

FiberstoreOS

Reliability Command Line Reference

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1 BHM Commands

1.1 sysmon enable

Use this command to enable system monitor. Use the no command to disable system monitor.

Command Syntax

sysmon enable

no sysmon enable

Command Mode

Global Configuration

Default

Enable

Usage

None

Examples

The following example shows how to enable system monitor:

```
Switch# configure terminal
```

```
Switch(config)# sysmon enable
```

Related Commands

show sysmon

1.2 show sysmon

Use this command to show system monitor information.

Command Syntax

show sysmon

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to enable system monitor

```
Switch# show sysmon
```

```
System monitor disable
```

Related Commands

sysmon enable

1.3 heart-beat-monitor enable

Use this command to enable heart beat monitor. Use the no command to disable heart beat monitor.

Command Syntax

heart-beat-monitor enable

no heart-beat-monitor enable

Command Mode

Global Configuration

Default

Enable

Usage

The default of heart beat monitor is enable.

Examples

The following example shows how to enable heart beat monitor:

```
Switch# configure terminal
```

```
Switch(config)# heart-beat-monitor enable
```

Related Commands

show heart-beat-monitor

1.4 heart-beat-monitor reactivate

Use this command to specify a reactivation after process crash.

Command Syntax

heart-beat-monitor reactivate (reload system | shutdown port |warning)

reload system	reload system
shutdown port	shutdown all port when system crash
warning	print warning on screen

Command Mode

Global Configuration

Default

Reload system

Usage

The default reactivation is reload system.

Examples

The following example shows how to set heart-beat-monitor the reactivation

Switch# configure terminal

Switch(config)# heart-beat-monitor reactivate reload system

Related Commands

show heart-beat-monitor

1.5 show heart-beat-monitor

Use this command to show heart beat monitor status.

Command Syntax

show heart-beat-monitor

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to show system monitor information

Switch# show heart-beat-monitor

```
heart-beat-monitor enable.
```

```
heart-beat-monitor reactivation: print warning.
```

Related Commands

heart-beat-monitor enable

heart-beat-monitor reactivate

2 EFM Commands

2.1 ethernet oam enable

Use this command to enable Ethernet operations, maintenance, and administration (OAM) on an interface.

Command Syntax

ethernet oam enable

no ethernet oam enable

Command Mode

Interface Configuration

Default

The default status of Ethernet OAM is disabled

Usage

This command is used to enable the Ethernet OAM module on a port.

Examples

The following example shows how to enable Ethernet OAM

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam enable
```

Related Commands

no ethernet oam enable

2.2 ethetnet oam mode

Use the command to configure Ethernet OAM mode on an interface

Command Syntax

ethernet oam mode active

ethernet oam mode passive

no ethernet oam mode

Command Mode

Interface Configuration

Default

The default Ethernet OAM mode for the DTE is passive.

Usage

This command is used to set the DTE to active mode or passive mode.

Examples

The following example shows how to set EFM mode

```
Switch # configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam mode active
```

```
Switch(config-if)# ethernet oam mode passive
```

Related Commands

None

2.3 ethernet oam min-rate

Use this command to set the OAMPDU timer. Use the no form of the command to reset to default value.

Command Syntax

ethernet oam min-rate *SECONDS*

no ethernet oam min-rate

<i>SECONDS</i>	The number of seconds chosen for this timer. The range is 1~10
----------------	----------------------------------------------------------------

Command Mode

Interface Configuration

Default

The default value of the OAMPDU timer is 1 second

Usage

Set the timer to emit at least one OAMPDU per second and ensure that the sublayer adheres to the maximum number of OAMPDUs per second. The minimum is 1 OAMPDU per second and the maximum is 10 OAMPDU per second

Examples

The following example shows how to set the OAMPDU timer to 1

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam min-rate 1
```

Related Commands

show ethernet oam status

2.4 ethernet oam max-rate

Use this command to set the OAMPDU maximum number of PDUS per second. Use the no form of the command to reset max-rate to the default value.

Command Syntax

ethernet oam max-rate *PDUS*

no ethernet oam max-rate

<i>PDUS</i>	The maximum number of PDUs per second. The range is 1~10
-------------	----------------------------------------------------------

Command Mode

Interface Configuration

Default

The default value of the max-rate is 10 PDUs per second.

Usage

This command is to ensure that the sublayer adheres to the maximum number of OAMPDUs per second. The minimum is 1 OAMPDU per second and the maximum is 10 OAMPDUs per second.

Examples

The following example shows how to set the OAMPDU maximum number to 10 per second

```
Switch # configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam max-rate 10
```

Related Commands

show ethernet oam status

2.5 ethernet oam link-monitor on

Use this command to turn on link monitoring on an interface. Use the no form of this command to turn link monitoring off.

Command Syntax

ethernet oam link-monitor on

no ethernet oam link-monitor on

Command Mode

Interface Configuration

Default

When link monitor is supported, link monitoring is automatically turned on.

Usage

None

Examples

The following example shows how to turn on link monitoring on interface eth-0-1

```
Switch # configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam link-monitor on
```

Related Commands

show ethernet oam status

2.6 ethernet oam link-monitor supported

Use this command to configure link monitoring on an interface. Use the no form of this command to remove support for link monitoring on an interface.

Command Syntax

ethernet oam link-monitor supported

no ethernet oam link-monitor supported

Command Mode

Interface Configuration

Default

The default state of the link monitor is supported

Usage

None

Examples

The following example shows how to configure link monitoring on interface eth-0-1

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

Switch(config-if)# ethernet oam link-monitor supported

Related Commands

show ethernet oam status

2.7 ethernet oam link-monitor frame

Use this command to configure the low and high threshold and the window for the frame event. If the low threshold is exceeded, an errored frame link event is generated. If the high threshold is exceeded, the action defined using the command ethernet oam link-monitor high threshold action is taken.

Command Syntax

ethernet oam link-monitor frame threshold high (*HIGH_THRES* | **none**) **low** *LOW_THRES*
window *WINDOW*

no ethernet oam link-monitor frame {**threshold** {**high**|**low**}|**window**}

<i>HIGH_THRES</i>	Value of the high threshold for errored frames. The range is 1~65535
none	No high threshold value is set
low <i>LOW_THRES</i>	Value of the low threshold for errored frames. 0~65535
window <i>WINDOW</i>	Size of frame event window, expressed in milliseconds, in multiples of 100, in the range 10~600

Command Mode

Interface Configuration

Default

The default value for high threshold is none, meaning that no high threshold is configured.

The default value of low threshold is 1.

The default value for the frame event window is 100.

Usage

None

Examples

The following example shows how to configure the low and high threshold and the window for the frame event

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam link-monitor frame threshold high 5 low 2 window 200
```

Related Commands

show ethernet oam status

2.8 ethernet oam link-monitor frame-seconds threshold

Use this command to configure the low and high threshold and the window for the frame-seconds event. If the low threshold is exceeded, an errored-frame-seconds link event is generated. If the high threshold is exceeded then action defined through the command ethernet oam link-monitor high threshold action will be taken.

Command Syntax

ethernet oam link-monitor frame-seconds threshold high (*HIGH_THRES* | **none**) **low** *LOW_THRES* **window** *WINDOW*

no ethernet oam link-monitor frame-seconds threshold high

<i>HIGH_THRES</i>	High threshold for the number of errored frame-seconds in the range of 1~900
none	No high threshold value is set
low <i>LOW_THRES</i>	Low threshold for the number of errored frame-seconds 1~900
window <i>WINDOW</i>	Window for frame-seconds events, in milliseconds, in multiples of 100, in the range 100~9000

Command Mode

Interface Configuration

Default

The default value for high threshold is none, meaning that no high threshold is configured. The default value for the low threshold is 1. The default value of frame event window is 1000.

Usage

None

Examples

The following example shows how to configure the threshold and window for the frame-seconds event

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam link-monitor frame-seconds threshold high 5 low 2 window 200
```

Related Commands

show ethernet oam status

2.9 ethernet oam link-monitor high threshold action

Use this command to define action when high threshold is detected. Use no form of the command to reset the action.

Command Syntax

ethernet oam link-monitor high-threshold action error-disable-interface

no ethernet oam link-monitor high-threshold action error-disable-interface

Command Mode

Interface Configuration

Default

When high threshold is exceeded it will generate only the corresponding link event and will not trigger any interface events by default

Usage

None

Examples

The following example shows how to define action of error-disable interface when high threshold is detected

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam link-monitor high-threshold action error-disable-interface
```

Related Commands

show ethernet oam status

2.10 ethernet oam remote-loopback

Use this command to configure remote loopback on a interface. This command can be used to enable or disable remote loopback and also configure the remote loopback timeout, which is the number of seconds the DTE will wait for the remote DTE to respond to the ethernet oam remote-loopback enable command. Use the no form of this command to remove remote-loopback support from the interface.

Command syntax

ethernet oam remote-loopback {**supported** | **timeout SECS**}

no ethernet oam remote-loopback {**supported** | **timeout**}

supported	Remote loopback can be initiated in the DTE
timeout SECS	The remote loopback timeout value in the range of 1~10

Command Mode

Interface Configuration

Default

The default state for the remote loopback is not supported. If a timeout is not configured, the local DTE remains in remote loopback state until the remote DTE responds or the user stops remote loopback administratively.

One switch supports 4 interfaces in “local Loopback” status at the same time.

Usage

None

Examples

The following example shows how to support remote-loopback on interface eth-0-1

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam remote-loopback supported
```

Related Commands

show ethernet oam status

2.11 ethernet oam remote-loopback start

Use this command to start an Ethernet OAM remote-loopback mechanism.

Command Syntax

ethernet oam remote-loopback start interface *IFNAME*

<i>IFNAME</i>	Name of the interface
---------------	-----------------------

Command Mode

Privileged EXEC

Default

The default state of the remote loopback function is disabled.

Usage

None

Usage

This command is used to start a remote loopback mechanism.

Examples

The following example shows how to start an Ethernet OAM remote-loopback mechanism

```
Switch# ethernet oam remote-loopback start interface eth-0-1
```

Related Commands

show ethernet oam state-machine

2.12 ethernet oam remote-loopback stop

Use this command to stop an Ethernet OAM remote-loopback process.

Command Syntax

ethernet oam remote-loopback stop interface *IFNAME*

<i>IFNAME</i>	Name of the interface
---------------	-----------------------

Command Mode

Privileged EXEC

Default

Use this command to stop an Ethernet OAM remote loopback mechanism.

Usage

Use this command to stop an Ethernet OAM remote loopback mechanism.

Examples

The following example shows how to stop an Ethernet OAM remote-loopback process

```
Switch# ethernet oam remote-loopback stop interface eth-0-9
```

Related Commands

show ethernet oam state-machine

2.13 ethernet oam test-packet start

Use this command to send test packet on LOOPBACK interface.

Command Syntax

ethernet oam test-packet start interface *IFNAME* **vlan** *VLANID* **mac** *MAC* **count** *COUNT*

interface <i>IFNAME</i>	Name of the interface
vlan <i>VLANID</i>	The VLAN ID. The range is 1~4094
mac <i>MAC</i>	The mac address in HHHH.HHHH.HHHH format
count <i>COUNT</i>	Configure the count for the packet. The range is 1 - 10000

Command Mode

Privileged EXEC

Default

None

Usage

This command is used to send packet to remote interface on LOOPBACK interface.

Examples

The following example shows how to send test packet on interface eth-0-13

```
Switch# ethernet oam test-packet start interface eth-0-13 vlan 2 mac 1.2.3 count 3
```

Related Commands

show ethernet oam statistics

2.14 ethernet oam timeout

Use this command to reset the LOCAL_LOST_LINK_TIMER and start an Ethernet OAM discovery process. Use the no form of the command to reset to the default value.

Command Syntax

ethernet oam timeout *SECONDS*

no ethernet oam timeout

<i>SECONDS</i>	The number of seconds chosen for the link-timer in the range 2~30
----------------	-------------------------------------------------------------------

Command Mode

Interface Configuration

Default

The default value of the timeout is 5 seconds

Usage

This command is used to start a discovery process by resetting the LOCAL_LOST_LINK_TIMER.

Examples

The following example shows how to set the timeout to 5s

```
Switch # configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam timeout 5
```

Related Commands

None

2.15 ethernet oam remote-failure

Use this command to error-disable port when get remote failure item form peer. Use the no form of the command to unset the action.

Command Syntax

ethernet oam remote-failure (link-fault | critical-event | dying-gasp) action

error-disable-interface

no ethernet oam remote-failure (link-fault | critical-event | dying-gasp) action

error-disable-interface

link-fault	Critical Link Event
critical-event	Dying Gasp Event
dying-gasp	Link Fault Event

Command Mode

Interface Configuration

Default

None

Usage

This command is used to error-disable port when get remote failure item form peer.

Examples

The following example shows how to error-disable port when get remote failure item form peer on interface eth-0-1

```
Switch # configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet oam remote-failure link-fault action error-disable-interface
```

Related Commands

None

2.16 show ethernet oam discovery

Use this command to display the ethernet oam administrative and operation configuration for local and remote DTE

Command Syntax

```
show ethernet oam discovery (interface IFNAME)
```

interface <i>IFNAME</i>	Name of the interface
--------------------------------	-----------------------

Command Mode

Privileged EXEC

Default

None

Usage

The following sample output from this command displays ethernet oam administrative and operation configurations for local and remote DTE

Example

The following example shows how to display the ethernet oam administrative and operation configuration for local and remote DTE of interface eth-0-1

```
Switch1# show ethernet oam discovery interface eth-0-1
```

Related Commands

None

2.17 show Ethernet oam status

Use this command to display the runtime settings of link-monitoring and general OAM operations for all interfaces or for a specific interface

Command Syntax

```
show ethernet oam status (interface IFNAME)
```

interface <i>IFNAME</i>	Name of the interface
--------------------------------	-----------------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display the runtime settings of link-monitoring and general OAM operations of interface eth-0-1

```
Switch# show ethernet oam status interface eth-0-1
```

Related Commands

None

2.18 show ethernet oam state-machine

Use this command to display the state machine information.

Command Syntax

```
show ethernet oam state-machine (interface IFNAME)
```

interface <i>IFNAME</i>	Name of the interface
--------------------------------	-----------------------

Command Mode

Privileged EXEC

Default

None

Usage

The command displays the state of the interface.

Examples

The following example shows how to display the state machine information of eth-0-1

```
Switch# show ethernet oam state-machine interface eth-0-1
```

Related Commands

None

2.19 show ethernet oam statistics

Use this command to display the statistics information.

Command Syntax

show ethernet oam statistics (**interface** *IFNAME*)

interface <i>IFNAME</i>	Name of the interface
--------------------------------	-----------------------

Command Mode

Privileged EXEC

Default

None

Usage

The command displays the statistics of the interface.

Examples

The following example shows how to display the statistics information of eth-0-1

```
Switch# show ethernet oam statistics interface eth-0-1
```

Related Commands

None

3 CFM Commands

3.1 ethernet cfm enable

Use this command to enable CFM globally. Use the no parameter to disable the CFM function on the bridge.

Command Syntax

ethernet cfm enable

no ethernet cfm enable

Command Mode

Global Configuration

Default

Disabled

Usage

This command is used to enable CFM globally.

Examples

The following example shows how to enable and disable cfm globally:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm enable
```

```
Switch(config)# no ethernet cfm enable
```

Related Commands

None

3.2 ethernet cfm domain level

Use this command to create an MD within which you can manage Ethernet traffic or enter cfm domain mode. Ensure you specify the level for each MD. The levels separate MDs from each other and provide different areas of functionality.

Command Syntax

ethernet cfm domain *DOMAIN_NAME* level *LEVEL*

no ethernet cfm domain *DOMAIN_NAME*

<i>DOMAIN_NAME</i>	Maintenance domain name
<i>LEVEL</i>	MD level, the range is 0 to 7

Command Mode

Global Configuration

Default

None

Usage

The levels define the MD as follows:

0~2 (operator levels)

3~4 (provider levels)

5~7 (customer levels)

Examples

The following example shows how to create and destroy domain:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm domain test level 5
```

```
Switch(config-ether-cfm)# exit
```

```
Switch(config)# no ethernet cfm domain test
```

Related Commands

None

3.3 service

Use this command to create an MA within which you can create mep.

Command Syntax

service *CSI_ID* (**vlan** *VLAN_ID*)

no service *CSI_ID*

<i>CSI_ID</i>	Maintenance association name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Ethernet-cfm Configure mode

Default

None

Usage

None

Examples

The following example shows how to create and remove MA:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm domain test level 5
```

```
Switch(config-ether-cfm)# service cst vlan 30
```

```
Switch(config-ether-cfm)# no service cst
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* **level** *LEVEL*

3.4 ethernet cfm mep

Use this command to define an MEP within an MA. Each MEP and remote MEP must have a unique ID within an MA. If two or more MEPs share the same ID, CFM raises an event indicating a duplicate MEP exists in the MA.

Command Syntax

ethernet cfm mep (down|up) mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID* |) interval (1 | 2 | 3 | 4 | 5 | 6 | 7)

no ethernet cfm mep (down|up) mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID* |)

down	Down mep
up	Up mep
<i>MEPID</i>	Local mep id, the range is 1 to 8191
<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
1	CCM Interval 3.3 millisecond
2	CCM Interval 10 millisecond
3	CCM Interval 100 millisecond
4	CCM Interval 1 second
5	CCM Interval 10 second
6	CCM Interval 1 minute
7	CCM Interval 10 minutes

Command Mode

Interface Configuration

Default

None

Usage

None

Examples

The following example shows how to create MEP:

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet cfm mep down mpid 1 domain md1 vlan 2 interval 1
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* level *LEVE*

service *CSI_ID* (vlan *VLAN_ID*)

3.5 ethernet cfm mep crosscheck mpid

Use this command to define a remote MEP within an MA. Each MEP and remote MEP must have a unique ID within an MA. If two or more MEPs share the same ID, CFM raises an event indicating a duplicate MEP exists in the MA.

Command Syntax

ethernet cfm mep crosscheck mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID*) mac *MAC*

no ethernet cfm mep crosscheck mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID*)

<i>MEPID</i>	The range is 1 to 8191
<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
<i>MAC</i>	Remote mep mac address

Command Mode

Interface Configuration

Default

None

Usage

None

Examples

The following example shows how to create remote MEP:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm domain test level 5
```

```
Switch(config-ether-cfm)# service cst vlan 30
```

```
Switch(config-ether-cfm)# exit
```

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# ethernet cfm mep crosscheck mpid 8000 domain test vlan 30 mac 0.0.1
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* **level** *LEVEL*

service *CSI_ID* (**vlan** *VLAN_ID*)

3.6 ethernet cfm mip

Use this command to define an MIP. The relative MD and MA should be configured before MIP is configured.

Command Syntax

ethernet cfm mip level *LEVEL* **vlan** *VLAN_ID*

no ethernet cfm mip level *LEVEL* **vlan** *VLAN_ID*

<i>LEVEL</i>	MD level, the range is 0 to 7
<i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Interface Configuration

Default

None

Usage

None

Examples

The following example shows how to create MIP:

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet cfm mip level 5 vlan 2
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* level *LEVEL*

service *CSI_ID* (vlan *VLAN_ID*)

3.7 ethernet cfm cc enable domain

Use the command to enable continuity check for an MA.

Command Syntax

ethernet cfm cc enable domain *DOMAIN_NAME* (vlan *VLAN_ID*)

no ethernet cfm cc enable domain *DOMAIN_NAME* (vlan *VLAN_ID*)

<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Global Configuration

Default

None

Usage

None

Examples

The following example shows how to enable cc:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm cc enable domain test vlan 2
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* **level** *LEVEL*

service *CSI_ID* (**vlan** *VLAN_ID*)

3.8 ethernet cfm cc domain priority

Use the command to define continuity check vlan priority for an MA.

Command Syntax

ethernet cfm cc domain *DOMAIN_NAME* (**vlan** *VLAN_ID*) **priority** *VLAN_PRIORITY*

no ethernet cfm cc domain *DOMAIN_NAME* (**vlan** *VLAN_ID*) **priority**

<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
<i>VLAN_PRIORITY</i>	Vlan priority, the range is 0 to 7, the default value is 0

Command Mode

Global Configuration

Default

None

Usage

None

Examples

The following example shows how to configure vlan priority for CC message:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm cc domain test vlan 2 priority 3
```

Related Commands

ethernet cfm domain *DOMAIN_NAME* level *LEVEL*

service *CSI_ID* (vlan *VLAN_ID*)

ethernet cfm cc enable domain *DOMAIN_NAME* (vlan *VLAN_ID*)

3.9 ethernet cfm loopback

Use the command to issue CFM loopback messages for remote mepid or multicast address and verify that remote MEPs are accessible.

Command Syntax

ethernet cfm loopback (multicast | unicast *rmepid* *RMEPID*) *mepid* *MEPID* (domain *DOMAIN_NAME* | level *LEVEL*) (vlan *VLAN_ID*) (repeat *COUNT*)(timeout *TIMEOUT*)(priority *PRIORITY*)

multicast	Send multicast frame
unicast	Send unicast frame
rmepid	Mep ID of remote MEP
<i>RMEPID</i>	Remote mep id, the range is 1 to 8191
<i>MEPID</i>	Source mep id, the range is 1 to 8191
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
repeat <i>COUNT</i>	Repeat count, the range is 1 to 255, the default value is 1
timeout <i>TIMEOUT</i>	The value of timeout, the range is 1 to 65535, the default value is 5
priority <i>PRIORITY</i>	The range is 0 to 7, the default value is 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to start loopback:

```
Switch# ethernet cfm loopback multicast mepid 1 domain test vlan 2 repeat 3 timeout 5 priority 7
```

Related Commands

ethernet cfm mep (down|up) mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID* |) interval (1 | 2 | 3 | 4 | 5 | 6 | 7)

ethernet cfm mep crosscheck mpid *MEPID* (vlan *VLAN_ID* |) mac *MAC*

3.10 ethernet cfm loopback mac

Use the command to issue CFM loopback messages for remote MEP or MIP mac address and verify that remote MEPs or MIPs are accessible.

Command Syntax

ethernet cfm loopback mac *MACADDRESS* unicast mepid *MEPID* (domain *DOMAIN_NAME* | level *LEVEL*) (vlan *VLAN_ID*) (repeat *COUNT*)(timeout *TIMEOUT*)(priority *PRIORITY*)

<i>MACADDRESS</i>	The remote mep mac address
<i>MEPID</i>	The source local mep id and its range is 1 to 8191
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
repeat <i>COUNT</i>	Repeat count, the range is 1 to 255, the default value is 1

timeout <i>TIMEOUT</i>	The value of timeout, the range is 1 to 65535, the default value is 5
priority <i>PRIORITY</i>	The range is 0 to 7, the default value is 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to start loopback:

```
Switch# ethernet cfm loopback mac 0.0.1 unicast mepid 1 domain test vlan 2 repeat 3 timeout 5
priority 7
```

Related Commands

ethernet cfm mep (down|up) mpid *MEPID* **domain** *DOMAIN_NAME* (**vlan** *VLAN_ID* |) **interval** (1 | 2 | 3 | 4 | 5 | 6 | 7)

ethernet cfm mep crosscheck mpid *MEPID* (**vlan** *VLAN_ID* |) **mac** *MAC*

3.11 ethernet cfm errors enable domain

Use the command to configure reserve ccm errors. The default action is to reserve ccm errors.

Command Syntax

ethernet cfm errors enable domain *DOMAIN_NAME* (**vlan** *VLAN_ID* |)

no ethernet cfm errors enable domain *DOMAIN_NAME* (**vlan** *VLAN_ID* |)

<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Global Configuration

Default

None

Usage

For every mep, five latest errors will be reserved.

Examples

The following example shows how to configure reserve ccm errors:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm errors enable domain test vlan 2
```

Related Commands

None

3.12 clear ethernet cfm errors

Use the command to clear cfm errors for domain.

Command Syntax

clear ethernet cfm errors (**domain** *DOMAIN_NAME* | **level** *LEVEL*)

domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to clear ccm errors:

```
Switch# clear ethernet cfm errors domain test
```

Related Commands

None

3.13 ethernet cfm ais status enable

Use the command to enable or disable ais function and configure relative parameters.

Command Syntax

ethernet cfm ais status enable (**all** | **loc** | **mismerge** | **unexpected-mep** | **unexpected-meg-level** | **unexpected-period**) **domain** *DOMAIN_NAME* (**vlan** *VLAN_ID*)
level *LEVEL* (**unicast** *RMEP_MAC* | **multicast**)

no ethernet cfm ais status enable (**all** | **loc** | **mismerge** | **unexpected-mep** | **unexpected-meg-level** | **unexpected-period**) **domain** *DOMAIN_NAME* (**vlan** *VLAN_ID*)
level *LEVEL* (**unicast** *RMEP_MAC* | **multicast**)

all	Ais for all defect condition
loc	Ais for loss of continuity
mismerge	Ais for incorrect MEG ID
unexpected-mep	Ais for unexpected MEP ID received
unexpected-meg-level	Ais for incorrect MEG level
unexpected-period	Ais for mis-matched in period received
<i>DOMAIN_NAME</i>	Maintenance domain name of the local mep
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
<i>LEVEL</i>	Ais packet will be sent in this MD level, the range is 1 to 7
unicast	Unicast ais frame to be sent
<i>RMEP_MAC</i>	The remote mep mac address

multicast	Multicast ais frame to be sent
------------------	--------------------------------

Command Mode

Interface Configuration

Default

None

Usage

None

Examples

The following example shows how to configure ais:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm ais status enable all domain test vlan 2 level 5 multicast
```

Related Commands

None

3.14 ethernet cfm ais suppress alarm enable domain

Use the command to enable ais suppress alarm. When this command is configured and ais condition is enabled, the loc errors will not be reported.

Command Syntax

ethernet cfm ais suppress alarm enable domain *DOMAIN_NAME* (**vlan** *VLAN_ID*)

no ethernet cfm ais suppress alarm enable domain *DOMAIN_NAME* (**vlan** *VLAN_ID*)

<i>DOMAIN_NAME</i>	Maintenance domain name of the local mep
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Global Configuration

Default

None

Usage

None

Examples

The following example shows how to enable ais suppress alarm:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm ais suppress alarm enable domain test vlan 2
```

Related Commands

None

3.15 ethernet cfm server-ais status enable level

Use this command to configure ais server and parameters.

Command Syntax

ethernet cfm server-ais status enable level *LEVEL* (**interval** (1|60))

no ethernet cfm server-ais status enable

<i>LEVEL</i>	Ais packet will be sent in this MD level, the range is 1 to 7
interval	Transmission interval for AIS frames
1	The ais transmission interval is 1 second
60	The ais transmission interval is 60 seconds

Command Mode

Interface Configuration

Default

None

Usage

None

Examples

The following example shows how to configure ais server:

```
Switch# configure terminal
```

```
Switch(config)# interface eth-0-1
```

```
Switch(config-if)# ethernet cfm server-ais status enable level 5 interval 60
```

Related Commands

None

3.16 show ethernet cfm domain

Use the command to display information related to the configuration of MDs and MAs.

Command Syntax

```
show ethernet cfm domain DOMAIN_NAME
```

<i>DOMAIN_NAME</i>	Maintenance domain name
--------------------	-------------------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display information related to the configuration of MDs and MAs:

Switch# show ethernet cfm domain test

Related Commands

None

3.17 show ethernet cfm maintenance-points

Use the command to display information related to configuration of MEPs, remote MEPs, and MIPs.

Command Syntax

show ethernet cfm maintenance-points

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display information related to configuration of MEPs, remote MEPs, and MIPs:

```
Switch# show ethernet cfm maintenance-points
```

Related Commands

None

3.18 show ethernet cfm maintenance-points local

Use the command to display information related to configuration of MEPs and MIPs.

Command Syntax

show ethernet cfm maintenance-points local (mep|mip) (interface *IFNAME* | domain *DOMAIN_NAME* | level *LEVEL*)

mep	Maintenance end point
mip	Maintenance intermediate point
interface <i>IFNAME</i>	Interface name
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display information related to configuration of MEPs and MIPs:

```
Switch# show ethernet cfm maintenance-points local mep interface eth-0-1
```

Related Commands

None

3.19 show ethernet cfm maintenance-points remote

Use the command to display information related to configuration of remote MEPs.

Command Syntax

show ethernet cfm maintenance-points remote (mpid *MEPID*| mac *MAC*) (domain *DOMAIN_NAME* | level *LEVEL*) (vlan *VLAN_ID*)

mpid <i>MEPID</i>	The remote mep id, the range is 1 to 8191
mac <i>MAC</i>	The remote mep mac address
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display information of remote MEP:

```
Switch# show ethernet cfm maintenance-points remote mpid 1 domain test
```

Related Commands

None

3.20 show ethernet cfm cc config

Use the command to display information related to CC configuration.

Command Syntax

show ethernet cfm cc config

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display information related to CC configuration:

```
Switch#show ethernet cfm cc config
```

Related Commands

None

3.21 show ethernet cfm errors

Use the command to display CFM error.

Command Syntax

show ethernet cfm errors (domain *DOMAIN_NAME* | level *LEVEL*)

domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display CFM error:

```
Switch# show ethernet cfm errors
```

Related Commands

None

3.22 show ethernet cfm ais mep

Use the command to display ais configuration for local mep.

Command Syntax

```
show ethernet cfm ais mep MEPID domain DOMAIN_NAME (vlan VLAN_ID)
```

<i>MEPID</i>	Local mep id, the range is 1 to 8191
<i>DOMAIN_NAME</i>	Maintenance domain name
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display ais configuration for local mep:

```
Switch# show ethernet cfm ais mep 1 domain test vlan 2
```


Related Commands

None

3.23 show ethernet cfm

Use the command to display cfm global information.

Command Syntax

show ethernet cfm

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to cfm global information:

```
Switch# show ethernet cfm
```

Related Commands

None

3.24 ethernet cfm linktrace rmepid

Use the command to issue CFM linktrace messages for remote mep and discovery a path to remote mep.

Command Syntax

ethernet cfm linktrace rmepid *RMEPID* **mepid** *MEPID* (**domain** *DOMAIN_NAME* | **level** *LEVEL*)
(**vlan** *VLAN_ID*) (**ttl** *TTL* | **timeout** *TIMEOUT*) **priority** *PRIORITY* | **l3m-egress-identifier-tlv** |
sender-id-tlv | **organization-specific-tlv**)

<i>RMEPID</i>	Remote mep id, the range is 1 to 8191
<i>MEPID</i>	The source local mep id and its range is 1 to 8191
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
ttl <i>TTL</i>	Maximum hops, the range is 1 to 255, the default value is 64
timeout <i>TIMEOUT</i>	The value of timeout, the range is 1 to 65535, the default value is 5
priority <i>PRIORITY</i>	The range is 0 to 7, the default value is 7
ltm-egress-identifier-tlv	LTM egress identifier TLV
sender-id-tlv	Sender ID TLV
organization-specific-tlv	Organization Specific TLV

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to start linktrace:

```
Switch# ethernet cfm linktrace rmepid 1 mepid 2 domain test vlan 2 ttl 255 timeout 5 priority 7
```

Related Commands

ethernet cfm mep (down|up) mpid *MEPID* **domain** *DOMAIN_NAME* (**vlan** *VLAN_ID* |) **interval** (*I* | 2 | 3 | 4 | 5 | 6 | 7)

ethernet cfm mep crosscheck mpid *MEPID* (**vlan** *VLAN_ID* |) (**mac** *MAC*)

3.25 ethernet cfm linktrace mac

Use the command to issue CFM linktrace messages for remote mep or mip mac address and discovery a path to remote mep or mip.

Command Syntax

ethernet cfm linktrace mac *MACADDRESS* **mepid** *MEPID* (**domain** *DOMAIN_NAME* | **level** *LEVEL*) (**vlan** *VLAN_ID*) (**ttl** *TTL* | **timeout** *TIMEOUT* | **priority** *PRIORITY*)

<i>MACADDRESS</i>	The remote mep mac address
<i>MEPID</i>	The source local mep id and its range is 1 to 8191
domain <i>DOMAIN_NAME</i>	Maintenance domain name
level <i>LEVEL</i>	MD level, the range is 0 to 7
vlan <i>VLAN_ID</i>	Vlan id, the range is 1 to 4094
ttl <i>TTL</i>	Maximum hops, the range is 1 to 255, the default value is 64
timeout <i>TIMEOUT</i>	The value of timeout, the range is 1 to 65535, the default value is 5
priority <i>PRIORITY</i>	The range is 0 to 7, the default value is 7

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to start linktrace:

```
Switch# ethernet cfm linktrace mac 7234.ef5a.2806 mepid 1 domain test vlan 2 ttl 255  
timeout 5 priority 7
```

Related Commands

ethernet cfm mep (down|up) mpid *MEPID* domain *DOMAIN_NAME* (vlan *VLAN_ID* |) interval (*I* | *2* | *3* | *4* | *5* | *6* | *7*)

ethernet cfm mep crosscheck mpid *MEPID* (vlan *VLAN_ID* |) (mac *MAC*)

3.26 ethernet cfm linktrace cache enable

Use the command to configure caching linktrace information. The default value is disabled.

Command Syntax

ethernet cfm linktrace cache enable

no ethernet cfm linktrace cache enable

Command Mode

Global Configuration

Default

Disabled

Usage

None

Examples

The following example shows how to configure caching linktrace information:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm linktrace cache enable
```

Related Commands

None

3.27 ethernet cfm linktrace cache size

Use the command to configure linktrace cache size.

Command Syntax

ethernet cfm linktrace cache size *ENTRIES*

no ethernet cfm linktrace cache size

<i>ENTRIES</i>	Cache entry number, the range is 1 to 65535, the default value is 100
----------------	-----------------------------------------------------------------------

Command Mode

Global Configuration

Default

100

Usage

None

Examples

The following example shows how to configure linktrace cache size:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm linktrace cache size 200
```

Related Commands

None

3.28 ethernet cfm linktrace cache hold-time

Use the command to configure linktrace cache hold time.

Command Syntax

ethernet cfm linktrace cache hold-time *MINUTES*

no ethernet cfm linktrace cache hold-time

<i>MINUTES</i>	Cache entry hold time minutes, the range is 1 to 65535 minutes, the default value is 60 minutes
----------------	-------------------------------------------------------------------------------------------------

Command Mode

Global Configuration

Default

60 minutes

Usage

None

Examples

The following example shows how to configure linktrace cache hold time:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm linktrace cache hold-time 90
```

Related Commands

None

3.29 show ethernet cfm linktrace cache

Use the command to display linktrace cache entries.

Command Syntax

```
show ethernet cfm linktrace cache
```

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display linktrace cache entries:

switch# show ethernet cfm linktrace cache

Related Commands

None

3.30 clear ethernet cfm linktrace cache

Use the command to clear linktrace cache.

Command Syntax

clear ethernet cfm linktrace cache

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to clear linktrace cache:

```
Switch# clear ethernet cfm linktrace cache
```

Related Commands

None

3.31 ethernet cfm mip ccm-database size

Use the command to configure mip ccm database size.

Command Syntax

ethernet cfm mip ccm-database size *ENTRIES*

no ethernet cfm mip ccm-database size

<i>ENTRIES</i>	Cache entry number, the range is 1 to 65535, the default value is 100
----------------	-----------------------------------------------------------------------

Command Mode

Global Configuration

Default

100

Usage

None

Examples

The following example shows how to configure mip ccm database size:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm mip ccm-database size 200
```

Related Commands

None

3.32 ethernet cfm mip ccm-database hold-time

Use the command to configure mip ccm-database hold time.

Command Syntax

```
ethernet cfm mip ccm-database holdt-ime MINUTES
```

```
no ethernet cfm mip ccm-database hold-time
```

<i>MINUTES</i>	Mip ccm database hold time minutes, the range is 60 to 65535 minutes, the default value is 60 minutes
----------------	-------------------------------------------------------------------------------------------------------

Command Mode

Global Configuration

Default

60 minutes

Usage

None

Examples

The following example shows how to configure mip ccm-database hold time:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm mip ccm-database holdt-ime 90
```

Related Commands

None

3.33 show ethernet cfm mip ccm-database

Use the command to display mip ccm-database.

Command Syntax

```
show ethernet cfm mip ccm-database
```

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to display mip ccm-database:

```
Switch# show ethernet cfm mip ccm-database
```

Related Commands

None

3.34 clear ethernet cfm mip ccm-database

Use the command to clear mip ccm database.

Command Syntax

```
clear ethernet cfm mip ccm-database
```

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to clear mip ccm database:

```
Switch# clear ethernet cfm mip ccm-database
```

Related Commands

None

3.35 ethernet cfm sf-reason

Use the command to configure signal fail reasons and these reasons will trigger g8031/g8032.

Command Syntax

```
ethernet cfm sf-reason (all | {loc | rdi-rx | ais-defect} | none)
```

```
no ethernet cfm sf-reason
```

all	Configure all reasons to trigger Signal Fail
loc	Configure loc to trigger Signal Fail
rdi-rx	Configure remote mep rdi to trigger Signal Fail
ais-defect	Configure ais condition to trigger Signal Fail
none	Configure none reason

Command Mode

Global Configuration

Default

The default value of sf-reason is Loc

Usage

None

Examples

The following example shows how to configure signal fail reasons:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm sf-reason all
```

Related Commands

None

3.36 ethernet cfm mode

Use this command to configure cfm mode globally. Use the no parameter to configure cfm mode to 802.1ag.

Command Syntax

ethernet cfm mode (dot1ag|1731)

no ethernet cfm mode

dot1ag	IEEE 802.1ag-2007
---------------	-------------------

y1731	ITU-T Y.1731
-------	--------------

Command Mode

Global Configuration

Default

IEEE 802.1ag-2007

Usage

None

Examples

The following example shows how to configure cfm mode globally:

```
Switch# configure terminal
```

```
Switch(config)# ethernet cfm mode dot1ag
```

```
Switch(config)# no ethernet cfm mode
```

Related Commands

None

4 CPU Traffic Limit Commands

4.1 cpu-traffic-limit total rate

Use this command to set the total rate of all streams destined to CPU. Use the no form of this command to set the total rate to the default value.

Command Syntax

cpu-traffic-limit total rate *RATE_RANGE*

no cpu-traffic-limit total rate

<i>RATE_RANGE</i>	Rate of all streams destined to cpu, kbps, <0-1000000>
-------------------	--------------------------------------------------------

Command Mode

Global Configuration

Default

2000 kbps

Usage

If the configured rate is lower than total rate granularity, a warning will be prompted to inform administrator that all packet destined to CPU shall be dropped.

Examples

This example shows how to configure cpu-traffic-limit total rate.

```
Switch(config)# cpu-traffic-limit total rate 3000
```

This example shows how to reset cpu-traffic-limit total rate.

```
Switch(config)# no cpu-traffic-limit total rate
```

Related Commands

show cpu traffic-limit

4.2 cpu-traffic-limit reason rate

Use this command to set the individual limit rate for the stream carried with this reason. Use the no form of this command to set the individual limit rate of the reason to its default value.

Command Syntax

cpu-traffic-limit reason {bpdu | cfm | slow-protocol | eapol | erps | smart-link | arp | dhcp | rip | ldp | ospf | pim | vrrp | ipda | icmp-redirect | mcast-rpf-fail | macsa-mismatch | port-security-discard | vlan-security-discard | mtu-dontfrag | mtu-frag | ip-option | ucast-ttl-fail | mpls-ttl-fail | igmp | sflow-ingress | fwd-to-cpu | uddl} rate *RATE_RANGE*

no cpu-traffic-limit reason {bpdu | cfm | slow-protocol | eapol | erps | smart-link | arp | dhcp | rip | ldp | ospf | pim | vrrp | ipda | icmp-redirect | mcast-rpf-fail | macsa-mismatch | port-security-discard | vlan-security-discard | mtu-dontfrag | mtu-frag | ip-option | ucast-ttl-fail | mpls-ttl-fail | igmp | sflow-ingress | fwd-to-cpu | uddl} rate

bpdu	Reason for BPDU protocols packets(including STP, RSTP, MSTP)
cfm	Reason for CFM protocol packets
slow-protocol	Reason for slow protocol packets.(including EFM, LACP)
eapol	Reason for Dot1x protocol packets
erps	Reason for ERPS protocol packets
arp	Reason for ARP protocol packets
dhcp	Reason for DHCP protocol packets
rip	Reason for RIP protocol packets
bgp	Reason for BGP protocol packets
ldp	Reason for LDP protocol packets
ospf	Reason for OSPF protocol packets
pim	Reason for PIM protocol packets
vrrp	Reason for VRRP protocol packets
ipda	Reason for packets with IPDA destination to router itself
icmp-redirect	Reason for redirecting ICMP

learning-full	Reason for learning cache is full
mcast_rpf_fail	Reason for multi-cast packets with rpf fail
macsa-mismatch	Reason for packets that are discarded for source mac is learned from another security port
port-security-discard	Reason for packets that are discarded for fdb number equals to allowed maximum number of security port
vlan-security-discard	Reason for packets that are discarded for fdb number equals to allowed maximum number on the specified vlan
mtu-dontfrag	The packet need be fragmented, but the 'don't frag' flag is set in ip header
mtu-frag	The packet will be fragmented
ip-option	Reason for IP packets with optional fields
ucast-ttl-fail	Reason for ucast ip packets with fail TTL
mpls-ttl-fail	Reason for mpls packets with fail TTL
igmp	Reason for IGMP or igmp snooping packets
sflow-ingress	Reason for sflow sampled packets at ingress direction
fwd-to-cpu	Reason for packets forwarding to cpu
<i>RATE_RANGE</i>	Individual rate of streams destined to cpu carried with the reason, kbps, <0-1000000>

Command Mode

Global Configuration

Default

Reason	Rate(kbps)	Reason	Rate(kbps)
bpdu	192	icmp-redirect	64
cfm	256	mcast-rpf-fail	64
slow-protocol	64	macsa-mismatch	64
eapol	64	port-security-discard	64
erps	64	vlan-security-discard	64
smart-link	64	udld	64
arp	320	mtu-dontfrag	256
dhcp	320	mtu-frag	256
rip	320	fwd-to-cpu	256

Reason	Rate(kbps)	Reason	Rate(kbps)
ldp	512	ip-option	256
ospf	512	ucast-ttl-fail	256
pim	384	mpls-ttl-fail	64
vrrp	384	igmp	256
ipda	512	sflow-ingress	384

Usage

If the configured rate is lower than the individual rate granularity, a warning will be prompted to inform administrator that the packet carried with that reason shall be dropped.

Examples

This example shows how to configure individual rate for BPDU and CFM PDU.

```
Switch(config)# cpu-traffic-limit reason bpdu cfm rate 300
```

This example shows how to reset individual rate for BPDU and CFM PDU.

```
Switch(config)# no cpu-traffic-limit reason bpdu cfm rate
```

Related Commands

```
show cpu traffic-limit
```

4.3 cpu-traffic-limit reason all rate

Use this command to set the individual limit rate for all reasons to their default value.

Command Syntax

```
no cpu-traffic-limit reason all rate
```

Command Mode

Global Configuration

Default

Same as defaults in section “cpu-traffic-limit reason rate”

Usage

This example shows how to reset individual rate for all reasons.

Examples

```
Switch(config)# no cpu-traffic-limit reason all rate
```

Related Commands

cpu traffic-limit reason rate

show cpu traffic-limit

4.4 cpu-traffic-limit reason class

Use this command to set the priority class for the stream carried with the reason. Use the no form of this command to set the priority class of the reason to its default value.

Command Syntax

```
cpu-traffic-limit reason {bpd | cfm | slow-protocol | eapol | erps | smart-link | arp | dhcp | rip | ldp | ospf | pim | vrrp | ipda | icmp-redirect | mcast-rpf-fail | macsa-mismatch | port-security-discard | vlan-security-discard | mtu-dontfrag | mtu-frag | ip-option | ucast-ip-ttl-fail | mpls-ttl-fail | igmp | sflow-ingress | udld} class CLASS_RANGE
```

```
no cpu-traffic-limit reason {bpd | cfm | slow-protocol | eapol | erps | smart-link | arp | dhcp | rip | ldp | ospf | pim | vrrp | ipda | icmp-redirect | mcast-rpf-fail | macsa-mismatch | port-security-discard | vlan-security-discard | mtu-dontfrag | mtu-frag | ip-option | ucast-ip-ttl-fail | mpls-ttl-fail | igmp | sflow-ingress | udld} class
```

<i>CLASS_RANGE</i>	Priority of the stream carried with this reason. Reason with class 3 has the highest priority. <0-3>
--------------------	------------------------------------------------------------------------------------------------------

Command Mode

Global Configuration

Default

Reason	class	Reason	class
bpd	3	icmp-redirect	0
cfm	2	mcast-rpf-fail	1

Reason	class	Reason	class
slow-protocol	1	macsa-mismatch	0
eapol	0	port-security-discard	0
erps	2	vlan-security-discard	0
smart-link	2	udld	3
arp	1	mtu-dontfrag	0
dhcp	0	mtu-frag	0
rip	1	sflow-ingress	0
ldp	1	ip-option	0
ospf	1	ucast-ttl-fail	0
pim	1	mpls-ttl-fail	0
vrrp	1	igmp	2
ipda	0		

Usage

The reason with the highest priority class will get preference treatment when dealing with scheduling.

Examples

This example shows how to configure priority class for BPDU and CFM.

```
Switch(config)# cpu-traffic-limit reason bpdu cfm class 3
```

This example shows how to configure priority class for BPDU and CFM.

```
Switch(config)# no cpu-traffic-limit reason bpdu cfm class
```

Related Commands

show cpu traffic-limit

4.5 cpu-traffic-limit reason all class

Use this command to set the priority class for all reasons to their default value.

Command Syntax

no cpu-traffic-limit reason all class

Command Mode

Global Configuration

Default

Same as defaults in section “cpu-traffic-limit reason class”

Usage

This example shows how to reset the priority class for all reasons.

Examples

```
Switch(config)# no cpu-traffic-limit reason all class
```

Related Commands

cpu traffic-limit reason class

show cpu traffic-limit

4.6 show cpu traffic-limit

Use this command to show the CPU traffic-limit configurations.

Command Syntax

show cpu traffic-limit

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows cpu traffic-limit configurations.

Switch# show cpu traffic-limit

reason	rate (kbps)	class
bpdu	192	3
cfm	256	2
slow-protocol	64	1
eapol	64	0
erps	64	2
smart-link	64	2
udld	64	3
arp	320	1
dhcp	320	0
rip	500	3
ldp	512	1
ospf	512	1
pim	384	1
vrrp	384	1
ipda	512	0
icmp-redirect	64	0
mcast-rpf-fail	64	1
macsa-mismatch	64	0
port-security-discard	64	0
vlan-security-discard	64	0
mtu-dontfrag	256	0
mtu-frag	256	0
ip-option	256	0
ucast-ttl-fail	256	0
mpls-ttl-fail	64	0
igmp	256	2
sflow-ingress	384	0
fwd-to-cpu	256	0
Total rate:	3000 (kbps)	

Related Commands

cpu-traffic-limit total rate

cpu-traffic-limit reason rate

cpu-traffic-limit reason class

5 G.8031 Commands

5.1 g8031 eps-id

Use this command to enter the eps configuration mode.

If the g8031 eps group with the specified eps-id does not exist, system will create a new one.

Use the no form of this command to delete the g8031 eps group.

Command Syntax

g8031 eps-id *EPS_ID* (**working-port** *IFNAME-W* **protection-port** *IFNAME-P*)

no g8031 eps-id *EPS_ID*

eps-id <i>EPS_ID</i>	unique id to identify an EPS protection link (1-2048)
working-port <i>IFNAME-W</i>	interface name for working port
protection-port <i>IFNAME-P</i>	interface name for protection port

Command Mode

Global Configuration

Default

None

Usage

Use this command to enter the eps configuration mode.

If the g8031 eps group with the specified eps-id does not exist, system will create a new one. User should specify the working port and protection port when creating a group. The working port and protection port is not allowed to change after the eps group created.

If the g8031 eps group with the specified eps-id exists, user can enter the eps configuration mode without specify the working port and protection port.

Examples

The following example shows how to create a g8031 eps group and enter the eps configuration mode:

```
Switch(config)# g8031 eps-id 10 working-port eth-0-9 protection-port eth-0-10
```

Related Commands

instance

domain

show g8031

5.2 instance

Use this command to bind an instance in a g8031 eps group.

Use the no form of this command to unbind the protected instance.

Command Syntax

instance *INSTANCE_ID*

no instance *INSTANCE_ID*

<i>INSTANCE_ID</i>	Set restrictions for the port of particular instance (0-4094)
--------------------	---------------------------------------------------------------

Command Mode

EPS Configuration

Default

None

Usage

Use this command to bind an instance in g8031 eps group. The instance should exist in the mstp config mode before binding.

User can bind more than one instance a g8031 eps group.

Examples

The following example shows how to bind an instance in g8031 eps group:

```
Switch(g8031-config-switching)# instance 10
```

Related Commands

```
g8031 eps-id
```

```
show g8031
```

5.3 domain

Use this command to bind a cfm maintains domain in the g8031 eps group.

Use the no form of this command to unbind the cfm maintains domain.

Command Syntax

```
domain MD_NAME working-service MA_NAME_W protection-service MA_NAME_P
```

```
no domain
```

domain <i>MD_NAME</i>	maintenance-domain name
working-service <i>MA_NAME_W</i>	maintenance-association name for working path
protection-service <i>MA_NAME_P</i>	maintenance-association name for protection path

Command Mode

EPS Configuration

Default

None

Usage

Use this command to bind a cfm maintains domain and maintains association in the g8031 eps group.

The cfm maintains domain and maintains association should exist in the cfm configuration.

Examples

The following example shows how to bind a cfm maintains domain:

```
Switch(g8031-config-switching)# domain test working-service test1 protection-service test2
```

Related Commands

g8031 eps-id

show g8031

5.4 mode

Use this command to set the mode of g8031 ethernet protection.

Use the no form of this command to return to the default setting.

Command Syntax

mode (revertive | non-revertive)

no mode

revertive	Revertive mode
non-revertive	Non-revertive mode

Command Mode

EPS Configuration

Default

The default setting should be revertive mode.

Usage

Use this command to set the mode of g8031 ethernet protection.

After set the mode of g8031 ethernet protection, the state machine of APS should restart.

Examples

The following example shows how to change the mode of a g8031 eps group:

```
Switch(g8031-config-switching)# mode non-revertive
```

Related Commands

g8031 eps-id

show g8031

5.5 timer

Use this command to set the hold-off timer or wait-to-restore timer of a g8031 ethernet protection group.

Use the no form of this command to return to the default setting.

Command Syntax

timer (wait-to-restore *TIME-VALUE* | hold-off *TIME-VALUE*)

no timer (wait-to-restore | hold-off)

wait-to-restore <i>TIME-VALUE</i>	EPS wait-to-restore timer(5-12min)
hold-off <i>TIME-VALUE</i>	EPS hold-off timer(0-100 in steps of 100ms)

Command Mode

EPS Configuration

Default

The default value of wait-to-restore (WTR) period is 5 minutes.

The default value of hold-off timer is 0.

Usage

Use this command to set the hold-off timer or wait-to-restore timer of g8031 ethernet protection.

The wait-to-restore (WTR) period, may be configured by the operator in 1 minute steps between 5 and 12 minutes; the default value is 5 minutes.

The range of the hold-off timer is 0 to 100 in steps of 100 ms

Examples

The following example shows how to change the timer of a g8031 eps group:

```
Switch(g8031-config-switching)# timer wait-to-restore 8
```

```
Switch(g8031-config-switching)# timer hold-off 5
```

Related Commands

g8031 eps-id

`show g8031`

5.6 g8031 force

Use this command to trigger the local force-switch event of a g8031 ethernet protection group.

Command Syntax

`g8031 force eps-id EPS_ID`

<code>eps-id <i>EPS_ID</i></code>	unique id to identify an EPS protection link (1-2048)
-----------------------------------	-------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to trigger the local force-switch event of a g8031 ethernet protection group.

When the current state has the higher priority than force-switch, system should reject the operation.

Examples

The following example shows how to trigger the local force-switch event of a g8031 eps group:

```
Switch# g8031 force eps-id 10
```

Related Commands

`g8031 eps-id`

`show g8031`

5.7 g8031 manual

Use this command to trigger the local manual-switch event of a g8031 ethernet protection group.

Command Syntax

g8031 manual eps-id *EPS_ID*

eps-id <i>EPS_ID</i>	unique id to identify an EPS protection link (1-2048)
-----------------------------	-------------------------------------------------------

Command Mode

Privileged EXEC

Default

N/A

Usage

Use this command to trigger the local manual -switch event of a g8031 ethernet protection group.

When the current state has the higher priority than manual-switch, system should reject the operation.

Examples

The following example shows how to trigger the local manual-switch event of a g8031 eps group:

```
Switch# g8031 manual eps-id 10
```

Related Commands

g8031 eps-id

show g8031

5.8 g8031 lockout

Use this command to trigger the local lockout event of a g8031 ethernet protection group.

Command Syntax

g8031 lockout eps-id *EPS_ID*

eps-id <i>EPS_ID</i>	unique id to identify an EPS protection link (1- 2048)
-----------------------------	--------------------------------------------------------

Command Mode

Privileged EXEC

Default

N/A

Usage

Use this command to trigger the local lockout event of a g8031 ethernet protection group.

Examples

The following example shows how to trigger the local lockout event of a g8031 eps group:

```
Switch# g8031 lockout eps-id 10
```

Related Commands

g8031 eps-id

show g8031

5.9 g8031 exercise

Use this command to trigger the local exercise event of a g8031 ethernet protection group.

Command Syntax

g8031 exercise eps-id *EPS_ID*

eps-id <i>EPS_ID</i>	unique id to identify an EPS protection link (1-2048)
-----------------------------	-------------------------------------------------------

Command Mode

Privileged EXEC

Default

N/A

Usage

Use this command to trigger the local exercise event of a g8031 ethernet protection group.

Examples

The following example shows how to trigger the local exercise event of a g8031 eps group:

```
Switch# g8031 exercise eps-id 10
```

Related Commands

g8031 eps-id

show g8031

5.10 g8031 clear

Use this command to trigger the local clear event of a g8031 ethernet protection group.

Command Syntax

```
g8031 clear eps-id EPS_ID
```

eps-id <i>EPS_ID</i>	unique id to identify an EPS protection link (1- 2048)
-----------------------------	--------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to trigger clear local event of a g8031 ethernet protection group.

Examples

The following example shows how to trigger clear local event of a g8031 eps group:

```
Switch# g8031 clear eps-id 10
```

Related Commands

g8031 eps-id

show g8031

5.11 show g8031

Use this command to show the configuration and statues of g8031 ethernet protection groups.

Command Syntax

show g8031 (*eps-id EPS_ID* |)

eps-id EPS_ID	unique id to identify an EPS protection link (1- 2048)
----------------------	--------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to show the configuration and statues of g8031 ethernet protection groups.

User can enter the eps-id to show the specified group. If the eps-id is not specified, all groups should be shown.

Examples

The following example shows the result of using this command:

Switch# show g8031

```
Codes: ID - Group id of G.8031
      IF-W - Interface of working entity, IF-P - Interface of protection entity
      MD - Maintenance domain
      MA-W - Maintenance association of working entity
      MA-P - Maintenance association of protection entity
      CS - Current state, LS - Last state, LE - Last event, FS - Far end state
      R/B - Request signal & bridged signal, MODE - Revertive or Non-revertive
      WTR - Wait to restore, DFOP - Failure of protocol defects
=====
ID  IF-W  IF-P  MD  MA-W  MA-P  CS  LS  LE  FS  R/B  MODE
-----
10  eth-0-9  eth-0-10  test  test1  test2  NR  NR  NR  NR  NR  null  REV
APS Vid - 11
Active-Path - Working
DFOP State - Not in defect mode
Protected Instance - 10
=====
```

Related Commands

g8031 eps-id

5.12 debug g8031

Use this command to enable the debug of g8031 module.

Use the no form of this command to disable the debug.

Command Syntax

debug g8031 (rx | tx | event | all)

no debug g8031 (rx | tx | event | all)

rx	Enable rx debugs
tx	Enable tx debugs
event	Enable event debugs
all	Enable all debugs

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to enable the debug of g8031 module.

Examples

The following example shows how to enable the debug of g8031 module:

```
Switch# debug g8031 all
```

```
Switch # terminal monitor
```

Related Commands

g8031 eps-id

6 G.8032 Commands

6.1 g8032 ring-id

Use this command to enter the g8032 configuration mode.

If the g8032 ring with the specified ring-id does not exist, system will create a new one.

Use the no form of this command to delete the g8032 ring.

Command Syntax

g8032 ring-id (*RING_ID* **east-interface** *IFNAME-E* **west-interface** *IFNAME-W*)

g8032 ring-id (*RING_ID* **interface** *IFNAME* **major-ring-id** *MAJOR_RING_ID*)

no g8032 ring-id *RING_ID*

ring-id <i>RING_ID</i>	unique id to identify an g8032 ring (1-2048)
east-interface <i>IFNAME-E</i>	interface name for east interface
west-interface <i>IFNAME-W</i>	interface name for west interface
interface <i>IFNAME</i>	interface name for sub-ring interface
major-ring-id <i>MAJOR_RING_ID</i>	unique id to identify an ethernet major-ring protection

Command Mode

Global Configuration

Default

None

Usage

Use this command to enter the g8032 configuration mode.

If the g8032 ring with the specified ring-id does not exist, system will create a new one. User should specify the east interface and west interface when creating a group. The east interface and west interface is not allowed to change after the g8032 ring created.

If the g8032 ring with the specified ring-id exists, user can enter the g8032 configuration mode without specify the east interface and west interface.

Examples

The following example shows how to create a g8032 ring and enter the g8032 configuration mode:

```
Switch(config)# g8032 ring-id 1 east-interface eth-0-1 west-interface eth-0-2
```

```
Switch(g8032-config-switch)# exit
```

```
Switch(config)# g8032 ring-id 2 interface eth-0-3 major-ring-id 1
```

```
Switch(g8032-config-switch)# exit
```

```
Switch(config)# g8032 ring-id 1
```

```
Switch(g8032-config-switch)# exit
```

```
Switch(config)# g8032 ring-id 2
```

```
Switch(g8032-config-switch)#
```

Related Commands

domain

instance

timer

show g8032

6.2 instance

Use this command to bind an instance in g8032 ring.

Use the no form of this command to unbind the instance.

Command Syntax

instance *INSTANCE_ID*

no instance *INSTANCE_ID*

<i>INSTANCE_ID</i>

Set restrictions for the port of particular instance (0- 4094)

Command Mode

G8032 configuration

Default

None

Usage

Use this command to bind an instance in g8032 ring. The instance should exist in the mstp config mode before binding.

User can bind more than one instance in a g8032 ring.

Examples

The following example shows how to bind an instance in g8032 ring:

```
Switch(g8032-config-switch)# instance 1
```

```
Switch(g8032-config-switch)#
```

Related Commands

domain

timer

show g8032

6.3 domain

Use this command to bind a cfm maintains domain in the g8032 ring.

Use the no form of this command to unbind the cfm maintains domain.

Command Syntax

domain *MD_NAME* **service** *MA_NAME*

no domain

<i>MD_NAME</i>	maintenance-domain name
<i>MA_NAME</i>	maintenance-association name

Command Mode

G8032 configuration

Default

None

Usage

Use this command to bind a cfm maintains domain and maintains association in the g8032 ring.

The cfm maintains domain and maintains association should exist in the cfm configuration.

Examples

The following example shows how to bind a cfm maintains domain:

```
Switch(g8032-config-switch)# domain md1 service ma1
```

```
Switch(g8032-config-switch)#
```

Related Commands

instance

timer

show g8032

6.4 control-vlan

Use this command to set the R-APS vlan of a g8032 ring.

Use the no form of this command to delete the ring's R-APS vlan.

Command Syntax

control-vlan *VID* (**sub-ring** |)

no control-vlan

<i>VID</i>	R-APS channel vlan id
sub-ring	Sub-ring's R-APS channel

Command Mode

G8032 configuration

Default

None

Usage

Use this command to set the R-APS channel vlan of a g8032 ring. R-APS messages should use a dedicated vlan.

Notice that "a dedicated vlan " means learning is disabled for this vlan. Dynamic FDB is flushed and static FDB is deleted. User can not config static FDB for this vlan after is configured as a control vlan.

Examples

The following example shows how to set R-APS channel vlan:

```
Switch(g8032-config-switch)# control-vlan 22
```

```
Switch(g8032-config-switch)#
```

Related Commands

domain

instance

timer

show g8032

6.5 rpl owner

Use this command to set the rpl of a g8032 ring.

Use the no form of this command to delete the rpl.

Command Syntax

rpl owner (east-interface | west-interface)

no rpl owner

east-interface	ring's east interface
west-interface	ring's west interface

Command Mode

G8032 configuration

Default

None

Usage

Use this command to set the rpl of a g8032 ring. In a (major) ring, user can specify east interface or west interface as rpl, but User can only specify east-interface as rpl interface in a sub-ring.

Examples

The following example shows how to set rpl of a g8032 ring

```
Switch(g8032-config-switch)# rpl owner east-interface
```

```
Switch(g8032-config-switch)#
```

Related Commands

domain

instance

timer

show g8032

6.6 timer

Use this command to set the wait-to-restore timer or hold-off timer or guard-timer of a g8032 ring.

Use the no form of this command to return to the default setting.

Command Syntax

timer (**wait-to-restore** *TIMEVAL*| **hold-off** *TIMEVAL*| **guard-timer** *TIMEVAL*)

no timer (**wait-to-restore**| **hold-off**| **guard-timer**)

wait-to-restore <i>TIMEVAL</i>	g8032 wait-to-restore timer(5-12min)
hold-off <i>TIMEVAL</i>	g8032 hold-off timer(0-10s)
guard-timer <i>TIMEVAL</i>	g8032 guard timer(100ms-2s)

Command Mode

G8032 configuration

Default

The default value of wait-to-restore (WTR) period is 5 minutes.

The default value of hold-off timer is 0.

The default value of guard timer is 500ms.

Usage

Use this command to set the wait-to-restore timer or hold-off timer or guard-timer of g8032 ring.

The wait-to-restore (WTR) period, may be configured by the operator in 1 minute steps between 5 and 12 minutes; the default value is 5 minutes.

The range of the hold-off timer is 0 to 10 seconds in steps of 100 ms.

The guard timer may be configured by the operator in 100ms steps between 100ms and 2 seconds, with a default value of 500ms.

Examples

The following example shows how to change the timer of a g8032 ring:

```
Switch(g8032-config-switch)# timer wait-to-restore 6
```

```
Switch(g8032-config-switch)# timer hold-off 100
```

```
Switch(g8032-config-switch)# timer guard-timer 200
```

Related Commands

domain

instance

show g8032

6.7 ring enable

Use this command to start the g8032 ring state machine.

Command Syntax

ring enable

Command Mode

G8032 configuration

Default

None

Usage

Use this command to start the g8032 ring state machine. The ring should have bind md/ma and instance before enable the ring.

Examples

The following example shows how to enable the ring:

```
Switch(g8032-config-switch)# ring enable
```

```
Switch(g8032-config-switch)#
```

Related Commands

ring disable

show g8032

6.8 ring disable

Use this command to stop the g8032 ring state machine.

Command Syntax

ring disable

Command Mode

G8032 configuration

Default

None

Usage

Use this command to stop the g8032 ring state machine.

Examples

The following example shows how to disable a g8032 ring:

```
Switch(g8032-config-switch)# ring disable
```

```
Switch(g8032-config-switch)#
```

Related Commands

ring enable

show g8032

6.9 show g8032

Use this command to show the configuration and statues of g8032 ring.

Command Syntax

show g8032 (ring-id *RING_ID* |)

<i>RING_ID</i>	unique id to identify an g8032 ring (1-2048)
----------------	----------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to show the configuration and statuses of g8032 ring.

User can enter the ring-id to show the specified ring. If the ring-id is not specified, all rings should be shown.

Examples

The following example shows the result of using this command:

```
Switch# show g8032
```

```
RingID MajorRing Current Role East Status West Status
-----
1 N/A Idle Owner eth-0-9 Blocked eth-0-20 Forward
Control Vlan : 22
MD Name : mdl
Service Id : mal
Protect Instance : 1
Current Event : NR-RB
Wait-to-restore : 06:00
Hold-off Timer : 0 (msecs)
Guard Timer : 500 (msecs)
```

Related Commands

g8032 ring-id

6.10 debug g8032

Use this command to enable the debug of g8032 module.

Use the no form of this command to disable the debug.

Command Syntax

debug g8032 (rx | tx | event | all)

no debug g8032 (rx | tx | event | all)

rx	Enable rx debugs
tx	Enable tx debugs
event	Enable event debugs
all	Enable all debugs

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to enable the debug of g8032 module.

Examples

The following example shows how to enable the debug of g8032 module:

```
Switch# debug g8032 all
```

```
Switch # terminal monitor
```

Related Commands

g8032 ring-id

7 UDLD Commands

7.1 udld enable

Use this command enable/disable global UDLD state.

Command Syntax

udld enable

no udld enable

Command Mode

Global Configuration

Default

Disabled

Usage

None

Examples

This example shows how to enable global UDLD state.

```
Switch(config)# udld enable
```

Related Commands

show udld

7.2 udld port

Use this command to enable/disable UDLD state on a specific interface.

Command Syntax

udld port (aggressive)

no udld port

aggressive	UDLD aggressive mode
-------------------	----------------------

Command Mode

Interface Configuration

Default

Disabled

Usage

None

Examples

This example shows how to enable UDLD on interface eth-0-9.

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# udld port
```

Related Commands

show udld

7.3 udld message interval

Use this command to set the UDLD message interval. Use no command to set the interval to default value.

Command Syntax

udld message interval *INTERVAL*

no udld message interval

<i>INTERVAL</i>

UDLD message interval (seconds). The range is 1-90

Command Mode

Global Configuration

Default

15s

Usage

None

Examples

This example shows how to set UDLD message interval to 5 seconds.

```
Switch(config)# udld message interval 5
```

Related Commands

show udld

7.4 udld reset

Use this command to reset the interfaces disabled by UDLD.

Command Syntax

udld reset

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to reset interfaces disabled by UDLD.

```
Switch# udld reset
```

Related Commands

None

7.5 show udld

Use this command to show UDLD information of interfaces.

Command Syntax

```
show udld (IFNAME)
```

<i>IFNAME</i>	Interface name
---------------	----------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to show UDLD information of interface eth-0-1.

```
Switch# show udld eth-0-1
```

```
Interface eth-0-1
---
UDLD mode      : aggressive mode
Operational state : Bidirectional
Message interval : 15
Time out interval : 3

Neighbor 1
```

```
---  
Device ID       : 001e.0808.0360  
Port ID        : eth-0-2  
Device Name    : DUT2  
Message Interval : 15  
Timeout Interval : 3  
Link status    : Bidirectional  
Expiration time : 40
```

Related Commands

None

7.6 show uddl neighbors

Use this command to show information of UDLD neighbors.

Command Syntax

```
show uddl neighbors
```

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to show UDLD neighbor information.

```
Switch# show uddl neighbor
```

Port	Device Name	Device ID	Port ID	Neighbor State
eth-0-9	DUT2	d4f2.489f.d100	eth-0-9	bidirectional

Related Commands

None

7.7 debug udd

Use this command to debug UDLD.

Command Syntax

debug udd (all|packet|events)

no debug udd (all|packet|events)

all	Show both packet and events
packet	Show packets only
events	Show events only

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to enable UDLD debug for packets.

```
Switch# debug udd packet
```

Related Commands

None

7.8 show debugging udd

Use this command to show UDLD debugging status.

Command Syntax

show debugging udd

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to show UDLD debugging status.

```
Switch# show debugging udd
```

Related Commands

None

8 ERPS Commands

8.1 erps

Use this command to create/remove erps domain instance.

Command Syntax

erps *DOMAINID* (*ERPS_NAME*)

no erps *DOMAINID*

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>ERPS_NAME</i>	ERPS domain name

Command Mode

Global Configuration

Default

None

Usage

This command is used to create or delete a erps domain. The command should the use first when config erps.

Examples

This example shows how to create an erps domain with ID 11 and name test11.

```
Switch(config)# erps 11 test11
```

Note: *ERPS_NAME* is optional. If no name is provided by command, system will generate the domain name automatically. The name format follows “ERPS00ID”, where ID is domain ID provided through the command.

Related Commands

show erps list

8.2 erps control vlan

Use this command to specific erps domain's control vlan.

Command Syntax

erps *DOMAINID* (**primary|sub**) **control vlan** *VLANID*

no erps *DOMAINID* (**primary|sub**) **control vlan**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
primary	primary ring
sub	sub ring
<i>VLANID</i>	The range is 2-4094

Command Mode

Global Configuration

Default

None

Usage

The erps protocol packet is transferred in the control vlan.

It is best to add the control vlan into the instance which is bound by the domain.

Examples

This example shows how to set vlan 15 as primary control vlan for erps domain 11.

```
Switch(config)# erps 11 primary control vlan 15
```

Related Commands

show erps

8.3 erps hellotime

Use this command to set/reset hello timer interval for specific erps domain instance. The timer should be the same of all nodes in the ring.

Command Syntax

erps *DOMAINID* **hellotime** *HELLOTIME*

no erps *DOMAINID* **hellotime**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>HELLOTIME</i>	Hello timer interval(seconds). The range is 1-150

Command Mode

Global Configuration

Default

The default hellotime is 1s, the unit is 100ms

Usage

None

Examples

This example shows how to set hello timer interval of erps domain 11 to 100ms.

```
Switch(config)# erps 11 hellotime 1
```

Related Commands

show erps

8.4 erps failtime

Use this command to set/reset fail timer interval for specific erps domain instance. The timer should be the same of all nodes in the ring.

Command Syntax

erps *DOMAINID* **failtime** *FAILTIME*

no erps *DOMAINID* **failtime**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>FAILTIME</i>	Fail timer interval (seconds). The range is 3-450

Command Mode

Global Configuration

Default

None

Usage

The default failtime is 3s , the unit is 100ms

Examples

This example shows how to set fail timer interval of erps domain 11 to 6s.

```
Switch(config)# erps 11 failtime 60
```

Related Commands

show erps

8.5 erps mstp instance

Use this command to set/reset the mstp instance which ERPS will block.

Command Syntax

erps *DOMAINID* **mstp instance** *INSTANCE_ID*

no erps *DOMAINID* **mstp instance**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
-----------------	------------------------------------

<i>INSTANCE_ID</i>	MSTP instance. The range is 1-4094
--------------------	------------------------------------

Command Mode

Global Configuration

Default

None

Usage

No default instance is specified.

Examples

This example shows how to set instance 1 as protected instance.

```
Switch(config)# erps 11 mstp instance 1
```

Related Commands

show erps

8.6 erps ring level

Use this command to create/remove an ERPS ring for specific ERPS domain.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **level** (**primary|sub**)

no erps *DOMAINID* **ring** *RINGID*

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
primary	Primary ring
sub	Sub ring

Command Mode

Global Configuration

Default

None

Usage

The rings in the erps domain are divided into primary and subrings that are differentiated by the configuration.

Examples

This example shows how to create a sub ring with ID 1 for ERPS domain 11.

```
Switch#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#erps 11 ring 1 level sub
```

Related Commands

```
show erps
```

8.7 erps ring mode

Use this command to set/unset specific ERPS ring instance node mode.

Command Syntax

```
erps DOMAINID ring RINGID mode (master|transit|vpls)
```

```
no erps DOMAINID ring RINGID mode
```

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
master	Master node
transit	Transit node
vpls	VPLS node

Command Mode

Global Configuration

Default

None

Usage

The master node is used to send and receive erps protocol packet.

The transit and vpls node is used to transfer erps protocol packet to neighbor switch.

Examples

This example shows how to set node as ERPS domain 11 ring 1 transit node.

```
Switch(config)# erps 11 ring 1 mode transit
```

Related Commands

show erps

8.8 erps ring primary interface

Use this command to set/unset primary interface for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **primary interface** (*IFPHYSICAL*|*IFAGG*)

no erps *DOMAINID* **ring** *RINGID* **primary interface**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Global Configuration

Default

None

Usage

For master node, the interface with type primary is used to send erps protocol packet.

Examples

This example shows how to set interface eth-0-9 as primary interface for ERPS domain 11 ring 1.

```
Switch(config)#interface eth-0-9
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#switchport trunk allowed vlan add 15
```

```
Switch(config-if)#exit
```

```
Switch(config)#erps 11 ring 1 primary interface eth-0-9
```

Note: Only the interface in trunk/dot1q-tunnel mode can be set as primary interface.

Related Commands

show erps

8.9 erps ring secondary interface

Use this command to set/unset primary or secondary interface for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **secondary interface** (*IFPHYSICAL*|*IFAGG*)

no erps *DOMAINID* **ring** *RINGID* **secondary interface**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Global Configuration

Default

None

Usage

None

Examples

This example shows how to set interface eth-0-9 as primary interface for ERPS domain 11 ring 1.

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk allowed vlan add 15
```

```
Switch(config-if)# exit
```

```
Switch(config)# erps 11 ring 1 secondary interface eth-0-9
```

Note: Only the interface in trunk/dot1q-tunnel mode can be set as secondary interface.

Related Commands

show erps

8.10 erps ring interface

Use this command to set/unset vpls interface for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *DOMAINID* **interface** (*IFPHYSICAL*|*IFAGG*)

no erps *DOMAINID* **ring** *DOMAINID* **interface**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Global Configuration

Default

None

Usage

None

Examples

This example shows how to set interface eth-0-9 as vpls interface for ERPS domain 11 ring 1.

```
Switch(config)#interface eth-0-9
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#switchport trunk allowed vlan add 15
```

```
Switch(config-if)#exit
```

```
Switch(config)#erps 11 ring 1 interface eth-0-9
```

Related Commands

show erps

8.11 erps ring edge-mode

Use this command to set/unset specific ERPS ring instance edge node mode.

Command Syntax

erps *DOMAINID* **ring** *DOMAINID* **edge-mode** (**edge|assistant-edge**)

no erps *DOMAINID* **ring** *DOMAINID* **edge-mode**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
edge	Edge node
assistant-edge	Assistant-edge node

Command Mode

Global Configuration

Default

None

Usage

Both the edge node and the assistant-edge node are special transit nodes.

Examples

This example shows how to set node as ERPS domain 11 ring 1 edge node.

```
Switch(config)# erps 11 ring 1 edge-mode edge
```

Note: Once a node is set to edge/assistant-edge node, it will be set to transit node automatically.

Related Commands

show erps

8.12 erps ring edge interface

Use this command to set/unset edge interface for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *DOMAINID* **edge interface** (*IFPHYSICAL*|*IFAGG*)

no erps *DOMAINID* **ring** *DOMAINID* **edge interface**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Global Configuration

Default

None

Usage

Of the two ports via which the edge node (assistant-edge node) accesses the subring, one is a common port and the other is an edge port. The common port is the port for the edge node (assistant-edge node) to access the primary ring and the subring, while the edge port is the port for the edge node to access the subring only.

Examples

This example shows how to set interface eth-0-9 as edge interface for ERPS domain 11 ring 1.

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk allowed vlan add 15
```

```
Switch(config-if)# exit
```

```
Switch(config)# erps 11 ring 1 edge interface eth-0-9
```

Note: This common is only available for edge/assistant-edge node.

Related Commands

show erps

8.13 erps ring common interface

Use this command to set/unset edge or common interface for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **common interface** (*IFPHYSICAL*|*IFAGG*)

no erps *DOMAINID* **ring** *RINGID* **common interface**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Global Configuration

Default

None

Usage

Of the two ports via which the edge node (assistant-edge node) accesses the subring, one is a common port and the other is an edge port. The common port is the port for the edge node (assistant-edge node) to access the primary ring and the subring, while the edge port is the port for the edge node to access the subring only.

Examples

This example shows how to set interface eth-0-9 as edge interface for ERPS domain 11 ring 1.

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# switchport mode trunk
```

```
Switch(config-if)# switchport trunk allowed vlan add 15
```

```
Switch(config-if)# exit
```

```
Switch(config)# erps 11 ring 1 common interface eth-0-9
```

Note: This common is only available for edge/assistant-edge node.

Related Commands

show erps

8.14 erps ring srpt

Use this command to enable/disable srpt functionality for specific ERPS ring instance.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **srpt** (**enable|disable**)

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255
enable	Enable the srpt

disable	Disable the srp
----------------	-----------------

Command Mode

Global Configuration

Default

None

Usage

None

Examples

This example shows how to enable srpt functionality for ERPS domain 11 ring 1.

```
Switch(config)# erps 11 ring 1 srpt enable
```

Related Commands

show erps

8.15 erps ring enable

Use this command to enable specific erps ring instance.

Command Syntax

erps *DOMAINID* ring *RINGID* **enable**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255

Command Mode

Global Configuration

Default

None

Usage

None

Examples

This example shows how to enable ERPS domain 11 ring 1.

```
Switch(config)#erps 11 ring 1 enable
```

Note: Upon the specific ERPS ring is enabled successfully, the ring state should leave the idle state.

Related Commands

show erps

8.16 erps ring disable

Use this command to disable specific erps ring instance.

Command Syntax

erps *DOMAINID* **ring** *RINGID* **disable**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
<i>RINGID</i>	ERPS ring ID. The range is 1-255

Command Mode

Global Configuration

Default

None

Usage

None

Examples

This example shows how to disable ERPS domain 11 ring 1.

```
Switch(config)# erps 11 ring 1 disable
```


Note: Upon the specific ERPS ring is enabled successfully, the ring state should leave the idle state.

Related Commands

show erps

8.17 erps enable

Use this command to enable specific ERPS domain instance.

Command Syntax

erps *DOMAINID* enable

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
-----------------	------------------------------------

Command Mode

Global Configuration

Default

None

Usage

This command to enable all the ring of the erps domain.

Examples

This example shows how to enable erps domain 11.

```
Switch(config)# erps 11 enable
```

Note: Enable the domain will make all the rings within the domain be enabled. Upon the specific ERPS ring is enabled successfully, the ring state should leave the idle state.

Related Commands

show erps

8.18 erps disable

Use this command to disable specific erps domain instance.

Command Syntax

erps *DOMAINID* **disable**

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
-----------------	------------------------------------

Command Mode

Global Configuration

Default

None

Usage

This command to disable all the ring of the erps domain.

Examples

This example shows how to disable erps domain 11.

```
Switch(config)# erps 11 disable
```

Note: Enable the domain will make all the rings within the domain be enabled. Upon the specific ERPS ring is enabled successfully, the ring state should leave the idle state.

Related Commands

show erps

8.19 erps mode rrpp

Use this command to compatible with RRPP.

Command Syntax

erps mode rrpp

no erps mode rrpp

Command Mode

Global Configuration

Default

None

Usage

This command to compatible with RRPP.

Examples

This example shows how to compatible with RRPP.

```
Switch(config)# erps mode rpp
```

Related Commands

None

8.20 show erps

Use this command to show the configuration for specific erps domain.

Command Syntax

```
show erps DOMAINID
```

<i>DOMAINID</i>	ERPS domain ID. The range is 1-255
-----------------	------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to display the configuration for erps domain 1.

```
Switch# show erps 1
```

```
ERPS domain ID: 1
ERPS domain name: ERPS001
ERPS domain primary control VLAN ID: 0
ERPS domain sub control VLAN ID: 0
ERPS domain hello timer interval: 1 second(s)
ERPS domain fail timer interval: 3 second(s)
```

Related Commands

None

8.21 show erps list

Use this command to show the list of erps domain(s).

Command Syntax

```
show erps list
```

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to display the erps domain list.

```
Switch# show erps list
```

```
ERPS Domain List
ID      Name
=====
```

Related Commands

None

8.22 clear erps counters

Use this command to clear the statistics for all domains or for single domain or for single ring.

Command Syntax

clear erps counters (all | (domain *DOMAINID* (|ring *RINGID*)))

all	All domain
domain <i>DOMAINID</i>	ERPS domain ID. The range is 1-255
ring <i>RINGID</i>	One ring ID. The range is 1-255

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to clear all domain statistics:

```
Switch# clear erps counters all
```

Related Commands

None

8.23 debug erps

Use this command to open the debug functions of ERPS.

Command Syntax

debug erps (all | dump | events)

no debug erps (all | dump | events)

all	all debug information
dump	dump debug information
events	events debug information

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This example shows how to open all debug functions:

```
Switch# debug erps all
```

Related Commands

None

9 Smart-Link Commands

9.1 smart-link group

Use this command to create a smart-link group and enter smart-link group configuration mode. To destroy the smart-link group, used no form of this command.

Command Syntax

smart-link group *GROUP-ID*

no smart-link group (*GROUP-ID* | **all**)

<i>GROUP-ID</i>	smart-link group ID. The range is 1-16
all	All the smart-link groups have been exist

Command Mode

Global Configuration

Default

There is no any smart-link group

Usage

Up to 16 smart-link groups can be created.

Examples

Create a smart-link group with ID 1.

Switch(config)# smart-link group 1

Related Commands

show smart-link group

9.2 smart-link relay enable

Use this command to enable the switch to relay the smart-link flush packet. To disable relaying the packets use no form of this command.

Command Syntax

smart-link relay enable

no smart-link relay enable

Command Mode

Global Configuration

Default

Relaying the smart-link flush packet is enabled.

Usage

By default, the smart-link flush packet could be flooded. Use the command, “no smart-link relay enable”, to disable the packet flooding to other switches.

Examples

```
Switch(config)# no smart-link relay enable
```

Related Commands

None

9.3 interface

Use this command to set master or slave member interface of the smart-link group. To unset the member uses the no form of this command.

Command Syntax

interface (*IFPHYSICAL*|*IFAGG*) (**master** | **slave**)

no interface (**master** | **slave** | **all**)

<i>IFPHYSICAL</i>	The name of physical interface, like eth-0-1
-------------------	----------------------------------------------

<i>IFAGG</i>	The name of link-agg interface, like agg1
master	The interface act as master role
slave	The interface act as slave role
all	Both of the master and slave interface

Command Mode

Smart-link Group Configuration

Default

There is no any interface member in the smart-link group by default.

Usage

Every smart-link group has two member interfaces, master and slave. The interfaces should be physical (i.e. eth-0-1) or aggregator (i.e. agg1) switch interface.

NOTE: STP must be disabled in the smart-link interfaces first.

Examples

This example shows how to set interfaces eth-0-9 and eth-0-13 as the member interfaces of smart-link group 1.

```
Switch(config)# interface eth-0-9
Switch(config-if)# spanning-tree port disable
Switch(config-if)# exit
Switch(config)# interface eth-0-13
Switch(config-if)# spanning-tree port disable
Switch(config-if)# exit
Switch(config)# smart-link group 1
Switch(config-smlk-group)# interface eth-0-9 master
Switch(config-smlk-group)# interface eth-0-13 slave
Switch(config-smlk-group)# end
Switch# show smart-link group 1
```

```
Smart-link group 1 information:
The smart-link group was disabled.
```

```

Auto-restore:
  state      time      count  Last-time
  disabled   60         0      N/A
=====
Protected instance:
Load balance instance:
=====
INTERFACE:
Role      Member  DownCount  Last-Down-Time  FlushCount  Last-Flush-Time
MASTER   eth-0-9   0          N/A              0           N/A
SLAVE    eth-0-13  0          N/A              0           N/A

```

Related Commands

show smart-link group

9.4 protected mstp instance

Use this command to set/unset protected MSTP instance to the smart-link group.

Command Syntax

protected mstp instance *INSTANCE-ID*

no protected mstp instance (**all** | *INSTANCE-ID*)

<i>INSTANCE-ID</i>	MSTP instance ID. The range is 0-4094
all	All the instance have been exist

Command Mode

Smart-link Group Configuration

Default

There is no protected MSTP instance in the smart-link group by default.

Usage

The smart-link groups only protect these VLANs in the protected MSTP instances. The smart-link group can't be enabled if no protected instance is configured. To protect those VLANs which are not bound with MSTP instance, use the command "protected mstp instance 0".

NOTE: If the MTSP instance is removed, it will be removed from smart-link group at the same time.

Examples

This example shows how to set MSTP instance 0, 10 and 100 to the smart-link group 1.

```
Switch(config)# smart-link group 1
Switch(config-smlk-group)# protected mstp instance 0
Switch(config-smlk-group)# protected mstp instance 10
Switch(config-smlk-group)# protected mstp instance 100
Switch(config-smlk-group)# end
Switch# show smart-link group 1
```

```
Smart-link group 1 information:
The smart-link group was disabled.
=====
Auto-restore:
state      time      count    Last-time
disabled   60        0        N/A
=====
Protected instance: 0 100 10
Load balance instance:
=====
INTERFACE:
Role       Member   DownCount Last-Down-Time FlushCount Last-Flush-Time
MASTER    eth-0-9  0         N/A           0         N/A
SLAVE     eth-0-13 0         N/A           0         N/A
```

Related Commands

show smart-link group

9.5 load-balance instance

Use this command to set/unset load-balancing to the smart-link group.

Command Syntax

load-balance instance *INSTANCE-ID*

no load-balance instance (**all** | *INSTANCE-ID*)

<i>INSTANCE-ID</i>	MSTP instance ID. The range is 0-4094
all	All the instance have been exist

Command Mode

Smart-link Group Configuration

Default

There is no load-balancing instance in the smart-link group by default.

Usage

Load-balancing instances will be active in the slave interface. If user want to configure load-balancing instances, should before the smart-group is enabled.

Examples

This example shows how to set protected instance 10 as the load-balancing instance.

```
Switch(config)# smart-link group 1
```

```
Switch(config-smlk-group)# load-balance instance 10
```

Related Commands

show smart-link group

9.6 restore time

Use this command to set restore time of the smart-link group.

Command Syntax

restore time *RESTORE-TIME*

no restore time

<i>RESTORE-TIME</i>	The range is 30-1200(seconds)
---------------------	-------------------------------

Command Mode

Smart-link Group Configuration

Default

The default restore time is 60 seconds.

Usage

When the master interface is resumed, the links will not be immediately restored to the master interface, but will be delayed a while. The delay time is called restore time.

Examples

This example shows how to set restore time as 30 seconds in the smart-link group 1.

```
Switch(config)# smart-link group 1
```

```
Switch(config-smlk-group)# restore time 30
```

Related Commands

show smart-link group

9.7 restore enable

Use this command to enable/disable restoring feature of the smart-link group.

Command Syntax

restore enable

no restore enable

Command Mode

Smart-link Group Configuration

Default

The restoring feature of the smart-link group is disabled by default.

Usage

When master interface fails, the link will be switched to the slave interface. Then, if master interface is resumed, the link will not be switched back to keep the flow stable by default. If restoring feature is enabled, the link will be switched back.

NOTE: If load-balancing instance is configured, this feature is recommended strongly.

Examples

This example shows how to enable the restoring feature in the smart-link group 1.

```
Switch(config)# smart-link group 1
```

Switch(config-smlk-group)# restore enable

Related Commands

show smart-link group

9.8 flush send

Use this command to set/unset the flush packet sender in the smart-link group.

Command Syntax

flush send control-vlan *VLAN-ID* password simple *PASSWORD*

no flush send

<i>VLAN-ID</i>	Flush packet will be sent through this VLAN. The range is 1-4094
<i>PASSWORD</i>	The simple password of the flush packet, and the length is 1 to 15

Command Mode

Smart-link Group Configuration

Default

There is no flush sender in the smart-link group by default.

Usage

Mac address-table should be updated when a master (forwarding) link goes down and the slave link begins forwarding traffic. Flush packet is used for this purpose.

NOTE: If the control-vlan is not existed in the switch, sending flush packet will fail.

Examples

This example shows how to configure flush sender of the smart-link group 1, control-vlan is 4 and password is “test”.

```
Switch(config)# smart-link group 1
```

```
Switch(config-smlk-group)# flush send control-vlan 4 password simple test
```

Related Commands

show smart-link group

smart-link flush receive

9.9 group enable

Use this command to enable/disable the smart-link group.

Command Syntax

group enable

no group enable

Command Mode

Smart-link Group Configuration

Default

Smart-link group is disabled by default.

Usage

After interface and protected instance configuration is finished, this command could be used to enable the group.

Examples

This example shows how to enable the smart-link group 1.

```
Switch(config)# smart-link group 1
```

```
Switch(config-smlk-group)# group enable
```

Related Commands

show smart-link group

9.10 smart-link flush receive

Use this command to set/unset the flush packet receiver in the switch interface.

Command Syntax

smart-link flush receive control-vlan *VLAN-ID* **password simple** *PASSWORD*

no smart-link flush receive

<i>VLAN-ID</i>	Flush packet will be sent through this VLAN. The range is 1-4094
<i>PASSWORD</i>	The simple password of the flush packet, and the length is 1 to 15

Command Mode

Interface Configuration

Default

There is no flush receiver by default.

Usage

The received flush packet should have the same VLAN-ID and password with the sender. Otherwise, the packet will be discarded.

Examples

This example shows how to configure flush receiver in the interface eth-0-9, control-vlan is 4 and password is “test”.

```
Switch(config)# interface eth-0-9
```

```
Switch(config-if)# smart-link flush receive control-vlan 4 password simple test
```

```
Switch(config-if)# end
```

```
Switch# show smart-link
```

```
Relay smart-link flush packet is enabled
Smart-link received flush packet number:0
Smart-link processed flush packet number:0
Smart link Group Number is 1.
Group-ID   State   MASTER  SLAVE
1          disabled N/A     N/A
```

Related Commands

flush send

show smart-link

9.11 smart-link tcn enable

Use this command to enable smart link tcn. To disable the smart-link tcn, used no form of this command.

Command Syntax

smart-link tcn enable

no smart-link tcn enable

Command Mode

Global Configuration

Default

Disable

Usage

None

Examples

Switch(config)# no smart-link tcn enable

Related Commands

show smart-link

9.12 smart-link tcn query-count

Use this command to set smart link tcn query count. To reset the smart-link tcn query count to default value, used no form of this command.

Command Syntax

smart-link tcn query-count *QUERY-COUNT*

no smart-link tcn query-count

<i>QUERY-COUNT</i>	TCN query count. The range is 1-10.
--------------------	-------------------------------------

Command Mode

Global Configuration

Default

2

Usage

None

Examples

This example shows how to set smart link tcn query count to 5.

```
Switch(config)# smart-link tcn query-count 5
```

Related Commands

show smart-link

9.13 smart-link tcn query-interval

Use this command to set smart link tcn query interval. To reset the smart-link tcn query interval to default value, used no form of this command.

Command Syntax

smart-link tcn query-interval *QUERY-INTERVAL*

no smart-link tcn query-interval

<i>QUERY-INTERVAL</i>	TCN query interval. The range is 1-255s.
-----------------------	------------------------------------------

Command Mode

Global Configuration

Default

10s

Usage

None

Examples

This example shows how to set smart link tcn query interval to 50.

```
Switch(config)# no smart-link tcn query-interval 50
```

Related Commands

show smart-link

9.14 show smart-link

Use this command to display information of all smart-link groups.

Command Syntax

show smart-link

Command Mode

Privileged EXEC

Default

None

Usage

This command is used to display a summary information of Smart-link group status, including received flush packet, processed flush packet and current Smart-link group number , etc.

Examples

```
Switch# show smart-link
```

```
Relay smart-link flush packet is enabled
Smart-link received flush packet number:7
Smart-link processed flush packet number:0
Smart link Group Number is 1.
Group-ID   State   MASTER   SLAVE
1          enabled eth-0-1  eth-0-2
```

Related Commands

None

9.15 show smart-link group

Use this command to display detailed information of all smart-link groups or a specific group.

Command Syntax

show smart-link group (*GROUP-ID*)

<i>GROUP-ID</i>	Smart-link group ID. The range is 1-16
-----------------	----------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

This command is used to display detail information of a specified Smart-link group or all Smart-link groups' status.

Examples

```
Switch# show smart-link group 1
```

Related Commands

None

9.16 clear smart-link statistic

Use this command to clear the statistic of the smart-link groups.

Command Syntax

clear smart-link statistic

Command Mode

Privileged EXEC

Default

None

Usage

This command is used to clear the statistic of the smart-link groups.

Examples

Switch# clear smart-link statistic

Related Commands

None

9.17 debug smart-link

Use this command to debug detail information of smart link.

Command Syntax

debug smart-link (all | flush | instance | interface | restore)

all	All debugging
flush	Smart-Link Flush Packet
instance	Smart-Link Instance
interface	Smart-Link Interface
restore	Smart-Link auto-restore

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

Switch# debug smart-link all

Related Commands

None

10 Monitor Link Commands

10.1 monitor-link group

Use this command to create monitor link group.

Command Syntax

monitor link group *GROUP-ID*

no monitor link group *GROUP-ID*

<i>GROUP-ID</i>	Monitor link group number. The range is 1-16
-----------------	----------------------------------------------

Command Mode

Global Configuration

Defaults

No monitor link group is created

Usage

This command is used to create monitor link group. The group range is 1-16.

Examples

In the following example, monitor link group 1 is created:

```
Switch# configure terminal
```

```
Switch(config)# monitor-link group 1
```

Related Commands

no monitor-link group

10.2 monitor-link uplink interface

Use this command to add uplink interface to monitor link group.

Command Syntax

monitor-link uplink interface (*IFPHYSICAL|IFAGG*)

no monitor-link uplink interface (*IFPHYSICAL|IFAGG*)

<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Monitor-link Configuration

Defaults

No interface is add

Usage

Only Ethernet interface and aggregation interface can be used as monitor link group.

Examples

In the following example, the ethernet interface is set to monitor link group member

```
Switch(config)# monitor-link group 1
```

```
Switch(config-mtlk-group)# monitor-link uplink interface eth-0-1
```

Related Commands

show monitor-link group

10.3 monitor-link uplink smart-link group

Use this command to add smart link group to monitor link group.

Command Syntax

monitor-link uplink smart-link group *GROUP-ID*

no monitor-link uplink smart-link group *GROUP-ID*

<i>GROUP-ID</i>	Smart link group number. The range is 1-16
-----------------	--------------------------------------------

Command Mode

Monitor-link Configuration

Defaults

No smart link group is add

Usage

Only the smart link group witch is enabled can be add to monitor link group

Examples

In the following example, the smart link group is set to monitor link group member:

```
Switch(config)# monitor-link group 1
```

```
Switch(config-mtlk-group)# monitor-link uplink smart-link group 1
```

Related Commands

show monitor-link group

10.4 no monitor-link uplink

Use this command to delete all the uplink from monitor link group.

Command Syntax

no monitor-link uplink

Command Mode

Monitor-link Configuration

Defaults

None

Usage

This command is used to delete all the uplink from monitor link group.

Examples

In the following example, all the uplink is deleted from monitor link group

```
Switch(config-mtlk-group)# no monitor-link uplink
```

Related Commands

show monitor-link group

10.5 monitor-link downlink interface

Use this command to add downlink interface from monitor link group.

Command Syntax

monitor-link downlink interface (*IFPHYSICAL*|*IFAGG*)

no monitor-link downlink (*IFPHYSICAL*|*IFAGG*)

<i>IFPHYSICAL</i>	Ethernet interface name
<i>IFAGG</i>	Link aggregation interface name

Command Mode

Monitor-link Configuration

Defaults

No interface is add

Usage

Only Ethernet interface and aggregation interface can be add to monitor link group.

Examples

In the following example, the ethernet interface is set to monitor link group member:

```
Switch(config)# monitor-link group 1
```

```
Switch(config-mtlk-group)# monitor-link downlink interface eth-0-1
```

Related Commands

```
show monitor-link group
```

10.6 monitor-link recover-time

Use this command to set recover time of for monitor link group.

Command Syntax

```
monitor-link recover-time RECOVER_TIME
```

```
no monitor-link recover-time
```

<i>RECOVER_TIME</i>	Monitor link group recover time range (second)
---------------------	------------------------------------------------

Command Mode

Global Configuration

Defaults

The default value is 3 seconds

Usage

This command is used to set recover time of for monitor link group. If the uplink is change to up, all the downlink will be set to up after recover timer.

Examples

In the following example, monitor link group's recover-time is set to 1s

```
Switch# configure terminal
```

```
Switch(config)# monitor-link recover-time 1
```

Related Commands

```
show monitor-link group
```

10.7 show monitor-link group

Use this command to display all the monitor link group status.

Command Syntax

show monitor-link group (*GROUP-ID*)

<i>GROUP-ID</i>	Monitor link group number. The range is 1-16
-----------------	----------------------------------------------

Command Mode

Privileged EXEC

Defaults

None

Usage

This command is used to display a specified or all the monitor link group status, including status, group id, uptime, downtime , etc.

Examples

In the following example, monitor link group 1 is displayed

```
Switch# show monitor-link group
```

```
Group Id: 1
Monitor link status: UP
Role      Member      Last-up-time      Last-down-time      upcount  downcount
UpLk 1   eth-0-2      2011/07/15,01:34:17  2011/07/15,01:34:14  1        1
```

Related Commands

None

10.8 debug monitor-link

Use this command to debug monitor link.

Command Syntax

debug monitor-link

Command Mode

Privileged EXEC

Defaults

None.

Usage

None.

Examples

In the following example, the debug of monitor link is set to on

```
Switch# debug monitor-link
```

Related Commands

None

11 VRRP Commands

11.1 advertisement-interval

To configure the interval between successive advertisements sent by the master virtual router in a Virtual Router Redundancy Protocol (VRRP) group, use the advertisement-interval command in router configuration mode. To restore the default value, use the no form of this command.

Command Syntax

advertisement-interval *interval*

no advertisement-interval

<i>interval</i>	Time interval between successive advertisements sent by the master virtual router. The unit of the interval is in seconds. The valid range is 1 to 255 seconds.
-----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------

Command Mode

Router Configuration

Default

Default is 1 second.

Usage

The advertisements sent by the master virtual router communicate the state and priority of the current master virtual router.

The advertisement-interval command configures the time between successive advertisement packets and the time before other routers declare the master router to be down. Routers or access servers on which timer value are not configured can learn timer values from the master router. The timers configured on the master router always override any other timer settings. All routers in a VRRP group must use the same timer value. If the same timer value is not set, the routers in the VRRP

group will not communicate with each other and any misconfigured router will change its state to master.

Examples

The following example shows how to configure the master virtual router to send advertisements every 4 seconds:

```
Switch(config)# router vrrp 1
```

```
Switch(config-router)# advertisement-interval 4
```

Related Commands

advertisement-interval msec

11.2 advertisement-interval msec

To configure the advertisement interval with milli-second mode between successive advertisements sent by the master virtual router in a VRRP group, use the `advertisement-interval msec` command in router configuration mode. To restore the second mode, use the `no` form of this command.

Command Syntax

advertisement-interval msec *interval*

no advertisement-interval msec

<i>interval</i>	Time interval between successive advertisements sent by the master virtual router. The unit of the interval is in 100 milli-seconds. The valid range is 100 to 900 milli-seconds.
-----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Command Mode

Router Configuration

Default

100 milli-seconds

Usage

The advertisements be sent by the master virtual router communicate the state and priority of the current master virtual router.

The advertisement-interval msec command configures the time between successive advertisement packets and the time before other routers declare the master router to be down. Routers or access servers on which timer values are not configured can learn timer values from the master router. The timers configured on the master router always override any other timer settings. All routers in a VRRP group must use the same timer value. If the same timer value is not set, the routers in the VRRP group will not communicate with each other and any misconfigured router will change its state to master.

Examples

The following example shows how to configure the master virtual router to send advertisements every 100 milli-seconds:

```
Switch(config)# router vrrp 1
```

```
Switch(config-router)# advertisement-interval msec 100
```

Related Commands

advertisement-interval

11.3 interface (VRRP)

To enable the Virtual Router Redundancy Protocol (VRRP) protocol on a specified interface, use the interface command in router mode. To disable VRRP protocol on this interface, use the no form of this command.

Command Syntax

interface *interface-name*

no interface

<i>interface-name</i>	Interface name
-----------------------	----------------

Command Mode

Router Configuration

Default

None

Usage

The max VRRP group number should be no more than 3 for one VRRP interface.

Examples

The following is a sample output from the interface command:

```
Switch(config)#router vrrp 1
```

```
Switch(config-router)#interface eth-0-1
```

Related Commands

router vrrp

11.4 learnmaster-mode

To enable the backup router to learn advertisement interval from master router, use the learnmaster-mode true command in router mode. To disable learn advertisement interval from master router, use the learnmaster-mode false.

Command Syntax

learnmaster-mode (true|false)

true	Enable learn advertisement interval from master router
false	Disable learning advertisement interval from master router

Command Mode

Router Configuration

Default

Default is false.

Usage

By default, backup router does not learn advertisement interval from master router.

Examples

The following example shows how to configure a backup router learning advertisement interval from master router.

```
Switch(config)# router vrrp 1
```

```
Switch(config-router)# learnmaster-mode true
```

Related Commands

router vrrp

11.5 preempt-mode

To configure the router to take over as master virtual router for a Virtual Router Redundancy Protocol (VRRP) group if it has higher priority than the current master virtual router, use the `preempt-mode enable` command in router mode. To disable this function, use the `preempt-mode disable` command.

Command Syntax

preempt-mode (true | false)

true	Preemption enabled
false	Preemption disabled

Command Mode

Router Configuration

Default

Default is true.

Usage

By default, the router configured `preempt-mode true` will take over as master virtual router for the group if it has a higher priority than the current master virtual router.

Examples

The following example shows how to configure the router to preempt the current master virtual router when its priority of 200 is higher than that of the current master virtual router.

```
Switch(config)# router vrrp 1
Switch(config-router)# preempt-mode true
Switch(config-router)# priority 200
```

Related Commands

preempt delay

11.6 preempt delay

To configure the master down interval when preempt takes effect.

Command Syntax

preempt delay *time*

<i>time</i>	Preempt delay time, the valid range is 0~3600 seconds
-------------	-------------------------------------------------------

Command Mode

Router Configuration

Default

Default is 0 second.

Usage

The original master down interval = $(3 * \text{adv_interval}) + \text{skew_time}$. when preempt delay time is configured, then master down interval = $(3 * \text{adv_interval}) + \text{skew_time} + \text{preempt_delay}$. By default, preempt delay is 0 second.

Examples

The following example shows how to configure the router to preempt the current master virtual router when its priority of 200 is higher than that of the current master virtual router, but delay 30 seconds to preempt.

```
Switch(config)# router vrrp 1
Switch(config-router)# preempt-mode true
Switch(config-router)# priority 200
```

```
Switch(config-router)# preempt delay 30
```

Related Commands

preempt-mode

11.7 priority (VRRP)

To set the priority level of the router within a Virtual Router Redundancy Protocol (VRRP) group, use the priority command in router configuration mode. To remove the priority level of the router, use the no form of this command.

Command Syntax

priority *level*

no priority

<i>level</i>	Priority of the router within the VRRP group. The range is from 1 to 254.
--------------	---------------------------------------------------------------------------

Command Mode

Router Configuration

Default

Default is 100

Usage

Use this command to control which router becomes the master virtual router.

Examples

The following example shows how to configure the router with a priority of 254:

```
Switch(config)# router vrrp 1
```

```
Switch(config-router)# priority 254
```

Related Commands

router vrrp

11.8 router vrrp

To create a Virtual Router Redundancy Protocol (VRRP) group, use the `router vrrp` command in Global Configuration mode. To remove this VRRP group, use the `no` form of this command.

Command Syntax

`router vrrp group`

`no router vrrp group`

<i>group</i>	Group number to which the tracking applies. The group number range is from 1 to 63
--------------	------------------------------------------------------------------------------------

Command Mode

Global Configuration

Default

None

Usage

None

Examples

The following is a sample shows how to create a VRRP group

```
Switch(config)# router vrrp 1
```

Related Commands

None

11.9 track (VRRP)

To configure the Virtual Router Redundancy Protocol (VRRP) to track an object, use the `track` command in router configuration mode. To disable the tracking, use the `no` form of this command.

Command Syntax

`track obj_id (decrement VALUE)`

`no track`

<i>obj_id</i>	track object id, the valid range is from 1~500
decrement	Priority decrement
<i>VALUE</i>	Decrement value<1-255>

Command Mode

Router Configuration

Default

None

Usage

Use track to monitor an up link interface, so that when the monitoring interface is down, backup can change to master router.

Only 1 track object is valid for one special VRRP group, and the later configured track object will always overwrite the previous one.

Examples

The following is a sample output from the track command:

```
Switch(config)# track 10 interface eth-0-1 linkstate
```

```
Switch(config)# router vrrp 1
```

```
Switch(config-router)# track 10
```

Related Commands

router vrrp

11.10 enable /disable

To enable a VRRP session, use the enable command in router configuration mode.

Command Syntax

enable/disable

Command Mode

Router Configuration

Default

None

Usage

None

Examples

The following is a sample shows how to enable a VRRP session:

```
Switch(config-router)# enable
```

The following is a sample shows how to disable a VRRP session:

```
Switch(config-router)# disable
```

Related Commands

None

11.11 virtual-ip

To enable the Virtual Router Redundancy Protocol (VRRP) on an interface and identify the IP address of the virtual router, use the `virtual-ip` command in router configuration mode. To disable VRRP on the interface and remove the IP address of the virtual router, use the `no` form of this command.

Command Syntax

virtual-ip *ip-address*

no virtual-ip

<i>ip-address</i>	IP address of the virtual router
-------------------	----------------------------------

Command Mode

Router Configuration

Default

None

Usage

For VRRP to elect a designated router, at least one router on the cable must have been configured with the primary address of the virtual router.

VRRP does not support address learning. All addresses must be configured.

All routers in the VRRP group must be configured with the same primary address for the virtual router. If different primary addresses are configured, the routers in the VRRP group will not communicate with each other and any mis-configured routers in the group will change their state to master.

The virtual IP address must be in the same subnet with VRRP interface, and if virtual IP is equal to the interface IP address, it is called IP address owner.

Examples

The following example shows how to enable VRRP on eth-0-1. The VRRP group is 1. IP address 10.0.1.20 is the address of the virtual router.

```
Switch(config)# interface eth-0-1
Switch(config-if)# no switchport
Switch(config-if)# ip address 10.0.1.1/24
Switch(config)# router vrrp 1
Switch(config-router)# interface eth-0-1
Switch(config-router)# virtual-ip 10.0.1.20
Switch(config-router)# enable
```

Related Commands

router vrrp

11.12 show vrrp

To display a brief or detailed status of one or all configured Virtual Router Redundancy Protocol (VRRP) groups on the router, use the show vrrp command in Privileged EXEC mode.

Command Syntax

show vrrp (*group* |)

<i>group</i>	(Optional) Virtual router group number of the group for which information is to be displayed.
--------------	-----------------------------------------------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

If no group is specified, all groups are displayed.

Examples

The following is a sample output from the show vrrp command:

Switch# show vrrp

```
VRID <1>
State           : Master
Virtual IP      : 10.0.20.254 (Not IP owner)
Interface       : eth-0-10
VMAC            : 0000.5e00.0101
Advt timer      : 1
Preempt mode    : TRUE
Conf pri        : 200          Run pri   : 200
Master router ip : 10.0.20.1
Master priority  : 200
Master advt timer : 1
Master down timer : 3
Preempt delay   : 100 second(s)
Learn master mode : FALSE
```

Related Commands

router vrrp

12 VRRP Remote Tracking Commands

12.1 delay up

To specify a period of time (in seconds) to delay communicating state changes of a tracked object, use `delay up` in track mode. To restore to default value, use the `no` form of this command.

Command Syntax

`delay up` *seconds*

`no delay up`

<i>seconds</i>	time range is from 1 to 180.
----------------	------------------------------

Command Mode

Track Mode

Default

None

Usage

None

Examples

In the following example, the `delay up` command is used to configure delay when object state is turned from down to up:

```
Switch(config)# track 1 interface eth-0-1 linkstate
```

```
Switch(config-track)# delay up 30
```

Related Commands

`delay down`

12.2 delay down

To specify a period of time (in seconds) to delay communicating state changes of a tracked object, use delay down in track mode. To restore to default value, use the no form of this command.

Command Syntax

delay up *seconds*

no delay up

<i>seconds</i>	Time range is from 1 to 180.
----------------	------------------------------

Command Mode

Track Mode

Default

None

Usage

None

Examples

In the following example, the delay down command is used to configure delay when object state is turned from up to down:

```
Switch(config)# track 1 interface eth-0-1 linkstate
```

```
Switch(config-track)# delay down 30
```

Related Commands

delay up

12.3 frequency

Sets the rate at which a specified IP SLA operation repeats. To turn to default value, use no form of this command.

Command Syntax

frequency *seconds*

no frequency

<i>seconds</i>	Time range is from 1 to 4800. (Frequency \geq timeout \geq threshold)
----------------	---------------------------------------------------------------------------

Command Mode

Ip Sla Mode

Default

The default value is 60 seconds.

Usage

None

Examples

In the following example, the frequency command is used to set the rate at which a specified IP SLAs operation repeats:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# frequency 10
```

Related Commands

show ip sla monitor

12.4 ip sla monitor

To create an IP SLA entry and enter IP SLA monitor configuration mode, use ip sla monitor in CONFIG mode. To delete an IP SLA entry, use the no form of this command.

Command Syntax

ip sla monitor *entrynumber*

no ip sla monitor *entrynumber*

<i>entrynumber</i>	Identify ip sla monitor entry, its range is from 1 to 500
--------------------	-----------------------------------------------------------

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the ip sla monitor command is used to create an ip sla monitor entry:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)#
```

Related Commands

show ip sla monitor

12.5 ip sla monitor schedule

To enable an IP SLA entry, use ip sla monitor schedule in CONFIG mode. To disable an IP SLA entry, use the no form of this command.

Command Syntax

ip sla monitor schedule (*entrynumber*)

<i>entrynumber</i>	Identify ip sla monitor entry, its range is from 1 to 500
--------------------	-----------------------------------------------------------

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the ip sla monitor schedule command is used to enable an IP SLA monitor entry:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# exit
```

```
Switch(config)# ip sla monitor schedule 1
```

Related Commands

show ip sla monitor

12.6 timeout

Sets the amount of time an IP SLA operation waits for a response from its request packet. To turn to default value, use no form of this command.

Command Syntax

timeout *seconds*

no timeout

<i>seconds</i>	Time range is from 1 to 4800.(Frequency \geq timeout \geq threshold)
----------------	--------------------------------------------------------------------------

Command Mode

Ip Sla Mode

Default

The default value is 5 seconds.

Usage

None

Examples

In the following example, the timeout command is used to set the time range:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# timeout 10
```

Related Commands

show ip sla monitor

12.7 threshold

Sets the upper threshold value for calculating network monitoring statistics created by an IP SLAs operation. To turn to default value, use no form of this command.

Command Syntax

threshold *seconds*

no threshold

<i>seconds</i>	Time range is from 1 to 4800.(Frequency \geq timeout \geq threshold)
----------------	--------------------------------------------------------------------------

Command Mode

Ip Sla Mode

Default

The default value is 5 seconds.

Usage

None

Examples

In the following example, the threshold command is used to set the threshold time range:

```
Switch(config)# ip sla monitor 1
Switch(config-ipsla)# threshold 10
```

Related Commands

show ip sla monitor

12.8 track

To configure a track object, use the track command in Global Configuration mode.

Command Syntax

track *object_id*

<i>object_id</i>	Object identity is used to identify track object, its range is from 1 to 500
------------------	------------------------------------------------------------------------------

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the track command is used to create a track object:

```
Switch(config)# track 1 interface eth-0-1 linkstate
Switch(config-track)#
```

Related Commands

show track

12.9 track interface linkstate

Create a track object and track the state of an interface, use the track interface linkstate command in Global Configuration mode. To remove a track, use the no form of this command.

Command Syntax

track *object_id* **interface** *IFNAME* **linkstate**

no track *object_id*

<i>object_id</i>	Object identity is used to identify track object, its range is from 1 to 500
<i>IFNAME</i>	Interface name

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the track interface linkstate command is used to create an track object:

```
Switch(config)# track 1 interface eth-0-1 linkstate
```

```
Switch(config-track)#
```

Related Commands

show track

12.10 track rtr reachability

Create a track object and track the state of an ip sla entry, use the track rtr reachability to command in Global Configuration mode. To remove a track, use the no form of this command.

When the state of IP SLA entry is OK or over-threshold, track object state is up; otherwise track object state is down.

Command Syntax

track *object_id* **rtr** **entrynum** *reachability*

no track *object_id*

<i>object_id</i>	Object identity is used to identify track object, its range is from 1 to 500
<i>entrynumber</i>	Entry number is used to identify IP SLA monitor entry, its range is from 1 to 500

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the track rtr reachability command is used to create a track object:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# exit
```

```
Switch(config)# track 1 rtr 1 reachability
```

```
Switch(config-track)#
```

Related Commands

show track

12.11 track rtr state

Create a track object and track the state of an IP SLA entry, use the track rtr state command in Global Configuration mode. To remove a track, use the no form of this command.

When the state of IP SLA entry is OK, track object state is up; otherwise track object state is down.

Command Syntax

track *object_id* **rtr** *entrynum* **state**

no track *object_id*

<i>object_id</i>	Object identity is used to identify track object, its range is from 1 to 500
<i>entrynumber</i>	Entry number is used to identify IP SLA monitor entry, its range is from 1 to 500

Command Mode

Global Configuration

Default

None

Usage

None

Examples

In the following example, the track rtr state command is used to create a track object:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# exit
```

```
Switch(config)# track 1 rtr 1 state
```

```
Switch(config-track)#
```

Related Commands

show track

12.12 type echo protocol

Defines an Echo operation with ICMP packet and enters destination IP address or hostname.

To delete an Echo operation and destination IP address or hostname, use the no form of this command.

Command Syntax

type echo protocol ipIcmpEcho (destination-ip-address|destination-hostname)

no type echo protocol ipIcmpEcho

<i>destination-ip-address</i>	Destination ip address of sending icmp packet
<i>destination-hostname</i>	Destination hostname of sending icmp packet

Command Mode

Ip Sla Mode.

Default

None

Usage

None

Examples

In the following example, the type echo protocol ipIcmpEcho command is used to set ICMP packet and destination IP address:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# type echo protocol ipIcmpEcho 192.168.0.1
```

Related Commands

show ip sla monitor

12.13 show ip sla monitor

To show IP SLA entries, use show ip sla monitor in EXEC mode.

Command Syntax

show ip sla monitor (*entrynumber*)

<i>entrynumber</i>	Entry number is used to identify ip sla monitor entry, its range is from 1 to 500
--------------------	-----------------------------------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

In the following example, the show ip sla monitor command is used to show ip sla monitor entries:

```
Switch# show ip sla monitor
```

```
Entry 1
  Type           : Echo
  Admin state    : Enable
  Destination address : 192.168.0.1
  Frequency      : 3 seconds
  Timeout        : 2 seconds
  Threshold      : 1seconds
  Running Frequency : 3 seconds
  Vrf            : vpn1
  Return code    : OK
```

Related Commands

ip sla monitor

12.14 show track

To show TRACK entries, use show track in EXEC mode.

Command Syntax

show track *object_id*

<i>object_id</i>	Object identity is used to identify track object, its range is from 1 to 500
------------------	------------------------------------------------------------------------------

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

In the following example, the show track command is used to show track entries:

Switch# show track

```
Track 2
  Type       : Response Time Reporter (RTR) Reachability
  Interface  : eth-0-2
  State      : down
  Delay up   : 30 seconds
  Delay down : 30 seconds
```

Related Commands

track

12.15 vrf

To use IP SLA operations in VPNs, use vrf in ipsla mode. To remove VPN features from IP SLA operations, use the no form of this command.

Command Syntax

vrf *vrfname*

no vrf

<i>vrfname</i>	VRF name
----------------	----------

Command Mode

Ip Sla Mode

Default

None

Usage

None

Examples

In the following example, the vrf command is used to use ip sla monitor entry in VPN:

```
Switch(config)# ip sla monitor 1
```

```
Switch(config-ipsla)# vrf vpn1
```

Related Commands

show ip sla monitor

13 VARP Commands

13.1 ip virtual-router mac

Use this command to configure a virtual mac for switch.

Command Syntax

ip virtual-router mac *mac-addr*

no ip virtual-router mac

<i>mac-addr</i>	Virtual mac address.
-----------------	----------------------

Command Mode

Global Configuration

Default

None

Usage

This virtual mac is used for interface configured virtual IP address. The address is receive-only; the switch never sends packets with this address as the source. And it only exists in ARP replay for virtual IP.

Examples

The following example is the result of this command:

```
Switch(config)# ip virtual-router mac 1.1.1
```

Related Commands

ip virtual-router address

13.2 ip virtual-router address

Use this command to configure a virtual IP address for interface.

Command Syntax

ip virtual-router address *IP-address*

no ip virtual-router address

<i>IP-address</i>	Virtual IP address.
-------------------	---------------------

Command Mode

Interface Configuration

Default

None

Usage

The ip virtual-router address command assigns a virtual IP address to the configuration mode interface. The virtual IP address should be in the subnet of the IP address assigned to the interface and if virtual mac is not configured, there is no reply to ARP request packet for the virtual IP address.

Examples

The following example is the result of this command:

```
Switch(config-if)# ip virtual-router address 1.1.1.1
```

Related Commands

ip virtual-router mac