

## OAM Configuration Commands

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# 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 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

#### Syntax

`[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

## Usage Guidelines

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 }

## Syntax

**[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
<i>value1</i>	Fastest transmission rate, which ranges between 1 and 10. Its unit is packet/second.
<i>value2</i>	Slowest transmission rate, which ranges between 1 and 10. Its unit is second.
<i>value3</i>	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

## Usage Guidelines

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

## Syntax

**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

## Usage Guidelines

The 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 enable action error-disable-interface after receiving remote link fault instruction in the GigaEthernet0/1:

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#ethernet oam remote-failure link-fault action error-disable-interface
```

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

## Syntax

```
[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
<i>Value</i>	<p>Error-signal period event ranges between 1 and 65535, whose unit is signal number.</p> <p>Error-frame event ranges between 1 and 65535, whose unit is frame number.</p> <p>Error-frame event ranges between 1 and 65535, whose unit is frame number.</p> <p>Error-frame second event ranges between 1 and 900, whose unit is second.</p> <p>Error-CRC event ranges between 1 and 65535, whose unit is frame number.</p>

## Default

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

## Command Mode

Port configuration mode

## Usage Guidelines

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
```

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

## Syntax

```
[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
<i>Value</i>	<p>Error-signal period events ranges between 1 and 65535, whose unit is signal number.</p> <p>Error-frame event ranges between 1 and 65535, whose unit is frame number.</p> <p>Error-frame event ranges between 1 and 65535, whose unit is frame number.</p> <p>Error-frame second event ranges between 1 and 900, whose unit is second.</p> <p>Error-CRC event ranges between 1 and 65535, whose unit is frame number.</p>

## 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

## Usage Guidelines

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
```

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

## Syntax

**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
<i>Value</i>	<p>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.</p> <p>The error-frame event ranges between 1 and 60, whose unit is second.</p>



	<p>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.</p> <p>Error-frame second event ranges between 10 and 900, whose unit is second.</p> <p>The error-CRC event ranges between 1 and 180, whose unit is second.</p>
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## 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

## Usage Guidelines

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
```

### 1.1.7 ethernet oam link-monitor high-threshold action

## Syntax

**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

**Usage Guidelines**

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
```

### 1.1.8 ethernet oam link-monitor negotiation-supported

**Syntax**

**[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

## Usage Guidelines

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
```

### 1.1.9 clear ethernet oam statistics

## Syntax

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

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

## Parameter

Parameter	Description
<i>intf-id</i>	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

## Usage Guidelines

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
```

### 1.1.10 show ethernet oam discovery

#### Syntax

**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
<i>intf-id</i>	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

#### Usage Guidelines

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:               00e00f

Remote Info TLV
-----
MAC address:       001b.0d9c.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:               00000c

```

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

#### Syntax

**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
<i>intf-id</i>	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

#### Usage Guidelines

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
```

### 1.1.12 show ethernet oam configuration

## Syntax

**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
<i>intf-id</i>	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

## Usage Guidelines

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

### 1.1.13 show ethernet oam runtime

#### Syntax

**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
<i>intf-id</i>	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

#### Usage Guidelines

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 -> SEND\_LOCAL\_REMOTE -> SEND\_LOCAL\_REMOTE\_OK -> SEND\_ANY -> INACTIVE