Content

Chapter 1 Commands for Network Port Configuration

1.1 Commands for Ethernet Port Configuration

1.1.1 bandwidth

Command: bandwidth control *<bandwidth>* {transmit | receive | both}

 no bandwidth control

Function: Enable the bandwidth limit function on the port; the no command disables this function.

Parameter: *<bandwidth>* is the bandwidth limit, which is shown in kbps ranging between 1-1000000K; both refers to the bandwidth limit when the port receives and sends data, receive refers to the bandwidth **limit** will only performed when the switch receives data from out side, while **transmit** refers to the function will be perform on sending only.

Command Mode: Port Mode.

Default: Bandwidth limit disabled by default.

Usage Guide: When the bandwidth limit is enabled with a size set, the max bandwidth of the port is determined by this size other than by 10/100/1000M. If **[both | receive | transmit]** keyword is not specified, the default is **both**.

Note: The bandwidth limit can not exceed the physic maximum speed on the port. For example, an 10/100M Ethernet port can not be set to a bandwidth limit at 101000K (or higher), but applicable on a 10/100/1000 port working at a speed of 100M. If the actual bandwidth is not a integral multiple of chip bandwidth granularity, it will be modified automatically. For example, a chip bandwidth granularity is 64K, but the input bandwidth is 50, the bandwidth will be modified as 64K.

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

1.1.2 combo-forced-mode

Command：combo-forced-mode {copper-forced | copper-preferred-auto | sfp-forced | sfp-preferred-auto }

Function：Sets to combo port mode (combo ports only).

Parameters：**copper-forced** forces use of copper cable port; **copper-preferred-auto** for copper cable port first; **sfp-forced** forces use of fiber cable port; **sfp-preferred-auto** for fiber cable port first.。

Command mode: Port Mode.

Default: The default setting for combo mode of combo ports is sfp-preferred-auto

Usage Guide: The combo mode of combo ports and the port connection condition determines the active port of the combo ports. A combo port consists of one fiber port and a copper cable port. It should be noted that the speed-duplex command applies to the copper cable port while the negotiation command applies to the fiber cable port, they should not conflict. For combo ports, only one, a fiber cable port or a copper cable port, can be active at a time, and only this port can send and receive data normally. For the determination of the active port in a combo port, see the table below. The headline row in the table indicates the combo mode of the combo port, while the first column indicates the connection conditions of the combo port, in which Note:

1. Combo port is a conception involving the physical layer and the LLC sublayer of the datalink layer. The status of a combo port will not affect any operation in the MAC sublayer of the datalink layer and upper layers. If the bandwidth limit for a combo port is 1Mbps, then this 1Mbps applies to the active port of this combo port, regardless of the port type being copper or fiber.

2. If a combo port connects to another combo port, it is recommended for both parties to use the forced copper or the forced fiber mode.

3. Run show interface under Admin Mode to check for the active port of a combo port .The following result indicates if the active port for a combo port is the fiber (or copper) cable port: Hardware is Gigabit-combo, active is fiber (or copper)

Example：Setting ports 1/0/21-24 to the forced fiber mode.

Switch(config)#interface ethernet 1/0/21-24

Switch(Config-If-Port-Range)#combo-forced-mode sfp-forced

1.1.3 clear counters interface

Command: clear counters [interface {ethernet *<interface-list>* | vlan *<vlan-id>* | port-channel *<port-channel-number>* | *<interface-name>*}]

Function: Clears the statistics of the specified port.

Parameters: *<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.

Command mode: Admin Mode.

Default: Port statistics are not cleared by default.

Usage Guide: If no port is specified, then statistics of all ports will be cleared.

Example: Clearing the statistics for Ethernet port1/0/1.

Switch#clear counters interface ethernet 1/0/1

1.1.4 flow control

Command: flow control

　　　　　　no flow control

Function: Enables the flow control function for the port: the "**no flow control"** command disables the flow control function for the port.

Command mode: Port Mode.

Default: Port flow control is disabled by default.

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.

Note: Port flow control function is not recommended unless the users need a slow speed, low performance network with low packet loss. Flow control will not work between different cards in the switch. When enable the port flow control function, speed and duplex mode of both ends should be the same.

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

1.1.5 interface ethernet

Command: interface ethernet *<interface-list>*

Function: Enters Ethernet Port Mode from Global Mode.

Parameters: *<interface-list>* stands for port number.

Command mode: Global Mode

Usage Guide: Run the **exit** command to exit the 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)#

1.1.6 loopback

Command: loopback

        no loopback

Function: Enables the loopback test function in an Ethernet port; the no command disables the loopback test on an Ethernet port.

Command mode: Port Mode.

Default: Loopback test is disabled in Ethernet port by default.

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

1.1.7 name

Command: name *<string>*

        no name

Function: Configure name for the appointed port; the no command cancels this configuration.

Parameters: *<string>* is string and 200 characters are most.

Command Mode: Port Mode.

Default: There is no name as default.

Usage Guide: This command is good for user to manage switch. User can configure the name according to the using situation of port, for example, the port of 1/0/1-2 is used by financial sector, so define its name as financial; the port of 1/0/9 is used by engineering sector, so define its name as engineering; the port of 1/0/12 is connected to server, so define its name as Servers. Then, the port using situation is clear.

Example: Appoint the name of the port of 1/0/1-2 as financial.

Switch(config)#interface ethernet 1/0/1-2
Switch(Config-If-Port-Range)#name financial

1.1.8 negotiation

Command: negotiation {on | off}

Function: Enables/Disables the auto-negotiation function of a 1000Base-FX port.

Parameters: on: enables the auto-negotiation; off: disable the auto-negotiation.

Command mode: Port configuration Mode.

Default: Auto-negotiation is enabled by default.

Usage Guide: This command applies to 1000Base-FX interface only. The **negotiation** command is not available for 1000Base-TX or 100Base-TX interface. For combo port, this command applies to the 1000Base-FX port only but has no effect on the 1000Base-TX port. To change the negotiation mode, speed and duplex mode of 1000Base-TX port, use **speed-duplex** command instead.

Example: Port 1 of Switch1 is connected to port 1 of Switch2, the following will disable the negotiation for both ports.

Switch1(config)#interface ethernet1/0/1

Switch1(Config-If-Ethernet1/0/1)#negotiation off

Switch2(config)#interface ethernet1/0/1

Switch2(Config-If-Ethernet1/0/1)#negotiation off

1.1.9 port-rate-statistics interval

Command: port-rate-statistics interval *<interval-value>*

Function: Set the interval of port-rate-statistics, ranging from 5 to 600.

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.

Command Mode: Global Mode

Usage Guide: None.

Example: Count the interval of port-rate-statistics as 20 seconds.

Switch(config)#port-rate-statistics interval 20

1.1.10 port-scan-mode

Command: port-scan-mode {interrupt | poll}

           no port-scan-mode

Function: Configure the scan mode of the port as "interrupt" or "poll", the no command restores the default scan mode.

Parameter: interrupt: the interrupt mode; poll: the poll mode.

Command Mode: Global Mode.

Default: Poll mode.

Usage Guide: There are two modes that can respond up/down event of the port. The interrupt mode means that interrupt hardware to announce the up/down change, the poll mode means that software poll can obtain the port event, the first mode is rapid. If using poll mode, the convergence time of MRPP is several hundred milliseconds, if using interrupt mode, the convergence time is less than 50 milliseconds.

Notice: The scan mode of the port usually configured as poll mode, the interrupt mode is

only used to the environment of the good performance, but the security of the poll mode is better.

Example: Configure the scan mode of the port as interrupt mode.

Switch(config)#port-scan-mode interrupt

1.1.11 port-status query interval

This command is not supported by the switch.

1.1.12 storm-control

Command：**storm-control {unicast | broadcast | multicast} <packets>**

              no storm-control {unicast | broadcast | multicast}

Function：Configure the broadcast, multicast or unicast flow which is allowed passing by all ports. The no command disables this suppression function, it means the allowed wire-speed broadcast, multicast and unicast flow.

Parameters：**unicast** means suppression unicast flow, **multicast** means suppression multicast flow, **broadcast** means suppression broadcast flow, **<packets>** is the limit of packet number, ranging from 1 to 1488905. For non-10GB ports, the unit of <packets> is PPS, that is, the value of <packets> is the number of packets allowed to pass per second; for 10GB ports, the unit is KPPS, that is, the value of <packets> multiplies 1000 makes the number of packets allowed, so the value should be less than 14880.

Command mode: Port Mode.

Default: There is no suppression.

Usage Guide：Without any VLAN, all switch ports are in the same broadcast domain. For the above three flow, the switch will send to all ports in broadcast domain, it may form the broadcast storm. The broadcast storm extremely affect the switch performance. Enabling the storm-control function of the switch can protect the switch affected by the broadcast storm less. Notice: This command significance of the 10G ports and other ports is different. when configure the broadcast flow allowed passing the 10G port as 3, it means when there are more than 3 broadcast packets were received per second, the extra part will be dropped.

Example：Configure 3 broadcast packets are allowed passing the port (1000M) of 1/0/8-10 per second.

Switch(config)#interface ethernet 1/0/8-10

Switch(Config-If-Port-Range)#storm-control broadcast 3

1.1.13 rate-violation

Command: rate-violation <200-2000000> [recovery <0-86400>]

          no rate-violation

Function: Set the max packet reception rate of a port. If the rate of the received packet violates the packet reception rate, shut down this port and configure the recovery time, the default is 300s. The no command will disable the rate-violation function of a port.

The rate-violation means the port received all packets rate (the number of the received packets per second), do not distinguish the packet type.

Parameters: ***<200-2000000>*** the max packet reception rate of a port, the unit is packets/s.

<0-86400>: The interval of recovery after shutdown, the unit is s.

recovery: After a period of time the port can recover shutdown to up again. ***<0-86400>*** is the timeout of recovery. For example, if the shutdown of a port happens after the packet reception rate exceeding the limit, the port will be up again when the user-defined timeout expires. The default timeout is 300s, while 0 means the recovery will never happen.

Command Mode: Port Mode

Default: There is no control operation for rate-violation.

Usage Guide: This command is mainly used to detect the abnormal port flow. For example, when there are a large number of broadcast messages caused by a loopback, which affect the processing of other tasks, the port will be shut down to ensure the normal processing of the switch.

Example: Set the rate-violation of port 1/0/8-10 (GB ports) of the switch as 10000pps and the port recovery time as 1200 seconds.

Switch(config)#interface ethernet 1/0/8-10

Switch(Config-Port-Range)#rate-violation 10000 recovery 1200

1.1.14 rate-violation control

This command is not supported by the switch**.**

1.1.15 remote-statistics interval

This command is not supported by the switch.

1.1.16 show interface

Command: show interface [ethernet *<interface-number>* | port-channel *<port-channel-number>* | loopback *<loopback-id>* | vlan *<vlan-id>* | tunnel *<tunnel-id>* | *<interface-name>*] [detail]

show interface ethernet status

show interface ethernet counter {packet | rate}

Function: Show information of layer 3 or layer 2 port on the switch

Parameter: *<vlan-id>* is the VLAN interface number, the value range from 1 to 4094. *<tunnel-number>* is the tunnel number, the value range from 1 to 50. *<loopback-id>* is the loop back number, the value range from 1 to 1024. *<interface-number>* is the port number of the Ethernet, status show important information of all the layer 2 ports. counter {packet | rate} show package number or rate statistics of all layer 2 ports. *<port-channel-number>* is the number of the aggregation interface, *<interface-name>* is the name of the interface such as port-channel1. [detail] show the detail of the port.

Command Mode: Admin and Configuration Mode.

Default: Information not displayed by default

Usage Guide: While for vlan interfaces, the port MAC address, IP address and the statistic state of the data packet will be shown; for tunnel port, this command will show tunnel interface state and the statistic state of control layer receives/sends tunnel data packet, about the statistic data of physics interface receiving/sending data packet, please refer to show interface ethernet command; for loopback port, this command will show the interface statistic state of IP address and receiving/sending data packet; As for Ethernet port, this command will show port speed rate, duplex mode, flow control switch state, broadcast storm suppression of the port and the statistic state of the data packets; for aggregated port, port speed rate, duplex mode, flow control switch state, broadcast storm suppression of the port and the statistic state of the data packets will be displayed. The information of all ports on the switch will be shown if no port is specified.

Using [detail] to show the detail information for ethernet port and port-channel port, the information is related with the type of switch, board card.

For ethernet port, using status to show important information of all the layer 2 ports by list format. each port is a row, the showing information include port number, Link, Protocl status, Speed, Duplex, Vlan, port type and port name; counter packets show package number statistics of all ethernet ports, include layer 2 unicast, broadcast, multicast, error of input and output redirection package number; counter rate show the rate statistics of all ethernet ports, input and output package number, byte number in 5 minutes and 5 seconds.

Example: Show the information of VLAN 1

Switch#show interface vlan 1

Vlan1 is up, line protocol is up, dev index is 2005

Device flag 0x1003(UP BROADCAST MULTICAST)

IPv4 address is:

192.168.10.1   255.255.255.0   (Primary)

Hardware is EtherSVI, address is 00-00-00-00-00-01

MTU is 1500 bytes , BW is 0 Kbit

Encapsulation ARPA, loopback not set

5 minute input rate 0 bytes/sec, 0 packets/sec

5 minute output rate 0 bytes/sec, 0 packets/sec

The last 5 second input rate 0 bytes/sec, 0 packets/sec

The last 5 second output rate 0 bytes/sec, 0 packets/sec

Input packets statistics:

Input queue 0/600, 0 drops

0 packets input, 0 bytes, 0 no buffer

0 input errors, 0 CRC, 0 frame alignment, 0 overrun

0 ignored, 0 abort, 0 length error

Output packets statistics:

0 packets output, 0 bytes, 0 underruns

0 output errors, 0 collisions, 0 late collisions

Show the information of loopback 1:

Switch#show interface loopback 1

Loopback1 is up, line protocol is up, dev index is 2006

Device flag 0x100b(UP BROADCAST LOOP MULTICAST)

IPv4 address is:

    1.1.1.1   255.255.255.255   (Primary)

MTU is 1500 bytes , BW is 0 Kbit

5 minute input rate 0 bytes/sec, 0 packets/sec

5 minute output rate 0 bytes/sec, 0 packets/sec

The last 5 second input rate 0 bytes/sec, 0 packets/sec

The last 5 second output rate 0 bytes/sec, 0 packets/sec

Input packets statistics:

Input queue 0/600, 0 drops

0 packets input, 0 bytes, 0 no buffer

0 input errors, 0 CRC, 0 frame alignment, 0 overrun

0 ignored, 0 abort, 0 length error

Output packets statistics:

0 packets output, 0 bytes, 0 underruns

0 output errors, 0 collisions, 0 late collisions

Show the information of tunnel 1

Switch#show interface tunnel 1

Tunnel1 is up, line protocol is up, dev index is 2007

Device flag 0x91(UP P2P NOARP)

IPv4 address is:

(NULL)

5 minute input rate 0 bytes/sec, 0 packets/sec

5 minute output rate 0 bytes/sec, 0 packets/sec

The last 5 second input rate 0 bytes/sec, 0 packets/sec

The last 5 second output rate 0 bytes/sec, 0 packets/sec

Input packets statistics:

Input queue 0/600, 0 drops

0 packets input, 0 bytes, 0 no buffer

0 input errors, 0 CRC, 0 frame alignment, 0 overrun

0 ignored, 0 abort, 0 length error

Output packets statistics:

0 packets output, 0 bytes, 0 underruns

0 output errors, 0 collisions, 0 late collisions

Show the information of port 1/0/1.

Switch#show interface e1/0/1

Ethernet1/0/1 is up, line protocol is down

Ethernet1/0/1 is layer 2 port, alias name is (null), index is 1

Hardware is Gigabit-TX, address is 00-03-0f-02-fc-01

PVID is 1

MTU 1500 bytes, BW 10000 Kbit

Encapsulation ARPA, Loopback not set

Auto-duplex: Negotiation half-duplex,　　Auto-speed: Negotiation 10M bits

FlowControl is off, MDI type is auto

5 minute input rate 0 bytes/sec, 0 packets/sec

5 minute output rate 0 bytes/sec, 0 packets/sec

The last 5 second input rate 0 bytes/sec, 0 packets/sec

The last 5 second output rate 0 bytes/sec, 0 packets/sec

Input packets statistics:

0 input packets, 0 bytes, 0 no buffer

0 unicast packets, 0 multicast packets, 0 broadcast packets

0 input errors, 0 CRC, 0 frame alignment, 0 overrun, 0 ignored

0 abort, 0 length error, 0 pause frame

Output packets statistics:

0 output packets, 0 bytes, 0 underruns

0 unicast packets, 0 multicast packets, 0 broadcast packets

0 output errors, 0 collisions, 0 late collisions, 0 pause frame

Show the important information of all layer 2 ports:

Switch#show interface ethernet status

Codes: A-Down - administratively down, a - auto, f - force, G - Gigabit

Interface	Link/Protocol	Speed	Duplex	Vlan	Type	Alias Name
1/0/1	UP/UP	f-100M	f-full	1	G-TX	
1/0/2	UP/UP	a-100M	a-full	trunk	G-TX	
1/0/3	UP/DOWN	auto	auto	1	G-TX	
1/0/4	A-Down/DOWN	auto	auto	1	G-TX	

…

Show the package number statistics information of all layer 2 ports:

Switch#Show interface ethernet counter packet

Interface		Unicast(pkts)	BroadCast(pkts)	MultiCast(pkts)	Err(pkts)
1/0/1	IN	12,345,678	12,345,678,9	12,345,678,9	4,567
	OUT	23,456,789	34,567,890	5,678	0
1/0/2	IN	0	0	0	0
	OUT	0	0	0	0
1/0/3	IN	0	0	0	0
	OUT	0	0	0	0
1/0/4	IN	0	0	0	0
	OUT	0	0	0	0

…

Show the rate statistics information of all layer 2 ports:

Switch#Show interface ethernet counter rate

Interface		IN(pkts/s)	IN(bytes/s)	OUT(pkts/s)	OUT(bytes/s)
1/0/1	5m	13,473	12,345,678	12,345	1,234,567
	5s	135	65,800	245	92,600
1/0/2	5m	0	0	0	0
	5s	0	0	0	0
1/0/3	5m	0	0	0	0
	5s	0	0	0	0
1/0/4	5m	0	0	0	0
	5s	0	0	0	0

…

1.1.17 shutdown

Command: shutdown

> **no shutdown**

Function: Shuts down the specified Ethernet port; the no command opens the port.

Command mode: Port Mode.

Default: Ethernet port is open by default.

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

1.1.18 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]]}| force10g-full} no speed-duplex

Function: Sets the speed and duplex mode for 1000Base-TX, 100Base-TX or 100Base-FX ports; the no command restores the default speed and duplex mode setting, i.e., auto speed negotiation and duplex.

Parameters: auto is the auto speed and duplex negotiation, 10 is 10Mbps speed, 100 is 100Mbps speed, 1000 is 1000Mbps speed, auto is duplex negotiation, full is full-duplex, half is half-duplex; 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; force100-fx is the forced 100Mbps at full-duplex mode; module-type is the type of 100Base-FX module; auto-detected: automatic detection; no-phy-integrated: there is no phy-integratd 100Base-FX module; phy-integrated: phy-integratd 100Base-FX module; force1g-half is the forced 1000Mbps speed at half-duplex mode; force1g-full is the forced 1000Mbps speed at full-duplex mode; 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. force10g-full is the forced 10000Mbps speed at full-duplex mode.

Command mode: Port Mode.

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

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

1.1.19 switchport discard packet

This command is not supported by switch.

1.1.20 virtual-cable-test

Command: virtual-cable-test interface (ethernet |)IFNAME

Function: Test the link of the twisted pair cable connected to the Ethernet port. The response may include: well, short, open, fail. If the test information is not well, the location of the error will be displayed (how many meters it is away from the port).

Parameter: *<interface-list>*: Port ID

Command Mode: Admin Mode.

Default Settings: No link test.

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.

Notice: combo port supports VCT function detection only at copper cable port mode, 100M port does not diagnose the link length at Link UP 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 1/0/25.

Switch#virtual-cable-test interface ethernet 1/0/25

Interface Ethernet1/0/25:

Cable pairs　　　Cable status　　　Error length (meters)

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(1, 2)　　　　　　open　　　　　　5

(3, 6)　　　　　　open　　　　　　5

(4, 5)　　　　　　open　　　　　　5

(7, 8)　　　　　　short　　　　　5

Chapter 2 Commands for Port Isolation Function

2.1 isolate-port group

Command: isolate-port group <*WORD*>

　　　　no isolate-port group <*WORD*>

Function: Set a port isolation group, which is the scope of isolating ports; the no operation of this command will delete a port isolation group and remove all ports out of it.

Parameters: <*WORD*> is the name identification of the group, no longer than 32 characters.

Command Mode: Global Mode.

Default: None.

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

2.2 isolate-port group switchport interface

Command: isolate-port group <*WORD*> switchport interface [ethernet] <*IFNAME*>

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

Function: Add one port or a group of ports into a port isolation group to isolate, which will become isolated from the other ports in the group. The no operation of this command will remove one port or a group of ports out of a port isolation group, which will be able to communicate will ports in that group normally. If the ports removed from the group still belong to another port isolation group, they will remain isolated from the ports in that group. If an Ethernet port is a member of a convergence group, it should not be added into a port isolation group, and vice versa, a member of a port isolation group should not be added into an aggregation group. But one port can be a member of one or more port

isolation groups.

Parameters: **<WORD>** is the name identification of the group, no longer than 32 characters. If there is no such group with the specified name, create one; **ethernet** means that the ports to be isolated is Ethernet ones, followed by a list of Ethernet ports, supporting symbols like ";" and "-". For example: "ethernet 1/0/1;3;4-7;8"; **<IFNAME>** is the name of the interface, such as e1/0/1. If users use interface name, the parameter of **ethernet** will not be required.

Command Mode: Global Mode.

Default: None.

Usage Guide: Users can add Ethernet ports into 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".

Switch(config)#isolate-port group test switchport interface ethernet 1/0/1-2; 1/0/5

2.3 isolate-port apply

Command: isolate-port apply [<l2|l3|all>]

Function: This command will apply the port isolation configuration to isolate layer-2 flows, layer-3 flows or all flows.

Parameters: **<l2|l3|all>** the flow to be isolated, l2 means isolating layer-2 flows, l3 means isolating layer-3 flows, all means isolating all flows.

Command Mode: Global Mode.

Default: Isolate all flows.

Usage Guide: User can apply the port isolation configuration to isolate layer-2 flows, layer-3 flows or all flows according to their requirements.

Example: Only apply port isolation to layer-2 flows on the switch.

Switch(config)#isolate-port apply l2

2.4 show isolate-port group

Command: show isolate-port group [<WORD>]

Function: Display the configuration of port isolation, including all configured port isolation groups and Ethernet ports in each group.

Parameters: **<WORD>** the name identification of the group, no longer than 32 characters; no parameter means to display the configuration of all port isolation groups.

Command Mode: Admin Mode and Global Mode.

Default: Display the configuration of all port isolation groups.

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

Chapter 3 Commands for Port Loopback Detection Function

3.1 debug loopback-detection

Command: debug loopback-detection

Function: After enabling the loopback detection debug on a port, BEBUG information will be generated when sending, receiving messages and changing states.

Parameters: None.

Command Mode: Admin Mode.

Default: Disabled by default.

Usage Guide: Display the message sending, receiving and state changes with this command.

Example:

Switch#debug loopback-detection

%Jan 01 03:29:18 2006 Send loopback detection probe packet:dev Ethernet1/0/10, vlan id 1

%Jan 01 03:29:18 2006 Send loopback detection probe packet:dev Ethernet1/0/10, vlan id 2

3.2 loopback-detection control

Command: loopback-detection control {shutdown |block| learning}

       no loopback-detection control

Function: Enable the function of loopback detection control on a port, the no operation of this command will disable the function.

Parameters: 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.

       learning disable the control method of learning MAC addresses on the port, not forwarding traffic and delete the MAC address of the port.

Default: Disable the function of loopback diction control.

Command Mode: Port Mode.

Usage Guide: If there is any loopback, the port will not recovery the state of be controlled

after enabling control operation on the port. If the overtime is configured, the ports will recovery normal state when the overtime is time-out. If the control method is block, the corresponding relationship between instance and vlan id should be set manually by users, it should be noticed when be used.

Example: Enable the function of loopback detection control under port1/0/2 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

3.3 loopback-detection control-recovery timeout

Command: loopback-detection control-recovery timeout <0-3600>

Function: This command is used to recovery to uncontrolled state after a special time when a loopback being detected by the port entry be controlled state.

Parameters: *<0-3600>* second is recovery time for be controlled state, 0 is not recovery state.

Default: The recovery is not automatic by default.

Command 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.

Examples: Enable automatic recovery of the loopback-detection control mode after 30s.

Switch(config)#loopback-detection control-recovery timeout 30

3.4 loopback-detection interval-time

Command: loopback-detection interval-time *<loopback> <no-loopback>*

          no loopback-detection interval-time

Function: Set the loopback detection interval. The no operate closes the loopback detection interval function.

Parameters: *<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.

Command 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

3.5 loopback-detection specified-vlan

Command: loopback-detection specified-vlan *<vlan-list>*

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

Function: Enable the function of loopback detection on the port and specify the VLAN to be checked; the no operation of this command will disable the function of detecting loopbacks through this port or the specified VLAN.

Parameters: *<vlan-list>* the list of VLANs allowed passing through the port. Given the situation of a trunk port, the specified VLANs can be checked. So this command is used to set the vlan list to be checked.

Default: Disable the function of detecting the loopbacks through the port.

Command 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 1/0/2 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

3.6 show loopback-detection

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

Function: Display the state of loopback detection on all ports if no parameter is provided, or the state and result of the specified ports according to the parameters.

Parameters: *<interface-list>* the list of ports to be displayed, for example: ethernet 1/0/1.

Command 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
Ethernet1/0/4	Enable	Shutdown	No

Chapter 4 Commands for ULDP

4.1 debug uldp

Command: debug uldp (hello | probe | echo | unidir | all) [receive | send] interface [ethernet] IFNAME

        no debug uldp (hello | probe | echo | unidir | all) [receive | send] interface [ethernet] IFNAME

Function: Enable the debugging for receiving and sending the specified packets or all ULDP packets on port. After enable the debugging, show the information of the received and sent packets in terminal. The no command disables the debugging.

Parameters: hello: packet's type is hello, it's announcement packet, including common announcement packet, RSY and Flush packet

        probe: packet's type is probe, it's detection packet

        echo: packet's type is echo, it means response of   detection packet

        unidir: packet's type is unidir, it's announcement packet that discover the single link

        all: All ULDP packets

Command mode: Admin mode

Default: Disable.

Usage Guide: With this command, user can check probe packets received by port 1/0/2.

Switch#debug uldp probe receive interface ethernet 1/0/2

4.2 debug uldp error

Command: debug uldp error

        no debug uldp error

Function: Enable the error message debug function, the no form command disable the function.

Parameter: None.

Command Mode: Admin Mode.

Default: Disabled.

Usage Guide: Use this command to display the error message.

Example: Display the error message.

Switch#debug uldp error

4.3 debug uldp event

Command: debug uldp event

      no debug uldp event

Function: Enable the message debug function to display the event; the no form command disables this function.

Parameter: None.

Command Mode: Admin Mode.

Default: Disabled.

Usage Guide: Use this command to display all kinds of event information.

Example: Display event information.

Switch#debug uldp event

4.4 debug uldp fsm interface ethernet

Command: debug uldp fsm interface ethernet *<IFname>*

      no debug uldp fsm interface ethernet *<IFname>*

Function: To enable debugging information for ULDP for the specified interface. The no form of this command will disable the debugging information.

Parameters: *<IFname>* is the interface name.

Command Mode: Admin Configuration Mode.

Default: Disabled by default.

Usage Guide: This command can be used to display the information about state transitions of the specified interfaces.

Example: Print the information about state transitions of interface ethernet 1/0/1.

Switch#debug uldp fsm interface ethernet 1/0/1

4.5 debug uldp interface ethernet

Command: debug uldp {hello|probe|echo|unidir|all} [receive|send] interface ethernet *<IFname>*

      no debug uldp {hello|probe|echo|unidir|all} [receive|send] interface ethernet *<IFname>*

Function: Enable the debug function of display the packet details. After that, display some kinds of the packet details of terminal interface.

Parameter: *<IFname>*: Name of the interface.

Command Mode: Admin Mode.

Default: Disabled.

Usage Guide: Use this command to display the Hello packet details receiving on the interface Ethernet 1/0/1.

Switch#debug uldp hello receive interface Ethernet 1/0/1

4.6 debug uldp packet

Command: debug uldp packet [receive|send]

          no debug uldp packet [receive|send]

Function: Enable receives and sends packet debug function, after that. Display the type and interface of the packet which receiving and sending on the client. The no form command disables this function.

Parameter: None.

Command Mode: Admin Mode.

Default: Disabled.

Usage Guide: Use this command to display the packet that receiving on each interface.

Switch#debug uldp packet receive

4.7 uldp aggressive-mode

Command: uldp aggressive-mode

          no uldp aggressive-mode

Function: To configure ULDP to work in aggressive mode. The no form of this command will restore the normal mode.

Parameters: None.

Command Mode: Global Configuration Mode and Port Configuration Mode.

Default: 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

4.8 uldp enable

Command: uldp enable

Function: ULDP will be enabled after issuing this command. In global configuration mode, this command will enable ULDP for the global. In port configuration mode, this command

will enable ULDP for the port.

Parameters: None.

Command Mode: Global Configuration Mode and Port Configuration Mode.

Default: By default ULDP is not configured.

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

4.9 uldp disable

Command: uldp disable

Function: To disable ULDP configuration through this command.

Parameters: None.

Command Mode: Global Configuration Mode and Port Configuration Mode.

Default: By default ULDP is not configured.

Usage Guide: When ULDP is disabled globally, then ULDP in all the ports will be disabled.

Example: To disable the ULDP configuration in global configuration mode.

Switch(config)#uldp disable

4.10 uldp hello-interval

Command: uldp hello-interval *<integer>*

                no uldp hello-interval

Function: To configure the interval for ULDP to send hello messages. The no form of this command will restore the default interval for the hello messages.

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

Command Mode: Global Configuration Mode.

Default: 10 seconds by default.

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

4.11 uldp manual-shutdown

Command: uldp manual-shutdown

        no uldp manual-shutdown

Function: To configure ULDP to work in manual shutdown mode. The no command will restore the automatic mode.

Parameters: None.

Command Mode: Global Configuration Mode.

Default: Auto 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

4.12 uldp recovery-time

Command: uldp recovery-time*<integer>*

        no uldp recovery-time

Function: To configure the interval for ULDP recovery timer. The no form of this command will restore the default configuration.

Parameters: *<integer>*: the time out value for the ULDP recovery timer. Its value is limited between 30 and 86400 seconds.

Command Mode: Global Configuration Mode.

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

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

4.13 uldp reset

Command: uldp reset

Function: To reset the port when ULDP is shutdown.

Parameters: None.

Command Mode: Globally Configuration Mode and Port Configuration Mode.

Default: None.

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

4.14 show uldp

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

Function: To show the global ULDP configuration and status information of interface. If <interface-name> is specified, ULDP configuration and status about the specified interface as well as its neighbors' will be displayed.

Parameters: *<interface-name>* is the interface name.

Command Mode: Admin and Configuration Mode.

Default: None.

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

Chapter 5 Commands for LLDP Function

5.1 clear lldp remote-table

Command: clear lldp remote-table

Function: Clear the Remote-table on the port.

Parameters: None.

Default: Do not clear the entries.

Command 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

5.2 debug lldp

Command: debug lldp

          no debug lldp

Function: Enable the debug information of LLDP function, the no operation of this command will disable the debug information of LLDP function.

Parameters: None.

Default: Disable the debug information of LLDP function.

Command Mode: Admin Mode.

Usage Guide: When the debug switch is enabled, users can check the receiving and sending of packets and other information.

Example: Enable the debug switch of LLDP function on the switch.

Switch#debug lldp

5.3 debug lldp packets

Command: debug lldp packets interface ethernet <*IFNAME*>

          no debug lldp packets interface ethernet <*IFNAME*>

Function: Display the message-receiving and message-sending information of LLDP on the port; the no operation of this command will disable the debug information switch.

Parameters: None.

Default: Disable the debug information on the port.

Command Mode: Admin Mode.

Usage Guide: When the debug switch is enabled, users can check the receiving and sending of packets and other information on the port.

Example: Enable the debug switch of LLDP function on the switch.

Switch#debug lldp packets interface ethernet 1/0/1

%Jan 01 00:02:40 2006 LLDP-PDU-TX   PORT= ethernet 1/0/1

5.4 lldp enable

Command: lldp enable

               lldp disable

Function: Globally enable LLDP function; **disable** command globally disables LLDP function.

Parameters: None.

Default: Disable LLDP function.

Command 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

5.5 lldp enable (Port)

Command: lldp enable

               lldp disable

Function: Enable the LLDP function module of ports in port configuration mode; **disable** command will disable the LLDP function module of port.

Parameters: None.

Default: the LLDP function module of ports is enabled by default in port configuration mode.

Command 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

5.6 lldp mode

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

Function: Configure the operating state of LLDP function of the port.

Parameters: 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".

Command 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

5.7 lldp msgTxHold

Command: lldp msgTxHold *<value>*

            no lldp msgTxHold

Function: Set the multiplier value of the aging time carried by update messages sent by the all ports with LLDP function enabled, the value ranges from 2 to 10.

Parameters: *<value>* is the aging time multiplier, ranging from 2 to 10.

Default: the value of the multiplier is 4 by default.

Command 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

5.8 lldp neighbors max-num

Command: lldp neighbors max-num *<value>*

            no lldp neighbors max-num

Function: Set the maximum number of entries can be stored in Remote MIB.

Parameters: *<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.

Command 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

5.9 lldp notification interval

Command: lldp notification interval *<seconds>*

          no lldp notification interval

Function: When the time interval ends, the system is set to check whether the Remote Table has been changed. If it has, the system will send Trap to the SNMP management end.

Parameters: *<seconds>*is the time interval, ranging from 5 to 3600 seconds.

Default: The time interval is 5 seconds.

Command 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

5.10 lldp tooManyNeighbors

Command: lldp tooManyNeighbors {discard | delete}

Function: Set which operation will be done when the Remote Table is full.

Parameters: discard: discard the current message.

          delete: Delete the message with the least TTL in the Remoter Table.

Default: Discard.

Command 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

5.11 lldp transmit delay

Command: lldp transmit delay *<seconds>*

        no lldp transmit delay

Function: Since local information might change frequently because of the variability of the network environment, there could be many update messages sent in a short time. So a delay is required to guarantee an accurate statistics of local information.

When transmit delay is the default value and tx-interval is configured via some commands, transmit delay will become one fourth of the latter, instead of the default 2.

Parameters: *<seconds>*is the time interval, ranging from 1 to 8192 seconds.

Default: The interval is 2 seconds by default.

Command 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

5.12 lldp transmit optional tlv

Command: lldp transmit optional tlv [portDesc] [sysName] [sysDesc] [sysCap]

        no lldp transmit optional tlv

Function: Configure the type of optional TLV of the port.

Parameters: 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.

Command 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

5.13 lldp trap

Command: lldp trap *<enable | disable>*

Function: enable: configure to enable the Trap function on the specified port; **disable:** configure to disable the Trap function on the specified port.

Parameters: None.

Default: The Trap function is disabled on the specified port by default.

Command 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

5.14 lldp tx-interval

Command: lldp tx-interval *<integer>*

         no lldp tx-interval

Function: Set the interval of sending update messages on all the ports with LLDP function enabled, the value of which ranges from 5 to 32768 seconds and is 30 seconds by default.

Parameters: *<integer>* is the interval of sending updating messages, ranging from 5 to 32768 seconds.

Default: 30 seconds.

Command Settings: 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

5.15 show debugging lldp

Command: show debugging lldp

Function: Display all ports with lldp debug enabled.

Parameters: None.

Default: None.

Command 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

debug lldp packets interface Ethernet1/0/1

debug lldp packets interface Ethernet1/0/2

debug lldp packets interface Ethernet1/0/3

debug lldp packets interface Ethernet1/0/4

debug lldp packets interface Ethernet1/0/5

=============END OF DEBUG SETTINGS==============

5.16 show lldp

Command: show lldp

Function: Display the configuration information of global LLDP, such as the list of all the ports with LLDP enabled, the interval of sending update messages, the configuration of aging time, the interval needed by the sending module to wait for re-initialization, the interval of sending TRAP, the limitation of the number of the entries in the Remote Table.

Parameters: None.

Default: Do not display the configuration information of global LLDP.

Command 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 enabled port : Ethernet 1/0/1

LLDP interval :30

LLDP txTTL :120

LLDP txShutdownWhile :2

LLDP NotificationInterval :5

LLDP txDelay :20

-------------END------------------

5.17 show lldp interface ethernet

Command: show lldp interface ethernet *<IFNAME>*

Function: Display the configuration information of LLDP on the port, such as: the working state of LLDP Agent.

Parameters: *<IFNAME>*: Interface name.

Default: Do not display the configuration information of LLDP on the port.

Command 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)#show lldp interface ethernet 1/0/1

Port name :   ethernet 1/0/1

LLDP Agent Adminstatus: Both

LLDP Operation TLV: portDecs   sysName   sysDesc   sysCap

LLDP Trap Status: disable

LLDP maxRemote: 100

LLDP Overflow handle: discard

LLDP interface remote status : Full

5.18 show lldp neighbors interface ethernet

Command: show lldp neighbors interface ethernet < *IFNAME* >

Function: Display the LLDP neighbor information of the port.

Parameters: None.

Default: Do not display the LLDP neighbor information of the port.

Command Mode: Admin Mode, Global Mode.

Usage Guide: Users can check the LLDP neighbor information of the port by using "show lldp neighbors interface ethernet XXX".

Example: Check the LLDP neighbor information of the port after LLDP is enabled on the port.

Switch(config)#show lldp neighbors interface ethernet 1/0/1

5.19 show lldp traffic

Command: show lldp traffic

Function: Display the statistics of LLDP data packets.

Parameters: None.

Default: Do not display the statistics of LLDP data packets.

Command 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	0	7	0	0

Chapter 6 Commands for Port Channel

6.1 debug port-channel

Command: debug port-channel *<port-group-number>* {all | event | fsm | packet | timer}

                no debug port-channel [*<port-group-number>*]

Function: Open the debug switch of port-channel.

Parameters: *<port-group-number>* is the group number of port channel, ranging from 1～128

           all: all debug information

           event: debug event information

           fsm: debug the state machine

           packet: debug LACP packet information

           timer: debug the timer information

Command mode: Admin mode.

Default: Disable the debugging of port-channel.

Usage Guide: Open the debug switch to check the debug information of port-channel.

Example:

(1)debug the state machine for port-group 1.

Switch#debug port-channel 1 fsm

(2) debug LACP packet information for port-group 2.

Switch#debug port-channel 2 packet

(3) debug all for port-group 1.

Switch#debug port-channel 1 all

6.2 interface port-channel

Command: interface port-channel *<port-channel-number>*

Function: Enters the port channel configuration mode

Command mode: Global Mode

Usage Guide: On entering aggregated port mode, configuration to GVRP or spanning tree modules will apply to aggregated ports; if the aggregated port does not exist (i.e., ports have not been aggregated), an error message will be displayed and configuration will be saved and will be restored until the ports are aggregated. Note such restoration will be performed only once, if an aggregated group is ungrouped and aggregated again, the

initial user configuration will not be restored. If it is configuration for modules, such as shutdown configuration, then the configuration to current port will apply to all member ports in the corresponding port group.

Example: Entering configuration mode for port-channel 1.

Switch(config)#interface port-channel 1

Switch(Config-If-Port-Channel1)#

6.3 lacp port-priority

Command: lacp port-priority *<port-priority>*

         no lacp port-priority

Function: Set the port priority of LACP protocol.

Parameters: *<port-priority>*: the port priority of LACP protocol, the range from 0 to 65535.

Command mode: Port Mode.

Default: The default priority is 32768 by system.

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

6.4 lacp system-priority

Command: lacp system-priority *<system-priority>*

         no lacp system-priority

Function: Set the system priority of LACP protocol.

Parameters: *<system-priority>*: The system priority of LACP protocol, ranging from 0 to 65535.

Command mode: Global Mode

Default: The default priority is 32768.

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

6.5 lacp timeout

Command: lacp timeout {short | long}

no lacp timeout

Function: Set the timeout mode of LACP protocol.

Parameters: The timeout mode includes long and short.

Command mode: Port Mode

Default: Long.

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

6.6 load-balance

Command: load-balance {src-mac | dst-mac | dst-src-mac | src-ip | dst-ip | dst-src-ip}

Function: Set load-balance mode for port-group.

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

Command mode**:** Aggregation port mode.

Default: Perform load-balance according to the source and destination MAC.

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)#interface port-channel 1

Switch(Config-If-Port-Channel1)#load-balance src-mac

6.7 port-group

Command: port-group *<port-group-number>*

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

Function: Creates a port group. The no command deletes that group.

Parameters: *<port-group-number>* is the group number of a port channel from 1～128.

Default: There is no port-group.

Command mode: Global Mode

Example: Creating a port group.

Switch(config)# port-group 1

Delete a port group.

Switch(config)#no port-group 1

6.8 port-group mode

Command: port-group *<port-group-number>* mode {active | passive | on}

           no port-group

Function: Add a physical port to port channel, the no operation removes specified port from the port channel.

Parameters: *<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.

Command mode: Port Mode.

Default: Switch ports do not belong to a port channel by default; LACP not enabled by default.

Usage Guide: Every port joined the port-group must be consistent on the rate, configuration and physical property. If the specified port group does not exist, then print a error message. All ports in a port group must be added in the same mode, i.e., all ports use the mode used by the first port added. Adding a port in "on" mode is a "forced" action, which means the local end switch port aggregation does not rely on the information of the other end, port aggregation will succeed as long as all ports have consistent VLAN information. Adding a port in "active" or "passive" mode enables LACP. Ports of at least one end must be added in "active" mode, if ports of both ends are added in "passive" mode, the ports will never aggregate.

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

6.9 show port-group

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

Function: Display the specified group number or the configuration information of all port-channel which have been configured.

Parameters: ***<port-group-number>*** is the group number of port channel to be displayed, from 1～128; **brief** displays summary information; **detail** displays detailed information.

Command 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: 1. 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   0x8000,00-12-cf-4d-e1-a1   8,1,1       dst-src-mac
10   passive 0x8000,00-12-cf-4d-e1-b2   8,2,0       dst-src-ip
20   on                                  8,0,0    src-ip
```

2. Display the detailed information of port-group 1.

Switch#show port-group 1 detail

Flags: A -- LACP_Activity, B -- LACP_timeout, C -- Aggregation,

         D -- Synchronization, E -- Collecting, F -- Distributing,

         G -- Defaulted, H -- Expired

Port-group number: 1,   Mode: active,   Load-balance: dst-src-mac

Port-group detail information:

System ID: 0x8000,00-03-0f-0c-16-6d

Local:

```
Port              Status      Priority  Oper-Key    Flag
----------------------------------------------------------
   Ethernet1/0/1       Selected      32768       1           {ACDEF}
   Ethernet1/0/2       Selected      32768       1           {ACDEF}
   Ethernet1/0/3       Selected      32768       1           {ACDEF}
   Ethernet1/0/4       Selected      32768       1           {ACDEF}
   Ethernet1/0/5       Selected      32768       1           {ACDEF}
   Ethernet1/0/6       Selected      32768       1           {ACDEF}
   Ethernet1/0/7       Selected      32768       1           {ACDEF}
   Ethernet1/0/8       Selected      32768       1           {ACDEF}
```

```
   Ethernet1/0/20     Unselected  32768     1        {ACG}
Ethernet1/0/23      Standby      32768     1        {AC}


Remote:
Actor           Partner  Priority  Oper-Key   SystemID                    Flag
--------------------------------------------------------------------------------
Ethernet1/0/1       1              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/2     2              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/3     3              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/4     4              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/5     5              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/6     6              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/7     7              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/8     8              32768        1              0x8000,00-03-0f-01-02-04
{CDEF}
   Ethernet1/0/23   23         32768      1          0x8000,00-03-0f-01-02-04      {C}
Switch#
```

Chapter 7 Commands for MTU

7.1 mtu

Command: mtu [<mtu-value>]

        no mtu

Function: Enable the mtu receiving function. The no command restores to the normal frame range of 64--1518.

Parameter: mtu-value: the MTU value of frames that can be received, in byte, ranging from <1500-9000>. The corresponding frame size is <1518/1522-9018/9022>. Without setting is parameter, the allowed max frame size is 9018/9022.

Default: MTU function not enabled by default.

Command 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. Notice: Set the MTU value of JUMBO frame are 1500, 1518, 1982, 2030 bytes for this device only.

Example: Enable the mtu function of the switch.

Switch(config)#mtu