

EPON OLT (BT-P6104H/P6108H)

command manual V1.0

SHENZHEN BAITONG PUTIAN TECHNOLOGY CO., LTD.

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Chaptor 1 Common demand

1.1 System login Command

1.1.1 configure terminal

command

configure terminal

mode

privileged mode

parameter

no

description

configure terminal

Configure terminal command used to enter global configuration mode

illustration

enter global configuration mode

EPON-OLT#configure terminal

EPON-OLT(config)#

1.1.2 disable

command

disable

mode

privileged mode

parameter

no

description

disable command is used to close privileged mode and back to normal mode.

illustration

```
# close privileged mode and back to normal mode
EPON-OLT#disable
EPON-OLT>
```

1.1.3 enable

command

enable

mode

normal mode

parameter

no

description

enter the password to enter privilege mode.

illustration

```
#From normal mode to privileged mode
```

```
EPON-OLT> enable
```

```
password: enable
```

```
EPON-OLT#
```

1.1.4 exit

command

exit

mode

all mode

parameter

no

description

Exit command is used for exiting the current mode, return to the previous

model.

illustration

```
#From privileged mode to normal mode
```

```
EPON-OLT#exit
```

```
EPON-OLT>
```

1.2 File management command

1.2.1 copy running-config startup-config

command

```
copy running-config startup-config
```

mode

```
privileged mode
```

parameter

```
no
```

description

```
copy running-config startup-config
```

copy running-config startup-config command is used to save current system running configuration to OLT flash as a startup configuration file.

illustration

```
# copy current running configuration as the startup configuration:
```

```
EPON-OLT#copy running-config startup-config
```

```
Building and writing configuration.
```

```
EPON-OLT#
```

1.2.2 erase startup-config

command

```
erase startup-config
```

mode

privileged mode

parameter

no

description

Delete the startup configuration file. Execute the command and restart the OLT will restore to factory default Setting.

illustration

#delete the startup configuration file.

EPON-OLT#erase startup-config

erase startup-config? (y/n):

1.2.3 download configure

command

copy tftp flash <ip-address> <configure file-name> <sys file-name>

mode

privilege mode

parameter

ip-address: TFTP sever ip address

Configure file - name: the TFTP server configuration file name.

description

Download configuration file from TFTP to the OLT as startup configuration file.

restart OLT to bring the download configuration file into effect.

illustration

download the switch.cfg configuration file to OLT from the tftp sever 172.16.0.1.

EPON-OLT# copy tftp flash 172.16.0.1 switch.cfg

1.2.4 update image

command

copy tftp image <ip-address> <file-name>

mode

privileged mode

parameter

ip-address: TFTP sever ip address

file - name: the TFTP server configuration file name.

description

Download the image file to the OLT from TFTP server as updated image file,
restart olt to bring image file into effect.

illustration

download the image file to the host 172.16.0.1 and ave as iSpirit2948G - 3 v05.

img:

```
EPON-OLT#copy tftp image 172.16.0.1 iSpirit2948G-3v05.img
```

1.2.5 upload configure

command

```
copy startup-config tftp <ip-address> <file-name>
```

mode

privileged mode

parameter

ip-address: It is the TFTP sever ip address used for uploading configure file .

file-name: saving configuration file name.

description

Saving the OLT startup configuration file to the TFTP server.

illustration

Saving the OLT configuration files to the tftp sever 172.16.0.200, name as
switch.cfg:

```
EPON-OLT# copy startup-config tftp 172.16.0.200 switch.cfg
```

1.2.6 write

command

write

mode

Privileged mode

parameter

no

description

Save the current configuration.

illustration

no

1.3 System management command

1.3.1 enable password

command

enable password <password>

no enable password

mode

global configuration mode

parameter

password: The password string. The default password is empty.

description

The enable password command is used to modify password which allow from normal mode to enter privileged mode.

no enable password command is used to cancel the password.

illustration

Changing OLT password into the admin:

EPON-OLT(config)#enable password admin

1.3.2 exec-timeout

command

exec-timeout <minutes> [<seconds>]

no exec-timeout

mode

configuration line vty mode

parameter

minutes: minute, range:0-35791.

seconds: second, range:0-59.

description

exec-timeout command used to configure telnet user idle timeout. The default value is 10 minutes.

no exec-timeout command is used to cancel the telnet idle timeout configuration and restore the default value.

illustration

configured telnet idle timeout 15 minutes:

```
EPON-OLT(config)#line vty
```

```
EPON-OLT(config-line)#exec-timeout 15
```

```
EPON-OLT(config-line)#
```

1.3.3 hostname

command

hostname <name>

no hostname

mode

global configuration mode

parameter

Name: the name of the system, to begin with a letter. The default system name

“EPON-OLT”.

description

The hostname command is used to change the name of the system.

no hostname command to restore default name

illustration

EPON-OLT(config)#hostname photon

#change the system name to photon:

photon(config)#

1.3.4 password

command

password <password>

no password

mode

global configuration mode

parameter

password: the password string. no password by default.

description

the password command is used to set for telnet connection password.

no password command is used to cancel the password Settings, restore the default value.

illustration

no

1.3.5 reboot system

command

reboot

mode

Privileged mode

parameter

no

description

reboot command used to reset OLT

illustration

EPON-OLT #reboot。

1.3.6 set systime

command

systime <year> -<month>- <day> <hour>: <minute> :<second>

mode

Privileged mode

parameter

year: setting the year, range: 2000-2050.

month: setting the month: range: 1-12.

day: setting the date, range: 1-31.

hour: setting the hours, range: 0-23.

minute: setting the minutes, range: 0-59.

second: setting the second, range: 0-59.

description

systime command is used to set the system time.

illustration

EPON-OLT # systime 2018-04-24 15:51:05。

1.3.7 show systime

command

show systime

mode

privileged mode

parameter

no

description

show systime command is used to display the system current date and time

illustration

EPON-OLT#show systime

The current time:2014-04-24 15:55:08

1.3.8 show history

command

show history

mode

Privileged mode

parameter

no.

description

show history command is used to display the use of historical command records, can display the 20 commands before execution command.

illustration

no

1.3.9 show version

command

show version

mode

privileged mode

parameter

no

description

Show version command used to display the system image file version information

and so on.

illustration

```
# show system version
```

```
EPON-OLT#show version
```

1.3.10 terminal

command

```
terminal{length <number>|monitor| no length}
```

mode

privileged mode

parameter

length: limit the number of command rows display on the screen. The default 25 rows.

no length: cancel the rows limits.

description

terminal command used to configure a number of rows of display on the screen.

illustration

```
# configuration terminal displays 10 rows each time
```

```
EPON-OLT#terminal length 10
```

1.3.11 who

command

```
who
```

mode

privilege mode

parameter

no

description

the who command is used to display the current user of vty

illustration

```
#Display the current VTY users
EPON-OLT#who
 vty[0] connected from
 vty[23] connected from 172.20.2.104
```

1.3.12 line vty

command

Line vty

mode

global configuration mode

parameter

no

description

Line vty command into the terminal configuration mode

illustration

```
# into the terminal configuration mode
EPON-OLT(config)#line vty
EPON-OLT (config-line)#
```

1.3.13 manage interface

Configuration management ip address of outband

command

manage interface

manage ip address

mode

interface configuration mode

description

The the manage interface command used to login outband manage interface. The manage ip address command used to config OLT outband management

ip-address.

No manage IP address command is used to cancel the outband management ip address

illustration

Configuration of the OLT outband management ip address: 192.168.100.1/24
EPON-OLT(config)# manage interface
EPON-OLT(config)# if-mng)#manage ip address 192.168.100.1/24

1.4 View configuration commands

1.4.1 show running-config

command

show running-config [access-list | interface | ip {igmp snooping | route} | mstp |
vlan]

mode

privileged mode

parameter

access-list: about ACL configuration

Interface: the relevant configuration of the interface, including physical interface and virtual interface.

Ip igmp snooping: igmp snooping relevant configuration.

IP route: relevant routing configuration.

Mstp: relevant mstp configuration.

Valn: relevant vlan configuration

description

show running-config

Show running-config command is used to display the current configuration information.

illustration

no

1.4.2 show startup-config

command

show startup-config

mode

privileged mode

parameter

no

description

Show startup-config command is used to display content of startup configuration file.

illustration

no

1.5 Mac address command

1.5.1 mac-address-table ageing-time

command

mac-address-table ageing-time <time>

no mac-address-table ageing-time

mode

global configuration mode

parameter

Time: the mac address aging time, time range: 10-1000000 seconds. The default 300 seconds.

description

Mac-address - the table ageing - time command is used to set aging time of the

MAC address table.

No bridge ageing-time command is used to restore ageing time of the mac address table to the factory value

illustration

```
# set the OLT aging time :100 seconds
```

```
EPON-OLT(config)# mac-address-table ageing-time 100
```

```
EPON-OLT(config)#
```

1.5.2 show mac-address-table

command

```
show mac-address-table
```

mode

```
privileged mode
```

description

Display the MAC address table information

illustration

```
#display all mac address table information
```

```
EPON-OLT#show mac-address-table
```

VLAN	MAC-ADDRESS	TYPE	PORT
1	0004.0c0d.070a	dynamic	ge3

```
EPON-OLT#
```

1.5.3 clear mac address-table dynamic

command

```
clear mac address-table dynamic [ interface <ifname> ]
```

mode

```
privileged mode
```

parameter

Ifname: interface name.

description

illustration

```
EPON-OLT#clear mac address-table dynamic
```

```
EPON-OLT#
```

1.6 Network diagnosis command

1.6.1 ping

command

```
ping <ip-address> [-n <count> | -l <size> | -r <count> | -s <count> | -j <count>  
<ip-address>* | -k <count> <ip-address>* | -w <timeout>]*
```

mode

privileged mode

parameter

ip-address: target ip address

-n: the number of sent package

-l: the length of package

-r: the records number of specified routing hops

-s: the records time of specified routing hops

-j: source loose routing, input routing hops and related IP addresses. Multiple IP addresses can be repeatedly entered.

-k: source band strictly routing, input routing hops and related IP addresses.

Multiple IP addresses can be repeated enterd.

-w: the timeout time for each response, unit second

description

Ping is a network debugging tool that tests whether another host is reachable.

Simple applications only input the IP address of the target host; if you use Ping as a diagnostic tool, you can enter more detailed parameters.

illustration

```
#sending 5 request packages to the host 172.16.0.1.
```

EPON-OLT#ping 172.16.0.1 -n 5

1.6.2 trace-route

command

```
trace-route <ip-address> [-h <maximum-hops> | -j <count> <ip-address>* | -w  
<timeout>]*
```

mode

privileged mode

parameter

ip-address: target IP address.

-h: maximum hops.

-j: the source loose routing, input routing hops and related IP addresses. Multiple IP addresses can be repeated entered. Multiple IP addresses can be repeated entered.

-w :timeout time (second)

description

Traceroute can detect the routing of packets passing from one host to another. If you just want to test this function, users only need to enter the target IP address. If you want to be a network diagnosis, you can add relevant parameters.

traceroute: it sends TTL incremental UDP packets from the host to the destination host. If TTL is zero, the passing router return TTL value exhaustion, an unreachable ICMP package, and if the host does not have the port of the UDP packet, the host responds to the port unreachable ICMP package. Traceroute according to the response of the ICMP package is whether the host is unreachable or the port is not reachable to determine whether to reach the destination host. If the host unreachable it is the router's feedback, print the router's IP address and continue to send TTL plus 1 UDP packets until TTL is equal to Maxmum time to live. If the port is not reachable, it is the destination host response, prints the IP

address of the host, and stops sending the UDP packet.

illustration

#the purpose is test the routing path that target ip address is 192.168.10.2, and the maximum hop number is 10 hops.

```
EPON-OLT#trace-route 192.168.10.2 -n 10
```

1.6.3 telnet

command

```
telnet <ip-address>
```

mode

privileged mode

parameter

ip-address: target IP address

description

Remote access to another OLT or host

illustration

```
# Login to OLT with manages IP address 172.16.0.1
```

```
EPON-OLT#telnet 172.16.0.1
```

1.7 Multiuser management command

1.7.1 username

command

```
username <username> password <password> {normal | privilege}
```

```
no username [username]
```

mode

global configuration mode

parameter

username: user name string ,maximum length :20.

password: password string, maximum length :20.

normal: general authority

privilege: privileged authority

description

username command used to add user or to modify existing users' passwords and authority. you can add up to ten users at most. Multi users can be used for landing on telnet terminals and HTTP users.

The no username command is used to delete an existing user or all users.

illustration

#Add a user name ABC and password ABC.

```
EPON-OLT(config)#username abc password abc
```

```
EPON-OLT(config)#
```

1.8 User security control command

1.8.1 web

command

```
web{disable | enable | max-connect | refresh-interval }
```

mode

global configuration mode

parameter

disable: no login OLT through web pages

enable: allow login OLT through web pages

description

Used to set up whether to support web login

illustration

setting up support Web login

```
EPON-OLT(config)#web enable
```

```
EPON-OLT(config)#
```

1.8.2 security-manage snmp

command

```
snmp-server enable traps {community< word> | contact< l> | disable |  
enable | group | host | location| user | view }
```

```
no snmp-server enable traps
```

mode

```
global configuration mode
```

parameter

```
group-id: Rule group number, rule range <1-99>
```

description

```
Used to set up whether to support SNMP login
```

illustration

```
# setting support snmp login mode
```

```
EPON-OLT(config)# snmp-server enable traps
```

```
EPON-OLT(config)#
```

Chaptor 2 Port Command

2.1 Port general configuration

2.1.1 interface

command

```
interface <if-name> [if-name | if- range]
```

mode

interface configuration mode

parameter

If-name: port name. FE is 100mbps fast-ethernet port simplified name, GE is 1000mbps ethernet port simplified name, PON for PON port and so on. Example: the first fast-ethernet port is expressed as fe1.

if-range : it is interface range, you can enter multiple physical port at the same time configure them. Such as interface ge1 - 4

Note: do not support aggregation port or vlan interface configuration.

description

Interface command used to enter one or more port configuration mode.

illustration illustration

```
#Enter the ge2 interface
```

```
EPON-OLT(config)#interface ge2
```

2.1.2 description

command

```
description <line>
```

```
no description
```

mode

interface configuration mode

parameter

Port description string

description

The description command is add port description.

The no description command is used to cancel port description

illustration

```
bulid 1 floor 5
```

```
#Port ge1 described as: bulid 1 floor 5
```

```
EPON-OLT(config-ge1)#description bulid 1 floor 5
```

```
EPON-OLT(config-ge1)#
```

2.1.3 show interface

command

```
show interface [ifname<if-name> | switchport]
```

mode

```
priviledge mode
```

Parameters

if-name: interface name.

switchport: display basic information of all port.

description

The show interface command displays all the information of the two and three layers without any parameters. Specifies the interface name to display the information of the specified two or three level interface. Show interface statistics command displays the sending and receipt packet statistics for the specified interface.

illustration

```
#display the information of the vlan1 interface
```

```
EPON-OLT>show interface vlan1
```

```
Interface vlan1
```

```
Hardware Type:    VLAN
```

```
MAC Address:      0009.ca1b.a011
```

Flags: <UP,BROADCAST,MULTICAST>
Admin Status: UP
Operate Status: DOWN
Index: 3
Metric: 1
MTU: 1500
IP Address: 192.168.0.1/24

#display the information of the ge1 interface

EPON-OLT#show interface ge1

Interface ge1

Hardware Type: Ethernet
MAC Address: 0625.0000.004a
Flags: <UP,BROADCAST,RUNNING,MULTICAST>
Admin Status: UP
Operate Status: UP
Index: 2011
Metric: 1
MTU: 1500
Duplex: full
Config Duplex: AutoNego
Bandwidth: 100m
Config Bandwidth: AutoNego
Switchport Mode: access
Default Vlan: 1

2.1.4 shutdown

Command

shutdown

no shutdown

mode

interface configuration mode

parameter

no

description

shutdown the port, the command is shutdown the port by managed DOWN

no shutdown command for enable port, port management state is up

illustration

```
#shutdown port GE1
```

```
EPON-OLT(config-ge1)#shutdown
```

```
EPON-OLT(config- ge1)#
```

2.1.5 speed

command

speed {autonegiate | full-10 | full-100 | full-1000 | half-10 | half-100}

mode

interface configuration mode

parameter

auto: speed rate state is auto adaptive.

full-10: speed rate state is 10M full duplex

full-100: speed rate state is 100M full duplex

full-1000: speed rate state is 1000M full duplex

half-10: speed rate state is 10M half duplex

half-100: speed rate state is 100M half duplex

escription

Seting port speed

illustration

```
#Seting ge1 port speed is forced 100M full duplex.
```

```
EPON-OLT(config- ge1)#speed full-100
```

```
EPON-OLT(config- ge1)#
```

2.2 MIRROR Commands

2.2.1 mirror

command

mirror interface <if-name> direction {both | receive | transmit}

no mirror interface <if-name> direction [receive | transmit]

mode

Interface configuration mode

parameter

if-name: mirrored port

both: setting monitoring both way data of the mirrored port

receive: setting monitoring received data of the mirrored port

transmit: setting monitoring sent data of the mirrored port

description

mirror interface command specifies the mirrored port, it is used to monitor the data flow of this port.

no mirror interface command is used to cancel the monitoring port.

illustration

#Using port GE1 to monitor the data flow received by the ge2 port:

```
EPON-OLT(config- ge1)#mirror interface ge2 direction receive
```

```
EPON-OLT(config- ge1)#
```

2.2.2 show mirror

command

show mirror [interface <if-name>]

mode

privilege mode

parameter

interface <if-name>: interface name

description

show mirror command is used to display mirror configuration information of the the specified port.

illustration

no

2.3 Broadcast storm control command

2.3.1 storm-control

command

storm-control {broadcast | dlf | multicast | level pps<value>}

storm-control {broadcast | dlf | multicast } disable

mode

interface configuration mode

parameter

Broadcast: control the number of broadcast packet

dlf: control the number of unknown destination unicast packet

Multicast: control the number of multicast packets

Level pps: number of control packages

The storm-control command is used to set the port's forwarding the number of limited broadcast packets, DLF(unknown unicast packets) and multicast packets.

The port of storm-control is set up, which limits the forwarding speed of broadcast, unknown unicast, multicast packets.

storm-control disable command is used to cancel the settings

illustration

#setting limit port ge1 100 packets per second for broadcasting packet forwarding

EPON-OLT(config-ge1)#storm-control broadcast level pps100

EPON-OLT(config-ge1)#

2.3.2 show storm-control

command

```
show storm-control [<if-name>]
```

mode

privileged mode

parameter

if-name: interface name

description

show storm-control command is used to display the port information of setted storm-control, showing the contents of control value and number of lost packets of broadcast packets, dlf packages, and multicast packages.

illustration

```
#display port ge1 broadcast storm information
```

```
EPON-OLT#show storm-control ge1
```

Port	Bcast	Mcast	Dlf	Limit(kbits)
ge1	set	unset	unset	64

```
EPON-OLT#
```

2.4 FLOW-CONTROL COMMANDS

2.4.1 flowcontrol

command

```
flowcontrol {send|receive} {on|off}
```

```
no flowcontrol
```

mode

Interface configuration mode

parameter

no

description

flowcontrol on command is used to enable the port's flow control function.

flowcontrol off command is used to disable the port's flow control function

illustration

```
#enable ge3 port to send flow control function
```

```
EPON-OLT(config-ge3)#flowcontrol send on
```

2.4.2 show flowcontrol

command

```
show flowcontrol [interface <if-name>]
```

mode

Privileged mode

parameter

if-name: interface name

description

View the configuration of port flow control

illustration

```
no
```

2.5 Port bandwidth command

2.5.1 line-rate

command

```
line-rate egress <rate>
```

```
line-rate ingress <rate>
```

mode

Interface configuration mode

parameter

egress: port output rate

ingress: port input rate

rate: set the rate value

Granularity is the multiple of 64kb

description

Set the port's maximum input and output rate. The minimum limit is 64Kbps

illustration

```
#Set port ge1 input speed limit rate 128Kbps
```

```
EPON-OLT(config-ge1)#line-rate ingress 128k
```

```
EPON-OLT(config- ge1)#
```

2.5.2 show line rate

command

```
show interface <if-name>
```

mode

Privileged mode

parameter

if-name: interface name

description

show interface <if-name> command is used to display the speed limit configuration of the specified port.

Illustration:

```
no
```

2.6 Port link aggregation command

2.6.1 static-channel-group <number>

Creating an aggregate link interface

command

```
static-channel-group <number>
```

mode

Configuration mode

parameter

aggregation number

description

Create the aggregate port. The system treats a link aggregation as a logical port. It is necessary to create link aggregation before configuring aggregate ports

illustration

Creating an aggregate link interface

```
EPON-OLT(config)#static-channel-group 3
```

Delete aggregation interface

```
EPON-OLT(config)#no static-channel-group <number>
```

enter the aggregate link interface

command

```
interface sa< number> interface sa< number> enter the aggregate group link
```

interface

illustration

```
EPON-OLT(config)#interface sa3
```

add the port to the aggregate group member

command

```
static-channel-group member add interface <if-name>
```

mode

Configuration mode

parameter

If-name: member interface which join aggregate group link interface

description

Add the port to the aggregate group member

illustration

```
EPON-OLT(config)#static-channel-group 3
```

```
EPON-OLT(config)#interface sa3
```

```
EPON-OLT(config-sa3)#static-channel-group member add interface ge8
```

```
EPON-OLT(config-sa3)#static-channel-group member add interface ge7
```

2.6.2 port-channel load-balance

command

```
port-channel load-balance { dst-mac | src-dst-mac | src-mac }
```

```
no port-channel load-balance
```

mode

Static-channel interface configuration mode

parameter

dst-mac: Load balancing for data flow out of port direction is based on destination MAC address

src-dst-mac: Load balancing for data flow out of port direction is based on the source MAC address and destination MAC address. This is the default load balancing strategy.

src-mac: Load balancing for data flow out of port direction is based on the source MAC address.

description

port-channel load-balance Command is used to setting the load balancing policy of the TRUNK group

no port-channel load-balance command is used to cancel the configured load balancing policy and back to the src-dst-mac policy (default policy does not display)

illustration

#Configure trunk to load balancing according to the destination MAC address.

```
EPON-OLT(config)#static-channel-group 8
```

```
EPON-OLT(config-sa8)#port-channel load-balance src- mac
```

2.6.3 channel-group < group-number > mode active

command

```
channel-group < group-number > mode active
```

mode

Interface configuration mode

parameter

group-number: aggregation group number

description

The number of aggregated ports is dynamically adjusted according to the traffic policy, and the bandwidth of aggregation will also change. For example, there are 2 ports to participate in aggregation at low load, and 4 ports will participate in aggregation when high load, so it is better to meet the application requirements.

illustration

```
#Configure port ge5, ge6 dynamically join aggregate member group 2
```

```
EPON-OLT(config)#interface ge5
```

```
EPON-OLT(config-ge5)#channel-group 2 mode active
```

```
EPON-OLT(config)#interface ge6
```

```
EPON-OLT(config-ge6)#channel-group 2 mode active
```

2.6.4 port-channel load-balance

command

```
port-channel load-balance { dst-mac | src-dst-mac | src-mac }
```

```
no port-channel load-balance
```

mode

Interface mode

parameter

dst-mac : Load balancing for data flow out of port direction according to destination MAC address.

src-dst-mac : Load balancing for data flow out of port direction is based on the source MAC address and destination MAC address, this is the default dynamic

load balancing strategy.

src-mac: Load balancing for data flow out of port direction is based on the source MAC address.

description

port-channel load-balance command is used to set the load balancing policy of the TRUNK group

no port-channel load-balance command is used to cancel the configuration of load balancing policy and back to src-dst-mac policy (default policy does not display)

illustration

#Configure trunk to load balancing according to the destination MAC address.

EPON-OLT(config-ge2)#port-channel load-balance src-mac

2.7 Protection port command

2.7.1 switchport protect

command

switchport protect

no switchport protect

mode

Interface configuration mode

Parameter nothing

description

switchport protect command is used to configure port to protect port

no switchport protect command is used to cancel protect port

illustration

Configure port GE1 as a protection port

EPON-OLT(config-ge1)#switchport protected

2.7.2 show port-protected

command

```
show port-protected
```

mode

Privileged mode

parameter

no

description

Display protected port information

illustration

#Display all protection port configuration

```
EPON-OLT# show port-protected
```

```
Port      Port protected
```

```
-----
```

```
ge1      ON
```

```
EPON-OLT#
```

TOP SECRET

Chaptor 3 MAC Security command

3.1 MAC binding command

3.1.1 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>
```

mode

Interface configuration mode

parameter

mac-address : The physical address of the binding is represented by 12 bit 16 hexadecimal. MAC address style is HHHH.HHHH.HHHH.

vlan-id: MAC bind vlan ID number, range 1-4094

switchport port-security mac-address command is used to bind port with MAC.

no switchport port-security mac-address command is used to cancel bind

illustration

```
#Configure port ge1 in vlan1 for MAC binding 00ca.0009.0001
```

```
EPON-OLT(config-ge1)# switchport port-security mac-address 00ca.0009.0001
```

```
vlan 1
```

```
EPON-OLT(config-ge1)#
```

3.1.2 show port-security address

command

```
show port-security address
```

mode

priviledged mode

description

View port MAC binding information

illustration

```
EPON-OLT#show port-security address
      VLAN ID  MAC ADDRESS  IFNAME
      1       00ca.0009.0001  ge1
EPON-OLT#
```

3.1.3 mac-address-table ageing-time <number>

command

```
mac-address-table ageing-time <number>
```

mode

Global configuration mode

parameter

<number>, Aging time, unit second

description

MAC address aging time setting

illustration

The MAC address aging time is set to 500 seconds

```
EPON-OLT(config)#mac-address-table ageing-time 500
```

3.2 MAC filter command

3.2.1 mac-address-table static <mac-address> vlan <vlan-id> drop

command

```
mac-address-table static <mac-address> vlan <vlan-id> drop
```

```
no mac-address-table static <mac-address> vlan <vlan-id> drop
```

mode

Interface configuration mode

parameter

mac-address: The physical address of the filter is represented by 12 bits and 16 symbols; the MAC address style HHHH.HHHH.HHHH

vlan-id: MAC bind vlan ID number, range 1-4094

description

```
mac-address-table static <mac-address> vlan <vlan-id> drop
no mac-address-table static <mac-address> vlan <vlan-id> drop
```

illustration

```
EPON-OLT(config-ge1)# mac-address-table static drop 00ca.0009.0001 vlan 1
```

3.3 MAC address learning control command

3.3.1 switchport port-security maximum

command

```
switchport port-security maximum <number>
no s switchport port-security maximum
```

mode

Interface configuration mode

parameter

number: Limit the number of learning MAC, range 0-8191

description

switchport port-security maximum command is used to limit number of learn MAC address on ports

no switchport port-security maximum command is used to cancel learning MAC

restrictions

illustration

```
#Configuring port ge1 can only learn 50 MAC addresses
EPON-OLT(config- ge1)#switchport port-security maximum 50
```

3.3.2 show port-security

command

```
EPON-OLT#show port-security
```

mode

priviledged mode

description

Show the specified port to learn the number of MAC

illustration

EPON-OLT#show port-security

Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	Security Action
ge2	50	0	drop

EPON-OLT#

TOP SECRET

Chaptor Management ONU

4.1 ONU authorization

4.1.1 #epon onu autoauth

command

```
epon onu autoauth {enable | disable}
```

mode

global configuration mode

parameter

enable: enable ONU authorization

disable: disable ONU authorization

description

Enable or disable ONU authorization

illustration

```
EPON-OLT(config)#epon onu autoauth enable
```

4.1.2 # epon port <pon-if> onu authmode

command

```
epon port <pon-if> onu authmode {all | loid | mac | mac-or-loid |  
mac-or-loid-password}
```

mode

global configuration mode

parameter

pon-if: pon interface

all: all authorization mode

loid: loid authorization mode

mac: mac authorization mode

mac-or-loid: mac or loid authorization mode

mac-or-loid-password: mac or loid with password authorization mode

description

epon port <pon-if> onu authmode

epon port <pon-if> onu authmode command is used to set onu authorization mode

illustration

The ONU is authorized according to the MAC address: to enable the ONU authorization under the global configuration mode, and then to authorize the ONU MAC address under the corresponding PON port
EPON-OLT(config)# epon port 1 onu authmode mac

4.1.3 # epon port <pon-if> onu confirm mac-auth

command

epon port <pon-if> onu confirm mac-auth <mac address>

mode

global configuration mode

parameter

pon-if: pon interface

mac address: The MAC address of ONU can view ONU tags or find unregistered ONU through show EPON port <pon-if> onu-autofind-list all command.

description

epon port <pon-if> onu confirm mac-auth command is used to authorize unauthorized ONU to be legitimate ONU registration online

illustration

MAC authorized 90:C6:82:14:47:53 ONU for MAC to become legitimate ONU

4.1.4 epon port <pon-if> onu<onu-id> add mac-auth

command

epon port <pon-if> onu<onu-id> add mac-auth

mode

global configuration mode

parameter

pon-if: pon interface

onu-id: user specified ONU assigns the Id number

description

epon port <pon-if> onu<onu-id> add mac-auth command authorizes unauthorized ONU to become legitimate ONU registration online.

4.1.5 epon port <pon-if> onu <onu-id> add loid-auth admin

command

epon port <pon-if> onu <onu-id> add loid-auth admin

mode

global configuration mode

parameter

pon-if: pon interface

onu-id: user specified ONU assigns the Id number

loid: The user assigns the Loid number to the ONU

description

epon port <pon-if> onu <onu-id> add loid-auth admin command authorizes the unauthorized ONU to be authorized by Loid to become a legitimate ONU registration online.

EPON-OLT(config)#epon port 1 onu 2 loid-auth admin

4.1.6 # show epon port <pon-if> onu-autofind-list all

command

show epon port <pon-if> onu-autofind-list all

mode

priviledged mode

parameter

pon-if: pon interface

description

show epon port <pon-if> onu-autofind-list all command is used to find the unregistered online ONU.

illustration

```
EPON-OLT#show epon port 1 onu-autofind-list all
```

```
-----  
Index  MAC  
-----  
1      54:93:59:00:D4:B3  
2      90:C6:82:14:47:53  
-----
```

4.2 ONU State view

command

```
show epon onu all info
```

mode

```
priviledged mode
```

parameter

```
no
```

description

```
show epon onu all info command is used to view the registrated ONU state
```

illustration

```
EPON-OLT#show epon onu all info
```

```
-----  
PON  ONU  MAC          Control  Run    Config  Match  
      ID          flag     state   state   state  
-----  
1    1    90:C6:82:14:47:53  Active  Online  Success  Match  
1    2    90:C6:82:13:2B:58  Active  Online  Success  Match  
-----
```

4.3 ONU delete

command

```
epon port <pon-if> onu <onu-id> delete
```

mode

```
global configuration mode
```

parameter

pon-if: pon interface

onu-id: user specified ONU assigns the Id number

description

```
epon port <pon-if> onu <onu-id> delete
```

epon port <pon-if> onu <onu-id> delete command deleted the registered ONU.

illustration

```
EPON-OLT(config)#epon port 1 onu 1 delete
```

4.4 ONU Port Vlan

command

```
epon port <pon-if> onu <onu-id> eth <port-id> vlan {tag | translation |  
transparent | trunk }
```

mode

```
global configuration mode
```

parameter

pon-if: pon interface

onu-id: user specified ONU assigns the Id number

port-id: ONU Ethernet port number

tag: vlan tag mode

translation: vlan translation mode

transparent: transparent mode

trunk: trunk mode

description

epon port <pon-if> onu <onu-id> eth <port-id> vlan command is used to configure the ONU port work mode

illustration

```
EPON-OLT(config)#epon port 1 onu 1 eth 4 vlan tag 100
```

4.5 ONU optical power view

command

```
show epon port <pon-if> onu <onu-id> optical-info
```

mode

priviledged mode

parameter

pon-if: pon interface

onu-id: user specified ONU assigns the Id number

description

show epon port <pon-if> onu <onu-id> optical-info command is used to view ONU transmitting and receiving optical power and other information

illustration

```
EPON-OLT# show epon port 1 onu 3 optical-info
```

```
-----  
Voltage(V) : 3.27  
Tx optical power(dBm) : 2.11  
Rx optical power(dBm) : -5.19  
Laser bias current(mA) : 16.36  
Temperature(C) : 42.47
```

Chaptor 5 vlan command

5.1 Vlan Creating

5.1.1 vlan database

command

vlan database

mode

global configuration mode

parameter

no

description

Enter vlan configuration mode

illustration

enter vlan configuration mode

EPON-OLT(config)#vlan database

EPON-OLT(config-vlan)#

5.1.2 vlan

command

vlan <vlan-id>

no vlan <vlan-id>

mode

vlan configuration mode

parameter

Vlan-id: create one or more VLAN. The range of VLAN ID is 1-4094. Vlan-id has two expressions, one is multiple VLAN numbers separated by a comma, such as 1,3,5,10, and the other is a VLAN range, such as 2-10, but the two can not exist at

the same time. The number of VLAN created by a single command can not exceed 100.

description

Vlan command is used to create VLAN. It is important to note that VLAN 1 can not be deleted, it is default VLAN

No vlan command is used to delete a vlan.

illustration

#Creating vlan 2-10

```
EPON-OLT(config-vlan)#vlan 2-10
```

```
EPON-OLT(config-vlan)#
```

5.2 Vlan port configuration command

5.2.1 switchport access

command

```
switchport access vlan <vlan-id>
```

```
no switchport access vlan
```

mode

interface configuration mode

parameter

vlan-id: Port VID, range 2-4094

VLAN 1 is available In default, all ports are untagged members of VLAN1

description

The switchport access command is used to set the port into access mode and set port PVID. This command is valid only for the layer 2 interface of VLAN mode.

After setting this command, the port PVID is the specified VLAN, and the layer 2 interface belongs to the untag member of the specified VLAN only.

no switchport access vlan command is used to cancel vlan setting, it will restore the default vlan 1.

illustration

```
# Configure port ge1 as a untagged port for vlan2
EPON-OLT(config-ge1)#switchport access vlan 2
EPON-OLT(config-ge1)#
```

5.2.2 switchport hybrid allowed vlan add

command

```
switchport hybrid allowed vlan add <vlan-list> egress-tagged { disable | enable}
```

mode

```
interface configuration mode
```

parameter

```
vlan-list: Join VLAN's VLAN number, range 1-4094
```

description

The switchport hybrid command is used to add the port to the specified one or more VLAN, if egress-tagged is enable, the data will be forwarded with the tag, and if egress-tagged disable, it is a untag member, forwarding data with untag.

<vlan_list> has two expressions, one is multiple VLAN numbers separated by a comma, such as 1,3,5,10, and the other is a VLAN range, such as 2-10, but the two styles can not exist at the same time. The expression 1,3-5 is wrong (, and - only one exist). 2-4 or 6-7 is also wrong (- only be used once)

illustration

```
# set port ge1 as a tagged port in vlan 1-3
EPON-OLT(config- ge1)#switchport mode hybrid
EPON-OLT(config- ge1)#switchport hybrid allowed vlan add 1-3 egress-tagged
enable
EPON-OLT(config- ge1)#
```

5.2.3 switchport hybrid allowed vlan none

command

```
switchport hybrid allowed vlan none
```

mode

```
interface configuration mode
```

parameter

```
no
```

description

This command is valid only for the layer 2 interface of hybrid mode. The interface is no longer a member of all VLAN (except VLAN1). After executing this command, the port's native VLAN will restore to 1.

illustration

```
# Port ge1 is the tagged port of vlan1, untagged port of vlan2 and vlan3, vid=2.
```

```
Now delete all vlan of port ge1, except vlan1
```

```
EPON-OLT(config- ge1)#switchport hybrid allowed vlan none
```

5.2.4 switchport hybrid allowed vlan remove

command

```
switchport hybrid allowed vlan remove <vlan-id>
```

mode

```
interface configuration mode
```

parameter

```
vlan-id: VLAN number to be removed, range 1-4094
```

description

This command is valid only for the layer two interface of hybrid mode. The interface is no longer a member of one or more specified VLAN.

illustration

```
# Delete port ge1 from vlan2
```

```
EPON-OLT(config- ge1)#switchport hybrid allowed vlan remove 2
```

EPON-OLT(config- ge1)#

5.2.5 switchport hybrid vlan

command

switchport hybrid vlan <vlan-id>

no switchport hybrid vlan

mode

interface configuration mode

parameter

vlan-list: Join VLAN's VLAN number, range 1-4094

description

This command is valid only for the layer two interface of hybrid mode. Set the native VLAN of the interface to the specified VLAN. When this command is set, the PVID of the interface is a specified VLAN, and the interface belongs to a untagged member of the specified VLAN (if the port already belongs to the TAG member of the VLAN before setting this command, then the port continues to be a TAG member, PVID is a specified VLAN)

The no switchport hybrid vlan command restores the native VLAN of the interface to the default VLAN (VLAN1). After this command is executed, the previous setting native VLAN is deleted (no longer belongs to the untag or tag member of the previous native VLAN), the new native vlan is vlan1, belongs untag member of the VLAN1 (if the port is already vlan1 tag member before executing this command, then it is kept as a member of the tag). PVID is modified to 1.

illustration

Configure port ge1 to be untagged member of vlan2, tagged member of vlan1, and vid is 2

```
EPON-OLT(config- ge1)#switchport mode hybrid
```

```
EPON-OLT(config- ge1)#switchport hybrid vlan 2
```

```
EPON-OLT(config- ge1)#switchport hybrid allowed vlan add 1 egress-tagged
```

```
enable
EPON-OLT(config- ge1)#
```

5.2.6 switchport mode

command

```
switchport mode { access | hybrid | trunk}
no switchport { access | hybrid | trunk}
```

mode

interface configuration mode

parameter

access: the interface VLAN mode is access mode. The default is the access mode. If the layer two interface is set to access mode, the interface is default untag member of VLAN1 and PVID is 1.

hybrid: the interface VLAN mode is hybrid mode. If the interface is set to hybrid mode, the interface is default untag member of VLAN1, and PVID is 1

trunk: the interface VLAN mode is trunk mode. If the interface is set to trunk mode, the interface is default tag member of VLAN1, and PVID is 1

description

Switchport mode command is used to set VLAN mode of the interface, mode include access, hybrid or trunk.

no switchport command restore the interface mode to the default value, back to the access mode, and access vlan is vlan1

illustration

```
# Set port ge1 to trunk port
EPON-OLT(config- ge1)#switchport mode trunk
EPON-OLT(config- ge1)#
```

5.2.7 switch port trunk allowed vlan add

command

```
switchport trunk allowed vlan add <vlan-id>
```

mode

interface configuration mode

parameter

Vlan-id: one or more VLAN numbers added to the interface. The range of VLAN ID is 1-4094. <vlan-id> has two expressions, one is multiple VLAN numbers separated by a comma, such as 1,3,5,10, and the other is a VLAN range, such as 2-10, but the two ways can't exist at the same time.

description

This command is valid only for the layer two interface of the trunk mode. The interface is added to the specified one or more VLAN to become the tagged member of the specified VLAN.

illustration

```
# Port ge1 is configured as a tagged member of vlan1-10
EPON-OLT(config- ge1)#switchport trunk allowed vlan add 1-10
EPON-OLT(config- ge1)#
```

5.2.8 switch port trunk allowed vlan except

command

```
Switch port trunk allowed vlan except <vlan-id>
```

mode

interface configuration mode

parameter

no

description

This command is valid only for the layer two interface of the trunk mode. The interface is added to all VLAN except <vlan-id>, and is the tagged member of all VLAN except <vlan-id>. When a new VLAN is created in the future, the port will

also be added to the new VLAN, which is the tag member of this VLAN.

illustration

```
# Port ge1 is configured as a tagged member of all VLAN except vlan1000
EPON-OLT(config- ge1)#switchport trunk allowed vlan except 1000
EPON-OLT(config- ge1)#
```

5.2.9 switchport trunk allowed vlan none

command

```
switchport trunk allowed vlan none
```

mode

```
interface configuration mode
```

parameter

```
no
```

description

This command is valid only for the layer two interface of the trunk mode. The interface is no longer a member of any VLAN (except VLAN1)

illustration

```
# Delete the trunk port ge1 from all VLAN except vlan1
EPON-OLT(config- ge1)#switchport trunk allowed vlan none
EPON-OLT(config- ge1)#
```

5.2.10 switchport trunk allowed vlan remove

command

```
switchport trunk allowed vlan remove <vlan-list>
```

mode

```
interface configuration mode
```

parameter

Vlan-list: one or more VLAN numbers deleted from the interface. The range of

VLAN ID is 1-4094. Vlan-list has two expressions, one is multiple VLAN numbers separated by a comma, such as 1,3,5,10, and the other is a VLAN range, such as 2-10, but the two ways can't exist at the same time

description

This command is valid only for layer two interface of the trunk mode. The interface is no longer a member of specified one or more VLAN

illustration

```
# delete port ge1 from VLAN 2 and vlan3
EPON-OLT(config- ge1)#switchport trunk allowed vlan remove 2,3
EPON-OLT(config- ge1)#
```

5.3 Vlan view command

5.3.1 show vlan

command

```
show vlan [<vlan-id>]
```

mode

priviledged mode

parameter

vlan-id: VLAN number you want to display, range 1-4094

description

Displays VLAN information, including port information in VLAN. Only display the specify vlan information, when the VLAN ID is specified

illustration

```
# View the current VLAN state
```

```
EPON-OLT#show vlan
```

VLAN	Name	State	Member ports ([u]-Untagged, [t]-Tagged)
1	vlan1	active	[u]fe1/1 [u]fe1/2 [u]fe1/3 [u]fe1/4 [u]fe1/5 [u]fe1/6 [u]fe1/7 [u]fe1/8 [u]fe1/9 [u]fe1/10

[u]fe1/11 [u]fe1/12 [u]fe1/13 [u]fe1/14 [u]fe1/15
[u]fe1/16 [u]fe1/17 [u]fe1/18 [u]fe1/19 [u]fe1/20
[u]fe1/21 [u]fe1/22 [u]fe1/23 [u]fe1/24 [u]fe1/25
[u]fe1/26 [u]fe1/27 [u]fe1/28 [u]fe1/29 [u]fe1/30
[u]fe1/31 [u]fe1/32 [u]fe1/33 [u]fe1/34 [u]fe1/35

Chapter 6 QinQ Comand

6.1 QinQ based on PVID

command

PON port configuration command

interface pon< if-number >

switchport access vlan < vlan-id >

switchport vlan-stacking customer-edge-port

Uplink port configuration command

interface ge< if-number >

switchport mode trunk

switchport trunk allowed vlan add < vlan-id >

switchport vlan-stacking provider-port

mode

interface mode

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

vlan-id: Outer layer VLAN number, range 1-4094

description

The user data has VLAN tag, OLT adds pon port PVID to data as outer layer tag at pon port again for uplink transmission, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user

illustration

QINQ based on port PVID=100

```
interface pon1
```

```
    switchport access vlan 100
```

```
    switchport vlan-stacking customer-edge-port
```

```
interface ge1
```

```
    switchport mode trunk
```

```
    switchport trunk allowed vlan add 100
```

```
    switchport vlan-stacking provider-port
```

6.2 QinQ based on cvlan

command

PON port configuration

```
interface pon< if-number >
```

```
    switchport mode trunk
```

```
    switchport trunk allowed vlan add <s-vlan-id >
```

```
    switchport vlan-stacking provider-port
```

```
    switchport vlan mapping < c-vlan-id > < s-vlan-id >
```

delete

```
no switchport vlan mapping < c-vlan-id > < s-vlan-id >
```

Uplink port configuration

```
interface ge1
```

```
    switchport mode trunk
```

```
    switchport trunk allowed vlan add <s- vlan-id >
```

mode

interface configuration mode

parameter

c-vlan-id: VLAN number of inner layer, range 1-4094

s-vlan-id: VLAN number of outner layer, range 1-4094

if-number: interface number 1,2,3,4,5,6,7,8.

description

The user data has a CVLAN tag, OLT PON port add the SVLAN ID to the upstream of data, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

when the outer VLAN ID is same as the port PVID

illustration

QinQ based on cvlan

* PORT+VLAN QinQ

* Ingress packet, CVLAN=100, ingress port=pon1

* Egress packet, SVLAN=110, CVLAN=100, egress port=ge1

implementation by switching chip

interface pon1

switchport mode trunk

switchport trunk allowed vlan add 110

switchport vlan-stacking provider-port

switchport vlan mapping 100 110

interface ge1

switchport mode trunk

switchport trunk allowed vlan add 110

Another way of implementation is by PON chip

epon port 1 classif 1 cvlan 100 vlan-action push 110

interface pon1

switchport mode hybrid

switchport hybrid allowed vlan add 110 egress-tagged disable

interface ge1

switchport mode trunk

switchport trunk allowed vlan add 110

6.3 QinQ based on cvlan range

command

PON port configuration

```
interface pon< if-number >
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add <s-vlan-id >
```

```
switchport vlan-stacking provider-port
```

```
switchport vlan mapping < c-vlan-id 1- c-vlan-id 2 > < s-vlan-id >
```

Uplink port configuration

```
interface ge1
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add <s- vlan-id >
```

delete configuration

```
no switchport vlan mapping < c-vlan-id 1- c-vlan-id 2 > < s-vlan-id >
```

mode

interface configuration mode

parameter

c-vlan-id1- c-vlan-id2: The beginning VLAN number of the inner layer to end VLAN number, range 1-4094

s-vlan-id: VLAN number of outer layer, range 1-4094

if-number: interface number, 1,2,3,4,5,6,7,8.

description

The user data has a CVLAN tag that belongs to the specified cvlan range, OLT PON port add the SVLAN ID to the upstream of data, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

QinQ based on cvlan range

* PORT+VLAN QinQ

* Ingress packet, StartCvlan=100, EndCvlan=109, ingress port=pon1

* Egress packet, SVLAN=110, CVLAN=100-109, egress port=ge1

implementation by switching chip

```
interface pon1
    switchport mode trunk
    switchport trunk allowed vlan add 110
    switchport vlan-stacking provider-port
    switchport vlan mapping 100-109 110
# delete
    no switchport vlan mapping 100-109 110
# vlan mapping
# delete all vlan mapping
    no switchport vlan mapping all
```

Uplink port configuration

```
interface ge1
    switchport mode trunk
    switchport trunk allowed vlan add 110
```

Another way of implementation is by PON chip

```
epon port 1 classif 1 cvlan 100 109 vlan-action push 110
```

```
interface pon1
    switchport mode hybrid
    switchport hybrid allowed vlan add 110 egress-tagged disable
```

Uplink port configuration

```
interface ge1
    switchport mode trunk
    switchport trunk allowed vlan add 110
```

6.4 QinQ based on Ethernet type

command

```
epon port<if-number>classif <number >ethernet-type <type> vlan-action push
```

<s-vlan-id >

PON port configuration

```
interface pon< if-number >
```

```
    switchport mode hybrid
```

```
    switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
    switchport mode trunk
```

```
    switchport trunk allowed vlan add <s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

Type: ethernet data type

s-vlan-id: outer layer VLAN number, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to data type of the user, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

QINQ based on Ethernet type, for example: add SVLAN=110 based on PPOE:0x8863

*Ingress packet,cvlan = 100,ingress port = pon1

*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1

```
epon port 1 classif 1 ethernet-type 0x8863 vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
```

```
interface pon1
```

```
    switchport mode hybrid
```

```
switchport hybrid allowed vlan add 110 egress-tagged disable
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.5 QinQ based on Ethernet type and cvlan

command

```
epon port<if-number> classif<number> ethernet-type<type> cvlan <c-vlan-id >
vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add <s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

Type: ethernet data type

c-vlan-id: inter layer user VLAN number, range 1-4094

s-vlan-id: outer layer VLAN number, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to data type and cvlan id of the user, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the

user.

illustration

```
# QINQ based on Ethernet type and CVLAN, for example: add SVLAN=110 based
on PPOE:0x8863 and cvlan 100
*Ingress packet,cvlan = 100,ingress port = pon1
*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1
epon port 1 classif 1 ethernet-type 0x8863 cvlan 100 vlan-action push 110
# delete
#no epon port 1 classif 1
interface pon1
switchport mode hybrid
switchport hybrid allowed vlan add 110 egress-tagged disable
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.6 QinQ based on Ethernet type and cvlan range

command

```
epon port<if-number>classif <number >ethernet-type <type> cvlan <c-vlan-id 1>
<c-vlan-id2 > vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add <s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

Type: ethernet data type

c-vlan-id1- c-vlan-id2: the starting VLAN number of inter layer to end VLAN user, range 1-4094

s-vlan-id: outer layer VLAN number, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to data type and a cvlan range of the user, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

```
# QINQ based on Ethernet type and CVLAN range, for example: add SVLAN=110
```

```
based on PPOE:0x8863 and cvlan 100
```

```
*Ingress packet,cStartVlan = 100,cEndVlan = 109,ingress port = pon1
```

```
*Egress packet,cStartVlan = 100,cEndVlan = 109, Svlan = 110,egress port = ge1
```

```
epon port 1 classif 1 ethernet-type 0x8863 cvlan 100 109 vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
```

```
interface pon1
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add 110 egress-tagged disable
```

```
interface ge1
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add 110
```

6.7 QinQ based on layer 3 protocol

command

```
epon port <if-number> classif<number > l3-protocol<protocol> vlan-action push  
<s-vlan-id >
```

PON port configuration

```
interface pon< if-number >  
  switchport mode hybrid  
  switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>  
  switchport mode trunk  
  switchport trunk allowed vlan add<s-vlan-id >
```

mode

interface configuration mode

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

protocol: protocol type

s-vlan-id: outer layer VLAN number, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to layer 3 protocol of the data, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

#QinQ based on layer 3 protocol, for example, SVLAN=110 based on ICMP

*Ingress packet,cvlan = 100,icmp 协议号=1,ingress port = pon1

*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1

```
epon port 5 classif 1 l3-protocol icmp vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
```

```
interface pon1
```

```
switchport mode hybrid
switchport hybrid allowed vlan add 110 egress-tagged disable
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.8 QinQ based on ONU llid cvlan range

command

```
epon port<if-number> onu<onu number> classif<number> cvlan <c-vlan-id 1>
<c-vlan-id2 >vlan-action push<s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU llid number

c-vlan-id1- c-vlan-id2: VLAN number from the beginning to the end of the inner layer. range 1-4094.

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to ONU LLID and CVLAN range, the data is transmitted to the upper device with a double VLAN

tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

```
# QinQ based on ONU LLID and CVLAN range. for example, ONUID = 1
* PORT+VLAN QinQ
* Ingress packet, StartCvlan=100, EndCvlan=109, ingress port=pon1
* Egress packet, SVLAN=110, CVLAN=100-109, egress port=ge1
epon port 1 onu 1 classif 1 cvlan 100 109 vlan-action push 110
interface pon1
switchport mode hybrid
switchport hybrid allowed vlan add 110 egress-tagged disable
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.9 QinQ based on ONU llid cvlan

command

```
epon port <if-number> onu<onu number> classif <number> cvlan<c-vlan-id >
vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU llid number

c-vlan-id: VLAN number of the inner layer, range 1-4094.

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to ONU LLID and CVLAN, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

QinQ based on ONU LLID and CVLAN. for example, ONUID = 1

* PORT+VLAN QinQ

* Ingress packet, Cvlan=100, ingress port=pon1

* Egress packet, SVLAN=110, CVLAN=100, egress port=ge1

epon port 1 onu 1 classif 1 cvlan 100 vlan-action push 110

interface pon1

switchport mode hybrid

switchport hybrid allowed vlan add 110 egress-tagged disable

interface ge1

switchport mode trunk

switchport trunk allowed vlan add 110

6.10 QinQ based on ONU llid Ethernet type

command

```
epon port <if-number> onu<onu number> classif <number> ethernet-type  
<type> vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU llid number

Type: ethernet data type

c-vlan-id: VLAN number of the inner layer, range 1-4094.

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to ONU LLID CVLAN, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

```
#QinQ based on ONU LLID CVLAN. for example, ONUID = 1, PPOE:0x8863 add  
SVLAN=110
```

```
*Ingress packet,cvlan = 100,ingress port = pon1
```

```
*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1
```

```
epon port 1 onu 1 classif 1 ethernet-type 0x8863 vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
```

```
interface pon1
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add 110 egress-tagged disable
```

```
interface ge1
```

```
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.11 QinQ based on ONU lld Ethernet type and cvlan range

command

```
epon port <if-number> onu<onu number> classif <number> ethernet-type
<type> cvlan <c-vlan-id 1> <c-vlan-id2 > vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU lld number

Type: ethernet data type

c-vlan-id - c-vlan-id2: VLAN number from the beginning to the end of the inner layer. range 1-4094.

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to ONU LLID ethernet type and CVLAN range, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent

to the user.

illustration

```
# QinQ based on ONU LLID Ethernet type and CVLAN range. for example, ONUID
= 1, PPOE:0x8863, cvlan 100-109, add SVLAN=110
*Ingress packet,cStartVlan = 100,cEndVlan = 109,ingress port = pon1
*Egress packet,cStartVlan = 100,cEndVlan = 109, Svlan = 110,egress port = ge1
epon port 5 onu 1 classif 1 ethernet-type 0x8863 cvlan 100 109 vlan-action push
110
# delete
#no epon port 1 classif 1
interface pon1
switchport mode hybrid
switchport hybrid allowed vlan add 110 egress-tagged disable
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 110
```

6.12 QinQ based on ONU llid Ethernet type and cvlan

command

```
epon port <if-number> onu<onu number> classif <number> ethernet-type
<type> cvlan <c-vlan-id > vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

interface configuration mode

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU llid number

Type: ethernet data type

c-vlan-id: VLAN number of the inner layer. range 1-4094.

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to ONU LLID ethernet type and CVLAN, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

```
# QinQ based on ONU LLID Ethernet type and CVLAN range. for example, ONUID = 1, PPOE:0x8863, cvlan 100, add SVLAN=110
```

```
*Ingress packet,cvlan = 100,ingress port = pon1
```

```
*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1
```

```
epon port 1 onu 1 classif 1 ethernet-type 0x8863 cvlan 100 vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
```

```
interface pon1
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add 110 egress-tagged disable
```

```
interface ge1
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add 110
```

6.12 QinQ based on ONU llid layer 3 protocol

command

```
epon port <if-number> onu<onu number> classif<number >  
l3-protocol<protocol> vlan-action push <s-vlan-id >
```

PON port configuration

```
interface pon< if-number >
```

```
switchport mode hybrid
```

```
switchport hybrid allowed vlan add <s-vlan-id > egress-tagged disable
```

Uplink port configuration

```
interface ge<if-number>
```

```
switchport mode trunk
```

```
switchport trunk allowed vlan add<s-vlan-id >
```

mode

```
interface configuration mode
```

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number : classif number

onu number: ONU llid number

protocol: protocol type

s-vlan-id: VLAN number of the outer layer, range 1-4094

description

OLT PON port add the SVLAN ID to the upstream of data according to protocol type, the data is transmitted to the upper device with a double VLAN tag. The outer SVLAN ID of downstream data is removed when it passes through the PON port, and then the data with inner VLAN tag only is sent to the user.

illustration

QINQ based on ONU LLID's 3 tier protocol, for example: SVLAN=110 based on ICMP.*Ingress packet,cvlan = 100,icmp Protocol number=1,ingress port = pon1

*Egress packet,cvlan = 100, Svlan = 110,egress port = ge1

```
epon port 5 onu 1 classif 1 l3-protocol icmp vlan-action push 110
```

```
# delete
```

```
#no epon port 1 classif 1
interface pon1
Switch port mode hybrid
Switch port hybrid allowed vlan add 110 egress-tagged disable
interface ge1
Switch port mode trunk
Switch port trunk allowed vlan add 110
```

6.13 vlan conversion

6.13.1 vlan 1:1 conversion

command

PON port configuration

```
interface pon< if-number >
```

```
Switch port mode trunk
```

```
Switch port trunk allowed vlan add < c-vlan-id >
```

```
Switch port vlan-stacking provider-port
```

```
Switch port vlan transform < c-vlan-id > < new-vlan-id >
```

Uplink port configuration

```
interface ge< if-number >
```

```
Switch port mode trunk
```

```
Switch port trunk allowed vlan add < new-vlan-id >
```

```
Switch port vlan-stacking provider-port
```

```
Switch port vlan transform < new-vlan-id > < c-vlan-id >
```

mode

interface configuration mode

parameter

if-number: interface number, 1,2,3,4,5,6,7,8.

number: classif number

c-vlan-id: user VLAN number, range 1-4094

new-vlan-id: new vlan number after conversion, range 1-4094

description

Upstream user datagram with cvlan tag, OLT PON port converts the cvlan tag into a new vlan tag and creates a vlan conversion table, then the data is transmitted to the upper device with a new vlan tag. Downstream data OLT lookup the VLAN conversion corresponding table, OLT convert the downlink data vlan tag into user's vlan according to conversion table, and then forward the data to the user.

illustration

```
# vlan 1:1 conversion
*Ingress packet,vlan = 100,ingress port = pon1
*Egress packet, vlan = 110,egress port = ge1
interface pon1
Switch port mode trunk
Switch port trunk allowed vlan add 100
Switch port vlan-stacking provider-port
Switch port vlan transform 100 110
interface ge1
Switch port mode trunk
Switch port trunk allowed vlan add 110
Switch port vlan-stacking provider-port
Switch port vlan transform 110 100
```

Chaptor 7 QOS

7.1 QoS configuration command

7.1.1 mls qos enable

command

mls qos enable

mode

Global configuration mode

parameter

no

description

mls qos enable command is used to enable data QoS processing

no mls qos command is used to enable data QoS processing

illustration

EPON-OLT(config)# mls qos enable.

7.1.2 mls qos cos-map <value>

command

mls qos cos-map <value>

mode

Global configuration mode

parameter

Value : 0 1 3 4 5 6 7 priority cos value

description

mls qos enable command is used to enable data QoS processing

no mls qos command closes data QoS processing.

illustration

EPON-OLT(config)# mls qos cos-map 0 1 3 4 5 6 7.

7.1.3 mls qos map dscp-cos <name>

command

```
mls qos map dscp-cos <name> <dscp-value> to <qp-value>  
no mls qos map dscp-cos <name> <dscp-value>
```

mode

Global configuration mode

parameter

dscp-value: dscp value, range: 0-63.
qp-value: data queue value, value: 0-7.
name: specify map name

description

mls qos map dscp-cos <name> command is used to map dscp-cos to qp value
queue
no mls qos map dscp-cos <name> command is used to restore the default
mapping

illustration

```
# mapping the dscp value 50 to qp1 queue.  
EPON-OLT(config)# mls qos map dscp-cos 1 50 to 1
```

7.1.4 mls qos scheduler

command

```
mls qos scheduler {sp|wrr <value>}  
no mls qos scheduler
```

mode

Global configuration mode

parameter

sp: strict priority scheduler.
wrr value: weighted round robin scheduler

description

mls qos scheduler command is used to set priority scheduler.
no mls qos scheduler command is used to restore the default priority scheduler.

illustration

configuring OLT using a strict priority scheduler

EPON-OLT(config)# mls qos scheduler sp

7.2 show QoS command

7.2.1 show mls qos

command

show mls qos

mode

Privileged mode

parameter

no

description

Show qos command is used to display global configuration information

illustration

EPON-OLT# show mls qos

enable

7.2.2 show mls qos cos-map

command

show mls qos cos-map

mode

Privileged mode

parameter

no

description

show mls qos cos-mapcommand closes data QoS processing command to view QoS level. ◦

illustration

```
EPON-OLT# show mls qos cos-map
```

```
EPON-OLT#
```

TOP SECRET

Chatptor 8 MSTP Command

8.1 MSTP configuration command

8.1.1 multiple-spanning-tree enable

command

multiple-spanning-tree enable

no multiple-spanning-tree enable

mode

global configuration mode

parameter

no multiple-spanning-tree enable: closing the function of multiple spanning tree,
default disable

enable: turn on this funtion

description

enable or disable compatibility with Cisco spanning tree protocol.

xxx network OLT using 802.1s based MSTP protocol, and the length of MSTI message is 16 bytes, while CISCO OLT BPDU has 26 bytes per MSTI message. In order to compatible with CISCO OLT users, OLT compatible switch should be turn on when configuring OLT for the XXX networks.

illustration

no.

8.1.2 spanning-tree mst configuration

Command

spanning-tree mst configuration

mode

global configuration mode

parameter

no

description

Enter spanning-tree configuration mode

illustration

no

8.1.3 forward-time

command

forward-time

no forward-time

mode

MST configuration mode

parameter

Seconds: the waiting time number of seconds from discarding to learning and from learning to forwarding. The range is 4-30 seconds. Default 15 seconds

According to spanning tree protocol, forward-time must accord with the following conditions: $2 * (\text{forward-time} - 1) \geq \text{max-age}$.

description

forward-time command is used to configure the forwarding delay time

no forward-time command is used to cancel configure the forwarding delay time and restore default value.

illustration

no

8.1.4 hello-time

command

hello-time <seconds>

no hello-time

mode

MST configuration mode

parameter

seconds : root OLT Root OLT generates the interval between configuration information. The range is 1-10 seconds. The default is 2 seconds. According to the generation number protocol, hello-time must satisfy the following conditions:

$2 * (\text{hello-time} + 1) \leq \text{max-age}$.

seconds: The root OLT sends hello datagram's time of interval. range 1-10 seconds. default 2 seconds.

According to spanning tree protocol, hello-time must accord with the following conditions: $2 * (\text{hello-time} + 1) \leq \text{max-age}$.

description

hello-time: setting the interval time for sending hello datagram

no hello-time: cancel the hello-time setting and restore default value.

illustration

setting hello datagram interval time 10 seconds

EPON-OLT(config-mst)# hello-time 10

EPON-OLT(config)#

8.1.5 max-age

command

max-age <seconds>

no max-age

mode

MST configuration mode

parameter

seconds : waiting time that OLT receive the next spanning tree configuration information. Range: 6-40 seconds, default 20 seconds

description

Configure the maximum time to listen to the root bridge

no command for cancel configure the maximum time and restore the default

value.

illustration

no

8.1.6 max-hops

command

max-hops <hops>

no max-hops

mode

MST configuration mode

parameter

hops: The number of hops specified in a domain before BPDU is dropped. Range 1-40. Default 20 jumps

description

Configuring the maximum number of hops for the BPDU datagram effective.

no command for cancel configure the maximum hops and restore the default value.

illustration

no

8.1.7 priority

command

priority <value>

mode

MST configuration mode

parameter

value: the priority of bridge, range: 0-61440, default value: 32768, priority can only be a multiplier of 4096

description

Configuring the bridge priority. The higher priority bridge is more easily selected as a root bridge

illustration

```
# configuring CIST bridge priority 36862
```

```
EPON-OLT(config-mst)# priority 36862
```

8.1.8 instance

command

```
instance <instance-id> [priority <value> | vlan <vlan-id>]
```

```
no instance <instance-id> [vlan <vlan-id>]
```

mode

MST configuration mode

parameter

instance-id: to create an instance number, range 1-15

value : The value of priority, range: 0-61440, minimum size 4096. The default value: 32768

vlan-id: VLAN number Added to the instance

description

instance <instance-id> command for creating instance

instance <instance-id> priority <value> command for configuring MSTI bridge priority.

instance <instance-id> vlan <vlan-id> command for adding instance vlan

no instance <instance-id> command for delete instance

no instance <instance-id> vlan <vlan-id> command delete association of vlan with instance

illustration

```
# creating MSTP instance 2 and adding vlan 2 vlan 3.
```

```
EPON-OLT(config-mst)#instance 2
```

```
EPON-OLT(config-mst)#instance 2 vlan 2
```

```
EPON-OLT(config-mst)#instance 2 vlan 3
```

EPON-OLT(config-mst)#

8.1.9 region

command

region <region-name>

no region

mode

MSTP configuration mode

parameter

region-name: The domain name of the MSTP, length: 1-32 characters.

no command to cancel configuration

description

Configuring domain name

illustration

no

8.1.10 revision

command

revision <revision-num>

mode

MSTP configuration mode

parameter

revision-num: revision version number, range: 0-255

description

Configuring revision version number

illustration

no

8.1.11 spanning-tree force-version

command

spanning-tree force-version <version>

no spanning-tree force-version

mode

interface configuration mode

parameter

version: spanning tree version, scope 0-3, 0 represent STP protocol, 1 represents no support for spanning tree, 2 represents RSTP protocol, 3 represents MSTP protocol. The default protocol type is 0

description

Configuring the type of protocol for sending spanning tree packet.

no command to cancel configuration and restore default value.

illustration

Configuring port ge1 to send STP protocol packages

EPON-OLT(config- ge1)# spanning-tree mst force-version 0

EPON-OLT(config- ge1)#

8.1.12 spanning-tree guard root

command

spanning-tree g guard root

no spanning-tree guard root

mode

interface configuration mode

parameter

no

description

configuring starts the root guard function and does not receive the BPDU packet with higher bridge priority than itself, specifying that the OLT is root OLT. Default:

the function is closed

no command to cancel configuration and restore default value.

illustration

no

8.1.13 spanning-tree autoedge

command

spanning-tree autoedge

no spanning-tree autoedge

mode

interface configuration mode

parameter

no

description

spanning-tree autoedge command enable automatic edge detection

no command to cancel configuration.

illustration

EPON-OLT(config-ge1)# spanning-tree autoedge

8.1.14 spanning-tree link-type

command

spanning-tree link-type { point-to-point | shared}

no spanning-tree link-type

mode

interface configuration mode

parameter

point-to-point : The connection type is point-to-point, allowing port fast converting state.it is default type.

shared: the connection type is shared, and the port state is not allowed to be

converted quickly. The port state depends on computing process of 802.1D

description

Configure the connection type of the interface

no command to cancel configuration

illustration

no

8.2 MSTP view command

8.2.1 show spanning-tree mst

command

```
show spanning-tree mst [config | detail | instance <instance-id> [interface  
<if-name>] | interface <if-name>]
```

mode

privileged mode

parameter

instance-id: instance number, range: 0-15.

if-name: interface number

description

show spanning-tree mst command displays the CIST information and the corresponding tables of VLAN and instance.

show spanning-tree mst config command display the MSTP's configuration information.

show spanning-tree mst detai command displays the details information of MSTP, including CIST interface information, instance information and instance interface information.

show spanning-tree mst instance <instance-id> command displays a instance information.

show spanning-tree mst instance <instance-id> interface <if-name> command displays a CIST interface information.

show spanning-tree mst interface <if-name> command displays a MSTI interface

information.

illustration

```
# display MSTP configuration information
EPON-OLT#show spanning-tree mst config
%
%  MSTP Configuration Information for bridge 1 :
%-----
%  Format Id          : 0
%  Name              : lenovo8800
%  Revision Level    : 1
%  Digest            : 0xD042DCDBBC60C63B623C157F60A37A6F
%-----
EPON-OLT#
EPON-OLT#show spanning-tree mst instance 1 interface fe1/1
%  fe1/1: Port 2001 - Id 87d1 - Role Disabled - State Discarding
%  fe1/1: Designated Internal Path Cost 0 - Designated Port Id 0
%  fe1/1: Configured Internal Path Cost 20000000
%  fe1/1: Configured CST External Path cost 20000
%  fe1/1: CST Priority 128 - MSTI Priority 128
%  fe1/1: Designated Root 0000000000000000
%  fe1/1: Designated Bridge 0000000000000000
%  fe1/1: Message Age 0 - Max Age 0
%  fe1/1: Hello Time 0 - Forward Delay 0
%  fe1/1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0
EPON-OLT#
```

8.3 MSTP Debug command

8.3.1 debug mstp

command

```
debug mstp
```

no debug mstp

mode

Privileged mode

parameter

no

description

debug mstp command is used to enable the MSTP protocol debug switch, and the related logs information display in the log table.

no debug mstp command turn off MSTP debug.

illustration

start MSTP debug

EPON-OLT#debug mstp

EPON-OLT#

8.3.2 debug mstp all

command

debug mstp all

no debug mstp all

mode

Privileged mode

parameter

no

description

debug mstp all command is used to enable the MSTP all protocol debug switch, and the related logs information display in the log table.

no debug mstp all command turn off MSTP all debug

illustration

start MSTP all debug

EPON-OLT#debug mstp all

EPON-OLT#

8.3.3 debug mstp cli

command

debug mstp cli
no debug mstp cli

mode

Privileged mode

parameter

no

description

debug mstp cli command is used to enable the MSTP cli debug switch, and the related logs information display in the log table.

no debug mstp cli command turn off MSTP cli debug

illustration

```
# start MSTP cli debug
EPON-OLT#debug mstp cli
EPON-OLT#
```

8.3.4 debug mstp packet

command

debug mstp packet [recv | send]
no debug mstp packet [recv | send]

mode

Privileged mode

parameter

no

description

debug mstp packet is used to enable the MSTP packet debug switch, and the related logs information display in the log table.

no debug mstp packet command turn off MSTP packet debug

illustration

```
# start MSTP packet debug
EPON-OLT#debug mstp packet rcv
EPON-OLT#
```

8.3.5 debug mstp protocol

command

```
debug mstp protocol [detail]
no debug mstp protocol [detail]
```

mode

Privileged mode

parameter

no

description

debug mstp protocol is used to enable the MSTP protocol debug switch, and the related logs information display in the log table.

no debug mstp protocol command turn off MSTP protocol debug

illustration

```
# start MSTP protocol debug
EPON-OLT#debug mstp protocol detail
EPON-OLT#
```

8.3.6 debug mstp timer

command

```
debug mstp timer [detail]
no debug mstp timer [detail]
```

mode

Privileged mode

parameter

no

description

debug mstp timer is used to enable the MSTP timer debug switch, and the related logs information display in the log table.

no debug mstp timer turn off MSTP timer debug

illustration

start MSTP timer debug

EPON-OLT#debug mstp timer detail

EPON-OLT#

TOP SECRET

Chaptor 8 AAA Command

9.1 802.1x command

9.1.1 dot1x

command

dot1x system-auth-ctrl

no dot1x system-auth-ctrl

mode

global configuration mode

parameter

no

description

The dot1x command enable the 802.1x protocol of OLT. To establish the AAA environment, we first need to execute this command to enable the 802.1x protocol.

no dot1x command disable the 802.1x protocol of OLT. After the 802.1x protocol is shut down, the AAA environment can not be established.

illustration

enable 802.1x protocol

```
EPON-OLT(config)# dot1x system-auth-ctrl
```

```
EPON-OLT#
```

closing 802.1x protocol

```
EPON-OLT(config)# no dot1x system-auth-ctrl
```

9.1.2 dot1x port-control auto

command

dot1x port-control auto

mode

Interface configuration mode

parameter

no

description

Configure a port to be auto, and users under this port need to authenticated to access the network.

illustration

Configuration port ge1 is Auto state

EPON-OLT(config-ge1)# dot1x port-control auto

9.1.3 dot1x port-control force-authorized

command

dot1x port-control force-authorized

mode

Interface configuration mode

parameter

no

description

Configure a port to be force-authorized, and users under this port can access the network without authentication.

illustration

Configuration port ge1 is force-authorized state

EPON-OLT(config-ge1)#dot1x port-control force-authorized

EPON-OLT(config-ge1)#

9.1.4 dot1x port-control force-unauthorized

command

dot1x port-control force-unauthorized

mode

Interface configuration mode

parameter

no

description

Configure a port to be force-unauthorized, and users on this port can't access the network.

illustration

Configuration port ge1 is force-unauthorized state

EPON-OLT(config-ge1)#dot1x port-control force-unauthorized

EPON-OLT(config-ge1)#

9.1.5 no dot1x port-control

command

no dot1x port-control

mode

Interface configuration mode

parameter

no

description

Configure a port to be N/A state, and users under this port can access the network without authentication.

illustration

Configuration port ge1 is N/A state

EPON-OLT(config-ge1)#no dot1x port-control

EPON-OLT(config-ge1)#

9.1.6 dot1x reauthentication

command

dot1x reauthentication

no dot1x reauthentication

mode
Interface configuration mode

parameter
no

description
dot1x reauthentication command is used to enable the re-authentication of 802.1x Protocol.
no dot1x reauthentication command is used to enable re-authentication of the 802.1x Protocol

illustration
enable the re-authentication of 802.1x Protocol
EPON-OLT(config- ge1)# dot1x reauthentication
EPON-OLT(config- ge1)# no dot1x reauthentication

9.1.7 dot1x timeout re-authperiod

command
dot1x timeout re-authperiod <interval>

mode
Interface configuration mode

parameter
interval: Specifies the interval of re-authentication in seconds

description
Configure the interval of time for re-authentication of 802.1x protocol.

illustration
configure the interval of time for re-authentication is 1000 seconds
EPON-OLT(config- ge1)# dot1x timeout re-authperiod 1000

9.1.8 dot1x timeout tx-period

command

```
dot1x timeout tx-period <interval>
```

mode

Interface configuration mode

parameter

interval : Specifies the interval time OLT resending the EAP-Request protocol packet in seconds.

description

Configuring the interval time of the OLT retransmission of the EAP-Request protocol package

illustration

```
#configuring the interval time of the OLT retransmission of the EAP-Request protocol package 20 seconds.
```

```
EPON-OLT(config- ge1)#dot1x timeout tx-period 20
```

9.1.9 dot1x max-req

command

```
dot1x max-req <number>
```

mode

Interface configuration mode

parameter

number : The number of times the OLT retransmission of the EAP-Request protocol package.

description

Configuring the number of times the OLT retransmission of the EAP-Request protocol package

illustration

```
#configuring the number of times is 2 for the OLT retransmission of the EAP-Request protocol package
```

EPON-OLT(config- ge1)#dot1x max-req 2

9.1.10 dot1x quiet-period

command

dot1x quiet-period <interval>

mode

Interface configuration mode

parameter

interval : The interval time of waiting re-authentication, when a user fails authentication need re-authentication. the unit is in seconds.

description

Configuring the interval time of waiting re-authentication, when a user fails authentication need re-authentication

illustration

Configuring the interval time of waiting re-authentication is 20 seconds.

EPON-OLT(config- ge1)#dot1x quiet-period 20

9.1.11 dot1x timeout server-timeout

command

dot1x timeout server-timeout <interval>

mode

Interface configuration mode

parameter

interval: Specifies the interval time of OLT sending the RADIUS packet to to the authentication server. the unit is in seconds.

description

Configuring the interval time of OLT sending the RADIUS packet to to the authentication server.

illustration

Configuring the interval time of OLT sending the RADIUS packet to to the authentication server is 20 seconds.

```
EPON-OLT(config- ge1)#dot1x timeout server-timeout 20
```

9.1.12 dot1x timeout supp-timeout

command

```
dot1x timeout supp-timeout <interval>
```

mode

Interface configuration mode

parameter

interval: Specifies the interval time of OLT sending the EAP request packet to the client, the unit is in seconds.

description

Configuring the interval time of OLT sending the EAP request packet to the client

illustration

```
# Configuring the interval time of OLT sending the EAP request packet to the client is 20 seconds
```

```
EPON-OLT(config- ge1)#dot1x timeout supp-timeout 30
```

9.1.13 show dot1x

command

```
show dot1x
```

```
show dot1x interface
```

mode

Privileged mode

parameter

No

description

show dot1x command: display all 802.1x configuration information, including the

configuration information of all ports; show dot1x interface command: display the information of all access users under this port.

illustration

```
#display all configuration information of 802.1x
EPON-OLT#show dot1x
#display all access users information under this port
EPON-OLT#show dot1x interface
```

9.2 radius-server Command

9.2.1 radius-server host

command

```
radius-server host <ip-address>
```

mode

Global configuration mode

parameter

ip-address: Specify the IP address of the main authentication server.

description

Configuring main authentication server ip address.

illustration

```
#Configuring main authentication server ip address 198.168.80.111
EPON-OLT(config)#radius-server host 198.168.80.111
EPON-OLT(config)#
```

9.2.3 radius-server key

command

```
radius-server key <string>
```

mode

Global configuration mode

parameter

string: Specify the shared key of OLT

description

Configure shared key between OLT and authentication server

illustration

#configuring OLT shared key as abcdef

EPON-OLT(config)#radius-server key abcdef

9.2.4 radius-server deadtime

command

radius-server deadtime <value>

no radius-server deadtime

mode

Global configuration mode.

parameter

no

description

radius-server deadtime <value>Set radius-server dead time (minutes).

no radius-server accounting Closing function.

radius-server deadtime <value> command is used to set radius-server dead time
(unit:minute)

illustration

#setting radius-server dead time as 100 minutes

EPON-OLT(config)# radius-server deadtime 100

9.2.5 radius-server timeout

command

radius-server timeout <value>

mode

Global configuration mode

parameter

Value: timeout value, unit is seconds

description

Configuring radius-server timeout time

illustration

Configuring radius-server timeout time is 5 seconds

EPON-OLT(config)# radius-server timeout 5

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Chaptor 10 IGMP SNOOPING Command

10.1 IGMP Snooping Command

10.1.1 ip igmp snooping

command

ip igmp snooping

no ip igmp snooping

mode

Global configuration mode

parameter

no

description

ip igmp snooping command is used to start the IGMP snooping function of all VLAN

no ip igmp snooping command is used to enable the IGMP snooping function of all VLAN.

illustration

no

10.1.2 ip igmp snooping fast-leave

command

ip igmp snooping fast-leave vlan <vlan-id>

no ip igmp snooping fast-leave vlan <vlan-id>

mode

Global configuration mode

parameter

vlan-id: the VLAN number that start fast-leave function

description

Start IGMP V2 fast-leave function for a vlan

Start IGMP V2 fast-leave function for a vlan

illustration

```
#start vlan 2 IGMP V2 multicast members fast-leave function
```

```
EPON-OLT(config)#ip igmp snooping fast-leave vlan 2
```

10.1.3 ip igmp snooping delay-time

command

```
ip igmp snooping delay-time <value> vlan <vlan-id>
```

```
no ip igmp snooping delay-time <value> vlan <vlan-id>
```

mode

Global configuration mode

parameter

value: delay time, unit is seconds, range: 0-260.

Vlan-id: The VLAN number of the configured VLAN, range: 1—40104.

description

Setting dynamic leave delay time for a VLAN multicast member. After receiving the leave packet, wait for a specified interval time, then delete the member.

No command is used to cancel fast leave delay time setting and restore the default value.

illustration

```
# configuration vlan1 receives the dynamic delay leave packet of the multicast member for 100 seconds to leave the member.
```

```
EPON-OLT(config)# ip igmp snooping delay-time 100 vlan 1
```

```
EPON-OLT(config)#no ip igmp snooping delay-time vlan 1
```

```
EPON-OLT(config)#
```

10.1.4 ip igmp snooping vlan

command

```
ip igmp snooping vlan <vlan-id>  
no ip igmp snooping vlan <vlan-id>
```

mode

Global configuration mode

parameter

Vlan-id: The VLAN number of the configured VLAN, range: 1—40104.

description

Configuring vlan enable multicast.
No command is used to cancel vlan multicast

illustration

```
# configuring vlan 2 enable multicast  
EPON-OLT(config)# ip igmp snooping vlan 2  
EPON-OLT(config)#
```

10.1.5 ip igmp snooping mrouter

command

```
ip igmp snooping mrouter vlan <vlan-id>  
no ip igmp snooping mrouter vlan <vlan-id>
```

mode

Global configuration mode

parameter

Vlan-id: VLAN number.

description

Configuring the query port, the other ports receive the multicast joining and leaving packet will be forward to the port; the port will join the multicast group.

No command is used to delete query port.

illustration

```
#configuring port ge1 as vlan2 query port
EPON-OLT(config-ge1)#no ip igmp snooping mrouter vlan 2
EPON-OLT(config)#
```

10.1.6 ip igmp snooping querier-timeout

command

```
ip igmp snooping querier-timeout vlan <vlan-id>
no ip igmp snooping querier-timeout vlan <vlan-id>
```

mode

Global configuration mode

parameter

Vlan-id: The VLAN number of the configured VLAN, range: 1 – 40104.

description

Configuring multicast query timeout
No command is used to cancel multicst query timeout

illustration

```
#configuring vlan2 multicast query timeout
EPON-OLT(config)# ip igmp snooping querier-timeout vlan 2
EPON-OLT(config)#
```

10.1.7 ip igmp snooping vlan

command

```
ip igmp snooping vlan <vlan-id>
no ip igmp snooping vlan <vlan-id>
```

mode

global configuration mode

parameter

vlan-id: vlan number

description

To start a VLAN IGMP snooping function, you must first execute IP IGMP snooping before configuring a igmpsnoop function of VLAN.

no command is used to disable VLAN's IGMP snooping function.

illustration

disable the IGMP snooping function of vlan3, and other VLAN enable IGMP snooping function.

```
EPON-OLT(config)#no ip igmp snooping vlan 3
```

10.2 IGMP SNOOPING view command

10.2.1 show ip igmp snooping

command

```
show ip igmp snooping [fast-leave [vlan <vlan-id>] | fast-leave-timeout [vlan <vlan-id>] | forwarding-table | group-membership-timeout [vlan <vlan-id>] | interface [vlan <vlan-id>] | query-membership-timeout [vlan <vlan-id>] | vlan <vlan-id> ]
```

mode

privileged mode

parameter

fast-leave: Display enabled immediate leave function state

vlan <vlan-id>: display specified vlan configuration.

fast-leave-timeout: display fast-leave-timeout configuration.

forwarding-table: display multicast conversion table, including multicast, vlan and port.

group-membership-timeout: display group-membership-timeout configuration

interface: display the relationship between the vlan and port that can be used.

query-membership-timeout: display query-membership-timeout configuration

vlan: Display the IGMP snooping configuration of the specified VLAN.

description

Display the igmp snooping configuration

illustration

```
# display the vlan1 igmp snooping configuration.
```

```
EPON-OLT#show ip igmp snooping vlan 1
```

```
Bridge 1 VLAN 0:
```

```
IGMP Snooping is globally enabled
```

```
Bridge 1: VLAN 1
```

```
IGMP Snooping is enabled
```

```
IGMP Snooping fast-leave is enabled
```

```
IGMP Snooping fast-leave-timeout is 300000 ms
```

```
IGMP snooping query membership timeout is 300000 ms
```

```
IGMP snooping group membership timeout is 400000 ms
```

```
EPON-OLT#
```

10.2.2 show ip igmp groups

command

```
show ip igmp groups { group ip address | ifname | detail }
```

mode

```
priviledged mode
```

parameter

```
group ip address: display group membership ip address.
```

```
ifname: group interface
```

```
display group detail information.
```

description

```
no
```

illustration

```
no
```

10.2.3 show ip igmp snooping mrouter

command

```
show ip igmp snooping mrouter [interface <if-name> | vlan <vlan-id>]
```

mode

privileged mode

parameter

interface <if-name>: Display specified port

vlan <vlan-id>: display specified vlan query port

description

Display query port information

illustration

```
#display vlan3 query port
```

```
EPON-OLT#show ip igmp snooping mrouter vlan 3
```

Bridge	VLAN	Ports
-----	-----	-----
	1	3 fe1/2,

```
EPON-OLT#
```

10.2.4 show ip igmp interface

command

```
show ip igmp interface
```

mode

privileged mode

parameter

no

description

Display group interface information

illustration

```
# Display group information
```

```
EPON-OLT#show ip igmp interface
Interface vlan1.1 (Index 3)
  IGMP Configure Disabled, IGMP Status Disabled, Inactive, Version 3 (default)
  IGMP interface has 0 group-record states
  IGMP activity: 0 joins, 0 leaves
  IGMP query interval is 125 seconds
  IGMP querier timeout is 255 seconds
  IGMP max query response time is 10 seconds
  Last Member Query Count is 2
  Last member query response interval is 1000 milliseconds
  Group Membership interval is 260 seconds
```

10.3 IGMP SNOOPING Debug command

10.3.1 debug igmp snooping

command

```
debug igmp snooping [all] | [decode] | [encode] | [events] | [fsm] | [recv] |
[send] | [tib]
```

```
no debug igmp snooping [all] | [decode] | [encode] | [events] | [fsm] | [recv]
| [send] | [tib]
```

mode

Privileged mode

parameter

all: open igmp snooping all debug switch

decode: IGMP packet decode.

encode: IGMP packet neocode.

recv: open igmp snooping packet reception.

send: open igmp snooping packet sending.

description

debug igmp snooping command is used to turn on the IGMP snooping related debug switch to enable users to see the related events of IGMP snooping and the

sending and receiving of messages.

no debug igmp snooping command closes the corresponding IGMP snooping debug switch.

illustration

```
# open igmp snooping report debug reception
```

```
EPON-OLT#debug igmp snooping receive
```

```
EPON-OLT#
```

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Chapter 11 Snooping

11.1 dhcp snooping Configuration command

11.1.1 ip dhcp snooping

command

```
ip dhcp snooping [binding] | [database] | [errdisable] | verify] | [vlan]
no ip dhcp snooping
```

mode

Global configuration mode

parameter

Binding: Configuring the trusted VLAN bound by DHCP.

vlan: Configure the trusted VLAN of the DHCP server.

description

ip dhcp snooping command is used to enable the global DHCP snooping function

no ip dhcp snooping command is used to disable the global DHCP snooping

function

illustration

```
# Configure OLT e the DHCP Snooping function, and only the DHCP server
connected vlan100 is legal.
```

```
EPON-OLT(config)#ip dhcp snooping vlan100
```

11.1.2 dhcp snooping

command

```
ip dhcp snooping [information | limit | trust]
no ip dhcp snooping [information | limit | trust]
```

mode

Interface configuration mode

parameter

information: Configuring DHCP Snooping agent information .

limit: Configure DHCP Snooping limit rate.

trust: Configuring the DHCP Snooping trust.

description

ip dhcp snooping trust command enable the interface DHCP snooping function

illustration

```
EPON-OLT(config-ge1)#ip dhcp snooping trust
```

```
EPON-OLT(config-ge1)#
```

11.2 dhcp snooping view command

11.2.1 show ip dhcp snooping

command

```
show ip dhcp snooping
```

mode

Privileged mode

parameter

no

description

show ip dhcp snooping command to view DHCP snooping configuration information

illustration

```
EPON-OLT#show ip dhcp snooping
```

11.2.2 show dhcp snooping binding vlan

command

```
show dhcp snooping binding vlan <vlan-id>
```

mode

Privileged mode

parameter

vlan-id: vlan number

description

show dhcp snooping binding-table command view the binding table information learned by DHCP snooping.

illustration

```
EPON-OLT#show dhcp snooping binding vlan 1
```

Chapter 12 ACL Command

12.1 ACL configuration command

12.1.1 Standard ACL rules

command

```
access-list {<group-id>} {permit | deny } {<ip-add>|<any>|<host>}
```

mode

global configuration mode

parameter

group-id: rule group number <1-99>|<100-199>|<1300-1999>|<2000-2699>

permit: enable forwarding the packets that match specified rules.

deny: disable forwarding the packets that match specified rules.

Ip address: match ip address.

any: any source host

host: a single host address

description

Configure the ACL access control rules based on standard ACL rules. This type of rule only determines whether the source IP address of the packet matches the configured ACL rule; if it matches, it does the corresponding processing according to deny / permit. In all ACL rules, there is a hidden rule for all IP packets of deny, which is automatically generated by the system when the user configures an ACL rule. Therefore, users do not need to manually go to the configuration of deny any. This is also true based on extended IP rules and MAC address rules.

illustration

Configure a set of rules that permit packet forwarding on a 192.168.0.0 network segment with a source address and deny packet forwarding on 192.168.0.11 and other addresses

```
EPON-OLT(config)#access-list 1 deny host 192.168.0.11
```

```
EPON-OLT(config)#access-list 1 permit 192.168.0.0 0.0.0.255
```

```
EPON-OLT(config)#access-list 1 deny any
```

```
EPON-OLT(config)#
```

12.1.2 Extended ACL rules

command

```
access-list {<group-id>} {permit | deny }
```

mode

global configuration mode

parameter

group-id: rule group number <100-199>|<2000-2699>

permit: enable forwarding the packets that match specified rules.

deny: disable forwarding the packets that match specified rules.

illustration

Configuration rules deny IP packets from 192.168.0.2 to 192.168.1.0 network segment

```
EPON-OLT(config)#access-list 100 deny ip host 192.168.0.2 192.168.1.0 0.0.0.255
```

12.1.3 ip-access-group

command

```
ip-access-group <group-id>
```

mode

interface configuration mode

parameter

group-id : specified rule group number, standard IP rule range <1-99>|<1300-1999>, extended IP rule range <100-199>|<2000-2699>, Mac arp rule range <1100-1199>, Mac ip rule range <700-799>

description

specify a set of ACL rules on the port

illustration

```
# specify a set of ACL rules on ge1 port
EPON-OLT(config-ge1)#ip-access-group 1 in
EPON-OLT(config-ge1)#
```

12.1.4 delete ACL rule

command

```
no access-list <group-id>
```

mode

global configuration mode

parameter

group-id: access list group id

description

Delete configuration's ACL rule

illustration

```
#delete access list 1
EPON-OLT(config)#no access-list 1
EPON-OLT(config)#
```

12.2 ACL view command

12.2.1 show ip-access-group

command

```
show ip-access-group
```

mode

```
priviledged mode
```

parameter

```
no
```

description

```
Display the configuration of the ACL rule
```

illustration

```
EPON-OLT#show ip-access-group
```

```
Interface ge1
```

```
access-list 100 is set
```

```
EPON-OLT#
```

12.2.2 show access-list

command

```
show access-list [<group-id>]
```

mode

```
priviledged mode
```

parameter

```
group-id: the rule number
```

description

```
Display configuration's ACL rules
```

illustration

```
# Display ACL rules configuration information
```

```
EPON-OLT#show access-list
```

Standard IP access list 1, Remark acl1

deny 192.168.1.0, wildcard bits 0.0.0.255

permit any

EPON-OLT#

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Chapter 13 TCP/IP Basic Command

13.1 configuration command

13.1.1 arp

command

arp <ip-address> <mac-address>

no arp <ip-address>

mode

global configuration mode

parameter

ip-address: Bound IP address

mac-address: The physical address of the binding is represented by 12 bit 16 hexadecimal, and the MAC address is HHHH.HHHH.HHHH.;

mac-address: Bound physical address

description

Bind IP and MAC with the layer two interface. After the configuration is successful, the corresponding data of the IP and MAC addresses can only be forwarded from the specified layer two port.

The no arp command is used to delete corresponding ARP table entries or static configuration.

illustration

#Configure IP address 192.168.1.1 and MAC address 0003.0010.1011 mapping

```
EPON-OLT(config)#arp 192.168.1.1 0003.0010.1011
```

```
EPON-OLT(config)#
```

13.1.2 ip address

command

ip address <address/mask>

no ip address [<address/mask>]

mode

interface mode

parameter

address/mask: IP address and mask length. address range:0.0.0.0 to 223.255.255.255; mask leng:0 to 32.

description

ip address command is used to configure the IP address for a layer three interface. This command is currently effective only under the layer three interface (VLAN). You need to use the ip interface VLAN command to start the layer three interface before you using the command.

no ip address command is used to delete the configured IP address on the interface

illustration

configuration interface vlan100 ip address is 192.168.192.100, and the mask length is 24.

```
EPON-OLT#conf ter
```

```
EPON-OLT(config)#inter vlan1.100
```

```
EPON-OLT(config-vlan1.100)#ip addr 192.168.192.100/24
```

```
EPON-OLT(config-vlan1.100)#end
```

```
EPON-OLT#show ip interface vlan1.100 brief
```

Interface	IP-Address	Status	Protocol
Vlan1.100	192.168.192.100	up	up

```
EPON-OLT#
```

13.1.2 ip dhcp client

command

ip dhcp client

no ip dhcp client

mode

interface configuration mode

parameter

no

description

ip dhcp client command is used to configure the Vlan automatically obtain IP address. Before using this command, you need to use the ip interface VLAN command to start the layer three interface. Then enter the VLAN layer three interface to configuration.

no ip address command is used to delete the automatic IP address acquisition function configured on the interface.

illustration

configure interface vlan100's ip address is automatically obtained by DHCP.

```
EPON-OLT(config)#inter vlan1.100
```

```
EPON-OLT(config-vlan1.100)#ip dhcp client
```

13.1.3 ip route

command

```
ip route {<ip-address>/<mask-length> | <ip-address> <mask>} <gateway >
```

```
no ip route {<ip-address>/<mask-length> | <ip-address> <mask>}
```

mode

global configuration mode

parameter

ip-address: destination IP address

mask-length: mask length

Mask: ip address mask

gateway: IP address of the next hop for routing.

description

ip route command is used to configure static routing, and route selection and routing backup can be achieved according to distance parameters.

no ip route commands is used to delete static routes. If there are multiple routes

to the same network, not specifying the gateway will delete all static routes that match the destination network.

illustration

```
# Configure a route to the 210.1.1.0/24 segment, the next hop is 172.20.2.2
```

```
EPON-OLT#configure terminal
```

```
EPON-OLT(config)#ip route 210.1.1.0/24 172.20.2.2
```

```
EPON-OLT(config)#
```

```
#delete a static routing
```

```
EPON-OLT#configure terminal
```

```
EPON-OLT(config)#no ip route 210.1.1.0/24
```

```
EPON-OLT(config)#
```

13.1.4 ip interface vlan

command

```
ip interface vlan <vlan-id>
```

```
no ip interface vlan <vlan-id>
```

mode

```
global configuration mode
```

parameter

```
vlan-id: vlan number
```

description

```
ip interface vlan command is used to start layer three vlan interface.
```

```
no ip interface vlan command is used to cancel layer three vlan interface.
```

illustration

```
#start the vlan2 layer three interface
```

```
EPON-OLT(config)#ip interface vlan 2
```

13.2 Display command

13.2.1 show ip arp

command

Show ip arp

mode

priviledged mode

parameter

no

description

Display address resolution table

illustration

Display the dynamic learning ARP table

EPON-OLT#show arp dynamic

ARP TABLE

Internet Address	Physical Address	Type
210.21.223.113	0001.30ba.9c00	dynamic
210.21.223.117	0005.6401.22ad	dynamic

Total Number : 2

EPON-OLT#

13.2.2 show ip interface

command

show ip interface [<ifname>] brief

mode

priviledged mode

parameter

ifname: The interface name that needs to be specified, which can be a layer two interface or a layer three interface. Default displays all layer two and layer three

interfaces.

description

show ip interface command is used to display the summary information of the interface.

illustration

Display the information of the interface vlan24

EPON-OLT#show ip interface vlan24 brief

Interface	IP-Address	Status	Protocol
vlan24	192.168.192.32	up	up

EPON-OLT#

13.2.3 show ip route

command

show ip route [<network>]

mode

priviledged mode

parameter

no parameter: displays the active route in the current routing table.

network: display associated routing information of the pecifies the network, using 32 bits decimal notation or address prefix / mask(A.B.C.D/M).

description

The show ip route command is used to display routing information. Contents include destination address, mask length, protocol, priority, weight, next hop and output interface.

This command displays only the currently activated route (the best route).

illustration

Display the current routing

EPON-OLT#show ip route

Codes: K - kernel, C - connected, S - static, R - RIP, B – BGP

O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default
C 192.168.0.0/24 is directly connected, vlan1
EPON-OLT#

Display the routing of the specified network

EPON-OLT#show ip route 1.0.2.0

Routing entry for 1.0.2.0/24

Known via "rip", distance 120, metric 2, best

Last update 00: 05: 37 ago

* 172.20.1.3, via vlan2

EPON-OLT#

13.2.4 show ip route database

command

show ip route database

mode

priviledged mode

parameter

no parameter:Displays all routes in the routing table, including active and active routes.

description

show ip rout database command is used to display route information in the entire routing table, including inactive routing.

illustration

#display all routing information

EPON-OLT#show ip route database

Codes: C - connected, S - static, O - OSPF, IA - OSPF inter area

Chapter 14 SNMP Command

14.1 SNMP configuration command

14.1.1 snmp-server community

command

```
snmp-server community <community-name> {ro | rw}
```

```
no snmp-server community <community-name>
```

mode

global configuration mode

parameter

community-name: SNMP community name. Character length: 1~20.

ro: read only.

rw: read and write

description

snmp-server community command is to configure the SNMP common community name and the related attributes.

no snmp-server community command is to delete the SNMP common community name

illustration

```
# Configure a community named private and attribute is read and write property.
```

```
EPON-OLT(config)#snmp-server community private rw
```

```
EPON-OLT(config)#
```

```
# Delete a community named private
```

```
EPON-OLT(config)#no snmp-server community private
```

```
EPON-OLT(config)#
```

14.1.2 snmp-server enable traps

command

snmp-server enable traps
no snmp-server enable traps

mode
global configuration mode

parameter
no

description
snmp-server enable traps command is configured for SNMP trap reception
no snmp-server enable traps command is used to delete SNMP trap reception.

illustration
EPON-OLT(config)# snmp-server enable traps

14.1.3 snmp-server host

command
snmp-server host <ipaddress> traps version {1 | 2c} <word>
no snmp-server host <ipaddress> traps version {1 | 2c} <word>

mode
global configuration mode

parameter
ipaddress: trap reception ip address.
1: SNMP version V1
2c: SNMP version V2c

description
snmp-server host <ipaddress> traps command is to configure the related properties of SNMP trap and trap reception ip address.
no snmp-server host <ipaddress> traps is used to delete SNMP trap reception.

illustration
Configure a SNMP trap named test and send the destination IP is 192.168.0.10;
the SNMP version is 1.
EPON-OLT(config)# snmp-server host 192.168.0.10 traps version 1
EPON-OLT(config)#

14.1.4 snmp-server contact

command

snmp-server contact <line>

no snmp-server contact

mode

global configuration mode

parameter

line: contact related content

description

snmp-server contact command is used to config the contact information

no snmp-server contact is used to delete the contact information

illustration

configuration content of the contact: E-mail: networks@lenovo.com

EPON-OLT(config)# snmp-server contact E-mail: networks@lenovo.com

14.1.5 snmp-server user

command

snmp-server user <user-name> <group-name> v3 [auth {md5 | sha} <auth-key>]

no snmp-server user <user-name> <group-name> v3

mode

global configuration mode

parameter

user-name: setting user name of SNMPv3 engine ID. Character length: 1~32

group-name: Setting the group name of the user. Character length: 1~32

auth: setting the authenticable user security level for user

md5: Using the hmac MD5 authentication protocol for authentication

sha: Using authentication HMAC Sha authentication protocol

auth-key : type the authentication password, MD5 is a 16 bytes hexadecimal character string, sha is a 20 bytes hexadecimal character string.

description

snmp user command is to set a user name corresponding to the local engine ID of SNMPv3. If the username supports authentication, the authentication protocol (md5 or sha) and the corresponding authentication password must be set.

no snmp user command is to delete a user name corresponding to SNMPv3's local engine ID.

illustration

Set a user name initialmd5 supporting MD5 authentication, the group name is initia, and the authentication password is 047b473f93211a17813ce5fff290066b.

```
EPON-OLT(config)# snmp-server user initialmd5 initial v3 auth md5  
047b473f93211a17813ce5fff290066b
```

Set a user name initialnone without authentication. The group name is initial.

```
EPON-OLT(config)# snmp-server user initialnone initial v3
```

Delete user with username initialmd5 and group name initial.

```
EPON-OLT(config)#no snmp-server user initialmd5 initial v3
```

14.1.6 snmp-server group

command

```
snmp-server group <group-name> v3 {auth | noauth} [notify <notify-view-name>  
| write <write-view-name> | read <read-view-name>]
```

```
no snmp-server group <group-name> v3 {auth | noauth}
```

mode

global

parameter

group-name: configuration of group name. Character length: 1~32

auth: access control need authentication

Noauth: access control doesn't require authentication

notify: set producing notifications for the MIB view

notify-view: Set the view name of the MIB view that can produce the notification

write: Set the writable for MIB view

write-view: Set the writable for view name of MIB view

read: Set the readable for MIB view

read-view: Set the readable for view name of MIB view

description

snmp group command is to set up SNMP group name and information

no snmp group command is to delete SNMP group name and information

illustration

The # set group name is initial, the security level is (auth), the notification specified by the security model (v3), and the writable or readable view names are Internet, Internet, Internet:

```
EPON-OLT(config)# snmp-server group initial v3 auth read internet write internet  
notify internet
```

```
# Delete groups names initial group.
```

```
EPON-OLT(config)# no snmp-server group initial v3 auth
```

```
EPON-OLT(config)#
```

14.2 SNMP view command

14.2.1 show snmp community

command

```
show snmp community
```

mode

```
priviledged mode
```

parameter

```
no
```

description

show snmp community command is to display all of the current public names

illustration

```
# display all of the public names
```

EPON-OLT#show snmp community

EPON-OLT#

14.2.2 show snmp engine-id

command

show snmp engine-id

mode

priviledged mode

parameter

no

description

show snmp engine-id command is to display the engine-id used by SNMP

illustration

display the engine-id used by SNMP

EPON-OLT#show snmp engine-id

EPON-OLT#

14.2.3 show snmp user

command

show snmp user [specify-name-of-user]

mode

priviledged mode

parameter

no

description

show snmp user command is to display the user and its properties used by SNMP

illustration

display the user and its properties used by SNMP

EPON-OLT#show snmp user initialnone

EPON-OLT#

14.2.4 show snmp group

command

show snmp group

mode

priviledged mode

parameter

no

description

show snmp group command is to display all the group information used by SNMP

illustration

display all the group information used by SNMP

EPON-OLT#show snmp group

EPON-OLT#

Chaptor 15 System log command

15.1 General log command

15.1.1 debug ip

command

debug ip [dhcp | icmp | packet | tcp | udp]

no debug ip [dhcp | icmp | packet | tcp | udp]

mode

Priviledged mode

parameter

all: Debug all IP, ARP, ICMP, UDP, TCP and other protocol packets. Analyze importtand information of ip header, including protocol type, packet length and layer four messages, such as port numbers, etc.

arp: Debug the ARP protocol packet, analyzing ARP the content of ARP, determining whether to be a request or response packet, sending IP and receiving MAC address information, etc.

icmp: Debug the receiving and sending of the ICMP Protocol data message. The command mainly analyzes the source and destination address of IP header.

Recv: received ip packet

Send: sent ip packet

tcp: debug the sending and receiving states of the TCP transport layer protocol, show the size of the receiving and receiving packet window, application layer port, the size of the packet, and the source and destination addresses.

udp: Debug the sending and receiving states of the UDP transport layer protocol, shows the application layer port, the size of the packet, and the source and destination addresses.

description

debug ip command is used to open the debug switch for packets encapsulated in the IP header, so that users can see the detailed information about the sending

and receiving of the specified IP type message

no debug ip command is used to close the corresponding IP message debug switch

illustration

#open the icmp packets debug switch

EPON-OLT#debug ip icmp

EPON-OLT#

15.1.3 no debug all

command

no debug all

mode

Privileged mode

parameter

no

description

no debug all command is used to close all debug switch

illustration

close all debug switch

EPON-OLT#no debug all

EPON-OLT#

15.1.4 show debugging

command

show debugging [igmp | ip | mstp]

mode

Privileged mode

parameter

igmp: debug switch of related IGMP

ip: debug switch of related IP
mstp: debug switch of related MSTP

description

show debugging command is used to view which debug switches are currently open.

illustration

view the current opening debug switches

EPON-OLT#show debugging

IP debugging status:

IP receive packets debugging is on.

IP send packets debugging is on.

MSTP debugging status:

IGMP SNOOPING debugging status:

EPON-OLT#

15.1.5 show logging

command

show log

mode

Privileged mode

parameter

no

description

show logging command is used to display log information in the log table

illustration

display log information in the log table

EPON-OLT#show logging

2089/08/10 11: 01: 24 Informational: ICMP: SEND: Destination IP: 172.20.10.54

Source IP: 172.20.10.2 ICMP Type: 11 ICMP Code: 0

2089/08/10 11: 01: 21 Informational: ICMP: SEND: Destination IP: 172.20.10.54

Source IP: 172.20.10.2 ICMP Type: 11 ICMP Code: 0

2089/08/10 11: 01: 18 Informational: ICMP: SEND: Destination IP: 172.20.10.54

Source IP: 172.20.10.2 ICMP Type: 11 ICMP Code: 0

2089/08/10 11: 00: 13 Informational: ICMP: SEND: Destination IP: 172.20.3.3

Source IP: 172.20.14.2 ICMP Type: 3 ICMP Code: 3

2089/08/10 11: 00: 13 Informational: ICMP: SEND: Destination IP: 172.20.3.3

Source IP: 172.20.14.2 ICMP Type: 3 ICMP Code: 3

2089/08/10 10: 59: 38 Informational: ICMP: SEND: Destination IP: 172.20.10.54

Source IP: 172.20.10.2 ICMP Type: 11 ICMP Code: 0

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