OAM Configuration Commands

Table of Contents

Chapter 1   OAM Configuration Commands

1.1   OAM Configuration Commands

The following are OAM configuration commands:

- ethernet oam

- ethernet oam {max-rate | min-rate | mode | timeout }

- ethernet oam remote-failure {critical-event | dying-gasp | link-fault } action

- ethernet oam remote-loopback {supported | timeout}

- ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold high

- ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold low

- ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} window

- ethernet oam link-monitor high-threshold action

- ethernet oam link-monitor negotiation-supported

1.1.1   ethernet oam

Description

[**no**] **ethernet oam**

To enable or disable the OAM function, run [**no**] **ethernet oam**.

Parameter

None

Default

Ethernet OAM is disabled by default.

Command mode

Port configuration mode

Explanation

None

Example

The following commands are used to enable the OAM function on GigaEthernet 0/2 interface.

Switch#
Switch#config
Switch_config#interface g0/2
Switch_config_g0/2#ethernet oam

1.1.2   ethernet oam {max-rate | min-rate | mode | timeout }

Description

[**no**] **ethernet oam {max-rate** *value1* **| min-rate** *value2* **| mode {active | passive} | timeout** *value3***}**

ethernet oam max-rate *value1* is used to set the fastest transmission rate of the OAM packet.

ethernet oam max-rate *value2* is used to set the slowest transmission rate of the OAM packet.

ethernet oam mode {active | passive} is used to set the OAM mode.

ethernet oam timeout *value3* is used to set the timeout time of the OAM connection.

Parameter

Parameter	Description
value1	Fastest transmission rate, which ranges between 1 and 10. Its unit is packet/second.
value2	Slowest transmission rate, which ranges between 1 and 10. Its unit is second.
value3	Timeout time of the OAM connection, which ranges between 2 and 30 and whose unit is second

Default

The value of **max-rate** is 10.

The value of **min-rate** is 1.

The value of **timeout** is 5.

The value of **mode** is **active**.

Command mode

Port configuration mode

Explanation

This command can be used to configure some optional parameters for establishing the OAM connection.

Example

The following example shows how to set the fastest and slowest connection rates of the OAM on the GigaEthernet 0/2 interface to 5 packets/second, the connection timeout time to 10 seconds and the OAM mode to **passive**.

Switch #config

Switch_config#

Switch_config#interface g0/2

Switch_config_g0/2# ethernet oam max-rate 5

Switch_config_g0/2#ethernet oam min-rate 5

Switch_config_g0/2#ethernet oam timeout 10

Switch_config_g0/2#ethernet oam mode passive

1.1.3 ethernet oam remote-failure {critical-event | dying-gasp | link-fault } action

Description

ethernet oam remote-failure {critical-event | dying-gasp | link-fault } action error-disable-interface

no ethernet oam remote-failure {critical-event | dying-gasp | link-fault } action

This command is used to configure the trigger action after the remote fault instruction is received.

Parameter

None

Default

No trigger action is conducted after the remote fault instruction is received.

Command mode

Port configuration mode

Explanation

switch cannot generate the LINK FAULT packets and the Critical Event packets. However, these packets will be handled if they are received from the remote terminal. router can transmit and receive the Dying Gasp packet. When the local port enters the **errdisabled** state or is closed by the administrator or the OAM function of the local port is closed by the manager, the Dying Gasp packet will be transmitted to the remote terminal that connects the local port.

Example

The following example shows how to set the GigaEthernet0/2 port as the access port of VLAN10:

Switch(config)#interface f0/1

Switch(config)#vlan10

Switch(config-f0/1)#switchport pvid 10

1.1.4   ethernet oam remote-loopback {supported | timeout}

Description

The command **ethernet oam remote-loopback supported** is used to configure the remote loopback function.

The **ethernet oam remote-loopback timeout *value*** is used to configure the timeout time of the remote loopback.

Parameter

Parameter	Description
value3	Timeout time of the OAM connection, which ranges between 1 and 10 and whose unit is second

Default

Two seconds

Command mode

Port configuration mode

Explanation

The timer is effective only to the loopback master terminal. If the slave terminal does not receive the response from the slave terminal in the regulated timeout time after the master terminal transmits the **start** or **stop** request, the system will exit the loopback mode automatically.

Example

The following example shows how to set the timeout time of loopback on the GigaEthernet 0/2 port to 5 seconds.

Switch_config_g0/2#ethernet oam remote-loopback timeout 5

1.1.5 ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold high

Description

[**no**] **ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold high {none |** *value*}

To configure the high threshold for link monitoring, run the previous command.

Parameter

Parameter	Description
Value	Error-signal period event ranges between 1 and 65535, whose unit is signal number.
	Error-frame event ranges between 1 and 65535, whose unit is frame number.
	Error-frame event ranges between 1 and 65535, whose unit is frame number.
	Error-frame second event ranges between 1 and 900, whose unit is second.
	Error-CRC event ranges between 1 and 65535, whose unit is frame number.

Default

The default value of each general link event is **none**.

Command mode

Port configuration mode

Explanation

After the high threshold of an event and **ethernet oam link-monitor high-threshold action error-disable-interface** are configured, the local port enters the **errdisabled** state when the local port receives the high threshold of the event.

Example

The following example shows how to configure the high threshold of the error-frame event to **10** on interface GigaEthernet0/2.

Switch_config_g0/2#ethernet oam link-monitor symbol-period threshold high 10

1.1.6 ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold low

Description

[**no**] **ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} threshold low {none |** *value***}**

To configure the low threshold for link monitoring, run the previous command.

Parameter

Parameter	Description
Value	Error-signal period events ranges between 1 and 65535, whose unit is signal number.
	Error-frame event ranges between 1 and 65535, whose unit is frame number.
	Error-frame event ranges between 1 and 65535, whose unit is frame number.
	Error-frame second event ranges between 1 and 900, whose unit is second.
	Error-CRC event ranges between 1 and 65535, whose unit is frame number.

Default

The default value of the error-signal period event is 1.

The default value of the error-frame event is 1.

The default value of the error-frame period event is 1.

The default value of the error-frame second event is 1.

The default value of the error-CRC event is 10.

Command mode

Port configuration mode

Explanation

After the low threshold of an event is configured and the locally-received event exceeds the low threshold, the Event Notification OAM packet will be transmitted to notify the peer terminal.

Example

The following example shows how to set the low threshold of the error-frame event to **10** on interface GigaEthernet0/2.

Switch_config_g0/2#ethernet oam link-monitor symbol-period threshold low 10

1.1.7 ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} window

Description

ethernet oam link-monitor {symbol-period | frame | frame-period | frame-seconds | receive-crc} window *value*

To configure the size of the round-query window for link monitoring, run the previous command.

Parameter

Parameter	Description
Value	The error-signal period event ranges between 10 and 600 on GigaEthernet and ranges between 1 and 60 on FastEthernet. The unit is 100M signals.
	The error-frame event ranges between 1 and 60, whose unit is second.
	The error-frame period event ranges between 100 and 6000 on GigaEthernet and ranges between 10 and 600 on FastEthernet. The unit is 14881 frames.
	Error-frame second event ranges between 10 and 900, whose unit is second.
	The error-CRC event ranges between 1 and 180, whose unit is second.

Default

The default value of the error-signal period event is 10 on GigaEthernet and is 1 on FastEthernet.

The default value of the error-frame event is 1.

The default value of the error-frame period event is 100 on GigaEthernet and is 10 on FastEthernet.

The default value of the error-frame second event is 60.

The default value of the error-CRC event is 1.

Command mode

Port configuration mode

Explanation

None

Example

The following example shows how to set the window of the error-frame period event to **50** on interface GigaEthernet0/2.

Switch_config_g0/2#ethernet oam link-monitor symbol-period window 50

1.1.8 ethernet oam link-monitor high-threshold action

Description

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

[**no**] **ethernet oam link-monitor high-threshold action**

To configure the link-monitor trigger event with the high threshold, run **ethernet oam link-monitor high-threshold action error-disable-interface**.

Parameter

None

Default

The high-threshold trigger event does not exist by default.

Command mode

Port configuration mode

Description

After the high threshold of an event and **ethernet oam link-monitor high-threshold action error-disable-interface** are configured, the local port enters the **errdisabled** state when the local port receives the high threshold of the event.

Example

The following example shows how to set the high-threshold trigger event on interface GigaEthernet 0/2 to **error-disable-interface**.

Switch_config_g0/2#ethernet oam link-monitor high-threshold action error-disable-interface

1.1.9 ethernet oam link-monitor negotiation-supported

Description

[**no**] **ethernet oam link-monitor negotiation-supported**

To configure the link-monitor negotiation, run **ethernet oam link-monitor negotiation-supported**.

Parameter

None

Default

Link-monitor negotiation is supported.

Command mode

Port configuration mode

Description

devices support link monitoring. However, if the third-party devices do not support link monitoring, devices automatically do not support link monitoring during OAM Discovery and the OAM connection can be established through the third-party devices in this case. Otherwise, when the link-monitor negotiation is not configured, devices mandatorily support the link-monitor function, but the OAM connection cannot be created if the third-party devices do not support the link-monitor function.

Example

The following example shows that the link-monitor function is not supported on interface GigaEthernet 0/2.

Switch_config_g0/2#no ethernet oam link-monitor negotiation-supported

1.1.10   ethernet oam remote-loopback {start | stop}

Description

ethernet oam remote-loopback {start | stop} interface intf-type intf-id

To start or stop the remote OAM loopback, run the previous command.

Parameter

Parameter	Description
intf-id	Designates an interface.

Default

None

Command mode

Privileged mode

Description

The remote OAM loopback cannot be enabled on the physical interface that belongs to the aggregation interface.

Example

The following example shows how to positively start the remote OAM loopback on interface GigaEthernet 0/2.

Switch#ethernet oam remote-loopback start interface g0/2

1.1.11   clear ethernet oam statistics

Description

clear ethernet oam statistics [interface intf-type intf-id**]**

To clear the OAM statistics information, run the previous command.

Parameter

Parameter	Description
intf-id	Designates an interface. If an interface is not designated, the OAM statistics information on all interfaces will be deleted.

Default

None

Command mode

Privileged mode

Description

After this command is run, the following statistics information (type-classified packet numbering information, link-event statistics information and remote trouble statistics information) is deleted meanwhile.

Example

The following example shows how to clear the OAM statistics information on interface GigaEthernet 0/2.

Switch#clear ethernet oam statistics interface g0/2

1.1.12 show ethernet oam discovery

Description

show ethernet oam discovery interface [intf-type intf-id]

To display the OAM discovery information on all interfaces or a designated interface, run the previous command.

Parameter

Parameter	Description
intf-id	Displays the Discovery information on the designated interface or on all protocol-up ports and enables the Discovery information on the OAM interface.

Default

None

Description

None

Example

The following example shows how to display the OAM discovery information on interface GigaEthernet 0/2.

Switch_config_g0/2#show ethernet oam discovery interface g0/2
GigaEthernet0/2
Local Info TLV

PDU revision: 1

Loopback status: LB_DISABLED

OAM configurations field:
   Mode   : active
   Unidirection   : not supported
   Remote loopback   : supported
   Link Events   : supported
   Variable retrieval: not supported

Mtu size: 1500

OUI: 001fce

Remote Info TLV

MAC address: 001f.ce9c.e703

PDU revision: 0

OAM configurations field:
   Mode   : active
   Unidirection   : not supported
   Remote loopback   : not supported
   Link Events   : supported
   Variable retrieval: not supported

Mtu size: 1500

OUI: 001fce

1.1.13   show ethernet oam statistics {pdu | link-monitor | remote-failure}

Description

show ethernet oam statistics {pdu | link-monitor | remote-failure} interface [intf-type intf-id]

To display the OAM statistics information on a designated interface or all interfaces, run the previous command.

Parameter

Parameter	Description
intf-id	Displays the statistics information on the designated interface or on all protocol-up ports and enables the statistics information on the OAM interface.

Default

None

Description

None

Example

The following example shows how to display the classified OAM packet numbering information on interface GigaEthernet 0/2.

Switch#show ethernet oam statistics pdu interface g0/2
GigaEthernet0/2
Counters:

Information OAMPDU Tx   : 59
Information OAMPDU Rx   : 56
Unique Event Notification OAMPDU Tx   : 0
Unique Event Notification OAMPDU Rx   : 0
Duplicate Event Notification OAMPDU TX: 0
Duplicate Event Notification OAMPDU RX: 0
Loopback Control OAMPDU Tx   : 0
Loopback Control OAMPDU Rx   : 0
Variable Request OAMPDU Tx   : 0
Variable Request OAMPDU Rx   : 0
Variable Response OAMPDU Tx   : 0
Variable Response OAMPDU Rx   : 0

Organization Specific OAMPDU Tx   : 0

Organization Specific OAMPDU Rx   : 0

Unsupported OAMPDU Tx   : 0

Unsupported OAMPDU Rx   : 0

Frames Lost due to OAM   : 0

1.1.14   show ethernet oam configuration

Description

show ethernet oam configuration interface [intf-type intf-id]

To display the OAM configuration information on all interfaces or a designated interface, run **show ethernet oam configuration interface [intf-type intf-id]**.

Parameter

Parameter	Description
intf-id	Displays the OAM configuration information on the designated interface or on all protocol-up ports and enables the configuration information on the OAM interface.

Default

None

Description

None

Example

The following example shows how to display the OAM configuration information on interface GigaEthernet 0/2.

Switch#show ethernet oam configuration interface g0/2

GigaEthernet0/2

General

Admin state   : enabled

Mode   : active

PDU max rate   : 10 packets/second

PDU min rate   : 1 seconds/packet

Link timeout   : 1 seconds

High threshold action: no action

Remote Failure

Link fault action   : no action

Dying gasp action   : no action

Critical event action: no action

Remote Loopback

Is supported   : supported

Loopback timeout   : 2

Link Monitoring

Negotiation   : supported

Status   : on

Errored Symbol Period Event

Window   : 10 * 100M symbols

Low threshold   : 1 error symbol(s)

High threshold   : none

Errored Frame Event

Window   : 1 seconds

Low threshold   : 1 error frame(s)

High threshold   : none

Errored Frame Period Event

Window   : 100 * 14881 frames

Low threshold   : 1 error frame(s)

High threshold   : none

Errored Frame Seconds Summary Event

Window   : 60 seconds

Low threshold   : 1 error second(s)

High threshold   : none

Errored CRC Frames Event

Window   : 1 seconds

Low threshold   : 10 error frame(s)

High threshold   : none

1.1.15   show ethernet oam runtime

Description

show ethernet oam runtime interface [intf-type intf-id]

To display the OAM running information on all interfaces or a designated interface, run the previous command.

Parameter

Parameter	Description
intf-id	Displays the Runtime information on the designated interface or on all protocol-up ports and enables the Runtime information on the OAM interface.

Default

None

Description

None

Example

The following example shows how to display the OAM Runtime information on interface GigaEthernet 0/2.

Switch#show ethernet oam runtime interface g0/2

GigaEthernet0/2

Runtime Settings:

----

local_pdu   : NOT_WORKING

local_mux   : FWD

local_par   : FWD

local_link_status : OK

local_satisfied : FALSE

local_stable   : FALSE

pdu_cnt   : 10

pdu_timer   : stopped

lost_link_timer   :   stopped

remote_state_valid: FALSE

remote_stable   :   FALSE

remote_evaluating : FALSE

Discovery State Machine:

Last 10 state transition recorded: INACTIVE -> FAULT -> ACTIVE_SEND_LOCAL ->

SEN D_LOCAL_REMOTE -> SEND_LOCAL_REMOTE_OK -> SEND_ANY -> INACTIVE

1.1.16   debug ethernet oam remote-loopback

Description

debug ethernet oam remote-loopback

To enable the debugging switch of remote OAM loopback, run the previous command.

Parameter

None

Default

None

Command mode

Privileged mode

Description

When this command is run, the state switchover process of the remote state machine will be displayed.

1.1.17   debug ethernet oam packet {tx | rx}

Description

debug ethernet oam packet [tx | rx]

To enable the debugging switch of the OAM output packet's content, run the previous command.

Parameter

None

Default

None

Command mode

Privileged mode

Description

> If **tx** and **rx** are not entered and the **Enter** key is pressed directly, all received and transmitted OAM PDU content will be exported and the remaining length of the frame-header-excluded packet will be displayed. **tx** means to export only the content of the transmitted OAM PDU; **rx** means to export only the content of the received OAM PDU.

Example

> omitted

1.1.18 debug ethernet oam discovery-sm

Description

> **debug ethernet oam discovery-sm**
>
> To open the debugging switch of the OAM discovery state machine, run the previous command.

Parameter

> None

Default

> None

Command mode

> Privileged mode

Description

> None

Example

> omitted

1.1.19 debug ethernet oam error

Description

> **debug ethernet oam error**

To open the error-treated debugging switch of the OAM packet, run the previous command.

Parameter

None

Default

None

Command mode

Privileged mode

Description

None

Example

omitted