulation hdlc
```

related commands

show interface bundle, show interface bundle all, show interface bundles

applicable models/versions

All models.

command mode

Router/configure/interface/bundle

configure interface bundle fr

This command accesses next-level commands for frame relay bundle configuration.
Be sure to select frame relay encapsulation when initially creating the bundle, using the configure interface bundle encapsulation command.

syntax

fr

default

None.

example

```
Router/configure/interface/bundle wan1# fr
```

related commands

enable fragment_rfc1490, enable interface, enable pvc, frame_size, lmi, intf_type, pvc, mfr

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle fr intf_type

This command sets the interface type for a frame relay bundle.

syntax

intf_type type <dce | dte | nni>

Parameter	Description	
type	dte	data terminal equipment (default)
	dce	data communications equipment
	nni	network-to-network interface

default

dte

example

```
Router/configure/interface/bundle wan1/fr# intf_type dce
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr frame_size

This command sets the maximum frame size for a frame relay bundle. This setting applies to all of the bundle's PVCs.

NOTE

This setting is applicable to all pvcs within a specific bundle. On some occasions, providing a small frame size may cause problems when a large number of pvcs are configured within the same bundle. This is because the LMI frame size is restricted to the configured frame size. Since LMI frames carry the status of all pvcs within the bundle, if the frame size is too small, the LMI packet cannot carry all of the pvcs and their status information to the remote site. Such checks are already done as part of the CLI configuration so as not to allow a very low frame size. Larger incoming frames are dropped. Outgoing frames are fragmented using FRC 1490/2427 to stay within the max frame size

syntax

frame_size size_number <56-9216>

Parameter	Description
size_number	Frame size value from 56 to 9216.

default

1500 bytes

example

```
Router/configure/interface/bundle wan1/fr# frame_size 1400
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr fragment_size

This command sets the frame size above which a packet is fragmented. Packets are intelligently fragmented when the MFR fragment size is exceeded.

syntax

mfr fragment_size size_number <56-4096>

Parameter	Description
size_number	Specifies the number of payload bytes from the original Frame Relay frame that will go into each fragment. Valid values are from 56 to 4096 bytes; the default is 1500.

default

1500 bytes

example

```
Router/configure/interface/bundle wan1/fr# mfr fragment_size
1300
```

related commands

mfr seg_threshold

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr seg_threshold

This command sets the segmentation threshold for multilink frame relay frames.
The segmentation threshold can never be greater than the frame size.

syntax

mfr seg_threshold size_number <56-4096>

Parameter	Description
size_number	All packet fragments will be equal to or greater than seg_threshold, that is to say, seg_threshold is the minimum fragment size. Valid values are from 56 to 4096 bytes; the default is 512.

default

512 bytes

example

```
Router/configure/interface/bundle wan1/fr# mfr seg_threshold
600
```

related commands

mfr fragment_size

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr class

This command selects the bandwidth requirement classification for a multilink frame relay bundle.

syntax

mfr class type <A | B | C> specific_rule

Parameter	Description
type	A Bundle is up when any one link is up. B Bundle is up when all links are up. C Bundle is up when a user-specified number of links are up,
Specific_rule	When class_type only is C, minimum number of active links needed to activate the MFR bundle

default

Class: A type

example

```
Router/configure/interface/bundle wan1/fr# mfr class A
Router/configure/interface/bundle wan1/fr# mfr class C 2
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr hello_timer

This command sets the hello message retransmission interval for a multilink frame relay bundle. This is the time interval between acknowledgement requests sent to destination devices.
Both ends of a bundle link send out hello messages at regular intervals. When a peer devices receives a hello message, it responds by sending an acknowledgment. This exchanges of hello messages and acknowledgments serves as a keepalive mechanism for the link.

syntax

mfr hello_timer interval_time <1-180>

Parameter	Description
Interval_time	Interval time value from 1 to 180 seconds; the default is 10.

default

10 seconds

example

```
Router/configure/interface/bundle wan1/fr# mfr hello_timer 20
```

related commands

mfr ack_msg, mfr class, mfr diff_delay

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr ack_msg

This command sets the multilink frame relay acknowledgement timer parameters.
Both ends of a bundle link send out hello messages at regular intervals. When a peer devices receives a hello message, it responds by sending an acknowledgment. This exchanges of hello messages and acknowledgments serves as a keepalive mechanism for the link.

syntax

mfr ack_msg [ack_timer interval_time <1-10>] [max_retry retry_number <1-5>]

Parameter	Description
Interval_time	Time interval for which the system waits for an acknowledgement from the network device before resending the hello message. The range is from 1 to 10 seconds; the default is 4.
retry_number	Maximum number of times a bundle link will resend a hello message while waiting for an acknowledgment. The range is from 1 to 5; the default is 2.

default

None.

example

```
Router/configure/interface/bundle wan1/fr# mfr ack_msg
ack_timer 5 max_retry 4
```

related commands

mfr class, mfr diff_delay, mfr hello_timer

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mfr diff_delay

This command sets the differential delay value for a multilink frame relay bundle. To disable diff_delay feature, use no form of this command or set diff_delay to zero.

syntax

mfr diff_delay [value <10-128>]
no mfr diff_delay [value <10-128>]

Parameter	Description
value	Tolerance, in milliseconds, to differential delay between frame relay links. The range is from 0 to128 milliseconds; the default is 0.

default

0 ms

example

```
Router/configure/interface/bundle wan1/fr# no mfr diff_delay
Router/configure/interface/bundle wan1/fr# mfr diff_delay 50
```

related commands

mfr ack_msg, mfr class, mfr hello_timer

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr mtu

This command configures the MTU (maximum transmission unit) parameters for a frame relay bundle. This setting applies to all of the bundle's PVCs.

syntax

mtu mtu_size < 64 -9216 >

Parameter	Description
mtu_size	maximum transmission unit size

default

jumboMtuLimit

example

```
Router/configure/interface/bundle wan1/fr# mtu 100
```

related commands

show ip interfaces detail

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr enable interface

This command enables or disables frame relay operation on the entire bundle. To disable interface, use no form of this command.

syntax

enable interface
no enable interface

default

Interface is enabled.

example

```
Router/configure/interface/bundle wan1/fr# enable interface
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr enable pvc

This command enables or disables individual PVCs or all PVCs.

syntax

enable pvc dlci_number <16-1022 | all>
no enable pvc dlci_number <16-1022 | all>

Parameter	Description
dlci_number	DLCI number of the pvc or 'all' for all pvcs

default

The PVC is enabled

example

```
Router/configure/interface/bundle wan1/fr# enable pvc 101
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr enable fragment_rfc1490

This command enables or disables rfc1490 fragmentation. To disable rfc1490 fragmentation, use no form of this command.
RFC 1490 describes an encapsulation method for carrying network interconnect traffic over a Frame Relay backbone. It covers aspects of both Bridging and Routing. Additionally, it describes a simple fragmentation procedure for carrying large frames over a frame relay network with a smaller MTU.

syntax

enable fragment_rfc1490
no enable fragment_rfc1490

default

RFC 1490 fragmentation feature in the bundle is disabled.

example

```
Router/configure/interface/bundle wan1/fr# enable
fragment_rfc1490
```

related commands

frame_size

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr enable shaping

This command enables or disables the shaping operation of all PVCs in the specified bundle.

syntax

enable shaping

default

The default setting is disabled

example

```
Router/configure/interface/bundle wan1/fr# enable shaping
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr enable fragment_frf12

This command enables or disables FRF12 fragmentation. To disable FRF12 fragmentation, use the no form of this command.
FRF12 describes an encapsulation method for carrying network interconnect traffic over a Frame Relay backbone. It covers aspects of both Bridging and Routing. Additionally, it describes a simple fragmentation procedure for carrying large frames over a frame relay network with a smaller MTU.

syntax

enable fragment_rfc12 [type <interface | end-to-end>]
no enable fragment_rfc12 [type <interface | end-to-end>]

Parameter	Description	
type	interface	For UNI or NNI interface.
	end-to-end	For between peer DTEs.

default

FRF12 fragmentation feature in the bundle is disabled.

example

```
Router/configure/interface/bundle wan1/fr# enable
fragment_rfc12 interface
```

related commands

frame_size

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr lmi

This command accesses next-level commands for configuring the local management interface (LMI) on a frame relay bundle.
This command also selects the type of LMI to be used.

syntax

lmi [type <ansi | cisco | q933a>]
no lmi [type <ansi | cisco | q933a>]

Parameter	Description	
type	ansi	ANSI T1.617 Annex D (default)
	cisco	Cisco-compatible LMI
	q933a	ITU-T Q.933 Annex A

default

lmi-type: ansi

example

```
Router/configure/interface/bundle wan1/fr# lmi
Router/configure/interface/bundle wan1/fr# lmi cisco
```

related commands

lmi dte, lmi dce, lmi keepalive, lmi fast_recovery

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr lmi dce

Sets the bundle LMI status polling interval and error threshold parameters. In the DCE mode, the system responds to LMI polls from the remote DTE device. Use this command for both DCE and NNI interface types.

syntax

dce [n392 n392_number <1-10>] [n393 n393_number <1-10>] [t392 t392_number <5-255>]

Parameter	Description
n392_number	Error threshold (the maximum number of unreceived LMI status inquiries accepted by the system before the interface is declared down). The range is from 1 to10; the default is 9. This value must always be less than the n393 value below.
n393_number	Maximum number of LMI polling intervals during which the n392 error threshold above is counted. The range is from 1 to10; the default is 10.
t392_number	polling verification timer on DCE/NNI interface. The range is from 5 to 255; the default is 15

default

n392: 9, n393: 10, t392: 15

example

```
Router/configure/interface/bundle wan1/fr/lmi# dce n392 7
n393 8 t392 6
```

related commands

intf_type

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/lmi

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configure interface bundle fr lmi dte

Sets the bundle LMI status polling interval and error threshold parameters. In the DTE mode, the system sends LMI polls to the remote DCE device. Use this command for both DTE and NNI interface types.

syntax

dte [n392 n392_number <1-10>] [n393 n393_number <1-10>] [n391 n391_number <1-255>]

Parameter	Description
n392_number	Error threshold (the maximum number of unreceived LMI status inquiries accepted by the system before the interface is declared down). The range is from 1 to10; the default is 9. This value must always be less than the n393 value below.
n393_number	Maximum number of LMI polling intervals during which the n392 error threshold above is counted. The range is from 1 to10; the default is 10.
n391_number	Number of LMI status inquiries that pass before the system sends a full status inquiry message. The range is from 1 to 255; the default is 6.

default

n392: 9, n393: 10, n391: 6

example

```
Router/configure/interface/bundle wan1/fr/lmi# dte n392 7
n393 8 n391 9
```

related commands

intf_type

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/lmi

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configure interface bundle fr lmi keepalive

Sets the bundle LMI polling keepalive interval for all PVCs.
The DTE generates an LMI status inquiry message once every keepalive interval and sends it to the DCE, which expects to receive status inquiries once every keepalive interval. If the DCE does not receive an inquiry during a keepalive interval, the error count advances by one.

syntax

keepalive [interval_time <5-255>]

Parameter	Description
Interval_time	The LMI polling interval is from 5 to 255 seconds. The default is 10 seconds for DTE/NNI and 15 seconds for DCE.

default

DTE/NNI: 10
DCE: 15

example

```
Router/configure/interface/bundle wan1/fr/lmi# keepalive 16
```

related commands

intf_type, dte, dce

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/lmi

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configure interface bundle fr lmi fast_recovery

To enable/disable recovery measures if LMI timeout occurs. This command is disabled by default

syntax

fast_recovery
no fast_recovery

default

Fast_recovery is disabled.

example

```
Router/configure/interface/bundle wan1/fr/lmi# fast_recovery
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/lmi

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configure interface bundle fr pvc

This command adds PVCs to a frame relay bundle and accesses next_level commands for setting PVC parameters.
Each PVC requires a unique DLCI number for identification. To remove a PVC, type **no pvc <n>** where **<n>** is the DLCI number of that PVC.

syntax

pvc dlci_number <16-1022>
no pvc dlci_number <16-1022>

Parameter	Description
dlci_number	DLCI number of the PVC to be configured. The range is from 16 to 1022.

default

None.

example

```
Router/configure/interface/bundle wan1/fr# pvc 600
```

related commands

desc, enable, ip, map, policing, red, shaping, switch

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr

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configure interface bundle fr pvc desc

This command describes the PVC.

syntax

desc desc_string <‘string’>
no desc desc_string <‘string’>

Parameter	Description
desc_string	Name of the PVC. Use up to 64 characters; enclose in quotation marks.

default

None.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# desc
‘test_pvc’
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

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configure interface bundle fr pvc shaping

This command configures traffic shaping (outgoing traffic) on a PVC. Shaping sets the committed information rate and data burst parameters that control the data flow on the PVC in the outgoing direction. To configure shaping parameters, you must first enable the shaping operation in the specified bundle by using the **enable shaping** command.

syntax

shaping [cir cir_number] [bcmax bcmax_number] [bcmin bcmin_number] [be be_number]

Parameter	Description
cir_number	Committed information rate for LMI, in bits per second. The default is that bundle bandwidth minus CIR sum of all configured PVCS in the bundle.
bcmax_number	Maximum committed (guaranteed) transmission burst size on the PVC, The default is that bundle bandwidth minus CIR sum of all configured PVCS in the bundle.
bcmin_number	Minimum committed burst size, in bits. Generally, this is a value less than bcmax.
be	Excess burst size (number of bits in excess of bcmax); non-guaranteed

default

None.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# shaping
cir 100000 bcmax 100000
```

related commands

policing

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc policing

This command enables or disables traffic policing (incoming traffic) on a PVC. Policing sets the committed information rate and data burst parameters that control the data flow on the PVC in the incoming direction. Policing is automatically enabled on all PVCs of all frame relay bundles.

NOTE

Non-committed PVCs are created by setting the PVC CIR to 0.

syntax

policing [cir cir_number] [bc bc_number] [be be_number] [de]
no policing [cir cir_number] [bc bc_number] [be be_number] [de]

Parameter	Description
cir_number	Committed information rate for LMI, in bits per second. The default is the bundle bandwidth rate.
bc_number	Maximum committed (guaranteed) transmission burst size for the LMI PVC, in bits. The default is the bundle bandwidth rate.
be_number	Excess burst size (number of bits in excess of bc value); non-guaranteed The default is 0.
de	Enable discard-eligible (DE) bit on a PVC. The default is off. This setting allows lower-priority PVCs to designate their traffic as eligible for discard during periods of heavy congestion.

default

None.

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example

```
Router/configure/interface/bundle wan1/fr/pvc 101# policing
cir 100000 bc 100000 de
```

related commands

shaping

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc switch

This command enables Layer 2 switching between the current PVC and another PVC on the same bundle, or between the current PVC and a PVC on another bundle.
To ensure correct switching, specify both PVC number and bundle name.
Before enabling switching, configure the other bundle and associated PVC. Both of the bundles and PVCs must exist to enable switching.

syntax

switch dlci_number <16-1022> bundle_name
no switch dlci_number <16-1022> bundle_name

Parameter	Description
dlci_number	DLCI number of the other PVC.
bundle_name	Name of the WAN bundle to which the other PVC belongs. This entry is not required if both PVCs are on the same bundle.

default

None.

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example

```
Router/configure/interface/bundle wan1/fr/pvc 101# switch
100 wan2
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc map ipv4

This command assigns a static peer IPv4 address to a PVC.
Once a static peer IPv4 address has been assigned, inverse ARP ceases to function. If a remote IPv4 address is changed, the static entry will not update. Use the no option of this command to remove the static entry and automatically invoke inverse ARP.

syntax

map ipaddr <IPv4 address>
no map ipaddr <IPv4 address>

Parameter	Description
ipaddr	Remote IPv4 address of the PVC

default

None.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# map ipv4
5.5.5.2
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc map ipv6

This command assigns a static peer IPv6 address to a PVC.
Use the no option of this command to remove the static entry.

syntax

map ipv6 ipaddr <IPv6 address>
no map ipv6 ipaddr <IPv6 address>

Parameter	Description
ipaddr	Remote IPv6 address of the PVC

default

None.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# map ipv6
22::1
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc

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configure interface bundle fr pvc red

This command configures the RED for the fr pvc interface. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from 1 to 15
dscp	DiffServ Codepoint for DS-RED

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default

None.

example

In the following example, bundle wan0 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# red
maxth-green 35 minth-green 20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc ewf

This command configures the exponential weight factor for average queue size calculation.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

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default

None.

example

In the following example, bundle wan0 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc enable-red

This command enables/disables RED or DiffServ compliant WRED for the fr pvc interface.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, bundle wan0 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# enable-
red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc bridge

This command supports IEEE 802 tagged frames.

syntax

bridge type [lan | vlan
no bridge type [lan | vlan]

Parameter	Description
type_string	lan: LAN packets (IEEE 802.3) to be bridged (default). vlan: VLAN packets (IEEE 802.1Q) to be bridged.

default

Bridge feature in the PVC is disabled.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# bridge
type lan
```


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related commands

switchport, bridge-group

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc qos

This command accesses next-level commands for configuring Quality of Service (QoS) on the fr pvc interface.

syntax

qos

default

None.

example

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet

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configure interface bundle fr pvc qos auto-qos

This command provides interface specific QoS parameters. The appropriate QoS feature, namely CBQ (shaping) or Policing, and direction will be selected based on the interface type. For WAN interfaces the CBQ feature is selected for the outbound direction. No other combinations of interfaces, feature, and direction are allowed for auto QoS configuration.

In the SW QoS support, the auto QoS parameters are defined such it should provide differentiated treatment for voice/RTP traffic, and the rest. In the hierarchical flow classification mechanism we should define QoS policy classes to identify the voice traffic.

The auto QoS parameters are now defined as follows.

- Three policy-classes for WAN interfaces and six policy classes for LAN interfaces as shown in the diagram(s), with assigned classification keys.
- For WAN interfaces, policy classes are defined in the outbound direction with CBQ parameter specification, as shown in the diagram Figure 3.7

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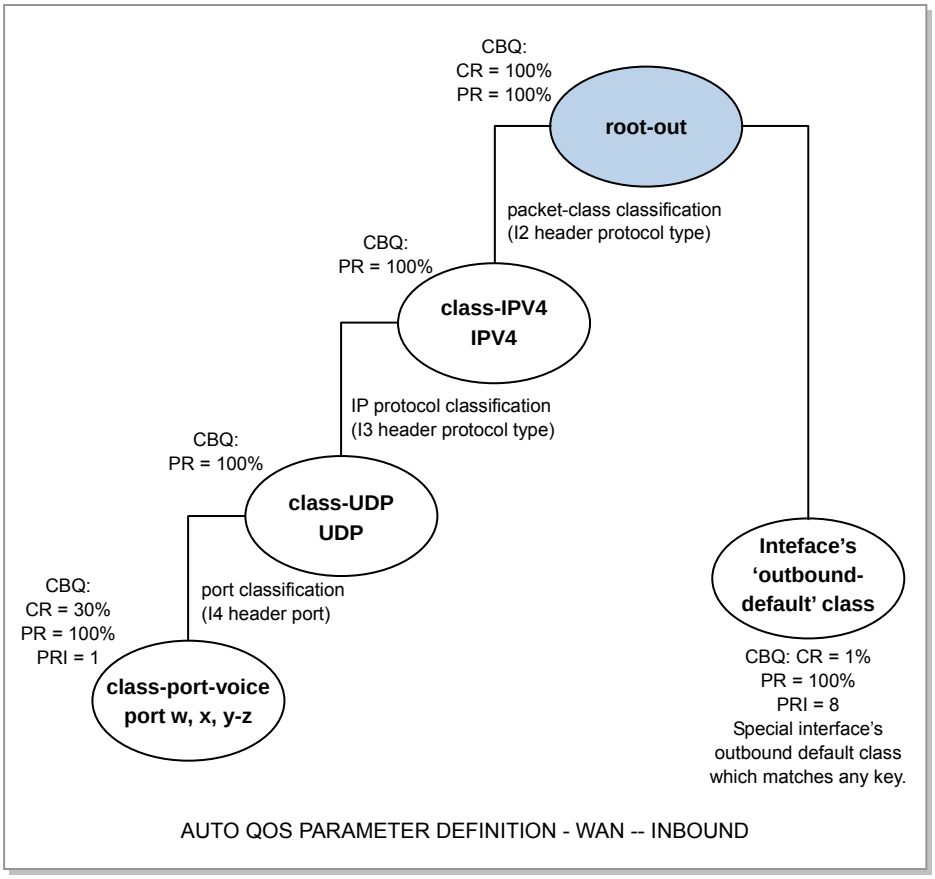

Figure 3.7 Auto QoS Parameter Definition for WAN Interfaces

syntax

[no]auto-qos

default

no auto-qos

example

In the following example, provides interface specific QoS parameters

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos# auto-
qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

configure interface bundle fr pvc qos disable-qos

This command disables QoS features with different actions based on interface type.

QoS supported interfaces can be divided to following groups based on CBQ and WRED/DS-RED support…

- CBQ-Enabled Group (WAN and Crypto Interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration except enabling interface WRED if it was disabled. Traffic through this group bypass without influence of QoS features configured in this group.
  When disable QoS is taken off from the interface and interface still remembers that WRED is enabled because of disable QoS process, the interface WRED state must re-instated as it was before disable QoS. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled

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- Non-CBQ-Enabled Group (Tunnel, Ethernet, and VLAN interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration. Traffic through this group bypass without influence of QoS features configured in this group. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled

syntax

[no]disable-qos

default

no disable-qos

example

In the following example, disables Qos features.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
disable-qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

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configure interface bundle fr pvc qos add-policy-class

This command creates a new QoS class.
The class-name and parent parameters must be entered.

syntax

add-policy-class class-name<name> parent<root-in | root-out>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.
parent	Name of the parent class; QoS classes are defined hierarchically. To add to the root, specify either root-in or root-out.

default

None.

example

In the following example, interface bundle wan0 is configured to create class1 class under root-out class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos# add-
policy-class class1 root-out
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

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configure interface bundle fr pvc qos policy-class

This command accesses next-level commands to modify parameters of this traffic class. From this command user configures classification type, marking, CBQ parameters and etc.

syntax

policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, enter class1 policy mode.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

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configure interface bundle fr pvc qos policy-class cbq

This command configures class based queuing parameters. Committed rate (cr) and Peak rate (pr) are configured by specific number (Kbps or percent of total bandwidth. Priority is optional parameter. Priority 1 is the highest.

syntax

cbq <cr | cr-percent> cr_value<value> <pr | pr-percent> pr_value<value> priority priority_value<value>
no cbq <cr | cr-percent> cr_value<value> <pr | pr-percent> pr_value<value> priority priority_value<value>

Parameter	Description
cr	Committed rate in Kbits.
cr-percentbs	Committed Rate as % of interface bandwidth.
pr	Peak Rate in Kbps
pr-percent	Peak Rate as % of interface bandwidth
priority	Scheduling priority. Valid only for leaf classes from 1 to 8

default

None

example

In the following example, class1 is configured to 20 percent of cr, 100 percent of pr and priority 1.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# police
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1/police# cbq cr-percent 20 pr-
percent 100 priority 1
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class police

This command accesses next-level commands for configuring police. From this command user configures single rate tree color marking (srtcm), two rate three color marking (trtcm) and color-aware mode

syntax

police

default

None.

example

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#police
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class police srtcm

This command configures traffic policing (srtcm) related parameters. Valid cbs and ebs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

srtcm committed-rate<value> cbs cbs_rate<value> ebs ebs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action <permit | drop | mark-dscp-<value>>

Parameter	Description
committed-rate	Committed rate in Kbits.
cbs-rate	Committed burst in Kbits.
ebs-rate	Excess burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

Node

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example

In the following example, class1 is configured to committed-rate 100, cbs 100, ebs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#police
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1/police# srtcm 100 cbs 100 ebs
200 green-action permit yellow-action mark-dscp-20 red-
action drop
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class police trtcm

This command configures traffic policing (trtcm) related parameters. Valid cbs and pbs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

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no trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

Parameter	Description
committed_rate	Committed rate in Kbits.
peak_rate	Peak rate in Kbits
cbs_rate	Committed burst in Kbits.
pbs_rate	Peak burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

None.

example

In the following example, class1 is configured to committed-rate 100, peak-rate 200, cbs 100, pbs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# police
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1/police# trtcm 100 200 cbs 100
pbs 200 green-action permit yellow-action mark-dscp-20 red-
action drop
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class police color-aware

This command enables the metering to run in color aware mode. Color-aware mode allows user to police traffic according to the color classification of a packet.

syntax

color-aware
no color-aware

default

no color-aware

example

In the following example, class1 is configured to color-aware mode.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# police
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1/police# color-aware
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class queue-buffers

This command sets the class queue's max buffer limit no restores default value.

syntax

queue-buffers buffer_limit<value>
no queue-buffers buffer_limit<value>

Parameter	Description
number	Maximum buffer limit

default

None.

example

In the following example, class1 is configured to have 1000 buffers.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# police
Router/configure/interface/bundle wan0/fr/pvc 100qos/policy-
class class1/police# queue-buffers 1000
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class/police

configure interface bundle fr pvc qos policy-class match-access-list

This command is used to specify an access-list as a matching rule for a class. The access-list must be created first and added as a matching rule. Multiple access-lists cannot be used in a class.

syntax

match-access-list acl_name<name>

Parameter	Description
acl_name	access-list name or 'default'

default

None.

example

In the following example, acl1 is added as a matching rule of class class1.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#match-access-list acl1
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class match-control-packet

Traffic generated by the router (eg. control packets) represents a special case for outbound QoS service policies. Some locally generated traffic should be treated as any other user traffic, and the QoS system should apply the configured QoS mechanisms to this traffic. An example of such traffic is performance probes that are designed to measure the behavior incurred by packets of a given class. Other locally generated traffic, particularly Layer 2 keepalives and routing protocol messages, are vital to the basic functioning of the router and should not be subject to some QoS features.

syntax

match-control-packet type_name<name>

Parameter	Description
type_name	packet type name ‘control’ or ‘default’

default

None.

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example

In the following example, class1 is configured to match control packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#match-control-packet control
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class match-packet-class

This command matches layer 2 header protocol type to this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

match-packet-class type_name<name>

Parameter	Description
type_name	Layer 2 header protocol type name or ‘default’ (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

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default

None.

example

In the following example, class1 is configured to match ipv4 packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#match-packet-class ipv4
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-src-ip

This command matches source IP address or subnet to this class. If optional netmask parameter is configured, matching source IP address can be multiple IP addresses.

syntax

match-src-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 source IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-src-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-dest-ip

This command matches destination IP address or subnet to this class.
If optional netmask parameter is configured, matching destination IP address can be multiple IP addresses.

syntax

match-dest-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 dest IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-dest-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-src-port

This command matches TCP/UDP source ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., match-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 source port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-src-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-dest-port

This command matches TCP/UDP destination ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., match-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 destination port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-dest-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-vlan-id

This command matches VLAN IDs to this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

match-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to match 10 VLAN ID

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-vlan-id 10
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-dscp

This command matches DiffServ Code Points (DSCP) to this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

match-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to match 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-dscp 60
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-precedence

This command matches IP precedence to this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

match-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to match 6 IP precedence

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-tos

This command matches IP Type Of Service (TOS) field to this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

match-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to match 6 IP tos

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-tos 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-user-priority

This command matches 802.1p priority values to this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

match-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-protocol

This command matches IP header protocol type to this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

match-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF} -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to match 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#match-protocol 17
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-exp

This command matches EXPerimental (EXP) bits of MPLS header to this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

match-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-exp 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

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configure interface bundle fr pvc qos policy-class match-src-ipv6

This command matches source IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching source IPv6 address can be multiple IPv6 addresses.

syntax

match-src-ipv6 ipv6_address<ipv6_address> prefixlen[value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-src-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 source IPv6 address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-src-ipv6 1111::1111
```

related commands

None.

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class match-dest-ipv6

This command matches destination IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching destination IPv6 address can be multiple IPv6 addresses.

syntax

match-dest-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-dest-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 dest IPv6 address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-dest-ipv6 1111::1111
```

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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class match-flow-label

This command matches IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

match-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to match 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-flow-label 60
```


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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class match-traffic-class

This command matches traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

match-traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to match 60 traffic class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# match-traffic-class 60
```

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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class mark-dscp

This command marks packets with DiffServ Code Point (DSCP). Valid DSCP ranges are from 0 to 63. DSCP values parameter can not be a range.

syntax

mark-dscp codepoint<0-63>

Parameter	Description
codepoint	Mark packets with DiffServ Codepoint. Valid: 0-63, ef, af and cs code points

default

None.

example

In the following example, class1 is configured to mark 6 Diffserv codepoint.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#mark-dscp 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class mark-precedence

This command marks packets with IP precedence value. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can not be a range.

syntax

mark-precedence precedence_value<0-7>

Parameter	Description
precedence_value	Mark packets with precedence value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 precedence value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#mark-precedence 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class mark-qos-priority

This command sets outgoing LAN interface output queue of Ethernet LAN modules such as LMG20 without modifying packet by priority value. Priority value ranges are from 0 to 7. The higher priority value is, priority is the higher.

syntax

[no]mark-qos-priority priority_value<0-7>

Parameter	Description
priority_value	Mark packets with priority value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 7 priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# mark-qos-priority 7
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class mark-user-priority

This command marks packets with 802.1p value. Valid 802.1p ranges are from 0 to 7. 802.1p values parameter can not be a range.

syntax

mark-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	Mark packets with 802.1p value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 802.1p value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# mark-user-priority 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class pbr-redirect

This command configures policy based routing (pbr). Valid mode parameter is nexthop ip/ipv6 address and lsp.

syntax

pbr-redirect mode< nexthop address | lsp interface_name >
no pbr-redirect mode< nexthop address | lsp interface_name >

Parameter	Description
mode	Nexthop, lsp, Egress interface
address_or_interface	Nexthop IP/IPv6 address MPLS LSP interface name

default

None.

example

In the following example, class1 is configured to redirect **2222::2222** nexthop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr#pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1#pbr-redirect nexthop 2222::2222
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-packet-class

This command deletes layer 2 header protocol type from this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

delete-packet-class protocol_type<name>

Parameter	Description
protocol_type	Layer 2 header protocol type value or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to delete ipv4 packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-packet-class ipv4
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-ip

This command deletes source/destination IP address or subnet from this class. If optional netmask parameter is configured, deleting source/destination IP address can be multiple IP addresses.

syntax

delete-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source/Dest IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to delete 11.11.11.11 IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-ip 11.11.11.11
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-src-port

This command deletes TCP/UDP source ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., delete-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 source port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-src-port 10000
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-dest-port

This command deletes TCP/UDP destination ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., delete-dest--port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 destination port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-dest-port 10000
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-vlan-id

This command deletes VLAN IDs from this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

delete-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to delete 10 VLAN ID

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-vlan-id 10
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-dscp

This command deletes DiffServ CodePoints from this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

delete-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to delete 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-dscp 60
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-precedence

This command deletes IP precedence from this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

delete-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to delete 6 IP precedence

```
Router# configure terminal
Router/configure# interface bundle wan0 Router
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-precedence 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-tos

This command deletes IP TOS field from this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

delete-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to delete 6 IP tos.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-tos 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-user-priority

This command deletes 802.1p priority values from this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

delete-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-user-priority 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-protocol

This command deletes IP header protocol type from this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

delete-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF } -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to delete 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-protocol 17
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-exp

This command deletes EXPerimental (EXP) bits of MPLS header from this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

delete-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-exp 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-control-packet

This command deletes control-packet from this class.

syntax

delete-control-packet type_name<name>

Parameter	Description
type_name	Packet type name ‘control’ or ‘default’.

default

None.

example

In the following example, class1 is configured to delete control packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-control-packet control
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-ipv6

This command deletes source/destination IPv6 address or subnet from this class. If optional prefixlen parameter is configured, deleting source/destination IPv6 address can be multiple IPv6 addresses.

syntax

delete-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source/Dest IPv6 addr/range/subnet or 'default' (E.g., delete-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to delete 1111::1111 IPv6 address.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
```

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```
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-flow-label

This command deletes IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

delete-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

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example

In the following example, class1 is configured to delete 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class delete-traffic-class

This command deletes traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

delete -traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or ‘default’ (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

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example

In the following example, class1 is configured to delete 60 traffic class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# delete-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class ewf

This command configures the exponential weight factor (ewf) for average queue size calculation. Valid ewf value is from 1 to 15.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

default

None.

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example

In the following example, class1 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class red

This command configures the RED for class. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

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no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from 1 to 15
dscp	DiffServ Codepoint for DS-RED

default

None.

example

In the following example, class1 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
```


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```
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# red maxth-green 35 minth-green
20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos policy-class enable-red

This command enables/disables RED or DiffServ Code Point compliant WRED for class.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, class1 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
policy-class class1
Router/configure/interface/bundle wan0/fr/pvc
100/qos/policy-class class1# enable-red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos/policy-class

configure interface bundle fr pvc qos delete-policy-class

This command deletes specific class on the fr pvc interface. The class-name must be entered.

syntax

delete-policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

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example

In the following example, class1 is deleted.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
delete-policy-class class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

configure interface bundle fr pvc qos delete-all

This command deletes all classes on the fr pvc interface.

syntax

delete-all

default

None.

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example

In the following example, all classes are deleted.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# fr
Router/configure/interface/bundle wan0/fr# pvc 100
Router/configure/interface/bundle wan0/fr/pvc 100# qos
Router/configure/interface/bundle wan0/fr/pvc 100/qos#
delete-all
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/qos

configure interface bundle fr pvc ip

This command accesses next-level commands for assigning an IP address and source forwarding address to a terminated PVC.
The command also enables and configures directed broadcasting and filtering for a terminated PVC.

syntax

ip

example

```
Router/configure/interface/bundle SF_01/fr/pvc 19# ip
```


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related commands

configure interface bundle fr pvc ip address, configure interface bundle fr pvc ip dvmrp, configure interface bundle fr pvc ip igmp, configure interface bundle fr pvc ip multicast, configure interface bundle fr pvc ip ospf, configure interface bundle fr pvc ip pim, configure interface bundle fr pvc ip redirects, configure interface bundle fr pvc ip rip, configure interface bundle fr pvc ip unreachable

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc ip address

This command assigns or removes a routing destination IP address and subnet mask to a PVC.

NOTE

The network 1.1.0.0 is utilized internally in the Router system. The user is prevented from configuring IP addresses within, or IP routes to, this network.

Parameter	Description
IP address	IP address of the PVC
netmask	Subnet mask of the PVC
type	-
broadcast	Broadcast interface

syntax

ip address <*IP address*> netmask <*subnet mask*> [type <broadcast>]
no ip address <*IP address*> netmask <*subnet mask*> [type <broadcast>]

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example 1

```
Router/configure/interface/bundle SF_01/fr/pvc 19# ip
address 192.5.72.1 255.255.255.0 broadcast
```

example 2

```
Router/configure/interface/bundle SF_01/fr/pvc 19# ip
address 192.5.72.1 24 broadcast
```

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc enable

This command enables or disables the PVC. To disable the PVC, use no form of this command.

syntax

enable
no enable

default

The PVC is enabled.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# enable
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc crypto

This command configures the network type for the specified pvc on a specified Frame Relay bundle.
There is no default for this command.

Parameter	Description
network_type	-
trusted	Interface is part of a trusted network
untrusted	Interface is part of a untrusted network

syntax

crypto network_type <trusted | untrusted>
no crypto network_type <trusted | untrusted>

example

```
Router/configure/interface/bundle Dallas/fr/pvc 17# crypto
trusted
```

applicable models/versions

All models.

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configure interface bundle fr pvc access-group

Use this command to apply an access list to an interface to filter incoming, outgoing packets. Use the no form of this command to disable an access group.

syntax

access-group direction<in|out> rule<ip> acl_name<name>
no access-group direction<in|out> rule<ip> acl_name<name>

Parameter	Description
direction	for inbound/outbound packets
rule	Ip: IPv4 Ruleset
Acl_name	Access list name

default

Disabled (no)

example

```
Router/configure/interface wan/fr/pvc# access-group in ip rule1
```

related commands

configure access-group

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

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configure interface bundle fr pvc frf20

This command accesses next-level commands for FRF.20.
FRF.20 is a Frame Relay IP header compression implementation agreement.

syntax

frf20

default

None.

example

```
Router/configure/interface/bundle Dallas/fr/pvc 17# frf20
```

related commands

enable, config

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc frf20 enable

Provide the control for FRF.20.
This command enables the FRF.20 support on the PVC.

syntax

enable
no enable

default

The FRF.20 feature is disabled.

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example

```
Router/configure/interface/bundle wan1/fr/pvc 101/frf20#
enable
```

related commands

config

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/frf20

configure interface bundle fr pvc frf20 config

Provide the control for FRF.20. This command sets the timeout, retries, f_max_period, f_max_time values of FRF.20.

syntax

config [timeout time_number <1-10>] [retries retry_number <1-10>] [f_max_period period_number <0-0xFFFF>] [f_max_time max_time_number <0-0xFF>]

Parameter	Description
time_number	The timeout value of frf20 state machine. Valid number is from 1 to 10. Default is 6.
retry_number	The retries number for negotiation. Valid number is from 1 to 10. Default is 3
period_number	The negotiable number of tcp headers before context state. Valid number is from 0 to 0x FFFF. Default is 256.
max_time_number	The negotiable time interval between full headers. Valid number is from 0 to 0x FF. Default is 5.

default

timeout: 6, retries: 3, f_max_period: 256, f_max_time: 5

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example

```
Router/configure/interface/bundle wan1/fr/pvc 101/frf20#
config timeout 5 retries 5 f_max_period 512 f_max_time 10
```

related commands

enable

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/fr/pvc/frf20

configure interface bundle fr pvc ipv6 address

This command assigns or removes a routing destination IPv6 address and subnet mask to a PVC.

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format
eui-64	Configures an ipv6 address by using an EUI-64 ID.
anycast	Used to specify the anycast address.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

example 1

```
Router/configure/interface/bundle SF_01/fr/pvc 19# ipv6
address 1001::1/64
```

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example 2

```
Router/configure/interface/bundle SF_01/fr/pvc 19# ipv6
address 1001::1/64 anycast
```

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc

configure interface bundle fr pvc ipv6 enable

This command enables or disables the PVC. To disable the PVC, use the no form of this command.

syntax

ipv6 enable
no ipv6 enable

default

None.

example

```
Router/configure/interface/bundle wan1/fr/pvc 101# ipv6
enable
Router/configure/interface/bundle wan1/fr/pvc 101# no ipv6
enable
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/fr/pvc

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configure interface bundle hdlc keepalive

This command sets the keep alive parameter on the bundle encapsulated by HDLC.

syntax

hdlc keepalive time_value <value>

Parameter	Description
Time_value	keepalive interval in seconds, 0-120 (default: 10sec, 0 second means no keepalive)

default

None.

example

```
Router/configure/interface/bundle HDLC# hdlc keepalive 20
```

related commands

show interface bundle

applicable models/versions

All models.

related commands

show interface bundle

command modes

Router/configure/interface/bundle

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configure interface bundle hdlc packet_type

This command sets the keep-alive parameter on the bundle encapsulated by HDLC. Keep-alive packet type, broadcast keep-alive will be sent as a broadcast packet and unicast keep-alive will be sent as a unicast packet

syntax

hdlc packet_type [broadcast | unicast]

Parameter	Description
Packet_type	keepalive packet type (default: unicast) broadcast: keepalive will be sent as broadcast packet unicast: keepalive will be sent as unicast packet

default

None.

example

```
Router/configure/interface/bundle HDLC# hdlc packet_type
broadcast
```

related commands

show interface bundle

applicable models/versions

All models.

related commands

show interface bundle

command modes

Router/configure/interface/bundle

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configure interface bundle hdlc mtu

This command sets the mtu parameter on the bundle encapsulated by HDLC.

syntax

hdlc mtu size_value <value>

Parameter	Description
Size_value	maximum transmission unit (default: 1500) 64-4500

default

None.

example

```
Router/configure/interface/bundle HDLC# hdlc mtu 3000
```

related commands

show interface bundle

applicable models/versions

All models.

related commands

show interface bundle

command modes

Router/configure/interface/bundle

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configure interface bundle hdlc_bridging

This command sets L2 bridging function on the bundle encapsulated by HDLC.

syntax

hdlc_bridging
no hdlc_bridging

default

None.

example

```
Router/configure/interface/bundle HDLC# hdlc_bridging
```

related commands

show interface bundle

applicable models/versions

All models.

related commands

show interface bundle

command modes

Router/configure/interface/bundle

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configure interface bundle restore

This command defines how a dropped link of a multilink bundle is restored. You can have the system do this automatically (default setting), or you can do it manually.

syntax

restore method_type [automatic | manual] time_value <time>
no restore method_type [automatic | manual] time_value <time>

Parameter	Description
Method_type	automatic: automatic restore configuration manual: manual restore configuration
Time_value	link restore time in seconds, The default is 120 seconds.

default

None.

example

```
Router/configure/interface/bundle wan0# restore manual
Router/configure/interface/bundle wan0# restore automatic 150
```

applicable models/versions

All models.

related commands

link_restore, show interface bundle

command modes

Router/configure/interface/bundle

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configure interface bundle ip address

This command assigns or removes a routing destination IP address and subnet mask to bundle.

NOTE

Before IP address will be assigned, the logical interface must be linked to bundle.

Parameter	Description
IP address	Bundle's IP address
netmask	Bundle's subnet mask

syntax

ip address <*IP address*> netmask <*subnet mask*>
no ip address <*IP address*> netmask <*subnet mask*>

example 1

```
Router/configure/interface/bundle wan1# ip address
192.5.72.1 255.255.255.0
```

example 2

```
Router/configure/interface/bundle wan1# ip address 192.5.72.1 24
```

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ip negotiated

This command enables a bundle interface to obtain an IPv4 address from the peer using IPCP.
When an IP address is assigned, 31-bit subnet mask is used.

NOTE

Before IP address negotiation can start, the PPP protocol type must be specified for the bundle.

syntax

ip negotiated

default

None.

example

```
IBG1000/configure/interface/bundle bundle1# ip negotiated
```

related commands

show ip interface brief, show interface bundle xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle ip peer-addr

This command gives an IPv4 address to the peer after provisioning an IPv4 address as a parameter. Only an IP address is specified as a parameter. It is a kind of IP address pool. The peer's PPP IPCP will request an IP address to be assigned and the assigned IPv4 address will be given to the peer.

NOTE

Before using this command, an IP address must be assigned on bundle.

syntax

ip peer-addr

Parameter	Description
IP address	IP address to be assigned to the peer

default

None.

example

```
IBG1000/configure/interface/bundle bundle1# ip peer-addr
34.1.5.6
```

related commands

show ip interface brief, show interface bundle xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle ip primary_dns_request

This command enables a bundle interface to get an IPv4 primary DNS address from the peer. The peer's PPP IPCP will give an IPv4 DNS address upon request.

NOTE

Before using this command, an IP address must be assigned on bundle.

syntax

ip primary_dns_request

default

None.

example

```
IBG1000/configure/interface/bundle bundle1# ip
primary_dns_request
```

related commands

show ip interface brief, show interface bundle xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle ip secondary_dns_request

This command enables a bundle interface to obtain an IPv4 secondary DNS address from the peer. The peer's PPP IPCP will give an IPv4 DNS secondary address upon request.

NOTE

Before using this command, an IP address must be assigned on bundle.

syntax

ip secondary_dns_request

default

None.

example

```
IBG1000/configure/interface/bundle bundle1# ip
secondary_dns_request
```

related commands

show ip interface brief, show interface bundle xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle ipv6 address

This command assigns an IP v6 address to the bundle.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format
eui-64	Configures an IPv6 address by using an EUI-64 ID
anycast	Used to specify the anycast address

default

None.

example

```
Router/configure/interface/bundle wan1# ipv6 address
3ffe::7/64
Router/configure/interface/bundle wan1# no ipv6 address
3ffe::3/64
```

related commands

show ipv6 interfaces brief

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle ipv6 enable

This command enables the IP v6 on the bundle.

syntax

ipv6 enable
no ipv6 enable

default

None.

example

```
Router/configure/interface/bundle wan1# ipv6 enable
Router/configure/interface/bundle wan1# no ipv6 enable
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle

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configure interface bundle link_restore

This command restores a link that was previously dropped from a multilink T1 or E1 bundle. This command is not needed if the bundle is configured for automatic link restoration using the **configure interface bundle restore** command.

syntax

link_restore link_spec <link>

Parameter	Description
Link_spec	all-restores all T1s or E1s. 1 .. 28 (T1# or E1#)-restores specific T1/E1

default

None.

example

```
Router/configure/interface/bundle wan0# link_restore 0/1
Router/configure/interface/bundle wan0# link_restore all
```

applicable models/versions

All models.

related commands

show interface bundle, restore

command modes

Router/configure/interface/bundle

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configure interface bundle bcp

This command accesses next-level commands for configuring a PPP bundle with the Bridging Control Protocol (BCP).

syntax

bcp
no bcp

default

None.

example

```
Router/configure/interface/bundle wan0# bcp
```

related commands

command under bcp, show interface bundle

applicable models/versions

All models.

configure interface bundle bcp bridge

This command sets BCP related parameters which are specifying packet types to be serviced on this bundle for bridging service.

syntax

bridge type [lan | vlan]
no bridge type [lan | vlan]

Parameter	Description
type	Lan: LAN packets (IEEE 802.3) to be bridged (default) Vlan: VLAN packets (IEEE 802.1Q) to be bridged

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default

None.

example

```
Router/configure/interface/bundle wan0/bcp# bridge type lan
Router/configure/interface/bundle wan0/bcp# bridge type vlan
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle
Router/configure/interface/bundle/bcp

configure interface bundle ppp mtu-mru-magic mtu

This command configures the PPP MTU (maximum transmission unit) parameters for a single- or fractional-link PPP bundle.

syntax

ppp mtu-mru-magic mtu mtu_value <min-def-max>
no ppp mtu-mru-magic mtu mtu_value <min-def-max>

Parameter	Description
Mtu_value	Minimum, default, and maximum packet sizes to be sent, separated by dashes. For example, 100-250-1000 selects packets ranging from 100 to 1000 bytes, with a default size of 250 bytes. The default is 64 -1500-8192.

default

None.

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example

```
Router/configure/interface/bundle wan0# ppp mtu-mru-magic
mtu 2000-2000-2000
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle ppp mtu_auto

This command enables/disables MTU auto negotiation on a bundle interface. This command is designed to update the MTU size according to the peer's Maximum Receive Unit (MRU). The LCP MTU value is adaptively changed according to the peer's MRU value without a validation process

syntax

ppp mtu_auto
no ppp mtu_auto

default

Disabled (no)

example

```
Router/configure/interface/bundle wan0# ppp mtu_auto
```

related commands

show interface bundle

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle ppp pap sent-username

This command sets the pap user name to be sent to server.

syntax

ppp pap sent-username username<name_string> password<password_string>

no ppp pap sent-username username<name_string>
password<password_string>

Parameter	Description
username	configure the pap username
password	configure the pap password

default

None.

example

```
Router/configure/interface/bundle wan0# ppp pap sent-username
test test123
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface bundle

applicable models/versions

All models.

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command modes

Router/configure/interface/bundle

configure interface bundle ppp pap peer-name

This command sets the PAP peer username and password for MLP and MLPPP bundle.

syntax

ppp pap peer-name username<name_string> password<password_string>
no ppp pap peer-name username<name_string> password<password_string>

Parameter	Description
username	configure the pap username expected from peer
password	configure the pap password expected from peer

default

None.

example

```
Router/configure/interface/bundle wan0# ppp pap peer-name
test test123
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp chap sent-username

This command sets the CHAP peer username and password for MLP and MLPPP bundle.

syntax

ppp chap sent-username username<name_string> password<password_string>
no ppp chap sent-username username<name_string>
password<password_string>

Parameter	Description
username	configure the chap username on local end
password	configure the chap password

default

None.

example

```
Router/configure/interface/bundle wan0# ppp chap sent-
username kkk kkk123
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp chap peer-name

This command sets the CHAP peer username and password for MLP and MLPPP bundle.

syntax

ppp chap peer-name username<name_string> password<password_string>
no ppp chap peer-name username<name_string> password<password_string>

Parameter	Description
username	configure the chap username expected from peer
password	configure the chap password expected from peer

default

None.

example

```
Router/configure/interface/bundle wan0# ppp chap peer-name
test test123
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp authentication

This command sets which authentication protocol is running as a server. You are able to choose pap or chap.

syntax

ppp authentication protocol_type [pap | chap]
no ppp authentication protocol_type [pap | chap]

Parameter	Description
Protocol_type	To choose authentication server for PPP PAP: Password Authentication Protocol CHAP: Challenge Handshake Authentication Protocol

default

None.

example

```
Router/configure/interface/bundle wan0# ppp authentication
pap
Router/configure/interface/bundle wan0# ppp authentication
chap
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp authentication-database

This command specifies where authentication DB is for authentication server. Currently you can select local, radius and tacacs DBs which are scanned from client requests while server is running.

syntax

ppp authentication-database DB_type [local | radius | tacacs]
no ppp authentication-database DB_type [local | radius | tacacs]

Parameter	Description
DB_type	Local: It's default DB which is set by administrator inside a system per interface. Radius: radius server Tacacs: TACACS server

default

None.

example

```
Router/configure/interface/bundle wan0# ppp authentication-
database local
Router/configure/interface/bundle wan0# ppp authentication-
database radius
Router/configure/interface/bundle wan0# ppp authentication-
database tacacs
```

related commands

ppp authentication, under ppp pap, under ppp chap, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp lfi-fragment-delay

This command configures the fragmentation-delay for PPP bundle with interleaving.

syntax

ppp lfi-fragment-delay delay_value <value>
no ppp lfi-fragment-delay delay_value <value>

Parameter	Description
Delay_value	10-50 delay in mill seconds-default 10

default

None.

example

```
Router/configure/interface/bundle wan0# ppp lfi-fragment-
delay 20
```

related commands

interleave, ip-rtp-reserve, show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp ip-rtp-reserve

This command reserves specified port range and the bandwidth for RTP traffic.

syntax

ppp ip-rtp-reserv port_value1 <value1> port_value2 <value2>
no ppp ip-rtp-reserv port_value1 <value1> port_value2 <value2>

Parameter	Description
Port_value1	1024-65535 port value in decimal-default 1024
Port_value2	1024-65535 port value in decimal-default 1024

default

None.

example

```
Router/configure/interface/bundle wan0# ppp ip-rtp-reserv
10000 20000
```

related commands

lfi-fragment-delay, show interface bundle, interleave,

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp interleave

This command configures PPP bundle with interleaving for LFI.

syntax

ppp interleave
no ppp interleave

default

None.

example

```
Router/configure/interface/bundle wan0# ppp interleave
```

related commands

show interface bundle, ip-rtp-reserve, lfi-fragment-delay,

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp echo-interval

This command configures the echo-timer for the PPP bundle

syntax

ppp echo-interval interval_value <value>
no ppp echo-interval interval_value <value>

Parameter	Description
Interval_value	3-60, interval in seconds-default 5

default

None.

example

```
Router/configure/interface/bundle wan0# ppp echo-interval 20
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp retry-interval

This command configures the retry-timer for the PPP bundle

syntax

ppp retry-interval interval_value <value>
no ppp retry-interval interval_value <value>

Parameter	Description
Interval_value	3-60, interval in seconds-default 3

default

None.

example

```
Router/configure/interface/bundle wan0# ppp retry-interval 5
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle mlppp mrru

This command configures the MLPPP MRRU (maximum receive reconstructed unit) parameters for a multi-link PPP bundle.

syntax

mlppp mrru mrru_value <min-def-max>
no mlppp mrru mrru_value <min-def-max>

Parameter	Description
mrru_value	Minimum, default, and maximum packet sizes to be sent, separated by dashes. For example, 1500-1510-8192 selects packets ranging from 1500 to 8192 bytes, with a default size of 1510 bytes. The default is 1500 -1524-8192.

default

None.

example

```
Router/configure/interface/bundle wan0# ml ppp mrru 1500-
1510-4500
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle mlppp sequence

This command configures the MLPPP sequence parameters for a multi-link PPP bundle.

syntax

mlppp sequence type [long | short]
no mlppp sequence type [long | short]

Parameter	Description
type	long: long sequence short: short sequence The default is long

default

None.

example

```
Router/configure/interface/bundle wan0# mlppp sequence short
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle ppp fragmentation_disable

This command disables/enables fragmentation on an MLPPP bundle.
Fragmentation is enabled by default on an MLPPP bundle.
If fragmentation is disabled, other fragmentation-related commands will be blocked at command level and frame is forwarded without being fragmented regardless of the physical link bandwidth.

syntax

ppp fragmentation_disable

default

Enabled (yes)

example

```
Router/configure/interface/bundle wan0# ppp
fragmentation_disable
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle mlppp seg_threshold

This command configures the MLPPP segmentation threshold for a multi-link PPP bundle.

syntax

mlppp seg_threshold seg_threshold_value <value>

Parameter	Description
seg_threshold_value	64 – 4500, default 512

default

None.

example

```
Router/configure/interface/bundle wan0# mlppp seg_threshold
1000
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle mlppp differential_delay

This command configures the MLPPP differential delay for a multi-link PPP bundle.

syntax

mlppp differential delay differential delay_value <value>
no mlppp differential delay differential delay_value <value>

Parameter	Description
differential delay_value	0-128, default 0

default

None.

example

```
Router/configure/interface/bundle wan0# mlppp differential
delay 100
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle mlppp minimum_links

This command configures the MLPPP minimum number of links to be active for a multi-link PPP bundle.

syntax

mlppp minimum_links min_link_num <num>
no mlppp minimum_links min_link_num <num

Parameter	Description
min_link_num	Number under total number of Links, default 1

default

None.

example

```
Router/configure/interface/bundle wan0# mlppp minimum_links 2
```

related commands

show interface bundle

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle drop

This command is for configure the link drop mechanism. It is a command allows the Router system to drop an errored T1 or E1 link from the bundle. A bundle is dropped if excessive errors of a user-specified type occur for a user-defined time interval.

syntax

drop error_type [es | ses | uas | eev | bpv | csf | oof | crc] drop_time <time>
no drop error_type [es | ses | uas | eev | bpv | csf | oof | crc] drop_time <time>

Parameter	Description	
Error_type	ses	Severely Errored Seconds
	es	Errored Seconds
	uas	Unavailable Seconds
	eev	Excessive Error Violations Seconds
	bes	Bursty Errored Seconds
	bpv	Bipolar Violations
	lofc	Loss of Frame Counts
	css	Controlled Slip Seconds
	oof	Out of Frame Seconds
	crc	CRC-6 Errors
Drop_time	Drop time in consecutive seconds (es, ses, uas) or drop counts.	

default

None.

example

```
Router/configure/interface/bundle wan1# drop es 3
Router/configure/interface/bundle wan1# drop ses 5
Router/configure/interface/bundle wan1# drop uas 7
Router/configure/interface/bundle wan1# drop bes 10
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle shutdown

This command shuts down a WAN bundle by stopping all data transmission over it.

syntax

shutdown
no shutdown

default

None.

example

```
Router/configure/interface/bundle MMM# shutdown
```

related commands

show interface bundle

applicable models/versions

All models.

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configure interface bundle qos

This command accesses next-level commands for configuring Quality of Service (QoS) on the specific interface.

syntax

qos

default

None.

example

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle qos auto-qos

This command provides interface specific QoS parameters. The appropriate QoS feature, namely CBQ (shaping) or Policing, and direction will be selected based on the interface type. For WAN interfaces the CBQ feature is selected for the outbound direction. No other combinations of interfaces, feature, and direction are allowed for auto QoS configuration.

In the SW QoS support, the auto QoS parameters are defined such it should provide differentiated treatment for voice/RTP traffic, and the rest. In the hierarchical flow classification mechanism we should define QoS policy classes to identify the voice traffic.

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The auto QoS parameters are now defined as follows.

- Three policy-classes for WAN interfaces and six policy classes for LAN interfaces as shown in the diagram(s), with assigned classification keys.
- For WAN interfaces, policy classes are defined in the outbound direction with CBQ parameter specification, as shown in the diagram figure 3.8.

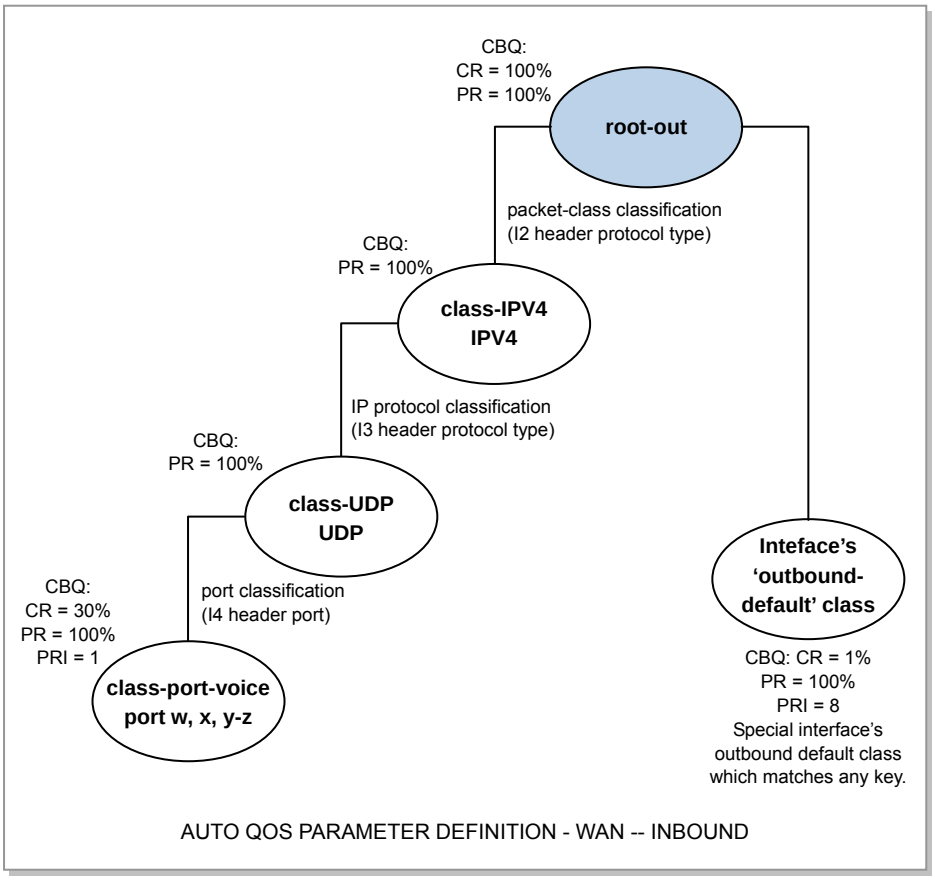

Figure 3.8 Auto QoS Parameter Definition for WAN Interfaces

syntax

[no]auto-qos

default

no auto-qos

example

In the following example, provides interface specific QoS parameters

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# auto-qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

configure interface bundle qos disable-qos

This command disables QoS features with different actions based on interface type. QoS supported interfaces can be divided to following groups based on CBQ and WRED/DS-RED support.

- CBQ-Enabled Group (WAN and Crypto Interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration except enabling interface WRED if it was disabled. Traffic through this group bypass without influence of QoS features configured in this group.
  When disable QoS is taken off from the interface and interface still remembers that WRED is enabled because of disable QoS process, the interface WRED state must re-instated as it was before disable QoS. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled
- Non-CBQ-Enabled Group (Tunnel, Ethernet, and VLAN interfaces)
  In this group, the disable QoS process disables QoS features without altering the existing QoS configuration. Traffic through this group bypass without influence of QoS features configured in this group. Any modification of QoS feature under disable-qos mode will be influenced when QoS is not disabled.

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syntax

[no]disable-qos

default

no disable-qos

example

In the following example, disables Qos features.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# disable-qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

configure interface bundle qos add-policy-class

This command creates a new QoS class.
The class-name and parent parameters must be entered.

syntax

add-policy-class class-name<name> parent<root-in | root-out>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.
parent	Name of the parent class; QoS classes are defined hierarchically. To add to the root, specify either root-in or root-out.

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default

None.

example

In the following example, interface bundle wan0 is configured to create class1 class under root-out class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# add-policy-class
class1 root-out
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

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configure interface bundle qos policy-class

This command accesses next-level commands to modify parameters of this traffic class. From this command user configures classification type, marking, CBQ parameters and etc.

syntax

policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, enter class1 policy mode.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

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configure interface bundle qos policy-class cbq

This command configures class based queuing parameters. Committed rate (cr) and Peak rate (pr) are configured by specific number (Kbps or percent of total bandwidth. Priority is optional parameter. Priority 1 is the highest.

syntax

cbq <cr | cr-percent> cr_value<value> <pr | pr-percent> pr_value<value> priority priority_value<value>
no cbq <cr | cr-percent> cr_value<value> <pr | pr-percent> pr_value<value> priority priority_value<value>

Parameter	Description
cr	Committed rate in Kbits.
cr-percentbs	Committed Rate as % of interface bandwidth.
pr	Peak Rate in Kbps
pr-percent	Peak Rate as % of interface bandwidth
priority	Scheduling priority. Valid only for leaf classes from 1 to 8

default

Node

example

In the following example, class1 is configured to 20 percent of cr, 100 percent of pr and priority 1.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# police
Router/configure/interface/bundle wan0/qos/policy-class
class1/police# cbq cr-percent 20 pr-percent 100 priority 1
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

configure interface bundle qos policy-class police

This command accesses next-level commands for configuring police. From this command user configures single rate tree color marking (srtcm), two rate three color marking (trtcm) and color-aware mode

syntax

police

default

None.

example

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class class1
Router/configure/interface/bundle wan0/qos/policy-class class1#
police
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

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configure interface bundle qos policy-class police srtcm

This command configures traffic policing (srtcm) related parameters. Valid cbs and ebs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

srtcm committed-rate<value> cbs cbs_rate<value> ebs ebs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow-action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action <permit | drop | mark-dscp-<value>>

Parameter	Description
committed-rate	Committed rate in Kbits.
cbs-rate	Committed burst in Kbits.
ebs-rate	Excess burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

Node

example

In the following example, class1 is configured to committed-rate 100, cbs 100, ebs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# police
Router/configure/interface/bundle wan0/qos/policy-class
class1/police# srtcm 100 cbs 100 ebs 200 green-action permit
yellow-action mark-dscp-20 red-action drop
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

configure interface bundle qos policy-class police trtcm

This command configures traffic policing (trtcm) related parameters. Valid cbs and pbs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

no trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

Parameter	Description
committed_rate	Committed rate in Kbits.
peak_rate	Peak rate in Kbits
cbs_rate	Committed burst in Kbits.
pbs_rate	Peak burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

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default

None.

example

In the following example, class1 is configured to committed-rate 100, peak-rate 200, cbs 100, pbs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# police
Router/configure/interface/bundle wan0/qos/policy-class
class1/police# trtcm 100 200 cbs 100 pbs 200 green-action
permit yellow-action mark-dscp-20 red-action drop
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

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configure interface bundle qos policy-class police color-aware

This command enables the metering to run in color aware mode. Color-aware mode allows user to police traffic according to the color classification of a packet.

syntax

color-aware
no color-aware

default

no color-aware

example

In the following example, class1 is configured to color-aware mode.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# police
Router/configure/interface/bundle wan0/qos/policy-class
class1/police# color-aware
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

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configure interface bundle qos policy-class queue-buffers

This command sets the class queue's max buffer limit **no]** restores default value.

syntax

queue-buffers buffer_limit<value>
no queue-buffers buffer_limit<value>

Parameter	Description
number	Maximum buffer limit

default

None.

example

In the following example, class1 is configured to have 1000 buffers.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# police
Router/configure/interface/bundle wan0/qos/policy-class
class1/police# queue-buffers 1000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class/police

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configure interface bundle qos policy-class match-access-list

This command is used to specify an access-list as a matching rule for a class. The access-list must be created first and added as a matching rule. Multiple access-lists cannot be used in a class.

syntax

match-access-list acl_name<name>

Parameter	Description
acl_name	access-list name or 'default'

default

None.

example

In the following example, acl1 is added as a matching rule of class class1.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-access-list acl1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

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configure interface bundle qos policy-class match-control-packet

Traffic generated by the router (e.g. control packets) represents a special case for outbound QoS service policies. Some locally generated traffic should be treated as any other user traffic, and the QoS system should apply the configured QoS mechanisms to this traffic. An example of such traffic is performance probes that are designed to measure the behavior incurred by packets of a given class. Other locally generated traffic, particularly Layer 2 keepalives and routing protocol messages, are vital to the basic functioning of the router and should not be subject to some QoS features.

syntax

match-control-packet type_name<name>

Parameter	Description
type_name	Packet type name 'control' or 'default'

default

None.

example

In the following example, class1 is configured to match control packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-control-packet control
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-packet-class

This command matches layer 2 header protocol type to this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6) or hex-value.

syntax

match-packet-class type_name<name>

Parameter	Description
type_name	Layer 2 header protocol type name or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to match ipv4 packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-packet-class ipv4
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-src-ip

This command matches source IP address or subnet to this class. If optional netmask parameter is configured, matching source IP address can be multiple IP addresses.

syntax

match-src-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 source IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class class1
Router/configure/interface/bundle wan0/qos/policy-class class1#
match-src-ip 11.11.11.11
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-dest-ip

This command matches destination IP address or subnet to this class.
If optional netmask parameter is configured, matching destination IP address can be multiple IP addresses.

syntax

match-dest-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 dest IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class class1
Router/configure/interface/bundle wan0/qos/policy-class class1#
match-dest-ip 11.11.11.11
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-src-port

This command matches TCP/UDP source ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., match-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 source port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-src-port 10000
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-dest-port

This command matches TCP/UDP destination ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., match-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 destination port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-dest-port 10000
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-vlan-id

This command matches VLAN IDs to this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

match-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to match 10 VLAN ID

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-vlan-id 10
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-dscp

This command matches DiffServ Code Points (DSCP) to this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

match-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to match 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-dscp 60
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-precedence

This command matches IP precedence to this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

match-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to match 6 IP precedence

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-precedence 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-tos

This command matches IP Type Of Service (TOS) field to this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

match-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to match 6 IP tos

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-tos 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-user-priority

This command matches 802.1p priority values to this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

match-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-user-priority 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-protocol

This command matches IP header protocol type to this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

match-protocol type_value<name | 0-255>

Parameter	Description
Word	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF } -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to match 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-protocol 17
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-exp

This command matches EXPerimental (EXP) bits of MPLS header to this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

match-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-exp 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-src-ipv6

This command matches source IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching source IPv6 address can be multiple IPv6 addresses.

syntax

match-src-ipv6 ipv6_address<ipv6_address> prefixlen[value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-src-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 source IPv6 address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-src-ipv6 1111::1111
```

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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-dest-ipv6

This command matches dest IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching destination IPv6 address can be multiple IPv6 addresses.

syntax

match-dest-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-dest-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 dest IPv6 address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-dest-ipv6 1111::1111
```


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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-flow-label

This command matches IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

match-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to match 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1 match-flow-label 60
```

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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class match-traffic-class

This command matches traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

match-traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to match 60 traffic class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# match-traffic-class 60
```


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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class mark-dscp

This command marks packets with DiffServ Code Point (DSCP). Valid DSCP ranges are from 0 to 63. DSCP values parameter can not be a range.

syntax

mark-dscp codepoint<0-63>

Parameter	Description
codepoint	Mark packets with DiffServ Codepoint. Valid: 0-63, ef, af and cs code points

default

None.

example

In the following example, class1 is configured to mark 6 Diffserv codepoint.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# mark-dscp 6
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class mark-precedence

This command marks packets with IP precedence value. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can not be a range.

syntax

mark-precedence precedence_value<0-7>

Parameter	Description
precedence_value	Mark packets with precedence value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 precedence value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# mark-precedence 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class mark-qos-priority

This command sets outgoing LAN interface output queue of Ethernet LAN module such as LMG20 without modifying packet by priority value. Priority value ranges are from 0 to 7.
The higher priority value is, priority is the higher.

syntax

[no]mark-qos-priority priority_value<0-7>

Parameter	Description
priority_value	Mark packets with priority value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 7 priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# mark-qos-priority 7
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class mark-user-priority

This command marks packets with 802.1p value. Valid 802.1p ranges are from 0 to 7. 802.1p values parameter can not be a range.

syntax

mark-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	Mark packets with 802.1p value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 802.1p value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# mark-user-priority 6
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class pbr-redirect

This command configures policy based routing (pbr). Valid mode parameter is nexthop ip/ipv6 address and lsp.

syntax

pbr-redirect mode< nexthop address | lsp interface_name >
no pbr-redirect mode< nexthop address | lsp interface_name >

Parameter	Description
mode	Nexthop, lsp, Egress interface
address_or_interface	Nexthop IP/IPv6 address MPLS LSP interface name

default

None.

example

In the following example, class1 is configured to redirect **2222::2222** nexthop.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# pbr-redirect nexthop 2222::2222
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-packet-class

This command deletes layer 2 header protocol type from this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

delete-packet-class protocol_type<name>

Parameter	Description
protocol_type	Layer 2 header protocol type value or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to delete ipv4 packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-packet-class ipv4
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-ip

This command deletes source/destination IP address or subnet from this class. If optional netmask parameter is configured, deleting source/destination IP address can be multiple IP addresses.

syntax

delete-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source/Dest IP addr/range/subnet or ‘default’ (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to delete 11.11.11.11 IP address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-ip 11.11.11.11
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-src-port

This command deletes TCP/UDP source ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., delete-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 source port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-src-port 10000
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-dest-port

This command deletes TCP/UDP destination ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., delete-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 destination port

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-dest-port 10000
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-vlan-id

This command deletes VLAN IDs from this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

delete-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to delete 10 VLAN ID

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-vlan-id 10
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-dscp

This command deletes DiffServ CodePoints from this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

delete-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to delete 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-dscp 60
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-precedence

This command deletes IP precedence from this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

delete-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to delete 6 IP precedence

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-precedence 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-tos

This command deletes IP TOS field from this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

delete-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to delete 6 IP tos

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-tos 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-user-priority

This command deletes 802.1p priority values from this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

delete-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-user-priority 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-protocol

This command deletes IP header protocol type from this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

delete-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF MPLS} -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to delete 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-protocol 17
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-exp

This command deletes EXPerimental (EXP) bits of MPLS header from this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

delete-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-exp 6
```

related commands

None.

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-control-packet

This command deletes control-packet from this class.

syntax

delete-control-packet type_name<name>

Parameter	Description
type_name	Packet type name ‘control’ or ‘default’.

default

None.

example

In the following example, class1 is configured to delete control packet

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-control-packet control
```

related commands

None.

applicable models/versions

All models.

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command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-ipv6

This command deletes source/destination IPv6 address or subnet from this class. If optional prefixlen parameter is configured, deleting source/destination IPv6 address can be multiple IPv6 addresses.

syntax

delete-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source/Dest IPv6 addr/range/subnet or ‘default’ (E.g., delete-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to delete 1111::1111 IPv6 address

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-flow-label

This command deletes IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

delete-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to delete 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class delete-traffic-class

This command deletes traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

delete -traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to delete 60 traffic class

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# delete-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

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command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class ewf

This command configures the exponential weight factor (ewf) for average queue size calculation. Valid ewf value is from 1 to 15.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

default

None.

example

In the following example, class1 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

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configure interface bundle qos policy-class red

This command configures the RED for class. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from 1 to 15
dscp	DiffServ Codepoint for DS-RED

default

None.

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example

In the following example, class1 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# red maxth-green 35 minth-green 20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos policy-class enable-red

This command enables/disables RED or DiffServ Code Point compliant WRED for class.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, class1 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# policy-class
class1
Router/configure/interface/bundle wan0/qos/policy-class
class1# enable-red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos/policy-class

configure interface bundle qos delete-policy-class

This command deletes specific class on the bundle interface. The class-name must be entered.

syntax

delete-policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

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example

In the following example, class1 is deleted.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# delete-policy-
class class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

configure interface bundle qos delete-all

This command deletes all classes on the bundle interface.

syntax

delete-all

default

None.

example

In the following example, all classes are deleted.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# delete-all
```

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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

configure interface bundle qos enable

This command enables/disables a QoS feature on this interface. CBQ, Policing, monitoring and PBR can be enabled. Valid traffic direction parameter is outbound or inbound.

syntax

enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>
no enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>

Parameter	Description
cbq	Enable CBQ on the interface.
policing	Enable policing on the interface
monitoring	Enable monitoring only
pbr	Enable Policy Based Routing
traffic	Outbound traffic Inbound traffic

default

None.

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example

In the following example, bundle wan0 is configured to enable cbq.outbound traffic

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# qos
Router/configure/interface/bundle wan0/qos# enable cbq
outbound
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/qos

configure interface bundle aaa

To configure aaa related method list for wan interface.

syntax

aaa

example

```
Router/configure# interface bundle wan1
Router/configure/interface/bundle/wan1# aaa

next-level commands
configure interface bundle aaa accounting
configure interface bundle aaa authentication
configure interface bundle aaa authorization
```

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related commands

configure interface bundle aaa accounting, configure interface bundle aaa authentication, configure interface bundle aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle aaa accounting

This command is used to configure accounting list for wan interface.
This command has four parameters, which are commands, exec, network and system method lists.

syntax

accounting commands clist_name <name | default> exec elist_name <name | default> network nlist_name <name | default> system slist_name <name | default>

no accounting commands clist_name <name | default> exec elist_name <name | default> network nlist_name <name | default> system slist_name <name | default>

Parameter	Description
clist_name	Valid commands list name.
elist_name	Valid exec list name.
nlist_name	Valid network list name.
slist_name	Valid system list name.

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example

```
Router/configure# aaa
Router/configure/aaa# accounting commands wan1 start_stop
Router/configure/aaa# accounting exec wan1stop_only
Router/configure/aaa# accounting network wan1 wait_start
Router/configure/aaa# accounting system wan1 none
Router/configure/aaa# exit
Router/configure# interface bundle wan1
Router/configure/interface/bundle/wan1# aaa
Router/configure/interface/bundle/wan1/aaa# accounting
command wan1 exec wan1 system wan1
```

related commands

configure interface bundle aaa authentication configure interface bundle aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/aaa

configure interface bundle aaa authentication

This command is used to configure authentication login and protocol list name for wan interface. If interface specific authentication list is not configured, default authentication login and protocol list is used for login.

syntax

authentication login_method <list> protocol_method <list>
no authentication login_method <list> protocol_method <list>

Parameter	Description
login_method	Valid login list name which is already configured in aaa authentication list
protocol_method	Valid protocol list name which is already configured in aaa authentication list.

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example

```
Router/configure# aaa
Router/configure/aaa# authentication login wan1
tacacs/radius/local
Router/configure/aaa# authentication protocol wan1 pap/ascii
Router/configure/aaa# exit
Router/configure# interface bundle wan1
Router/configure/interface/bundle wan1# aaa
Router/configure/interface/bundle wan1/aaa# authentication
login wan1 wan1
```

related commands

configure interface bundle aaa authorization, configure interface bundle aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/aaa

configure interface bundle aaa authorization

This command is used to configure authorization commands list for bundle. If bundle specific authorization commands list is not configured, default list is used for authorization.

syntax

authorization command_list <list_name>
no authorization command_list <list_name>

Parameter	Description
command_list	Valid command list name which is already configured in aaa authorization list

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example

```
Router/configure# aaa
Router/configure/aaa# authorization commands wan1_lst
tacacs/radius/local
Router/configure/aaa# exit
Router/configure# interface bundle wan1
Router/configure/interface/bundle wan1# aaa
Router/configure/interface/bundle wan1/aaa# authorization
wan1_lst
```

related commands

configure interface bundle aaa authentication, configure interface bundle aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/aaa

configure interface bundle rtp

This command enables or disables RTP header compression and accesses next-level commands for configuring RTP.
Before enabling RTP, the bundle must be configured with links, protocol, and IP address and netmask.

syntax

rtp
no rtp

default

None.

example

```
Router/configure/interface/bundle MMM# rtp
```

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related commands

show interface bundle, timeout under rtp, connections under rtp

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle rtp timeout

This command configures the timeout for the RTP table entries.
RTP timeout applies to both the compressor and decompressor entries on the same router. If no packets are sent or received during the configured timeout period, then that entry is deleted from the table.

syntax

timeout timeout_value <value>
no timeout timeout_value <value>

Parameter	Description
Timeout_value	30-65535 timeout in seconds-default 60

default

None.

example

```
Router/configure/interface/bundle MMM/rtp# timeout 100
```

related commands

show interface bundle, connections under rtp

applicable models/versions

All models.

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command modes

Router/configure/interface/bundle/rtp

configure interface bundle rtp connections

This command configures the maximum number of RTP connections for the bundle.

syntax

connections connection_count <value>
no connections connection_count <value>

Parameter	Description
Connection_count	1-512 maximum number of connections-default 512

default

None.

example

```
Router/configure/interface/bundle MMM/rtp# connections 200
```

related commands

show interface bundle, timeout under rtp

applicable models/versions

All models.

command modes

Router/configure/interface/bundle/rtp

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configure interface bundle REM_

Is to add comments at the end.

syntax

REM_ comment_string <comment>
no REM_ comment_string <comment>

Parameter	Description
Comment_string	comments for the bundle-max len 80 to enter quoted strings, use “" as delimiter

default

None.

example

```
Router/configure/interface/bundle wan0# REM_ "last comment"
```

related commands

REM

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

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configure interface bundle red

This command configures the RED for the bundle interface. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from 1 to 15
dscp	DiffServ Codepoint for DS-RED

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default

None.

example

In the following example, bundle wan0 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# red maxth-green 35
minth-green 20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle ewf

This command configures the exponential weight factor for average queue size calculation.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

default

None.

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example

In the following example, bundle wan0 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle enable-red

This command enables/disables RED or DiffServ compliant WRED for the bundle interface.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, bundle wan0 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface bundle wan0
Router/configure/interface/bundle wan0# enable-red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/bundle

configure interface bundle crypto

Configure the network type for the interface

syntax

crypto network_type
no crypto network_type

Parameter	Description
network_type	Configure the network type for the interface

default

Disabled (no)

example

```
Router/configure # interface bundle wan
Router/configure/interface bundle wan # crypto untrusted
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface bundle wan

configure interface bundle access-group

Use this command to apply an access list to an interface to filter incoming, outgoing packets. Use the no form of this command to disable an access group.

syntax

access-group direction<in|out> rule<ip|ipv6> acl_name<name>
no access-group direction<in|out> rule<ip|ipv6> acl_name<name>

Parameter	Description
direction	for inbound/outbound packets
rule	Ip: IPv4 Ruleset IPv6: IPv6 Ruleset
Acl_name	Access list name

default

Disabled (no)

example

```
Router/configure/interface bundle wan# access-group in ip
rule1
```

related commands

configure access-group

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applicable models/versions

All models.

command modes

Router/configure/interface/bundle/

configure interface bundle isdn

This command accesses next-level commands to configure parameters for ISDN. You can configure the ISDN interface characteristics after you have entered this isdn command.

syntax

isdn

default

None

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn#
```

related commands

switch-type, side, caller, callednum

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1

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configure interface bundle isdn switch-type

ISDN switch type must be configured and should match the carrier's equipment. You can use the switch-type command to choose the proper switch type. The correct switch type should be supplied by the carrier. The below table lists the ISDN service provider switch types.

NOTE

If you want to change switch type while the ISDN is active, you should de-activate ISDN first and change the switch type and then activate again.

syntax

switch-type switch_type_name<name>

module	Parameter	Description
BRI	basic-ni	National ISDN Basic Rate Switch Type
	basic-dms	NT DMS-100 Basic Rate Switch Type
	basic-5ess	AT & T Basic Rate Switch Type (default)
	basic-ntt	NTT Basic Rate Switch Type
	basic-euro	Euro ISDN Basic Rate Switch Type
	basic-ccitt	CCITT/ITU-T Basic Rate Switch Type
	basic-aus	Australian Telecom Basic Rate Switch Type
PRI	Primary-dms100	DMS100 Primary Rate Switch Type
	Primary-ntt	NTT Primary Rate Switch Type
	Primary-qsig	Q Signaling Primary Rate Switch Type
	Primary-dms250	DMS250 Primary Rate Switch Type
	Primary-ni2	National ISDN 2 Primary Rate Switch Type
	Primary-euro	Euro ISDN Primary Rate Switch Type
	Primary-ccitt	CCITT/ITU-T Primary Rate Switch Type
	Primary-4ess	AT & T Primary Rate Switch Type
	Primary-5ess	AT & T Primary Rate Switch Type (default)
	Primary-bc303tmc	Belcore TR-303 TMC Primary Rate Switch Type
	Primary-bc303csc	Belcore TR-303 CSC Primary Rate Switch Type
	Primary-aus	Australian Telecom Primary Rate Switch Type

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default

primary-5ess (PRI interface)
basic-5ess (BRI interface)

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# switch-type
primary-euro
or
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# switch-type
basic-ccitt
```

related commands

side, callednum, caller

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn
Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn side

ISDN interface side type must be configured. You can choose the interface side type by this side command to serve as either network side (NET) or user side (USR).

NOTE

If you want to change ISDN interface side while the ISDN is active, you should de-activate ISDN first and change the interface side and then activate again.

syntax

side side_type<type>
'no' form of this command does not exist.

Side-type	Description
USR	Network side of ISDN interface
NET	User side of ISDN interface

default

USR

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# side NET
```

related commands

switch-type

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn spid1

Configures the ISDN service profile identifier for BRI channel 1. SPID is configured for each B Channel. SPID is usually a telephone number with some optional numbers. However, numbering schemes depends on service profile. This command is not supported for pri

NOTE

If you want to change SPID while the ISDN is active, you should de-activate ISDN first and change the SPID and then activate again.

syntax

spid1 spid_number <number>
no spid1 spid_number <number>
'no' form of this command will unconfigure the SPID for BRI Channel 1

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# spid1 1234567
```

related commands

tei-mode, tei-value, spid2

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn spid2

Configures the ISDN service profile identifier for BRI channel 2. SPID is used for defining the services subscribed by ISDN device. All the switch types don't support SPID. SPID is configured for each B Channel. SPID is usually a telephone number with some optional numbers. However, numbering schemes depends on service profile.
This command is not supported for pri

NOTE

If you want to change SPID while the ISDN is active, you should de-activate ISDN first and change the SPID and then activate again.

syntax

spid2 spid_number <number>
no spid2 spid_number <number>
'no' form of this command will unconfigure the SPID for BRI Channel 2

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# spid2 1234567
```

related commands

tei-mode, tei-value, spid1

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn disconnect-cause

A disconnect-cause code is an information element that indicates why an ISDN call failed or was otherwise disconnected. When the originating gateway receives a Release Complete message, it generates a tone corresponding to the cause code in the message. The below table lists the default cause codes that the VoIP (Voice over IP) gateway sends to the switch when a call fails at the gateway, and the corresponding tones that it generates. Although the VoIP gateway generates the cause codes listed in below table by default, there are commands introduced to override these defaults, allowing the gateway to send different cause codes to the switch. When you implement these commands, the configured cause codes are sent to the switch; otherwise, the default cause codes of the voice application are sent.

syntax

disconnect-cause cause_code<code| busy>
no disconnect-cause cause_code<code| busy>
'no' form of this command will set the disconnect-cause to busy

The below table shows the code (val) and it's Description (Cause)

Val	Cause
1	Unallocated (unassigned) number
2	No route to specified transit network
3	No route to destination
6	Channel unacceptable
7	Call awarded and being delivered in an established channel
16	Normal call clearing
17	User busy
18	No user responding
19	No answer from user (user alerted)
21	Call rejected
22	Number changed
26	Non-selected user clearing
27	Designation out of order
21	Call rejected

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(Continued)

Val	Cause
22	Number changed
26	Non-selected user clearing
27	Designation out of order
28	Invalid number format
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer capability not implemented
66	Channel type not implemented
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid call reference value
82	Identified channel does not exist
83	A suspended call exists, but this call identity does not
84	Call identity in use
85	No call suspended
86	Call having the requested call identity has been cleared
88	Incompatible destination

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(Continued)

Val	Cause
91	Invalid transit network selection
95	Invalid message, unspecified
96	Mandatory information element is missing
97	Message type non-existent or not implemented
98	Message not compatible with call state or message type non-existent or not implemented
99	Information element non-existent or not implemented
100	Invalid information element contents
101	Message not compatible with call state
102	Recovery on timer expires
111	Protocol error, unspecified
127	Internetworking, unspecified

default

17

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# disconnect-
cause 127
```

related commands

connect-delay, idle-timeout, keep-alive, timer

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn idle-timeout

Use this idle-timeout command to configures the idle timeout Value. ISDN connection will get automatically disconnected after idle-timeout period, if there is no traffic passing for the specified duration. This will be very handy command since ISDN connectivity is charged on the basis of usage.

syntax

idle-timeout idle_time <time>
no idle-timeout idle_time <time>
'no' form of this command will set the idle-timeout to default value.

default

5 min

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# idle-timeout 10
```

related commands

connect-delay, disconnect-cause, keep-alive, timer

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn connect-delay

Configures the specified connect delay period used to connect the ISDN call (in seconds)

syntax

connect-delay connect_delay_time <time>
no connect-delay connect_delay_time <time>
'no' form of this command will set the connect-delay to default value.

default

15 secs

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# connect-delay 30
```

related commands

disconnect-cause, idle-timeout, keep-alive, timer

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn callednum

Configure the number to be dialed. This number will be used to call, whenever interesting data will flow through the bundle. This callednum command used to configure the called party and sub-address.

syntax

callednum called_number <number> [sub-address sub_address<sub_address>]

no callednum called_number <number> [sub-address sub_address<sub_address>]
'no' form of this command will remove the configured called number

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# callednum
18005551212
```

related commands

caller, calling-number

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn caller

Configures the expected origin of call. All calls other than these origins or calls without caller-id are rejected. Caller ID Check adds a level of security for incoming calls. This caller command can be called multiple times. Note that, when ISDN device is connected to ISDN switch, which doesn't supply caller ID, all calls will be rejected.

syntax

caller caller number <number>
no caller caller number <number>
'no' form of this command will make all calls acceptable without Caller ID check

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# caller
18001111212
```

related commands

callednum, calling-number

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn answer1

When multiple devices are attached to an ISDN BRI, you can verify that only a single device answers an incoming call by verifying the number or subaddress in the incoming call against the configured number or subaddress or both of the device.

This command is not supported for pri.

syntax

answer1 called_party_number<number> [sub_address <sub_addresss>]
no answer1 called_party_number<number> [sub_address <sub_addresss>]
'no' form of this command will remove the verification request.

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# answer1 1234567
or
Router/configure/interface/bundle bri1/isdn# answer1 1234567
sub-address 7890
```

related commands

callednum, answer2

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn answer2

When multiple devices are attached to an ISDN BRI, you can verify that only a single device answers an incoming call by verifying the number or subaddress in the incoming call against the configured number or subaddress or both of the device.
This command is not supported for pri.

syntax

answer2 called_party_number <number> [sub_address <sub_addresss>]
no answer2 called_party_number <number> [sub_address <sub_addresss>]
'no' form of this command will remove the verification request.

default

NULL

example

```
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# answer2 1234567
or
Router/configure/interface/bundle bri1/isdn# answer2 1234567
sub-address 7890
```

related commands

answer1

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn keep-alive

Use this command to configure the Q.921 keep-alive period used for the ISDN call.

syntax

keep-alive keep_alive_time <time>
no keep-alive keep_alive_time <time>
'no' form of this command will set the keep-alive to default value.

default

10 sec

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# keep-alive
timeout 6000
```

related commands

connect-delay, disconnect-cause, idle-timeout, timer

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn tei-mode

You may have a dynamically or statically assigned TEI for you ISDN service. Configures the ISDN Terminal Endpoint Identifier mode for configuring the tei-mode.
This command is not supported for pri.

NOTE

If you want to change tei-mode while the ISDN is active, you should de-activate ISDN first and change the tei-mode and then activate again.

syntax

tei-mode tei_mode<point-to-point | point-to-multipoint>
'no' form of this command will set the tei-mode to default value.

default

point-to-multipoint

example

```
Router/configure/interface/bundle bri1/isdn# tei-mode point-
to-point
```

related commands

tei-value, spid1, spid2

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn tei-value

You may have a statically assigned the ISDN Terminal Endpoint Identifier value for Point-to-Point TEI mode with this isdn tei-value in the range from 0 to 63.
This command is not supported for pri.

NOTE

If you want to change tei-value while the ISDN is active, you should de-activate ISDN first and change the tei-value and then activate again.

syntax

tei-value tei_value <value>

default

0

example

```
Router# configure terminal
Router/configure# interface bundle bri1
Router/configure/interface/bundle bri1# isdn
Router/configure/interface/bundle bri1/isdn# tei-value 63
```

related commands

tei-mode, spid1, spid2

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle bri1/isdn

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configure interface bundle isdn incoming-voice

Configures the ISDN port for incoming voice calls. This command makes to routes incoming ISDN voice calls to the voice module.

NOTE

If you want to change voice/data service while the ISDN is active, you should de-activate ISDN first and change the voice/data service and then activate again.

syntax

incoming-voice
no incoming-voice
'no' form of this command disable this feature

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# incoming-voice
```

related commands

activate, callednum, caller, calling-number

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn overlap-receiving

To enable overlap receiving on an ISDN interface, use overlap-receiving command, specify if the interface will do overlap receiving. You must configure this command to allow the router to wait for all the digits to be received before the call is routed. If there is no option for specified t302_time in command, the t302 is set by 15 s.

syntax

overlap-receiving [t302 t302_time <time>]
no overlap-receiving [t302 t302_time <time>]
'no' form of this command disable this feature

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# overlap-
receiving
or
Router/configure/interface/bundle pri1/isdn# overlap-
receiving t302 10
```

related commands

progress, send-alerting, sending-complete

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn calling-number

Configure the specified calling number included for outgoing calls.
The receivers equipment that called with this calling-number will show this configured number on CID display.

syntax

calling-number calling_number <number>
no calling-number calling_number <number>
'no' form of this command disable this feature

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# calling-number
1234567
```

related commands

callednum, caller

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn send-alerting

Specify if Alerting message to be sent out before connect message.

syntax

send-alerting
no send-alerting
'no' form of this command disable this feature

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# send-alerting
```

related commands

overlap-receiving, progress, sending-complete

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn sending-complete

Specify if sending complete included in outgoing setup message.

syntax

sending-complete
no sending-complete
'no' form of this command disable this feature

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# sending-
complete
```

related commands

overlap-receiving, progress, send-alerting

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn timer t301

Specify ISDN Timer values to be changed. The user can configure the value of t301 specific time value in seconds or 0 to disable.

syntax

timer t301 t301_time_value<value>

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# timer t301 10000
```

related commands

switch-type, overlap-receiving

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn timer t309

Specify ISDN Timer values to be changed. The user can configure the value of t309 specific time value in seconds or 0 to disable.

syntax

timer t309 t309_time_value<value>

default

disable

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# timer t309 0
```

related commands

switch-type, overlap-receiving

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn activate

This command turns on the ISDN with user data.

NOTE

You can not de-activate with **no activate** command while the ISDN port is active. You should shut down bundle or voice-port to de-activate ISDN port.

syntax

activate
no activate
'no' form of this command will set the isdn deactivate

default

deactivate

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# activate
```

related commands

switch-type, side, caller, callednum

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn numbering-type

This is the command to set the ISDN numbering type for attempting to match the numbering type of a call. To delete, use the no form of the command.

syntax

[no] numbering-type <called | calling> { unknwon | international | national | network | subscriber | overlap | abbreviated | reserved }

Parameter	Description
unknown	Numbering type unknown.
international	International numbering type.
national	National numbering type.
network	Network numbering type.
subscriber	Subscriber numbering type.
Overlap	Overlap numbering type.
abbreviated	Abbreviated numbering type.
reserved	Reserved numbering type.

default

None.

example

```
Router/debug/isdn# numbering-type called national
```

related commands

numbering-plan

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn numbering-plan

This is the command to set the ISDN numbering plan for attempting to match the numbering plan of a call. To delete, use the no form of the command.

syntax

[no] numbering-plan <called | calling> { unknwon | isdn | telephony | data | telex | national | private | reserved }

Parameter	Description
unknown	Numbering plan unknown.
isdn	ISDN numbering plan,
telephony	Telephony numbering plan,
data	Data numbering plan,
telex	Telex numbering plan.
national	National numbering plan,
abbreviated	Abbreviated numbering type.
Private	Private numbering plan,
reserved	Reserved numbering plan,

default

None.

example

```
Router/debug/isdn# numbering-plan calling isdn
```

related commands

numbering-type

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn pri-group

This command is used when the user wants to devide a PRI interface to two or more logical interfaces. This command is configured with group number and a group of timeslots for each PRI-group. This command can be used only for the voice-mode of PRI-interface.

syntax

[no] pri-group group_number<number> timeslot_range<timeslot>

default

None.

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# pri-group 1 1-
15
```

related commands

None

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn progress

If this command is set, the system will send a Q.931-PROGRESS message, when it receives a Q.931-SETUP message for calling.

syntax

[no] progress

default

Deactivate.

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# progress
```

related commands

None.

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn supp-srv calling-name

This command specifies if the system use calling-name on ISDN interface.

syntax

[no] supp-srv calling-name

default

Deactivate.

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# supp-srv
Router/configure/interface/bundle pri1/isdn/supp-srv#
calling-name
```

related commands

None.

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure interface bundle isdn supp-srv no-prog-inbandsig

This command defines an action, when the system receives a Q.931-DISCONNECT message with the value 8 of ProgressIndicator after sending a Q.931 SETUP message. If this command is set, the system will send Q.931-RELEASE message and disconnect the call in this status. Otherwise, the system will keep a bearer-channel and wait a Q.931-RELEASE message.

syntax

[no] supp-srv no-prog-inbandsig

default

Deactivate.

example

```
Router# configure terminal
Router/configure# interface bundle pri1
Router/configure/interface/bundle pri1# isdn
Router/configure/interface/bundle pri1/isdn# supp-srv
Router/configure/interface/bundle pri1/isdn/supp-srv# no-
prog-inbandsig
```

related commands

None.

applicable models/versions

Requires ISDN module.

command modes

Router/configure/interface/bundle pri1/isdn

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configure te-metric

This command sets traffic engineering metric for an interface.
Use the no form of this command to unset traffic engineering metric for this interface
The te-metric is used in OSPF-TE Link State Advertisements. If the te-metric value is not set, OSPF cost value for an interface is used in TE LSA.

syntax

te-metric METRIC <1-65535>
no te-metric METRIC <1-65535>

Parameter	Description
METRIC	Specifies the te-metric value. The default value is 0. The range is 1- 65535.

example

```
Router# configure terminal
Router/configure# interface ethernet 0/0
Router/configure/interface/ethernet(0/0)#te-metric 6
```

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(0/0)

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configure label-switching

Use this command to enable label switching on an interface.

syntax

label-switching LABELSPACE <n>
no label-switching LABELSPACE <n>

If no label-space is provided, this interface is bound to the platform-wide (zero) label-space.

Parameter	Description
LABELSPACE	Specifies the label space value. The range is 0-65535. Default

example

This example shows the enabling of label switching on the ethernet 0/0 interface.

```
Router# configure terminal
Router/configure# interface ethernet 0/0
Router/configure/interface/ethernet(0/0)# label-switching
654
```

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet(0/0)

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3.15.3 l2tp-server

Use this command to create a L2TP interface template. L2TP interface is dynamically created and deleted. When L2TP connection established, a L2TP interface will bring up. Only one L2TP interface template supported on a iBG and only as LNS supported. l2tp-server interface configuration shown by 'show running-config'. And refer to 'show interface l2tp-server' to show dynamically created l2tp interfaces.

syntax

interface l2tp-server l2tp_server_name<name>
no interface l2tp-server l2tp_server_name<name>

Parameter	Description
name	name l2tp-server tmplate name, maximum 8 charters.

default

Disabled (no)

example

This command creates a new l2tp server interface with name 'l2tp1'

```
Router/configure# interface l2tp-server l2tp1
```

related commands

remote-config, remote user, ipsec-protection, ip address

applicable models/versions

All models.

command modes

Router/configure

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configure interface l2tp-server ip address

This command assign IP address to a l2tp-server interface on the router.

syntax

ip address <ip_address>
no ip address <ip_address>

Parameter	Description
ip_address	Ip address

default

disable

example

To assign ip address to l2tp server interface, enter:

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
```

related commands

remote-config, remote-user, ipsec-protection

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server

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configure interface l2tp-server remote-config

This command configures domain name on l2tp-server interface. Each domain can have the network configuration such as ip address, DNS that will be assigned to clients.

syntax

remote-config domain_name<name>
no remote-config domain_name<name>

Parameter	Description
Domain_name	Domain name. l2tp server interface name, max 30 characters.

default

Disabled (no)

example

```
Router/configure/interface/l2tp-server l2tp1# remote-config
lab.com
Router/configure/interface/l2tp-server l2tp1/remote-config#
address-pool 100.1.1.1 100.1.1.100
Router/configure/interface/l2tp-server l2tp1/remote-config#
exit
Router/configure/interface/l2tp-server l2tp1# remote-config
sales.com
Router/configure/interface/l2tp-server l2tp1/remote-config#
address-pool 200.1.1.1 200.1.1.100
Router/configure/interface/l2tp-server l2tp1/remote-config#
dns 200.1.1.254
Router/configure/interface/l2tp-server l2tp1/remote-config#
nbns 200.1.1.254
```

related commands

remote-user, shutdown, ipsec-protection

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server

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configure interface l2tp-server remote-config address-pool

This command configures the pool of ip addresses given to connecting clients. This pool belongs to each remote-domain. When client connet, one of the address of the pool is configrued on client.

syntax

address-pool start_address<address> end_address<address>
no address-pool start_address<address> end_address<address>

Parameter	Description
Start_address	First IP address of the pool
End_address	Last IP address of the pool

default

Disabled (no)

example

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
Router/configure/interface/l2tp-server l2tp1# exit
Router/configure/interface/l2tp-server l2tp1# remote-config
test.com
Router/configure/interface/l2tp-server l2tp1/remote-config #
address-pool 10.1.1.1 10.1.1.100
```

related commands

dns, nbns

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server/remote-config

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configure interface l2tp-server remote-config dns

This command configures the DNS address the client will use. The DNS address is configured on client side

syntax

dns <ip_address>
no dns <ip_address>

Parameter	Description
ip_address	Address of a DNS server for clients to use

default

Disabled (no)

example

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
Router/configure/interface/l2tp-server l2tp1# exit
Router/configure/interface/l2tp-server l2tp1# remote-config
lab1.com
Router/configure/interface/l2tp-server l2tp1/remote-config #
dns 10.1.1.254
```

related commands

address-pool, nbns

applicable models/versions

All models.

command modes

Router/configure/l2tp-server/remote-config

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configure interface l2tp-server remote-config nbns

This command configures the Net Bios Name Server (aka WINS server) the client will use.

syntax

nbns <ip_address>
no nbns <ip_address>

Parameter	Description
Ip_address	IP Address of a NBNS

default

Disabled (no)

example

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
Router/configure/interface/l2tp-server l2tp1# exit
Router/configure/interface/l2tp-server l2tp1# remote-config
lab1.com
Router/configure/interface/l2tp-server l2tp1/remote-config #
nbns 10.1.1.254
```

related commands

address-pool, dns

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server/remote-config

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configure interface l2tp-server remote-user

This command configures the username and password expected from client for user authentication. PAP, CHAP and MSCHAP are supported. If radius is configured. Both local and radius authentication are used. For configuring radius, see ‘configure aaa radius’

syntax

remote-user user_name<name> password<word>
no remote-user user_name<name> password<word>

Parameter	Description
User_name	User name
password	Password

default

Disabled (no)

example

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
Router /configure/interface/l2tp-server l2tp1/remote-user#
username1 passwd1
Router /configure/interface/l2tp-server l2tp1/remote-user#
username2 passwd2
```

related commands

remote-config, shutdown, ipsec-protection

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server

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configure interface l2tp-server shutdown

This command shuts down the l2tp server interface. Use 'no shutdown' to bring the shutdowned interface up.

syntax

shutdown
no shutdown

default

Disabled (no)

example

```
Router/configure/interface/l2tp-server l2tp1# shutdown
```

related commands

remote-config, remote-user, ipsec-protection

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server

© SAMSUNG Electronics Co., Ltd.

configure interface l2tp-server ipsec-protection

iBG provides L2TP over IPSEC and IKE credentials for L2TP. This command automatically creates dynamic IKE, IPSEC policy for L2TP over IPSEC with default parameters. Firewall and crypto interface also should be configured for L2TP over ISPEC to work properly.

syntax

ipsec-protection profile-name <name> Ike_local_address <address> key pre_shared_key <string>
no ipsec-protection profile-name <name> Ike_local_address <address> key pre_shared_key <string>

Parameter	Description
Profile-name	Name of crypto dynamic ike and ipsec policy, max 8 characters If profile-name is 'none', L2TP-server interface is configured without IPSEC.
Ike_local_address	Our crypto-untrusted interface address used as IKE authenticated tunnel endpoint
Pre_shared_key	Pre-shared key for IKE

default

Disabled (no)

example

Configure l2tp-server interface with IPSEC

```
Router/configure# interface l2tp-server l2tp1
Router/configure/interface/l2tp-server l2tp1# ip address
11.1.1.1
Router/configure/interface/l2tp-server l2tp1# remote-config
domain1.com
Router/configure/interface/l2tp-server l2tp1/remote-config#
address-pool 10.1.1.1 10.1.1.10
Router/configure/interface/l2tp-server l2tp1/remote-config #
exit
Router/configure/interface/l2tp-server l2tp1# remote-user
username1 passwd1
Router/configure/interface/l2tp-server l2tp1# exit
Router/configure/interface/l2tp-server l2tp1# ipsec-
protection ipspol 20.1.1.1 key secret1234567890
```


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related commands

remote-config, remote-user, ipsec-protection

applicable models/versions

All models.

command modes

Router/configure/interface/l2tp-server

3.15.4 loopback

This command configures a software interface.

syntax

interface loopback loopback_name<name>

Parameter	Description
loopback_name	Name of the interface Enter a maximum of eight characters

default

Disabled (no)

example

Local router command sequence.

```
Router# configure terminal
Router/configure# interface loopback hilow
```

related commands

ip address

applicable models/versions

All models.

© SAMSUNG Electronics Co., Ltd.

command modes

Router/configure

configure interface loopback ip address

This command assigns an IP address and subnet mask for a loopback interface.

syntax

ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>
no ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>

Parameter	Description
ip_address	IP address in dotted-string format
netmask	Subnet mask in dotted-string format Length of subnet mask in integer. Range should be 0~32

default

Disabled (no)

example

```
Router# configure terminal
Router/configure# interface loopback hilow
Router/configure/interface/loopback hilow# ip address
10.1.100.21 255.255.0.0
Router/configure/interface/loopback hilow# ip address
20.1.100.21 24
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/loopback

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configure interface loopback crypto

This command configures the network type for the specified a loopback interface.

syntax

crypto [trusted | untrusted]
no crypto [trusted | untrusted]

example

```
Router/configure/interface/loopback 1 # crypto trusted
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/loopback 1

configure interface loopback ipv6 address

This command assigns an IP v6 address to loopback interface.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format.
eui-64	Configures an ipv6 address by using an EUI-64 ID.
anycast	Used to specify the anycast address.

default

None.

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example

```
Router# configure terminal
Router/configure# interface loopback hilow
Router/configure/interface/loopback hilow# ipv6 address
3ffe::7/64
Router/configure/interface/loopback hilow# no ipv6 address
3ffe::3/64
```

related commands

show ipv6 interfaces brief

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/loopback

configure interface loopback ipv6 enable

This command enables IP v6 on the loopback interface.

syntax

ipv6 enable
no ipv6 enable

default

None.

example

```
Router/configure/interface/loopback hilow# ipv6 enable
Router/configure/interface/loopback hilow# no ipv6 enable
```

related commands

None.

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/loopback

3.15.5 tunnel

This command configure tunnel interface.

syntax

tunnel tunnel_name<name>
no tunnel tunnel_name<name>

Parameter	Description
tunnel_name	Tunnel name, max 8 characters.

default

Disabled (no)

example

```
Router/configure# interface tunnel tun1
Router/configure/interface tun1#
```

related commands

ethernet, bundle, vlan, sa, po, l2tp-server, loopback, virtual-access, avc, console

applicable models/versions

All models.

command modes

Router/configure

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel ip address

This command configures ip-address and subnet-mask for this interface.

syntax

ip address tunnel_address<ip_address> subnet_mask<mask>
no ip address tunnel_address<ip_address> subnet_mask<mask>

Parameter	Description
Tunnel_address	Tunnel interface Ip-address
Subnet_mask	Tunnel interface subnet mask.

default

Disabled (no)

example

```
Router/configure# interface tunnel tun1
Router/configure/interface tun1# ip address 10.1.1.1 24
```

related commands

unreachables, redirects, rip, ospf

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel ip unreachables

This command enables/disables ICMP destination unreachable messages on this interface.

syntax

tunnel ip unreachables
no tunnel ip unreachables

default

Enable (on)

example

```
Router/configure# interface tunnel tun1
Router/configure/interface tun1#ip address 10.1.1.1 24
Router/configure/interface tun1# no ip unreachables
```

related commands

ip, redirects, rip, ospf

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

configure interface tunnel ip redirect

Enable/disable ICMP redirect messages on this interface

syntax

tunnel ip redirect
no tunnel ip redirect

© SAMSUNG Electronics Co., Ltd.

default

Enable (on)

example

```
Router/configure# interface tunnel tun1
Router/configure/interface tun1# ip address 10.1.1.1 24
Router/configure/interface tun1# no ip redirect
```

related commands

ip, unreachables, rip, ospf

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

configure interface tunnel ipv6 address

This command assigns an IP v6 address to the tunnel interface.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format.
eui-64	Configures an IPv6 address by using an EUI-64 ID.
anycast	Used to specify the anycast address.

default

None.

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example

```
Router# configure terminal
Router/configure# interface tunnel tunnel1
Router/configure/interface/tunnel tunnel1# ipv6 address
3ffe::7/64
Router/configure/interface/tunnel tunnel1# no ipv6 address
3ffe::3/64
```

related commands

show ipv6 interfaces brief

applicable models/versions

iBG2016, 3026/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel

configure interface tunnel keepalive

This command configures keepalive signals between the tunnel end points. Send a keeplalive every <interval> seconds. If there is no response after <retries> bring the tunnel down.

syntax

keepalive interval interval_time<seconds> retries retry_num<n>
no keepalive interval interval_time<seconds> retries retry_num<n>

Parameter	Description
interval_time	keepalive interval in seconds, 0-120 (default: 10sec, 0 second means no keepalives)
retries retry_num	number of retries, 1-16 (default: 3)

default

Disabled (no)

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example

To configure a keepalive signal with 10 second intervals, and retries set to 3, enter:

```
Router/configure/interface/tunnel tun1#  keepalive interval
10 retries 3
```

related commands

ip, tunnel, crypto, qos, shutdown, te-metric

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

configure interface tunnel tunnel checksum

Configures end-to-end checksum tests. The default mode is off. Enabling checksums will force the router to drop corrupted packets. To disable checksum use ‘no tunnel checksum’.

syntax

tunnel checksum
no tunnel checksum

default

Disabled (no)

example

To enable checksum tests on all traffic through the tunnel, enter:

```
Router/configure/interface/tunnel tun1#  tunnel checksum
```


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related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/intrface/tunnel

configure interface tunnel tunnel source

Use this command to specify a tunnel source address. Use the no form of this command to unspecify the tunnel source address.

syntax

tunnel source source_address<ip_address>
no tunnel source source_address<ip_address>

Parameter	Description
Ip_address	tunnel source ip-address

default

Disabled (no)

example

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface tun1# ip address 10.1.1.1
Router/configure/interface tun1# tunnel destination
10.10.1.1
Router/configure/interface tun1# tunnel source 10.11.2.1
```

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related commands

tunnel checksum, tunnel destination, tunnel mode, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

configure interface tunnel tunnel destination

Configures the IP address for the tunnel destination. The tunnel destination cannot be a point-to-point interface peer. It should be reachable through a physical interface.

syntax

tunnel destination tun_dst<ip_address>
no tunnel destination tun_dst<ip_address>

Parameter	Description
tun_dst	the IP address for the tunnel destination

default

Disabled (no)

example

To set the address of the other end of the tunnel **tun1** to be 10.10.20.10, enter:

```
Router/configure/interface/tunnel tun1#  tunnel destination
10.10.20.10
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

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applicable models/versions

All models.

command modes

Router/configure/tunnel

configure interface tunnel tunnel mode

This command configures the tunnel encapsulation mode.

syntax

tunnel mode mode-type<gre | ipip>
no tunnel mode mode-type<gre | ipip>

Parameter	Description
mode-type	The encapsulation method. Can be either GRE (the default) or IPIP (IP in IP).

default

Disabled (no)

example

To configure GRE encapsulation, enter:

```
Router/configure/interface/tunnel tun1# tunnel mode gre
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models
/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel key

Configures an key as ID for a tunnel interface. This key must be the same value on both tunnel endpoints. The key field is intended to be used for identifying an individual traffic flow within a tunnel. Tunnel ID keys can be used as a form of weak security to prevent misconfiguration or injection of packets from a foreign source. However, this is not a reliable security option. The default mode is no key configured. To disable the key enter **no tunnel key**.

syntax

tunnel key key_number<n>
no tunnel key key_number<n>

Parameter	Description
Key_num	Tunnel key vlaue, 0-4294967295

default

Disabled (no)

example

To configure the tunnel key for **tun1** to be **884452**, enter:

```
Router/configure/interface/tunnel tun1# tunnel key 884452
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel sequence

Configures a tunnel interface to drop out-of-order datagram. This command is turned off by default. Once enabled, use no tunnel sequence to disable.
This command is included to provide compatibility with Cisco Systems.

syntax

tunnel sequence
no tunnel sequence

default

Disabled (no)

example

To enable the tunnel to delete packets arriving out of order, enter:

```
Router/configure/interface/tunnel tun1#  tunnel sequence
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel tos

Configures the Type of Service (ToS) value for the tunnel interface. If the ToS value is not specified, the ToS value of the inner IP header is copied to the GRE-IP header. Use the no form to disable this command.

syntax

tunnel tos tos_value<n>
no tunnel tos tos_value<n>

Parameter	Description
tos_value	The ToS for the tunnel. Valid range is 0-255. The default is 0 (no ToS).

default

Disabled (no)

example

To set the ToS value for the **tun1** tunnel to 100, enter:

```
Router/configure/interface/tunnel tun1# tunnel tos 100
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel ttl

Configures the time-to-live (TTL) value for the tunnel interface. To disable, use **no tunnel ttl** command.

syntax

tunnel ttl_value<n>
no tunnel ttl_value<n>

Parameter	Description
Ttl_value	tunnel ttl value, 1-255 (default = 30)

default

Disabled (no)

example

```
Router/configure/interface/tunnel tun1# tunnel ttl 13
```

related commands

tunnel source, tunnel destination, tunnel key, tunnel sequence, tunnel tos, tunnel ttl, tunnel path_mtu_discovery, tunnel protection

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel path-mtu-discovery

Use this command to enable path Maximum Transmission Unit (MTU) discovery in the underlying tunnel interface. Use the no form of this command to disable this feature.

syntax

tunnel path-mtu-discovery
no tunnel path-mtu-discovery

default

Disabled (no)

example

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface tunnel tun1# tunnel mode gre
Router/configure/interface tunnel tun1# tunnel source
192.168.0.1
Router/configure/interface tunnel tun1# tunnel destination
10.0.0.1
Router/configure/interface tunnel tun1# tunnel path-mtu-
discovery
```

related commands

tunnel mode, tunnel source, tunnel destination, tunnel ttl

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel tunnel protection

This command creates IKE/ISPEC policy automatically with pre shared key for the tunnel. To configure protection profile with this command, tunnel should be fully configured with ip address of the tunnel interface, tunnel source and tunnel destination. To modify or create manually IKE/IPSEC policy, refer to ‘crypto ike policy’, and ‘crypto ipsec policy’.

To disable use **no tunnel protection** <policy_*name*>

syntax

tunnel protection policy_name <name> pre_shared_secret <key>
no tunnel protection policy_name <name> pre_shared_secret <key>

Parameter	Description
Policy_name	IKE, IPSEC policy name, max 8 characters.
Pre_shared_key	Pre shared key with the tunnel end point, max 49 characters.

default

Disabled (no)

example

To protect the **tun1** tunnel with an IKE, IPSec policy named **policy28** with pre shared key **key123**

```
Router/configure/interface/tunnel tun1# ip address 11.1.1.1
24
Router/configure/interface/tunnel tun1# tunnel source
20.1.1.1
Router/configure/interface/tunnel tun1# tunnel destination
30.1.1.1
Router/configure/interface/tunnel tun1# tunnel protection
pol28 key123
```

related commands

tunnel mode, tunnel source, tunnel destination, tunnel ttl, tunnel sequence, tunnel tos, tunnel ttl, tunnel key, path_mtu_discovery

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applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

configure interface tunnel crypto

Configures the network type for the interface. there are two types of crypto network, trusted and untrusted.

syntax

crypto network_type <trusted | untrusted>
no crypto network_type <trusted | untrusted>

Parameter	Description
network_type	Configure the network type for the interface. Trusted-interface is part of a trusted network. untrusted-interface is part of an untrusted network.

default

Disabled (no)

example

To configure tunnel interface as untrusted type.

```
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# crypto untrusted
```

related commands

qos, enable-qos, shutdown, te-metric, ip

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel shutdown

This command shuts down a tunnel interface by stopping all data transmission over it.

syntax

shutdown
no shutdown

default

None.

example

```
Router/configure/interface/tunnel tun1# shutdown
```

related commands

show interface bundle

applicable models/versions

All models.

configure interface tunnel te-metric

This command sets traffic engineering metric for an interface. Use the no form of this command to unset traffic engineering metric for this interface. The te-metric is used in OSPF-TE Link State Advertisements. If the te-metric value is not set, OSPF cost value for an interface is used in TE LSA.

syntax

te-metric METRIC <1-65535>
no te-metric METRIC <1-65535>

Parameter	Description
METRIC	Specifies the te-metric value. The default value is 0. The range is 1- 65535.

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example

```
Router/configure/interface/tunnel tun1# te-metric 6
```

applicable models/versions

All models.

command modes

Router/configure/interface tunnel

configure interface tunnel qos

This command accesses next-level commands for configuring Quality of Service (QoS) on the specific interface.

syntax

qos

default

None.

example

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel

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configure interface tunnel qos add-policy-class

This command creates a new QoS class.
The class-name and parent parameters must be entered.

syntax

add-policy-class class-name<name> parent<root-in | root-out>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.
parent	Name of the parent class; QoS classes are defined hierarchically. To add to the root, specify either root-in or root-out.

default

None.

example

In the following example, interface tunnel tun1 is configured to create class1 class under root-out class

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# add-policy-class
class1 root-out
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos

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configure interface tunnel qos policy-class

This command accesses next-level commands to modify parameters of this traffic class. From this command user configures classification type, marking, CBQ parameters and etc.

syntax

policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, enter class1 policy mode.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos

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configure interface tunnel qos policy-class police

This command accesses next-level commands for configuring police. From this command user configures single rate tree color marking (srtcm), two rate three color marking (trtcm) and color-aware mode.

syntax

police

default

None.

example

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# police
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class police srtcm

This command configures traffic policing (srtcm) related parameters. Valid cbs and ebs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

srtcm committed-rate<value> cbs cbs_rate<value> ebs ebs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action <permit | drop | mark-dscp-<value>>

Parameter	Description
committed-rate	Committed rate in Kbits.
cbs-rate	Committed burst in Kbits.
ebs-rate	Excess burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

default

Node

example

In the following example, class1 is configured to committed-rate 100, cbs 100, ebs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# police
Router/configure/interface/tunnel tun1/qos/policy-class
class1/police# srtcm 100 cbs 100 ebs 200 green-action permit
yellow-action mark-dscp-20 red-action drop
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class/police

configure interface tunnel qos policy-class police trtcm

This command configures traffic policing (trtcm) related parameters. Valid cbs and pbs range corresponds to CIR should be>=(100msec * CIR)/1000 and <=(5000 msec * CIR)/1000. Valid action type is permit, mark-dscp or drop.

syntax

trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

no trtcm committed_rate<value> peak_rate<value> cbs cbs_rate<vlaue> pbs pbs_rate<value> green-action green-action<permit | drop | mark-dscp-<value>> yellow–action yellow–action<permit | drop | mark-dscp-<value>> red-action red-action<permit | drop | mark-dscp-<value>>

Parameter	Description
committed_rate	Committed rate in Kbits.
peak_rate	Peak rate in Kbits
cbs_rate	Committed burst in Kbits.
pbs_rate	Peak burst in Kbits
green-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
yellow-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>
red-action	Action to be taken on green packet, Valid permit, drop or mark-dscp-<value>

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default

None.

example

In the following example, class1 is configured to committed-rate 100, peak-rate 200, cbs 100, pbs 200, green-action permit, yellow-action mark-dscp 20 and red-action drop.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# police
Router/configure/interface/tunnel tun1/qos/policy-class
class1/police# trtcm 100 200 cbs 100 pbs 200 green-action
permit yellow-action mark-dscp-20 red-action drop
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class/police

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configure interface tunnel qos policy-class police color-aware

This command enables the metering to run in color aware mode. Color-aware mode allows user to police traffic according to the color classification of a packet.

syntax

color-aware
no color-aware

default

no color-aware

example

In the following example, class1 is configured to color-aware mode.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# police
Router/configure/interface/tunnel tun1/qos/policy-class
class1/police# color-aware
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class/police

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configure interface tunnel qos policy-class match-access-list

This command is used to specify an access-list as a matching rule for a class. The access-list must be created first and added as a matching rule. Multiple access-lists cannot be used in a class.

syntax

match-access-list acl_name<name>

Parameter	Description
acl_name	access-list name or 'default'

default

None.

example

In the following example, acl1 is added as a matching rule of class class1.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
match-access-list acl1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-control-packet

Traffic generated by the router (e.g., control packets) represents a special case for outbound QoS service policies. Some locally generated traffic should be treated as any other user traffic, and the QoS system should apply the configured QoS mechanisms to this traffic. An example of such traffic is performance probes that are designed to measure the behavior incurred by packets of a given class. Other locally generated traffic, particularly Layer 2 keepalives and routing protocol messages, are vital to the basic functioning of the router and should not be subject to some QoS features.

syntax

match-control-packet type_name<name>

Parameter	Description
type_name	Packet type name 'control' or 'default'

default

None.

example

In the following example, class1 is configured to match control packet

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
match-control-packet control
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-packet-class

This command matches layer 2 header protocol type to this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

match-packet-class type_name<name>

Parameter	Description
type_name	Layer 2 header protocol type name or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to match ipv4 packet

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-packet-class ipv4
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-src-ip

This command matches source IP address or subnet to this class. If optional netmask parameter is configured, matching source IP address can be multiple IP addresses.

syntax

match-src-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 source IP address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
match-src-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-dest-ip

This command matches destination IP address or subnet to this class.
If optional netmask parameter is configured, matching destination IP address can be multiple IP addresses.

syntax

match-dest-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to match 11.11.11.11 dest IP address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-dest-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-src-port

This command matches TCP/UDP source ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., match-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 source port

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-src-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-dest-port

This command matches TCP/UDP destination ports to this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

match-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., match-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to match 10000 destination port

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-dest-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-vlan-id

This command matches VLAN IDs to this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

match-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to match 10 VLAN ID

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-vlan-id 10
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-dscp

This command matches DiffServ Code Points (DSCP) to this class.
Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

match-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to match 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-dscp 60
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-precedence

This command matches IP precedence to this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

match-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to match 6 IP precedence

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-tos

This command matches IP Type Of Service (TOS) field to this class.
Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

match-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to match 6 IP tos

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-tos 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-user-priority

This command matches 802.1p priority values to this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

match-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-protocol

This command matches IP header protocol type to this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

match-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF MPLS} -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to match 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
match-protocol 17
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-exp

This command matches EXPerimental (EXP) bits of MPLS header to this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

match-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to match 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-exp 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-src-ipv6

This command matches source IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching source IPv6 address can be multiple IPv6 addresses.

syntax

match-src-ipv6 ipv6_address<ipv6_address> prefixlen[value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-src-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 source IPv6 address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-src-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-dest-ipv6

This command matches destination IPv6 address or subnet to this class. If optional prefixlen parameter is configured, matching destination IPv6 address can be multiple IPv6 addresses.

syntax

match-dest-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source IPv6 addr/range/subnet or 'default' (E.g., match-dest-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to match 1111::1111 dest IPv6 address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-dest-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class match-flow-label

This command matches IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

match-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to match 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class match-traffic-class

This command matches traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

match-traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to match 60 traffic class

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# match-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class mark-dscp

This command marks packets with DiffServ Code Point (DSCP). Valid DSCP ranges are from 0 to 63. DSCP values parameter can not be a range.

syntax

mark-dscp codepoint<0-63>

Parameter	Description
codepoint	Mark packets with DiffServ Codepoint. Valid: 0-63, ef, af and cs code points

default

None.

example

In the following example, class1 is configured to mark 6 Diffserv codepoint.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# mark-dscp 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class mark-precedence

This command marks packets with IP precedence value. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can not be a range.

syntax

mark-precedence precedence_value<0-7>

Parameter	Description
precedence_value	Mark packets with precedence value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 precedence value.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# mark-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class mark-qos-priority

This command sets outgoing LAN interface output queue of Ethernet LAN modules such as LMG20 without modifying packet by priority value. Priority value ranges are from 0 to 7. The higher priority value is, priority is the higher.

syntax

[no]mark-qos-priority priority_value<0-7>

Parameter	Description
priority_value	Mark packets with priority value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 7 priority value.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# mark-qos-priority 7
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class mark-user-priority

This command marks packets with 802.1p value. Valid 802.1p ranges are from 0 to 7. 802.1p values parameter can not be a range.

syntax

mark-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	Mark packets with 802.1p value. Valid: 0-7

default

None.

example

In the following example, class1 is configured to mark 6 802.1p value.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# mark-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class pbr-redirect

This command configures policy based routing (pbr). Valid mode parameter is nexthop ip/ipv6 address and lsp.

syntax

pbr-redirect mode< nexthop address | lsp interface_name >
no pbr-redirect mode< nexthop address | lsp interface_name >

Parameter	Description
mode	Nexthop, lsp, Egress interface
address_or_interface	Nexthop IP/IPv6 address MPLS LSP interface name

default

None.

example

In the following example, class1 is configured to redirect **2222::2222** nexthop.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# pbr-redirect nexthop 2222::2222
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-packet-class

This command deletes layer 2 header protocol type from this class. Valid layer 2 protocol type name is well known string (for example ipv4, ipv6 or mpls) or hex-value.

syntax

delete-packet-class protocol_type<name>

Parameter	Description
protocol_type	Layer 2 header protocol type value or 'default' (E.g., match-packet-class IPV4) Valid: {IPV4,IPV6,MPLS} -or- <hex-value (xxxx)>.

default

None.

example

In the following example, class1 is configured to delete ipv4 packet

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
delete-packet-class ipv4
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-ip

This command deletes source/destination IP address or subnet from this class. If optional netmask parameter is configured, deleting source/destination IP address can be multiple IP addresses.

syntax

delete-ip ip_address<ip_address> netmask[value]

Parameter	Description
ip_address	Source/Dest IP addr/range/subnet or 'default' (E.g., match-src-ip x.x.x.x-y.y.y.y)
netmask	Subnet mask. Always defaults to 32 (255.255.255.255) for ranges

default

None.

example

In the following example, class1 is configured to delete 11.11.11.11 IP address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-ip 11.11.11.11
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class delete-src-port

This command deletes TCP/UDP source ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-src-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP source port number/range or 'default' (E.g., delete-src-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 source port

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-src-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-dest-port

This command deletes TCP/UDP destination ports from this class. Valid port ranges are from 1 to 65535. Port values parameter can be a range.

syntax

delete-dest-port port_number<1-65535>

Parameter	Description
port_number	TCP/UDP destination port number/range or 'default' (E.g., delete-dest-port 20-21). Valid: 1-65535.

default

None.

example

In the following example, class1 is configured to delete 10000 destination port

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-dest-port 10000
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-vlan-id

This command deletes VLAN IDs from this class. Valid VLAN ID ranges are from 1 to 4095. VLAN ID values parameter can be a range.

syntax

delete-vlan-id VLAN_ID<1-4095>

Parameter	Description
VLAN_ID	VLAN ID/range or 'default' (E.g., match-vlan-id 100-120). Valid: 1-4095

default

None.

example

In the following example, class1 is configured to delete 10 VLAN ID

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-vlan-id 10
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-dscp

This command deletes DiffServ CodePoints from this class. Valid DSCP ranges are from 0 to 63. DSCP values parameter can be a range.

syntax

delete-dscp DSCP_value<0-63>

Parameter	Description
DSCP_value	DSCP value/range or 'default' (E.g., match-dscp 0-3). Valid: 0-63.

default

None.

example

In the following example, class1 is configured to delete 60 diffserv codepoint

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-dscp 60
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-precedence

This command deletes IP precedence from this class. Valid IP precedence ranges are from 0 to 7. IP precedence values parameter can be a range.

syntax

delete-precedence precedence_value<0-7>

Parameter	Description
precedence_value	IP precedence value/range or 'default' (E.g., match-precedence 0-4). Valid: 0-7.

default

None.

example

In the following example, class1 is configured to delete 6 IP precedence

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-precedence 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class delete-tos

This command deletes IP TOS field from this class. Valid TOS ranges are from 1 to 255. TOS values parameter can be a range.

syntax

delete-tos field_value<1-255>

Parameter	Description
field_value	IP TOS field value/range or 'default' (E.g., match-tos 5-8). Valid: 1-255

default

None.

example

In the following example, class1 is configured to delete 6 IP tos

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-tos 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class delete-user-priority

This command deletes 802.1p priority values from this class. Valid 802.1p priority ranges are from 0 to 7. 802.1p priority values parameter can be a range.

syntax

delete-user-priority 802.1p_value<0-7>

Parameter	Description
802.1p_value	802.1p value/range or 'default' (E.g., match-user-priority 0-2). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 802.1p priority value.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-user-priority 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-protocol

This command deletes IP header protocol type from this class. Valid IP header protocol type ranges are from 0 to 255. IP header protocol type values parameter can be a range.

syntax

delete-protocol type_value<name | 0-255>

Parameter	Description
type_value	IP header protocol type value or 'default' (E.g., match-protocol {UDP TCP OSPF MPLS} -or- <value (0-255)>). Valid: 0-255

default

None.

example

In the following example, class1 is configured to delete 17 IP header protocol type.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class class1
Router/configure/interface/tunnel tun1/qos/policy-class class1#
delete-protocol 17
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class delete-exp

This command deletes EXPerimental (EXP) bits of MPLS header from this class. Valid EXP bits of MPLS header ranges are from 0 to 7. EXP bits of MPLS header values parameter can be a range.

syntax

delete-exp EXP_value<0-7>

Parameter	Description
EXP_value	EXP value/range or 'default' (E.g., match-exp 0-3). Valid: 0-7

default

None.

example

In the following example, class1 is configured to delete 6 EXP bits of MPLS header.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-exp 6
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-control-packet

This command deletes control-packet from this class.

syntax

delete-control-packet type_name<name>

Parameter	Description
type_name	Packet type name ‘control’ or ‘default’.

default

None.

example

In the following example, class1 is configured to delete control packet

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-control-packet control
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-ipv6

This command deletes source/destination IPv6 address or subnet from this class. If optional prefixlen parameter is configured, deleting source/destination IPv6 address can be multiple IPv6 addresses.

syntax

delete-ipv6 ipv6_address<ipv6_address> prefixlen [value]

Parameter	Description
Ipv6_address	Source/Dest IPv6 addr/range/subnet or 'default' (E.g., delete-ipv6 x:x:x:x:x:x:x:x)
prefixlen	Prefix length. Always defaults to 128 for ranges

default

None.

example

In the following example, class1 is configured to delete 1111::1111 IPv6 address

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-ipv6 1111::1111
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

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configure interface tunnel qos policy-class delete-flow-label

This command deletes IPv6 flow label to this class. Valid IPv6 flow label ranges are from 0 to 1048575. IPv6 flow label values parameter can be a range.

syntax

delete-flow-label flow-label_value <0-1048575>

Parameter	Description
flow-label_value	IPv6 flow label value/range or 'default' (E.g., match-flow-label 0-3). Valid: 0-1048575.

default

None.

example

In the following example, class1 is configured to delete 60 IPv6 flow label

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-flow-label 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos policy-class delete-traffic-class

This command deletes traffic class field of IPv6 to this class. Valid traffic class ranges are from 0 to 255. Traffic class values parameter can be a range.

syntax

delete -traffic-class traffic-class_value <0-255>

Parameter	Description
traffic-class_value	Traffic class value/range or 'default' (E.g., match-traffic-class 0-3). Valid: 0-255.

default

None.

example

In the following example, class1 is configured to delete 60 traffic class

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# policy-class
class1
Router/configure/interface/tunnel tun1/qos/policy-class
class1# delete-traffic-class 60
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/tunnel/qos/policy-class

© SAMSUNG Electronics Co., Ltd.

configure interface tunnel qos delete-policy-class

This command deletes specific class on the interface. The class-name must be entered.

syntax

delete-policy-class class-name<name>

Parameter	Description
class-name	The name assigned to a new QoS class. The maximum number of characters allowed is 18.

default

None.

example

In the following example, class1 is deleted.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# delete-policy-
class class1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos

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configure interface tunnel qos delete-all

This command deletes all classes on the tunnel interface.

syntax

delete-all

default

None.

example

In the following example, all classes are deleted.

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# delete-all
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos

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configure interface tunnel qos enable

This command enables/disables a QoS feature on this interface. CBQ, Policing, monitoring and PBR can be enabled. Valid traffic direction parameter is outbound or inbound.

syntax

enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>
no enable <cbq | policing | monitoring | pbr> traffic<outbound | inbound>

Parameter	Description
cbq	Enable CBQ on the interface.
policing	Enable policing on the interface
monitoring	Enable monitoring only
pbr	Enable Policy Based Routing
traffic	Outbound traffic Inbound traffic

default

None.

example

In the following example, tunnel tun1 is configured to enable cbq.outbound traffic

```
Router# configure terminal
Router/configure# interface tunnel tun1
Router/configure/interface/tunnel tun1# qos
Router/configure/interface/tunnel tun1/qos# enable cbq outbound
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/tunnel/qos

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3.15.6 avc

This command configures a new End-to-End MFR.
Each AVC requires a unique AVC name for identification.

syntax

interface avc avc_name < name > dlci_number <16-1022>

Parameter	Description
avc_name	AVC name, max 8 characters
dlci_number	DLCI number of the AVC to be configured. The range is from 16 to 1022.

default

None.

example

```
Router/configure# interface avc avc_test 16
```

related commands

class, cvc, diff_delay, enable, fragment_size, ip, map, red, seg_threshold, sequence

applicable models/versions

All models.

command modes

Router/configure

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configure interface avc cvc

This command adds the PVC in a specific bundle, with the DLCI number, to the AVC.
The system can bundle as many as 28 PVCs into one AVC. A CVC cannot be shared between separate AVCs.

syntax

cvc dlci_number <16-1022> bundle_name
no cvc dlci_number <16-1022> bundle_name

Parameter	Description
dlci_number	DLCI number of the PVC in a specific bundle.
bundle_name	Name of the bundle the pvc belongs to

default

None.

example

```
Router/configure/interface/avc avc_name 16# cvc 101 wan1
```

related commands

enable cvc

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc class

This command defines the status of the AVC depending on the class selected. In class D and E, only the administrator can bring the AVC status up or down by modifying the configured shaping parameters of one or more CVCs. In such cases, the remote AVC does not learn of the updated status.

troubleshooting tip:
If the network administrator sets an AVC in the class 'D' parameter and then administratively reduces the CIR of any CVC that causes the local AVC to go down (because of the class D setting), the remote AVC will not go down because the local and remote CIR values do not match. To avoid this problem, either change the CIR for the remote CVC to match the local CIR value or reduce the class D CIR value.

syntax

class class_type <A|B|C|D|E> specific_rule

Parameter	Description
class_type	A If any CVC is up, the AVC is up. This is the default. B If all CVCs are up, the AVC is up. C If the user-supplied threshold is satisfied, the AVC is up. D If every CVC has a CIR that is greater than or equal to the user-supplied threshold value, the AVC is up. E If the total CIR is above the user-supplied threshold value, the AVC is up.
specific_rule	When class_type is A, B None C Number of cvcs D Min. CIR (bps) of each cvc is met E Min. CIR (bps) of the avc is met

default

class_type: A

example

```
Router/configure/interface/avc avc_name 16# class A
Router/configure/interface/avc avc_name 16# class C 2
Router/configure/interface/avc avc_name 16# class D 1000000
```

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related commands

enable avc, enable cvc

applicable models/versions

All models.

command modes

Router/configure/interface/avc

configure interface avc fragment_size

This command sets the frame size above which a packet is fragmented. Packets are intelligently fragmented when the fragment size is exceeded.

syntax

fragment_size size_number <56-9216>

Parameter	Description
size_number	Specifies the number of payload bytes from the original Frame Relay frame that will go into each fragment. Valid values are from 56 to 9216 bytes; the default is 1500.

default

1500 bytes

example

```
Router/configure/interface/avc avc_name 16# fragment_size 1400
```

related commands

seg_threshold

applicable models/versions

All models.

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command modes

Router/configure/interface/avc

configure interface avc seg_threshold

This command sets the segmentation threshold for an AVC. Remember that the segmentation threshold can never be greater than the frame size.

syntax

seg_threshold size_number <56-4096>

Parameter	Description
size_number	All packet fragments will be equal to or greater than seg_threshold, that is to say, seg_threshold is the minimum fragment size. Valid values are from 56 to 4096 bytes. Default is 512.

default

512 bytes

example

```
Router/configure/interface/avc avc_name 16# seg_thrshold 600
```

related commands

fragment_size

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc map

This command assigns a static route to an AVC.
Once a static route has been assigned, inverse ARP ceases to function.
If a destination IP address is changed, the static route will not update.

syntax

map ipaddr <IP address>
no map ipaddr <IP address>

Parameter	Description
ipaddr	IP address of the AVC's destination

default

None.

example

```
Router/configure/interface/avc avc_name 16# map 5.5.5.2
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc bridge

This command supports IEEE 802 tagged frames.

syntax

bridge type [lan | vlan]
no bridge type [lan | vlan]

Parameter	Description
type_string	lan: LAN packets (IEEE 802.3) to be bridged (default). vlan: VLAN packets (IEEE 802.1Q) to be bridged.

default

Bridge feature in the AVC is disabled.

example

```
Router/configure/interface/avc avc_name 16# bridge type lan
```

related commands

switchport, bridge-group

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc red

This command configures the RED for the avc interface. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from 1 to 15
dscp	DiffServ Codepoint for DS-RED

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default

None.

example

In the following example, avc avc0 100 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface avc avc0 100
Router/configure/interface/avc avc0 100# red maxth-green 35
minth-green 20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc

configure interface avc ewf

This command configures the exponential weight factor for average queue size calculation.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

default

None.

example

In the following example, avc avc0 100 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface avc avc0 100
Router/configure/interface/avc avc0 100# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc

configure interface avc enable-red

This command enables/disables RED or DiffServ compliant WRED for the avc interface.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, avc avc0 100 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface avc avc0 100
Router/configure/interface avc avc0 100# enable-red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc

configure interface avc enable mfr_e2e_enhanced

This command enables router enhanced FRF.15.
Router enhanced FRF.15 is a proprietary protocol and can only work between router systems. In addition to the features of standard FRF.15, router enhanced mode supports end-to-end status integrity of CVCs which doesn't depend on LMI software loopback detection, and differential delay calculations.
Use the no form of this command to disable enhanced mode and configure standard FRF.15 mode.

syntax

enable mfr_e2e_enhanced
no enable mfr_e2e_enhanced

default

Standard FRF.15 mode

example

```
Router/configure/interface/avc avc_name 16# enable
mfr_e2e_enhanced
```

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related commands

cvc, diff_delay

applicable models/versions

All models.

command modes

Router/configure/interface/avc

configure interface avc enable avc

This command enables individual AVCs of a frame relay bundle.

syntax

enable avc
no enable avc

default

enable

example

```
Router/configure/interface/avc avc_name 16# no enable avc
```

related commands

enable cvc

applicable models/versions

All models.

command modes

Router/configure/interface/avc

© SAMSUNG Electronics Co., Ltd.

configure interface avc enable cvc

This command enables individual CVCs of a frame relay bundle.

syntax

enble cvc dlci_number <16-1022> bundle_name
no enble cvc dlci_number <16-1022> bundle_name

Parameter	Description
dlci_number	DLCI number of the PVC in a specific bundle.
bundle_name	Name of the bundle the pvc belongs to

default

enable

example

```
Router/configure/interface/avc avc_name 16# no enable cvc
101 wan1
```

related commands

enable avc

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc diff_delay

This command configures the maximum differential delay allowed for a CVC. When the AVC is in router enhanced FRF.15 mode, using the 'no diff_delay' command will disable differential delay calculations and will not take any action toward dropping any CVC that is above the configured differential delay limit. The show of CVCs will, however, show the individual differential delay values for the system administrator's awareness when the 'show interface avc x 16' command is used.

syntax

diff_delay [value <10-128>]
no diff_delay [value <10-128>]

Parameter	Description
value	Differential delay in milliseconds. The range is from 10 to 128 milliseconds.

default

80 ms

example

```
Router/configure/interface/avc avc_name 16# diff_delay 50
```

related commands

enable mfr_e2e_enhanced

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc ip address

This command assigns an IP address and subnet mask for individual AVCs of a frame relay bundle.

syntax

ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>
no ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>

Parameter	Description
ip_address	IP address in dotted-string format.
netmask	Subnet mask in dotted-string format. Length of subnet mask in integer. Range should be 0~32.

default

Disabled (no)

example

```
Router/configure/interface/avc avc_name 16# ip address
10.1.100.21 255.255.0.0
Router/configure/interface/avc avc_name 16# ip address
20.1.100.21 24
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc sequence

This command sets the sequence length of an AVC. Users can choose either 12- or 24-bit spacing.

syntax

sequence length <long | short>

Parameter	Description
length	long: 24-bit sequence space (default in enhanced FRF.15 mode) short: 12-bit sequence space (default in standard FRF.15mode)

default

None.

example

```
Router/configure/interface/avc avc_name 16# sequence long
```

related commands

enable mfr_e2e_enhanced

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc access-group

Use this command to apply an access list to an interface to filter incoming, outgoing packets. Use the no form of this command to disable an access group.

syntax

access-group direction<in|out> rule<ip|ipv6> acl_name<name>
no access-group direction<in|out> rule<ip|ipv6> acl_name<name>

Parameter	Description
direction	for inbound/outbound packets
rule	Ip: IPv4 Ruleset IPv6: IPv6 Ruelset
Acl_name	Access list name

default

Disabled (no)

example

```
Router/configure/interface avc# access-group in ip rule1
```

related commands

configure access-group, configure interface ethernet access-group

applicable models/versions

All models.

command modes

Router/configure/interface/avc

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configure interface avc crypto

This command configures the network type for the specified a DTE-to-DTE MFR aggregated virtual circuit.

syntax

crypto [trusted | untrusted]
no crypto [trusted | untrusted]

example

```
Router/configure/interface/avc aaa 16 # crypto trusted
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/avc aaa 16

3.15.7 console

Configures console related setting. The only current valid next-level command is ‘aaa’.

syntax

interface console

example

```
Router/configure# interface console
Router/configure/interface/console#
```


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related commands

configure interface console aaa

applicable models/versions

All models.

command modes

Router/configure/interface

configure interface console aaa

This command configures authentication, authorization and accounting method list for console.

syntax

aaa

example

```
Router/configure# interface console
Router/configure/interface/console# aaa
Router/configure/interface/console/aaa#
```

related commands

configure interface console aaa accounting, configure interface console aaa authentication, configure interface console aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/console

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configure interface console aaa accounting

This command is used to configure accounting list for console interface. This command has four parameters, which are commands, exec, network and system method lists.

syntax

no accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>
accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>

Parameter	Description
clist_name	Valid commands list name.
elist_name	Valid exec list name.
nlist_name	Valid network list name.
slist_name	Valid system list name.

example

```
Router/configure# aaa
Router/configure/aaa# accounting commands con1 start_stop
Router/configure/aaa# accounting exec con1stop_only
Router/configure/aaa# accounting network con1 wait_start
Router/configure/aaa# accounting system con1 none
Router/configure/aaa# exit
Router/configure# interface console
Router/configure/interface/console# aaa
Router/configure/interface/console/aaa# accounting command
con1 exec con1 network con1
```

related commands

configure interface console aaa authentication, configure interface console aaa authorization

applicable models/versions

All models.

command modes

Router/configure/interface/console/aaa

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configure interface console aaa authentication

This command is used to configure authentication login and protocol list name for console. If console specific authentication list is not configured, default authentication login and protocol list is used for login.

syntax

authentication login_method <list> protocol_method <list>
no authentication login_method <list> protocol_method <list>

Parameter	Description
login_method	Valid login list name which is already configured in aaa authentication list
protocol_method	Valid protocol list name which is already configured in aaa authentication list.

example

```
Router/configure# aaa
Router/configure/aaa# authentication login console
tacacs/radius/local
Router/configure/aaa# authentication protocol con pap/ascii
Router/configure/aaa# exit
Router/configure# interface console
Router/configure/interface/console# aaa
Router/configure/interface/console/aaa# authentication login
con
```

related commands

configure interface console aaa authentication, configure interface console aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/console/aaa

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configure interface console aaa authorization

This command is used to configure authorization commands list for console. If console specific authorization commands list is not configured, default list is used for authorization.

syntax

no authorization command_list <list_name>
authorization command_list <list_name>

Parameter	Description
command_list	Valid command list name which is already configured in aaa authorization list

example

```
Router/configure# aaa
Router/configure/aaa# authorization commands con
tacacs/radius/local
Router/configure/aaa# exit
Router/configure# interface console
Router/configure/interface/console# aaa
Router/configure/interface/console/aaa# authorization con
```

related commands

configure interface console aaa authentication, configure interface console aaa accounting

applicable models/versions

All models.

command modes

Router/configure/interface/console/aaa

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3.15.8 virtual-access

Use this command to create and delete a virtual access interface. Virtual-access interface configuration can be shown using ‘show running-config’. Use ‘show interface virtual-accesses’ to verify created virtual-access interfaces.

syntax

interface virtual-access virtual_access_name<name>
no interface virtual-access virtual_access_name<name>

Parameter	Description
name	name virtual-access name, maximum 8 charters.

default

Disabled (no)

example

This command creates a new virtual-access interface with name ‘pppoe1’

```
Router/configure# interface virtual-access pppoe1
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure

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configure interface virtual-access protocol

This command specifies the virtual-access interface is used for PPPoE client.

syntax

protocol pppoe client
no protocol pppoe client

default

Disabled (no)

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe client
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access ip address

This command assigns IP address to a virtual-access interface on the router.

syntax

ip address IP_ADDR<ip_address>
no ip address IP_ADDR<ip_address>

Parameter	Description
IP_ADDR	IP address

default

Disabled (no)

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# ip address 11.1.1.1
```

related commands

ip negotiated

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access ip negotiated

This command specifies that IP address for the virtual-access interface is obtained through PPP/IPCP address negotiation

syntax

ip negotiated
no ip negotiated

default

Disabled (no)

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# ip negotiated
```

related commands

ip address

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access ppp authentication

This configure specifies that authentication protocol is used in link establishing. PAP and CHAP is supported for authentication protocol.

syntax

ppp authentication [pap|chap|pap-chap|none] sent-username USER<name> PASSWD <password>
ppp authentication [pap|chap|pap-chap|none] sent-username USER <name> password PASSWD<password>

Parameter	Description
USER	Username
PASSWD	Password

default

Disabled (no)

example

```
Router/configure# interface pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# ppp authentication pap sent-username
sinclear pas
sword qwe123
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access ppp keepalive

This configure specifies that time interval of keepalive packet to check PPP connection.

syntax

ppp keepalive interval TIME< 0 – 32767>
no ppp keepalive interval TIME< 0 – 32767>

Parameter	Description
TIME	Interval of keepalive packet (default = 10sec, off = 0)

default

10 seconds

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# ppp keepalive interval 30
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/virtual-access

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configure interface virtual-access pppoe ac-name

This configuration specifies AC (Access Concentrator) name for detecting PPPoE server.

syntax

pppoe ac-name AC_NAME<name>
no pppoe ac-name AC_NAME<name>

Parameter	Description
AC_NAME	Name of access concentrator

default

Disabled (no)

example

```
Router/configure# configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# pppoe ac-name acname1234
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access pppoe ethernet

This command attaches the specified ethernet interface to a pppoe virtual-access interface under configuration. Once attached to a pppoe virtual-access interface, the ethernet interface cannot be used as a regular ethernet interface.

syntax

ethernet PORT_NUM<slot/port>
no ethernet PORT_NUM<slot/port>

Parameter	Description
PORT_NUM	Slot/port

default

Disabled (no)

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# ethernet 0/2
```

related commands

ethernet pppoe-client

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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configure interface virtual-access shutdown

This configuration makes virtual-access interface be down administratively.

syntax

shutdown
no shutdown

default

Disabled (no)

example

```
Router/configure# interface virtual-access pppoe1
Router/configure/interface/virtual-access pppoe1# protocol
pppoe
Router/configure/interface/virtual-access
pppoe1/protocol/pppoe# shutdown
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/interface/virtual-access

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3.15.9 interface vlan

This command accesses next level commands for configuring a VLAN interface. The logical Layer 3 VLAN interfaces give users logical routing interfaces on the layer 2 switch level. Users always create VLANs and assign VLAN membership to the layer 2 interfaces prior to configuring logical Layer 3 VLAN interfaces.

syntax

interface vlan vlan_identifier <bridge-ID**.**VLAN ID>

Parameter	Description
vlan_identifier	Number of the bridge and VLAN ID to be configured.

default

None.

example

```
Router/configure# interface vlan vlan1.10
```

related commands

description, qos, vrrp, dhcp-relay

applicable models/versions

All models.

command modes

Router/configure

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configure interface vlan ip address

This command assigns an IP address and subnet mask to the VLAN interface. Subnet mask can be supplied in ether dotted-string format or subnet mask length.

syntax

ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>
no ip address ip_address<ip_address> netmask<subnet_ mask | subnet_mask_len>

Parameter	Description
ip_address	IP address in dotted-string format.
netmask	Subnet mask in dotted-string format. Length of subnet mask in integer. Range should be 0~32.

default

None.

example

```
Router/configure/interface vlan vlan1.10 # ip address
10.1.100.21 255.255.0.0
Router/configure/interface vlan vlan1.10 # ip address
20.1.100.21 24
```

related commands

None

applicable models/versions

All models.

command modes

Router/configure/interface vlan vlan<bridge-ID.VLANID>#

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configure interface vlan ipv6 address

This command assigns an IP v6 address to logical Layer 3 VLAN interfaces.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format.
eui-64	Configures an IPv6 address by using an EUI-64 ID.
anycast	Used to specify the anycast address.

default

None.

example

```
Router/configure/interface/vlan vlan1.10# ipv6 address
3ffe::7/64
Router/configure/interface/vlan vlan1.10# no ipv6 address
3ffe::3/64
```

related commands

show ipv6 interfaces brief

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/vlan

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configure interface vlan ipv6 enable

This command enables IP v6 on the logical Layer 3 VLAN interfaces.

syntax

ipv6 enable
no ipv6 enable

default

None.

example

```
Router/configure/interface/vlan vlan1.10# ipv6 enable
Router/configure/interface/vlan vlan1.10# no ipv6 enable
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/vlan

configure interface vlan shutdown

This command shuts down the logical Layer 3 VLAN interfaces. It disables only the logical Layer 3 VLAN interfaces, not the physical ports. That means Layer 2 is still in operation. Although the interfaces shut down, the port's current configuration and statistics are retained. To restore the interfaces after shutting it down, log into the system from the RS-232 console port and type 'no shutdown' at the Router/configure/interface VLAN vlan bridgeID. VLANID>prompt.

syntax

shutdown
no shutdown

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default

Disabled (no)

example

To configure shutdown for vlan1.10 of the VLAN interface, enter:

```
Router/configure/interface vlan vlan1.10# shutdown
Router/configure/interface vlan vlan1.10# no shutdown
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface vlan vlan<bridge-ID.VLANID>#

configure interface vlan aaa

This command configures aaa related method list for VLAN interface. This commands cannot be used stand-alone and should be used to be combined with the next-level commands.

syntax

aaa

example

```
Router/configure# interface vlan vlan1.10
Router/configure/interface/valn vlan1.10# aaa
```

related commands

configure interface vlan aaa accounting, configure interface vlan aaa authentication, configure interface vlan aaa authorization

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applicable models/versions

All models/SNOS v2.1 or higher.

command modes

Router/configure/interface/vlan

configure interface vlan aaa accounting

This command is used to configure accounting list for vlan interface.
This command has four parameters, which are commands, exec, network and system method lists.

syntax

no accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>
accounting commands clist_name <name> exec elist_name <name> network nlist_name <name> system slist_name <name>

Parameter	Description
clist_name	Valid commands list name.
elist_name	Valid exec list name.
nlist_name	Valid network list name.
slist_name	Valid system list name.

example

```
Router/configure# aaa
Router/configure/aaa# accounting commands vlan1 start_stop
Router/configure/aaa# accounting exec vlan1 stop_only
Router/configure/aaa# accounting network vlan1 wait_start
Router/configure/aaa# accounting system vlan1 none
Router/configure/aaa# exit
Router/configure# interface vlan vlan1.10
Router/configure/interface/vlan vlan1.10# aaa
Router/configure/interface/vlan vlan1.10/aaa# accounting
command vlan1 network vlan1
```

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related commands

configure interface vlan aaa authentication, configure interface vlan aaa authorization

applicable models/versions

All models/SNOS v2.1 or higher.

command modes

Router/configure/interface/vlan/aaa

configure interface vlan aaa authentication

This command is used to configure authentication login and protocol list name for vlan interface for login. If interface specific authentication list is not configured, default authentication login and protocol list is used for login.

syntax

no authentication login_method <list> protocol_method <list>
authentication login_method <list> protocol_method <list>

Parameter	Description
login_method	Valid login list name which is already configured in aaa authentication list
protocol_method	Valid protocol list name which is already configured in aaa authentication list.

example

```
Router/configure# aaa
Router/configure/aaa# authentication login vlan
tacacs/radius/local
Router/configure/aaa# authentication protocol vlan pap/ascii
Router/configure/aaa# exit
Router/configure# interface vlan vlan1.10
Router/configure/interface/vlan vlan1.10# aaa
Router/configure/interface/vlan vlan1.10/aaa# authentication
login vlan vlan
```


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related commands

configure interface vlan aaa authentication, configure interface vlan aaa accounting

applicable models/versions

All models/SNOS v2.1 or higher.

command modes

Router/configure/interface/vlan/aaa

configure interface vlan aaa authorization

This command is used to configure authorization commands list for VLAN interface. If interface specific authorization commands list is not configured, default list is used for authorization.

syntax

no authorization command_list <list_name>
authorization command_list <list_name>

Parameter	Description
command_list	Valid command list name which is already configured in aaa authorization list

example

```
Router/configure# aaa
Router/configure/aaa# authorization commands vlan tacacs/local
Router/configure/aaa# exit
Router/configure# interface vlan vlan1.10
Router/configure/interface/vlan vlan1.10# aaa
Router/configure/interface/vlan vlan1.10/aaa# authorization
vlan
```

related commands

configure interface vlan aaa authentication, configure interface vlan aaa accounting

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applicable models/versions

All models/SNOS v2.1 or higher.

command modes

Router/configure/interface/vlan/aaa

3.15.10 pppofr

Creates a PPPoFR WAN interface.

NOTE

To use PPPoFR (PPP over FR) service, first create a pppofr interface and bind PVC (s) to the pppofr interface. PPP over FR, MLPPP over FR and PPP over MFR services are supported.

Restrictions:
Only Frame Relay PVCs are supported.
Only the Internet Protocol (IP) is supported.
Up to 100 pppofr Interfaces are supported in a system.
Maximum 30 PVCs can be bound to a pppofr Interface.

syntax

interface pppofr if_string <name>
no interface pppofr if_string <name>

Parameter	Description
If_string	pppofr name, max 8 characters

default

None.

example

```
IBG1000/configure# interface pppofr pppofr1
configuring new pppofr interface pppofr1
IBG1000/configure/interface/pppofr pppofr1# exit
IBG1000/configure#
IBG1000/configure# no interface pppofr pppofr1
```


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related commands

All commands under pppofr node.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

configure interface pppofr REM

This command is to add comments at the beginning of syntax.

syntax

REM comment_string <comment>
no REM comment_string <comment>

Parameter	Description
Comment_string	comments for the pppofr-max len 80 to enter quoted strings, use “” as delimiter

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# REM "This pppofr
is for demo"
```

related commands

REM_

applicable models/versions

All models.

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command modes

Router/configure/interface/pppofr

configure interface pppofr add_vc

This command is to add a frame relay PVC to a pppofr interface. To support pppofr functionality, the PVC binding scheme is being used. A PVC DLCI and PVC bundle name are used as parameters.
In addition, an MFR PVC can be added to a pppofr interface. Using this, one can support PPP over MFR.

syntax

add_vc pvc_number <DLCI> bundle_name <frame relay bundle>

Parameter	Description
pvc_number	Frame Relay DLCI number
bundle_name	The name of the frame relay bundle

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# add_vc 100 wan1
```

related commands

All commands under pppofr node and PVC which is bound to pppofr interface related command.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr contact

This command specifies a person to be contacted regarding the pppofr.
This command entry must be enclosed in quotation marks.

syntax

contact contact_string <contact_name>

Parameter	Description
Contact_string	Contact name of the person to be contacted Use up to 15 characters; enclosed in quotation marks.

default

None.

example

```
Router/configure/interface/pppofr wan1# contact
"administrator"
pppofr wan1: contact set to administrator
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp_type

This command is to specify the PPP type of a pppofr interface. PPP or MLPPP can be selected for a FR PVC. Only PPP can be selected for an MFR PVC.

NOTE

If the encapsulation is changed on an existing pppofr interface, all packet filter, DoS, QoS, and NAT configuration for that pppofr interface will be lost. For this reason, a user is prevented from changing a pppofr interface's encapsulation. To achieve the desired changes, a user is required to delete the existing pppofr interface and then reconfigure a new pppofr interface with desired encapsulation, packet filters, DoS, QoS, and NAT parameters.

syntax

interface ppp_type encap_type [ppp | mlppp]

Parameter	Description	
Encap_type	ppp	PPP
	mlppp	multilink PPP on PVC

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp_type ppp
IBG1000/configure/interface/pppofr pppofr1# ppp_type mlppp
Error! pppofr interface encapsulation was already set.
Cannot be changed.
```

related commands

show interface pppofr xxx, show interface pppofrs

applicable models/versions

All models.

command mode

Router/configure/interface/pppofr

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configure interface pppofr ip address

This command assigns or removes a routing destination IP address and subnet mask to/from pppofr.

NOTE

Before an IP address is assigned, the PPP protocol type must be specified for the pppofr interface.

syntax

ip address <*IP address*> netmask <*subnet mask*>
no ip address <*IP address*> netmask <*subnet mask*>

Parameter	Description
IP address	pppofr's IP address
netmask	pppofr's subnet mask

example 1

```
IBG1000/configure/interface/pppofr pppofr1# ip address
195.5.72.1 255.255.255.0
 *Jan 10,2000,10:00:59 #IPMUXc-notification: <samsung> IP
address(195.5.72.1) is added  <OK>
```

example 2

```
IBG1000/configure/interface/pppofr pppofr1# ip address
195.5.72.2 24
 *Jan 10,2000,10:02:03 #IPMUXc-notification: <samsung> IP
address(195.5.72.2) is added  <OK>
```

related commands

show ip interface brief, show interface pppofr xxxx.

applicable models/versions

All models.

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command modes

Router/configure/interface/pppofr

configure interface pppofr ip negotiated

This command enables a pppofr interface to obtain an IPv4 address from the peer. The peer's PPP IPCP will give an IP address upon request. When an IP address is assigned, 31bit subnet mask is used.

NOTE

Before IP address negotiation starts, the PPP protocol type must be specified for the pppofr.

syntax

ip negotiated

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ip negotiated
```

related commands

show ip interface brief, show interface pppofr xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ip peer-addr

This command gives an IPv4 address to the peer after provisioning an IPv4 address as a parameter.
Only an IP address is specified as a parameter. It's a kind of IP address pool. The peer's PPP IPCP will request an IP address to be assigned and the pppofr will give IPv4 address to the peer.

NOTE

Before using this command, an IP address must be assigned on pppofr.

syntax

ip peer-addr

Parameter	Description
IP address	IP address to be assigned to the peer

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ip peer-addr
34.1.5.6
```

related commands

show ip interface brief, show interface pppofr xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ip primary_dns_request

This command enables a pppofr interface to obtain an IPv4 primary DNS address from the peer.
The peer's PPP IPCP will give an IPv4 DNS address upon request.

NOTE

Before using this command, an IP address must be assigned on pppofr.

syntax

ip primary_dns_request

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ip
primary_dns_request
```

related commands

show ip interface brief, show interface pppofr xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ip secondary_dns_request

This command enables a pppofr interface to obtain an IPv4 secondary DNS address from the peer.
The peer's PPP IPCP will give an IPv4 DNS secondary address upon request.

NOTE

Before using this command, an IP address must be assigned on pppofr.

syntax

ip secondary_dns_request

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ip
secondary_dns_request
```

related commands

show ip interface brief, show interface pppofr xxxx.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp mtu_auto

This command enables MTU auto negotiation on a pppofr interface.
This command is designed to update the local MTU using the peer's maximum receive unit (MRU) automatically. Note that the local MTU is not compared against the peer's MTU when the LCP MTU is updated using the peer's MRU.
To return to the default setting, use the no form of this command.

syntax

ppp mtu_auto
no ppp mtu_auto

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp mtu_auto
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp mtu-mru-magic mtu

This command configures the PPP MTU (maximum transmission unit) parameters for a pppofr interface.

syntax

ppp mtu-mru-magic mtu mtu_value <min-def-max>
no ppp mtu-mru-magic mtu mtu_value <min-def-max>

Parameter	Description
mtu_value	Minimum, default, and maximum packet sizes to be sent, separated by dashes. For example, 100-250-1000 selects packets ranging from 100 to 1000 bytes, with a default size of 250 bytes. The default is 64 -1500-8192.

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp mtu-mru-
magic mtu 1000-1000-1000
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr ppp pap sent-username

This command sets the pap user name to be sent to server.

syntax

ppp pap sent-username username<name_string> password<password_string>

no ppp pap sent-username username<name_string>
password<password_string>

Parameter	Description
username	configure the pap username
password	configure the pap password

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp pap sent-
username test test123
Warning! All CHAP related configurations are removed if
exist
```

related commands

ppp authentication pap, ppp authentication-database, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr ppp pap peer-name

This command sets the PAP peer username and password for MLP and MLPPP pppofr.

syntax

ppp pap peer-name username<name_string> password<password_string>
no ppp pap peer-name username<name_string> password<password_string>

Parameter	Description
username	configure the pap username expected from peer
password	configure the pap password expected from peer

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp pap peer-
name test test123
```

related commands

ppp authentication, under ppp pap, under ppp chap, ppp authentication-database, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr ppp chap sent-username

This command sets the CHAP peer username and password for MLP and MLPPP pppofr.

syntax

ppp chap sent-username username<name_string> password<password_string>
no ppp chap sent-username username<name_string>
password<password_string>

Parameter	Description
username	configure the chap username on local end
password	configure the chap password

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp chap sent-
username kkk kkk123
```

related commands

ppp authentication chap, ppp authentication-database, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr ppp chap peer-name

This command sets the CHAP peer username and password for MLP and MLPPP pppofr.

syntax

ppp chap peer-name username<name_string> password<password_string>
no ppp chap peer-name username<name_string> password<password_string>

Parameter	Description
username	configure the chap username expected from peer
password	configure the chap password expected from peer

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp chap peer-
name test test123
```

related commands

ppp authentication chap, ppp authentication-database, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp authentication

This command sets authentication server protocol. You can choose pap or chap.

syntax

ppp authentication protocol_type [pap | chap]
no ppp authentication protocol_type [pap | chap]

Parameter	Description
Protocol_type	To choose authentication server protocol for PPP PAP: Password Authentication Protocol CHAP: Challenge Handshake Authentication Protocol

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp
authentication pap
IBG1000/configure/interface/pppofr pppofr1# ppp
authentication chap
```

related commands

ppp authentication-database, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp authentication-database

This command specifies where authentication DB is for authentication server. Currently you can select local, radius and tacacs DBs which are scanned from client requests while server is running.

syntax

ppp authentication-database DB_type [local | radius | tacacs]
no ppp authentication-database DB_type [local | radius | tacacs]

Parameter	Description
DB_type	Local: It's default DB which is set by administrator inside a system per interface. Radius: radius server Tacacs: TACACS server

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp
authentication-database local
IBG1000/configure/interface/pppofr pppofr1# ppp
authentication-database radius
IBG1000/configure/interface/pppofr pppofr1# ppp
authentication-database tacacs
```

related commands

ppp authentication pap, ppp authentication chap, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp lfi-fragment-delay

This command configures the fragmentation-delay for PPP pppofr with interleaving.

NOTE

This feature is supported only on MLPPP pppofr.

syntax

ppp lfi-fragment-delay delay_value <value>
no ppp lfi-fragment-delay delay_value <value>

Parameter	Description
Delay_value	10-50 delay in mill seconds - default is10

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1 # ppp lfi-
fragment-delay 20
```

related commands

interleave, ip-rtp-reserve, show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr interleave

This command configures MLPPP pppofr with interleaving for LFI.

NOTE

This feature is supported only on MLPPP pppofr.

syntax

ppp interleave
no ppp interleave

default

None.

example

```
IBG1000/configure/interface/pppofr # interleave
```

related commands

show interface pppofr, ip-rtp-reserve, lfi-fragment-delay,

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

configure interface pppofr ppp ip-rtp-reserve

This command is for reserving specified port range and the bandwidth for RTP traffic

NOTE

This feature is supported only on MLPPP pppofr.

syntax

ppp ip-rtp-reserve
no ppp ip-rtp-reserve

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1 # ppp ip-rtp-
reserve
```

related commands

show interface pppofr, lfi-fragment-delay, interleave

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp echo-interval

This command configures the echo-timer for the PPP pppofr

syntax

ppp echo-interval interval_value <value>
no ppp echo-interval interval_value <value>

Parameter	Description
Interval_value	3-60, interval in seconds-default 5

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp echo-
interval 20
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr ppp retry-interval

This command configures the retry-timer for the PPP pppofr

syntax

ppp retry-interval interval_value <value>
no ppp retry-interval interval_value <value>

Parameter	Description
Interval_value	3-60, interval in seconds-default 3

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp retry-
interval 5
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr mlppp mrru

This command configures the MLPPP MRRU (maximum receive reconstructed unit) parameters for MLPPP pppofr.

syntax

mlppp mrru mrru_value <min-def-max>
no mlppp mrru mrru_value <min-def-max>

Parameter	Description
mrru_value	Minimum, default, and maximum packet sizes to be sent, separated by dashes. For example, 1500-1510-8192 selects packets ranging from 1500 to 8192 bytes, with a default size of 1510 bytes. The default is 1500 -1524-8192.

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# mlppp mrru 1500-
1510-4500
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr mlppp sequence

This command configures the MLPPP sequence parameters for a MLPPP pppofr.

syntax

mlppp sequence type [long | short]
no mlppp sequence type [long | short]

Parameter	Description
type	long: long sequence short: short sequence The default is long

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# mlppp sequence
short
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr ppp fragmentation_disable

This command disables/enables fragmentation on an MLPPP bundle where the bundle consists of pppofr interfaces. Fragmentation is enabled by default on an MLPPP bundle. If fragmentation is disabled, other fragmentation-related commands will be blocked at command level and frame is forwarded without being fragmented regardless of the physical link bandwidth.

syntax

ppp fragmentation_disable

default

Enabled

example

```
IBG1000/configure/interface/pppofr pppofr1# ppp
fragmentation_disable
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr mlppp seg_threshold

This command configures the MLPPP segmentation threshold for a MLPPP pppofr.

syntax

mlppp seg_threshold seg_threshold_value <value>

Parameter	Description
seg_threshold_value	64-4500. Default is 512

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# mlppp
seg_threshold 1000
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

© SAMSUNG Electronics Co., Ltd.

configure interface pppofr mlppp differential_delay

This command configures the MLPPP differential delay for a MLPPP pppofr.

syntax

mlppp differential delay differential delay_value <value>
no mlppp differential delay differential delay_value <value>

Parameter	Description
differential delay_value	0-128, default 0

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# mlppp
differential delay 100
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr mlppp minimum_pvcs

This command configures the MLPPP minimum number of PVCs to be active for a MLPPP pppofr.

syntax

mlppp minimum_pvcs min_pvc_num <num>
no mlppp minimum_pvcs min_pvc_num <num

Parameter	Description
min_pvc_num	Number under total number of PVCs, default 1

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1 # mlppp
minimum_pvcs 2
```

related commands

show interface pppofr

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr shutdown

This command shuts down a WAN pppofr by stopping all data transmission running over it.

NOTE

This feature will give no effect to the PVC(s) which is (are) bound to this pppofr. The effects of shutdown command will reached up to PPP layer.

syntax

shutdown
no shutdown

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# shutdown
```

related commands

show interface pppofr

applicable models/versions

All models.

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configure interface pppofr REM_

This command is to add comments at the end.

syntax

REM_ comment_string <comment>
no REM_ comment_string <comment>

Parameter	Description
Comment_string	comments for the pppofr-max len 80 to enter quoted strings, use “” as delimiter

default

None.

example

```
IBG1000/configure/interface/pppofr pppofr1# REM_ "last
comment"
```

related commands

REM

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

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configure interface pppofr red

This command configures the RED for the pppofr interface. Valid max and min value for green, yellow and red ranges are from 1 to 16383. Valid mark probability denominator (mpd) value is from 1 to 15.

syntax

red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

no red <<maxth-green max_th<1-16383> | minth-green min_th<1-16383> | mpd-green prob<1-15> | maxth-yellow max_th<1-16383> | minth-yellow min_th<1-16383> | mpd-yellow prob<1-15> | maxth-red max_th<1-16383> | minth-red min_th<1-16383> | mpd-red prob<1-15>> | <maxth max_th<1-16383> | minth min_th<1-16383> | mpd prod<1-15> | dscp value<1-63>>>

Parameter	Description
max_th	Maximum Threshold for green (WRED) from 1 to 16383. Maximum Threshold for yellow (WRED) from 1 to 16383 Maximum Threshold for red (WRED) from 1 to 16383.
min_th	Minimum Threshold for green (WRED) from 1 to 16383. Minimum Threshold for yellow (WRED) from 1 to 16383. Minimum Threshold for red (WRED) from 1 to 16383.
prob	Mark Probability Denominator (as power of 2) for green (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for yellow (WRED) from 1 to 15 Mark Probability Denominator (as power of 2) for red (WRED) from 1 to 15
maxth	Maximum Threshold for DS-RED
minth	Minimum Threshold for DS-RED
mpd	Mark Probability Denominator (as power of 2) for DS-RED from } 1 to 15
dscp	DiffServ Codepoint for DS-RED

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default

None.

example

In the following example, pppofr wan0 is configured to red with maxth-green 35, minth-green 20 and mpd-green 5.

```
Router# configure terminal
Router/configure# interface pppofr wan0
IBG1000/configure/interface/pppofr pppofr1# red maxth-green
35 minth-green 20 mpd-green 5
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

configure interface pppofr ewf

This command configures the exponential weight factor for average queue size calculation.

syntax

ewf factor<1-15>
no ewf factor<1-15>

Parameter	Description
factor	Exponential weight factor from 1 to 15.

default

None.

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example

In the following example, pppofr wan0 is configured to 15 ewf.

```
Router# configure terminal
Router/configure# interface pppofr wan0
IBG1000/configure/interface/pppofr pppofr1# ewf 15
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

configure interface pppofr enable-red

This command enables/disables RED or DiffServ compliant WRED for the pppofr interface.

syntax

enable-red <wred | ds-red>
no enable-red <wred | ds-red>

Parameter	Description
wred	Enable RED on class.
ds-red	Enable DiffSev compliant WRED on class

default

None.

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example

In the following example, pppofr wan0 is configured to enable wred.

```
Router# configure terminal
Router/configure# interface pppofr wan0
IBG1000/configure/interface/pppofr pppofr1# enable-red wred
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/pppofr

configure interface pppofr crypto

This command configures the network type for the interface

syntax

crypto network_type
no crypto network_type

Parameter	Description
network_type	Configure the network type for the interface

default

Disabled (no)

example

```
Router/configure # interface pppofr wan
Router/configure/interface pppofr wan # crypto untrusted
```


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related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface pppofr wan

configure interface pppofr access-group

Use this command to apply an access list to an interface to filter incoming or outgoing packets. Use the no form of this command to disable an access group.

syntax

access-group direction<in|out> rule<ip|ipv6> acl_name<name>
no access-group direction<in|out> rule<ip|ipv6> acl_name<name>

Parameter	Description
direction	for inbound/outbound packets
rule	Ip: IPv4 Ruleset IPv6: IPv6 Ruleset
Acl_name	Access list name

default

Disabled (no)

example

```
Router/configure/interface pppofr wan# access-group in ip
rule1
```

related commands

configure access-group

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applicable models/versions

All models.

command modes

Router/configure/interface/pppofr/

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3.16 ntclk-select

This command accesses next-level commands for configuring clocking operation.

NOTE

This command is transition command, need to next level command.

syntax

None.

default

None.

example

None.

related commands

ntclk-select t1, ntclk-select e1, ntclk-select bri, ntclk-select ct3

applicable models/versions

All models.

command modes

Router/configure

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3.16.1 ct3

This command selects the CT3 module port for clocking. To see the selected clock source, use the show network-clocks command. To remove the clock source, use the no form of this command.

You can specify up to five clock priorities. The highest priority active interface in the router supplies the primary reference source to all the other interfaces that require network clock synchronization services.

syntax

ntclk-select ct3 select_string <priority/slot/port>
no ntclk-select ct3 select_string <priority/slot/port>

Parameter	Description	
select_string	Priority	Priority number of the selected port. Valid number is from 1 to 5.
	slot	Slot number of CT3 module.
	Port	Port number of CT3 module.

default

None.

example

```
Router/configure# ntclk-select ct3 1/1/0
```

related commands

ntclk-select t1, ntclk-select e1, ntclk-select bri

applicable models/versions

All models.

command modes

Router/configure

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3.16.2 t1

This command selects the T1 module port for clocking. To see the selected clock source, use the show network-clocks command. To remove the clock source, use the no form of this command.

You can specify up to five clock priorities. The highest priority active interface in the router supplies the primary reference source to all the other interfaces that require network clock synchronization services.

syntax

ntclk-select t1 select_string <priorityslot/port | priority/slot/sub_slot/port>
no ntclk-select t1 select_string <priorityslot/port | priority/slot/sub_slot/port>

Parameter	Description	
select_string	priority	Priority number of selected port. Valid number is from 1 to 5.
	slot	Slot number of t1 module.
	sub_slot	Sub_slot number of t1 module.
	Port	Port number of t1 module.

default

None.

example

```
For T1 Mini Module
Router/configure# ntclk-select t1 1/0/1/0
For T1 Network Module
Router/configure# ntclk-select t1 2/1/0
```

related commands

ntclk-select ct3, ntclk-select e1, ntclk-select bri

applicable models/versions

All models.

command modes

Router/configure

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3.16.3 e1

This command selects the E1 module port for clocking. To see the selected clock source, use the show network-clocks command. To remove the clock source, use the no form of this command.

You can specify up to five clock priorities. The highest priority active interface in the router supplies the primary reference source to all other interfaces that require network clock synchronization services.

syntax

ntclk-select e1 select_string <priorityslot/port | priority/slot/sub_slot/port>
no ntclk-select e1 select_string <priorityslot/port | priority/slot/sub_slot/port>

Parameter	Description	
select_string	priority	Priority number of selected port. Valid number is from 1 to 5.
	slot	Slot number of e1 module.
	sub_slot	Sub_slot number of e1 module.
	Port	Port number of e1 module.

default

None.

example

```
For E1 Mini Module
Router/configure# ntclk-select e1 1/0/1/0
For E1 Network Module
Router/configure# ntclk-select e1 2/1/0
```

related commands

ntclk-select ct3, ntclk-select t1, ntclk-select bri

applicable models/versions

All models.

command modes

Router/configure

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3.16.4 bri

This command selects the ISDN module port for clocking. To see the selected clock source, use the show network-clocks command. To remove the clock source, use the no form of this command.

You can specify up to five clock priorities. The highest priority active interface in the router supplies the primary reference source to all the other interfaces that require network clock synchronization services.

syntax

ntclk-select bri select_string <priority/slot/sub_slot/port>
no ntclk-select bri select_string <priority/slot/sub_slot/port>

Parameter	Description	
select_string	priority	Priority number of selected port. Valid number is from 1 to 5.
	slot	Slot number of ISDN module.
	sub_slot	Sub_slot number of ISDN module.
	Port	Port number of ISDN module.

default

None.

example

```
Router/configure# ntclk-select bri 1/0/1/0
```

related commands

ntclk-select ct3, ntclk-select t1, ntclk-select e1

applicable models/versions

All models.

command modes

Router/configure

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3.17 ntclk-mode

This command sets the network clocking manager operation mode. To see the selected mode, use the show network-clocks command.

syntax

ntclk-mode mode_string <revert | non_revert | never | never/priority>

Parameter	Description
mode_string	revert: Whenever the active clock is the highest priority clock, clock switchover occurs, that is to say, the primary clock is always the highest priority among the active clocks. non_revert: Even if the active clock is the highest priority clock, clock switchover doesn't occur. Only when the primary clock is down does clock switchover occur. (default) never: Even if the primary clock is down, clock switchover doesn't occur. never/priority: This parameter switches over the primary clock to the priority clock source <Note: Active clock means that the clock status is changed from Down to Up or the new selected clock status is Up.>

default

non_revert

example

```
Router/configure# ntclk-mode revert
Router/configure# ntclk-mode never
Router/configure# ntclk-mode never/2
```

related commands

ntclk-select ct3, ntclk-select t1, ntclk-select e1, ntclk-select bri

applicable models/versions

All models.

command modes

Router/configure

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3.18 router-id

This command uses router identifier for the system. To use a fixed router ID, use the router-id command in router configuration mode.

syntax

router-id ip-address <A.B.C.D>
no router-id ip-address <A.B.C.D>

Parameter	Description
Ip-address	Router ID in IP address format

default

None.

example

```
Router/configure# router-id 10.1.1.1
```

related commands

show route-map

applicable models/versions

All models.

command modes

Router/configure

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3.19 maximum-paths

This command uses to configure the maximum number of parallel routes that an IP routing protocol will install into the routing table, use the maximum-paths command in router configuration or address family configuration mode.

syntax

maximum-paths path_number <1-8>

Parameter	Description
Path_number	Specifies the number of routes to install to he routing table. The range of number of routes is between 1 and 10.

default

BGP will install only one best path in the routing table but the default of all other routing protocols have four paths

example

```
Router/configure# maximum-paths 5
```

related commands

show route-map

applicable models/versions

All models.

command modes

Router/configure

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3.20 bridge

This command is a transit command to configure some information used in a bridge. A MAC address is added to or deleted form MAC FDB table through this command. Bridging-related parameters can also be modified through this command. This command must be followed by BRIDGE_ID and sub-command to execute the specific CLI.

3.20.1 acquire

Use this command to enable a specific bridge to learn station location information and register the information, MAC Address, in the FDB table. This helps in making forwarding decisions. Use the no form of this command to disable learning.

syntax

bridge *BRIDGEID* <1-1> acquire
no bridge *BRIDGEID* <1-1> acquire

Parameter	Description
BRIDGEID	Bridge Group_ID used for bridging

default

Enable

example

```
Router# configure terminal
Router/configure# bridge 1 acquire
```

related commands

show bridge, bridge 1 protocol mstp, show running-config

applicable models/versions

All models.

command modes

Router/configure

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3.20.2 address

Use this command to statically configure a bridge entry to forward or discard matching frames. Use the no form of this command to remove a statically configured bridge entry.

syntax

bridge *BRIDGEID* <1-1> address *MAC* STATE <forward | discard> *IFNAME* [*VLANID* <2-4095>]
no bridge *BRIDGEID* <1-1> address *MAC* STATE <forward | discard> *IFNAME* [*VLANID* <2-4095>]

Parameter	Description
BRIDGEID	BridgeGroup_ID used for bridging
MAC	Media Access Control address in the HHHH.HHHH.HHHH format
STATE	Packet filtering state
IFNAME	interface on which the frame comes in. Ethernet interface and Bundle interface can be used ad this parameter.
VLANID	the numerical ID of the bridge. If not configured, default vlan is used

example

```
Router# configure terminal
Router/configure# bridge 1 address 0001.2222.2222 forward
ethernet 2/0
Router/configure# no bridge 1 address 0001.2222.2222 forward
ethernet 2/0
Router/configure# bridge 1 address 0001.3333.3333 discard
ethernet 2/0vlan 200
```

related commands

show bridge, bridge 1 protocol mstp

applicable models/versions

All models.

command modes

Router/configure

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3.20.3 ageing-time

Use this command to specify an ageing-out time for a learned MAC address. The learned MAC address will persist till this specified time. Use the no form of this command to set configured value to the default value (300 seconds).

syntax

bridge-group BRIDGEID <1-1> ageing-time *AGEINGTIME* <10-630>
no bridge-group BRIDGEID <1-1> ageing-time *AGEINGTIME* <10-630>

Parameter	Description
BRIDGEID	The ID of the bridge-group that this ageing time is for
AGEINGTIME	The number of seconds of persistence. The default ageing time is 300 seconds

related commands

show bridge, bridge 1 protocol mstp

example

```
Router# configure terminal
Router/configure# bridge 1 ageing-time 600
```

applicable models/versions

All models.

command modes

Router/configure

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3.20.4 forward-time

Use this command to set the time (in seconds) after which (if this bridge is the root bridge) each port changes states to learning and forwarding. This value is used by all instances. To restore the default value of 15 seconds, use the no form of this command. The allowable range for forward-time is 4-30 seconds. Care should be exercised if the value is to be made below 7 seconds.

syntax

bridge *BRIDGEID* <1-1> forward-time *FORWARD_DELAY* <4-30>
no bridge *BRIDGEID* <1-1> forward-time *FORWARD_DELAY* <4-30>

Parameter	Description
BRIDGEID	The ID of the bridge group to which this delay time is assigned.
FORWARD_DELAY	the forwarding time delay in seconds

example

```
Router# configure terminal
Router/configure# bridge 1 forward-time 6
```

related commands

bridge protocol mstp

applicable models/versions

All models.

command modes

Router/configure

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3.20.5 hello-time

Use this command to set the hello-time, the time in seconds after which (if this bridge is the root bridge) all the bridges in a bridged LAN exchange Bridge Protocol Data Units (BPDUs), in detail, Configuration Message which is used to inform the switch is alive. A very low value of this parameter leads to excessive traffic on the network, while a higher value delays the detection of topology change. This value is used by all instances. To restore the default value of the hello time (2 seconds), use the no form of this command. Make sure that the value of hello time is always greater than the value of hold time (1 second by default).

syntax

bridge *BRIDGEID* <1-1> hello-time *HELLOTIME* <1-10>
no bridge *BRIDGEID* <1-1> hello-time *HELLOTIME* <1-10>

Parameter	Description
BRIDGEID	The ID of the bridge group to which this delay time is assigned.
HELLOTIME	The hello BPDU interval in seconds. The default value is 2 seconds

related commands

None.

example

```
Router# configure terminal
Router/configure# bridge 1 hello-time 3
```

applicable models/versions

All models.

command modes

Router/configure

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3.20.6 max-age

Use this command to set the max-age for a bridge. This value is used by all instances. Use the no form of this command to restore the default value of max-age (20 seconds). Max-age is the maximum time in seconds for which (if a bridge is the root bridge) a message is considered valid. This prevents the frames from looping indefinitely.

The value of max-age should be greater than twice the value of hello time plus one, but less than twice the value of forward delay minus one. The allowable range for max-age is 6-40 seconds. Configure this value sufficiently high, so that a frame generated by root can be propagated to the leaf nodes without exceeding the max-age.

syntax

bridge *BRIDGEID* <*1-1*> max-age MAXAGE<6-40>
no bridge *BRIDGEID* <*1-1*> max-age MAXAGE<6-40>

Parameter	Description
BRIDGEID	The ID of the bridge group to which this maximum age time is assigned
MAXAGE	The maximum time, in seconds, to listen for the root bridge. The default value of bridge max-age is 20 seconds

example

```
Router# configure terminal
Router/configure# bridge 1 max-age 12
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.20.7 max-hops

Use this command to specify the maximum allowed hops for a BPDU in an MST region. This parameter is used by all the instances of the MST. To restore the default value (20 seconds), use the no form of this command.
Specifying the max hops for a BPDU prevents the messages from looping indefinitely in the network. When a bridge receives a MST BPDU that has exceeded the allowed max-hops, it discards the BPDU.

syntax

bridge *BRIDGEID <1-1>* max-hops *HOP_COUNT*<1-40>
no bridge *BRIDGEID <1-1>* max-hops *HOP_COUNT*<1-40>

Parameter	Description
BRIDGEID	Specify the BridgeGroup_ID
HOP_COUNT	Maximum hops the BPDU will be valid for. The default max-hops in a MST region are 20

example

```
Router# configure terminal
Router/configure# bridge 1 max-hops 25
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.20.8 priority

Use this command to set bridge priority for the common instance. Using a lower priority indicates a greater likelihood of the bridge becoming root. This command must be used to set the priority of the bridge. The priority values can be set only in increments of 4094

syntax

bridge *BRIDGEID* <1-1> priority *PRIORITY* <0-61440>
no bridge *BRIDGEID* <1-1> priority *PRIORITY* <0-61440>

Parameter	Description
BRIDGEID	The ID of the bridge group for which the priority is set
PRIORITY	The bridge priority. The default priority is 32678 (or hex 0x8000)

example

```
Router# configure terminal
Router/configure# bridge 1 priority 4094
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.20.9 protocol

This command is a transit command to create or delete a Bridge. The type of spanning-tree protocol should be defined when creating a Bridge. Thus this command is used as a transit command and must be followed by ‘mstp’ to execute the bridge creation or deletion.

configure bridge protocol mstp

Use this command to create a multiple spanning-tree protocol (MSTP) bridge of a specified parameter. Use the no form of this command to delete a Bridge and disable Bridging functionality.

This command is the primary command to configure other bridge, VLAN, layer2 protocol related commands. After executing this command, a bridge is created and Default VLAN is created. And the system is ready to execute Bridging, VLAN switching.

MSTP is used for spanning-tree in the system because MSTP has advantages compared with legacy spanning-tree protocol, STP and RSTP. The MSTP bridges can have different spanning-tree topologies for different VLANs inside a region of ‘similar’ MSTP bridges. The multiple spanning tree protocol, like the rapid spanning tree protocol, provides rapid reconfiguration capability, while providing load balancing ability.

syntax

bridge *BRIDGEID <1-1>* protocol mstp
no bridge *BRIDGEID <1-1>* protocol mstp

Parameter	Description
BRIDGEID	Specify the bridge group ID

example

```
Router# configure terminal
Router/configure# bridge 1 protocol mstp
```

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related commands

show vlan brief, show spanning-tree mstp

applicable models/versions

All models.

command modes

Router/configure

3.20.10 spanning-tree

This command is a transit command to configure optional spanning-tree features used in a bridge. This command must be followed by ‘errdisable-timeout’ or ‘portfast’.

configure bridge spanning-tree errdisable-timeout enable

Use this command to enable the errdisable-timeout facility, which sets a timeout for ports that are disabled due to the BPDU guard feature. By default, the port is enabled after 300 seconds.

The BPDU guard feature shuts down the port on receiving a BPDU on a BPDU-guard enabled port. This command associates a timer with the feature such that the port gets enabled back without manual intervention after a set interval. This interval can be configured by the user using the bridge spanning-tree errdisable-timeout interval command.

syntax

bridge *BRIDGEID <1-1>* spanning-tree errdisable-timeout enable
no bridge *BRIDGEID <1-1>* spanning-tree errdisable-timeout enable

Parameter	Description
BRIDGEID	Bridge group name for bridging

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example

```
Router# configure terminal
Router/configure# bridge 1 spanning-tree errdisable-timeout
enable
```

related commands

bridge spanning-tree errdisable-timeout interval, bridge spanning-tree portfast bpdu-filter, bridge spanning-tree portfast bpdu-guard

applicable models/versions

All models.

command modes

Router/configure

configure bridge spanning-tree errdisable-timeout interval

Use this command to specify the time interval after which a port is brought back up. By default, the port is enabled after 300 seconds.

syntax

bridge *BRIDGEID* <*1-1*> spanning-tree errdisable-timeout interval *INTERVAL*<10-1000000>
no bridge *BRIDGEID* <*1-1*> spanning-tree errdisable-timeout interval *INTERVAL*<10-1000000>

Parameter	Description
BRIDGEID	Bridge group name for bridging
INTERVAL	Specify the errdisable-timeout interval in seconds

example

```
Router# configure terminal
Router/configure# bridge 1 spanning-tree errdisable-timeout
interval 34
```

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related commands

bridge spanning-tree errdisable-timeout enable, bridge spanning-tree portfast bpdu-filter, bridge spanning-tree portfast bpdu-guard

applicable models/versions

All models.

command modes

Router/configure

configure bridge spanning-tree portfast bpdu-filter

Use this command to set portfast BPDU filter globally for the bridge. All ports that have their BPDU filter set to default take the same value of bpdu-filter as that of bridge. Use the no form of this command to disabled the BPDU filter for the bridge.

syntax

bridge *BRIDGEID* <*1-1*> spanning-tree portfast bpdu-filter
no bridge *BRIDGEID* <*1-1*> spanning-tree portfast bpdu-filter

Parameter	Description
BRIDGEID	Bridge group name for bridging

usage

The Spanning Tree Protocol sends BPDUs from all ports. Enabling the BPDU Filter feature ensures that PortFastenabled ports do not transmit or receive any BPDUs. Use the show spanning tree command to show administratively configured and currently running values of the bpdu-filter parameter for bridge and port.

example

```
Router# configure terminal
Router/configure# bridge 1 spanning-tree portfast bpdu-filter
```


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related commands

bridge spanning-tree errdisable-timeout interval, bridge spanning-tree errdisable-timeout enable, bridge spanning-tree portfast bpdu-guard

applicable models/versions

All models.

command modes

Router/configure

configure bridge spanning-tree portfast bpdu-guard

Use this command to enable the BPDU (Bridge Protocol Data Unit) Guard feature globally on a bridge. Use the no form of this command to disable the BPDU Guard feature on a bridge.

syntax

bridge *BRIDGEID <1-1>* spanning-tree portfast bpdu-guard
no bridge *BRIDGEID <1-1>* spanning-tree portfast bpdu-guard

Parameter	Description
BRIDGEID	Bridge group name for bridging

usage

When the BPDU Guard feature is set for a bridge, all portfast-enabled ports of the bridge that have bpdu-guard set to default shut down the port on receiving a BPDU. In this case, the BPDU is not processed. You can either bring the port back up manually by using the no shutdown command, or configure the errdisable-timeout feature to enable the port after the specified time interval. Use the show spanning-treecommand to show the bridge and port configurations for the BPDU Guard feature. It shows both the administratively configured and currently running values of bpdu-guard.

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example

```
Router# configure terminal
Router/configure# bridge 1 spanning-tree portfast bpdu-guard
```

related commands

bridge spanning-tree errdisable-timeout interval, bridge spanning-tree errdisable-timeout enable, bridge spanning-tree portfast bpdu-filter

applicable models/versions

All models.

command modes

Router/configure

3.20.11 instance

This command is a transit command to configure parameters used in an instance. This command must be followed by ‘priority’.

configure bridge instance priority

This command sets the bridge priority for an MST instance to the value specified.
To restore the default value of the bridge priority (32768), use the no form of this command. The lower the priority of the bridge, the better the chances are of the bridge becoming a root bridge or a designated bridge for the LAN.
The permitted range of values is 0-61440. The priority values can be set only in increments of 4094.

syntax

bridge *BRIDGEID <1-1>* instance INSTANCE_ID priority BRIDGE_PRIORITY<0-61440>
no bridge *BRIDGEID <1-1>* instance INSTANCE_ID priority BRIDGE_PRIORITY<0-61440>

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Parameter	Description
BRIDGEID	Specify the bridge group ID
INSTANCE_ID	the instance ID
BRIDGE_PRIORITY	Specify the bridge priority (a lower priority indicates a greater likelihood of the bridge becoming root). The default value of the priority for each instance is 32768

related commands

None.

example

```
Router# configure terminal
Router/configure# bridge 1 instance 3 priority 3
```

applicable models/versions

All models.

command modes

Router/configure

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3.20.12 multiple-spanning-tree enable

Use this command to enable the Multiple Spanning Tree Protocol on a bridge. Use the no form of this command to disable the command. When disabling Multiple Spanning Tree Protocol, the system doesn't transmit and receive the BPDU and all member ports of a bridge move to forwarding state.

syntax

bridge *BRIDGEID* <1-1> multiple-spanning-tree enable
no bridge *BRIDGEID* <1-1> multiple-spanning-tree enable

Parameter	Description
BRIDGEID	Specify the BridgeGroup_ID

example

```
Router# configure terminal
Router/configure# bridge 1 multiple spanning-tree enable
```

related commands

None.

applicable models/versions

All models.

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3.20.13 cisco-interoperability

Use this command to enable/disable Cisco interoperability for MSTP.
By default, if this command is not used, Cisco interoperability is disabled.
If Cisco interoperability is required, all Orion boxes in the switched LAN must be Cisco-interoperability enabled. In an earlier version of MSTP in Cisco switches, MSTP packet is malformed. Thus, MSTP is not working correctly with some Cisco switches. When Orion is interoperating with Cisco, the only criteria used to classify a region are the region name and revision level. VLAN to instance mapping is not used to classify regions when interoperating with Cisco.

syntax

bridge *BRIDGEID* <*1-1*> cisco-interoperability STATE <enable | disable>

Parameter	Description
BRIDGEID	Specify the bridge group ID
STATE	Enable or disable state

example

```
Router# configure terminal
Router/configure# bridge 1 cisco-interoperability enable
Router/configure# bridge 1 cisco-interoperability disable
```

applicable models/versions

All models.

command modes

Router/configure

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3.21 set

This command accesses next-level commands for configuring GVRP (GARP VLAN Registration Protocol) and GMRP (GARP Multicast Registration Protocol). To view the GVRP and GMRP parameters before or after configuring them, use the appropriate show gvrp or show gmrp commands.

GMRP feature is not available in the current release.

syntax

set

example

```
Router/configure# set
```

related commands

set gvrp enable bridge, set port gvrp enable ethernet, set gmrp enable bridge, set port gmrp enable ethernet

applicable models/versions

All models.

command modes

Router/configure

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3.22 snmp-server

This command accesses next-level commands for configuring the SNMP agent on the Router system.

syntax

snmp-server

example

```
Router/configure# snmp-server
```

related commands

configure snmp-server community, configure snmp-server contact, configure snmp-server enable target-traps, configure snmp-server location, configure snmp-server REM, configure snmp-server REM_ configure snmp-server trap-source, configure snmp-server snmp-source, configure snmp-server chassis-id, configure snmp-server target, configure snmp-server engineID, configure snmp-server view, configure snmp-server group, configure snmp-server user

applicable models/versions

All models.

command modes

Router/configure

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3.22.1 REM

This command allows users to add comments (at the beginning of the SNMP area of the configuration file) during a configuration session.
Comments will appear in the configuration file after using the save local command.

syntax

REM <'*string*'>

Parameter	Description
comments	80-character (maximum) string enclosed in quotation marks.

example

```
Router/configure/snmp-server# REM 'SNMP configured on
February 22, 2006. 11:00'
```

related commands

show running-config

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.2 community

This command sets the SNMP community name and access privileges.
This entry is a password string that assigns access privileges to SNMP MIBs.

syntax

community *community* <*name*> *access_privilege* <*ro* | *rw*>

Parameter	Description
community	SNMP community name. Use up to 30 characters.
access_privilege	ro Read-only (can get but not set MIB parameters)
	rw Read/write (can get and set MIB parameters)

example

```
Router/configure/snmp-server# community network01 rw
```

related commands

show snmp communities.

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.3 contact

This command specifies a contact person for the SNMP agent on the Router system.

syntax

contact *contact* <*'name'*>

Parameter	Description
contact	Name of the person to contact regarding the SNMP agent. Use up to 255 characters and enclose in quotation marks.

example

```
Router/configure/snmp-server# contact 'Joe Smith'
```

related commands

show snmp status

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.4 location

This command defines the SNMP host system location.

syntax

location *location* <‘*string*’>

Parameter	Description
string	Location of the host system, enclosed in quotation marks

example

```
Router/configure/snmp-server# location ‘Suwon in Korea’
```

related commands

show snmp status

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.5 chassis-id

This command names the SNMP host system.

Parameter	Description
id	Name of the host system

syntax

chassis-id *id* <*name*>

example

```
Router/configure/snmp-server# chassis-id ibg_suwon
```

related commands

show snmp status

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.6 enable

This command accesses next-level commands for configuring enable or disable to transmit traps to the given target.
This command cannot be used as stand-alone and should be used to be combined with the next-level commands

syntax

enable

example

```
Router/configure/snmp-server# enable
```

related commands

configure snmp-server enable target-traps, configure snmp-server target

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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configure snmp-server enable target-traps

This command configures enable or disable to transmit trap groups to a target. If 'all' type is specified, all traps are sent. The 'snmp-server target' command should be configured before configuring the 'snmp-server enable target-traps' command.

syntax

enable target-traps *target <ip_address><port>*
<all|bgp|bundle|chassis|clock|config|dsx1|dsx3|dvmrp|environ|fr|imc|ips
|ospf|pim|rm|rmon|snmp|sntp|system|voice|vrrp>

Parameter	Description
target <ip_address> <port>	The IP address and the UDP port number of the recipient for which the traps are targeted. Parameter <port> is for SNOS version 2.0.0 or higher.
trap_group_type	(Optional) Type of trap groups to be sent to the target. If 'no' type is specified, the trap group is not sent.
all	- Sends all traps.
bgp	- Sends bgp group traps
bundle	- Sends bundle group traps.
chassis	- Sends chassis group traps.
clock	- Sends network clock group traps.
config	- Sends configuration group traps.
dsx1	- Sends dsx1 group traps.
dsx3	- Sends dsx3 group traps.
dvmrp	- Sends DVMRP group traps.
environ	- Sends environment group traps
fr	- Sends frame-relay group traps
imc	- Sends inter-module communication group traps.
ism	- Sends ISM Rule group traps.
ospf	- Sends OSPF group traps.
pim	- Sends PIM group traps.
rm	- Sends resource managements group traps
rmon	- Sends RMON group traps.

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(Continued)

Parameter		Description
snmp (For SNOS version 2.0.0 or higher)	(default)	- Sends SNMP group trap. Includes coldstart, warmstart, linkdown, linkup, and authfaul traps.
	coldstart	-.Sends SNMP coldStart trap.
	warmstart	-.Sends SNMP warmStart trap.
	linkdown	-.Sends SNMP linkDown trap.
	linkup	-.Sends SNMP linkUp trap.
	authfail	-.Sends SNMP authenticationFailure trap.
sntp		- Sends SNTP group traps.
system		- Sends system group traps
voice		- Sends voice group traps.
vrrp		- Sends VRRP group traps

example

```
step1) Router/configure/snmp-server# enable target-traps
165.213.176.232 162
step2) Router/configure/snmp-server/enable target-traps
165.213.176.232 162#all
```

(For SNOS version 2.0.0 or higher)

```
Router/configure/snmp-server# enable target-traps
2006:0:0:0:0:0:0:2 162
Router/configure/snmp-server/enable target-traps
2006:0:0:0:0:0:0:2 162# all
Router/configure/snmp-server/enable target-traps
2006:0:0:0:0:0:0:2 162# no all
```

related commands

show snmp targets

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.7 trap-source

This command configures SNMP version 1 trap messages so that they are sent with a specific IP address. Otherwise, traps will be sent with the system default address.

syntax

trap-source <*IP address*>

Parameter	Description
IP address	IP address for SNMP trap messages

example

```
Router/configure/snmp-server# trap-source 10.1.1.4
```

related commands

show snmp trap-source

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.8 snmp-source

This command configures the SNMP source IP address.

syntax

snmp-source <*IP address*>

Parameter	Description
IP address	IP address for SNMP response messages

example

```
Router/configure/snmp-server# snmp-source 20.1.1.4
```

related commands

show snmp snmp-source

applicable models/versions

All models.

command modes

Router/configure/snmp-server

3.22.9 REM

This command allows users to add comments (at the end of the SNMP area of the configuration file) during a configuration session.
Comments will appear in the configuration file after using the save local command.

syntax

REM_ *comments* <*'string'*>

Parameter	Description
comments	80-character (maximum) string enclosed in quotation marks.

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example

```
Router/configure/snmp-server# REM_ 'SNMP configured on
February 22, 2006. 11:0'
```

related commands

show running-config

applicable models/versions

All models.

command modes

Router/configure/snmp-server

3.22.10 engineID

This command changes the local SNMP engine ID on the router. Changing the value of snmpEngineID has important side-effects. If the local value of engineID changes, the security digests of SNMPv3 users will be invalid, and the users will have to be reconfigured.
Use the 'no' form of this command to reset the engineID as 00:00:00:00:00:00:00:00:00:00:00:00.

syntax

engineID *engineid <string>*
no engineID *engineid <string>*

Parameter	Description
engineid <string>	Unique and unambiguous identifier of an SNMP engine as well as the SNMP entity that corresponds to that engine. 12bytes octet-string in hex format (ex): 00:ec:00:00:00:00:5a:5a:5a:19

example

```
Router/configure/snmp-server# engineID
00:00:00:ec:00:00:00:00:5a:5a:5a:19
```


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related commands

show snmp enginID, show snmp users

applicable models/versions

All models.

command modes

Router/configure/snmp-server

3.22.11 view

This command creates and delete the SNMP view tables.

syntax

view *view_name <string> subtree_oid <string> type* <1|2>
no view *view_name <string> subtree_oid <sting> type* <1|2>

Parameter	Description
view_name <string>	View name to identify. Use up to 32 characters.
subtree_oid <string>	The set of all MIB object instances which have a common ASN.1 OBJECT IDENTIFIER prefix to their name.
type <1|2>	Configure whether the corresponding instance of subtrees is included in or excluded from the MIB view. 1 means 'included' and 2 means 'excluded' and default value is 1 (included).

example

```
Router/configure/snmp-server# view two 1.3 1
```

related commands

show snmp engineID, show snmp views, show snmp groups, show snmp users

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applicable models/versions

All models.

command modes

Router/configure/snmp-server

3.22.12 group

This command configures a new SNMP group or a table that maps SNMP users to SNMP views. In order to remove a specified SNMP group, use the 'no' form of this command. The 'snmp-server view' command should be configured before configuring the 'snmp-server group' command.

syntax

group *group_name* <*string*> {v3 <noauth|auth|priv> } [readview *view_name* <*string*>][writeview *view_name* <*string*>*]*[notifyview *view_name* <*string*>]

no group *group_name* <*string*> {v3 <noauth|auth|priv> } [readview *view_name* <*string*>][writeview *view_name* <*string*>][notifyview *view_name* <*string*>]

Parameter	Description
group_name <string>	Group name to identify. Use up to 32 characters
v3	SNMP version
noauth	Specifies no authentication of a packet. It is used at SNMP v3
auth	Specifies authentication of a packet. without encrypting it. It is used at SNMP v3.
priv	Specifies authentication of a packet and then encrypts it. It is used at SNMP v3.
readview	(Optional) The option that allows you to specifying a read view that enables you only to view the contents of the agent.
writeview	(Optional) The option that allows you to specifying a write view that enables you to enter data and configure the contents of the agent.
notifyview	(Optional) The option that allows you to specifying a notify view that enables you to specify a notify, inform, or trap.
view_name <string>	View name to identify. Use up to 32 characters

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example

```
Router/configure/snmp-server# group initial v3 priv readview
two writeview two notifyview two
```

related commands

configure snmp-server view, show snmp groups, show snmp views, show snmp users

applicable models/versions

All models.

command modes

Router/configure/snmp-server

3.22.13 user

This command creates and delete the SNMP user table and related information. To remove a user from an user table, use the 'no' form of the command. The 'snmp-server group' command should be configured before the 'snmp-server user' command.

syntax

user *user_name* <*string*> *group_name* <*string*> {v3 [authProtocol<md5|sha> authKey *auth_key* <string>] [privProtocol<des> privKey *priv_key* <*string*>]

no user *user_name* <*string*> *group_name* <*string*> {v3 [authProtocol <md5|sha> authKey *auth_key* <string>] [privProtocol<des> privKey *priv_key* <*string*>]

Parameter	Description
user_name <string>	User name to identify. Use up to 32 characters
group_name <string>	Group name to identify. Use up to 32 characters
v3	SNMP version
authProtocol	(Optional) Initiates an authentication level setting session.
md5	(Optional) The HMAC-MD5 authentication level.
sha	(Optional) The HMAC-SHA authentication level.

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(Continued)

Parameter	Description
auth_key <string>	(Optional) No default values exist for authentication algorithms when you configure the command. Also, no default key exist. The key should be formatted as aa:bb:cc:dd where aa, bb, cc, and dd are hex values. Also the key length should be exactly 16 octets long for MD5 and 20 octets long for SHA. If you have the localized MD5 or SHA digest, you can specify that plain-text password instead of the key string. The minimum length for a password is 12 characters for security.
privProtocol	(Optional) Initiates an privacy level setting session.
des	(Optional) The DES privacy authentication level.
aes	(Optional) The AES privacy authentication level. Note: This is applied to SNOS version 2.1.0 or higher
priv_key <string>	(Optional) No default values exist for authentication algorithms when you configure the command. Also, no default key exist. The key should be formatted as aa:bb:cc:dd where aa, bb, cc, and dd are hex values. Also the key length should be exactly 16 octets long. You can specify that plain-text password instead of the key string. The minimum length for a password is 12 characters for security.

example

```
Router/configure/snmp-server# user initialmd5 initial v3
authProtocol md5 authKey test12345678 privProtocol des
privKey test12345678
```

related commands

configure snmp-server user, show snmp users, show snmp groups, show snmp views

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.22.14 target

This command configures the recipient of an SNMP trap operation. To remove the specified target, use the 'no' form of this command. The 'snmp-server user' command may have been configured before the 'snmp-server target' command.

syntax

target *target* <*ip_address*> *udp_port* <*port*> {v1|v2c|{v3 {username *user_name* <*string*>} {secLevel <noatuh|auth|priv>} [notifyType <trap|inform>] } }

no target *target* <*ip_address*> *udp_port* <*port*> {v1|v2c|{v3 {username *user_name* <*string*>} {secLevel <noatuh|auth|priv>} [notifyType <trap|inform>] } }

Parameter	Description
target <ip_address>	The IP address of the recipient for which the traps are targeted.
udp_port <port>	Specifies a UDP port of the target to use.
v1/v2c/v3	SNMP trap version
user_name <string>	User name to identify. Use up to 32 characters
secLevel	(Optional) The user security level.
noauth	(Optional) Specifies no authentication of a packet It is used at SNMP v3
auth	(Optional) Specifies authentication of a packet. without encrypting it. It is used at SNMP v3.
priv	(Optional) Specifies authentication of a packet and then encrypts it. It is used at SNMP v3.
notifyType	(Optional) The type of notify.
trap	(Optional) Specifies the types of notification being sent should be a trap. It is used at SNMP v3
inform	(Optional) Specifies the types of notification being sent should be an inform. It is used at SNMP v3.

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example

```
Router/configure/snmp-server# target 90.90.90.240 162 v3
username initialmd5 secLevel noauth notifyType trap
```

related commands

show snmp targets, show snmp users, show snmp groups, show snmp views

applicable models/versions

All models.

command modes

Router/configure/snmp-server

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3.23 rmon

This command accesses next-level commands to configure parameters for RMON (Remote Monitoring).

syntax

rmon

example

```
Router/configure# rmon
```

related commands

configure rmon enable, configure rmon statistics, configure rmon history, configure rmon event, configure rmon alarm

applicable models/versions

All models.

command modes

Router/configure

3.23.1 enable

This command is used to enable rmon. If you want to disable rmon, you can use '**no rmon enable**' command.

syntax

enable
no enable

example

```
Router/configure/rmon# enable
```

related commands

configure rmon alarm, configure rmon event, configure rmon history, configure rmon statistics

applicable models/versions

All models.

command modes

Router/configure/rmon

3.23.2 statistics

This command is used to configure RMON statistics. If you configure RMON statistics, you can see the current RMON statistics information using ‘show rmon statistics’ command. Ethernet 0/0 doesn’t support RMON.

syntax

no statistics ethernet_name <if_name> [owner owner_string <string>]
statistics ethernet_name <if_name> [owner owner_string <string>]

Parameter	Description
ethernet_name	Ethernet interface name. For example, the format is ‘ethernetx/x’.
Owner	Owner of this entry

example

```
Router/configure/rmon# statistics ethernet0/4 owner tester
```

related commands

configure rmon alarm, configure rmon enable, configure rmon event, configure rmon history

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applicable models/versions

All models.

command modes

Router/configure/rmon

3.23.3 history

This command is used to configure RMON history table. RMON history table collects Ethernet statistics periodically and stores the differences.
RMON history has four parameters, which are Ethernet interface name, interval value, bucket number and owner string. You can see the configuration result using ‘show rmon history_control’ command.

syntax

history ethernet_name <if_name> [interval interval_value <1-3600>] [buckets buck_value <1-100>] [owner owner_str <string>]

no history ethernet_name <if_name> [interval interval_value <1-3600>] [buckets buck_value <1-100>] [owner owner_str <string>]

Parameter	Description
ethernet_name	Ethernet interface name. For example, the format is ‘ethernetx/x’.
Interval_value	Ethernet history interval
buck_value	Number of Ethernet history buckets.
Owner	Owner of this entry

example

```
Router/configure/rmon# history ethernet0/4 interval 30
buckets 10 owner tester
```

related commands

configure rmon alarm, configure rmon enable, configure rmon event, configure rmon statistics

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applicable models/versions

All models.

command modes

Router/configure/rmon

3.23.4 event

This command is used to configure RMON event. RMON event is used for RMON alarm action. When an RMON alarm is generated, configured RMON event is executed. RMON event has three types, which are log, trap and log_trap.

syntax

event event_idx <1-65535> [[type] {log | trap | log_trap}] [community com_str <str>] [Description desc_str <string>] [owner owner_str <string>]

no event event_idx <1-65535> [[type] {log | trap | log_trap}] [community com_str <str>] [Description desc_str <string>] [owner owner_str <string>]

Parameter	Description
event_idx	Index for the RMON event
Type	RMON event type. Possible values are log, trap, or log_trap. Default type is log_trap.
com_str	Community for sending traps. Therefore, if you configure type to log and configure some community string, configuration error is displayed. Default community is public.
desc_str	Description about the even. Default Description is ‘none’. If you want to configure Description string, use ‘ ’ mark.
Owner	Owner of this entry

example

```
Router/configure> rmon
Router/configure/rmon> event 1 type log_trap Description
“event 1” owner tester
```


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related commands

configure rmon alarm, configure rmon enable, configure rmon history, configure rmon statistics

applicable models/versions

All models.

command modes

Router/configure/rmon

3.23.5 alarm

This command is used to configure RMON alarm. RMON alarm is used to check specific mib OID's value periodically and occur the configured event when the values is over or under than threshold. The RMON MIB defines rising Alarm trap and falling Alarm trap. If configured event is set to trap or log_trap, these alarm traps are sent to trap server. Before configuring RMON alarm, you should configure the related RMON event first.

syntax

alarm index_num <1-65535> mib_oid <oid> alarm_interval <1-3600> r_threshold <n> f_threshold <n> r_eventidx <n> f_eventidx <n> [[type] { absolute | delta}] [[startup] { rising | falling | rise_fall}] [owner owner_string <string>]

no alarm index_num <1-65535> mib_oid <oid> alarm_interval <1-3600> r_threshold <n> f_threshold <n> r_eventidx <n> f_eventidx <n> [[type] { absolute | delta}] [[startup] { rising | falling | rise_fall}] [owner owner_string <string>]

Parameter	Description
index_num	Index number for the alarm entry
mib_oid	Variable to be monitored. It is represented by snmp mib oid. Any oid which is counter,gauge type, is ok. This string starts '1.' not '.1.'

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(Continued)

Parameter	Description
alarm_interval	Alarm interval. If alarm interval is configured to 30, mib_oid is checked for each 30 seconds. If this mib_oid value is over than r_threshold, the configured event (r_eventidx) has occurred. If this mib_oid value is under than f_threshold, the configured event (f_eventidx) has occurred.
r_threshold	Rising alarm threshold
f_threshold	Falling alarm threshold
r_eventidx	Rising event index
f_eventidx	Falling event index
Type	Posiible values are absolute or delta.
Startup	Posiible values are rising, falling or rise_fall.
Owner	Owner of this entry

example

```
Router/configure# rmon
Router/configure/rmon# event 1
Router/configure/rmon# event 2
Router/configure/rmon# alarm 1 1.3.6.1.2.1.2.2.1.10.1 300
1000 0 1 2 type absolute startup rising owner tester
```

related commands

configure rmon enable, configure rmon event, configure rmon history, configure rmon statistics

applicable models/versions

All models.

command modes

Router/configure/rmon

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3.24 poe

This command accesses next-level commands to configure parameters for poe (Power Over Ethernet).

syntax

poe

example

To configure for poe, enter:

```
Router/configure# poe
```

related commands

configure poe enablemonitoring, configure poe reset, configure poe restoredefaults, configure poe portpower, configure poe portpowerlimit, configure poe portpriority, configure poe powermanagementmode, configure poe powerbank

applicable models/versions

All models.

command modes

Router/configure

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3.24.1 enablemonitoring

This command configures to enable for automatically monitoring status of PoE module. It must use the no form of this command to disable monitoring.

syntax

poe enablemonitoring
no poe enablemonitoring

default

Disabled (no)

example

To configure monitoring function for poe module, enter:

```
Router/configure# poe enablemonitoring
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.24.2 reset

This command resets PoE module. This command resets the PoE Controller in PoE module. The PoE Controller generates an internal hardware reset for the PoE devices. All ports are powered down for the boot and detection period. This command must be set separately slot number for each physical slot.

syntax

poe reset [physlot slot_num<1 or 2>]

Parameter	Description
slot_num	an unsigned number of physical slot. (1 or 2)

example

To reset for poe module, enter:

```
Router/configure# poe reset 1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

3.24.3 restoredefaults

This command restores default information of PoE module.
This command restores modified values to factory default values and the PoE unit is reset internally. Then, the Controller generates an internal hardware reset. This command must be set separately slot number for each physical slot.

syntax

poe restoredefaults [physlot slot_num<1 or 2>]

Parameter	Description
slot_num	an unsigned number of physical slot. (1 or 2)

example

To reset for poe module, enter:

```
Router/configure# poe restoredefaults 1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.24.4 portpower

This command is to enable or disable port power of PoE module. That is, user is able to control power feeding for each port of poe module.
This command must be set separately for each physical slot and source port.

syntax

poe portpower [physlot slot_num<1 or 2>] [lport lport_num <1 to 19>] [enable enable_num<0 or 1>]

Parameter	Description
Slot_num	an unsigned number of physical slot. (1 or 2)
Lport_num	an unsigned number of Logical port. (1 to 19)
Enable_num	Enabled (1), Disabled (0).

example

to enable port power of Ethernet 1/10 in POE Module, enter:

```
Router/configure# poe portpower 1 10 0
```

to disable port power of Ethernet 1/10 in POE Module, enter:

```
Router/configure# poe portpower 1 10 1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.24.5 portpowerlimit

This command is to set port power limit in unit of mW in PoE module.
Set maximum power per single port. If a port exceeds its power limit, the PoE system shuts down that port. Power can be set up to 20,000 mW. Default is 16,800 mW. This command must be set separately for each physical slot and source port.

syntax

poe portpowerlimit [physlot slot_num<1 or 2>] [lport lport_num <1 to 19>] [watts watt_num<0 to 20000>]

Parameter	Description
Slot_num	an unsigned number of physical slot. (1 or 2)
Lport_num	an unsigned number of Logical port. (1 to 19)
Watt_num	enter an unsigned number of Power limit for unit of mW. (0 to 20000).

example

to enable port power limit of Ethernet 1/10 in POE Module, enter:

```
Router/configure# poe portpowerlimit 1 10 10000
```

related commands

Router/configure/poe powermanagementmode

applicable models/versions

All models.

command modes

Router/configure

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3.24.6 portpriority

This command sets port priority in PoE module. Port priority affects 2 items. First item is 'Power-up order' that is after a reset, the ports are powered up according to their priority. Second item is 'Shutdown order' when exceeding the power budget. This command must be set separately priority for each physical slot and source port.

syntax

poe portpriority [physlot slot_num<1 or 2>] [lport lport_num <1 to 19>] [priority priority_num<0 to 20000>]

Parameter	Description
Slot_num	an unsigned number of physical slot. (1 or 2)
Lport_num	an unsigned number of Logical port. (1 to 19)
priority_num	enter an unsigned number of Port Priority. critical-1; high-2; low-3.

example

To set port priority of device connected on Ethernet 1/10 port, enter;

```
Router/configure# poe portpriority 1 10 1
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.24.7 powermanagementmode

This command sets the mode of operation for the Power Management method to be used. See the below table.

[Definitions-power management mode]

PM Mode			Management mode	Total Allocated power	Port power limit	-
Pm_1	Pm_2	Pm_3				
0	2	0	Dynamic	Consumption	Max	default
0	0	0	Static	Consumption	Predefined	-
0	0	1		Consumption	Predefined	-
1	1	0	Class	Class	Class	-
1	2	0		Class	Max	-

- PM Mode - Pm_1, Pm_2 and Pm_3 values define the PM type
- Management Mode-There are three kinds: Dynamic, Static and Class, divided into sub-categories.
  - Dynamic - based on actual power used.
  - Static - preset by the user.
  - Class - set by the classification of the PD, also according to IEEE 802.3af.
- Total Allocated Power - The method in which the total power is calculated.
  - Consumption - sum of power consumed by all ports, measured in realtime.
  - Class - sum of all ports power *according to their class, except for classes
    0 & 4 for which the actual power consumption is summed.
- Port Power Limit - The conditions in which a port is disconnected due to high consumption, regardless to system power consumption.
  - Predefined - a user defined limit set by the Set Power Limit.
  - Class - if PD's power exceeds power according to its class.
  - Max - Full power according to 802.3af (15.4 W @ 44 V).

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syntax

poe powermanagementmode [physlot slot_num<1 or 2>] [PM1 pm_1 <1 to 7>] [PM2 pm_2<37 to 806>] [PM3 pm_3<470 to 585>]

Parameter	Description
slot_num	an unsigned number of physical slot. (1 or 2)
Pm_1	Selects the total allocated power, an unsigned number of Power Mode1. (1 or 2)
Pm_2	Selects the power limit at the port (Maximum or according to class), an unsigned number of Power Mode2. (1 or 2)
Pm_3	Selects the start condition, an unsigned number of Power Mode3. (1 or 2)

example

to set power management mode in POE module:

```
Router/configure# poe powermanagementmode 1 1 1 1
```

related commands

Router/configure/poe portpowerlimit, Router/configure/poe powerbank

applicable models/versions

All models.

command modes

Router/configure

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3.24.8 powerbank

This command sets power bank in PoE module. This command must be set separately priority for each physical slot.

[Definitions-power bank]

Power bank	PG3	PG2	PG1
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

When PG1=0, PG2=0 and PG3=0, the power limit is according to PB2.
It commands ‘show poe power status <slot>‘ to show Status of PG (=power Group). The default bank is determined by the ‘power good’ pins.

syntax

poe powerbank [physlot slot_num<1 or 2>] [bank bank_num <1 to 7>] [powerlimit powerlimit_num<37 to 806>] [maxvoltage maxvol_num<470 to 585>] [minvoltage minvol_num<440 to 555>] [guardband guardband_num<19 or 20>]

Parameter	Description
slot_num	an unsigned number of physical slot. (1 or 2)
bank_num	Applicable to Set Power Banks command only: specifies the power bank number to be configured (1 to 7; 0 is illegal). an unsigned number of Power bank number. (1 to 7)
powerlimit_num	This value is to be set between 37W to 806W depending on the power supplies capability. If power consumption exceeds this level, lowest priority ports will be disconnected., enter an unsigned number of Power Limit. (37 to 806)

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(Continued)

Parameter	Description
maxvol_num	Maximum voltage level: above this value, the PoE ports shutdown. enter an unsigned number of Port Priority. (470 to 585). Max Volt> Min Volt + 3 V, Max Volt ≤ 58.5 V
minvol_num	Minimum voltage level: below this value, the PoE ports shutdown., enter an unsigned number of Port Priority. (440 to 555), Max Volt> Min Volt + 3 V, Min Volt ≥ 44 V
guardband_num	Power guard band for not connecting additional ports- Power in watts. enter an unsigned number of Port Priority. (19 to 20 Watts)

example

To set power bank in POE module:

```
Router/configure# poe powerbank 1 1 806 585 440 19
```

related commands

Router/configure/poe portpowerlimit, Router/configure/poe powermanagementmode

applicable models/versions

All models.

command modes

Router/configure

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3.24.9 Download_firmware

This command is used to download firmware to the specified PoE module.

syntax

poe download_firmware [physlot slot_num<1 or 2>**]** **[**file_name]

Parameter	Description
physlot slot_num	Slot number of the PoE module for firmware to be downloaded to. (1 or 2)
file_name	File name to be downloaded. The full path such as /cf0/ and /usb0/ should be specified.

default

None.

example

In order to download firmware to a POE module, execute the following:

```
Router/configure# poe download_firmware 1 /cf0/filename.s19
```

related commands

applicable models/versions

All models.

command modes

Router/configure

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3.24.10 legacy_detect_mode

This command is used to enable/disable legacy_detect_mode of a PoE module. If enabled, the system can detect non-standard Cisco-proprietary powered devices.

syntax

poe legacy_detect_mode [physlot slot_num<1 or 2>] [enable/disable]

Parameter	Description
physlot slot_num	Slot number of the PoE module to be set to legacy detect mode. (1 or 2)
enable/disable	Enable or disable legacy_detect_mode (Enable/disable)

example

In order to enable/disable legacy_detect_mode for a POE module, execute the following:

```
Router/configure# poe legacy_detect_mode 1 enable
Router/configure# poe legacy_detect_mode 1 disable
```

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3.25 lacp

This command accesses next-level commands to configure parameters for Link Aggregation Control Protocol (LACP). Link Aggregation Control Protocol (LACP) is part of an IEEE specification (802.3ad) that allows you to bundle several physical ports together to form a single logical channel.

syntax

lacp

example

To configure lacp:

```
Router/configure# lacp
```

related commands

configure lacp system-priority

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/configure

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3.25.1 system-priority

This command configures system-priority for lacp. The higher the number, the lower the priority. System priority is used during the negotiation process of LACP.

syntax

lacp system-priority priority_number<1-65535>
no lacp system-priority priority_number<1-65535>

default

Default is 32768.

example

In order to configure system-priority for lacp, use the following example:

```
Router/configure# lacp system-priority 32768
Router/configure# no lacp system-priority 32768
```

related commands

None.

applicable models/versions

iBG2016 and iBG3026/SNOS v2.0 or higher.

command modes

Router/configure

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3.26 SYS_REM

This command allows users to add comments at the beginning of system-related configuration.

Parameter	Description
comments	80-character (maximum) string enclosed in quotation marks.

syntax

SYS_REM comments <‘comments’>

example

```
Router/configure# SYS_REM ‘Configured on November 3, 2000.
MNB 11/05/00 9:45.’
```

related commands

show running-config, SYS_REM_

applicable models/versions

All models.

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3.27 hostname

Use this command to change the hostname of your iBG system.

syntax

hostname HOSTNAME <*hostname*>

Parameter	Description
hostname	New hostname of iBG

default

None.

example

Following example shows the hostname change 'Router' to 'Miracle'.

```
Router# configure terminal
Router/configure# hostname Miracle
Miracle/configure#
```

related commands

show hostname

applicable models/versions

All models.

command modes

Router/configure

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3.28 date

This command configures the system date/time/timezone.
To view the LOCAL date, time and UTC date, time and UTC time zone offset settings, use the **show date** command. (To set the time, see configure UTC.)
To proper setting, conduct utc setting before configuring date with this command.

syntax

date month <1-12> day <1-31> year <2000-2038>

Parameter	Description
month	Current month(1-12).
day	Current day of month (1-31).
year	Current year (four digits). Valid range is 2000-2038.

example

```
Router/configure# date 03 26 2007
MON MAR 26 13:53:15 2007
 *Mar 26,2007,13 :53 :15 : #PLATFORM-critical : Date/Time is
changed
```

related commands

show date, configure utc

applicable models/versions

All models.

command modes

Router/configure date

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3.29 time

The Router's time is set with this command. The result value of this command is not stored in the Router's configuration file. And this command sets not UTC time but local time. The UTC time is set automatically, by using UTC value. In addition to setting the time itself, you need to set the UTC using utc command.

syntax

time hour <0-23> minute <0-59> second <0-59>
The time is in military (24-hour).

Parameter	Description
Hour	0-23
Minute	0-59
Second	0-59

example

```
Router/configure# time 12 13 30
WED JAN 18 12:13:30 2006
*Jan 18 03:13:30: #SYS-critical: Date/Time is changed
```

related commands

show date, configure utc

applicable models/versions

All models.

command modes

Router/configure time

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3.30 utc

This command sets the current time for the router in UTC (Universal Time Coordinated) time which is Earth's official time, also known as Greenwich Mean Time. Also referred to as Zulu time. Time is expressed in terms of a 24-hour clock (00:00:00 to 23:59:59 hours).
All global timezones are identified by their offset from Greenwich Mean Time-with timezones west of Greenwich England signed as negative as they are behind, and timezones east of Greenwich signed as positive as they are ahead of Greenwich time.

syntax

utc time_zone_offset <+ | -> [UTCHours <0-23>] [UTCMinutes <0-59>]
no utc time_zone_offset <+ | -> [UTCHours <0-23>] [UTCMinutes <0-59>]

Parameter	Description
time_zone_offset	Enter a plus sign (+) for timezones ahead of Greenwich-that is, places where the local time is earlier than it is in Greenwich England. Enter a minus sign (-) for timezones behind Greenwich-that is places where the local time is later than it is in Greenwich England.
UTC hours	The number of hours ahead or behind Greenwich. Valid range is 00-23. All time is expressed in terms of a 24-hour clock.
UTC minutes	The number of minutes ahead or behind Greenwich. Valid range is 00-59. (Most timezones only need to set the number of hours of offset.)

example

To set the local timezone to UTC time plus 9 offset,

```
Router/configure# utc + 9 00
WED JAN 18 11:52:39 2006
Router/configure#
*Jan 18 02:52:39: #SYS-critical: Date/Time is changed

Router/configure# show date
Local Date and Time:
WED JAN 18 11:52:40 2006

UTC Date and Time:
WED JAN 18 02:52:40 2006
UTC time_zone_offset : +9:0
```


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related commands

configure date, show date

applicable models/versions

All models.

command modes

Router/configure utc

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3.31 user

This command adds changes or removes system users. You can configure and assign access privilege levels (1~4) for up to 15 users. To remove a user, type no user name, followed by that user's name. There is only one user with Level 1 who can configure user-related command. You can change the level of the existing user by specifying its different level value in a command line.

syntax

user name <u_name> [level <1 | 2 | 3 | 4>]
no user name <u_name> [level <1 | 2 | 3 | 4>]

Parameter	Description
Name	Name of the user (up to 39 alphanumeric or special characters).
Level	User access privilege level. The following access privilege levels are supported: 1. System Administrator. Access to all CLI operations. 2. Can configure the system, view system data, conduct tests, and change the user's current password. However, this user cannot add users to or remove users from the system. 3. Can view system data, conduct tests, and change user's current password. However, this user cannot perform any other operations. 4. Can view system data and change user's current access password, but cannot perform any other operations. This level is automatically assigned if a level is not specified.

example1

```
Router/configure# user John level 2
```

This example adds a user named John with level 2 access privileges.

example2

```
Router/configure# no user John
```

This example removes a user named John.

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example3

```
Router/configure# user John level 3
```

This example changes John's level into level 3, where John is already existing and his previous level is different than level 3.

applicable models/versions

All models.

command modes

Router/configure

NOTE

Only the System Administrator (access privilege level 1) can add users to and remove users from a Ubigate router. System Administrators are prompted to enter a temporary password for each user that they add.

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3.32 ftp_user

This command configures a specific user for logging into an FTP server to transfer files to and from the Router system. The no form of this command unconfigures the FTP user and restores the default FTP user (‘admin’).

syntax

ftp_user user_name <name>
no ftp_user user_name <name>

Parameter	Description
user_name <name>	The name of an approved user. Only one user is supported.

example

This example configures a new ftp user. The system will prompt the user to enter a new password.

```
Router/configure# ftp_user samsung
Please enter new password:
Please re-enter password:
password is set
```

related commands

configure ftp_server, show ftp

applicable models/versions

All models.

command modes

Router/configure

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3.33 ftp_server

This command enables the FTP server and decides the directory list format for the FTP client. The no form of this command disables the FTP server.

syntax

ftp_server <ibg | linux>
no ftp_server

Parameter	Description
ibg	iBG file list format (default)
linux	Linux-like file list format

default

enabled

example

This example enables the FTP server.

```
Router/configure# ftp_server
```

related commands

configure ftp_user, show ftp

applicable models/versions

All models.

command modes

Router/configure

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3.34 telnet_server

This command enables the TELNET server. The no form of this command disables the TELNET server.

syntax

telnet_server
no telnet_server

example

This example enables the TELNET server.

```
Router/configure# telnet_server
```

related commands

configure telnet_timeout, configure login_banner banner, configure login_banner banner1, configure login_banner banner2, show telnet

applicable models/versions

All models.

command modes

Router/configure

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3.35 ssh_server

This chapter describes the commands used to configure Secure Shell (SSH) server.

3.35.1 sftpd

This command enables the sftp server subsystem functionality, which is disabled by default. Use this command to allow users to access the sftp service from hosts on network. The no form of this command disables the functionality.

syntax

sftpd
no sftpd

example

This example enables the SFTP server functionality.

```
Router/configure/ssh_server# sftpd
```

related commands

configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.2 compression

This command specifies whether or not the SSH server can use a specific compression mechanism. SSH server supports none and zlib. By default, all compression mechanisms are available. The no form of this command disables a specific mechanism.

syntax

compression mechanism <none | zlib>
no compression mechanism <none | zlib>

Parameter	Description
mechanism <none | zlib>	The type of compression being enabled or disabled.

example

This example enables the zlib for compression.

```
Router/configure/ssh_server# compression zlib
```

related commands

configure ssh_server sftpd, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.3 cipher

This command specifies whether or not the SSH server can use a specific cipher mechanism. SSH server supports 3DES, Blowfish, and AES in CBC mode. By default, all cipher mechanisms are available. The no form of this command disables a specific mechanism.

syntax

cipher cipher_algo <3descbc | blowfishcbc | aes128cbc | aes192cbc | aes256cbc>
no cipher cipher_algo <3descbc | blowfishcbc | aes128cbc | aes192cbc | aes256cbc>

Parameter	Description
cipher_algo <3descbc | blowfishcbc | aes128cbc | aes192cbc | aes256cbc>	The cipher mechanism to enable or disable.

example

This example disables the blowfishcbc algorithm for cipher.

```
Router/configure/ssh_server# no cipher blowfishcbc
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.4 mac

This command specifies whether or not the SSH server can use a particular MAC algorithm. SSH server supports HMAC SHA1, HMAC SHA1-96, HMAC MD5 and HMAC MD5-96. By default, all algorithms are available. The no form of this command disables a specific mechanism.

syntax

mac mac_algo <hmacsha1 | hmacsha196 | hmacmd5 | hmacmd596>
no mac mac_algo <hmacsha1 | hmacsha196 | hmacmd5 | hmacmd596>

Parameter	Description
mac_algo<hmacsha1 | hmacsha196 | hmacmd5 | hmacmd596>	The MAC algorithms

example

This example disables the HMAC MD5 algorithm for MAC.

```
Router/configure/ssh_server# no mac hmacmd5
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.5 authentication

This command specifies whether or not the SSH server can use a specific user authentication method (password or public key). By default, both methods are available. The no form of this command disables a specific mechanism.

syntax

authentication auth_method <password | publickey>
no authentication auth_method <password | publickey>

Parameter	Description
auth_method <password | publickey>	The authentication method to be enabled or disabled.

example

This example disables the password authentication method.

```
Router/configure/ssh_server# no authentication password
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.6 hostfile

This command specifies the name of the file containing the private host key for SSH operation. The default host key file is ‘shdsakey’ and must be stored in ‘/cf0’. The server expects the public key to be stored in a file of the same name with the extension ‘.pub’. The host key should not be encrypted by a passphrase. The no form of this command unconfigures the host key file and restores the default file.

syntax

hostfile hostkey_file <filename>
no hostfile hostkey_file <filename>

Parameter	Description
hostkey_file <filename>	The name of the file containing the public host key.

example

This example configures ‘/cf0/mydsakey’ file to the hostkey file for SSH server.

```
Router/configure/ssh_server# hostfile mydsakey
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.7 port

This command specifies the port on which the SSH server will listen.

syntax

port portno <n>

Parameter	Description
Portno <n>	The port number. The default is 22.

example

This example configures the number of SSH server port to 22.

```
Router/configure/ssh_server# port 22
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.8 logevents

This command configures SSH event logging. SSH logging is disabled by default. The no form of this command disables the logging.

syntax

logevents
no logevents

example

This example enables the event logging for SSH server.

```
Router/configure/ssh_server# logevents
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.9 restore

This command restores the default values to all configuration parameters for SSH server.

syntax

restore

example

This example restores the default parameters for SSH server.

```
Router/configure/ssh_server# restore
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, configure ssh_server enable, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.35.10 enable

This command enables or disables secure shell server. The no form of this command shuts down a SSH server.

syntax

enable
no enable

example

This example enables the SSH server.

```
Router/configure/ssh_server# enable
```

related commands

configure ssh_server sftpd, configure ssh_server compression, configure ssh_server cipher, configure ssh_server mac, configure ssh_server authentication, configure ssh_server hostfile, configure ssh_server logevents, configure ssh_server port, configure ssh_server restore, show ip ssh config

applicable models/versions

All models.

command modes

Router/configure/ssh_server

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3.36 ssh_keygen

This chapter describes the commands used to generate and manage the security keys for Secure Shell (SSH) server.

3.36.1 generate

This command generates host and user authentication keys. Supported key types are Rivest, Shamir, and Adelman (RSA) and Digital Signature Algorithm (DSA) key.

syntax

generate type <DSA | RSA> [outfile outfile <filename>] [passphrase passphrase <phrase>] [bits key_length <n>] [comment comment <text>]

Parameter	Description
Type <DSA | RSA>	The type of key to generate, either RSA or DSA
outfile <filename>	The name of the files to contain the generated keys. The private key will be stored in a file with the provided file name, while the public key will be stored in a file with the same name with the extension '.pub'. The default file name is shrsakey for RSA keys, and shdsakey for DSA keys.
passphrase <phrase>	The passphrase to encrypt the key file. The default is a null string. This option should not be set when generating host keys.
key_length <n>	The length of the key, in bits. Valid values are from 512 to 2048. The default is 1024.
comment <text>	A string to identify the key. The default is 'user@hostname'

example

This example generates a DSA host key for SSH server to default file name ('shdsakey') with comment.

```
Router/configure/ssh_keygen# generate DSA comment 'DSA host
key'
```

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related commands

configure ssh_keygen change, configure ssh_keygen convert, configure ssh_keygen encrypt, configure ssh_keygen digest

applicable models/versions

All models.

command modes

Router/configure/ssh_keygen

3.36.2 change

This command changes the passphrase used to encrypt a key file.

syntax

change old_passphrase <quoted_string> new_passphrase <quoted_string> key_file <filename>

Parameter	Description
old_passphrase <quoted_string>	The current passphrase. (null for null string)
new_passphrase <quoted_string>	The new passphrase.
key_file <filename>	The name of the encrypted key file.

example

This example changes a passphrase of key file.

```
Router/configure/ssh_keygen# change ‘old’ ‘new’ mydsakey
```

related commands

configure ssh_keygen generate, configure ssh_keygen convert, configure ssh_keygen encrypt, configure ssh_keygen digest

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applicable models/versions

All models.

command modes

Router/configure/ssh_keygen

3.36.3 convert

This command converts a public key file format between OpenSSH format (the default format) and a Secure Shell (SECSH) Standard format.

syntax

convert convert_type <secsh | openssh> oldfile <filename> [newfile <filename>]

Parameter	Description
convert_type <secsh | openssh>	The type of conversion to perform, either 'secsh' to convert from OpenSSH public key to SECSH public key or 'openssh' to convert from unencrypted private or public SECSH key to OpenSSH.
oldfile <filename>	The name of the existing key file to convert.
newfile <filename>	The name of the new key file to create. If this parameter is omitted, the output is showed on the screen.

example

This example coverts openssh public key ('original.pub') to secsh public key ('new.pub').

```
Router/configure/ssh_keygen# convert secsh original.pub
new.pub
```

related commands

configure ssh_keygen generate, configure ssh_keygen change, configure ssh_keygen encrypt, configure ssh_keygen digest

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applicable models/versions

All models.

command modes

Router/configure/ssh_keygen

3.36.4 encrypt

This command encrypts a private key file. The private key used for secure shell server should not be passphrase protected because you must be able to start the secure shell server without manual intervention. This command can be used to encrypt the private key with keys unique to the router.
To decrypt the key file, use the 'no' form of the command.

syntax

encrypt keyfile <filename>
no encrypt keyfile <filename>

Parameter	Description
keyfile <filename>	The name of the key file to encrypt. The existing file is overwritten.

example

This example encrypts a private key file ('mydsakey') to same file name.

```
Router/configure/ssh_keygen# encrypt mydsakey
```

related commands

configure ssh_keygen generate, configure ssh_keygen change, configure ssh_keygen convert, configure ssh_keygen digest

applicable models/versions

All models.

command modes

Router/configure/ssh_keygen

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3.36.5 digest

This command generates a key digest of a key file. It can be used to compare key files.

syntax

digest keyfile <filename> [digest <fingerprint | bubblebabble>]

Parameter	Description
keyfile <filename>	The name of the key file.
digest <fingerprint | bubblebabble>	The type of digest to generate, either fingerprint of bubblebabble. The default is fingerprint.

example

This example generates a key digest of a public key file (‘mydsakey’).

```
Router/configure/ssh_keygen# digest mydsakey.pub fingerprint
```

related commands

configure ssh_keygen generate, configure ssh_keygen change, configure ssh_keygen convert, configure ssh_keygen encrypt

applicable models/versions

All models.

command modes

Router/configure/ssh_keygen

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3.37 login_banner

This chapter describes the commands used to configure the login banners.

3.37.1 banner

Use this command to configure the first text line of message to be showed after a telnet or SSH login. To configure a message of more than 80 characters, issue the banner1 command (for the second line of text). To add a third text line to the message, use the banner2 command. The entire message cannot exceed 230 characters. To insert a blank line between text lines, type '\n' before the text of the line following the blank line. To remove the first line banner, use the 'no' form of the command.

syntax

banner banner_text <quoted_text>
no banner banner_text <quoted_text>

Parameter	Description
banner_text <quoted_text>	Enter up to 230 characters in a quoted string.

default

The factory default banner is 'SAMSUNG ELECTRONICS CO., LTD. Login'.

example

This example configures the first line of login banner.

```
Router/configure/login_banner# banner "This system is
private property and is only for the use of authorized
personnel."
```

related commands

configure telnet_server, configure telnet_timeout, configure login_banner banner1, configure login_banner banner2, show telnet

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applicable models/versions

All models.

command modes

Router/configure/login_banner

3.37.2 banner1

Use this command to configure the second text line of message to be showed after a telnet or SSH login. To configure a message for the first line of text, issue the banner command. To add a third text line to the message, use the banner2 command. The entire message cannot exceed 230 characters.
To insert a blank line between text lines, type '\n' before the text of the line following the blank line. To remove the second line banner, use the 'no' form of the command.

syntax

banner1 banner_text <quoted_text>
no banner1 banner_text <quoted_text>

Parameter	Description
banner_text <quoted_text>	Enter up to 230 characters in a quoted string.

default

Blank.

example

This example configures the second line of telnet banner.

```
Router/configure/login_banner# banner1 "SAMSUNG ELECTRONICS
CO., LTD. Telnet Login"
```

related commands

configure telnet_server, configure telnet_timeout, configure login_banner banner, configure login_banner banner2, show telnet

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applicable models/versions

All models.

command modes

Router/configure/login_banner

3.37.3 banner2

Use this command to configure the third text line of message to be showed after a telnet or SSH login. To configure a message for the first line of text, issue the banner command. To add a second text line to the message, use the banner1 command. The entire message cannot exceed 230 characters.
To insert a blank line between text lines, type '\n' before the text of the line following the blank line. To remove the third line banner, use the 'no' form of the command.

syntax

banner2 banner_text <quoted_text>
no banner2 banner_text <quoted_text>

Parameter	Description
banner_text <quoted_text>	Enter up to 230 characters in a quoted string.

default

Blank.

example

This example configures the third line of telnet banner.

```
Router/configure/login_banner# banner2 ”Copyright(c) 2006,
SAMSUNG ELECTRONICS CO., LTD.”
```

related commands

configure telnet_server, configure telnet_timeout, configure login_banner banner, configure login_banner banner1, show telnet

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applicable models/versions

All models.

command modes

Router/configure/login_banner

3.38 telnet_timeout

This command sets the lifetime for idle telnet sessions. When the telnet timer expires, a telnet session will be automatically logged out. Use the no form command to restore the default setting (900 seconds).

syntax

telnet_timeout timeout <n>

Parameter	Description
timeout <n>	The time, in seconds The range is 0 -86400 seconds; the default is 900 seconds. If 0 is entered, there will be no timeout configured.

example

This example configures the TELNET timeout to 1300 seconds.

```
Router/configure# telnet_timeout 1300
```

related commands

configure telnet_server, configure login_banner banner, configure login_banner banner1, configure login_banner banner2, show telnet

applicable models/versions

All models.

command modes

Router/configure

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3.39 admin_name

This command changes the first administrator log-in name (Level 1 access) to a user-specified name. The system default is ‘samsung’.

syntax

admin_name admin_name_string <string>

Parameter	Description
admin_name_string	The level 1 user’s login-ID.

default

The factory default admin name is ‘samsung’.

example

```
Router/configure# admin_name SuperUser
```

The example changes the first Level 1 user name to SuperUser.

applicable models/versions

All models.

command modes

Router/configure

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3.40 user-lock

This command accesses next-level commands to configure user lockout parameters. To view the user lockout parameters before or after configuring them, use the **show user-lock** command.

syntax

user-lock

example

```
Router/configure# user-lock
```

related commands

configure user-lock autolock, configure user-lock username, show user-lock config, show user-lock status

applicable models/versions

All models.

command modes

Router/configure

3.40.1 autolock

This command accesses next-level commands for enabling or disabling the automatic lockout for users.

syntax

user-lock autolock

example

```
Router/configure# user-lock autolock
```

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related commands

configure user-lock autolock enable, configure user-lock autolock disable, configure user-lock username, show user-lock config, show user-lock status

applicable models/versions

All models.

command modes

Router/configure

configure user-lock autolock enable

Use this command to enable the automatic lockout for all users. Any user that has failed to login three consecutive times will be locked out if autolock is enabled. In order to allow the locked user to login again, an administrator needs to unlock the user. Use the **no** form of the **user-lock username** command to unlock a user manually, or use the **user-lock autolock disable** command to disable autolock.

syntax

user-lock autolock enable

example

```
Router/configure# user-lock autolock enable
```

related commands

configure user-lock autolock disable, configure user-lock username, show user-lock config, show user-lock status

applicable models/versions

All models.

command modes

Router/configure

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configure user-lock autolock disable

Use this command to unset the automatic lockout for users entirely.

syntax

user-lock autolock disable

example

```
Router/configure# user-lock autolock disable
```

related commands

configure user-lock autolock enable, configure user-lock username, show user-lock config show user-lock status

applicable models/versions

All models.

command modes

Router/configure

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3.40.2 max-fail-attempts

Use this command to specify the number of consecutive failed login attempts before a user is locked-out. This value is valid only if autolock is enabled. Use the **show user-lock config** command to verify the user lockout parameters.

syntax

user-lock max-fail-attempts <number of failed login attempts>

Parameter	Description
number of failed login attempts	Number of failed login attempts before being locked-out

example

```
Router/configure# user-lock max-fail-attempts 5
```

related commands

configure user-lock autolock enable, show user-lock config

applicable models/versions

All models.

command modes

Router/configure

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3.40.3 username

Use this command to lock out a specific user manually. The locked user cannot login before being unlocked by an administrator. Use the **no** form of this command to unlock a specific user manually and use the **show user-lock status** command to verify the lock status for each user.

syntax

user-lock username <user_name>
no user-lock username <user_name>

Parameter	Description
user_name	Name of the user.

example

```
Router/configure# user-lock username John
```

related commands

configure user-lock autolock enable, configure user-lock autolock disable, show user-lock status

applicable models/versions

All models.

command modes

Router/configure

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3.41 event

This command accesses next-level commands for configuring events such as changing the severity of alarm or the size of event history table. To show the event log contents, use the show event event_history or show event current_alarm command.

syntax

event

default

None.

example

```
Router# configure terminal
Router/configure# event
```

related commands

configure event event_history, configure event chanage_severity

applicable models/versions

All models.

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3.41.1 event_history

Use this command to change the size of event history table. Before this configuration being applied, event history table will be cleared.

syntax

event event_history size <1-1000>

Parameter	Description
size	Specify the size of event history table. The range is 1-1000.

default

100

example

In the following example, the size of event history table is configured to 500.

```
Router# configure terminal
Router/configure# event
Router/configure/event# event_history 500
WARNING: After clearing event history table, event history
table will be resized

Press 'y' to continue:
```

related commands

show event event_history
clear event_history

applicable models/versions

All models.

command modes

Router/configure/event

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3.41.2 change_severity

Use this command to change the severity level of each alarm.

syntax

event change_severity alarm-id <WORD> severity <cri | maj | min>

Parameter	Description
alarm-id	Specify the name of alarm. Refer to alarm list which 'show event alarm_list' command displays
severity	Specify the severity level for indicated alarm among critical, major and minor.

default

None.

example

In the following example, the severity level of memLack is configured from minor level to critical level. See the alarm_list command for all of available alarms.

```
Router# configure terminal
Router/configure# event
Router/configure/event# change_severity memLack cri
```

related commands

show event alarm_list, show event current_alarm

applicable models/versions

All models.

command modes

Router/configure/event

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3.42 system

This command accesses next-level commands for configuring logging and system resources.

syntax

system

default

None.

example

```
Router# configure terminal
Router/configure# system
```

related commands

configure system carrier-type, configure system cpu_thresh, configure system memory_thresh, configure system logging, configure system reset-to-factory

applicable models/versions

All models.

3.42.1 system carrier-type

This command changes the module type between t1 and e1. when you use this command, you must be rebooting the system.

syntax

system carrier-type number <slot/subslot> mode <t1|e1>

Parameter	Description
Number	<slot/subslot/port> Number of the E1 WAN Mini module: slot/subslot Network module: slot
mode	t1: change to t1 mode e1: change to e1 mode

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example

```
Router/configure# system carrier-type 0/0 e1
```

related commands

configure reboot

applicable models/versions

T1, E1 modules

3.42.2 cpu_thresh

Use this command to configure to CPU threshold value. If CPU usage goes over threshold value, alarm will be raised. In opposite case, alarm will be cleared. The unit of threshold value is percentage. Use the no form of this command to disable CPU threshold.

syntax

system cpu_thresh value <1-100>
no system cpu_thresh value <1-100>

Parameter	Description
value	Specify the threshold value of CPU usage The range is 1-100

default

None.

example

In the following example, the CPU threshold value is configured to 90.

```
Router# configure terminal
Router/configure# system cpu_thresh 90
```


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related commands

show system cpu

applicable models/versions

All models.

command modes

Router/configure

3.42.3 memory_thresh

Use this command to configure to memory threshold value. If memory usage goes over threshold value, alarm will be raised. In opposite case, alarm will be cleared. The unit of threshold value is percentage. Use the no form of this command to disable memory threshold.

syntax

system memory_thresh value <1-100>
no system memory_thresh value <1-100>

Parameter	Description
value	Specify the threshold value of memory usage The range is 1-100

default

None.

example

In the following example, the memory threshold value is configured to 80.

```
Router# configure terminal
Router/configure# system memory_thresh 80
```

related commands

show system memory

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applicable models/versions

All models.

command modes

Router/configure

3.42.4 logging

This command accesses next-level commands for configuring console/ terminal logging, buffer logging, syslog, etc. To show the logging set, use the **show system logging syslog** command.

syntax

system logging

default

None.

example

```
Router# configure terminal
Router/configure# system logging
```

related commands

configure system logging all_terminal, configure system loggging buffered, configure system logging console, configure system logging current_terminal, configure system logging email, configure system logging_on, configure system logging syslog, configure system audit-log, configure system export_commandlog

applicable models/versions

All models.

command modes

Router/configure

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configure system logging export_commandlog

This command triggers the syslog messages which contain the information about the commands users input. The messages are sent to syslog servers to inform administrator of the change of system-configuration. To stop sending syslog messages, use the 'no export_commandlog' command.

syntax

export_commandlog

default

None.

example

```
Router/configure/system/logging/# export_commandlog
Command Log will be exported.

Router/configure/system/logging# no export_commandlog
Command Log will NOT be exported.
```

related commands

show system logging commandLog

applicable models/versions:

All models/SNOS v2.1 or higher.

command modes

Router/configure/system/logging

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configure system logging console

Use this command to configure system messages to be sent to the console. They are defined hierarchically by severity, with ‘emergency’ messages as the most urgent and ‘debugging’ messages being the least urgent. Users have the option of selecting the message type (and messages of greater severity) to be sent to the console. Use the no form of this command to not send to the console.

syntax

console level <emergency | alert | critical | error | warning | notification | informational | debugging>
no console level <emergency | alert | critical | error | warning | notification | informational | debugging>

Parameter	Description	
level	Specify logging severity level for console. Each severity level is as follows:	
	emergency	Emergency messages are logged.
	alert	Alert messages as well as emergency messages are logged.
	critical	Critical messages as well as all messages described above are logged.
	error	Error messages are logged, plus all messages described above.
	warning	Warning messages are logged, plus all messages described above.
	notification	Notification messages are logged, plus all messages described above.
	informational	Informational messages are logged, plus all messages described above.
	debugging	Debugging messages are logged, plus all messages described above.

default

None.

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example

In the following example, the severity level of the current terminal is configured as critical.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# current_terminal critical
```

related commands

configure system logging logging_on
show system logging syslog

applicable models/versions

All models.

command modes

Router/configure/system/logging

configure system logging all_terminal

Use this command to configure system messages to be sent to all terminals. They are defined hierarchically by severity, with ‘emergency’ messages as the most urgent and ‘debugging’ messages as the least urgent. Users have the option of selecting the message type (and messages of greater severity) to be sent to all terminals. Use the no form of this command to not send to terminals.

syntax

all_terminal level <emergency | alert | critical | error | warning | notification | informational | debugging>
no all_terminal level <emergency | alert | critical | error | warning | notification | informational | debugging>

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Parameter	Description	
level	Specify logging severity level for all terminals. Each severity level is as below:	
	emergency	Emergency messages are logged.
	Alert	Alert messages as well as emergency messages are logged.
	critical	Critical messages as well as all messages described above are logged.
	error	Error messages as well as all messages described above are logged.
	warning	Warning messages as well as all messages described above are logged.
	notification	Notification messages as well as all messages described above are logged.
	informational	Informational messages as well as all messages described above are logged.
	debugging	Debugging messages as well as all messages described above are logged.

default

None.

example

In the following example, the severity level of all terminals is configured to error.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# all_terminal error
```

related commands

configure system logging logging_on, show system logging syslog, configure system logging current_terminal

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applicable models/versions

All models.

command modes

Router/configure/system/logging

configure system logging current_terminal

Use this command to configure system messages to be sent to current terminal. They are defined hierarchically by severity, with ‘emergency’ messages being the most urgent and ‘debugging’ messages being the least urgent. Users have the option of selected message type (and messages of greater severity) to be sent to current terminal. Use the no form of this command to not send to the current terminal.

syntax

current_terminal level <emergency | alert | critical | error | warning | notification | informational | debugging>
no current_terminal level <emergency | alert | critical | error | warning | notification | informational | debugging>

Parameter	Description	
level	Specify logging severity level for current terminal. Each severity level is as below:	
	emergency	Emergency messages are logged.
	alert	Alert messages as well as emergency messages are logged.
	critical	Critical messages as well as all messages described above are logged.
	error	Error messages as well as all messages described above are logged.
	warning	Warning messages are logged, plus all messages described above.
	notification	Notification messages are logged, plus all messages described above.
	informational	Informational messages are logged, plus all messages described above.
	debugging	Debugging messages are logged, plus all messages described above.

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default

None.

example

In the following example, the severity level of the current terminal is configured as informational.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# current_terminal
informational
```

related commands

configure system logging logging_on, show system logging syslog, configure system logging all_terminal

applicable models/versions

All models.

command modes

Router/configure/system/logging

configure system logging buffered

Use this command to configure the size of the Syslog buffer and system messages to be stored in Syslog buffer. They are defined hierarchically by severity, with ‘emergency’ messages being the most urgent and ‘debugging’ messages being the least. Users have the option of selecting the message type (and messages of greater severity) to be stored in Syslog buffer.

syntax

buffered [size <1-10000>] [level <emergency | alert | critical | error | warning | notification | informational | debugging>]

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Parameter	Description	
size	Specify the size of Syslog buffer. The range is 1-10000.	
level	Specify logging severity level for syslog buffer. Each severity level is as below:	
	emergency	Emergency messages are logged.
	alert	Alert messages as well as emergency messages are logged.
	critical	Critical messages as well as all messages described above are logged.
	error	Error messages as well as all messages described above are logged.
	warning	Warning messages as well as all messages described above are logged.
	notification	Notification messages as well as all messages described above are logged.
	informational	Informational messages as well as all messages described above are logged.
	debugging	Debugging messages as well as all messages described above are logged.

default

None.

example

In the following example, the size of the Syslog buffer is configured to 500 and the severity level of the Syslog buffer is configured to notification.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# buffered size 500 level
notification
```

related commands

configure system logging logging_on, show system logging syslog

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applicable models/versions

All models.

command modes

Router/configure/system/logging

configure system logging logging_on

Use this command to configure system messages to logging to system. Use the no form of this command to disable logging to system. If logging is enabled, system messages are logged to the system at each configuration such as console, buffered, etc. If logging is disabled, however, all system messages are ignored.

syntax

logging_on
no logging_on

default

None.

example

In the following example, logging is enabled

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# logging_on
logging is enabled
```

related commands

show system logging syslog

applicable models/versions

All models.

command modes

Router/configure/system/logging

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configure system logging syslog

This command accesses next-level commands for configuring syslog server and facility type.

syntax

syslog

default

None.

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# syslog
```

related commands

configure system logging syslog host_ipaddr, configure system logging syslog facility.

applicable models/versions

All models.

command modes

Router/configure/system/logging

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configure system logging syslog utc_offset

Use this command to insert UTC information into syslog message.

syntax

utc_offset

default

None.

example

In the following example, logging time is configured to local time.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# utc_offset
utc offset will be displayed
```

related commands

show system logging syslog

applicable models/versions

All models/SNOS v2.2 or higher.

command modes

Router/configure

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configure system logging syslog host_ipaddr

Use this command to set the syslog host IP address and port number. Syslog hosts can be configured for the maximum of 5 syslog servers. Use the no form of this command to delete the configured syslog servers.

syntax

host_ipaddr ip <A.B.C.D> [port <1-65535>]

Parameter	Description
Ip	Specifies the IP address of the syslog server.
udp_portno	Specifies the port number of the syslog server. The default is 514. The range is 1-65535.

default

Port number is 514

example

In the following example, the IP address of the syslog server is configured to 165.213.122.165 using the default port number.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# syslog
Router/configure/system/logging# host_ipaddr 165.213.122.165
```

related commands

configure system logging syslog facility, show system logging syslog

applicable models/versions

All models.

command modes

Router/configure/system/logging/syslog

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configure system logging syslog host_ipaddrv6

Use this command to set the syslog host IP address and port number for IPv6. Syslog hosts can be configured for a maximum of 5 syslog servers. Use the no form of this command to delete the configured syslog servers.

syntax

host_ipaddr ip <A:B::C:D> [port <1-65535>]

Parameter	Description
Ip	Specify the IP address of the syslog server.
port	Specify the port number of the syslog server. The default is 514. The range is 1-65535.

default

Port number is 514

example

In the following example, the IP address of the syslog server is configured to 165.213.122.165 using the default port number.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# syslog
Router/configure/system/logging# host_ipaddrv6
2002::213:baff:fe85:e2c8
```

related commands

configure system logging syslog facility, show system logging syslog

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/system/logging/syslog

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configure system logging syslog facility

Use this command to configure the facility type and severity level for sending system messages to the syslog server. The severity levels are defined hierarchically by severity, with ‘emergency’ messages being the most urgent and ‘debugging’ messages being the least.

syntax

facility type <kern | user | mail | daemon | auth | syslog | lpr | news | uucp | sys9 | sys10 | sys11 | sys12 | sys13 | sys14 | local 0 | local1 | local2 | local3 | local4 | local5 | local6 | local7> level <none | alert | crit | err | warning | notice | info | debug>

Parameter	Description	
type	Specify facility type. The list of facility types is as below:	
	kern	Kernel messages
	user	User-level messages
	mail	Mail system
	daemon	System daemon
	auth	Security/authorization messages
	syslog	Messages generated internally by syslog
	lpr	Line printer subsystem
	news	Network news subsystem
	uucp	UUCP subsystem
	sys9	Indicates system use
	sys10	Indicates system use
	sys11	Indicates system use
	sys12	Indicates system use
	sys13	Indicates system use
	sys14	Indicates system use
	local0	Locally defined messages
	local1	Locally defined messages
	local2	Locally defined messages
	local3	Locally defined messages
	local4	Locally defined messages

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(Continued)

Parameter	Description	
type	local5	Locally defined messages
	local6	Locally defined messages
	local7	Locally defined messages
level	Specify severity level for syslog server. Each severity level is as below:	
	none	Does not log messages of the specified facility.
	emerg	Emergency messages are logged.
	alert	Alert messages as well as emergency messages are logged.
	crit	Critical messages as well as all messages described above are logged.
	err	Error messages as well as all messages described above are logged.
	warning	Warning messages as well as all messages described above are logged, plus all messages described above.
	notice	Notification messages as well as all messages described above are logged.
	info	Informational messages as well as all messages described above are logged.
	debug	Debugging messages as well as all messages described above are logged.

default

None.

example

In the following example, the facility type is configured to local4 and severity level is configured to notice.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# syslog
Router/configure/system/logging# facility local4 notice
```


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related commands

configure system logging syslog host_ipaddr, show system logging syslog

applicable models/versions

All models.

command modes

Router/configure/system/logging/syslog

configure system logging syslog identifier

Use this command to set the identifier in the packet to send to the syslog server. The Identifier is a unique alphanumeric value. This configuration is meaningful when the syslog server is already configured.

syntax

identifier
no identifier

default

disable

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# syslog
Router/configure/system/logging syslog# identifier
```

related commands

show system logging syslog

applicable models/versions

All models.

command modes

Router/configure/system/logging/syslog

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configure system logging email

This command accesses next-level commands for configuring e-mail and message type.

No syslog messages will be sent to the external SMTP server. Only security related syslog messages will be sent to the SMTP server.

syntax

email

default

None.

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
```

related commands

configure system logging email config, configure system logging email message-type

applicable models/versions

All models.

command modes

Router/configure/system/logging

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configure system logging email config

Use this command to configure the e-mail server IP address, e-mail address, timeout and message queue length. Use the no form of this command to delete the configured email servers.

syntax

config ip_addr<A.B.C.D> email_addr <mail address> [threshold-time time <1-60>] [queue-len length <1-75>]
no config ip_addr<A.B.C.D> email_addr <mail address> [threshold-time time <1-60>] [queue-len length <1-75>]

Parameter	Description
ip_addr	Specifies the IP address of the e-mail server.
email_addr	Specifies the e-mail receiver address.
time	Specifies time after (in minutes) to send log messages. The default is 60: The range is 1-60.
length	Specifies message queue length. The default is 75: The range is 1-75.

default

threshold-time is 60, queue-len is 75

example

In the following example, the IP address of the e-mail server is configured to 165.213.122.165 and admin@samsung.net is configured as the e-mail receiver.

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # config
165.213.122.165 admin@samsung.net
```

related commands

configure system logging email message-type

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applicable models/versions

All models.

command modes

Router/configure/system/logging/email

configure system logging email message-type

This command accesses next-level commands for configuring message type.

syntax

message-type

default

None.

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email #  message-type
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/system/logging/email

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configure system logging email message-type access-statistics

This command enables/disables logging access statistics e-mail messages.

syntax

access-statistics
no access-statistics

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # access-
statisticse
```

related commands

allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type allow-policy

This command enables/disables logging allow-policy e-mail messages.

syntax

allow-policy
no allow-policy

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email# message-type
Router/configure/system/logging/email/message-type# allow-
policy
```

related commands

access-statistics, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type allow-vpn

This command enables/disables logging allow-vpn e-mail messages.

syntax

allow-vpn
no allow-vpn

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # allow-vpn
```

related commands

access-statistics, allow-policy, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type auth-login

This command enables/disables logging auth-login e-mail messages.

syntax

auth-login
no auth-login

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # auth-
login
```

related commands

access-statistics, allow-policy, allow-vpn, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type config-changes

This command enables/disables logging config-changes e-mail messages.

syntax

config-changes

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # config-
changes
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type content-filtering

This command enables/disables logging content-filtering e-mail messages.

syntax

content-filtering
no content-filtering

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type #
content-filtering
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type data-inspection

This command enables/disables logging data-inspection e-mail messages.

syntax

data-inspection
no data-inspection

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # data-
inspection
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type deny-policy

This command enables/disables logging deny-policy e-mail messages.

syntax

deny-policy
no deny-policy

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # deny-
policy
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type enable-all

This command enables/disables logging all e-mail messages.

syntax

enable-all
no enable-all

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # enable-
all
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type general-attacks

This command enables/disables logging general-attacks e-mail messages.

syntax

general-attacks
no general-attacks

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type #
general-attacks
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type ip-options

This command enables/disables logging IP-options e-mail messages.

syntax

ip-options
no ip-options

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # ip-
options
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type ip-spoofing

This command enables/disables logging IP-spoofing e-mail messages.

syntax

ip-spoofing
no ip-spoofing

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # ip-
spoofing
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type ping-of-death

This command enables/disables logging ping-of-death e-mail messages.

syntax

ping-of-death
no ping-of-death

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # ping-
of-death
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, syn-flooding, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type syn-flooding

This command enables/disables logging syn-flooding e-mail messages.

syntax

syn-flooding
no syn-flooding

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # syn-
flooding
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, system-messages, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type system-messages

This command enables/disables logging system-messages e-mail messages.

syntax

system-messages
no system-messages

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # system-
messages
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, unauthorized-access, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type unauthorized-access

This command enables/disables logging unauthorized-access e-mail messages.

syntax

unauthorized-access
no unauthorized-access

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type #
unauthorized-access
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unavailable-policy, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type unavailable-policy

This command enables/disables logging unavailable-policy e-mail messages.

syntax

unavailable-policy
no unavailable-policy

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type #
unavailable-policy
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, win-nuke

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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configure system logging email message-type win-nuke

This command enables/disables logging win-nuke attack e-mail messages.

syntax

win-nuke
no win-nuke

default

disabled (no)

example

```
Router# configure terminal
Router/configure# system logging
Router/configure/system/logging# email
Router/configure/system/logging/email # message-type
Router/configure/system/logging/email/message-type # win-
nuke
```

related commands

access-statistics, allow-policy, allow-vpn, auth-login, config-changes, content-filtering, data-inspection, deny-policy, enable-all, general-attacks, ip-options, ip-spoofing, ping-of-death, syn-flooding, system-messages, unauthorized-access, unavailable-policy

applicable models/versions

All models.

command modes

Router/configure/system/logging/email/message-type

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3.42.5 jumboMtuLimit

This command sets the maximum Layer 2 or Layer 3 payload size. To revert to the default jumboMtuLimit setting, use the no form of this command.

syntax

system jumbMtuLimit mtu_limit <1500 | 9216>
no system jumbMtuLimit mtu_limit <1500 | 9216>

Parameter	Description
mtu_limit	Enter MTU limit 1500 or 9216

default

The default setting is 1500 byte

example

```
Router/configure# system jumboMtuLimi  1500
```

related commands

show interface, show system jumboMtuLimit

applicable models/versions

All models.

command modes

Router/configure

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3.42.6 reset-to-factory

This command sets default value User Accounts or System Settings in Nvram. In certain situations, it is desirable to return system configuration to the original default factory settings. This is useful when you want to remove an undesirable configuration that is present in the system. If you forget admin ID/PW and the system has become very complex or if you want to move the system from one network to other, you can reset the system to factory defaults and configure it as a new system.
Defaults value is set to next reboot command executed.

NOTE

The real reset-to-factory action will be conducted after the system reboot with an user's approval. After the system reboots, an user should agree to the question of reset-to-factory at boot monitor. Following logs shows an sample message.

WARNING: All User settings will be lost!!!

1) System will delete all user accounts.
2) System will set default user ID and password.
3) System will delete all user lock table.

Are you sure (Y or N)? y

WARNING: Detecting Factory Reset. All settings will be lost!

1) System Configuration will be deleted.(system.cfg)
2) System NVRAM will be cleared.
3) System Boot line is set to Default.
4) System Watchdog Time is set to Default(3 sec).
5) System ID/PW is set to Default.
6) System exception reboot flag will be set to enable.
7) System vender information is set to Default.
8) System's date and time is set as Jan 1 00:00 2000, you should set date and time on CLI, later.
9) Voice Site Flag is set to default site.
10) System will be rebooted.(NORMAL BT)

Are you sure you want to reset to factory defaults (Y or N)?

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syntax

system reset-to-factory target<users | system>

Parameter	Description
users	User Accounts (admin ID/PW)
system	System Settings such as boot line, watchdog value, next boot type

example

```
Router/configure# system reset-to-factory users

WARNING: All User settings will be lost!!!

System will delete all user accounts the next time reboot
command is executed.
After rebooting the system will show reconfirm message and
require reconfirming through console.
If you want to adapt to factory-to-reset system or user, you
should reconfirm through console.

Are you sure (Y or N)? y

Reset Enabled.
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure system reset-to-factory

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3.43 SYS_REM_

This command allows users to add comments at the end of system-related configuration.
Comments will appear after using the **save local** command.

syntax

SYS_REM_ comments <‘comments’>

Parameter	Description
comments	80-character (maximum) string enclosed in quotation marks.

example

```
Router/configure# SYS_REM__ ‘Everything left unchanged
except IP filter. MNB 11/06/
00 12:20.’
```

related commands

show startup-config, SYS_REM

applicable models/versions

All models.

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3.44 sntp

This command configures the simple network time protocol (SNTP) client. SNTP client synchronizes the system clock with a specific SNTP server on the network.

syntax

sntp [server <ip_address> [timeout <n>] [silentmode <on/off>]]
no sntp [server <ip_address> [timeout <n>] [silentmode <on|off>]]

Parameter	Description
server <ip_address>	An IP address (IPv4 or IPv6) or a host name. If none is specified, default is any broadcast server.
timeout <n>	The time, in seconds, in which the host responds. The default is 1024 seconds.
Silentmode< on|off>	silent mode flag (default: on)

default

Disabled (no)

example

This example configures the SNTP server 100.25.6.3 and time interval (1800 seconds) for synchronizing the system clock.

```
Router/configure# sntp server 100.25.6.3 timeout 1800
silentmode off
```

This example configures the SNTP server 2002::1234 and time interval (1200 seconds) with silent mode.

```
Router/configure# sntp server 2002::1234 timeout 1200
silentmode on
```

related commands

show sntp

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applicable models/versions

All models.

command modes

Router/configure

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3.45 ip

This command accesses next-level commands for configuring IP parameters. To view the IP parameters before or after configuring them, use the appropriate show ip commands.

syntax

ip

example

```
Router/configure# ip
```

related commands

configure ip access-group configure ip domain_name configure ip dos, configure ip access-list configure ip host_add configure ip load_balance, configure ip name_server configure ip pname_server configure ip route, configure ip routing

applicable models/versions

All models.

3.45.1 domain_name

Use this command to set the default domain name for the DNS. Use the no form of this command to unset the default domain.

syntax

ip domain_name <Domain string>
no ip domain_name <Domain string>

Parameter	Description
domain_name	Default domain name string

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example

```
Router/configure# ip domain_name company.com
```

applicable models/versions

All models.

3.45.2 host_add

This command adds a host name and its corresponding IP address to the internal hosts table.
This command checks the host table and maps a host name to an IP address before making a DNS query.

syntax

ip host_add hostname <*host name*> hostaddress <*IP address*>
no ip host_add hostname <*host name*> hostaddress <*IP address*>

Parameter	Description
hostname	Name of the new host
	Use up to 60 characters.
hostaddress	IP address of the new host.

example

```
Router/configure# ip host_add mainsys 10.1.3.251
```

related commands

configure ipv6 host_add, show hosts

applicable models/versions

All models.

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3.45.3 pname_server

This command defines the IPv4 address or IPv6 address of the primary DNS server. Use the no form of this command to remove the server configuration.

syntax

ip pname_server ipaddress <*IP address*>
no ip pname_server ipaddress <*IP address*>

Parameter	Description
ipaddress	IPv4 address or IPv6 address of the primary name server.

example

```
Router/configure# ip pname_server 10.1.100.16

Router/configure# ip pname_server 2002:1234::5678
```

related commands

configure ip name_server, show ip dns

applicable models/versions

All models.

3.45.4 name_server

This command defines the IPv4 address or IPv6 address of the secondary DNS server. Use the no form of this command to remove the server configuration.

syntax

ip name_server ipaddress <*IP address*>
no ip name_server ipaddress <*IP address*>

Parameter	Description
ipaddress	IPv4 address or IPv6 address of the secondary DNS server.

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example

```
Router/configure# ip name_server 123.70.0.23

Router/configure# ip name_server 2002:1234::9012
```

related commands

configure ip pname_server, show ip dns

applicable models/versions

All models.

3.45.5 unicast-routing

This command enables or disables IPv4 unicast routing (the default).

syntax

ip unicast-routing
no ip unicast-routing

example

ipv4 unicast-routing

applicable models/versions

All models.

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3.45.6 load-balancing

This command enables or disables IPv4 load balancing. The default is per flow.

syntax

ip load-balancing load_method[per-flow | per-packet]
no ip load-balancing load_method[per-flow | per-packet]

Parameter	Description
load_method	Select the method for load-balancing * Per-packet is not supported in LAN Modules

default

By default, per flow is on.

example

```
In the following example, enable per-packet mode for ip
load-balancing.
Router/configure# ip load-balancing per-packet
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.45.7 icmp

This command is used to configures the Internet Control Message Protocol (ICMP) that is a network-layer Internet protocol. ICMP provides message packets to report errors and other information regarding IP packet processing back to the source.

configure ip icmp rate-limit

Specifies ICMP send rate, to limit ICMP error message generation.

syntax

ip icmp rate-limit interval[1-n]
no ip icmp rate-limit interval[1-n]

Parameter	Description
interval	Time interval for sending ICMP messages in milliseconds (default = 1)

default

Enabled

example

```
In the following example, enter 2 as time interval for ICMP
error messages.
Router/configure# ip icmp rate-limit 2
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.45.8 route

This command adds a static IP route to a Router system.

NOTE

The network 1.1.0.0 is utilized internally in the Router system. The user is prevented from configuring IP addresses within, or IP routes to, this network.

Parameter	Description
ipaddress	IP address of the static route
netmask	Subnet mask of the static route
gateway	Gateway IP address, interface name, or fr bundlename:pvc# to the destination
metric	Administrative distance of the route The range is 1-255.

syntax

route ipaddress <IP address> netmask <subnet mask> gateway <gateway IP address> metric <n>

example 1

```
Gateway route:
Router/configure# ip route 10.1.200.0 255.255.0.0 10.2.71.5 2
```

example 2

```
Interface route:
Router/configure# ip route 10.1.200.0 255.255.255.0 wan1 2
```

example 3

```
Frame relay/pvc route:
Router/configure# ip route 10.1.200.0 255.255.255.0 wan1:17 2
```

applicable models/versions

All models.

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3.45.9 access-list

This command accesses commands for creating and modifying IP packet filtering rule sets. After creating a new rule set, you can apply it to the WAN bundles and Ethernet ports of the system, using such as configure access-group, configure interface bundle access-group, or configure interface ethernet access-group commands.

syntax

access-list list_name<name>
no access-list list_name<name>

Parameter	Description
List_name	Access list name

default

Disabled (no)

example

```
router# configrue terminal
router/configure# ip access-list list1
```

related commands

ip access-list add, ip access-list delete, ip access-list insert, access-group

applicable models/versions

All models.

command modes

Router/configure/ip

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configure ip access-list add

This command adds a rule to the current filter rule list.
Each rule is added with an identifying line number for future insertion or deletion.

syntax

add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port <0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value <0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

no add rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port <0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value <0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>] [log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
rul_action	permit rule or deny rule
Protocol	ip protocol-tcp/udp/icmp/ip/igmp or 0-255
Source	ip src address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
Destination	ip dst address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255

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Parameter	Description
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	ip precedence, 0-7
tos_value	ip type of service, 0-15
dscp_value	ip differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ip fragments'
logging	logging on/off (default: off)
Expire_time	rule expiry time (seconds)

default

Disabled (no)

example

```
router# configure terminal
router/configure# ip
router/configure/ip# access-list list1
router/configure/ip/access-list list1# add permit tcp any
any
router/configure/ip/access-list list1# add permit tcp
10.1.3.9/24 10.1.100.46 255.255.255.0 dport =23 flags
established log on
```

related commands

delete, insert

applicable models/versions

All models.

command modes

Router/configure/ip/access-list

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configure ip access-list insert

This command inserts a new rule into an existing filtering rule set.
This command lets you enter a rule in the middle of an existing set of rules by specifying a line number location.

syntax

insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

no insert line_num<num> rul_action<permit | deny> protocol<tcp | udp | icmp | igmp | 0-255> Source<IP address> [/ wildcard<wildcard>] | any destination<IP address> [/ wildcard<wildcard>] | any [sport src_port <0-65535>] [dport dts_port<0-65535>] [precedence precedence_value<0-7>] [tos tos_value<0-15>] [dscp dscp_value<0-63>] [flags flag<established | fin | syn | ack | psh | rst | urg>] [icmptype icmptype_value<0-255>] [icmpcode icmpcode_value<0-255>] [igmptype igmp_type<group-query | v1-report | dvmrp | pim | trace | v2-report | v2-leave | mtrace-response | mtrace | v3-report | mra | mrs | mrt or 0-12>]
[log logging<on | off>] [expire expire_time<seconds>]

Parameter	Description
line_num	The rule line number to insert a rule
rul_action	permit rule or deny rule
Protocol	ip protocol-tcp/udp/icmp/ip/igmp or 0-255
Source	ip src address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
Destination	ip dst address: a.b.c.d/a.b.c.d or a.b.c.d/0-32 or any
src_port	tcp/udp src port: =p, !=p, <p,>p, <=p,>=p, p1-p2
dts_port	tcp/udp dst port: =p, !=p, <p,>p, <=p,>=p, p1-p2

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Parameter	Description
Icmptype_value	icmp type, 0-255
Icmpcode_value	icmp code, 0-255
Igmp_type	group-query/v1-report/dvmrp/pim/trace/v2-report/v2-leave/ mtrace-response/mtrace/v3-report/mra/mrs/mrt or 0-12
precedence_value	ip precedence, 0-7
tos_value	ip type of service, 0-15
dscp_value	ip differentiated services code point (dscp), 0-63
Flag	tcp flags: established or fin, rst, psh, syn, urg, ack
Fragments	'non initial ip fragments'
logging	logging on/off (default: off)
Expire_time	rule expiry time (seconds)

default

Disabled (no)

example

```
router#configure terminal
router/configure# ip
router/configure/ ip # access-list list1
router/configure/ip/access-list list1# add permit tcp any any
router/configure/ip/access-list list1# insert 1 permit tcp
10.1.3.9/24 10.1.100.46 255.255.255.0 dport =23 flags
established log on
```

related commands

add, delete

applicable models/versions

All models.

command modes

Router/configure/ip/access-list

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configure ip access-list delete

This command deletes a rule from an IP packet filtering rule set.
You must know the line number of the rule to delete it. To show the rules currently stored in a rule set before or after deleting them, use the show ip access-list filter_list command. When you delete a rule, the line numbers of successive rules in the list are revised accordingly.

syntax

delete line_num<num>

Parameter	Description
Line_num	The line number of the rule to delete

default

Disabled (no)

example

```
router# configure terminal
router/configure# ip
router/configure/ip # access-list list1
router/configure/ip/access-list list1# delete 1
```

related commands

add, insert

applicable models/versions

All models.

command modes

Router/configure/ip/access-list

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3.45.10 dhcps

This command is used to configures the Dynamic Host Configuration Protocol (DHCP) server.

configure ip dhcps remote_database

This command configures the remote database for storing the binding information on DHCP server. The no form of this command removes the DB configuration.

syntax

remote_database database_url <ftp_url> [interval <n>]
no remote_database database_url <ftp_url> [interval <n>]

Parameter	Description
database_url <ftp_url>	Database URL (ftp://<user>:<password>@<host>:<port>/<url-path>)
interval <n>	update interval in seconds, default: 600.

example

```
This example configures the remote database and update
interval(60 seconds).
Router/configure/ip/dhcps# remote_database
ftp://common:common@100.25.6.3:8080/dhcps/dhcp.pool 60
```

related commands

configure ip dhcps pool, configure ip dhcps vendor,configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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configure ip dhcps pool

This command configures the address pool of DHCP server. This command enters the DHCP configuration mode for the specified pool, hence, all commands executed before the next Exit command apply to this pool. Use the no form of this command to delete a DHCP pool. The administrator can create multiple DHCP server pools on devices with multiple interfaces. Such a device may act as DHCP server on two interfaces to distribute different information to clients on the two different networks.

syntax

pool pool_name <name>
no pool pool_name <name>

Parameter	Description
pool_name <name>	Name of the address pool

example

```
This example configures the address pool of dhcp server to
‘subnet10.6.5’ and enters the pool configuration mode.
Router/configure/ip/dhcps# pool subnet10.6.5
```

related commands

configure ip dhcps remote_database, configure ip dhcps vendor,configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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configure ip dhcps pool clientid

This command configures the client id for host address pool of DHCP server. To remove a client id from a pool, use the no form of this command.

syntax

clientid id <mac_address>
no clientid id <mac_address>

Parameter	Description
id <mac_address>	client id in form of aa:bb:cc:dd:ee:ff

example

```
This example configures the client id for host address pool
‘host77’.
Router/configure/ip/dhcps/pool host77# clientid
00:50:40:f0:62:00
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool domain

This command configures a domain name for address pool of DHCP server. The DHCP server can pass a domain-name to the DHCP clients that connect to it. To remove a domain name from a pool, use the no form of this command.

syntax

domain domain_name <name>
no domain domain_name <name>

Parameter	Description
domain_name <name>	Domain name string passed to client

example

```
This example configures the domain name for address pool
‘subnet10.6.5’.
Router/configure/ip/dhcps/pool subnet10.6.5# domain
samsung.com
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool dnsserver

Use this command to add a DNS server to the list of DNS servers that the DHCP server passes to the clients. It can be inserted to the DNS server list up to 8. Use the no form of this command to disable the effects of a command.

syntax

dnsserver server_address <ip_address>
no dnsserver server_address <ip_address>

Parameter	Description
server_address <ip_address>	the IP address of the DNS server to be added to the list.

example

```
This example configures the DNS server address for address
pool 'subnet10.6.5'.
Router/configure/ip/dhcps/pool subnet10.6.5# dnsserver
100.45.7.101
```

related commands:ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool tftpserver

Use this command to add a TFTP server to the list of TFTP servers that the DHCP server passes to the clients. It can be inserted to the TFTP server list up to 8. Use the no form of this command to disable the effects of a command.

syntax

tftpserver server_address <ip_address>
no tftpserver server_address <ip_address>

Parameter	Description
server_address <ip_address>	the IP address of the TFTP server to be added to the list.

example

```
This example configures the TFTP server address for address
pool ‘subnet10.6.5’.
Router/configure/ip/dhcps/pool subnet10.6.5# tftpserver
10.6.5.10
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool netbios_name_server

Use this command to add a NetBIOS name server to the list of NetBIOS name servers that the DHCP server passes to the clients. It can be inserted to the server list up to 8. Use the no form of this command to disable the effects of a command.

syntax

netbios_name_server server_address <ip_address>
no netbios_name_server server_address <ip_address>

Parameter	Description
server_address <ip_address>	IP address of the NetBIOS name server to be added to the list.

example

```
This example configures the netbios name server address for
address pool ‘subnet10’.
Router/configure/ip/dhcps/pool subnet10# netbios_name_server
10.6.5.100
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool hwaddr

This command configures the hardware address for host address pool of DHCP server. To remove a hardware address from a pool, use the no form of this command.

syntax

hwaddr hwaddr <mac_address>
no hwaddr hwaddr <mac_address>

Parameter	Description
hwaddr <mac_address>	Hardware address in form of aa:bb:cc:dd:ee:ff

example

```
This example configures the hardware address for host
address pool ‘host77’.
Router/configure/ip/dhcps/pool host77# hwaddr
00:50:40:f0:62:00
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool host

This command configures the host IP address for host address pool of DHCP server. To remove a host address from a pool, use the no form of this command.

syntax

host host_ip <ip_address> host_mask <mask>
no host host_ip <ip_address> host_mask <mask>

Parameter	Description
host_id <ip_address>	Host ip address in form of A.B.C.D
host_mask <mask>	Host mask

example

```
This example configures the host ip address and mask for
host address pool 'host77'.
Router/configure/ip/dhcps/pool host77# host 10.6.5.50 24
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool lease

Use this command to set the expiration time for a leased address for the current DHCP pool. The default lease time is 3600 seconds. Use the no form of this command to restore the default setting.

syntax

lease lease_time <n>
no lease lease_time <n>

Parameter	Description
lease_time <n>	lease time in seconds

example

```
This example configures the lease time for address pool
‘subnet10’.
Router/configure/ip/dhcps/pool subnet10# lease 1800
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool network, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool network

Use this command to configure a network address and mask for a network address pool. To remove a network address from a pool, use the no form of this command.

syntax

network network_address <ip_address> net_mask <mask>
no network network_address <ip_address> net_mask <mask>

Parameter	Description
network_address <ip_address>	Network number form of A.B.C.D
net_mask <mask>	Network mask

example

```
This example configures the network address and mask for
network address pool 'subnet10'.
Router/configure/ip/dhcps/pool subnet10# network 10.6.5.0
255.255.255.0
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool default_router, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool default_router

Use this command to add a default router to the default router address list for a DHCP server pool. It can be inserted to the default router list up to 8. Use the no form of this command to remove a default router from the list.

syntax

default_router router_id <ip_address
no default_router router_id <ip_address>

Parameter	Description
router_id <ip_address>	IP address of the router to be added to the list.

example

```
This example configures the default router address for
address pool ‘subnet10.6.5’.
Router/configure/ip/dhcps/pool subnet10.6.5# default_router
10.6.5.1
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool exclude-range

Use this command to add an address range for excluding to the DHCP pool. Addresses except the specified range are given to DHCP clients that connect to this server. Use the no form of this command to delete a range from the DHCP pool.

syntax

exclude-range low_address <ip_address> high_address <ip_address>
no exclude-range low_address <ip_address> high_address <ip_address>

Parameter	Description
low_address <ip_address>	Low IP address in excluding range to be added to the list.
high_address <ip_address>	High IP address in excluding range to be added to the list.

example

```
This example configures the address range for excluding on
address pool ‘subnet10’.
Router/configure/ip/dhcps/pool subnet10# exclude-range
10.6.5.1 10.6.5.50
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool user_option, configure ip dhcps pool commit

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool user_option

Use this command to add a DHCP server option to the user option list for a DHCP server pool. Use the no form of this command to remove a user option from the list.

syntax

user_option option_code<n> option_type<sting | octet | ipaddress | int> option_value<data> option_flag<active | passive>
no user_option option_code<n> option_type<sting | octet | ipaddress | int> option_data<quote sting | string | ip_address | n>

Parameter	Description
User_option<n>	Code number of the DHCPv4 option to be added to the list.
option_type<sting | octet | ipaddress | int>	Data type of the DHCPv4 option to be added to the list.
option_value<data>	Data of the DHCPv4 option to be added to the list.
option_flag<active | passive>	Flag of the DHCPv4 option to be added to the list. The default option flag is active.

example

```
The example configures DHCP option 100 for address pool
‘subnet10’.
Router/configure/ip/dhcps/pool subnet10# user_option 100
ipaddress 20.1.1.1
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool exclude-range, configure ip dhcps pool commit

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps pool commit

This command commits the current pool configuration. Use the no form of this command to uncommit the pool configuration.

syntax

commit
no commit

example

```
This example commit the address pool ‘subnet10’.
Router/configure/ip/dhcps/pool subnet10# commit
```

related commands

configure ip dhcps pool, show ip dhcp config, configure ip dhcps pool clientid, configure ip dhcps pool domain, configure ip dhcps pool dnsserver, configure ip dhcps pool tftpserver, configure ip dhcps pool netbios_name_server, configure ip dhcps pool hwaddr, configure ip dhcps pool host, configure ip dhcps pool lease, configure ip dhcps pool network, configure ip dhcps pool exclude-range, configure ip dhcps pool user_option.

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/pool

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configure ip dhcps vendor

This command configures the vendor specific information option of the DHCP server. This command enters the DHCP configuration mode for the specified vendor class, hence, all commands executed before the next Exit command apply to this vendor specific information. Use the no form of this command to delete a DHCP vendor class. The administrator can create multiple DHCP vendor classes on devices with multiple interfaces.

syntax

vendor vendor_name <name>
no vendor vendor_name <name>

Parameter	Description
vendor_name <name>	Name of the vendor

example

```
This example configures the vendor specific information of
dhcp server to 'vendor1' and enters the vendor specific
information configuration mode.
Router/configure/ip/dhcps# vendor vendor1
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor sub_option_bin, configure ip dhcps vendor sub_option_txt, configure ip dhcps vendor vendor_class_idenifier, configure ip dhcps vendor vendor_option_bin, configure ip dhcps vendor vendor_option_txt

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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configure ip dhcps vendor sub_option_bin

This command adds and configures an encapsulated vendor-specific option formed by a series of bytes of the DHCP server. To remove a sub_option_bin from a vendor class, use the no form of this command.

syntax

sub_option_bin option_code<n> value<data>
no sub_option_bin option_code<n> value<data>

Parameter	Description
option_code<n>	Option code interpreted by vendor- specific code on the client
value<data>	Value of vendor specific information; a colon-separated list of hexadecimal values, ex) 01:02:4F:4B

example

```
This example configures the sub_option_bin for vendor
‘vendor1’.
Router/configure/ip/dhcps/vendor vendor1# sub_option_bin 100
01:02:4F:4B
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor, configure ip dhcps vendor sub_option_txt, configure ip dhcps vendor vendor_class_idenifier, configure ip dhcps vendor vendor_option_bin, configure ip dhcps vendor vendor_option_txt

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/vendor

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configure ip dhcps vendor sub_option_txt

This command adds and configures an encapsulated vendor-specific option of the DHCP server. To remove a sub_option_bin from a vendor class, use the no form of this command.

syntax

sub_option_txt option_code<n> value<data>
no sub_option_txt option_code<n> value<data>

Parameter	Description
option_code<n>	Option code interpreted by vendor- specific code on the client
value<data>	Value of vendor specific information.

example

```
This example configures the sub_option_txt for vendor
‘vendor1’.
Router/configure/ip/dhcps/vendor vendor1# sub_option_txt 100
“01024F4B”
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor, configure ip dhcps vendor sub_option_bin, configure ip dhcps vendor vendor_class_idenifier, configure ip dhcps vendor vendor_option_bin, configure ip dhcps vendor vendor_option_txt

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/vendor

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configure ip dhcps vendor vendor_class_identifier

This command adds and configures the vendor class identifier to identify the vendor type of the DHCP client. To remove a vendor class identifier from a vendor class, use the no form of this command.

syntax

vendor_class_identifier identifier<idenifier>
no vendor_class_identifier identifier<idenifier>

Parameter	Description
identifier<idenifier>	Identifier for vendor class

example

```
This example configures the sub_option_txt for vendor
‘vendor1’.
Router/configure/ip/dhcps/vendor vendor1#
vendoer_class_identifier “vendor1”
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor, configure ip dhcps vendor sub_option_bin, configure ip dhcps vendor sub_option_txt, configure ip dhcps vendor vendor_option_bin, configure ip dhcps vendor vendor_option_txt

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/vendor

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configure ip dhcps vendor vendor_option_bin

This command adds and configures the entire vendor-specific option (binary format) of the DHCP server. It replaces all sub-options. To remove a vendor_option_bin from a vendor class, use the no form of this command.

syntax

vendor_option_bin option_value <data>
no vendor_option_bin option_value<data>

Parameter	Description
option_value<data>	Value of vendor-specific option; a colon-separated list of hexadecimal values, ex) 01:02:4F:4B

example

```
This example configures the vendor_option_bin for vendor
‘vendor1’.
Router/configure/ip/dhcps/vendor vendor1# vendor_option_bin
01:02:4F:4B
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor, configure ip dhcps vendor sub_option_bin, configure ip dhcps vendor sub_option_txt, configure ip dhcps vendor vendor_class_idenifier, configure ip dhcps vendor vendor_option_txt

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/vendor

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configure ip dhcps vendor vendor_option_txt

This command adds and configures the entire vendor-specific option (text format) of the DHCP server. It replaces all sub-options. To remove a vendor_option_txt from a vendor class, use the no form of this command.

syntax

vendor_option_txt option_value<data>
no vendor_option_txt option_value<data>

Parameter	Description
Option_value<data>	Value of vendor-specific option; text string

example

```
This example configures the vendor_option_txt for vendor
‘vendor1’.
Router/configure/ip/dhcps/vendor vendor1# vendor_option_txt
“01024F4B”
```

related commands

configure ip dhcps remote_database, configure ip dhcps interface, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config, configure ip dhcps vendor, configure ip dhcps vendor sub_option_bin, configure ip dhcps vendor sub_option_txt, configure ip dhcps vendor vendor_class_idenifier, configure ip dhcps vendor vendor_option_bin

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps/vendor

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configure ip dhcps interface

This command enables DHCP server on specified interface. Use the no form of this command to disable the server on an interface.

syntax

interface interface_name <slot_port_name>
no interface interface_name <slot_port_name>

Parameter	Description
interface_name <slot_port_name>	Enter slot/port for ethernets or bundle_name for bundle. eg: ethernet0/1, wan123

example

```
This example enables the server on an ethernet interface
‘Ethernet 0/2’.
Router/configure/ip/dhcps# interface ethernet0/2
```

related commands

configure ip dhcps remote_database, configure ip dhcps pool, configure ip dhcps vendor, configure ip dhcps relay, configure ip dhcps enable, show ip dhcp config

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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configure ip dhcps relay

This command configures ip address and network address of relay agents that we will listen to. Use the no form of this command to delete the relay configuration.

syntax

relay relay_address <ip_address> network_address <ip_address>
no relay relay_address <ip_address> network_address <ip_address>

Parameter	Description
relay_address <ip_address>	Relay address in A.B.C.D form
network_address <ip_address>	Network address in A.B.C.D form

example

```
This example configures the relay agent for listen.
Router/configure/ip/dhcps# relay 8.8.8.1 8.8.8.0
```

related commands

configure ip dhcps remote_database, configure ip dhcps pool, configure ip dhcps vendor, configure ip dhcps interface, configure ip dhcps enable, show ip dhcp config

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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configure ip dhcps enable

This command brings up the DHCP server. Use the no form of this command to disable the server.

syntax

enable <global | specified >
no enable

Parameter	Description
global	permitted globally (default)
specified	permitted only for specified interfaces

default

disabled (no)

example

```
This example enables the DHCP server.
Router/configure/ip/dhcps# enable
```

related commands

configure ip dhcps remote_database, configure ip dhcps pool, configure ip dhcps vendor, configure ip dhcps interface, configure ip dhcps relay, show ip dhcp config

applicable models/versions

All models.

command modes

Router/configure/ip/dhcps

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3.45.11 configure ip igmp

This command accesses next-level commands for configuring IGMP snooping. To view the IGMP snooping parameters before or after configuring them, use the appropriate show ip igmp snooping commands.

IGMPv1 and IGMPv2 features are available in the current release.
IGMPv3 feature is not available in the current release.

syntax

ip igmp

example

```
Router/configure# ip igmp
```

related commands

ip igmp snooping

applicable models/versions

All models.

command modes

Router/configure

configure ip igmp snooping

Use this command to enable IGMP snooping globally. Use the no form of this command to disable IGMP snooping globally. Before enabling or disabling IGMP snooping on a bridge or on a VLAN, configure IGMP snooping globally.

syntax

ip igmp snooping
no ip igmp snooping

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example

```
Router# configure terminal
Router/configure# ip igmp snooping
```

related commands

ip igmp snooping vlan

applicable models/versions

All models

command modes

Router/configure

configure ip igmp snooping explicit-tracking

Use this command to enable explicit host tracking. Use the no form of this command to disable explicit host tracking. Explicit host tracking is supported only with IGMPv3 hosts.

With explicit host tracking enabled, the switch is in its proxy-reporting mode. In proxy-reporting mode, the switch forwards the first report only for a source-multicast group pair to the router, and suppresses all other reports for the same pair. With IGMPv3 proxy reporting, the switch does proxy reporting for unsolicited reports and reports that are received in the general query interval.

Disabling explicit tracking disables fast-leave processing and proxy reporting. With proxy reporting disabled, the switch works in transparent mode, and updates the IGMP snooping database as it receives reports, then forwards this information to the upstream router. The router can then explicitly track all reporting hosts.

Explicit-tracking is a IGMPv3 related feature and not supported in the current release.

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syntax

ip igmp snooping explicit-tracking vlan VLANID <default | 2-2045>
no ip igmp snooping explicit-tracking vlan VLANID <default | 2-2045>

Parameter	Description
VLANID	the numerical ID of the bridge

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping explicit-tracking vlan
default
Router/configure# ip igmp snooping explicit-tracking vlan 2
```

related commands

ip igmp snooping, ip igmp snooping fast-leave

applicable models/versions

All models

command modes

Router/configure

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configure ip igmp snooping fast-leave

Use this command to enable IGMPv2 snooping fast-leave processing. Use the no form of this command to disable fast-leave processing. When IGMP fast-leave processing is enabled in a VLAN, the switch removes an interface from the multicast group right away when it receives an IGMP v2 leave message on that interface. IGMP Snooping fast-leave is disabled by default.

syntax

ip igmp snooping fast-leave vlan VLANID <default | 2-4094>
no ip igmp snooping fast-leave vlan VLANID <default | 2-4094>

Parameter	Description
VLANID	the numerical ID of the bridge

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping fast-leave vlan default
Router/configure# ip igmp snooping fast-leave vlan 2
```

related commands

ip igmp snooping

applicable models/versions

All models

command modes

Router/configure

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configure ip igmp snooping querier

Use this command to enable multicast support within a subnet when no multicast routing protocol is configured in the VLAN or subnet. Use the no form of this command to disable multicast support within a subnet when no multicast routing protocol is configured. IGMP snooping querier is disabled by default.

The IGMP snooping querier uses the 0.0.0.0 IP address as it represents a special case where the switch proxies IGMP Queries for faster network convergence, but is not itself the querier. The switch does not use its own IP address (even if it has one), because this would cause the queries to be seen as coming from a newly elected querier. The 0.0.0.0 address is used to indicate that the query packets are not from a multicast router.

When IGMP snooping querier is enabled, if multicast routers are not present on the VLAN or subnet, the bridge, in effect, becomes the IGMP querier for the VLAN. IGMP snooping querier starts only when no other multicast routers are present in the VLAN or subnet.

syntax

ip igmp snooping querier vlan VLANID <default | 2-4094> [bridge BRIDGEID <1-1>]
no ip igmp snooping querier vlan VLANID <default | 2-4094> [bridge BRIDGEID <1-1>]

Parameter	Description
VLANID	the numerical ID of the bridge.

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping querier vlan default
```

related commands

ip igmp snooping

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applicable models/versions

All models

command modes

Router/configure

configure ip igmp snooping ssm-safe-reporting

Use this command to enable Source Specific Multicast (SSM)-safe reporting in the presence of a mix of IGMPv2 and IGMPv3 hosts. Use the no form of this command to return to the default setting. IGMP snooping ssm-safe-reporting is disabled by default.

syntax

ip igmp snooping ssm-safe-reporting vlan VLANID <default | 2-4094>

no ip igmp snooping ssm-safe-reporting vlan VLANID <default | 2-4094>

Parameter	Description
VLANID	the numerical ID of the bridge.

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping ssm-safe-reporting vlan 2
```

related commands

ip igmp snooping

applicable models/versions

All models

command modes

Router/configure

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configure ip igmp snooping last-member-query-interval

Use this command to configure the last-member-query interval for IGMP snooping. The interval is the actual time that the bridge waits for a response for the group-specific query. Use the no form of this command to return to the default setting. The default value is 1000 ms.

If the database indicates that there are no hosts associated with the group, the bridge will report the leave to the multicast router. Before this leave is sent to the multicast router, the bridge checks if this host is the last to leave the group by sending out an IGMP specific group query, and a timer is started. If no reports are received before the timer expires, the group record is deleted.

With IGMP fast-leave processing enabled, the no igmp snooping last-member-query-interval command sets the interval to 0 seconds; fast-leave always assumes a higher priority.

syntax

ip igmp snooping last-member-query-interval interval<100-900> vlan VLANID <default | 2-4094> [bridge BRIDGEID <1-1>]
no ip igmp snooping last-member-query-interval interval<100-900> vlan VLANID <default | 2-4094> [bridge BRIDGEID <1-1>]

Parameter	Description
interval	the group membership; in milliseconds; default: 1000 ms.
VLANID	the numerical ID of the vlan. default indicates the default VLAN

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping last-member-query-
interval 700 vlan default
```

related commands

ip igmp snooping

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applicable models/versions

All models

command modes

Router/configure

configure ip igmp snooping querier-timeout

Use this command to configure the interval in which if no query is received from the multicast router, switch is elected as querier (if the querier has been enabled on the VLAN). Use the no form of this command to set default value of the other-querier interval. The default value is 120 seconds.

syntax

ip igmp snooping querier-timeout interval<100-900> vlan VLANID <default | <2-4095>> [bridge BRIDGEID <1-1>]
no ip igmp snooping querier-timeout interval<100-900> vlan VLANID <default | <2-4095>> [bridge BRIDGEID <1-1>]

Parameter	Description
interval	the querier-timeout in milliseconds; default is 120 seconds.
default	the use of the default VLAN
VLANID	the numerical ID of the bridge.

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping querier-timeout 150 vlan
default
```

related commands

ip igmp snooping

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applicable models/versions

All models

command modes

Router/configure

configure ip igmp snooping max-response-time

Use this command to configure the interval in which the reply for the IGMP snooping query being sent should be received. Use the no form of this command to set default value of the maximum response time. The default value is 100 centi-seconds.

syntax

ip igmp snooping max-response-time interval<100-900> vlan VLANID <default | 2-4094>
no ip igmp snooping max-response-time interval<100-900> vlan VLANID <default | 2-4094>

Parameter	Description
Interval	the maximum response time in centi-seconds; default: 100 centi-seconds.
default	the use of the default VLAN
VLANID	the numerical ID of the bridge.

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping max-response-time 200
vlan default
```

related commands

ip igmp snooping

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applicable models/versions

All models

command modes

Router/configure

configure ip igmp snooping mrouter

Use this command to configure a Layer-2 port as a multicast router port. Mrouter interface can be statically configured using this command and is also dynamically learned on the Layer-2 port connected to a multicast router. Mrouter interface exchanges IGMP packets with other multicast routers. Use the no form of this command to remove the configuration.

syntax

ip igmp snooping mrouter interface IFNAME <name>
no ip igmp snooping mrouter interface IFNAME <name>

Parameter	Description
IFNAME	Specify the name of the interface

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping mrouter interface
ethernet2/0
```

related commands

ip igmp snooping

applicable models/versions

All models

command modes

Router/configure

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configure ip igmp snooping proxy

Use this command to enable IGMP proxy for the box. IGMP proxy makes the switch function as proxy for the hosts attached to the downstream.
Upon receiving a query from a multicast router, a proxy-enabled switch, itself, sends the reports for all the group MAC addresses it has learned, instead of forwarding the reports to its ports. Upon learning a new group MAC address, the report is forwarded to all multicast router interfaces. Upon receiving a leave message from downstream hosts, the protocol data unit (PDU) is forwarded to all multicast router interfaces. Use the no form of this command to disable IGMP proxy.

syntax

ip igmp snooping proxy
no ip igmp snooping proxy

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping proxy
```

related commands

ip igmp snooping

applicable models/versions

All models

command modes

Router/configure

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configure ip igmp snooping version

Use this command to configure the version of the IGMP reports sent out of a port. Use the no form of this command to set default value of the interface version. The default value is 2.

If the user has configured the version specifically, the reports are always sent out with only this version. If the user has not administratively configured the version value, and a version 1 query is received on an interface, this interface is made a version 1 interface, and all reports sent out of this interface are version 1 reports.

syntax

ip igmp snooping version version_num <1-2> vlan VLANID <default | 2-4094> bridge BRIDGEID <1-1> IFNAME
no ip igmp snooping version version_num <1-2> vlan VLANID <default | 2-4094> bridge BRIDGEID <1-1> IFNAME

example

```
Router# configure terminal
Router/configure# ip igmp snooping
Router/configure# ip igmp snooping version 2 vlan default
ethernet2/0
```

Parameter	Description
version_num	Identify the IGMP snooping version for this interface
default	the use of the default VLAN
VLANID	the numerical ID of the bridge.
IFNAME	Interface Name

related commands

ip igmp snooping

applicable models/versions

All models

command modes

Router/configure

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3.45.12 http

This command is used to configure the HTTP server and HTTP secure (HTTPS) sever configuration for Web-based Device Manager.

configure ip http port

Use this command to change the http server port.

syntax

ip http port http-port <*port*>

Parameter	Description
http-port	TCP port to which the http server listen

default

80

example

```
Following is an example to change the http server port to 81.
Router# configure terminal
Router/configure# ip http port 81
```

related commands

ip http secure-port, show ip http config

applicable models/versions

All models.

command modes

Router/configure

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configure ip http secure-port

Use this command to change the http secure (https) server port.

syntax

ip http secure-port https-port <*port*>

Parameter	Description
https-port	TCP port to which the http secure server to listen

default

443

example

```
Following is an example to change the http secure server
port to 444.
Router# configure terminal
Router/configure# ip http secure-port 444
```

related commands

ip http secure-server, show ip http config

applicable models/versions

All models.

command modes

Router/configure

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configure ip http server

Use this command to enable/disable the http server. If the http secure server is enabled also, you should better connect through https (secure server) for using web-based device manager.

syntax

ip http server
no ip http server

default

Disabled (no)

example

```
Following example enable the http server.
Router# configure terminal
Router/configure# ip http server
```

related commands

ip http secure-server, show ip http config

applicable models/versions

All models.

command modes

Router/configure

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configure ip http secure-server

Use this command to enable/disable the http secure (https) server. Http server or http secure server must be enabled to serve the web client request to use web-based device manager.

syntax

ip http secure-server
no ip http secure-server

default

enabled

example

```
Following is an example to disable the http secure server.
Router# configure terminal
Router/configure# no ip http secure-server
```

related commands

ip http server, show ip http config

applicable models/versions

All models.

command modes

Router/configure

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configure ip http gen-selfcert

Use this command to generate a iBG self-signed certificate. If you want to make the http secure-server work properly, you should generate at least a self-certificate or CA certificate.

syntax

ip http gen-selfcert cetifcate-id <*certificate-id*>

Parameter	Description
certificate-id	Self-signing certificate identifier

example

Following is an example to generate a iBG self-signed certificate.

```
Router# configure terminal
Router/configure# ip http gen-selfcert scert
```

related commands

show ip http selfcert

applicable models/versions

All models.

command modes

Router/configure

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configure ip http del-selfcert

Use this command to delete a certificate which had been certificated by the iBG itself.

syntax

ip http del-selfcert certificate-id <*certifcate-id*>

Parameter	Description
certificate-id	Identifier specifying the certificate to delete

default

None.

example

Following is an example to delete the trusted certificate whose private-key-id is ‘scert1’.

```
Router# configure terminal
Router/configure# ip http del-selfcert scert1
```

related commands

ip http gen-selfcert, show ip http selfcert

applicable models/versions

All models.

command modes

Router/configure

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3.45.13 mac access-list

Use this command to create/modify MAC access list. MAC filtering feature can be supported on LAN Module. IP access-list and MAC access-list can be attached to interface mutual exclusively. Only ingress filtering functionality is supported. Firewall and ACL will be largely mutually exclusive on a per interface basis. However, L2 ACL may co-exist with the firewall.

NOTE

Mac ACL is supported on iBG2016 and iBG3026 only.

syntax

mac access-list filter_name<name>
no mac access-list filter_name<name>

Parameter	Description
filter_name	The name of filter rule list

default

Disabled (no)

example

```
Router# configure terminal
router/configure# mac access-list mac_acl
```

related commands

ip access-list, mac access-list add, mac access-list delete, mac access-list insert

applicable models/versions

All models.

command modes

Router/configure

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configure mac access-list add

This command adds a MAC ACL rule to the current filter rule list.

syntax

add action <permit|deny> source<mac_address> | any destination<mac_address> | any [smask src_addr_mask <mask>] [dmask dst_addr_mask <mask>] [ethertype ethertype<n>|arp | aarp | ppp] [vlan vlan<0-4095>] [cos cos<0-7>]

Parameter	Description
Action	If a packet and a rule statement match, it permit or deny the packet.
Source	mac source address: a.b.c or any
Destination	mac destination address: a.b.c or any
Smask	mac source mask: a.b.c
Dmask	Mac destination mask: a.b.c
ethertype	arp/aarp/ppp/or Ethernet Type number in hex * 0x0800 is not supported. Use ip access-list.
vlan	Vlan id, 0-4095
cos	Cos vlaue, 0-7

default

Disabled (no)

example

```
router/configure# mac access-list macl
router/configure/mac access-list macl# add deny
0000.4700.0011 any smask ffff.ffff.ffff
router/configure/mac access-list macl# add deny any any
ethetype arp
router/configure/mac access-list macl# add deny any any cos 5
router/configure/mac access-list macl# add deny any any vlan 100
router/configure/mac access-list macl# add permit any any
```

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related commands

delete, insert

applicable models/versions

All models.

command modes

Router/configure/mac access-list

configure mac access-list insert

This command inserts a L2 rule to current rule list. Rule line numbers are re-numbered after insert a rule.

syntax

insert rule_line_no<n> action <permit|deny> source <mac_address>|any destination <mac_address>|any [smask src_addr_mask<mask>] [dmask dst_addr_mask<mask>] [ethertype ethertype<n>|arp | aarp | ppp] [vlan vlan<0-4095>] [cos cos<0-7>]

Parameter	Description
rule_line_no	Rule line number to insert into
Action	If a packet and a rule statement match, it permit or deny the packet.
Source	mac source address: a.b.c or any
Destination	mac destination address: a.b.c or any
Smask	mac source mask: a.b.c
Dmask	Mac destination mask: a.b.c
ethertype	arp/aarp/ppp/or Ethernet Type number in hex * 0x0800 is not supported. Use ip access-list.
vlan	Vlan id, 0-4095
cos	Cos vlaue, 0-7

default

Disabled (no)

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example

```
router/configure/mac access-list macl# add permit any any
router/configure/mac access-list macl# insert 1 deny any any
vlan 100
router/configure/mac access-list macl# insert 1 deny any any
cos 5
router/configure/mac access-list macl# insert 1 deny any any
ethetype arp
router/configure/mac access-list macl# insert 1 deny
0000.4700.0011 any smask ffff.ffff.ffff
```

related commands

add, delete

applicable models/versions

All models.

command modes

Router/configure/mac access-list

configure mac access-list delete

This command deletes a rule from an mac filtering rule set. Rule line numbers are re-numbered after delete a rule.

syntax

delete rule_line_no <n>

Parameter	Description
Rule_line_no	rule number which a rule to be deleted

default

Disabled (no)

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example

```
Router/configure/mac access-list macl # delete 3
```

related commands

add, insert

applicable models/versions

All models.

command modes

Router/configure/mac access-list

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3.46 ipv6

3.46.1 ipv6

This command accesses next-level commands for configuring IPv6 parameters. To view the IPv6 parameters before or after configuring them, use the appropriate **show ipv6** commands.

syntax

ipv6

default

None.

example

```
Router/configure# ipv6
```

related commands

configure ipv6 dhcp, configure ipv6 general-prefix, configure ipv6 hop-limit, configure ipv6 host_add, configure ipv6 icmp, configure ipv6 load-balancing, configure ipv6 multicast-routing, configure ipv6 neighbor, configure ipv6 ospf, configure ipv6 pim, configure ipv6 prefix-list, configure ipv6 route, configure ipv6 unicast-routing.

applicable models/versions

All models

command modes

Router/configure

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3.46.2 ipv6 prefix-list

Use this command to create the prefix list entry related IPv6.

syntax

ipv6 prefix-list [prefix-name <prefix_name> X:X::X:X/M]

Parameter	Description
prefix-name	Name of a prefix list.
A X:X::X:X/M	IPv6 address with mask for the prefix list.

default

None.

example

```
Router/configure# ipv6 prefix-list
Router/configure# ipv6 prefix-list aaa 1000:1001::2/64
```

related commands

show ipv6 prefix-list summary, show ipv6 prefix-list detail

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.46.3 ipv6 general-prefix

Use this command to create the prefix list entry related IPv6.

syntax

ipv6 general-prefix [<general_prefix_name> X:X::X:X/M]

Parameter	Description
general_prefix_name	Name of a general prefix.
A X:X::X:X/M	IPv6 address with mask for the general prefix.

default

None.

example

```
Router/configure# ipv6 general-prefix aaa 1000:1001::2/64
```

related commands

show ipv6 prefix-list summary, show ipv6 prefix-list detail

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.46.4 icmp rate-limit

Use this command to specify the ICMP send rate, to limit ICMP error message generation.

syntax

icmp rate-limit <rate-limit_value>

Parameter	Description
hoplimit_value	Hoplimit ranges from 1 to 100,000. (milliseconds)

default

500msec

example

```
Router# configure terminal
Router/configure# ipv6 icmp rate-limit 100
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/ipv6

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3.46.5 hop-limit

Use this command to configure the maximum number of hops in router advertisements and for all IPv6 packets originating from the routing system.

syntax

hop-limit <hoplimit_value>

Parameter	Description
hoplimit_value	hoplimit ranges from 1 to 255.

default

64 hops.

example

```
Router# configure terminal
Router/configure# ipv6 hop-limit 100
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/ipv6

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3.46.6 neighbor

Use this command to configure a static neighbor entry in the IPv6 neighbor discovery cache.

syntax

ipv6 neighbor ipv6address <IPv6 address> macaddress <MAC address> interface <interface_name>
no ipv6 neighbor ipv6address <IPv6 address> macaddress <MAC address> interface <interface_name>

Parameter	Description
ipv6address	IPv6 address of the neighbor.
macaddress	MAC address of the neighbor.
Interface	Name of the interface on which neighbor entry has to be added.

default

None.

example

```
Router# configure terminal
Router/configure# ipv6 neighbor 3ffe::2 00:11:22:33:44:55
ethernet0/2
```

```
Router# configure terminal
Router/configure# no ipv6 neighbor 3ffe::2 00:11:22:33:44:55
ethernet0/2
```

related commands

show ipv6 neighbors, clear ipv6 neighbors

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6

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3.46.7 route

Use this command to add a static route entry into the IPv6 routing table.

syntax

ipv6 route ipv6destinationprefix <IPv6_destination_prefix> ipv6gatewayaddress <IPv6_gateway_address> | interface <interface_name> <distance <Distance_value> | interface <Interface_name>>

no ipv6 route ipv6destinationprefix <IPv6_destination_prefix> ipv6gatewayaddress <IPv6_gateway_address> | interface <interface_name> <distance <Distance_value> | interface <Interface_name>>

Parameter	Description
ipv6destinationprefix	IPv6 Address with prefix value.
ipv6gatewayaddress	Gateway IPv6 address.
Interface	Name of the interface.
distance	Administrative distance of the route. The range is from 1 to 255.

default

None.

example

```
Router# configure terminal
Router/configure# ipv6 route 3ffe::2/64  3ffe::7 ethernet0/2
```

```
Router# configure terminal
Router/configure# no ipv6 route 3ffe::2/64  3ffe::7
ethernet0/2
```

related commands

show ipv6 route, clear ipv6 route

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applicable models/versions

All models.

command modes

Router/configure/ipv6

3.46.8 unicast-routing

Use this command to enable forwarding of IPv6 unicast datagram on the routing system.

syntax

ipv6 unicast-routing
no ipv6 unicast-routing

default

None.

example

```
Router# configure terminal
Router/configure# ipv6 unicast-routing
```

```
Router# configure terminal
Router/configure# no ipv6 unicast-routing
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6

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3.46.9 load-balancing

This command enables or disables IPv6 load balancing. The default is per flow.

syntax

ipv6 load-balancing load_method[per-flow | per-packet]
no ipv6 load-balancing load_method[per-flow | per-packet]

Parameter	Description
load_method	Select the method for load-balancing. * Per-packet is not supported in LAN Modules

default

By default, per flow is on.

example

```
In the following example, enable per-packet mode for ip
load-balancing.
Router/configure# ipv6 load-balancing per-packet
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.46.10 ipv6 multicast-routing

Use this command to turn on/off IPv6 multicast routing on the router; when turned off, the multicast protocol daemon remains present, but does not perform multicast functions. By default, multicast routing is on. When the no parameter is used with this command, the MRIB releases all VIFs and tunnels, cleans up MRTs, stops IGMP operation, and stops relaying multicast forwarder events to multicast protocols.
When IPv6 multicast routing is enabled, the MRIB re-creates tunnels, and starts processing any VIF addition/deletion requests, MRT addition/deletion requests, and any multicast forwarding events.
Use the no form of this command to disable this function.

NOTE

This command is the global command for enabling Multicast forwarder functionality on the router and is executed in configure-mode.

syntax

ipv6 multicast-routing
no ipv6 ip multicast-routing

example

```
Router# configure terminal
Router/configure# ipv6 multicast-routing
```

related commands

NONE

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

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3.47 interface

This command accesses next level commands for configuring neighbor discovery parameters, redirects and to configure the IPv6 address.

syntax

interface

default

None.

example

```
Router/configure# interface ethernet 0/1
Router/configure/interface/ethernet(0/1)#
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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3.47.1 interface ethernet

This command accesses next level commands for configuring an Ethernet port. To view the current configuration of an Ethernet port, use the show interface ethernet command. To view a summary of information for all Ethernet ports, use the show interface ethernets command.

syntax

interface ethernet ethernetidentifier <slot/port>

Parameter	Description
ethernet_identifier	Number of the Ethernet slot and port to be configured.

default

None.

example

```
Router/configure# interface ethernet 0/2
Router/configure# ipv6 hop-limit 100
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure

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configure interface ethernet ipv6 address

This command assigns an IPv6 address to the Ethernet port.

syntax

ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>
no ipv6 address ipv6_address<ipv6_prefix_address> <eui-64 | anycast>

Parameter	Description
Ipv6_address	IPv6 address in dotted-string format.
eui-64	Configures an IPv6 address by using an EUI-64 ID
anycast	Used to specify the anycast address.

default

None.

example

```
Router/configure/interface/ethernet 1/0# ipv6 address
3ffe::7/64
Router/configure/interface/ethernet 1/0# no ipv6 address
3ffe::3/64
```

related commands

show ipv6 interfaces brief

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet

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configure interface ethernet ipv6 enable

This command enables IPv6 on the interface.

syntax

ipv6 enable
no ipv6 enable

default

None.

example

```
Router/configure/interface/ethernet 1/0# ipv6 enable
Router/configure/interface/ethernet 1/0# no ipv6 enable
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet

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3.48 Neighbor Discovery

configure interface ethernet ipv6 nd curhoplimit

Use this command to configure the current hop limit of an outgoing RA on this interface.

syntax

ipv6 nd curhoplimit <number_of_hops>
no ipv6 nd curhoplimit <number_of_hops>

Parameter	Description
Number_of_hops	The range is from 0 to 255.

default

64 hops.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd curhoplimit
100
Router/configure/interface/ethernet 1/0# no ipv6 nd
curhoplimit 100
```

related commands

None.

applicable models/versions

All models.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd dad

Use this command to configure the number of NSs to be sent to validate DUP Status.

syntax

ipv6 nd dad-attempts <numberofNSs <number_of_NSs>>
no ipv6 nd dad-attempts <numberofNSs<number_of_NSs>>

Parameter	Description
numberofNSs	The range is from 0 to 600.

default

1 NS.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd dad-
attempts 10
Router/configure/interface/ethernet 1/0# no ipv6 nd dad-
attempts 10
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd linkmtu

Use this command to configure the RA link maximum transmission unit.

syntax

ipv6 nd linkmtu <link_mtu_value>
no ipv6 nd linkmtu <link_mtu_value>

Parameter	Description
link_mtu_value	The mtu value ranges from 0 to 1500.

default

1500

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd linkmtu 0
Router/configure/interface/ethernet 1/0# no ipv6 nd linkmtu 0
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd managed-config-flag

Use this command to enable MANAGED bit on the RAS sent on this interface.

syntax

ipv6 nd managed-config-flag
no ipv6 nd managed-config-flag

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd managed-
config-flag
Router/configure/interface/ethernet 1/0# no ipv6 nd managed-
config-flag
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 nd other-config-flag

Use this command to enable the OTHER bit on the RAS sent on this interface.

syntax

ipv6 nd other-config-flag
no ipv6 nd other-config-flag

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd other-
config-flag
Router/configure/interface/ethernet 1/0# no ipv6 nd other-
config-flag
```


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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 nd ns-interval

Use this command to configure the interval between neighbor solicitation retransmission on the interface.

syntax

ipv6 nd ns-interval <ns_interval_value>
no ipv6 nd ns-interval <ns_interval_value>

Parameter	Description
ns_interval_value	The ns interval ranges from 1000 to 4294967295 milliseconds.

default

1000 milliseconds.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd ns-interval
1000
Router/configure/interface/ethernet 1/0# no ipv6 nd ns-
interval 1000
```

related commands

None.

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 nd prefix

Use this command to configure the prefix to be included in Router Advertisements.

syntax

ipv6 nd prefix <prefix_tobe_advertised> valid <valid_life_time> prefer <preferred_life_time> | onlink <onlink_flag> autoflag <auto_flag>
no ipv6 nd prefix <prefix_tobe_advertised> valid <valid_life_time> prefer <preferred_life_time> | onlink <onlink_flag> autoflag <auto_flag>

Parameter	Description
Prefix	The IPv6 prefix to be advertised in X:X::X:X/M.
valid	Valid Lifetime in seconds. Ranges from 0 to 4294967295.
prefer	Preferred Lifetime in seconds. Ranges from 0 to 4294967295.
onlink	This flag indicates that the prefix is assigned to the link.
autoflag	This flag indicates that this prefix can be used for autoconfiguration.

default

valid_life_time = 2592000 sec.
preferred_life_time = 604800 sec.
onlink_flag = 1
auto_flag = 1

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd prefix
3ffe::3/64 valid  4294967295 prefer 4294967295 onlink 0
autoflag 0

Router/configure/interface/ethernet 1/0# no ipv6 nd prefix
3ffe::3/64 valid  4294967295 prefer 4294967295 onlink 0
autoflag 0
```


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related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 nd ra interval

Use this command to configure the maximum interval between router advertisements issued on this interface.

syntax

ipv6 nd ra-interval interval <interval_in_seconds>
no ipv6 nd ra-interval interval <interval_in_seconds>

Parameter	Description
interval	Interval ranges from 4 to 1800 seconds

default

600 sec.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd ra-interval
100
Router/configure/interface/ethernet 1/0# no ipv6 nd ra-
interval 100
```

related commands

None.

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 nd ra interval minimum

Use this command to configure the minimum interval between router advertisements issued on this interface.

syntax

ipv6 nd ra-interval-min interval <interval_in_seconds>
no ipv6 nd ra-interval-min interval <interval_in_seconds>

Parameter	Description
interval	Interval ranges from 3 to (maximuminterval/3) seconds

default

maximuminterval/3 sec.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd ra-interval
100
Router/configure/interface/ethernet 1/0# ipv6 nd ra-interval
33
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd ra lifetime

Use this command to configure the router lifetime in seconds on this interface.

syntax

ipv6 nd ra-lifetime lifetimeinsec <lifetime_in_seconds>
no ipv6 nd ra-lifetime lifetimeinsec <lifetime_in_seconds>

Parameter	Description
Lifetimeinsec	Lifetime ranges from 0 to 9000 seconds.

default

1800 sec.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd ra-lifetime
100
Router/configure/interface/ethernet 1/0# no ipv6 nd ra-
lifetime 100
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd reachable time

Use this command to configure the amount of time that an IPv6 node is considered to be reachable.

syntax

ipv6 nd reachable-time timeinmillisec <time_in_milli_seconds>
no ipv6 nd reachable-time timeinmillisec <time_in_milli_seconds>

Parameter	Description
timeinmillisec	Reachable time ranges from 0 to 3600000 milliseconds.

default

30000 ms.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd reachable-
time  10000
Router/configure/interface/ethernet 1/0# no ipv6 nd
reachable-time 10000
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

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configure interface ethernet ipv6 nd suppress

Use this command to suppress RAs on this interface.

syntax

ipv6 nd suppress-ra
no ipv6 nd suppress-ra

default

None.

example

```
Router/configure/interface/ethernet 1/0# ipv6 nd suppress-ra
Router/configure/interface/ethernet 1/0# no ipv6 nd
suppress-ra
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

configure interface ethernet ipv6 redirect

Use this command to enable/disable ICMPv6 redirect message on this interface.

syntax

ipv6 redirect
no ipv6 redirect

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default

None.

example

```
Router/configure/interface/ethernet 1/0# ipv6 redirect
Router/configure/interface/ethernet 1/0# no ipv6 redirect
```

related commands

None.

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/interface/ethernet/ipv6

3.48.1 dhcp

configure ipv6 dhcp pool

This command configures the static prefix pool of the DHCPv6 server.
This command enters the configuration mode for the specified pool, hence, all commands executed before the next Exit command apply to this pool. Use the no form of this command to delete a DHCPv6 pool. The administrator can create multiple DHCPv6 server pools.

syntax

ipv6 dhcp pool pool_name <name>
no ipv6 dhcp pool pool_name <name>

Parameter	Description
pool_name <name>	Name of the static prefix pool

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example

```
This example configures the static prefix pool of DHCPv6
server to ‘pool1’ and enters the pool configuration mode.
Router/configure/# ipv6 dhcp pool pool1
Router/configure/ipv6/dhcp/pool pool1#
```

related commands

configure ipv6 dhcp pool dns-server, configure ipv6 dhcp pool domain-name, configure ipv6 dhcp pool ntp-server, configure ipv6 dhcp pool prefix-delegation

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure

configure ipv6 dhcp pool dns-server

Use this command to add a DNS server to the list of DNS servers that the DHCPv6 server passes to the clients. It can be inserted in the DNS server list up to 10. Use the no form of this command to disable the effects of a command.

syntax

dns-server server_address <ipv6_address>
no dns-server server_address <ipv6_address>

Parameter	Description
server_address <ipv6_address>	the IPv6 address of the DNS server to be added to the list.

example

```
This example configures the DNS server address static prefix
pool‘pool1’.
Router/configure/ipv6/dhcps/pool pool1# dns-server
2000:1:1::1
```

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related commands

configure ipv6 dhcp pool, configure ipv6 dhcp pool domain-name, configure ipv6 dhcp pool ntp-server, configure ipv6 dhcp pool prefix-delegation

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6/dhcp/pool

configure ipv6 dhcp pool domain-name

This command configures a domain name for the DHCP server address pool. The DHCPv6 server can pass a domain-name to the DHCPv6 clients that connect to it. It can be inserted in the server list up to 10. To remove a domain name from a pool, use the no form of this command.

syntax

domain-name domain_name <name>
no domain-name domain_name <name>

Parameter	Description
Domain_name <name>	Domain name string passed to client

example

```
This example configures the domain name for static prefix
pool‘pool1’.
Router/configure/ipv6/dhcps/pool pool1# domain-name
samsung.com
```

related commands

configure ipv6 dhcp pool, configure ipv6 dhcp pool dns-server, configure ipv6 dhcp pool ntp-server, configure ipv6 dhcp pool prefix-delegation

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applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6/dhcp/pool

configure ipv6 dhcp pool ntp-server

Use this command to add a ntp-server to the list of ntp-servers that the DHCPv6 server passes to the clients. It can be inserted in the server list up to 10. Use the no form of this command to disable the effects of the command.

syntax

ntp-server server_address <ipv6_address>
no ntp-server server_address <ipv6_address>

Parameter	Description
server_address <ipv6_address>	the IPv6 address of the DNS server to be added to the list.

example

```
This example configures the DNS server address for static
prefix pool‘pool1’.
Router/configure/ipv6/dhcps/pool pool1# ntp-server
2000:1:1::1
```

related commands

configure ipv6 dhcp pool, configure ipv6 dhcp pool dns-server, configure ipv6 dhcp pool ntp-server, configure ipv6 dhcp pool prefix-delegation

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6/dhcp/pool

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configure ipv6 dhcp pool prefix-delegation

This command configures the prefix and duid for the DHCP server static prefix pool. To remove a prefix from a pool, use the no form of this command.

syntax

prefix-delegation prefix<ipv6_prefix> duid<duid> lifetime valid-lifetime<n> preferred-lifetime<n>
no prefix-delegation prefix<ipv6_prefix> duid<duid>

Parameter	Description
prefix<ipv6_prefix>	Host prefix in form of X:X::X:X/M
duid<duid>	Host duid in the form of hh:hh:tt:tt:m1:m2:m3:m4:m5:m6
valid-lifetime<n>	Valid lifetime in seconds. The ange is 60 -4294967295 and 4294967295 seconds means infinite.
preferred-lifetime<n>	Preferred lifetime in seconds. The range is 60 -4294967295 and 4294967295 seconds means infinite.

example

```
This example configures the prefix and duid for static
prefix pool‘pool1’.
Router/configure/ipv6/dhcps/pool pool1# prefix-delegation
1234::/48 00:03:00:01:11:22:33:44:55:66 lifetime 300 120
```

related commands

configure ipv6 dhcp pool, configure ipv6 dhcp pool dns-server, configure ipv6 dhcp pool domain-name, configure ipv6 dhcp pool ntp-server

applicable models/versions

All models/SNOS v2.0 or higher.

command modes

Router/configure/ipv6/dhcp/pool

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3.48.2 host_add

This command adds a host name and its corresponding IPv6 address to the internal hosts table.
This command checks the host table and maps a host name to an IPv6 address before making a DNS query.

syntax

ipv6 host_add hostname <*host name*> hostaddress <*ipv6address*> [interface <intf_name>]
no ipv6 host_add hostname <*host name*> hostaddress <*ipv6address*> [interface <intf_name>]

Parameter	Description
hostname	Name of the new host
	Use up to 60 characters.
hostaddress	IPv6 address of the new host.
interface	interface ID, in case of link local IPv6 hostaddress(e.g: ethernet0/2).

example

```
Router/configure# ipv6 host_add mainsys2 2003:1234::5678

Router/configure# ipv6 host_add mainsys3
fe80::0216:32ff:fe80:06f5 interface ethernet3/0
```

related commands

configure ip host_add, show hosts

applicable models/versions

All models.

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3.49 arp

This command adds an entry to the ARP table on a Router system. The ARP table contains the valid IP and MAC addresses of all other network hosts connected to the system. To view the ARP table contents, use the show arp command.

syntax

arp host_ip <ip_address> host_mac <mac_address> [flag <published | permanent>]

Parameter	Description
host_ip <ip_address>	Host system IP address in the form of aaa.bbb.ccc.ddd.
host_mac <mac_address>	Host system MAC address, in six groups of bytes with two digits per byte (nn:nn:nn:nn:nn:nn).
flag (permanent | published)	arp flags. flag permanent sets permanent ARP entry. flag published sets both the permanent and published flags. The publishing flag lets the system respond to ARP requests even if the system is not the destination host.

example

```
This example add an arp entry set both the permanent and
published flags.
Router/configure# arp 10.22.22.22 11:22:33:44:55:66 published
```

related commands

show arp, clear arp, configure arp_timeout

applicable models/versions

All models.

command modes

Router/configure

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3.50 arp_timeout

This command sets the global ARP cache timeout, in seconds, for dynamic entries. Use the no form of this command to restore the default setting (1200 seconds).

syntax

arp_timeout timeout <n>

Parameter	Description
timeout <n>	Timeout for arp cache in seconds. The range is 60-28800; the default is 1200.

example

```
This example configures the arp cache timeout to 1800 seconds.
Router/configure# arp_timeout 1800
```

related commands

configure arp, show arp, clear arp

applicable models/versions

All models.

command modes

Router/configure

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3.51 gratuitous-arp

This command enables the system to send gratuitous ARP request or gratuitous ARP reply. This is used to detect duplicate IP address.

syntax

gratuitous-arp
no gratuitous-arp

default

Enable

example

```
Router/configure# gratuitous-arp
```

applicable models/versions

All models.

command modes

Router/configure

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Ubigate iBG series

Command Reference (Vol.1)

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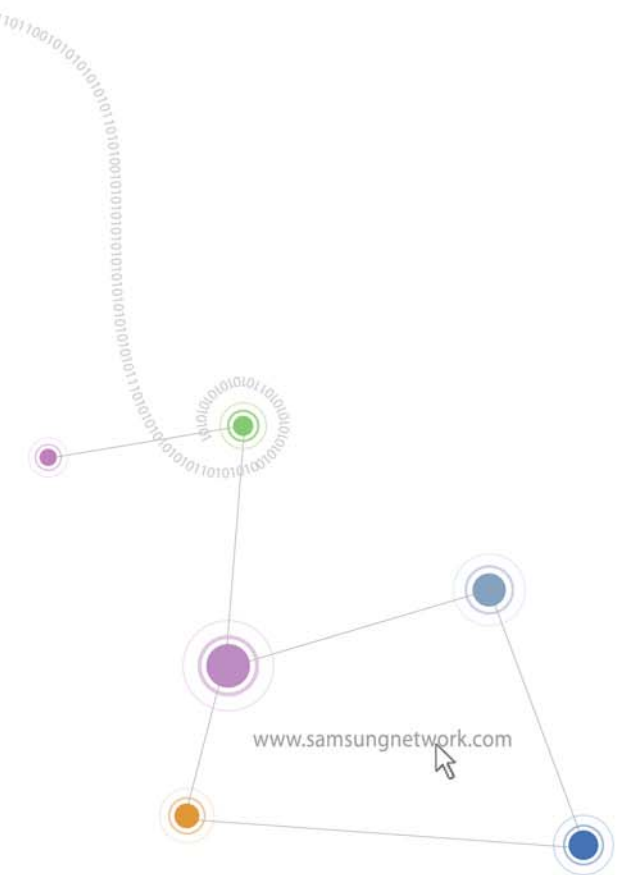

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