EPON OLT FD1002S CLI User Manual

(V1.2)

Shenzhen C-Data Technology Co., Ltd.

www.cdatatec.com

Contents

1. Preface

1.1. Introduction

C-Data OLT FD2000S system could support inband and outband network management mode and EMS network management based on SNMP ，which we would provide our EMS software along with the parcel for shipping .Besides, we could also support CLI management for user to get access to our EPON system with more option. Herein ,we would like to introduce our CLE user manual .However ,we would still highly recommend users to use our EMS management to monitor and configure the whole EPON system via EMS since we have offered very powerful function and simple operation in the EMS interface .

1.2. Definition

Product/Abbreviation	Description
EPON	Gigabit Ethernet Passive Optical Network
OLT	Optical Line Terminal
ONU	Optical Network Unit

2. Configuration Preparation

2.1. Management Model
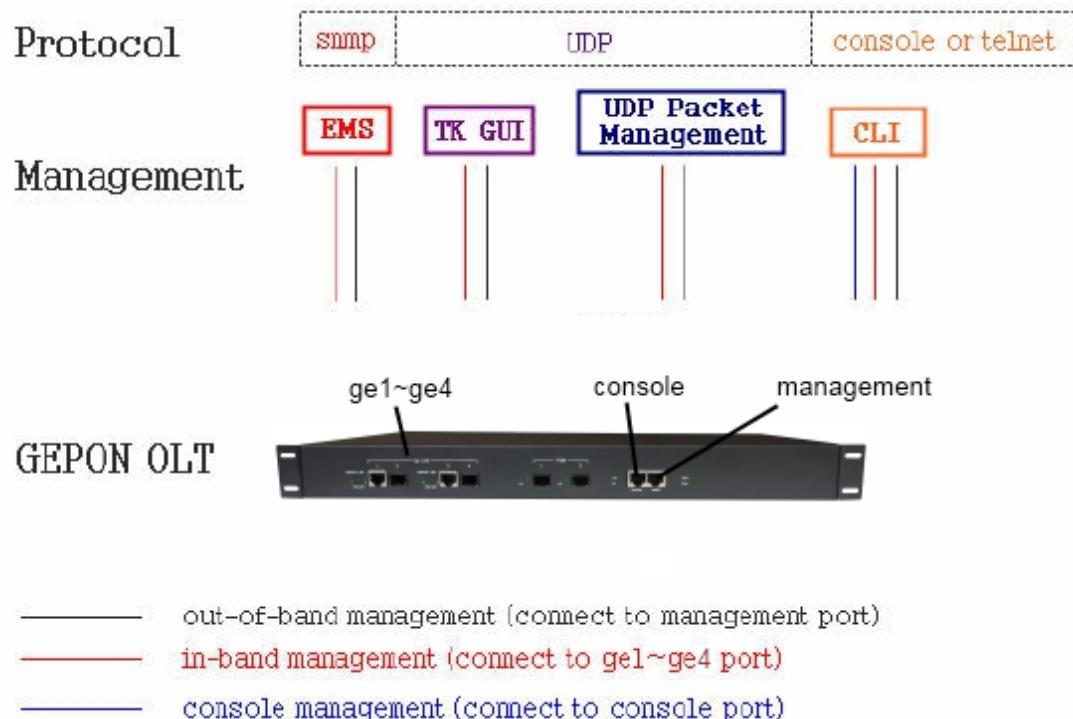
2.2. Console Port Connection

There is a Console port in the front panel of switch control module .The command line configuration interface is enabled via console port connecting to the NMS's superior terminal .Super terminal's basic configuration is as follows :
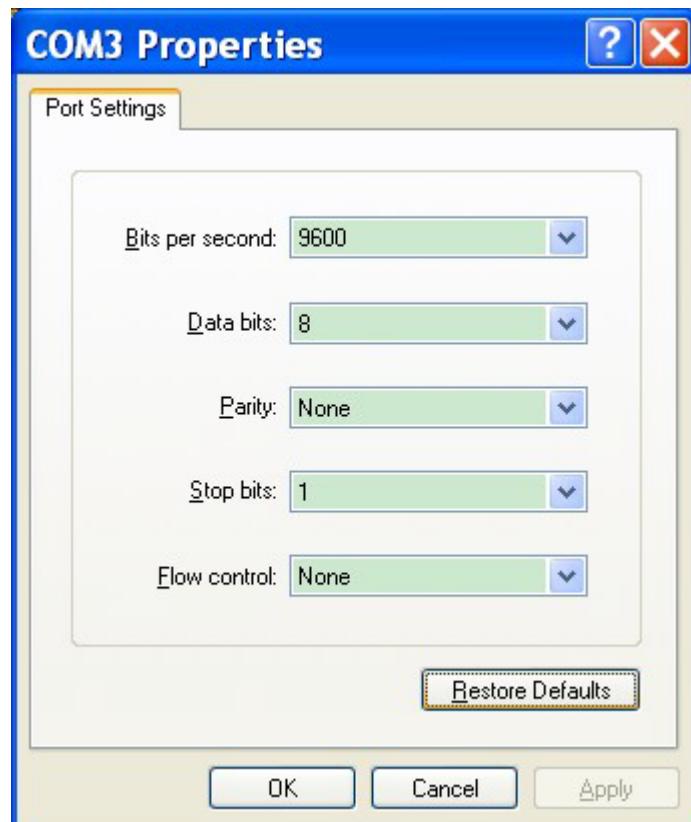
2.3. Network Connection

FD2100S support inband management (CAT5 connect to ge1-ge8 port) and outband management (CAT4 cable to management port).After Telnet to CLI interface ,we can manage the EPON products.

Defualt outband network management IP:**192.168.120.100**

Default inband network management IP: **192.168.1.100**

2.4. User Login EPON CLI System

System provide two login accounts default as follows:

User	Password
admin	**Admin**
guest	**Blank**

After you log in successfully, the following interface pops up :

```
****************************************************************
          Command Line Interface for   EPON System
                  Hardware Ver:   OLT-0.2
```
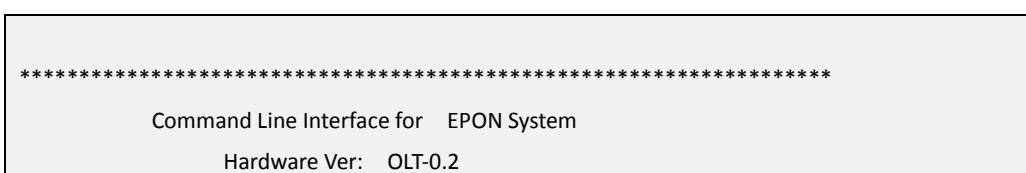
```
                 Software Ver:    OLT-1.5.2

                 Created Date:    Sep 30 2013 17:02:11

         Copyright (c) 2006-2012 . All rights reserved.

     ************************************************************
     Login:admin
     Password:
     epon>
```

When the command lines shows : epon>　　,user can input the configuration command to mange
or inquire the configuration information .

3. Command Format Illustration

3.1. Command Format

1   Command Conventions
2   Keyboard Operation Conventions
3   Symbols

Convention	Description
Boldface	Used to highlight the key words (inportant words that should never be modified when input).
italic	Used to denote the parameters that should be replaced by actual values when practical use in command line.
[ ]	Items(keywords or arguments) in square brackets [ ] are optional.
(x | y | …)	Alternative items are grouped in braces and separated by vertical bars. One is selected.
[x|y|…]	Optional alternative items are grouped in square brackets and separated by vertical bars. One or none is selected.
<x-y>	Values range from x to y. One is selected.
$	A line starting with the $ sign is comments.

Format	Description
<key>	Press the key with the key name inside angle brackets. For example, <Enter>, <Tab>, <Backspace>,　or <A>.

<key1 + key2>	Press the keys concurrently. For example, <Ctrl+Alt+A> means the three keys should be pressed concurrently.
<key1, key2>	Press the keys in turn. For example, <Alt, A> means the two keys should be pressed in turn.

Eye-catching symbols are also used in the manual to highlight the points worthy of special attention during the operation. They are defined as follow:

⚠ Caution: Means reader be extremely careful. Improper operation may cause data loss or damage to equipment

◤ Warning: Means reader be extremely careful. Improper operation may cause bodily injury.

📖 Note: Means a complementary description.

4. Hints Commands in this mannual is case sensitive.

3.2. Typical Parameter Category

When configure the system with CLI(command lines) ,we will meet with some data types with fixed format ,which embody some index's meaning ,expression mode and value range.

Herein,we list some repeated commands to explain their meaning and use.

vlanid	Vlan index with valid integer value from 1 to 4094 .
port	Port number including gigabitethernet ports from 1 to 6, short for ge1 to ge6 . To mention that ge5 to ge6 can't be seen, corresponding with 2 PON ports .We can say that ge5~ge6 is for PON1-PON2 configuration. While ge1~ge4 is for switch control modul's 4 uplink port configuration.
portlist	Port list such as "ge1,ge5"(2 ports) ,"ge1-ge5"(meaning 5 ports from ge1 to ge5.)
ifx-name	Ip port name includes inband and outband.inband interfaces is

	embodyed with vi+number (vi means virtual interface).for example: "vi0" means the first inband IP interface(it's the only one interface to support inband ip interface.);outband interface is embody with "cpm+number".cpm is the outband interface's device name .For example, cmp0 means the first outband ip nterface .(this is the only one interface to support outband ip interface .)
ip-addr	Ip address such as 192.168.1.1
ip-mask	Ip mask with 4 segments of algorism bytes ,such as 255.255.255.0
mac	MAC address such as 00:01:02:02:04:05

moduleId	Module ID number
	moduleId module name
	  3 common mbuf pool
	  4 HDLC driver
	  5 inter-board communicaiton protocol
	  9 device online status maintenance
	  10 system basic configuration
	  11 user manager
	  12 switch port attribute management
	  13 switch port status poll task
	  14 switch port statistics poll task
	  15 trunk module
	  16 mirroring module
	  17 normal vlan module
	  18 protocol type based VLAN
	  19 rapid spanning tree module
	  20 IP network interface
	  21 misc configuration on switch card
	  22 ONU base manage configuration
	  23 ONU advanced manage configuration
	  24 ONU UNI port configuration
	  25 ONU Queue configuration
	  26 ONU ACL Rules configuration
	  27 ONU port VLAN configuration
	  28 ONU authentication
	  29 ONU port QoS configuration
	  30 ONU IGMP Snooping configuration
	  31 ONU loopback test configuration
	  32 ONU dynamic mac table configuration
	  33 Extern network management module
	  34 OLT basic configuration
	  35 OLT advanced configuration

	36	OLT bridge configuration
	37	OLT DBA configuration
	38	OLT aggregate bandwidth configuration
	39	OLT acl rules configuration
	40	OLT priority copy mapping configuration
	41	OLT IGMP configuration
	42	OLT PPPOE configuration
	43	Logical Link basic configuration
	44	Logical Link advanced configuration
	45	Logical Link SLA configuration
	46	Logical Link VLAN configuration
	47	Logical Link blocked link configuration
	48	Logical Link dynamic and static MAC
	50	on-line upgrade module
	51	port statistics alarm and threshold

4. System Root Directory

Ater you log in successfully , input "？"or "help"to show the current directory

epon> ?

 [no] copy-log   **- print log messages on the current shell.**

 debug   **- enter debug mode**

 enable   **- enter privileged mode**

 exe   **- Execute raw commands(global C functions).**

 show   **- show various parameters**

4.1. Enable System Log Printed to Super Terminal

Command Grammar	[epon>**[no] copy-log**
Function	Show current System Log

4.2. System Debug Mode

Command Grammar	epon>**debug**
Function	enter debug mode

【Remark】

entering"exit"could return to the current mode .

You will find the command as follows after entering debug mode :

epon% ？   input "？"or "help"to show the current directory
  debug   - **debug specific module**
  dump   - **show module internal data**
  log-lvl   - **set log level for specific module**

4.2.1.debug

Command Grammar	epon%**debug module *<moduleId>***
Function	Configure the module's **debug** functions

【Remark】

This command isn't valid yet .

4.2.2.dump

Command Grammar	epon%**dump module *<moduleId>***
Function	Configure the module's **dump** functions
<moduleId>	Module ID ,format please refer to 3.3 typcial Parameter category

4.2.3.log-lvl

Command Grammar	epon%**Log-lvl module** *<moduleId>* *<level>*
Function	Change module's LOG level
<moduleId>	Module ID definition format refer to typical Parameter category illustration .
<level>	There are 5 level for LOG level, marked from 0 to 4 .0 is the highest level. 0:critical event 1:important event 2:general event 3:trivial event 4:debug message

4.3. Enable Mode

Command Grammar	epon>**enable**
Function	Enter "enable management mode and provides enable password.

【Example】

1. enter enable management mode:

```
epon>enable
password:
epon#
```

The default password to enter enable mode is admin.

epon#　？　　　　　Input"？" or "help"to show the follwing directory:

 igmp-snooping   **- configure global IGMP Snooping**

 mac-address   **- ctrl-card dynamic mac address table management**

 mirror   **- mirroring configuration**

 network   **- configure network parameters**

 olt   **- enter olt config mode**

 passwd   **- change enable password**

 rstp   **- enter rapid spanning tree config mode**

 show   **- dislpay configuration**

swmode   - set basic switch mode
swport   - enter switch port config mode
system   - configure system basic parameters
trunk   - enter trunk config mode
user   - User configuration
vlan   - enter vlan config mode

4.3.1. Switch Control Module MAC Address Management

4.3.1.1.   Configure switch control module's MAC Aging Time

Command Grammar	epon#mac-address aging *<timeout>*
Function	Configure switch control module's MAC address aging time
<timeout>	MAC aging time ,with value range from 0 to 255.step length is 15 seconds.

4.3.1.2.   Show switch control module's MAC Address List

Command Grammar	epon#mac-address show
Function	Show switch control module's MAC address list.

4.3.2. Port mirror Management

4.3.2.1.   Mirror Destination Port

Command Grammar	epon#mirror destination port *< port >*
Function	Configure the designated port for the switch control module as the mirror destination port
< port >	Designate a port as the mirror destination port with value range from gel to ge4.

4.3.2.2.   Add Mirror Source Port

Command Grammar	epon#**mirror source add port** *< portlist > < direction >*
Function	Configure added mirror source port ,available for designating some port's uplink ,downlink or bidirectional data flow as mirror source .
< port list>	Designate some port as mirror source port .Designation means could refer to 3.3 Typical Parameter category Illustration.
< direction >	Designate mirror source's data flow direction with vale as follows: ingress egress both

4.3.2.3.   Delete Mirror Source Port

Command Grammar	epon#**mirror source delete port** *< portlist > < direction >*
Function	Delete mirror source port ,which could appoint one direction's data flow as mirror source .
< port list>	Port list
< direction >	Appoint deleted mirror sour's data flow direction: ingress egress both

4.3.2.4.   Clear Mirror Source

Command Grammar	epon#**mirror source clear**

Function	Clear all mirror source including all source port and source VLAN.

4.3.3. Network Configuration Mode

Command Grammar	epon#**network**
Function	Configure inband and outband management port's IP address.

【Example】

1.Enter network management mode

```
epon#network
epon(net)#
```

epon(net)#   input"？"or "help"to show the following directory
  [no] address   - set network interface address
  [no] gateway   - configure network default gateway

4.3.3.1.   Configure Management Port's IP and Sub Mask

Command Grammar	epon(net)#**address** *<ifx-name> <ip-addr> <ip-mask>*
Function	Configure network port's IP address and submask. Currently our network management port includes inband network management port vi0 and outband network management port cpm0. input **address** *<ifx-name>* *could show the current networking configuration.*
< ifx-name>	Appointed ip port name ,which could be vi0 or cpm0 ,port format expression mode refer to typical Parameter category.
<ip-add>	Configure IP address
< ip-mask >	Configure appointed IP address's network mask.

【Example】

1.Enquiry the current inband network management port's network configuration:

```
epon(net)#address vi0
Interface vi0:
        Ip address            :192.168.1.100
        Netmask                :255.255.255.0
        associated vlan :1
        admin status         :operational
```

Example 2:Configure inband management IP as   192.168.1.1 ,mask is 255.155.155.0

```
epon(net)#address vi0 192.168.1.1 255.255.255.0
```

Example 3:Configure outband management IP as 192.168.1.2 and mask is 255.255.255.0

```
epon(net)#address cpm0 192.168.1.2 255.255.255.0
```

4.3.3.2.   Configure NMS Port Gateway

Command Grammar	epon(net)#**gateway** *<ip-addr>*
Function	Configure NMS port's gateway. Input command gateway to show the current gateway information.
<ip-addr>	Configure the appointed gateway address.

4.3.4. OLT Management Mode

4.3.4.1.   Enter OLT Management Mode

Command Grammar	epon#**olt** *<slotid> <oltid>*
Function	Enter OLT management mode to configure OLT,downplink and ONU . just input "olt" could show the current online OLT .
<slotid>	olt pon module slot with value 0 .
<oltid>	Pon ID with valid value 1 and 2 .

【Example】

1.Show current online OLT :

epon#olt
Following is online olt list:
Slot   Olt   Mac Address   Online Status
0   1   00:a1:02:01:03:40   Online
0   2   00:a1:02:01:03:40   Online

2. Manage PON-1 .

epon#olt 0 1
epon(slot0-olt1)#

epon(slot0-olt1)# ？　　　　input"？"or "help" to show the command directory :

   admin　　　　　　　　　- set olt administrate status
   bridge　　　　　　　　　- set olt bridge configuration
   default　　　　　　　　- reset olt default configuration
   ext-mgmt　　　　　　　- extern network management
   factory　　　　　　　　- Restore factory settings,onuid will be redistributed.
   link　　　　　　　　　- enter link config mode
   onu　　　　　　　　　- enter onu config mode
   overwrite-linkid　　- overwrite linkid when linkid is exhausted
   overwrite-onuid　　- overwrite onuid when onuid is exhausted
   p2p　　　　　　　　　- onu p2p management
   restore　　　　　　　- restore to saved configuration
   save　　　　　　　　　- save pon card configuration
   show　　　　　　　　　- show olt base configuration

4.3.4.2.　Enable OLT

Command Grammar	epon(slot0-olt1)#admin *<enable	disable>*
Function	Enable/disable OLT
<enable>	Enable OLT
<disable>	Disable OLT

4.3.4.3.　OLT Bridge Configuration

Command	epon(slot0-olt1)#bridge

Grammar	
Function	Show current bridge setting

【example】

1. **Show OLT's current bridge setting**

```
epon(slot0-olt1)#bridge
Bridge Configuration:
    learned mac age limit   :0      (ms)
    bridge vlan number       :64     (bridges)
    allow simple bridge      :YES
    mac learn overwrite      :NO
    discard unknown mac       :NO
    allow tagged frame        :YES
```

4.3.4.3.1. MAC Address Aging Time

Command Grammar	epon(slot0-olt1)#**bridge limit** *<limit>*
Function	Change MAC address's aging time .0 means not to learn MAC , the unit is 1ms .
<limit>	Parameterrange 0-2419200

4.3.4.3.2. Bridge VLAN Number Configuration

Command Grammar	epon(slot0-olt1)#**bridge vlan-num** *<vlanNum>*
Function	Set bridge vlan number(tk3723 chipset OLT 's fixed number is 64)
<vlanNum>	Fix number is 64

4.3.4.3.3. MAC Address Overwrite Configuration

Command	epon(slot0-olt1)#**bridge overwrite** *<enable | disable>*

Grammar	
Function	Set overwrite MAC address mode
<enable | disable>	Parameters <enable|disable> with the meaning as follows: enable:When MAC address is full ,new MAC overwrite existing MAC address . disable:When MAC address is full ,ignore the new MAC address .

4.3.4.3.4. Unknown MAC Restriction Configuration

Command Grammar	epon(slot0-olt1)#**bridge dsc-unk-mac *<enable | disable>***
Function	Set unknown MAC restriction mode
<enable | disable>	enable:unknown DA downlink packet deliver the broadcast to all ports . disable:unknown DA downlink packet is abandon

4.3.4.3.5. Forward Tag Frame Configuration

Command Grammar	epon(slot0-olt1)#**bridge tag-on-sbrg *<enable | disable>***
Function	Set tag forwarding rules under simple bridge mode.
<enable | disable>	enable:allow forwarding tag frame disable:dump tag frame

4.3.4.4.   Restore PON Default Setting

Command Grammar	epon(slot0-olt1)#**default**
Function	Restore PON Default Setting

【Remark】

The command will delete PON module's all setting and restore the ex-factory default setting .And the PON module will reboot automatically.

4.3.4.5.   Link Management Mode

Command Grammar	epon(slot0-olt1)#link *<linkid>*
Function	Enter LINK management mode and configure link Parameter.
<linkid>	Designated linked with value range from 1 to 256 .

【Example】

1.Show the current LINK :

```
epon(slot0-olt1)#link
Following is link list:
    Link Id    Mac Address            Online Status
    1            00:a1:02:01:07:30    Online
    2            00:a1:02:01:07:31    Offline
    3            00:a1:02:03:bc:f8    Offline
    4            00:a1:02:01:97:d0    Offline
    5            e0:67:b3:03:be:e8    Offline
    6            00:a1:02:04:e7:08    Offline
    7            00:a1:02:01:07:38    Online
    8            00:a1:02:01:07:39    Online
```

  2.Enter Link1 management interface :

```
epon(slot0-olt1)#link 1
epon(slot0-olt1-link1)#
```

epon(slot0-olt1-link1)# ？   input"？"or "help"to show command directory:
 [no] block   - block link
   bridge-mode   - only support simple-bridge mode now.
   dynamic-mac-clear   - clear dynamic mac table
   dynamic-mac-list   - display all dynamic mac table
   dynamic-mac-refresh   - refresh dynamic mac table
   rediscover   - force link rediscovery
   show   - show link basic configuration
   sla   - set link SLA parameters
   static-mac-add   - add a static mac
   static-mac-del   - delete a static mac
   static-mac-list   - display all static mac table

4.3.4.5.1. Block Current Link

Command Grammar	epon(slot0-olt1-link1)#**block**
Function	Block current link to stop the link's data flow.

4.3.4.5.2. Remove the Current Link Block

Command Grammar	epon(slot0-olt1-link1)#**no block**
Function	Remove the current link block to restore the link's data flow.

4.3.4.5.3. Clear Link's Dynamic MAC Address List

Command Grammar	epon(slot0-olt1-link1)#**dynamic-mac-clear**
Function	Clear link's dynamic MAC address list

4.3.4.5.4. Show Link's Dynamic MAC Address List

Command Grammar	epon(slot0-olt1-link1)#**dynamic-mac-list**
Function	Show all the MAC address list learned from the link

【Remark】

Please use the command " dynamic-mac-refresh" to refresh the link's dynamic MAC address before showing the link's dynamic MAC address .

4.3.4.5.5. Refresh Link's Dynamic MAC Address List

Command Grammar	epon(slot0-olt1-link1)#**dynamic-mac-refresh**
Function	Refresh link's dynamic MAC Address

4.3.4.5.6. Force Rediscovering Link

Command Grammar	epon(slot0-olt1-link1)#**rediscover**
Function	Force the link rediscovering to OLT

4.3.4.5.7. Show LINK Basic Information

Command Grammar	epon(slot0-olt1-link1)#**show**
Function	Show the link's current basic configuration information

【Example 】

1.Show the current link's basic configuration information :

```
epon(slot0-olt1-link1)#show
Link Basic Configurations:
    associated onu id             :1
    assigned link id by olt       :0
    mac address                   :00:a1:02:0a:a1:08
    online status                 :Online
    key exchange timer            :0     (sec)
    bridging type                 :simple-bridge
    mac table entry limit         :64    (entries)
    cross connected link id       :NO
```

4.3.4.5.8. Link SLA Configuration

4.3.4.5.8.1. Configure Link's Minimum Guaranteed Bandwidth

Command Grammar	epon(slot0-olt1-link1)#sla *<dir>* min-bw *<min-bw>*
Function	Configure the link's uplink or downlink's minimum guaranteed bandwidth
<dir>	Appoint the link sla's direction : downstream upstream
<min-bw>	Appoint the link 's minimum guaranteed bandwidth with valid value from 0,256 to 1000000. 0 means disabling the minimum guaranteed bandwidth function.

【Remark】

The minimum bandwidth much be lower than or equal to the maximum allowed bandwidth .

4.3.4.5.8.2. Configure Link's Maximum Allowed Bandwidth

Command Grammar	epon(slot0-olt1-link1)#sla *<dir>* max-bw *<max-bw>*
Function	Configure the link's uplink or downlink maximum allowed bandwidth .
<dir>	Appoint the link SLA's configuration direction : downstream upstream
<max-bw>	Appoint the link 's maximum allowed bandwidth with valid value from 256 to 1000000. 0 means disabling the minimum guaranteed bandwidth function.

【Remark】

The maximum bandwidth must higher than or equal to the minimum guaranteed bandwidth .

4.3.4.5.8.3. Configure Link Transmission Time Delayed Level

Command Grammar	epon(slot0-olt1-link1)#**sla** *<dir>* **level** *<level>*
Function	Configure uplink or downlink's transmission delayed time level.
<dir>	Two direction Parameter optional : downstream upstream
<level>	Appoint downlink or uplink's transmission delayed time level with the valid value as follows : **Sensitive**: sensitive service could be given the priority to transmit . tolerant : non-sensitive service

4.3.4.5.8.4. Configure Link's Maximum Burst Flow

Command Grammar	epon(slot0-olt1-link1)#**sla** *<dir>* **burst-size** *<burst>*
Function	Configure uplink or downlink's maximum burst flow .
<dir>	Two configuration direction as follows : downstream upstream
<burst>	Appoint the link 's maximum burst flow with the valid value range from 1 to 256.

4.3.4.5.8.5. Show LINK SLA Configuration

Command Grammar	epon(slot0-olt1-link1)#**sla** *<dir>*
Function	Show uplink or downlink's SLA configuration information
<dir>	downstream or upstream

【**Example**】

1.Show current uplink's SLA configuration information :

```
epon(slot0-olt1-link1)#sla upstream
Current Link SLA configuration(Upstream):
```

```
minimum guaranteed bandwidth    :0         (Kbps)
maximum allowed bandwidth           :1000000(Kbps)
delay sensitive                 :Tolerant
max burst size                      :100       (KBytes)
sla state                           :Enable
```

2.Show downlink's SLA configuration information :

```
epon(slot0-olt1-link1)#sla downstream
Current Link SLA configuration(Downstream):
    minimum guaranteed bandwidth    :0         (Kbps)
    maximum allowed bandwidth           :1000000(Kbps)
    delay sensitive                 :Tolerant
    max burst size                      :100       (KBytes)
    sla state                           :Enable
```

4.3.4.5.9. Add Link's Static MAC Address

Command Grammar	epon(slot0-olt1-link1)#static-mac-add *<mac>*
Function	Add link's static MAC address
<mac>	Input MAC address

4.3.4.5.10. Delete Link's Static MAC Address

Command Grammar	epon(slot0-olt1-link1)#static-mac-del *<mac>*
Function	Delete Appointed Link's Static MAC Address
<mac>	Input the deleted MAC address

4.3.4.5.11. Show Link's Static MAC Address List

Command Grammar	epon(slot0-olt1-link1)#static-mac-list

Function	Show the link's static MAC address

4.3.4.6.   ONU Management Mode

Command Grammar	epon(slot0-olt1)#**onu** *<onuid>*
Function	Enter ONU management mode and configure the ONU Parameter.
<onuid>	Input onuid with the valid value range from 1 to 64

【**Example**】

1.Show current online ONU

```
epon(slot0-olt1)#onu
Following is online onu list:
slotId   oltId   onuId   deviceType      basedMac              hWRev   fwRev
0        1       1       ONU4D            00:a1:02:01:07:30    V03     Vc2.30
0        1       6       ONU2D-G          00:a1:02:01:07:38    V02     Vc2.42
```

2. Enter ONU1 management interface

```
epon(slot0-olt1)#onu 1
epon(slot0-olt1-onu1)#
```

epon(slot0-olt1-onu1)# ？   input"？"or "help" to show command directory
  catv   **- catv switch configuration**
  ctc   **- CTC operations**
  default   **- restore to default setting**
  iadParamCfg   **- iadParamCfg**
  info   **- onu device user information**
  loopback-test   **- loopback test**
  mac-address   **- onu addresses management**
  port   **- enter onu port config mode**
  port-protect   **- isolate onu ports**
  reboot   **- reboot the system**
  restore   **- restore to saved configuration**
  rstp   **- onu rapid spanning tree config**
  save   **- save onu configuration**
  user-traffic   **- enable or disable user traffic**
  vlan-type   **- set onu additional vlan ethertype**

4.3.4.6.1. Restore ONU Default Configuration

Command Grammar	pon(slot0-olt1-onu1)#default
Function	Restore ONU default configuration

【Remark】

The command will delete all ONU's configuration to restore default configuration .The ONU will reboot automatically .

4.3.4.6.2. IGMP   Snooping Configuration

4.3.4.6.2.1. ONU IGMP Global Parameter Configuration

4.3.4.6.2.1.1.   Fast leave enable

Command Grammar	epon(slot0-olt1-onu1)#ctc igmp-snooping fast-leave <state>
Function	Enable /disable fast leave function
<state>	enable disable.

4.3.4.6.2.1.2.   Multicast Switching Mode

Command Grammar	epon(slot0-olt1-onu1)#ctc igmp-snooping mode <mode>
Function	Add a IGMP address and a port number
<mode>	igmp-mld-snooping controllable-igmp-mld igmp-snooping-only controllable-igmp disable *Only igmp-mld-snooping and disable are valid

4.3.4.6.2.2. IGMP Port Configuration

4.3.4.6.2.2.1.   Set number of igmp groups for onu port

Command Grammar	epon(slot0-olt1-onu1-fe1)#**ctc igmp-snooping max-group <*groups*>**
Function	set number of igmp groups for onu port
<*groups*>	number of igmp groups,<0~64>

4.3.4.6.2.2.2.   Set multicast strip mode

Command Grammar	epon(slot0-olt1-onu1-fe1)#**ctc igmp-snooping tag-handle <*mode*>**
Function	Set multicast strip mode
<*mode*>	not-strip-vlan-tag - Not Strip Vlan Tag strip-vlan-tag - Strip Vlan Tag switch - Switch VLAN tag

4.3.4.6.2.2.3.   add igmp-vlan-group list on ONU user port

Command Grammar	epon(slot0-olt1-onu1-fe1)#**ctc igmp-snooping vlan-tag-list <*vlanTagList*>**
Function	add igmp-vlan-group list at ONU user port
<*vlanTagList*>	- vlan tag list,<Combination of 1~4094, or null>

4.3.4.6.2.2.4.   Show multicast setting on ONU user port

Command Grammar	epon(slot0-olt1-onu1-fe1)#**ctc igmp-snooping show**
Function	Show multicast setting on ONU user port

4.3.4.6.3. Configure ONU User Information

Command Grammar	epon(slot0-olt1-onu1)#**info <*info*>**
Function	Configure ONU user information; Just input "info" to show the current ONU user's information .

<info>	User information bytes with longest bytes 64

4.3.4.6.4. ONU Link Loopback Test

Command Grammar	epon(slot0-olt1-onu1)#**loopback-test**
Function	Test ONU link status and this command is interactive command which need the user to provide the following Parameterstep by step . loopback location: mac phy number of frames:1-65535 payload length:64-1500 vlan tag:0-4094

【**Example** 】

1.Test ONU Link

```
epon(slot0-olt1-onu1)#loopback-test
please offer the loopback test parameter:
loopback location[mac|phy]:mac
number of frames[1~65535]:100
payload length[64~1500]:64
vlan tag[0~4094]:0
testing...
result:
frames sent                :100
frames received            :100
corrupted frames receiv    :0
minimum Delay (us)         :2512
maximum Delay (us)         :5788
mverage Delay (us)         :4135
```

4.3.4.6.5. Show ONU Dynamic MAC Address List

Command Grammar	epon(slot0-olt1-onu1)# **mac-address-show**
Function	Show ONU's dynamic learning MAC address gloably.

4.3.4.6.6. ONU Port Management Mode

Command Grammar	epon(slot0-olt1-onu1)#**port < *uni-port>***
Function	Enter ONU port management mode and configure the ONU port's Parameter.
< *uni-port >*	Appoint onu port number with valid value range from fe1 to fe24.

【**Example**】

1.Enter ONU1's port 1 interface

epon(slot0-olt1-onu1)#port fe1
epon(slot0-olt1-onu1-fe1)#

epon(slot0-olt1-onu1-fe1)# ？   input "？"or "help" to show the command directory
attribute   - onu port attribute config
bridge   - onu port bridge parameter config
ctc   - CTC mgmt mode
dynamic-mac-clear   - clear dynamic mac table
dynamic-mac-list   - display all dynamic mac table
[no] enable   - enable onu port
info   - set onu port user information
qos   - onu port qos config

4.3.4.6.6.1. Configure ONU port's Parameter Attribute

4.3.4.6.6.1.1. Show ONU Port Parameter

Command Grammar	epon(slot0-olt1-onu1-fe1)#**attribute**
Function	Show ONU port's Parameter attribute.

【**Example**】

1:Show ONU1 's port 1 attribute

epon(slot0-olt1-onu1-fe1)#attribute
ONU(0/1/1) Port fe1 attribute:
    auto negotiation :enable
    flow control   :disable
    speed   :10m

duplex	:half

4.3.4.6.6.1.2.   Configure ONU Port Auto-Negotiation

Command Grammar	epon(slot0-olt1-onu1-fe1)#**attribute auto-nego *<oper>***
Function	Configure ONU port to be auto-negotiable
<oper>	Value input is <enable | or disable>: enable : enable the port's auto-negotiation function disable : Disable the port's auto-negotiation function

4.3.4.6.6.1.3.   Configure ONU Port Speed

Command Grammar	epon(slot0-olt1-onu1-fe1)#**attribute speed *<speed>***
Function	Configure ONU port's speed
<speed>	ONU port speed with valid value as follows:10m 100m 1000m

4.3.4.6.6.1.4.   Configure ONU Port's Duplex Function

Command Grammar	epon(slot0-olt1-onu1-fe1)#**attribute duplex *< duplex>***
Function	Configure ONU port's duplex status
< duplex>	ONU port's duplex status with value "half" or full

4.3.4.6.6.1.5.   Configure ONU Port Flow Control Function

Command Grammar	epon(slot0-olt1-onu1-fe1)#**attribute flow-ctrl *<oper>***
Function	Configure ONU port's flow control function
< oper>	Enable/disable ONU port flow control function Enable: enable ONU port flow control function Disable:disable ONU port flow control function

4.3.4.6.6.2. Configure ONU port's Bridge Parameter

4.3.4.6.6.2.1.   Show ONU Port Bridge Parameter

Command Grammar	pon(slot0-olt1-onu1-fe1)#**bridge**
Function	Show ONU port bridge Parameter

【**example**】

1:Show ONU port-1's bridge Parameter

```
epon(slot0-olt1-onu1-fe1)#bridge
ONU(0/1/1) Port fe1 bridge parameter:
    automatic learning entry limit :16
    learned entry age limit              :0s
    forwarding mode                      :802.1d mode
```

4.3.4.6.6.2.2.   Configure ONU Port's Dynamic MAC Limits

Command Grammar	epon(slot0-olt1-onu1-fe1)#**bridge** *< entry-limit>*
Function	Configure ONU port's dynamic learning MAC number
< entry-limit>	Maximum learning MAC number with valid value from 0 to 64;0 means not to learn MAC address

4.3.4.6.6.2.3.   Configure ONU Port's MAC Aging Time

Command Grammar	epon(slot0-olt1-onu1-fe1)#**bridge age-time** *< age-time>*
Function	Configure ONU port's Aging time of MAC address
< age-time >	MAC address aging time with valid value from 0 to 32768; 0 means not to age MAC address

4.3.4.6.6.2.4.   Configure ONU Port's Forward Mode

Command Grammar	epon(slot0-olt1-onu1-fe1)#**bridge forward-mode** *< forward-mode>*

Function	Configure ONU port's forward mode
<forward-mode>	Forward mode with valid value such as 8021d,drop-until-learned; 8021d mode :unknown MAC packet broadcast to all ports ; Drop-until-learned mode: drop unknown MAC packet

4.3.4.6.6.3. Clear ONU Port's Dynamic MAC List

Command Grammar	epon(slot0-olt1-onu1-fe1)#**dynamic-mac-clear**
Function	Clear ONU port's dynamic MAC list

4.3.4.6.6.4. Show ONU Port's Dynamic MAC List

Command Grammar	epon(slot0-olt1-onu1-fe1)#**dynamic-mac-list**
Function	Show ONU port's dynamic MAC List

4.3.4.6.6.5. Enable ONU UNI Port

Command Grammar	epon(slot0-olt1-onu1-fe1)#**enable**
Function	Enable ONU port to make sure normal communication

4.3.4.6.6.6. Disable ONU UNI Port

Command Grammar	epon(slot0-olt1-onu1-fe1)#**no enable**
Function	Disable ONU port to stop the data flow communication

4.3.4.6.6.7. Configure ONU Port's User Information

Command Grammar	epon(slot0-olt1-onu1-fe1)#**info *<info>***
Function	Set ONU port's user information; Input "info" to show ONU port's user information

<info>	User information bytes length ,with the longest length 64 bytes

4.3.4.6.6.8. Configure ONU Port's Uplink Speed Limit

Command Grammar	epon(slot0-olt1-onu1-fe1)#**qos ingress-policing** *< max-rate>* *< traffic-type>*
Function	Set ONU port's uplink bandwidth limits. Input "qos ingress-policing" to show the current uplink speed limit configuration information .
< max-rate>	Maximum uplink bandwidth ;unit :kbps ;valid value:0-100000;
< traffic-type>	Appoint speed limit's packet type with value as follows: Broadcast; broadcastAndMulticast; broadcastMulticastAndFloodedUnicast; all

4.3.4.6.6.9. Configure ONU Port's Downlink Speed Limit

Command Grammar	epon(slot0-olt1-onu1-fe1)#**qos egress-shapping** *< max-rate>* *<schedule-algorithm>*
Function	**Set ONU port's downlink bandwidth limits.** **Input "qos egress-shapping" to show the current downlink speed limit configuration information .**
< max-rate>	**Maximum downlink bandwidth ;unit :kbps ;valid value:0-100000;**
<schedule-algor ithm>	Port's output flow shaping 's adjusty calculation method with valid value :: weighted-fair strict-priority

4.3.4.6.7. ONU UNI Port VLAN Configuration

4.3.4.6.7.1.1. Add VLAN

Command Grammar	epon(slot0-olt1-onu1-fe1)#**ctc vlan add cEtherType *<ctype>*** **cVLANTag *<cvlantag>* sEtherType *<stype>* sVLANTag *<svlantag>***
Function	Add appointed ONU UNI port's VLAN.

< *ctype*>	Ethernet type, ranging from 0 to 65536, typically set to 33024 (0x8100)
<*cvlantag*>	valid value range from 0 to 4095
< *stype*>	Converted vlan Ethernet type, ranging from 0 to 65536. UNI port is set to tag or trunk mode, this parameter should be set to 0 or null.
<*svlantag*>	Conversion vlan tag in the range of 0 to 4095. UNI port is set to tag or trunk mode, this parameter should be set to 0 or null.

【Example】

1.Add vlan100 to ONU UNI port 1:

```
epon(slot0-olt1-onu1-fe1)#ctc vlan add cEtherType 33024 cVLANTag 100
```

2. Translate vlan100 to vlan200 at ONU UNI port 1:

```
epon(slot0-olt1-onu1-fe1)#ctc vlan add cEtherType 33024 cVLANTag 100 sEtherType 33024 sVLANTag 200
```

4.3.4.6.7.1.2.   Delete VLAN

Command Grammar	epon(slot0-olt1-onu1-fe1)#ctc vlan delete cVLANTag <*cvlantag*>
Function	Delete appointed ONU UNI port's Vlan
< *vlanid* >	Appointed vlan to be deleted with valid value range from 0 to 4094

4.3.4.6.7.1.3.   Configure ONU UNI Port's VLAN Forwarding Mode and PVID

Command Grammar	epon(slot0-olt1-onu6-fe1)#ctc vlan policy <*policy*> etherType <*type*> pvid <*pvid*>
Function	Configure ONU UNI port's VLAN forwarding Mode and PVID
< *policy*>	The values are as follows <policy> policy0 Transparent mode, ignoring etherType and pvid value policy1 Access mode policy2 VLAN translation mode policy4 VLAN trunk mode.
<*type*>	Ethernet type, ranging from 0 to 65536, typically set to 33024 (0x8100)
<*pvid*>	valid value range from 0 to 4095

【Example】

1.Set ONU1 port 1 transparent mode:

> epon(slot0-olt1-onu1-fe1)#ctc vlan policy policy0

2 Set ONU1 port 1 to tag mode, set the port pvid to 100:

> epon(slot0-olt1-onu1-fe1)#ctc vlan policy policy1 etherType 33024 pvid 100

3 Set ONU1 port 1 to trunk mode, set the port pvid to 1:

> epon(slot0-olt1-onu1-fe1)#ctc vlan policy policy4 etherType 33024 pvid 1

【Illustration】

1. Policy0: transparent mode,.

Direction	Frame Type	Approach
Ingress	Untagged	without any changes (to retain the original VLAN TAG), forwarding
	Tagged	without any changes, forwarding
Egress	Untagged	without any changes (to retain the original VLAN TAG), forwarding
	Tagged	without any changes, forwarding

2. policy1   Access mode

Direction	Frame Type	Approach
Ingress	Untagged	Insert VLAN tag (main parameter is the VID), forwarding. (TPID = 0x8100, Pri = 0, VID = Port VID))
	Tagged	ignore the frame
Egress	Untagged	ignore the frame
	Tagged	Forward to the appropriate UNI port and strip VLAN TAG according to VID; if frame tagged VLAN ID is not equal to Port VID, the frame will be discarded.

3. policy2   Translation mode

Direction	Frame Type	Approach
Ingress	Untagged	Insert VLAN Tag, forwarding. (TPID = 0x8100, Pri = 0,VID = Port VID)
	Tagged	If VID of frame is included in input VLAN list of the UNI port the VID will be translated to output VID. Then forward the frame. Discard the frame if VID of frame is not included in input VLAN list of the UNI port
Egress	Untagged	ignore the frame
	Tagged	If VID of frame is included in output list of the UNI port the VID will be translated to input VID. Then forward the frame. Strip VLAN tag and forward the frame if the VID is equal

		to PVID
		Discard the frame if VID of frame is not included in the output VLAN list of the UNI port.

4. policy4 Trunk mode

Direction	Frame Type	Approach
Ingress	Untagged	Insert VLAN Tag, forwarding. (TPID = 0x8100, Pri = 0,VID=Port VID)
	Tagged	Forward the frame if VID of frame is included in "allows VLAN" list; Discarded the frame if VID of frame isn't included in "allows VLAN" list;
Egress	Untagged	ignore the frame
	Tagged	Forward the frame if VID of frame is included in "allows VLAN" list; Strip VLAN TAG and forward the frame if the VID is equal to PVID Discarded the frame if VID of frame isn't included in "allows VLAN" list;

4.3.4.6.7.1.4.   Show ONU UNI Port's VLAN Configuration

Command Grammar	epon(slot0-olt1-onu1-fe1)#ctc vlan show
Function	Show ONU UNI port's VLAN configuration information

4.3.4.6.8. Reboot ONU

Command Grammar	epon(slot0-olt1-onu1)#**reboot**
Function	Reboot onu

4.3.4.6.9. Configure RSTP Function

Command Grammar	epon(slot0-olt1-onu1)#**rstp *<oper>***

Function	Configure ONU's rapd spanning tress protocol (RSTP) function; Input "rstp" to show current RSTP status
<oper>	Enable/disable ONU RSTP function with valid value as follows: Enable: enable ONU RSTP function Disable: disable ONU RSTP function

4.3.4.6.10. Save ONU configuration

Command Grammar	pon(slot0-olt1-onu1)#**save**
Function	Save ONU's all configuration .

4.3.4.6.11. Configure ONU's Traffic Flow Management

Command Grammar	epon(slot0-olt1-onu1)#**user-traffic** *<oper>*
Function	Configure ONU user's traffic flow management When input "user" to show the onu user's current traffic flow
<oper>	enable :enable onu user's traffic flow Disable: disable onu user's traffic flow

4.3.4.6.12. Configure ONU VLAN's Ethernet Parameter

Command Grammar	epon(slot0-olt1-onu1)#**vlan-type ethtype** *<type>* **upstream** *<uptag>* **downstream** *<dntag>*
Function	Configure onu vlan's Ethernet type and set this vlan's Ethernet traffic direction; Input " vlan-type " to show onu's current VLAN Ethernet information.
<type>	VLAN's Ethernet type with default value as 0x8100 and the valid value range from 0 to 65535
<uptag>	Whether add the vlan tag of the vlan Ethernet type for the uplink traffic ;

	tag : add tag Untag: do not add tag
<dntag>	Whether add the vlan tag of the vlan Ethernet type for the downlink traffic ; tag : add tag Untag: do not add tag

4.3.4.7.   Configure Link ID Overwrite Function

Command Grammar	epon(slot0-olt1)#**overwrite-linkid** *<oper>*
Function	Whether new authorized link overwrites the existing link ID after the Link ID is set .
<oper>	Enable: new Link overwrites existing Link ID. Disable: new Link does not overwrite existing Link ID.

4.3.4.8.   Configure ONU ID Overwrite Function

Command Grammar	epon(slot0-olt1)#**overwrite-onuid** *< oper >*
Function	Whether new authorized ONU overwrites the existing ONU ID after the ONU ID is set .
<oper>	Enable: new ONU overwrites existing ONU ID. Disable: new ONU doesn't overwrites existing ONU ID .

4.3.4.9.   Reboot PON Card

Command Grammar	epon(slot0-olt1)#**reboot**
Function	Reboot PON card

4.3.4.10. Save PON card configuration

Command Grammar	epon(slot0-olt1)#**save**
Function	Save PON card's all configuration

4.3.4.11. Show OLT's Basic Information

Command Grammar	epon(slot0-olt1)#**show**
Function	Show OLT's basic configuration

【Example】

1.Show OLT's current basic configuration

```
epon(slot0-olt1)#show
Olt Basic Configurations:
    mac address                    :00:0d:b6:37:23:00
    work state                     :Online
    enable status                  :Enable
    max permitted link number  :210
    registered link number     :1
    accessed onu number            :1
    link id exhausted          :NO
    onu id exhausted               :NO
    link id overwrite          :NO
    onu id overwrite               :NO
```

4.3.5. Configure Enable Password Management

Command Grammar	epon#**passwd**
Function	Enter the enable password changing mode .

【Example】

1.Change enable password :

epon#passwd
Enter new enable password:
Confirm new enable password:
epon#

【Remark】

Please do save the configuration under the system directory after changing the password and reboot the system to make the setting valid .

4.3.6. RSTP Configuration Mode

Command Grammar	epon#**rstp**
Function	Enter switch control module's RSTP management mode

【Example】

1.Enerer RSTP Management Mode

epon#rstp
epon(rstp)#

epon(rstp)# ?   input"？" or "help" to show current directory
   bridge   **- bridge**
   disable   **- disable rstp**
   enable   **- enable rstp**
   hold-count   **- set rstp transmit hold count**
   port   **- rstp port parameter configuration**
   show   **- show rstp configuration**

4.3.6.1.   Configure RSTP Bridge Parameter

4.3.6.1.1. Bridge Forward Delay

Command	epon(rstp)#**bridge fdelay < *fdelay* >**

Grammar	
Function	Set RST Bridge delayed forward
< *fdelay* >	Value range : 4-30 ;must demand the following bind relation: 2× ForwardDelay – 1.0second >= MaxAge MaxAge is bridge infomration's maximum valid time ; ForwardDelay: forward delay

4.3.6.1.2. Bridge Maximum Valid Age

Command Grammar	epon(rstp)#**bridge maxage < *maxage*>**
Function	Configure RSTP bridge's maximum valid age which is the valid time for receiving BPDU packet from appointed port's bridge.
< *maxage*>	Value range : 6-40 ;must demand the following bind relation: 2× ForwardDelay – 1.0second >= MaxAge MaxAge is bridge infomration's maximum valid time ; ForwardDelay: forward delay

4.3.6.1.3. Bridge Priority

Command Grammar	epon(rstp)#**bridge priority <*priority*>**
Function	Set RSTP bridge priority
<*priority*>	Appointed bridge priority integer value from 1 to 61440,and step length is 4096 ,meaning 4096xN(N is from 0 to 15) .

4.3.6.2. Enable RSTP Function

Command Grammar	epon(rstp)#**enable**
Function	Enable switch control module's uplink port 's RSTP function

【Example】

1.Enable switch control module's uplink port 's RSTP function

epon(rstp)#enable

4.3.6.3.　　Disable RSTP Function

Command Grammar	epon(rstp)#**disable**
Function	disable switch control module's uplink port 's RSTP function

4.3.6.4.　　Hold Bridge Forwarding Frame Count

Command Grammar	epon(rstp)#**hold-count** *<holdcount>*
Function	Configure RSTP's deliving BPDU packet limit and appoint the maximum delivering BPDU packet within 1 second .
<holdcount>	Value range from 1 to 10.

4.3.6.5.　　Configure RSTP Port Parameter

4.3.6.5.1.　Set RSTP's Edge port Management

Command Grammar	epon(rstp)#**port** *<portlist>* **edgecfg** *<edge>*
Function	Configure RSTP port's managed edge port attribute. Appoint the port whether to be edge port or not .Edge port does not go through "discarding-learning-forwarding " step but transfer to switch status directly .
<portlist>	Appointed port list ,any one from ge1 to ge4 .
<edge>	Configure appointed RSTP port's edge port attribute with byte value such as edge ,non-edge and auto .

4.3.6.5.2. Set RSTP Port's Protocol Version Checkout

Command Grammar	epon(rstp)#port *<portlist>* mcheck
Function	Configure RSTP port's protocol version check out .When executing this command ,the appointed port's mode is force to be the same as next received BPDU packet version.If the next packet is STP BPDU packet ,the port's mode is STP .If it's RSTP BPDU packet ,the port's mode is RSTP. RSTP port's protocol version is a booting command, not available to preserve the attributed value continually .
<portlist>	Appointed port list ,any one from ge1 to ge4 .

4.3.6.5.3. Set RSTP Port's Point-to-Point Attribution

Command Grammar	epon(rstp)#port *<portlist>* p2pcfg *<p2p>*
Function	Configure RSTP port's point to point index . whether the appointed port is point-to-point port.Point to point port could allow to switch to forward status rapidly .Non-point to point port needs to go through step of discarding-learning-forwarding first before switching to forward status .
<portlist>	Port list from ge1 to ge4
<p2p>	Appointed RSTP port index with bytes value such as p2p,shared and auto .

4.3.6.5.4. Set RSTP Port's Link Cost

Command Grammar	epon(rstp)#port *<portlist>* path-cost *<pathcost>*
Function	Configure RSTP port's link cost .It's used to calculate the root link's cost .The port with the lowest root link cost will change to forward port when delivering the same bridge ID .
<portlist>	Appointed port list, any one from ge1 to ge4.
<pathcost>	Appointed RSTP port's link cost with integer value from 1 to 200000000.

4.3.6.5.5. Set RSTP Port's Priority Level

Command Grammar	epon(rstp)#**rstp port** *<portlist>* **priority** *<priority>*
Function	Configure RSTP port's priority level. The port with priority will change to forward port when delivering the same bridge ID and having the same link cost .
<portlist>	Port list ,any one from ge1 to ge4.
<priority>	Configure appointed RSTP port's priority level with integer value valid from 1 to 240 ,step length 16 ,meaning 16xN(n is from 0 to 15) .

4.3.6.6.   Show RSTP Configuration Information

Command Grammar	epon(rstp)#**show**
Function	Show RSTP bridge and port's configuration information

【**Example**】

1.show switch control module's RSTP configuration information :

```
epon(rstp)#show
RSTP Bridge Status:
    RSTP Setting              :Disable
    Bridge ID [PRI-MAC]       :32768-e0:67:b3:00:63:07
    Bridge Hello Time         :2 sec
    Bridge Max Age            :20 sec
    Bridge Forward Delay      :15 sec
    Transmit Hold Count       :6
    Root Bridge ID            :0-00:00:00:00:00:00
    Root Path Cost            :0
RSTP Port Status:
    PID Mode   Pri   PathCost   EdgeCfg   OperEdge   P2PCfg   OperP2P State
    1    RSTP  128   20000      Auto      Non-Edge   Auto     P2P      LinkDown
    2    RSTP  128   20000      Auto      Non-Edge   Auto     P2P      LinkDown
    3    RSTP  128   20000      Auto      Non-Edge   Auto     P2P      LinkDown
    4    RSTP  128   20000      Auto      Non-Edge   Auto     P2P      LinkDown
```

4.3.7. Configure switch control module's Switching Mode

4.3.7.1.   Set Private Vlan Mode

Command Grammar	epon#**swmode pve *\<mode\> \<net-port\>***
Function	Configure private vlan mode for uplink port of switch control module
< *mode* >	Private vlan mode : \<disable | onebyone | trunk\> disable:normal switch mode ,where the uplink port of switch control module doesn't has VLAN limitation . Onebyone: switch control module's uplink port is corresponding with PON port -----corresponding mode ,such as ge1-ge5,ge3-ge6Trunk: port convergence mode
< *net-port* >	When mode is trunk mode ,that means to converge the uplink ports .port from ge1 to ge4 .

4.3.7.2.   Show switch control module's Switch Mode Configuration

Command Grammar	epon#**swmode show**
Function	Show switch control module's switch mode

【Example】

1. Show switch control module's switch mode configuration information

```
epon#swmode show
Current basic switch mode        :vlan-unaware
Current private vlan mode        :disabled
```

4.3.7.3.   Enable switch control module's Vlan Function

Command	epon#**swmode vlan *\<mode\>***

Grammar	
Function	Enable switch control module's Vlan Function
<mode>	aware: eable vlan vlan aware unaware: disable vlan (vlan unaware)

4.3.8. Uplink Port Management mode of switch control module

Command Grammar	epon#**swport** *<port>*
Function	Enter port management mode of switch control module .under this mode , you can configure several index function.
<port>	Appointed port list ,any one from ge1 to ge6.

【**example**】

1.Enter switch control module's port 1 management mode

```
epon#swport ge1
epon(ge1)#
```

epon(ge1)# ?   input"？"or "help"to show directory :
   acc-frame   - set port access frame type
   def-pri   - set port default priority
   duplex   - set port duplex
   [no] enable   - set port enable
   flow-ctrl   - set port flow control
   ingr-filter   - set port ingress filter
   mode   - set port mode
   nest-vlan   - set port nest vlan enable or disable
   prot-vlan   - set port protocol based vlan enable or disable
   pvid   - set port pvid
   rate-ctrl   - set port ingress rate limit parameters
   reautonego   - set port reautonegotiation
   show   - show port attribute information
   [no] shutdown   - shut down a port
   speed   - set port speed

4.3.8.1.　　Set Port's RX Frames Types

Command Grammar	epon(ge1)#**acc-frame *\<type\>***
Function	Set switch control module port's RX packet frame types
\<type\>	Packet frame types : tagged:receive tagged packet only untagged: receive untagged packet only all:receive all types of packet frame

【Remark】

Our OTL system can't set untagged type mode yet .

4.3.8.2.　　Set Port's Default Priority Level

Command Grammar	epon(ge1)#**def-pri *\< privalue \>***
Function	Set switch control module's default priority level ,similar to PVID .When port received untagged vlan packet ,the packet is set by priority .The priority level is port's default 802.1P priority .The data packet will enter different priority queue to receive different service according to corresponding priority level and flow category .
\< privalue\>	Set configured port's priority level value from 0 to 7

4.3.8.3.　　Configure Port's Duplex Mode

Command Grammar	epon(ge1)#**duplex *\< duplex \>***
Function	Set switch control module port's duplex mode
\< duplex\>	full:full duplex mode half:half duplex mode auto:auto-negotiation mode

4.3.8.4. Enable Port

Command Grammar	epon(ge1)#**enable**
Function	Enable the switch control module port to deliver and receive packet. Under some circumstance, user can use this function to test the networking performance.

4.3.8.5. Disable Port

Command Grammar	epon(ge1)#**no enable**
Function	Disable the switch control module port to deliver and receive packet. Under some circumstance, user can use this function to test the networking performance.

4.3.8.6. Configure Port's Flow Control Mode

Command Grammar	epon(ge1)#**flow-ctrl** *<ctrl>*
Function	Configure switch control module port's flow control mode. Both optical port mode and electrical mode could support flow control configuration enforcedly and auto-negotiation; Under the half-duplex mode ,the port enable the back flow control function default; Under the full-duplex mode, you can enable or disable flow control in compliant with 802.x standard.
<ctrl>	enable: enable flow control function disable:disable flow control function auto:auto-negotiation mode

4.3.8.7. Set Port's RX Filter Function

Command Grammar	epon(ge1)#**ingr-filter** *<operator>*

Function	Configure switch control module port's RX packet filtering function. When the port is not the vlan member appointed by frame VID ,the packet is dumped at the time of receiving the frame .
<operator>	Enable: enable switch control module port's RX frame filter function Disable: disable switch control module port's RX frame filter function

4.3.8.8.   Configure Port Mode

Command Grammar	epon(ge1)#**mode** *<mode>*
Function	Configure switch control module port's port mode,including copper and fiber modes .
<mode>	Copper: copper mode fiber :fiber mode

4.3.8.9.   Enable Port's Nest-Vlan Function

Command Grammar	epon(ge1)#**nest-vlan** *<operator>*
Function	Configure switch control module port's nest vlan function
<operator>	enable :enable port nest's vlan function Disable: disable port nest's vlan function

4.3.8.10.   Enable Port's Protocol Vlan

Command Grammar	epon(ge1)#**prot-vlan** *<operator>*
Function	Configure switch control module port's protocol vlan function
<operator>	Enable: enable port's protocol vlan function Disable: disable port's protocol vlan function

【Remark】

This command's effect is the same as "[no] enable *<portlist>*" *under*the protocol vlan configuration mode .

4.3.5.6.Enable Port Protocol VLAN Function

4.3.8.11. Set Port's PVID

Command Grammar	epon(ge1)#**pvid** *<pvid>*
Function	Configure switch control module port's default vlan ID .
<pvid>	Vale range from 0 to 4094

4.3.8.12. Configure Port's Rate Limits

4.3.8.13. Configure Port's Reauto-Negotiation Function

Command Grammar	epon(ge1)#**reautoneg**
Function	Configure switch control module port's auto-negotiation function, which is needed on the purpose of networking debugging. This function could be replaced by means of plug in and out of the cable ,but if the cable/fiber is too complicated or too far ,it is better to realize it via software .Therefore ,port configuration management module must provide a command port for reauto-negotiation command ,which doesn't preserve the attributed value continually.

4.3.8.14. Show Port Information

Command Grammar	epon(ge1)#**show**
Function	Show switch control module port's configuration information

【**Example**】

1.Show switch control module port 1 's configuration information

```
epon(ge1)#show
-----------------        PortId  2          Attribution    --------------------
Auto-Negotiation:enable      AdminStatus      :enable
```

```
PVID                :1          DefaultPriority :0
Learning            :enable     AccFrameType        :All
CfgSpeed            :1000M      CfgDuplex           :full
WorkSpeed           :10M          WorkDuplex          :half
CfgFlwCtrl          :disable    LinkStatus          :down
IngressRateCtrlType:All             IngressRateLimit:0
EgressRateLimit :0
----------------------------   End      ----------------------------
```

4.3.8.15. Configure Port's Compulsive Shutdown Function

Command Grammar	epon(ge1)#**shutdown**
Function	Configure switch control module port's compulsive shutdown function. In an exceptional case, such as attached by virus or hacker and can't take any actions ASAP , the shutdown port function is recommended .

4.3.8.16. Remove Compulsive Shutdown Port

Command Grammar	epon(ge1)#**no shutdown**
Function	Remove switch control module port's compulsive shutdown function. In an exceptional case, such as attached by virus or hacker and can't take any actions ASAP , the shutdown port function is recommended .

4.3.8.17. Configure Current Port Rate

Command Grammar	epon(ge1)#**speed *<speed>***
Function	Configure switch control module port's speed.Under fiber port mode ,the port could only work at the speed of 1000Mbps;Under the copper port mode ,the port can work at different speed and available for auto-negotiation function configuration .
<speed>	10m: 10mbps

	100m: 100mbps 1g: 1gbmp(1000mbps) 10g: 10gbps Auto: auto-negotiation

4.3.9.System Configuration Mode

Command Grammar	epon#**system**
Function	Enter EPON system's management mode

【Example】

1.Enter system management mode

```
epon#system
epon(sys)#
```

epon(sys)# ?   input "？"or "help" to show current directory
  cfg-sync   **- synchronize onu config with its config file**
  console   **- configure console parameters**
  onu-auth   **- configure ONU authentication parameters**
  read-comm   **- set snmp read community string**
  reboot   **- reboot the system**
  restore   **- restore to saved configuration**
  save   **- save system configuration**
  trap-addr   **- set trap destination IP address**
  write-comm   **- set snmp write community string**

4.3.10.   Synchrony with ONU Configuration

Command Grammar	epon(sys)#**cfg-sync** *<slot> <status>*
Function	Configure OLT's setting is synchronous with ONU configuration. When this function is enabled , ONU will remove its own nvs automatically before ONU authorized to OLT .All configuration under the ONU will be cleared .All ONU's configuration is valid after authorized under the OLT .
<slot>	PON card slot with integer value from 1 to 4 .

<timeout>	Optional index:<enable|disable>

【**Remark**】

This function default is close because enabling it will make ONU's saved configuration lost ,needing to configure it again undet the OLT .Please use this function properly .

4.3.10.1.   Backup EPON System Configuration

Command Grammar	epon(sys)#**config backup***<host>*
Function	Put all EPON sytems's configuration file backup to TFTP server.
<host>	Appointed TFTP server's IP address

4.3.10.2.   Restore EPON System Configuration

Command Grammar	epon(sys)#**config upgrade** *<host>*
Function	Download system's configuration file from TFTP server and restore EPON system's configuration.
<host>	Appointed TFTP server's IP address

4.3.10.3.   Configure Console Port Speed

Command Grammar	e pon(sys)#**console speed***<speed>*
Function	Set OLT system's console port speed
<speed>	Value range:bps2400-bps115200 Remark: value should be $2400*2^n$ (n is integer)

4.3.10.4. ONU Authorization Management Mode

Command Grammar	epon(sys)#**onu-auth**
Function	Enter onu authorization management mode

【**Example**】

1.enter onu authorization management mode

epon(sys)#onu-auth
epon(sys-onuauth)#

epon(sys-onuauth)# ?   input"？"or"help"to show directory:

    inv-onu   **- process invalid ONU list**

    list   **- configure ONU address range**

    type   **- set authentication type**

4.3.10.4.1. Illegal ONU List Operation

4.3.10.4.1.1. Clear Illegal ONU List

Command Grammar	epon(sys-onuauth)#**inv-onu clear**
Function	Clear current illegal ONU list ,then the illegal onu can get a new chance to be authorized under OLT .

4.3.10.4.1.2. Show Illegal ONU List

Command Grammar	epon(sys-onuauth)#**inv-onu show**
Function	Show illegal ONU list and list all illegal ONU's MAC address

4.3.10.4.2. Configure ONU Authorized Address List

4.3.10.4.2.1. Add ONU Authorized Address List

Command	epon(sys-onuauth)#**list add *<start> <end> <type>***

Grammar	
Function	Add an ONU address list and appoint its authorization type
<start>	ONU starting MAC address: such as 00:A1:02:02:01:B0
<end>	ONU ending MAC address: such as:00:A1:02:02:01:F0
<type>	Set onu authorization type under address list with following value: Blacklist: the ONU with this type of MAC address can't be authorized to OLT . Whitelist: the onu beyond this MAC address range can't be authorized .

【Example】

1.Add the ONU with the MAC address : 00:A1:02:01:12:B0 to the blacklist

```
epon(sys-onuauth)#list add 00:A1:02:01:12:B0 blacklist
```

4.3.10.4.2.2. Delete ONU Authorized Address List

Command Grammar	epon(sys-onuauth)#**list delete *<index>***
Function	Delete an ONU address list
<index>	MAC address list index

4.3.10.4.2.3. Show Current MAC Address List

Command Grammar	epon(sys-onuauth)#**list show**
Function	Show current ONU authorized address list and distribute an index directory for all the MAC address automatically

【Example】

1.Show current ONU authorized MAC address list:

```
epon(sys-onuauth)#list show
NO.    Start Address        End Address          Type
1      00:a1:02:01:12:b0    00:a1:02:01:12:b0    blacklist
```

4.3.10.4.3. Configure ONU Authorized Type

Command Grammar	epon(sys-onuauth)#**type** ***\<type\>***
Function	Set EPON system ONU's authorized type
\<type\>	Valid value:\<blacklist | whitelist | none\> Blacklist: All onu in the MAC address type can't be authorized . Whitelist: All ONU beyond the MAC address type can't be authorized. None: non-authorization ,all ONU could be authorized .

4.3.10.5. Set SNMP Read Community

Command Grammar	epon(sys)#**read-comm** ***\<community\>***
Function	Set EMS software SNMP's read community
\< community \>	Read community with bytes serial ,the longest length couln't be over 26 bytes ,such as public .

4.3.10.6. Reboot OLT

Command Grammar	epon(sys)#**reboot** ***\<device\> \<slot\> \<olt\> \<onu\>***
Function	Reboot EPON device;This command will reboot switch control module , some PON card ,some ONU or the equipment under the EPON system . Input command " reboot " will only reboot the switch control module .

\<device\>	Appoint the device to be rebooted with following index:
	ctrl-card: reboot switch control module
	        \<slot\>\<olt\> \<onu\> is ignored .
	pon-card :reboot appointed pon card with index \<slot)
	        \<olt\> \<onu\> is ignored .
	Onu:reboot appointed onu under the index ***\<slot\> \<olt\> \<onu\>***
	  all : reboot the whole EPON system including OLT and ONU .

	<slot><olt> <onu> is ignored.
<slot>	Appoint PON card's slot number with valid value from 1 to 4 .
<olt>	Appoint PON port number under a pon card slot with valid value from 1 to 2 .
<onu>	Appoint ONU number with valid value from 1 to 64 .

【**Example**】

1.Reboot switch control module

```
epon(sys)#reboot
```

Or

3.Reboot the whole EPON system including switch control module ,all online PON card and all online ONU)

```
epon(sys)#reboot all
```

4.3.10.7.   Restore Default Configuration and Reboot Equipment

Command Grammar	epon(sys)#**restore *<device> <slot> <olt> <onu>***
Function	Restore ex-factory default configuration and reboot the device . When ***<device> <slot> <olt> <onu> is ignord ,the command just restore switch control module configuration .***
<device>	Appoint the device to restore default configuration with valid index : ctrl-card: restore switch control module's default configuration ***<slot><olt> <onu>*** is ignored pon-card: restore appointed PON card under ***<slot>*** configuration ***<olt> <onu>*** is ignored. onu :restore default configuration for appointed onu with index : ***<slot> <olt> <onu>*** all: restore system's all default configuration and command **<slot><olt> <onu> is ignored .**
<slot>	Appoint PON card's slot number with valid value from 1 to 4 .
<olt>	Appoint PON port number with valid value from 1 to 2 .
<onu>	Appoint ONU number with valid value from 1 to 64 .

4.3.10.8.   Save Current Configuration

Command Grammar	epon(sys)#**save *\<device\> \<slot\> \<olt\> \<onu\>***
Function	Save current configuration. Just input " save " command to save the switch control module's current configuration .

\<device\>	Appoint the device to save current configuration with valid index :
	ctrl-card: save switch control module's current configuration
	                \<slot\>\<olt\> \<onu\> is ignored
	pon-card: save appointed PON card under ***\<slot\>*** configuration
	                \<olt\> \<onu\> is ignored.
	onu :save configuration for appointed onu with index :
	\<slot\> \<olt\> \<onu\>
	  all: save system's all default configuration and command **\<slot\>\<olt\> \<onu\> is ignored .**

\<slot\>	Appoint PON card slot number with valid value from 1 to 4 .
\<olt\>	Appoint PON port number with valid value from 1 to 2 .
\<onu\>	Appoint ONU number with valid value from 1 to 64 .

4.3.10.9.   Set Trap Receiving IP Address

Command Grammar	epon(sys)#**trap-addr *\<index\> \<ip-addr\>***
Function	Configure EPON's receiving trap IP address with 4 IP at most.
\<index\>	Trap receiving IP index with valid value from 1 to 4 .
\<ip-addr\>	Set trap receiving IP address ,such as 192.168.0.1.

4.3.10.10. Set SNMP Written Community

Command Grammar	epon(sys)#**write-comm *\<community\>***

Function	Set SNMP's written community of EMS software
< *community* >	Written community with bytes serial ,longest length 26 bytes ,such as : private .

4.3.11.   Trunk Management Mode

Command Grammar	epon#**trunk** *<trunkid>*
Function	Create a trunk group and enter the trunk management mode for configuration .
< *trunkid* >	Trunk number with valid value from 1 to 4

【Example】

1.Create trunk 1 and enter trunk 1's management mode

```
epon#trunk 1
epon(trunk1)#
```

epon(trunk1)# ?   input "？"or"help"to show current directory
   balance-algorithm   **- set trunk balance algorithm**
   delete   **- delete the specifically trunk**
   member   **- Set trunk member**

4.3.11.1.   Configure Trunk Balance Algorithm

Command Grammar	epon(trunk1)#**balance-algorithm** *< balance>*
Function	Configure trunk's balance algorithm.All balance algorithm is the same when all trunk group adopts the same balance algorithm. Trunk group's packet can be shared among trunk member poprts .EPON system support several balance algorithm ,such as based on MAC address ,IP address ,transmission port number, MAC+IP, MAC+ transmission port number
<balance >	Trunk algorithm with valid index : mac :based on MAC address's KE balance algorithm. Ip: based on IP address's balance algorithm

	l4port: based on transmission port's balance algorithm ip-mac: based on MAC+IP address's balance algorithm l4port-mac inl2if :based on packet receiving port's balance algorithm

4.3.11.2.   Delete Trunk Group

Command Grammar	epon(trunk1)#**delete**
Function	Delete trunk group and its member

4.3.11.3.   Add Trunk Member

Command Grammar	epon(trunk1)#**member *<portlist>***
Function	Add trunk group's member pot
<portlist>	Appoint trunk member port list from ge1 to ge8

【**Example**】

1.Add member port ge1,ge3,ge4 and ge8 to trunk 1 .

```
epon(trunk1)#member ge1,ge3-ge4,ge8
```

4.3.12.   Show Trunk Configuration Information

Command Grammar	epon#**show trunk**
Function	Show switch control module's current trunk configuration

4.3.13.   User Management

4.3.13.1.   Set User Authority

Command Grammar	epon#**user access** *<name> < access >*
Function	Change appointed user's priority mode to limit use to access to system or limit the user right .
<name>	Appointed user name under the priority mode with the length from 4 to 15 bytes.
<access>	admin : manager who has all the configuration and operation rights . Guest: guest who could only ready the operation. Configuration

【Remark】

Only the system administer has the rights to change the system user's priority.

4.3.13.2.   Add User

Command Grammar	epon#**user add** *<name> <passwd> < access >*
Function	Add a user
<name>	User name with the length from 4 to 15 bytes.
<passwd>	Optional index to change new password .if there is no index ,the user's password is blank ;if index is provided ,it could be any obvious bytes combination with the length from 6 to 31 bytes .
<access>	admin : administer who has all the configuration and operation rights . Guest: guest who could only ready the operation. Configuration

4.3.13.3.   Delete User

Command Grammar	epon#**user delete** *<name>*
Function	Delete appointed user from logging in the system

<name>	Appoint the user name to be deleted with the bytes length from 4 to 15

【Remark】

Only the system's administer(the user priority level is 1) has the rights to add and delete system users .

4.3.13.4.   Change User Password

Command Grammar	epon#**user passwd** *<name>* [*<password>*]
Function	Change appointed user's log in password . If *<password>* is ignored **,** the log in password is blank.
<name>	User name with the bytes length from 4 to 15 bytes .
<password>	Optional index to input new password . If the index is not provided ,the password is blank ;if the index is provided ,the password length can be from 6 to 31 bytes.

4.3.13.5.   Show Current User's Information

Command Grammar	epon#**user show**
Function	Show system's all user list

【Example】

1.**Show System's Current User List**

```
epon#user show
User: admin          Access: administrator|0        Timeout: 1800
User: guest          Access: guest|0                 Timeout: 600
```

4.3.13.6.   Change User's Timeout

Command	epon#**user timeout** *<name> <timeout>*

Grammar	
Function	Change appointed user's timeout time. Within the timeout time ,user can't make any operation and log out the system automatically.
<name>	Change timeout user name with the byte length from 4 to 15 bytes.
<timeout>	Appointed user's timeout time with the valid index range from 1to 3600 and unit is second.

【Remark】

Change user's timeout function ,which is valid after logging in the system again .

4.3.14.   VLAN Management Mode

Command Grammar	epon#**vlan** *<vlanid>*
Function	Create a vlan and enter vlan management mode for configuration .
< vlanid >	Vlan ID to be modified or created with valid value from 1 to 4094.

【Example】

1.Create Vlan100 and enter vlan100's management mode

```
epon#vlan 100
epon(vlan100)#
```

epon(vlan100)# ?   input"？"or "help" to show current directory:
   delete   **- delete vlan members or vlan**
   member   **- add vlan member**

4.3.14.1.   Delete Vlan Member

Command Grammar	epon(vlan100)#**delete member** *<portlist>*
Function	Delete vlan member port. Input "delete member" to to delete this vlan and member port.
<portlistt>	Appoint vlan member port list ,any port from ge1 to ge16.

4.3.14.2.   Delete Vlan

Command Grammar	epon(vlan100)#**delete**
Function	Delete current vlan and all member ports under this vlan.

4.3.14.3.   Add Vlan Member Port list

Command Grammar	epon(vlan100)#**member** *<portlist> <tag>*
Function	Add vlan member port and set its tag mode.
<portlistt>	Added vlan member port list ,from ge1 to ge16.
<tag>	Tag mode with fixed index "tag" . When the member port is marked with tag .The packet from the port is added with vlan tag . When tag is deleted ,this port is not marked with tag .

【**Example**】

1.add switch control module port ge1,ge2,ge3 with vlan 100 to the tag member ports ,while port ge4,ge5,ge16 are member ports with vlan100 without tag .

```
epon(vlan100)#member ge1-ge3 tag
epon(vlan100)#member ge4-ge5,ge16
```

4.3.15.   Show Vlan Configuration Information

Command Grammar	epon#**show vlan**
Function	Show switch control module's vlan configuration information .

【Example】

1.Show switch control module's valn configuration:

```
epon#show vlan
vlan      1:
```

```
tagged ports        :
untagged ports    :ge1-ge16
vlan    100:
tagged ports        :ge1-ge3
untagged ports    :ge4-ge5,ge16
```

4.4. Show System Running Information

4.4.1. Show System's Current CPU Running Status

Command Grammar	epon>**show cpu**
Function	Show system's CPU running status information

【**Example**】

1.Show system's CPU Running Information:

```
epon>show cpu
     NAME          ENTRY        TID      PRI    total % (ticks)    delta % (ticks)

------------ ----------- ----------   ---   --------------   ---------------

tJobTask        0xd19a4          0x8ac158      0     0% (         0)    0% (         0)

mTrAging    0x43975c         0xf7c350       5     0% (        0)    0% (         0)

tErfTask     0xb46bc          0x8b5a30      10      0% (        0)     0% (        0)

intSched0   0x31a72c         0xf0b5e0      10     0% (        0)     0% (        0)

intSched1   0x31a72c         0xf16880      10     0% (        0)     0% (        0)

tNetTask    0x363c0          0x945d00      40     0% (        0)     0% (        0)

tIbcpPoll    0x13dc7c         0x1243cd0     45     0% (        0)     0% (        0)

tIbcpRx       0x13e74c         0x1241338     46    13% (        2)    13% (        2)

tXbdService  0xccba0          0xa1af80      50     0% (        0)     0% (        0)

tFtp6d          0x2f97c          0xa16ef0      56     0% (        0)     0% (        0)

tUserLog        0x16a9c0          0xf826a8      60     0% (        0)     0% (        0)

tUpgradeTask 0x167174        0x1348aa8     64     0% (        0)     0% (        0)

KERNEL                                                        0% (        0)     0% (        0)

INTERRUPT                                                  0% (       0)     0% (        0)

IDLE                                                            86% (       13)    86% (       13)

TOTAL                                                           99% (      15)    99% (      15)
```

4.4.2. Show System's Memory Use Status

Command Grammar	epon>**show mem**
Function	Show system's memory use status information

【**Example**】

1.Show system's current memory user information:

```
epon>show mem
   status          bytes          blocks      avg block   max block
   -------- -------------- ---------- ---------- ----------
current
  free              12695080             4      3173770    12681624
  alloc          12055336        1185        10173          -
  internal            408           2          204          -
cumulative
  alloc          12702512        1795         7076          -
peak
  alloc          12059424           -            -          -
```

4.4.3. Show System's Task Status

Command Grammar	epon>**show task**
Function	Show system's current task information

4.4.4. Enable CATV (RF) Function

Current ,C-Data has developed and produced a wide range of ONU models ,such as only data ONU FD101H,FD111H,FD112H,FD104H,FD104B,FD108B ,and ONU of various service function, such as FD304H(4FE+RF),FD204H(4FE+2POTS_,FD404H(4FE+2POTS+RF).So far ,our EMS and CLI NMS could both support data and RF-cutoff function in our EMS or in our CLI management interface. As for VOIP function, we could only support CLI management on the console port of the ONU .

Command Grammar	epon(slot3-olt2-onu9)#catv enable
Function	Enable ONU's RF function

4.4.5. disable CATV (RF) Cut-Off Function

Command Grammar	epon(slot3-olt2-onu9)#catv disable
Function	Disable ONU's RF function if subscriber don't pay CATV cost on time from the OLT management interface .

4.5. Global Command

Global command can be used under any command mode.

4.5.1. Create Command Alias

Command Grammar	alias *<alias> <cmd>*
Function	Create appointed command's alias
<alias>	Input command's alias
<cmd>	Original command

4.5.2. Change Directory

Command Grammar	cd *<directory>*
Function	Enter appointed directory
<directory>	Input directory

4.5.3. Clear Screen

Command Grammar	clear
Function	Clear screen

4.5.4.Copy File

Command Grammar	**copy** *<scr-file>* *<dest-file>*
Function	Copy file ; When <dest-file> is ignored , <scr-file> 's contents is printed on the screen.
< scr-file >	Source file
<dest-file>	destined file

4.5.5.Show System's Date

Command Grammar	**date**
Function	Show system's current date and time .

4.5.6.Delete File

Command Grammar	**del** *<filename>*
Function	Delete appointed file
< filename >	Appoint deleted file name

4.5.7.Exit From The Current Command Mode

Command Grammar	**exit**
Function	Exit from the current command mode and return to the previous command mode .

4.5.8. Return to System Main Directory

Command Grammar	**end**
Function	Return to the system's main directory

4.5.9. Help

Command Grammar	**help**
Function	Command help

4.5.10.   Command History

Command Grammar	**history**
Function	Show current input command history

4.5.11.   Log Out System

Command Grammar	**logout**
Function	Log out system

4.5.12.   Show Current File List

Command Grammar	**ls**
Function	Show current directory's file list

4.5.13.   PING

Command Grammar	ping *<host>*
Function	Test remote host's connection
< host>	Remote host's ip address

4.5.14.   Show Directory Route

Command Grammar	pwd
Function	Show directory route

4.5.15.   TFTP

Command Grammar	tftp *<cmd> <filename> < mode>*
Function	Upload/download file through TFTP
< cmd>	TFTP command: get : download file Put: upload file
<filename>	File name
<mode>	File format : ascii file format binary format