02- Port Module Command Line Manual

Directory

1. Commands for Ethernet Port Configuration 1
bandwidth 1
clear counters interface 1
description 2
flow control 2
interface ethernet 3
Loopback 3
Negotiation 4
Port-rate-statistics interval 4
rate-violation 5
rate-violation control 6
show interface 6
Shutdown 7
speed-duplex 8
storm-control 9
storm-control 9
storm-control bypass 10
virtual-cable-test 11
switchport discard packet 11
switchport flood-control 12
switchport flood-forwarding 13
2.Commands for Port Isolation Function 13
isolate-port group 13
isolate-port group switchport interface 14
show isolate-port group 14
3.Commands for Port Loopback Detection Function 15
loopback-detection control 15
loopback-detection control-recovery timeout 16
loopback-detection interval-time 16
loopback-detection specified-vlan 17
show loopback-detection 17
4.Commands for ULDP 18
uldp aggressive-mode 18
uldp enable 18
uldp hello-interval 19
uldp manual-shutdown 19
uldp recovery-time 19
uldp reset 20
show uldp 20
5.Commands for LLDP Function 21
clear lldp remote-table 21
lldp enable 21
lldp enable（port） 22
lldp management-address tlv 22
lldp mode 22
lldp msgTxHold 23
lldp neighbors max-num 23
lldp notification interval 24
lldp tooManyNeighbors 24
lldp transmit delay 25
lldp transmit optional tlv 25
lldp trap 26
lldp tx-interval 26
show debugging lldp 26
show lldp 27
show lldp interface ethernet 27
show lldp neighbors interface ethernet 28

show lldp traffic 29
6.Commands for Port Channel 29
interface port-channel 29
lacp port-priority 30
lacp system-priority 30
lacp timeout 31
load-balance 31
port-group 32
port-group mode 32
show port-group 33
7.Commands for MTU 33
Mtu 33
8.Commands for EFM OAM 34
clear ethernet-oam 34
ethernet-oam 34
ethernet-oam errored-frame threshold high 35
ethernet-oam errored-frame threshold low 35
ethernet-oam errored-frame window 36
ethernet-oam errored-frame-seconds threshold high 36
ethernet-oam errored-frame-seconds threshold Low 37
ethernet-oam errored-frame-seconds window 37
ethernet-oam errored-symbol-period threshold High 38
ethernet-oam errored-symbol-period threshold Low 38
ethernet-oam errored-symbol-period window 39
ethernet-oam link-monitor 39
ethernet-oam mode 40
ethernet-oam period 40
ethernet-oam remote-failure 41
ethernet-oam remote-loopback 41
ethernet-oam remote-loopback supported 42
ethernet-oam timeout 42
show ethernet-oam 43
show ethernet-oam events 43
show ethernet-oam link-events-configuration 44
show ethernet-oam loopback status 45
9.Commands for PORT SECURITY 45
clear port-security 45
show port-security 46
switchport port-security 46
switchport port-security mac-address 46
switchport port-security maximum 47
switchport port-security violation 47
10.Commands for DDM 48
clear transceiver threshold-violation 48
show transceiver 49
show transceiver threshold-violation 49
transceiver-monitoring 50
transceiver-monitoring interval 50
transceiver threshold 51
11.Commands for LLDP-MED 52
civic location 52
{description-language | province-state | city | county | street | locationNum | location | floor | room | postal | otherInfo} 52
ecs location 53
lldp med fast count 54
lldp med trap 54
lldp transmit med tlv all 54
lldp transmit med tlv capability 55
lldp transmit med tlv extendPoe 55
lldp transmit med tlv location 56

lldp transmit med tlv inventory 56
lldp transmit med tlv networkPolicy 57
network policy 57
show lldp 58
show lldp [interface ethernet <IFNAME>] 59
show lldp neighbors 59
show lldp traffic 60
12.Commands for bpdu-tunnel 61
bpdu-tunnel-protocol 61
bpdu-tunnel-protocol group-mac 61
bpdu-tunnel-protocol protocol-mac 62
bpdu-tunnel-protocol ethernetii 62
bpdu-tunnel-protocol snap 63
bpdu-tunnel-protocol llc 64
13.Commands for EEE Energy-saving 64
eee enable 65
14.Commands for LED shut-off 65
port-led shutoff time-range 65

1. Commands for Ethernet Port Configuration

bandwidth

Command	**bandwidth control** <*bandwidth*> **{transmit | receive | both}** **no bandwidth control**
parameter	*bandwidth* — is the bandwidth limit, which is shown in kbps ranging between 1-1000000K
default	Disable bandwidth restrictions by default
Mode	Port Configuration Mode
Usage Guide	Use the **bandwidth control <bandwidth>[both | receive | transmit]** command to set the bandwidth rate. Use the **no bandwidth control** restore default configuration
Example	Set the bandwidth limit of 1/0/1-8 port is 40000K. Switch(config)#interface ethernet 1/0/1-8 Switch(Config-If-Port-Range)#bandwidth control 40000 both

clear counters interface

Command	**clear counters [interface {ethernet** <*interface-list*> **| vlan** <*vlan-id*> **|** **port-channel** <*port-channel-number*> **|** <*interface-name*>**}]**
parameter	*interface-list* — stands for the Ethernet port number; *vlan-id* — stands for the VLAN interface number; *port-channel-number* — for trunk interface number; *interface-name* — for interface name, such as port-channel 1.
default	Port statistics default not cleared
Mode	Admin Mode
Usage Guide	If no port is specified, statistics for all ports are cleared.

Example	Clearing the statistics for Ethernet port1/0/1. Switch#clear counters interface ethernet 1/0/1

description

Command	**description** <*string*> **no description**
parameter	*string* is a character string, which should not exceeds 200 characters
default	No port name by default
Mode	Port Mode
Usage Guide	This command is for helping the user manage switches, such as the user assign names according to the port application, e.g. financial as the name of 1/0/1-2 ports which is used by financial department, engineering as the name of 1/0/9 ports which belongs to the engineering department, while the name of 1/0/12 ports is assigned with Server, which is because they connected to the server. In this way the port distribution state will be brought to the table.
Example	Specify the description of 1/0/1-2 port as financial. Switch(config)#interface ethernet 1/0/1-2 Switch(Config-If-Port-Range)#description financial

flow control

Command	**flow control** **no flow control**
parameter	-
default	Disable port traffic control by default
Mode	Port Mode
Usage Guide	After the flow control function is enabled, the port will notify the sending device to slow down the sending speed to prevent packet loss when traffic received exceeds the capacity of port cache. Ports support IEEE802.3X flow control; the ports work in half-duplex mode, supporting back-pressure flow control. If flow control results in

	serious HOL, the switch will automatically start HOL control (discarding some packets in the COS queue that may result in HOL) to prevent drastic degradation of network performance.
Example	Enabling the flow control function in ports 1/0/1-8. Switch(config)#interface ethernet 1/0/1-8 Switch(Config-If-Port-Range)#flow control

interface ethernet

Command	**interface ethernet** <*interface-list*>
parameter	*interface-list* stands for port number.
default	-
Mode	Global Mode
Usage Guide	This command can be used to enter port configuration mode and run exit command to exit Ethernet port mode to global mode.
Example	Entering the Ethernet Port Mode for ports1/0/1，1/0/4-5，1/0/8。 Switch(config)#interface ethernet 1/0/1;1/0/4-5;1/0/8 Switch(Config-If-Port-Range)#

Loopback

Command	**loopback** **no loopback**
parameter	-
default	By default, disable loop testing in the Ethernet port
Mode	Port Mode
Usage Guide	Loopback test can be used to verify the Ethernet ports are working normally. After loopback has been enabled, the port will assume a connection established

	to itself, and all traffic sent from the port will be received at the very same port.
Example	Enabling loopback test in Ethernet ports 1/0/1-8. Switch(config)#interface ethernet 1/0/1-8 Switch(Config-If-Port-Range)#loopback

Negotiation

Command	**negotiation {on | off}**
parameter	-
default	Auto-negotiation is enabled by default.
Mode	Port configuration Mode
Usage Guide	This command applies to 1000Base-FX interface only. The negotiation command is not available for 1000Base-TX or 100Base-TX interface. To change the negotiation mode, speed and duplex mode of 1000Base-TX port, use speed-duplex command instead.
Example	Port 21 of Switch1 is connected to port 21 of Switch2, the following will disable the negotiation for both ports. Switch1(config)#interface ethernet1/0/21 Switch1(Config-If-Ethernet1/0/21)#negotiation off Switch2(config)#interface ethernet1/0/21 Switch2(Config-If-Ethernet1/0/21)#negotiation off

Port-rate-statistics interval

Command	**port-rate-statistics interval** <*interval-value*>	
parameter	*interval-value*	The interval of port-rate-statistics, unit is second, ranging from 5 to 600 with the configuration step of 5.
default	Only port-rate-statistics of 5 seconds and 5 minutes are displayed.	

Mode	Global Mode
Usage Guide	This command can be used to set the port rate statistics interval time.
Example	Count the interval of port-rate-statistics as 20 seconds. Switch(config)#port-rate-statistics interval 20

rate-violation

Command	**rate-violation [broadcast | multicast | unicast | all] <200-2000000>** **no rate-violation**

parameter

broadcast	broadcast packet
multicast	multicast packet
unicast	unicast packet
all	all packets
<200-2000000>	the number of packets allowed to pass per second.

default	There is no limit for the packet reception rate.
Mode	Port Mode
Usage Guide	This command is mainly used to detect the abnormal port flow. For example, when there are a large number of broadcast packets caused by a loopback, which affect the processing of other tasks, the port will be shut down or block to ensure the normal processing of the switch. This command needs to associate with rate-violation control command.
Example	Set the rate-violation of port 1/0/8-10 (GB ports) as 10000pps, it will be shutdown after rate-violation and the port recovery time as 1200 seconds, when the packet reception rate exceeds 10000, the port will but shut down, and then, after 1200 seconds, the port will be UP again. Switch(config)#interface ethernet 1/0/8-10 Switch(Config-Port-Range)#rate-violation unicast 10000 Switch(Config-Port-Range)#rate-violation control shutdown recovery 1200

rate-violation control

Command	**rate-violation control [shutdown recovery <0-86400> | block]** **no rate-violation control**	
parameter	**shutdown**	A port is shutdown after rate-violation
	recovery	After a period of time the port can recover Shutdown to UP again.
	block	A port is block after rate-violation, this parameter and MSTP, EAPS(MRPP), Loopback Detection, ULPP are mutually exclusive. If other modules set STP state, this function can not be set to block mode.
	<0-86400>	Automatic recovery time
default	There is no control operation for rate-violation.	
Mode	Port Mode	
Usage Guide	This command is mainly used to the control operation after rate-violation.	
Example	After set the rate-violation of the unicast packet of port 1/8-10 (GB ports) as 10000pps, the port will be block. Switch(Config)#interface ethernet 1/0/8-10 Switch(Config-Port-Range)#rate-violation unicast 10000 Switch(Config-Port-Range)#rate-violation control block	

show interface

Command	**show interface [ethernet** <*interface-number*> **| port-channel** <*port-channel-number*> **| vlan** <*vlan-id*> **|** <*interface-name*>**] [detail]** **show interface ethernet status** **show interface ethernet counter {packet | rate}**	
parameter	*interface-number*	is the port number of the Ethernet,
	port-channel-number	is the number of the aggregation interface
	vlan-id	is the VLAN interface number, the value range from 1 to 4094
	interface-name	is the name of the interface such as port-channel1
	detail	show the detail of the port

default	Information not displayed by default
Mode	Admin and Configuration Mode.
Usage Guide	Use this command to view interface-related configuration information
Example	Show the information of VLAN 1 . Vlan1 is up, line protocol is up, dev index is 11001 Device flag 0x1003(UP BROADCAST MULTICAST) Time since last status change:0w-0d-1h-14m-57s (4497 seconds) IPv4 address is: 192.168.2.1 255.255.255.0 (Primary) VRF Bind: Not Bind Hardware is EtherSVI, address is 00-1f-ce-10-b0-1a MTU is 1500 bytes , BW is 0 Kbit Encapsulation ARPA, loopback not set 5 minute input rate 244 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec The last 5 second input rate 0 bits/sec, 0 packets/sec The last 5 second output rate 0 bits/sec, 0 packets/sec Input packets statistics: Input queue 0/600, 0 drops 1012 packets input, 193127 bytes, 0 no buffer 0 input errors, 0 CRC, 0 oversize, 0 undersize 0 jabber, 0 fragments Output packets statistics: 448 packets output, 108316 bytes, 0 underruns 0 output errors, 0 collisions

Shutdown

Command	**Shutdown**
parameter	-
default	Ethernet port is open by default.
Mode	Port Mode.
Usage Guide	When Ethernet port is shut down, no data frames are sent in the port, and the port status displayed when the user types the “show interface” command is “down”.
Example	Opening ports 1/0/1-8. Switch(config)#interface ethernet1/0/1-8 Switch(Config-If-Port-Range)#no shutdown

speed-duplex

Command

speed-duplex {auto [10 [100 [1000]] [auto | full | half |]] | force10-half | force10-full | force100-half | force100-full | force100-fx [module-type {auto-detected | no-phy-integrated | phy-integrated}] | {{force1g-half | force1g-full} [nonegotiate [master | slave]]}}

no speed-duplex

parameter

auto	is the auto speed and duplex negotiation
10	10kbps
100	100kbps
1000	1000kbps
force10-half	is the forced 10Mbps at half-duplex mode
force10-full	is the forced 10Mbps at full-duplex mode
force100-half	is the forced 100Mbps at half-duplex mode
force100-full	is the forced 100Mbps at full-duplex mode
force1g-half	is the forced 1000Mbps at half-duplex mode
force1g-full	is the forced 1000Mbps at full-duplex mode
force100-fx	is the forced 100Mbps at full-duplex mode
auto-detected	automatic detection
no-phy-integrated	there is no phy-integratd 100Base-FX module
phy-integrated	phy-integratd 100Base-FX module
nonegotiate	disables auto-negotiation forcibly for 1000Mb port
master	forces the 1000Mb port to be master mode
slave	Forces the 1000Mb port to be slave mode

default

Auto-negotiation for speed and duplex mode is set by default

Mode

Port Mode

Usage Guide

This command is configures the port speed and duplex mode. When configuring port speed and duplex mode, the speed and duplex mode must be the same as the setting of the remote end, i.e., if the remote device is set to auto-negotiation, then auto-negotiation should be set at the local port. If the remote end is in forced mode, the same should be set in the local end.

1000Gb ports are by default **master** when configuring **nonegotiate** mode. If one end is set to **master** mode, the other end must be set to **slave** mode.

force1g-half is not supported yet.

Example

Port 1 of Switch1 is connected to port 1 of Switch2, the following will set both ports in forced 100Mbps at half-duplex mode.

Switch1(config)#interface ethernet1/0/1

Switch1(Config-If-Ethernet1/0/1)#speed-duplex force100-half

	Switch2(config)#interface ethernet1/0/1 Switch2(Config-If-Ethernet1/0/1)#speed-duplex force100-half

storm-control

Command	**storm-control { kbps | pps }** **no storm-control pps**

parameter	**kbps**	means the unit of limit is kbits/s
	pps	means the limit unit ispackets/s.

default	The default is kbps.
Mode	Global Mode
Usage Guide	Configure the kbps or pps as the limit mode in global mode, then set broadcast, multicast or unknown unicast limit value in port mode.
Example	Setting ports 1-8 allow 1000kbit broadcast packets per second. Switch(config)#storm-control kbps Switch(config-if-port-range)#storm-control broadcast 1000

storm-control

Command	**storm-control {unicast | broadcast | multicast}** <***value***> **no storm-control {unicast | broadcast | multicast}**

parameter	**unicast**	to limit unicast traffic for unknown destination
	broadcast	to limit broadcast traffic.
	multicast	to limit multicast traffic
	value	Limit the flow rate per second, PPS range from 1 to 1488095; kbps range from 1 to 1000000.

default	No limit is set by default. So, broadcasts, multicasts and unknown destination unicasts are allowed to pass at line speed.
Mode	Port Mode

Usage Guide

All ports in the switch belong to a same broadcast domain if no VLAN has been set. The switch will send the above mentioned three traffics to all ports in the broadcast domain, which may result in broadcast storm and so may greatly degrade the switch performance. Enabling Broadcast Storm Control can better protect the switch from broadcast storm. If the allowed traffic is set to 1000kbps, this means allow 1000 kbit per second and suppress the rest. The switch supports two kind of speed limit, it includes kbps which is limit by bandwidth and pps which is limit by the numbers of packets. It only can select one from the two ways and cannot set the two way in the same time (by global mode)
Broadcast suppression is similar to bandwidth control. There is granularity limitation for the chip; the switch support 16Kbps granularities. If the <Kbits> that user input is not the integer times of 16, the system will adjust to the integer times of 16 automatically and print the true limit value to user.

Example

Setting ports 1-8 allow 1000kbit broadcast packets per second.
Switch(config-if-port-range)#storm-control broadcast 1000

storm-control bypass

Command

storm-control bypass {arp | bpdu | igmp | rma | rek } <enable | disable >

parameter

arp	means the protocol packets of arp-request
bpdu	means bpdu protocol packets
igmp	means igmp protocol packets
rma	means multicast address is the saved multicast packets
rek	means the special private packets that realtak used
enable	enable some protocol to limit filter function
disable	disable some protocol to broadcast limit filter function.

default

Disable

Mode

Global Mode.

Usage Guide

Configure broadcast limit filter function of some protocol in global mode,
then configure broadcast limit in port mode. At this moment, the protocol packets flow from the port cannot be limited.

Example

Configure arp protocol filter function to make the arp-request data packets thatfrom 1 port in cannot be limited.
Switch (config)#storm-control bypass arp enable
Switch(config-if-ethernet1/0/1)#storm-control broadcast 1000

virtual-cable-test

Command	**virtual-cable-test interface ethernet** <*interface-list*>

parameter	*interface-list*	Port ID

default	-
Mode	Admin Mode.

Usage Guide

The RJ-45 port connected with the twisted pair under test should be in accordance with the wiring sequence rules of IEEE802.3, or the wire pairs in the test result may not be the actual ones. On a 100M port, only two pairs are used: (1, 2) and (3, 6), whose results are the only effective ones. If a 1000M port is connected to a 100M port, the results of (4, 5) and (7, 8) will be of no meaning. The result may have deviations according to the type of the twisted pair, the temperature, working voltage and other conditions. When the temperature is 20 degree Celsius, and the voltage is stable without interference, and the length of the twisted pair is not longer than 100 meters, a deviation of +/-2 meters is allowed. When the port is at Link UP status, a deviation of +/-10 meters is allowed. Notice: the test procedure will block all data flow on the line for 5-10 seconds, and then restore the original status.
568A wiring sequence: (1 green white, 2 green), (3 orange white, 6 orange), (4 blue, 5 blue white), (7 brown white, 8 brown).
568B wiring sequence: (1 orange white, 2 orange), (3 green white, 6 green), (4 blue, 5 blue white), (7 brown white, 8 brown).

Example

Test the link status of the twisted pair connected to the 1000M port 1/0/1.

```
Switch#virtual-cable-test interface ethernet 1/0/1

Interface Ethernet1/0/1:
-------------------------------------------------
Cable pairs        Cable status       Length (meters)
-----------        ------------       ---------------
(1, 2)             well                          1
(3, 6)             well                          1
(4, 5)             well                          1
(7, 8)             well                          1
```

switchport discard packet

Command	**switchport discard packet { all | untag }** **no switchport discard packet { all | untag }**

parameter	**all**	means it does not receive any packet including untag, tag and the deal packet

	untag	means it does not receive untag

default

The default does not have the restriction.

Mode

Port Mode

Usage Guide

This command is not suggested to be configured only if there is the special requirement.

Example

Configure the port of 1/0/8 not to receive all packets.
Switch(config)#interface ethernet 1/0/8
Switch(config-if-ethernet1/0/8)#switchport discard packet all

switchport flood-control

Command

switchport flood-control { bcast|mcast|ucast }
no switchport flood-control { bcast|mcast|ucast }

parameter

bcast	prevents that broadcast packets cannot be transmitted to the specified port
mcast	prevents that unknown multicast packets cannot be transmitted to the specified port
ucast	prevents that unknown unicast packets cannot be transmitted to the specified port

default

Switch transmits broadcast, unknown multicast and unknown unicast packets to other port in broadcast domain.

Mode

Port configuration mode.

Usage Guide

This command takes effect for 100M and 1000M ports; it is also takes effect for Access, Trunk and Hybrid ports. When this command is valid, the port will allow unicast or multicast flow to pass after port learned the corresponding unicast mac or multicast mac.
This command only control that broadcast, multicast and unknown unicast packets sent by other ports cannot be transmitted to the specified port, but it cannot control these packets from the specified port. For example, set switchport flood-control bcast command in port 1/0/1, broadcast packets cannot be transmitted from other ports to port 1/0/1, but port 1/0/1 can receive and transmit broadcast packets.

Example

Configure flood-control of bcast and mcast for port 1/0/1 or port 1/0/8-10 respectively.
Switch(config)#interface ethernet 1/0/1
Switch(config-if-ethernet1/0/1)#switchport flood-control bcast

	Switch(config)#interface ethernet 1/0/8-10 Switch(config-if-port-range)#switchport flood-control mcast

switchport flood-forwarding

Command	**switchport flood-forwarding mcast** **no switchport flood-forwarding mcast**	
parameter	**mcast**	prevents that unknown multicast packets can be transmitted to the specified port.
default	Switch transmits unknown multicast packets to other port in broadcast domain.	
Mode	Port Mode	
Usage Guide	This command takes effect for 100M and 1000M ports; it is also takes effect for Access, Trunk and Hybrid ports. The command is usually combined with ip imgp snooping, ip imgp snooping does not supports unknown multicast and broadcast, it can transfer unknown multicast flow after configure switchport flood-forwarding mcast.	
Example	Set switch 1/0/1 port broadcast flood-forwarding. switch# switch#confi switch(config)#interface ethernet 1/0/1 switch(config-if-ethernet1/0/1)# switchport flood-forwarding mcast switch(config-if-ethernet1/0/1)#exit switch(config)#	

2.Commands for Port Isolation Function

isolate-port group

Command	**isolate-port group** <*WORD*> **no isolate-port group** <*WORD*>	
parameter	*WORD*	is the name identification of the group, no longer than 32

	characters

default	-
Mode	Global Mode
Usage Guide	Users can create different port isolation groups based on their requirements. For example, if a user wants to isolate all downlink ports in a vlan of a switch, he can implement that by creating a port isolation group and adding all downlink ports of the vlan into it. No more than 16 port isolation groups can a switch have. When the users need to change or redo the configuration of the port isolation group, he can delete the existing group with the no operation of this command.
Example	Create a port isolation group and name it as ”test”. Switch>enable Switch#config Switch(config)#isolate-port group test

isolate-port group switchport interface

Command	**isolate-port group** <*WORD*> **switchport interface [ethernet]** <*IFNAME*> **no isolate-port group** <*WORD*> **switchport interface [ethernet]** <*IFNAME*>

parameter	*WORD*	is the name identification of the group, no longer than 32 characters
	IFNAME	is the name of the interface

default	-
Mode	Global Mode or Vlan Configuration Mode
Usage Guide	Users can add Ethernet ports into a port isolation group according to their requirements, the isolation group can isolation it from each other (Global mode) in all vlan, it also can isolate it from each other (vlan mode) in some vlan or remove them from a port isolation group according to their requirements. When an Ethernet port is a member of more than one port isolate group, it will be isolated from every port of all groups it belongs to.
Example	Add Ethernet ports 1/0/1-2 and 1/0/5 into a port isolation group named as ”test”, add Ethernet ports 1/0/3-4 into a port isolation group named as ”1” in vlan10. Switch(config)#isolate-port group test switchport interface ethernet 1/0/1-2; 1/0/5 Switch(config-vlan10)#isolate-port group 1 switchport interface ethernet 1/0/3-4

show isolate-port group

Command	**show isolate-port group [**<*WORD*>**]**
parameter	*WORD* the name identification of the group, no longer than 32 characters
default	Display the configuration of all port isolation groups.
Mode	Admin Mode and Global Mode
Usage Guide	Users can view the configuration of port isolation with this command.
Example	Display the port isolation configuration of the port isolation group named as “test”. Switch(config)#show isolate-port group test Isolate-port group test The isolate-port Ethernet1/0/5 The isolate-port Ethernet1/0/2

3.Commands for Port Loopback Detection Function

loopback-detection control

Command	**loopback-detection control {shutdown |block }** **no loopback-detection control**
parameter	**shutdown** set the control method as shutdown, which means to close down the port if a port loopback is found. **block** set the control method as block, which means to block a port by allowing bpdu and loopback detection messages only if a port loopback is found.
default	Disable the function of loopback diction control.
Mode	Port Mode.
Usage Guide	Enable loopback detection control on the port, which is disabled by the NO operation of this command.
Example	Enable the function of loopback detection control under port1/2 mode. Switch(config)#interface ethernet 1/0/2 Switch(Config-If-Ethernet1/0/2)#loopback-detection control shutdown

	Switch(Config-If-Ethernet1/0/2)#no loopback-detection control

loopback-detection control-recovery timeout

Command	**loopback-detection control-recovery timeout <0-3600>**
parameter	**0-3600** second is recovery time for be controlled state, 0 is not recovery state.
default	The recovery is not automatic by default.
Mode	Global Configuration Mode.
Usage Guide	When a port detects a loopback and works in control mode, the ports always work in control mode and not recover. The port will not sent packet to detection in shutdown mode, however, the port will sent loopback-detection packet to detection whether have loopback in block or learning mode. If the recovery time is configured, the ports will recovery normal state when the overtime is time-out. The recovery time is a useful time for shutdown control mode, because the port can keep on detection loopback in the other modes, so suggest not to use this command.
Example	Enable automatic recovery of the loopback-detection control mode after 30s. Switch(config)#loopback-detection control-recovery timeout 30

loopback-detection interval-time

Command	**loopback-detection interval-time** <*loopback*> <*no-loopback*> **no loopback-detection interval-time**
parameter	*loopback* the detection interval if any loopback is found, ranging from 5 to 300, in seconds. *no-loopback* the detection interval if no loopback is found, ranging from 1 to 30, in seconds.
default	The default value is 5s with loopbacks existing and 3s otherwise.
Mode	Global Mode
Usage Guide	When there is no loopback detection, the detection interval can be relatively shorter, for too short a time would be a disaster for the whole network if there is

	any loopback. So, a relatively longer interval is recommended when loopbacks exist.
Example	Set the loopback diction interval as 35, 15. Switch(config)#loopback-detection interval-time 35 15

loopback-detection specified-vlan

Command	**loopback-detection specified-vlan** <*vlan-list*> **no loopback-detection specified-vlan [**<*vlan-list*>**]**

parameter		
	vlan-list	VLAN ID

default	Disable the function of detecting the loopbacks through the port.
Mode	Port Mode
Usage Guide	If a port can be a TRUNK port of multiple Vlans, the detection of loopbacks can be implemented on the basis of port+Vlan, which means the objects of the detection can be the specified Vlans on a port. If the port is an ACCESS port, only one Vlan on the port is allowed to be checked despite the fact that multiple Vlans can be configured. This function is not supported under Port-channel.
Example	Enable the function of loopback detection under port 1/2 mode. Switch(config)#interface ethernet 1/0/2 Switch(Config-If-Ethernet1/0/2)#switchport mode trunk Switch(Config-If-Ethernet1/0/2)#switchport trunk allowed vlan all Switch(Config-If-Ethernet1/0/2)#loopback-detection specified-vlan 1;3;5-20 Switch(Config-If-Ethernet1/0/2)#no loopback-detection specified-vlan 1;3;5-20

show loopback-detection

Command	**show loopback-detection [interface** <*interface-list*>**]**

parameter		
	interface-list	the list of ports to be displayed, for example: ethernet 1/0/1.

default	-
Mode	Admin and Configuration Mode.
Usage Guide	Display the state and result of loopback detection on ports with this command.

Example	Display the state of loopback detection on port 4. Switch(config)#show loopback-detection interface Ethernet 1/0/4 loopback detection config and state information in the switch! PortName Loopback Detection Control Mode Is Controlled Ethernet1/4 Enable Shutdown No

4.Commands for ULDP

uldp aggressive-mode

Command	**uldp aggressive-mode** **no uldp aggressive-mode**
parameter	-
default	Global Configuration Mode and Port Configuration Mode.
Mode	Normal mode.
Usage Guide	The ULDP working mode can be configured only if it is enabled globally. When ULDP aggressive mode is enabled globally, all the existing fiber ports will work in aggressive mode. For the copper ports and fiber ports which are available after the configuration is available, aggressive mode should be enabled in port configuration mode.
Example	To enable ULDP aggressive mode globally. Switch(config)#uldp aggressive-mode

uldp enable

Command	**uldp {enable|disable}**
parameter	-
default	By default ULDP is not configured.
Mode	Global Configuration Mode and Port Configuration Mode.
Usage Guide	ULDP can be configured for the ports only if ULDP is enabled globally. If ULDP is enabled globally, it will be effect for all the existing fiber ports. For copper ports and fiber ports which are available after ULDP is enabled, this command should be issued in the port configuration mode to make ULDP be effect.

Example	Enable ULDP in global configuration mode. Switch(config)#uldp enable

uldp hello-interval

Command	**uldp hello-interval** <*integer*> **no uldp hello-interval**

parameter	*integer*	The interval for the Hello messages, with its value limited between 5 and 100 seconds, 10 seconds by default.

default	10 seconds by default.
Mode	Global Configuration Mode.
Usage Guide	Interval for hello messages can be configured only if ULDP is enabled globally, its value limited between 5 and 100 seconds.
Example	To configure the interval of Hello messages to be 12 seconds. Switch(config)#uldp hello-interval 12

uldp manual-shutdown

Command	**uldp manual-shutdown** **no uldp manual-shutdown**
parameter	-
default	Auto mode.
Mode	Global Configuration Mode
Usage Guide	This command can be issued only if ULDP has been enabled globally
Example	To enable manual shutdown globally. Switch(config)#uldp manual-shutdown

uldp recovery-time

Command	**uldp recovery-time**<*integer*> **no uldp recovery-time**

parameter	*integer*	the time out value for the ULDP recovery timer. Its value is limited between 30 and 86400 seconds.

default 0 is set by default which means the recovery is disabled.

Mode Global Configuration Mode.

Usage Guide If an interface is shutdown by ULDP, and the recovery timer times out, the interface will be reset automatically. If the recovery timer is set to 0, the interface will not be reset.

Example To set the recovery timer to be 600 seconds.
Switch(config)#uldp recovery-time 600

uldp reset

Command **uldp reset**

parameter -

default -

Mode Globally Configuration Mode and Port Configuration Mode.

Usage Guide This command can only be effect only if the specified interface is disabled by ULDP.

Example To reset all the port which are disabled by ULDP.
Switch(config)#uldp reset

show uldp

Command **show uldp [interface ethernet**<*interface-name*>**]**

parameter	*interface-name*	is the interface name.

default -

Mode Admin and Configuration Mode.

Usage Guide If no parameters are appended, the global ULDP information will be displayed. If the interface name is specified, information about the interface and its neighbors will be displayed along with the global information.

Example To display the global ULDP information.
Switch(config)#show uldp

uldp enable

uldp hello interval is 10
uldp shut down mode is AUTO
uldp global work mode is NORMAL
the total number of the port is 4

PortName	PhyLink	LineProto	WorkMode	PortState	NeighborNum
Ethernet1/0/25	UP	DOWN	NORMAL	INACTIVE	0
Ethernet1/0/26	UP	DOWN	NORMAL	INACTIVE	0
Ethernet1/0/27	UP	DOWN	NORMAL	INACTIVE	0
Ethernet1/0/28	UP	DOWN	NORMAL	INACTIVE	0

5.Commands for LLDP Function

clear lldp remote-table

Command	**clear lldp remote-table**
parameter	-
default	Do not clear the entries.
Mode	Port Configuration Mode
Usage Guide	Clear the Remote table entries on this port.
Example	Clear the Remote table entries on this port. Switch(Config-If-Ethernet 1/0/1)# clear lldp remote-table

lldp enable

Command	**lldp {enable|disable}**
parameter	-
default	Disable LLDP function.
Mode	Global Mode
Usage Guide	If LLDP function is globally enabled, it will be enabled on every port.
Example	Enable LLDP function on the switch. Switch(config)#lldp enable

lldp enable（port）

Command	**lldp {enable|disable}**
parameter	-
default	Default Open
Mode	Port Configuration Mode.
Usage Guide	When LLDP is globally enabled, it will be enabled on every port, the switch on a port is used to disable this function when it is unnecessary on the port.
Example	Disable LLDP function of port on the port ethernet 1/0/5 of the switch. Switch(config)#in ethernet 1/0/5 Switch(Config-If-Ethernet1/0/5)#lldp disable

lldp management-address tlv

Command	**lldp management-address tlv [A.B.C.D]** **no lldp management-address tlv**	
parameter	**A.B.C.D**	it is the optional parameter, and it is the management address that user appoints for the port, it must be the unicast IPv4 address
default	Disable	
Mode	Port Mode	
Usage Guide	User can choose the feat management IPv4 address according to the configuration. If user appointed the management address when enable the function, this address will be used to send the management address TLV; if user does not appoint the management address, choose the IPv4 address from the VLAN layer3 as the management address to send the management address TLV. When the address is not appointed, if there is no feat address, the management address TLV information will not be sent.	
Example	Enable the management address TLV function of ethernet 1/0/1 and appoint the address. Switch1(Config-If-Ethernet1/0/1)# lldp management-address tlv 192.168.24.32	

lldp mode

Command	**lldp mode <send | receive | both | disable>**

parameter	**send**	Configure the LLDP function as only being able to send messages.
	receive	Configure the LLDP function as only being able to receive messages.
	both	Configure the LLDP function as being able to both send and receive messages.
	disable	Configure the LLDP function as not being able to send or receive messages.

default The operating state of the port is “both”.

Mode Port Configuration Mode.

Usage Guide Choose the operating state of the lldp Agent on the port.

Example Configure the state of port ethernet 1/0/5 of the switch as “receive”.

```
Switch(config)#in ethernet 1/0/5
Switch(Config-If-Ethernet1/0/5)#lldp mode receive
```

lldp msgTxHold

Command **lldp msgTxHold** <*value*>
no lldp msgTxHold

parameter	*value*	is the aging time multiplier, ranging from 2 to 10.

default the value of the multiplier is 4 by default.

Mode Global Mode.

Usage Guide After configuring the multiplier, the aging time is defined as the product of the multiplier and the interval of sending messages, and its maximum value is 65535 seconds.

Example Set the value of the aging time multiplier as 6.

```
Switch(config)#lldp msgTxHold 6
```

lldp neighbors max-num

Command **lldp neighbors max-num** <*value*>
no lldp neighbors max-num

parameter	*value*	is the configured number of entries, ranging from 5 to 500.

default	The maximum number of entries can be stored in Remote MIB is 100.
Mode	Port Configuration Mode.
Usage Guide	The maximum number of entries can be stored in Remote MIB.
Example	Set the Remote as 200 on port ethernet 1/0/5 of the switch. Switch(config)#in ethernet 1/0/5 Switch(Config-If-Ethernet1/0/5)# lldp neighbors max-num 200

lldp notification interval

Command	**lldp notification interval** <*seconds*> **no lldp notification interval**

parameter		
	seconds	is the time interval, ranging from 5 to 3600 seconds.

default	The time interval is 5 seconds.
Mode	Global Mode.
Usage Guide	After configuring the notification time interval, a “trap” message will be sent at the end of this time interval whenever the Remote Table changes.
Example	Set the time interval of sending Trap messages as 20 seconds. Switch(config)#lldp notification interval 20

lldp tooManyNeighbors

Command	**lldp tooManyNeighbors {discard | delete}**

parameter		
	discard	discard the current message.
	delete	Delete the message with the least TTL in the Remoter Table

default	Discard
Mode	Port Configuration Mode
Usage Guide	When the Remote MIB is full, Discard means to discard the received message; Delete means to the message with the least TTL in the Remoter Table.
Example	Set port ethernet 1/0/5 of the switch as delete. Switch(config)#in ethernet 1/0/5

	Switch(Config-If-Ethernet1/0/5)#lldp tooManyNeighbors delete

lldp transmit delay

Command	**lldp transmit delay** <*seconds*> **no lldp transmit delay**

parameter		
	seconds	is the time interval, ranging from 1 to 8192 seconds.

default	The interval is 2 seconds by default.
Mode	Global Mode
Usage Guide	When the messages are being sent continuously, a sending delay is set to prevent the Remote information from being updated repeatedly due to sending messages simultaneously.
Example	Set the delay of sending messages as 3 seconds. Switch(config)#lldp transmit delay 3

lldp transmit optional tlv

Command	**lldp transmit optional tlv [portDesc] [sysName] [sysDesc] [sysCap]** **no lldp transmit optional tlv**

parameter		
	portDesc	the description of the port
	sysName	the system name
	sysDesc	The description of the system
	sysCap	the capability of the system

default	The messages carry no optional TLV by default
Mode	Port Configuration Mode
Usage Guide	When configuring the optional TLV, each TLV can only appear once in a message, portDesc optional TLV represents the name of local port; sysName optional TLV represents the name of local system; sysDesc optional TLV represents the description of local system; sysCap optional TLV represents the capability of local system.
Example	Configure that port ethernet 1/0/5 of the switch carries portDesc and sysCap TLV. Switch(config)#in ethernet 1/0/5 Switch(Config-If-Ethernet1/0/5)# lldp transmit optional tlv portDesc sysCap

lldp trap

Command	**lldp trap <enable | disable>**
parameter	-
default	The Trap function is disabled on the specified port by default
Mode	Port Configuration Mode
Usage Guide	The function of sending Trap messages is enabled on the port.
Example	Enable the Trap function on port ethernet 1/0/5 of the switch. Switch(config)#in ethernet1/0/5 Switch(Config-If-Ethernet1/0/5)#lldp trap enable

lldp tx-interval

Command	**lldp tx-interval** <*integer*> **no lldp tx-interval**	
parameter	*integer*	is the interval of sending updating messages, ranging from 5 to 32768 seconds.
default	30s	
Mode	Global Mode	
Usage Guide	After configuring the interval of sending messages, LLDP messages can only be received after a period as long as configured. The interval should be less than or equal with half of aging time, for a too long interval will cause the state of being aged and reconstruction happen too often; while a too short interval will increase the flow of the network and decrease the bandwidth of the port. The value of the aging time of messages is the product of the multiplier and the interval of sending messages. The maximum aging time is 65535 seconds. When tx-interval is the default value and transmit delay is configured via some commands, tx-interval will become four times of the latter, instead of the default 40.	
Example	Set the interval of sending messages as 40 seconds. Switch(config)#lldp tx-interval 40	

show debugging lldp

Command	**show debugging lldp**
parameter	-
default	-
Mode	Admin and Configuration Mode
Usage Guide	With show debugging lldp, all ports with lldp debug enabled will be displayed.
Example	Display all ports with lldp debug enabled. Switch(config)#show debugging lldp ====BEGINNING OF LLDP DEBUG SETTINGS==== debug lldp packets interface Ethernet1/0/1 ==========END OF DEBUG SETTINGS==========

show lldp

Command	**show lldp**
parameter	-
default	Do not display the configuration information of global LLDP.
Mode	Admin Mode, Global Mode.
Usage Guide	Users can check all the configuration information of global LLDP by using “show lldp”.
Example	Check the configuration information of global LLDP after it is enabled on the switch. Switch(config)#show lldp -----LLDP GLOBAL INFORMATIONS----- LLDP has been enabled globally. LLDP enabled port : Ethernet1/0/1 Ethernet1/0/7 LLDP interval :30 LLDP txTTL :120 LLDP NotificationInterval :5 LLDP txDelay :2 LLDP-MED FastStart Repeat Count :4 ----------END----------

show lldp interface ethernet

Command	**show lldp interface ethernet** <*IFNAME*>
parameter	*IFNAME* Interface name
default	Do not display the configuration information of LLDP on the port.
Mode	Admin Mode, Global Mode.
Usage Guide	Users can check the configuration information of LLDP on the port by using “show lldp interface ethernet XXX”.
Example	Check the configuration information of LLDP on the port after LLDP is enabled on the switch. Switch (config-if-ethernet1/0/1)#show lldp int e 1/0/1 Port name :Ethernet1/0/1 LLDP Agent Adminstatus : Both LLDP Operation TLV : default LLDP Management Address TLV status : unenable LLDP Trap Status : disable LLDP maxRemote :100 LLDP Overflow handle : discard LLDP interface remote status : Free lldp dot3 TLV: MED Optional TLV : default MED Trap Status:Disable MED TLV Transmit Status:Disable MED Fast Transmit Status:Disable **********

show lldp neighbors interface ethernet

Command	**show lldp neighbors interface ethernet** < *IFNAME* >
parameter	*IFNAME* Interface name
default	Do not display the LLDP neighbor information of the port.
Mode	Admin Mode, Global Mode.
Usage Guide	Users can check the configuration information of LLDP on the port by using “show lldp interface ethernet XXX”.

Example	Check the LLDP neighbor information of the port after LLDP is enabled on the port. Switch (config-if-ethernet1/0/1)#show lld nei int e 1/0/1 Port name : Ethernet1/0/1 Port Remote Counter : 1 TimeMark :92 ChassisIdSubtype :4 ChassisId :00-e0-4c-00-00-00 PortIdSubtype :Local PortId :gi1 Lldp Port Pvid TLV : Lldp port Pvid : 1 **********

show lldp traffic

Command	**show lldp traffic**
parameter	-
default	Do not display the statistics of LLDP data packets.
Mode	Admin Mode, Global Mode.
Usage Guide	Users can check the statistics of LLDP data packets by using “show lldp traffic”.
Example	Check the statistics of LLDP data packets after LLDP is enabled on the switch. Switch(config)#show lldp traffic PortName Ageouts FramesDiscarded FramesInErrors FramesIn FramesOut TLVsDiscarded TLVsUnrecognized ---------- ------- ---------- ---------- -------- --------- ---------- ---------- Ethernet1/0/1 0 0 0 43 42 0 0 Ethernet1/0/7 0 0 0 0 42 0 0

6.Commands for Port Channel

interface port-channel

Command	**interface port-channel** <*port-channel-number*>
parameter	*port-channel-number* Port Channel Number
default	-
Mode	Global Mode
Usage Guide	Enable port channel configuration mode
Example	Entering configuration mode for port-channel 1. Switch(config)#interface port-channel 1 Switch(Config-If-Port-Channel1)#

lacp port-priority

Command	**lacp port-priority** <*port-priority*> **no lacp port-priority**
parameter	*port-priority* the port priority of LACP protocol, the range from 0 to 65535.
default	The default priority is 32768 by system.
Mode	Port Mode.
Usage Guide	Use this command to modify the port priority of LACP protocol, the no command restores the default value.
Example	Set the port priority of LACP protocol. Switch(Config-If-Ethernet1/0/1)# lacp port-priority 30000

lacp system-priority

Command	**lacp system-priority** <*system-priority*> **no lacp system-priority**
parameter	*system-priority* The system priority of LACP protocol, ranging from 0 to 65535.
default	The default priority is 32768.
Mode	Global Mode

Usage Guide	Use this command to modify the system priority of LACP protocol, the no command restores the default value.
Example	Set the system priority of LACP protocol. Switch(config)#lacp system-priority 30000

lacp timeout

Command	**lacp timeout {short | long}** **no lacp timeout**
parameter	-
default	Long
Mode	Port Mode
Usage Guide	Set the timeout mode of LACP protocol.
Example	Set the timeout mode as short in LACP protocol. Switch(Config-If-Ethernet1/0/1)#lacp timeout short

load-balance

Command	**load-balance {src-mac | dst-mac | dst-src-mac | src-ip | dst-ip | dst-src-ip | ingress-port | dst-src-mac-ip}** **no load-balance**

parameter

src-mac	performs load-balance according to the source MAC
dst-mac	performs load-balance according to the destination MAC
dst-src-mac	performs load-balance according to the source and destination MAC
src-ip	performs load-balance according to the source IP
dst-ip	performs load-balance according to the destination IP
dst-src-ip	performs load-balance according to the destination and source IP
ingress-port	performs load-balance according to the destination and source mac and destination, source IP
dst-src-mac-ip	performs load-balance according to the port of receive flow.

default	Perform load-balance according to the source MAC.
Mode	Global mode.
Usage Guide	Use port-channel to implement load-balance, user can configure the load-balance mode

	according to the requirements. If the specific load-balance mode of the command line is different with the current load-balance mode of port-group, then modify the load-balance of port-group as the specific load-balance of command line; otherwise return a message to notice that the current mode is already configured.
Example	Set load-balance mode of port-group. Switch(config)# load-balance src-mac

port-group

Command	**port-group** <*port-group-number*> **no port-group** <*port-group-number*>

parameter		
	port-group-number	is the group number of a port channel from 1～128.

default	There is no port-group
Mode	Global Mode
Usage Guide	it can create 64 port group at most
Example	Creating a port group. Switch(config)# port-group 1 Delete a port group. Switch(config)#no port-group 1

port-group mode

Command	**port-group** <*port-group-number*> **mode {active | passive | on}** **no port-group**

parameter		
	port-group-number	is the group number of port channel, from 1～128
	active	enables LACP on the port and sets it in Active mode
	passive	enables LACP on the port and sets it in Passive mode
	on	forces the port to join a port channel without enabling LACP.

default	Switch ports do not belong to a port channel by default; LACP not enabled by default.
Mode	Port Mode
Usage Guide	Add a physical port to the port channel NO remove the specified port from the port channel

Example	Under the Port Mode of Ethernet1/0/1, add current port to “port-group 1” in “active” mode. Switch(Config-If-Ethernet1/0/1)#port-group 1 mode active

show port-group

Command	**show port-group [**<*port-group-number*>**] {brief | detail |}**

parameter	*port-group-number*	is the group number of port channel to be displayed, from 1～128

default	-
Mode	All Configuration Mode
Usage Guide	If the user does not input port-group-number, that means the information of all the existent port-group are showed; if the port channel corresponds to port-group-number parameter and is not exist, then print a error message, otherwise display the current port-channel information of the specified group number.
Example	Display summary information for port-group 1 Switch#show port-group brief ID: port group number; Mode: port group mode such as on active or passive; Ports: different types of port number of a port group, the first is selected ports number, the second is standby ports number, and the third is unselected ports number. ID Mode Partner ID Ports Load-balance ---------- 1 active 0x0000,00-00-00-00-00-00 0,0,1 src-mac

7.Commands for MTU

Mtu

Command	**mtu [**<*mtu-value*>**]** **no mtu**

parameter	*mtu-value*	the MTU value of frames that can be received, in byte, ranging from <1500-12270>. The corresponding frame size is <1518/1522-12288/12292>.

		Without setting is parameter, the allowed max frame size is 12288/12292.

default	MTU function not enabled by default
Mode	Global Mode
Usage Guide	Set switch of both ends mtu necessarily, or mtu frame will be dropped at the switch has not be set
Example	Enable the mtu function of the switch. Switch(config)#mtu

8.Commands for EFM OAM

clear ethernet-oam

Command	**clear ethernet-oam [interface {ethernet |}** <*IFNAME*>**]**

parameter	*IFNAME*	the name of the port needs to clear OAM statistic information

default	N/A
Mode	Admin mode
Usage Guide	N/A
Example	Clear the statistic information of OAM packets and link event on all ports. Switch(config)#clear ethernet-oam

ethernet-oam

Command	**ethernet-oam** **no ethernet-oam**
parameter	-
default	Disable
Mode	Port mode

Usage Guide	N/A
Example	Enable ethernet-oam of Ethernet 1/0/4 Switch(config)#interface ethernet 1/0/4 Switch(Config-If-Ethernet1/0/4)#ethernet-oam

ethernet-oam errored-frame threshold high

Command	**ethernet-oam errored-frame threshold high {**<*high-frames*>** | none}** **no ethernet-oam errored-frame threshold high**	
parameter	*high-frames*	the high detection threshold of errored frame event, ranging from 2 to 4294967295.
	none	cancel the high threshold configuration.
default	**none**	
Mode	Port mode	
Usage Guide	During the specific detection period, serious link event is induced if the number of errored frame is larger than or equal to the high threshold and the device notifies the peer by sending Information OAMPDU of which the value of Link Fault flag in Flags field is 1. Note that the high threshold can not be less than the low threshold	
Example	Configure the high threshold of errored frame event on Ethernet 1/0/4 to be 3000. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame threshold high 3000	

ethernet-oam errored-frame threshold low

Command	**ethernet-oam errored-frame threshold low** <*low-frames*> **no ethernet-oam errored-frame threshold low**	
parameter	*low-frames*	the low detection threshold of errored frame event, ranging from 1 to 4294967295
default	1	
Mode	Port mode	
Usage Guide	During the specific detection period, errored frame event is induced if the number of errored frame is larger than or equal to the low threshold and the device notifies the peer by sending event notification OAMPDU. Note that the low threshold can not be larger than the high threshold.	

Example	Configure the low threshold of errored frame event on Ethernet 1/0/4 to 100. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame threshold low 100

ethernet-oam errored-frame window

Command	**ethernet-oam errored-frame window** <*seconds*> **no ethernet-oam errored-frame window**
parameter	*seconds* — is the time for counting the specified frame number, its range from 5 to 300, unit is 200ms
default	5
Mode	Port mode
Usage Guide	Detect the errored frame number of the port after the time of specific detection period. If the number of errored frame is larger than or equal to the threshold, bring the corresponding event and notify the peer through OAMPDU.
Example	Configure the detection period of errored frame event on port1/0/4 to be 20s. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame window 100

ethernet-oam errored-frame-seconds threshold high

Command	**ethernet-oam errored-frame-seconds threshold high {**<*high-seconds*> **|** **none}** **no ethernet-oam errored-frame-seconds threshold high**
parameter	*high-seconds* — the high detection threshold of errored frame period event,ranging from 2 to 4294967295. **none** — cancel the high threshold configuration.
default	**none**
Mode	Port mode
Usage Guide	During the specific detection period, serious link event is induced if the number of errored frame is larger than or equal to the high threshold and the device notifies the peer by sending Information OAMPDU of which the value of Link Fault flag in Flags field is 1. Note that the high threshold can not be less than the low threshold.
Example	Configure the high threshold of errored frame period event on port 1/0/4 to be 3000. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame-seconds threshold high 3000

ethernet-oam errored-frame-seconds threshold Low

Command	**ethernet-oam errored-frame-seconds threshold low** <*low-seconds*> **no ethernet-oam errored-frame-seconds threshold low**
parameter	*low-seconds* — the low detection threshold of errored frame seconds event, ranging from 1 to 65535 seconds.
default	1
Mode	Port mode
Usage Guide	During the specific detection period, errored frame period event is induced if the number of errored frame is larger than or equal to the low threshold and the device notifies the peer by event notification OAMPDU. Note that the low threshold should not be larger than the high threshold.
Example	Configure the low threshold of errored frame period event on port 1/0/4 to be 100. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame-seconds threshold low 100

ethernet-oam errored-frame-seconds window

Command	**ethernet-oam errored-frame-seconds window** <*seconds*> **no ethernet-oam errored-frame-seconds window**
parameter	*seconds* — is the time for counting the specified frame number, its range from 50 to 450, unit is 200ms.
default	300
Mode	Port mode
Usage Guide	Detect errored frame seconds of the port after the time of specific detection period. If the number of errored frame seconds is larger than or equal to the threshold, corresponding event is induced and the device notified the peer through OAMPDU.
Example	Configure the detection period of errored frame seconds event on port 1/0/4 to be 120s. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-frame-seconds window 600

ethernet-oam errored-symbol-period threshold High

Command	**ethernet-oam errored-symbol-period threshold high {**<*high-symbols*>** | none}** **no ethernet-oam errored-symbol-period threshold high**
parameter	*high-symbols* — the high detection threshold of errored symbol event, ranging from 2 to 18446744073709551615 symbols. **none** — cancel the high threshold configuration.
default	**none**
Mode	Port mode
Usage Guide	During the specific detection period, serious link event is induced if the number of errored symbols is larger than or equal to the high threshold and the device notifies the peer by sending Information OAMPDU of which the value of Link Fault flag in Flags field is 1. Note that the high threshold should not be less than the low threshold.
Example	Set the high threshold of errored symbol event on port 1/0/4 to none. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-symbol-period threshold high none

ethernet-oam errored-symbol-period threshold Low

Command	**ethernet-oam errored-symbol-period threshold low** <*low-symbols*> **no ethernet-oam errored-symbol-period threshold low**
parameter	*low-symbols* — the low threshold of errored symbol event, ranging from 1 to 18446744073709551615 symbols.
default	1
Mode	Port mode
Usage Guide	During the specific detection period, errored symbol event is induced if the number of errored symbols is larger than or equal to the low threshold and the device notifies the peer by sending event notification OAMPDU. Note that the low threshold should not be larger than the high threshold.

Example	Set the low threshold of errored symbol event on port 1/0/4 to be 5. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-symbol-period threshold low 5

ethernet-oam errored-symbol-period window

Command	**ethernet-oam errored-symbol-period window** <*seconds*> **no ethernet-oam errored-symbol-period window**
parameter	*seconds* — is the time for counting the specified frame number, its range from 5 to 300, unit is 200ms.
default	5
Mode	Port mode
Usage Guide	Detect errored symbols of the port after the time of specific detection period. If the number of errored symbols is larger than or equal to the threshold, corresponding event is induced and the device notified the peer through OAMPDU.
Example	Set the detection period of errored symbol event on port 1/0/4 to be 2s. Switch(Config-If-Ethernet1/0/4)#ethernet-oam errored-symbol-period window 10

ethernet-oam link-monitor

Command	**ethernet-oam link-monitor** **no ethernet-oam link-monitor**
parameter	-
default	Enable
Mode	Port mode
Usage Guide	Enable OAM to monitor local link errors. Generally link monitor is enabled when enabling OAM function of the port. When OAM link monitor is disabled, although local link error is not monitored, Event information OAMPDU from the peer is still normally received and processed.
Example	Enable the link monitor of port 1/0/4. Switch(Config-If-Ethernet1/0/4)#ethernet-oam link-monitor

ethernet-oam mode

Command	**ethernet-oam mode {active | passive}** **no ethernet-oam mode**	
parameter	**active**	active mode
	passive	passive mode
default	active mode	
Mode	Port mode	
Usage Guide	At least one of the two connected OAM entities should be configured to active mode. Once OAM is enabled, the working mode of OAM cannot be changed and you need to disable OAM function if you have to change the working mode.	
Example	Set the mode of OAM function on ethernet 1/0/4 to passive mode. Switch(Config-If-Ethernet1/0/4)#ethernet-oam mode passive	

ethernet-oam period

Command	**ethernet-oam period** <*seconds*> **no ethernet-oam mode**	
parameter	*seconds*	sending period, ranging from 1 to 2 seconds.
default	1s	
Mode	Port mode	
Usage Guide	Use this command to configure the transmission interval of Information OAMPDU which keep OAM connection normally.	
Example	Set the transmission interval of Information OAMPDU for ethernet 1/0/4 to be 2s. Switch(Config-If-Ethernet1/0/4)# ethernet-oam period 2	

ethernet-oam remote-failure

Command	**ethernet-oam remote-failure** **no ethernet-oam remote-failure**
parameter	-
default	Enable
Mode	Port mode
Usage Guide	With remote failure indication is enabled, if critical-event or link fault event is occurred locally, it will notify the peer by sending Information OAMPDU, log the fault information and send SNMP trap warning. When the remote failure indication is disabled, although local critical-event or link fault event is not monitored, failure indication information from the peer is still normally received and processed.
Example	Enable remote failure indication of ethernet 1/0/4. Switch(Config-If-Ethernet1/0/4)#ethernet-oam remote-failure

ethernet-oam remote-loopback

Command	**ethernet-oam remote-loopback** **no ethernet-oam remote-loopback**
parameter	-
default	Disable
Mode	port mode
Usage Guide	Only OAM can send remote loopback reques in auto mode, the OAM work in passive mode can not send remote loopback; when remote OAM working in loopback mode, all packets except OAM PDU packets will back local port according to the same route (Notice: during OAM loopback, it can not communicate), administrator can check the link delay of loopback, shake and throughput capacity. It can do loopback configuration after create OAM link, if OAM link is broken during loopback, the loopback will be cancel automatically. The command mutex with ethernet-oam remote-loopback supported.
Example	Enable the remote OAM of port 1/0/4 to remote loopback mode. Switch(Config-If-Ethernet1/0/4)#ethernet-oam remote-loopback Normal forwarding will be suspended during the remote-loopback, are you sure to start remote-loopback? [Y/N]

ethernet-oam remote-loopback supported

Command	**ethernet-oam remote-loopback supported** **no ethernet-oam remote-loopback supported**
parameter	-
default	Disable
Mode	Port mode.
Usage Guide	The port that only enable loopback support function can receive OAM loopback reques and in loopback mode. So when enable remote and in OAM loopback, please ensure remote configured loopback support. The command mutex with ethernet-oam remote-loopback.
Example	Enable OAM loopback support function of ethernet 1/0/4 Switch(Config-If-Ethernet1/0/4)#ethernet-oam remote-loopback supported

ethernet-oam timeout

Command	**ethernet-oam timeout** <*seconds*> **no ethernet-oam timeout**
parameter	*seconds* the timeout ranging from 5 to 10 seconds.
default	5s
Mode	Port mode
Usage Guide	OAM connection will be disconnected if no OAMPDU is received after specified timeout.
Example	Set the timeout of OAM connection for ethernet 1/0/4 to be 6 seconds. Switch(Config-If-Ethernet1/0/4)#ethernet-oam timeout 6

show ethernet-oam

Command	**show ethernet-oam [{local | remote} interface {ethernet |}** <*IFNAME*>**]**
parameter	*IFNAME* the port that OAM connection information will be shown
default	N/A.
Mode	Admin mode
Usage Guide	N/A.
Example	Show overview information of Ethernet OAM connection. Switch#show ethernet-oam Switch#show ethernet-oam Capability codes: L - Link Monitor, R - Remote Loopback U - Unidirection, V - Variable Retrieval --- Interface Local-Mode Local-Capability Remote-MAC-Addr Remote-Mode Remote-Capability 1/0/1 active L

show ethernet-oam events

Command	**show ethernet-oam events {local | remote} [interface {ethernet |}** <*IFNAME*>**]**
parameter	*IFNAME* the port that the statistic information of OAM link events needs to be shown
default	N/A.
Mode	Admin mode
Usage Guide	N/A.
Example	Show the statistic information of link events on Ethernet 1/0/1. Switch#show ethernet-oam events local interface 1/0/1 ethernet1/0/1 link-events： OAM_local_errored-symbol-period-events: ---

event time stamp：3539 errored symbol window(200ms)：5
errored symbol low threshold：1 errored symbol high threshold：none
errored symbol：1200120 errored running total：2302512542
event running total：232
OAM_local_errored-frame-period-events:
---
event time stamp：3539 errored frame window(200ms)：50
errored frame low threshold：1 errored frame high threshold：none
errored frame：1200120 errored running total：2302512542
event running total：52
OAM_local_errored-frame-events:
---
event time stamp：3539 errored frame window(200ms)：5
errored frame low threshold：1 errored frame high threshold：none
errored frame：1200120 errored running total：2302512542
event running total：75
OAM_local_errored-frame-seconds-summary-events:
---
event time stamp：3520 errored frame seconds summary window(200ms)：300
errored frame low threshold：1 errored frame high threshold：none
errored frame：1200120 errored running total：2302512542
event running total：232
OAM_local_link-fault：0
OAM_local_dying gasp：0
OAM_local_critical event：0

show ethernet-oam link-events-configuration

Command	**show ethernet-oam link-events-configuration [interface {ethernet | }** *<IFNAME>***]**
parameter	*IFNAME* — the port that the statistic information of OAM link events needs to be shown
default	N/A.
Mode	Admin mode
Usage Guide	N/A.
Example	Show configuration of link events on ethernet 1/0/1. Switch#show ethernet-oam link-events-configuration interface ethernet 1/0/1 Ethernet1/0/1 link-monitor configuration：

event high-threshold low-threshold window(200ms)

Err-symbol-Period none 1 2

Err-frame-Period none 1 10

Err-frame none 2 5

Err-frame-second-summary none 2 600

---

show ethernet-oam loopback status

Command	**show ethernet-oam loopback status [interface {ethernet | }** <*IFNAME*>**]**

parameter		
	IFNAME	means display the port of OAM loopback statusinformation

default	-
Mode	Admin mode
Usage Guide	Displays the loopback status OAM all or specified ports of the switch
Example	Display the OAM loopback status of all port. Switch(config)#show ethernet-oam loopback status OAM Loopback Status: Ethernet1/0/1: disable Ethernet1/0/2: disable Ethernet1/0/3: disable

9.Commands for PORT SECURITY

clear port-security

Command	**clear port-security {all | configured | dynamic | sticky} [[address** <***mac-addr***> **| interface** <***interface-id***>**] [vlan** <***vlan-id***> **]]**

parameter		
	all	All secure MAC entries on the interfaces
	configured	The configured secure MAC
	dynamic	The dynamic secure MAC learnt by the interface
	sticky	The secure MAC of sticky
	mac-addr	The specified secure MAC address
	interface-id	The secure MAC entries of the specified interface
	vlan-id	The specified VLAN

default	-
Mode	Admin mode
Usage Guide	Clear secure MACs on the interface
Example	Clear all secure MACs on the interface Switch#clear port-security all

show port-security

Command	**show port-security [interface** <*interface-id*>**] [address | vlan]**

parameter		
	interface-id	Show port-security configuration of the interface
	address	Show the secure address of the interface
	vlan	Show the maximum number of each VLAN configured on trunk/hybrid interface.

default	-
Mode	Any modes
Usage Guide	Display port security configuration.
Example	Show all secure MACs on the interfaces. Switch# show port-security address interface ethernet 1/0/1

switchport port-security

Command	**switchport port-security** **no switchport port-security**
parameter	-
default	Disable
Mode	Port mode
Usage Guide	Configure port security for the interface no disable port security with commands
Example	Enable port-security on the interface. Switch(config-if- ethernet1/0/1)#switchport port-security

switchport port-security mac-address

Command	**switchport port-security mac-address** <*mac-address*> **[vlan** <*vlan-id*>**]** **no switchport port-security mac-address** <*mac-address*> **[vlan** <*vlan-id*>**]**

parameter		
	mac-address	Configure the specified MAC address as the static secure MAC.
	vlan-id	The specified VLAN of the MAC address, it only takes effect on trunk and hybrid interfaces.

default	No secure MAC is bound by the interface.
Mode	Port mode
Usage Guide	When configuring the static secure MAC, pay attention to the number of the current secure MAC whether exceed the maximum MAC limit allowed by the interface. If exceeding the maximum MAC limit, it will result in violation operation.
Example	Configure the secure MAC address on the interface Switch (config-if- ethernet1/0/1)# switchport port-security mac-address 00-00-00-00-00-01

switchport port-security maximum

Command	**switchport port-security maximum** <*value*> **[vlan** <*vlan-list*>**]** **no switchport port-security maximum** <*value*> **[vlan** <*vlan-list*>**]**

parameter		
	value	Configure the maximum number of the secure MAC allowed by the interface, its range between 1 and 128. It is determined by the maximum MAC number of the device
	vlan-list	Configure the maximum value for the specified VLAN, it only takes effect on trunk and hybrid interfaces.

default	After enabling port-security, if there is no other configuration, the maximum number of the secure MAC is 1 on the interface. The interface number in VLAN is no limit by default
Mode	Port mode
Usage Guide	Pay attention to the coupling relation about the number between the interface and VLAN, set the maximum number configured by the interface as the standard firstly.
Example	Configure the maximum number of the secure MAC on the interface. Switch(config-if- ethernet1/0/1)# switchport port-security maximum 100

switchport port-security violation

Command	**switchport port-security violation {protect | recovery | restrict | shutdown}** **no switchport port-security violation**

parameter		
	protect	Protect mode, it will trigger the action that do not learn the new MAC, drop the package and do not send the warning
	recovery	After triggering the violation action of the port, the mac learning function can be recovered
	restrict	Restrict mode, it will trigger the action that do not learn the new MAC, drop the package, send snmp trap and record the configuration in syslog.
	shutdown	Shutdown mode is the default mode. Under this condition, the interface is disabled directly, send snmp trap and record the configuration in syslog.

default	**shutdown**
Mode	Port mode
Usage Guide	When exceeding the maximum number of the configured MAC addresses, MAC address accessing the interface does not belongs to this interface in MAC address table or a MAC address is configured to several interfaces in same VLAN, both of them will violate the security of the MAC address.
Example	Configure violation mode as protect for the interface. Switch(config-if-ethernet1/0/1)#switchport port-security violation protect

10.Commands for DDM

clear transceiver threshold-violation

Command	**clear transceiver threshold-violation [interface ethernet <interface-list>]**

parameter		
	interface-list	The interface list that the threshold violation of the transceiver monitoring needs to be cleared.

default	-
Mode	Admin mode
Usage Guide	Clear threshold violations monitored by transceivers
Example	Clear he threshold violation of the transceiver monitoring on port 21, 25, 26, 28. Switch#clear transceiver threshold-violation interface ethernet 1/0/21;25-26;28

show transceiver

Command	**show transceiver [interface ethernet <interface-list>] [detail]**	
parameter	**interface-list**	The interface list that the monitoring of the transceiver needs to be shown.
	detail	Show the detailed monitoring of the transceiver.
default	-	
Mode	User mode, admin mode and global mode	
Usage Guide	Displays the transceiver's detailed monitoring information.	
Example	Show the brief DDM information of all ports. Switch#show transceiver	

Interface	Temp（℃）	Voltage（V）	Bias（mA）	RX Power（dBM）	TX Power（dBM）
1/0/25	33	3.31	6.11	-30.54(A-)	-6.01
1/0/26	33	5.00（W+）	6.11	-20.54(W-)	-6.02

show transceiver threshold-violation

Command	**show transceiver threshold-violation [interface ethernet <interface-list>]**	
parameter	**interface-list**	The interface list that the transceiver monitoring needs to be shown.
default	-	
Mode	Admin mode and global mode	
Usage Guide	Show the transceiver monitoring	
Example	Show the transceiver monitoring Switch(config)#show transceiver threshold-violation interface ethernet 1/0/25-26 Ethernet 1/0/25 transceiver threshold-violation information： Transceiver monitor is enabled. Monitor interval is set to 30 minutes. The current time is Jan 02 12:30:50 2010. The last threshold-violation time is Jan 01 1:30:50 2010. Brief alarm information: RX loss of signal	

RX power low
Detail diagnostic and threshold information:

	Diagnostic Realtime Value	Threshold High Alarm	Low Alarm	High Warn	Low Warn
Temperature（℃）	33	70	0	70	0
Voltage（V）	7.31	10.00	0.00	5.00	0.00
Bias current（mA）	3.11	10.30	0.00	5.00	0.00
RX Power（dBM）	-30.54(A-)	9.00	-25.00（-34）	9.00	-25.00
TX Power（dBM）	-1.01	9.00	-12.05	9.00	-10.00

Ethernet 1/0/26 transceiver threshold-violation information:
Transceiver monitor is disabled. Monitor interval is set to 30 minutes.
The last threshold-violation doesn't exist.

transceiver-monitoring

Command	**transceiver-monitoring {enable | disable}**
parameter	-
default	Disable
Mode	Port mode
Usage Guide	Enable/disable transceiver monitoring
Example	Enable the transceiver monitoring of ethernet1/0/1. Switch(config-if-ethernet1/0/1)#transceiver-monitoring enable

transceiver-monitoring interval

Command	**transceiver-monitoring interval <minutes>** **no transceiver-monitoring interval**	
parameter	**minutes**	The interval of the transceiver monitoring needs to be set.
default	15 minutes	
Mode	Global mode	

Usage Guide	sets the interval for transceiver monitoring. No command sets the interval to the default interval of 15 minutes.
Example	Set the interval of the transceiver monitoring as 1 minute. Switch(config)#transceiver-monitoring interval 1

transceiver threshold

Command	**transceiver threshold {default | {temperature | voltage | bias | rx-power | tx-power} {high-alarm | low-alarm | high-warn | low-warn} {<value> | default}}**

parameter

default	Restore the threshold as the default threshold set by the manufacturer. If the monitoring index is not specified, restore all thresholds, if the monitoring index is specified, restore the corresponding threshold only.
temperature	The monitoring index—temperature
voltage	The monitoring index—voltage
bias	The monitoring index—bias current
rx-power	The monitoring index—receiving power
tx-power	The monitoring index—sending power
high-alarm	High-alarm of the monitoring index, namely there is alarm with A+ if exceeding the threshold.
low-alarm	Low-alarm of the monitoring index, namely there is alarm with Aif exceeding the threshold.
high-warn	High-warn of the monitoring index, namely there is warning with W+ if exceeding the threshold.
low-warn	Low-warn of the monitoring index, namely there is warning with W- if exceeding the threshold.

default	The threshold is set by the manufacturer
Mode	Port mode
Usage Guide	The range of the threshold parameters is shown for each monitoring index in the following: Temperature: -128.00~128.00 ℃ Voltage: 0.00~7.00 V Bias current: 0.00~140.00 mA x-power: -50.00~9.00 dBM tx-power: -50.00~9.00 dBM The maximum length of the threshold parameter configured by the user is 20 bits. After the user configured a parameter threshold, the threshold set by the manufacturer will

	be labeled with the bracket when showing the threshold, and decide whether give an alarm according to the user's configuration.
Example	Configure tx-power threshold of the fiber module, the low-warn threshold is configured as -12 on ethernet1/0/1. Switch(config-if-ethernet1/0/1)#transceiver threshold tx-power low-warn -12

11.Commands for LLDP-MED

civic location

Command	**civic location {dhcp server | switch | endpointDev}** <*country-code*> **no civic location**

parameter

dhcp server	Set device type to be DHCP server
switch	Set device type to be Switch
endpointDev	Set device type to be LLDP-MED Endpoint
country-code	Set country code which consist of 2 letters, such as DE or US, it should accord the country code of ISO 3166 standard.

default	No location with Civic Address LCI format is configured on the port.
Mode	Port mode
Usage Guide	Configure device type and country code of the location with Civic Address LCI format and enter Civic Address LCI address mode to configure the more detailed location.
Example	Configure device type as switch and country code as US for the location with Civic Address LCI format on Ethernet 19. Switch(Config-If-Ethernet1/0/19)# civic location switch US Switch(Med-Civic)#

{description-language | province-state | city | county | street | locationNum | location | floor | room | postal | otherInfo}

Command	**{description-language | province-state | city | county | street | locationNum | location | floor | room | postal | otherInfo}** <*address*> **no {description-language | province-state | city | county | street | locationNum | location | floor | room | postal | otherInfo}**

parameter

description-language	language for describing location, such as 'English'
province-state	state, canton, region, province prefecture, and so on, such as 'clara'
city	city, such as 'New York'
county	county, parish, such as 'santa clara'
street	street, such as '1301 Shoreway Road'
locationNum	house number, such as '9'
location	name and occupant of a location, such as 'Carrillo's Holiday Market'
floor	floor number, such as '13'
room	room number, such as '1308'
postal	postal/zip code, such as '10027-1234'
otherInfo	Additional location information, such as 'South Wing'
address	detailed address information, it cannot exceed 250 characters

default

No detailed information of the location with Civic Address LCI is configured on the port.

Mode

Civic Address LCI address mode

Usage Guide

With this command, configure the detailed information of the location with Civic Address LCI on the port, it is able to configure 10 kinds of address types at most.

Example

Configure the detailed location information in Civic Address LCI address mode.

```
Switch(Med-Civic)# city Beijing
Switch(Med-Civic)# street shangdi
```

ecs location

Command

ecs location <*tel-number*>

no ecs location

parameter

tel-number	location characters with ECS ELIN format, such as emergent telephone number, it is character string with the length between 10 and 25.

default	No location with ECS ELIN format is configured.
Mode	Port mode
Usage Guide	Length range of the location character string between 10 and 25 with ECS ELIN format.
Example	Configure the location of ECS ELIN format on port 19. Switch(Config-If-Ethernet1/0/19)# ecs location 880-445-3381

lldp med fast count

Command	**lldp med fast count** <*value*> **no lldp med fast count**	
parameter	*value*	The number of sending the packets fast, its range from 1 to 10, unit is entries.
default	4	
Mode	Global mode	
Usage Guide	With this command, set the number for sending the packets fast.	
Example	Set the number of quick packages to 5 Switch(config)#lldp med fast count 5	

lldp med trap

Command	**lldp med trap {enable | disable}**
parameter	-
default	Disable
Mode	Port mode
Usage Guide	Enable or disable LLDP-MED TRAP of the port.
Example	Enable LLDP-MED TRAP of the port 19. Switch(Config-If-Ethernet1/0/19)# lldp med trap enable

lldp transmit med tlv all

Command	**lldp transmit med tlv all** **no lldp transmit med tlv all**
parameter	-
default	Port does not enable the function for Sending LLDP-MED TLV.
Mode	Port mode
Usage Guide	After configuring this command, if the port is able to send LLDP-MED TLV, the sent LLDP packets with LLDP-MED TLV supported by all switches. However, LLDP packets sent by the port without any LLDP-MED TLV after the switch configured the corresponding no command.
Example	Port 19 enables the function for sending LLDP-MED TLV. Switch(Config-If-Ethernet1/0/19)# lldp transmit med tlv all

lldp transmit med tlv capability

Command	**lldp transmit med tlv capability** **no lldp transmit med tlv capability**
parameter	-
default	The function is disabled for sending LLDP-MED Capability TLV.
Mode	Port mode
Usage Guide	After configuring this command, if the port is able to send LLDP-MED TLV, the sent LLDP packets with LLDP-MED Capability TLV. However, LLDP packets sent by the port without LLDP-MED Capability TLV after the switch configured the corresponding no command. Note: LLDP-MED Capability TLV is the important LLDP-MED TLV, if do not configure the port to send LLDP-MED Capability TLV firstly, other LLDP-MED TLV will not be sent.
Example	Port 19 enables the function for sending LLDP-MED Capability TLV. Switch(Config-If-Ethernet1/0/19)# lldp transmit med tlv capability

lldp transmit med tlv extendPoe

Command	**lldp transmit med tlv extendPoe** **no lldp transmit med tlv extendPoe**
parameter	-
default	The function is disabled for sending LLDP-MED Extended Power-Via-MDI TLV.

Mode	Port mode
Usage Guide	Configure specified port to send LLDP-MED extended power supply - Via-MDITLV. No command disables the function.
Example	Port 19 enables the function for sending LLDP-MED Extended Power-Via-MDI TLV. Switch(Config-If-Ethernet1/0/19)# lldp transmit med tlv extendPoe

lldp transmit med tlv location

Command	**lldp transmit med tlv location** **no lldp transmit med tlv location**
parameter	-
default	Disable
Mode	Port Mode
Usage Guide	Configure the specified port to send LLDP-MED Location Identification TLV. After configured this command, if the port has the capability of sending LLDP-MED TLV, the LLDP packets sent from the port will include LLDP-MED Location Identification TLV. Otherwise, the LLDP packets sent from the port will not include LLDP-MED Location Identification TLV by the no command even if the port has the capability of sending LLDP-MED TLV. Notice: Before configuring this function, the capability of sending LLDP-MED Capability TLV must be configured. If the device does not support POE or the POE function of the port is disabled by the command, this TLV will not be sent.
Example	Enable the port 19 to send LLDP-MED Location Identification TLV. Switch(Config-If-Ethernet1/0/19)#lldp transmit med tlv location

lldp transmit med tlv inventory

Command	**lldp transmit med tlv inventory** **no lldp transmit med tlv inventory**
parameter	-
default	The function is disabled for sending LLDP-MED Inventory Management TLVs
Mode	Port mode
Usage Guide	After configuring this command, if the port is able to send LLDP-MED TLV, LLDP packets with LLDP-MED Inventory Management TLVs sent by the port. However, LLDP packets without LLDP-MED Inventory Management TLVs sent by the port after the switch configured the corresponding no command. Note: LLDP-MED Capability TLV sent

	by the port must be configured before sending LLDP-MED Inventory Management TLVs, or else the configuration cannot be successful.
Example	Port 19 enables the function for sending LLDP-MED Inventory Management TLVs. Switch(Config-If-Ethernet1/0/19)# lldp transmit med tlv inventory

lldp transmit med tlv networkPolicy

Command	**lldp transmit med tlv networkPolicy** **no lldp transmit med tlv networkPolicy**
parameter	-
default	The function is disabled for sending LLDP-MED Network Policy TLV.
Mode	Port mode
Usage Guide	After configuring this command, if the port is able to send LLDP-MED TLV, LLDP packets with LLDP-MED Network Policy TLV sent by the port. However, LLDP packets without LLDP-MED Network Policy TLV sent by the port after the switch configured the corresponding no command. Note: LLDP-MED Capability TLV sent by the port must be configured before sending LLDP-MED Network Policy TLV, or else the configuration cannot be successful.
Example	Port 19 enables the function for sending LLDP-MED Network Policy TLV. Switch(Config-If-Ethernet1/0/19)# lldp transmit med tlv networkPolicy

network policy

Command	**network policy {voice | voice-signaling | guest-voice | guest-voice-signaling | softphone-voice | video-conferencing | streaming-video | video-signaling} [status {enable | disable}] [tag {tagged | untagged}] [vid {**<*vlan-id*>**| dot1p}] [cos <*cos-value*>] [dscp** <*dscp-value*>**]** **no network policy {voice | voice-signaling | guest-voice | guest-voice-signaling | softphone-voice | video-conferencing | streaming- video | video-signaling}**

parameter	**status**	Whether the network policy is usable.
	enable	Network Policy of the specified application type has been defined, enable is the default value of the network policy.
	disable	Network Policy of the specified application type has been defined, disable is the default value of the network policy

tag	Configure the specified application to uses tagged or untagged VLAN method
tagged	Configure the flow of the specified application to use the tagged vlan method, here, the fields (such as VLAN ID, Layer2 priority and DSCP value) are take effect
untagged	Configure the flow without tag for the specified application, the fields (such as VLAN ID, Layer2 priority) are ignored, only DSCP value field takes effect. Untagged is the default value of VLAN method.
vid	Configure VLAN ID that the specified application belongs to
vlan-id	Configure the value of VLAN ID, its range from 1 to 4094
dot1p	Configure the specified application to tag the flow by using 802.1p priority, at the same time, use vlan 0 to load the flow.
cos	Configure the priority of Ethernet frame for VLAN
cos-value	Configure the value of Ethernet frame priority for VLAN, its range from 0 to 7, the default value is 5.
dscp	Configure DSCP of VLAN.
dscp-value	DSCP value input by the user, its range from 0 to 63, the default value is 46

default	No network policy is configured on the port.
Mode	Port mode
Usage Guide	User is able to configure the network policy of many kinds on a port, but their application types cannot repeat, and a kind of network policy corresponds to a LLDP-MED network policy TLV. If user configures multi-policy for a port, it will send multi-LLDP-MED network policy TLV to a LLDP packet. If user does not configure any network policy, no LLDP-MED network policy TLV is sent to LLDP packet.
Example	Configure the network policy with the application type of voice on port 19. Switch(Config-If-Ethernet1/0/19)# network policy voice tag tagged vid 2 cos 6 dscp 23

show lldp

Command	**show lldp**
parameter	-
default	-
Mode	Admin mode
Usage Guide	Show the global LLDP and LLDP-MED configuration
Example	Show the global LLDP and LLDP-MED configuration Switch#show lldp

-----LLDP GLOBAL INFORMATIONS-----
LLDP has been enabled globally.
LLDP enabled port : Ethernet1/0/19
LLDP interval :5
LLDP txTTL :20
LLDP NotificationInterval :5
LLDP txDelay :1
LLDP-MED FastStart Repeat Count :4
----------END----------

show lldp [interface ethernet <IFNAME>]

Command	**show lldp [interface ethernet <IFNAME>]**
parameter	**IFNAME** Port name
default	-
Mode	Admin mode
Usage Guide	Show LLDP and LLDP-MED configurations on the current port.
Example	Show LLDP and LLDP-MED configuration of the port 19. Switch#show lldp interface ethernet 1/0/19 Port name :Ethernet1/0/19 LLDP Agent Adminstatus : Both LLDP Operation TLV : default LLDP Trap Status : disable LLDP maxRemote :100 LLDP Overflow handle : discard LLDP interface remote status : Free MED Optional TLV : capabilities networkPolicy location power inventory MED Trap Status:Enable MED TLV Transmit Status:Disable MED Fast Transmit Status:Disable

show lldp neighbors

Command	**show lldp neighbors [interface ethernet <*IFNAME*>]**
parameter	***IFNAME*** Port number; for example :1/0/1

default	-
Mode	Admin mode
Usage Guide	With this command, checking LLDP and LLDP-MED information of the neighbors after the port received LLDP packets sent by the neighbors.
Example	Show the neighbor information on port 1. Switch #show lldp neighbors interface ethernet 1/0/1 Port name : Ethernet1/0/1 Port Remote Counter : 1 TimeMark :20 ChassisIdSubtype :4 ChassisId :00-03-0f-00-00-02 PortIdSubtype :Local PortId :3 PortDesc :Ethernet1/0/1 SysName :switch SysDesc :switch Device, Compiled Feb 12 17:39:53 2011 SoftWare Version 6.2.30.0 BootRom Version 4.0.1 HardWare Version Device serial number Copyright (C) 2001-2011 by Vendor. All rights reserved

show lldp traffic

Command	**show lldp traffic**
parameter	-
default	-
Mode	Admin Mode.
Usage Guide	After the port received the LLDP packets from the neighbor, this command can be used to view the statistics of the sent and received packets of LLDP and LLDP-MED.
Example	View the statistics of the sent and received packets after the LLDP function is enabled. Switch(config)#show lldp traffic PortName Ageouts FramesDiscarded FramesInErrors FramesIn FramesOut TLVsDiscarded TLVsUnrecognized ---------- ------- ---------- ---------- -------- --------- ---------- ---------- Ethernet1/0/1 0 0 0 0 7 0

12.Commands for bpdu-tunnel

bpdu-tunnel-protocol

Command	**bpdu-tunnel-protocol{stp| gvrp| dot1x| user-defined-protocol <name>}** **no bpdu-tunnel-protocol {stp| gvrp| dot1x| user-defined-protocol <name>}**

parameter	**stp**	enable bpdu-tunnel-protocol of stp function in port.
	gvrp	enable bpdu-tunnel-protocol of avrp function in port.
	dot1x	enable bpdu-tunnel-protocol of dot1x function in port.
	name	enable bpdu-tunnel-protocol of neme function in port, the protocol name range from 1 to 32 bytes, and it made up with character, data, underline and the head and tail character can not be underline

default	-
Mode	Port Mode.
Usage Guide	When finished configure bpdu-tunnel-protocol destination MAC address of some protocol, users can enable bpdu-tunnel-protocol function of protocol in port. Stp, gvrp or dot1x function mutex with bpdu-tunnel-protocol function in port, namely, if configured stp, gvrp or dot1x function in port, the bpdu-tunnel-protocol function of the protocol configured failed; if configured bpdu-tunnel-protocol function of this protocol in port, stp, gvrp or dot1x function can not configured in port.
Example	Configure bpdu-tunnel-protocol to enable stp protocol in port 1/0/1. Switch(Config-If-Ethernet1/0/1)# bpdu-tunnel-protocol stp

bpdu-tunnel-protocol group-mac

Command	**bpdu-tunnel-protocol {stp| gvrp| dot1x} {group-mac <mac> | default-group-mac}** **no bpdu-tunnel-protocol {stp| gvrp| dot1x}**

parameter	**stp**	configure bpdu-tunnel-protocol mac of stp protocol;
	gvrp	configure bpdu-tunnel-protocol mac of gvrp protocol;
	dot1x	configure bpdu-tunnel-protocol mac of dot1x protocol;
	mac	bpdu-tunnel-protocol mac address must be multicast address and

		it can not be protocodl saved address, namely address between 01-80-c2-00-00-00 and 01-80-c2-00-00-30;
	default-group-mac	the default mac address is 01-00-0c-cd-00-02.

default	-
Mode	Global Mode.
Usage Guide	This command must be configured before configure bpdu-tunnel-protocol in port.
Example	Configure 01-01-00-0c -00-02 bpdu-tunnel-protocol of stp protocol. Switch(Config)# bpdu-tunnel-protocol stp group-mac 01-01-00-0c -00-02

bpdu-tunnel-protocol protocol-mac

Command	**bpdu-tunnel-protocol user-defined-protocol <name> protocol-mac <mac> {group-mac <mac> | default-group-mac}** **no bpdu-tunnel-protocol user-defined-protocol <name>**

parameter	**name**	it is the protocol name and the protocol name includes 1 to 32 characters, and it makes up with character, data and underline, the head and tail character can not be underline;
	group-mac <mac>	it is the address of bpdu-tunnel-protocol mac and it must be multicast address, and it is not protocol saved address, namely the address between 01-80-c2-00-00-00 and 01-80-c2-00-00-30
	protocol-mac <mac>	it is the mac address of protocol;
	default-group-mac	The default mac address is 01-00-0c-cd-00-02

default	-
Mode	Global Mode
Usage Guide	The command must be configured before bpdu-tunnel-protocol in port.
Example	Configure 01-01-00-0c-00-03 to be the bpdu-tunnel-protocol of mrpp protocol. Switch(Config)# bpdu-tunnel-protocol user-defined-protocol mrpp protocol-mac 00-03-0f-00-00-02 group-mac 01-01-00-0c -00-03

bpdu-tunnel-protocol ethernetii

Command	**bpdu-tunnel-protocol user-defined-protocol <name> protocol-mac**

	<mac> encape-type ethernetii protocol-type <type> {group-mac <mac> | default-group-mac} **no bpdu-tunnel-protocol user-defined-protocol <name>**

parameter		
	name	it is the protocol name and the protocol name includes 1 to 32 characters, and it makes up with character, data and underline, the head and tail character can not be underline;
	protocol-mac <mac>	it is the mac address of protocol;
	type	the value of protocol and the format is xx-xx
	group-mac <mac>	it is the address of bpdu-tunnel-protocol mac and it must be multicast address, and it is not protocol saved address, namely the address between 01-80-c2-00-00-00 and 01-80-c2-00-00-30;
	default-group-mac	The default mac address is 01-00-0c-cd-00-02.

default	-
Mode	Global Mode
Usage Guide	The command must be configured before bpdu-tunnel-protocol in port.
Example	Configure 01-01-00-0c-00-04 to be the bpdu-tunnel-protocol of lldp protocol. Switch(Config)# bpdu-tunnel-protocol user-defined-protocol lldp protocol-mac 01-80-c2-00-00-0e encape-type ethernetii protocol-type 88-cc group-mac 01-01-00-0c -00-04

bpdu-tunnel-protocol snap

Command	**bpdu-tunnel-protocol user-defined-protocol <name> protocol-mac <mac> encape-type snap {oui <oui>| } protocol-type <type> {group-mac <mac> | default-group-mac}** **no bpdu-tunnel-protocol user-defined-protocol <name>**

parameter		
	name	it is the protocol name and the protocol name includes 1 to 32characters, and it makes up with character, data and underline, the head and tail character can not be underline
	protocol-mac <mac>	it is the mac address of protocol
	oui	the value of oui and the format is xx-xx-xx
	type	the value of protocol and the format is xx-xx
	group-mac <mac>	it is the address of bpdu-tunnel-protocol mac and it must be multicast address, and it is not protocol saved address, namely the address between 01-80-c2-00-00-00 and 01-80-c2-00-00-30
	default-group-mac	The default mac address is

	01-00-0c-cd-00-02

default	-
Mode	Global Mode
Usage Guide	The command must be configured before bpdu-tunnel-protocol in port.
Example	Configure 01-01-00-0c-00-05 to be the bpdu-tunnel-protocol of Apple Talk protocol. Switch(Config)# bpdu-tunnel-protocol user-defined-protocol lldp protocol-mac 00-03-c2-00-00-05 encape-type snap oui 08-00-07 protocol-type 80-9b group-mac 01-01-00-0c -00-05

bpdu-tunnel-protocol llc

Command	**bpdu-tunnel-protocol user-defined-protocol <name> protocol-mac <mac> encape-type llc dsap <dsap> ssap <ssap> {group-mac <mac> | default-group-mac}** **no bpdu-tunnel-protocol user-defined-protocol <name>**

parameter		
	name	it is the protocol name and the protocol name includes 1 to 32 characters, and it makes up with character, data and underline, the head and tail character can not be underline
	protocol-mac <mac>	it is the mac address of protocol
	dsap	The dsap value of protocol and it ranges from 0 to 255
	ssap	The ssap value of protocol and it ranges from 0 to 255;
	group-mac <mac>	it is the address of bpdu-tunnel-protocol mac and it must be multicast address, and it is not protocol saved address, namely the address between 01-80-c2-00-00-00 and 01-80-c2-00-00-30
	default-group-mac	The default mac address is 01-00-0c-cd-00-02

default	-
Mode	Global Mode
Usage Guide	The command must be configured before bpdu-tunnel-protocol in port.
Example	Configure 01-01-00-0c-00-06 to be the bpdu-tunnel-protocol of NetBIOS protocol. Switch(Config)# bpdu-tunnel-protocol user-defined-protocol lldp protocol-mac 00-03-c2-00-00-06 encape-type llc dsap 240 ssap 224 group-mac 01-01-00-0c -00-06

13.Commands for EEE Energy-saving

eee enable

Command	**eee enable** **no eee enable**
parameter	-
default	-
Mode	Port Mode
Usage Guide	It supports that configure EEE energy-saving function for the appointed port. There is not the EEE energy-saving function on port as default. After configuring the port to enable EEE energy-saving function, the port will enter the energy-saving state if stop to send packets to the port, the state of port is down. When sending packets to the port, the mode will changed from power saving mode to normal mode.
Example	Enable EEE energy-saving function: Switch(config-if-ethernet1/0/1)#eee enable

14.Commands for LED shut-off

port-led shutoff time-range

Command	**port-led shutoff time-range** <*time-range-name*> **no port-led shutoff**	
parameter	*time-range-name*	it is the name of the time-range defined by user, it is made up by 1 to 64 characters including letters, numbers, underlines. The first and last characters cannot be the underlines
default	-	
Mode	Global Configuration Mode	
Usage Guide	The LED shut-off function of the port can make all the LEDs off according to the configured time-range by user no matter what the link-act status is. It can save power. When there is no configured time-range, the default is all the times; when the range is exceeded, the port LED can be on according to the link-act status	
Example	Configure all the LEDs to be off in t1. switch(config)#: port-led shutoff time-range t1	