2018

NMS Web 2.0

NMS Operation Manual

Introduction

NMS Web 2.0, researched and developed by BDCOM, is a multi-platform network management system supporting several protocols, such as SNMP, HTTP, CLI. It contains abundant tools to monitor network performance, amicable interface display for customers, all-sided but simple functions of network configuration and so on. It is helpful for NMS to immensely improve the efficiency of network operation. NMS has the ability to real time monitor the whole network, helping Administrator realize centralized management in LAN.

NMS Web Operation Manual is a brief but detailed manual aiming at NMS. Through this manual, network administrator can get details in all management functions and operation approaches of NMS.

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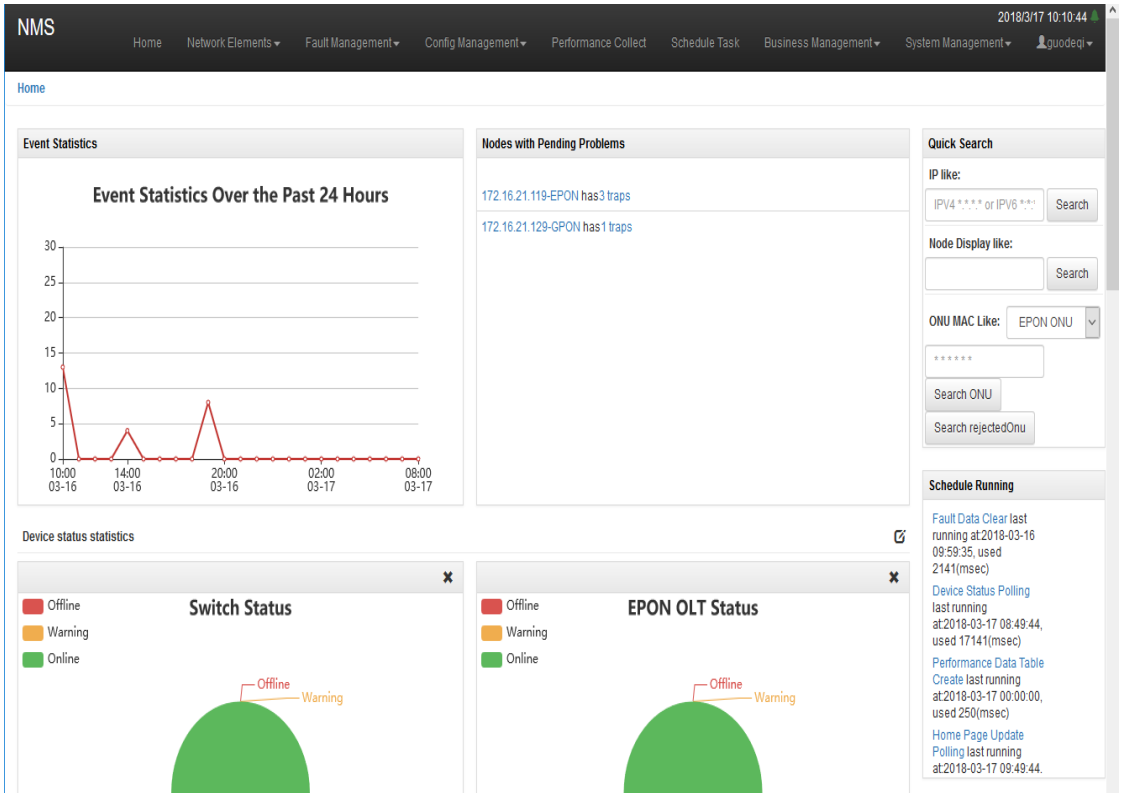
1 Home

Log in NMS, see the figure.



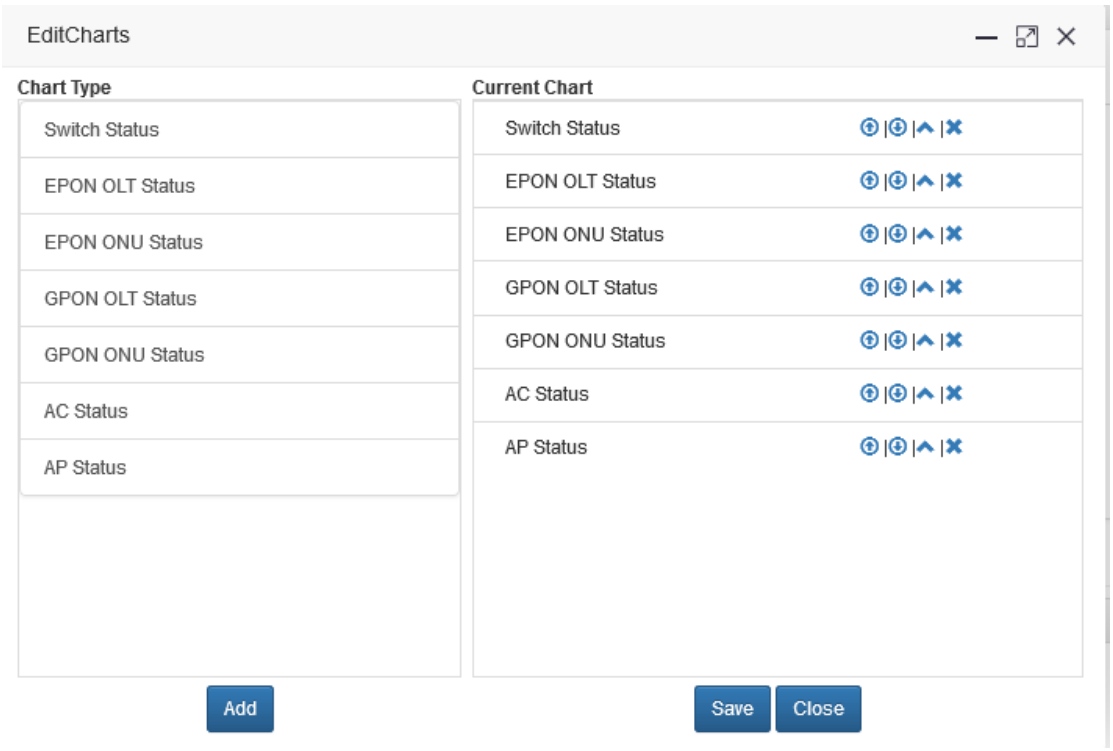
1.1 Statistics

The main four parts:

1: **Event Statistics Over the Past 24 Hours** shows the alarm total received by NMS every hour in the past 24-hour event statistics;

2: **Nodes with Pending Problems** shows the top 10 devices reported mostly in the past 24 hours, as counted by NMS. Click the device name to enter device management interface; click **Warnings** to enter the warning management interface.

3: **Switch Status** shows the amount and status of all the devices in NMS. Click the editing button on the rightest side of **Device status statistics** to edit the display and order of charts. See the figure. Choose the necessary type in **Chart Type** and click **Add** to add it in **Current Chart**. Click  to edit. Click **Save** to display the edited chart on **Home**.



4: **EPON OLT Status** is the core timing tasks statistics. It displays the execution time and time consuming for every part. For task role and configuration, please refer to **Management Element** for details.

1.2 Quick Search

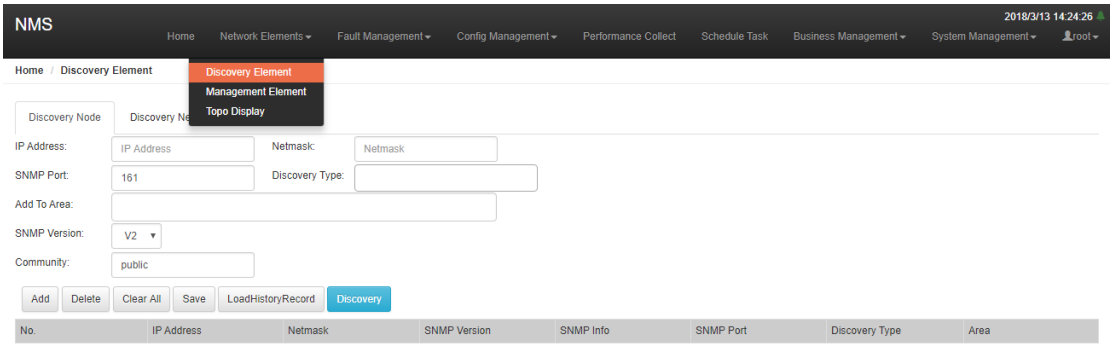
Click **Quick Search** to locate the device quickly and manage it. See the following figure, by searching **IP like**, **Node Display like** and **ONU MAC Like** to locate and manage the device. All three routes support fuzzy query to match the corresponding device. ONU Search includes EPON ONU and GPON ONU; EPON ONU requires ONU MAC address, while GPON ONU requires GPON ONU SN, that is serial number.

Search rejectedOnu provides rejected ONU search. Such function covers all EPON OLT in NMS to get all rejected ONU statistics. It can filter based on input MAC address. So the rejected ONU can be located and bound quickly.

2 Network Elements

Discovery and Management offers management portal to devices, an entry for all managed devices. After input, the devices will be differentiated by NMS automatically according to the type, condition and so on. The system provides appropriate management methods for all different devices. NMS receives basic data of devices and saves all such data in background database. Meanwhile, based on different types, all devices will be displayed on relevant interfaces.

The top is the navigation bar. On the navigation bar, click **Network Elements** -> **Discovery Element** to enable the **Discovery Element** configuration interface**.** See the following figure.



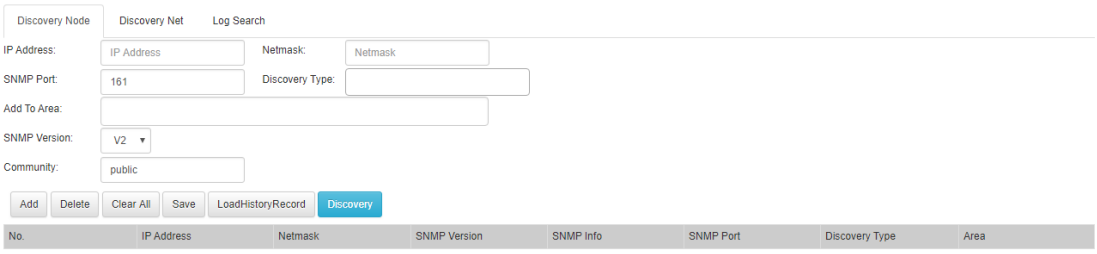
Discovery Element can enable users to configure topology discovery conveniently and flexibly. For example, users can configure and discover the used protocol and parameter, discover all nodes in a certain network, devices in certain IP segment and something else defined by users. The configuration function of **Discovery Element** enable administrators to make relevant changes in configuration based on the following two properties:

- **Discovery Node**
- **Discovery Net**

2.1 Discovery Node

With mechanism of **Discovery Element**, users can be forced to discover the appointed device or other devices with particular ports and agencies, when discovering any other device in the network. Therefore, it becomes convenient for users to first discover and add the preferential specifics of nodes and devices when operating **Discovery Element**.

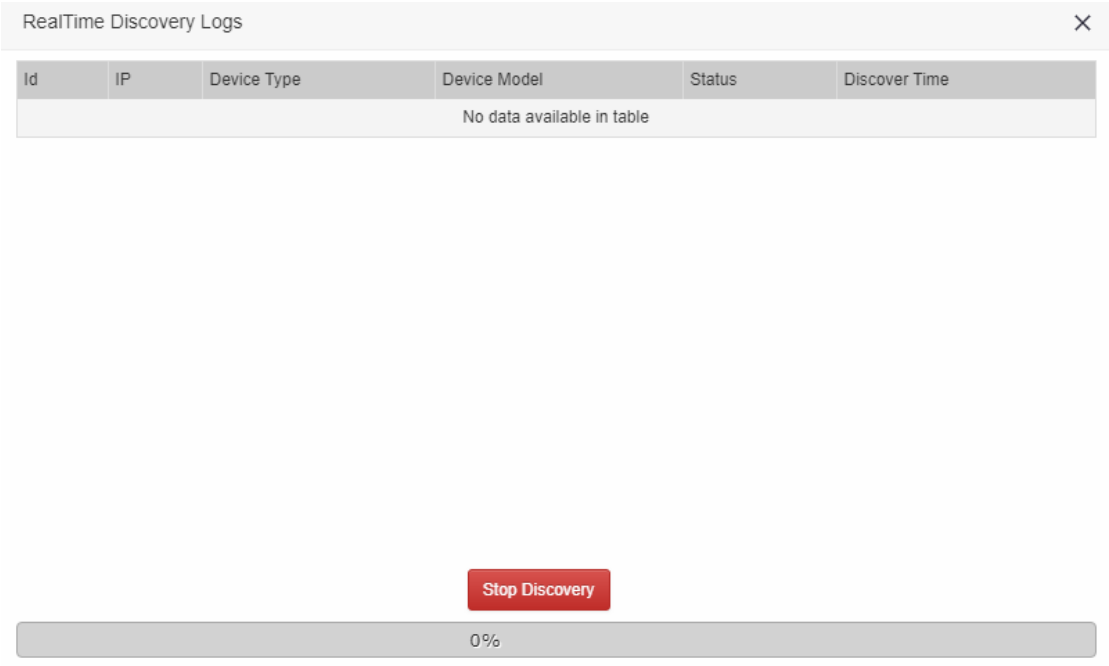
On the **Discovery Element** interface, choose the property page of **Discovery Node**. See the following figure**.**



2.1.1 RealTime Discovery Logs

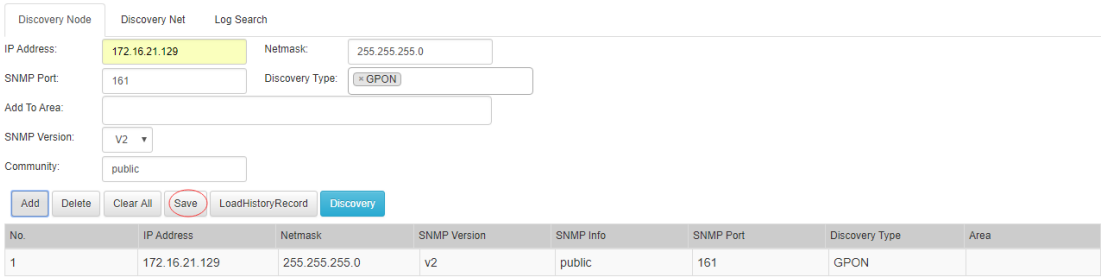
Operation steps:

- On the property page, enter IP address (IP address of the discovered node is required), net mask of node, SNMP port, discovery type, SNMP version and safety info into their relevant text boxes.
- Click **Add**. IP address and net mask will be added into the discovery list and NMS will discover those nodes.
- After the above operations, click **Discovery**.
- The interface is shown as the following figure.

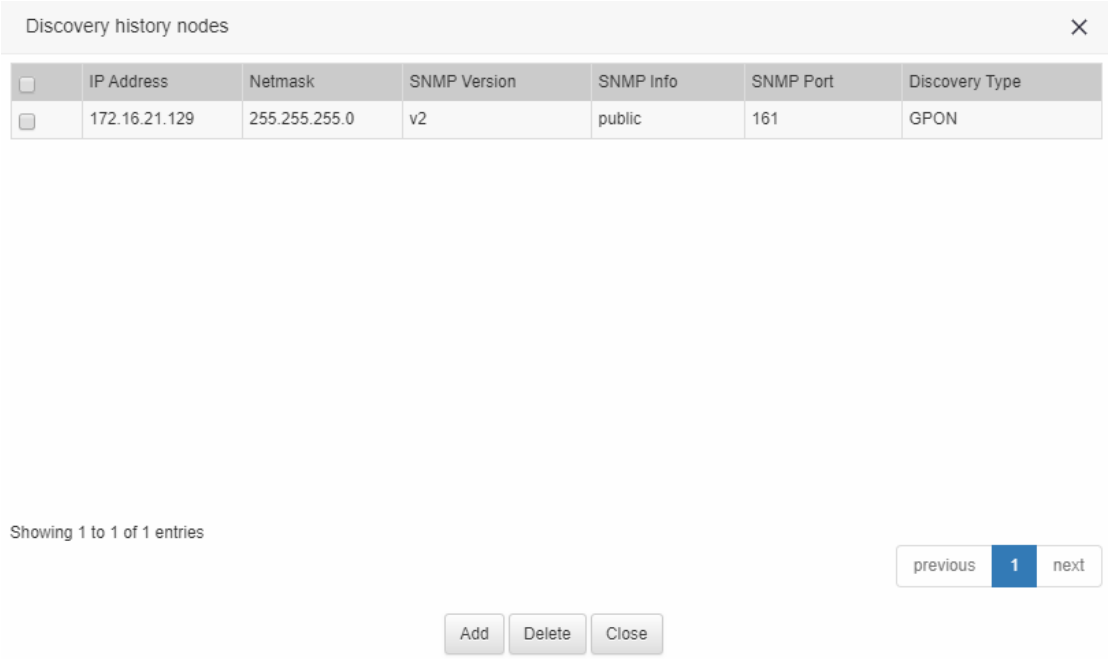


2.1.2 Save Discovery Node and Load History Record

After finishing the list, click **Save** to memorize the data in the database for the next use.



If history records exist, click **LoadHistoryRecord** to select history nodes in **Discovery history nodes**. Tick the required nodes in the checkbox in line 1, click **Add**; click **Delete** to clear history records; click **Close** to disenable the interface.

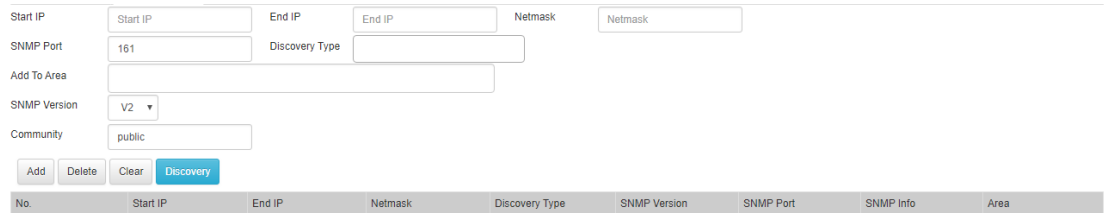


2.2 Discovery Net

Click **Start IP** and **End IP** to configure the range where only appointed IP address is discovered in the network. Here are the steps:

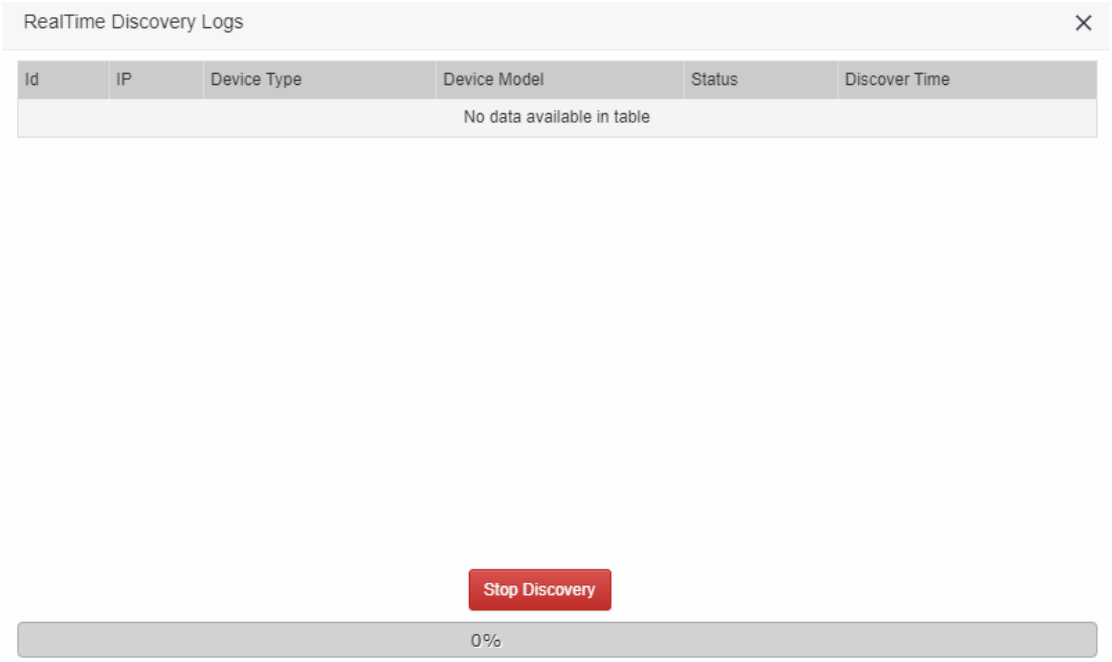
- Type in **Start IP** and **End IP**;
- Enter relevant Net mask, SNMP information, etc.;
- Click **Add** to finish the configuration;
- Click **Discovery** to enable **Discovery Net**.

Several IP address ranges can be configured in the same network.

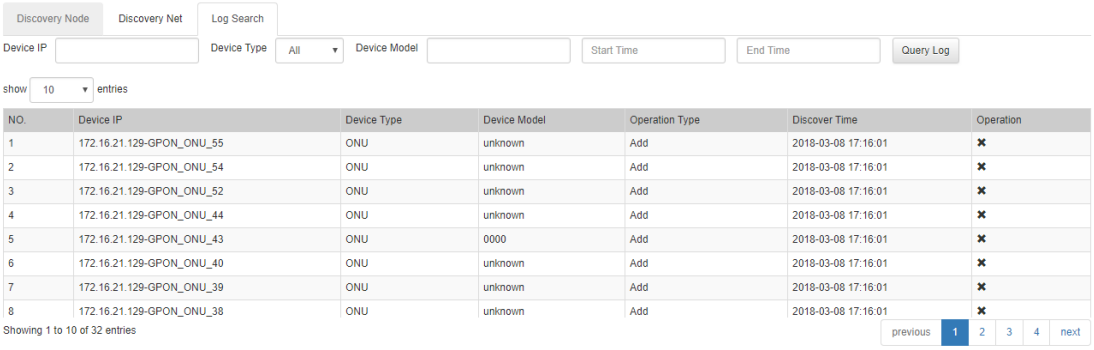


2.3 Log Search

After configuring Discovery Node, click **Discovery** to enable **Log Search**. The discovered network, device will show up in logs. If there is **Discovery Net**, the interface will be presented as the following figure.



Search in **Log Search** to inquire device discovery and deleted logs. Search the records in self-defined conditions, or the default search involves all logs.

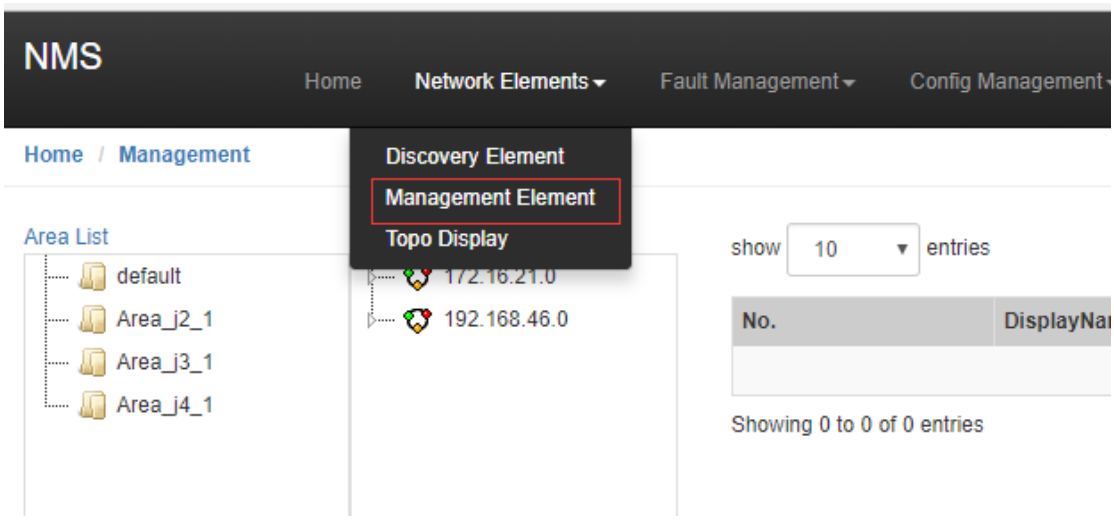


2.4 Caution

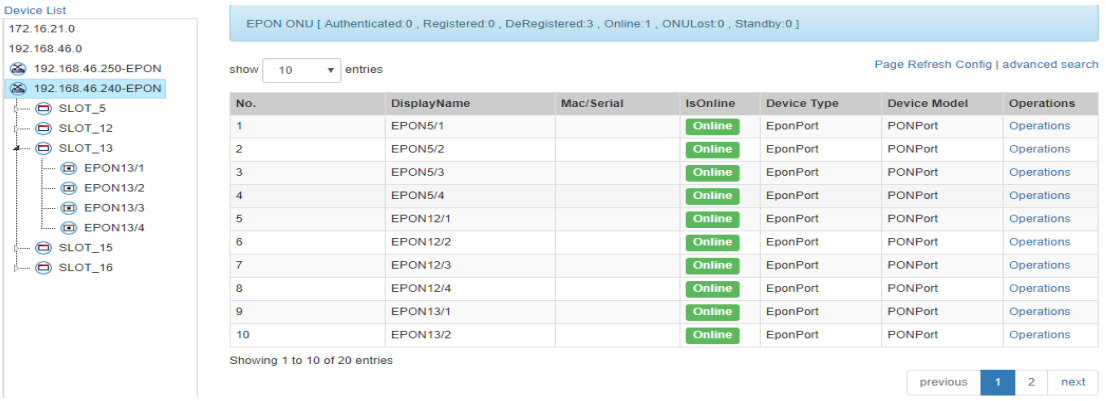
When some device has existed in NMS, the device will not be rediscovered or discovered during **Discovery** operation.

3 Management Element

Management Element provides preservation and configuration for discovered nodes. Click **Network Elements -> Management Element** to enable the interface. See the following figure.

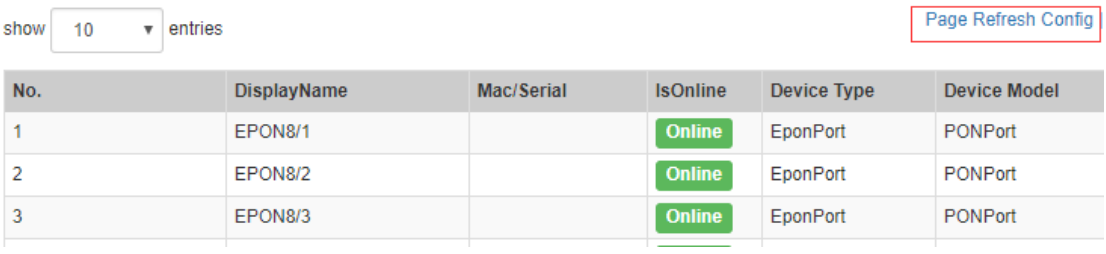


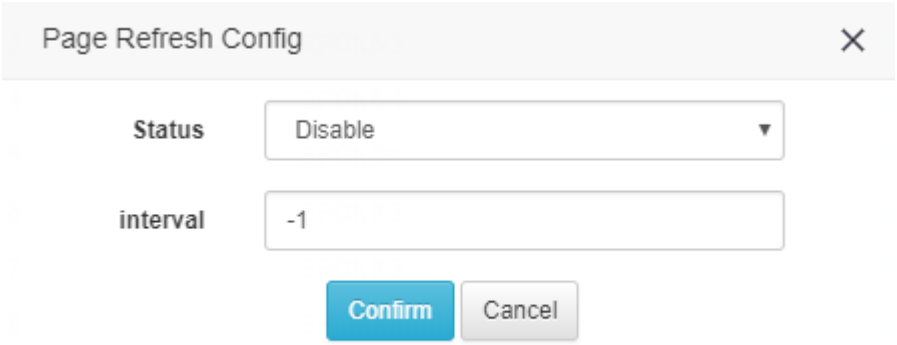
In the interface, select the area in **Area List**. The net tree (there is only one default area in original state and all devices are tacitly approved to be in default area) shows up in **Device List**. Following the chosen area and tree nodes, the relevant device details can be noticed in the form, and further configuration and preservation management can be operated. See the following figure.



3.1 Page Refresh Config

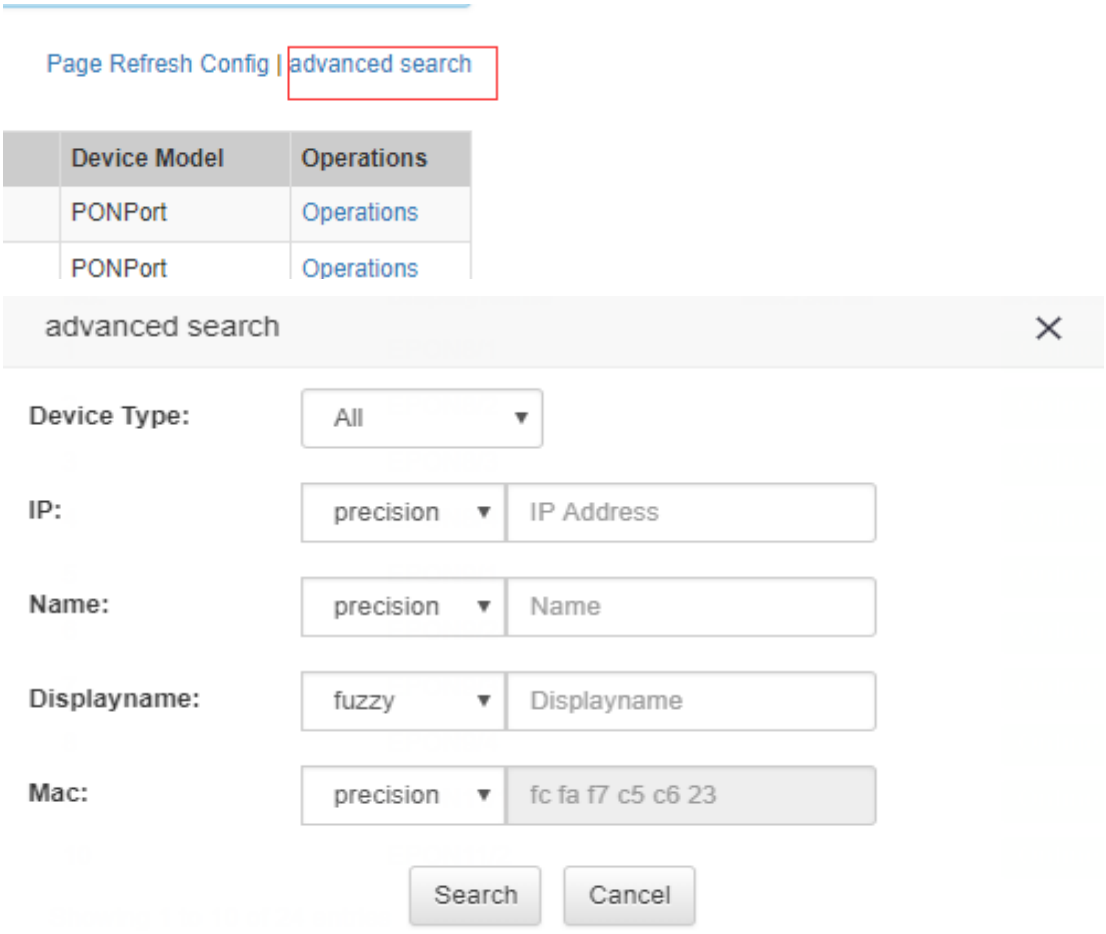
Page Refresh Config can periodically refresh the table data, default disenabled. Upon being enabled, it can get the latest data updates from the database regularly, consuming a certain amount of server performance, so short polling time is not recommended. See the following figure.





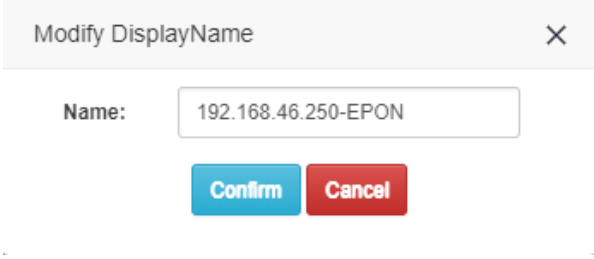
3.2 advanced search

advanced search can search switches like EPON, GPON, ONU, etc.. The general retrieval short keys: CTRL+F; if not, do the following.

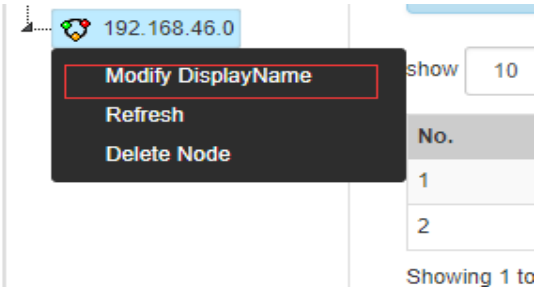


3.3 Modify DisplayName

To set names of the discovered devices, click **Modify DisplayName** in the right form. See the figure.



To modify the display names, right-click one certain tree node and choose **Modify DisplayName**. See the following figure.

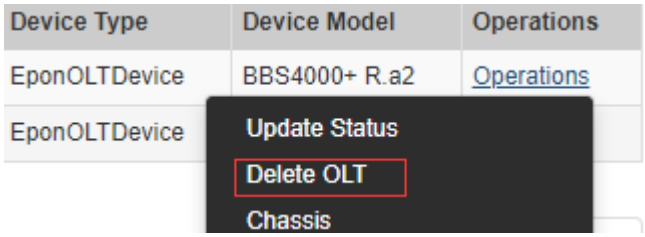


3.4 Update Status

NMS offers rear-end timing polling to update status. The update works every 2 hours tacitly. To acquire latest device connectivity, click **Operations->Update Status**. See the figure.

3.5 Delete OLT

Operate **Delete OLT** to remove some devices from NMS; if the device is right proceeding the NMS polling, **Delete OLT** may fail. Please delete that later.

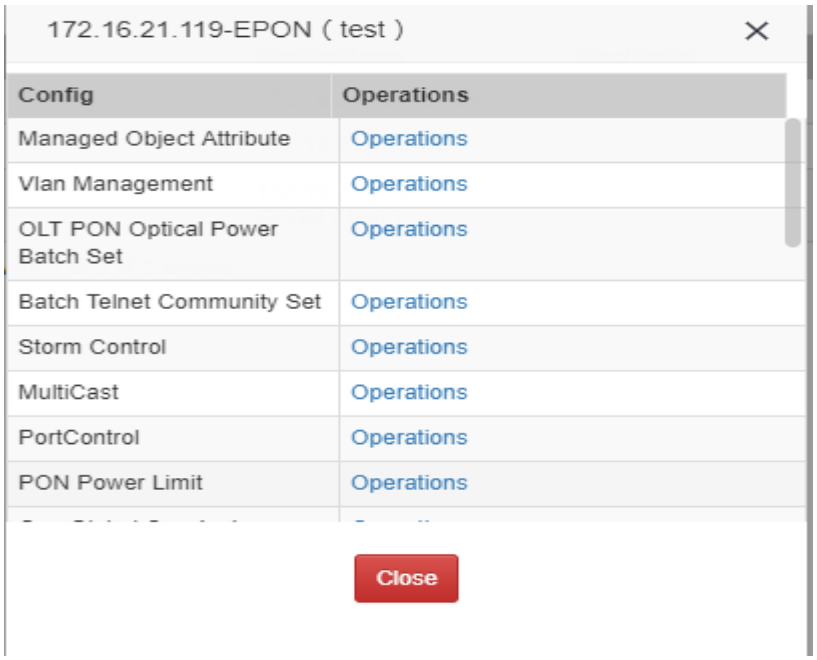


3.6 Chassis

Just click **Operations->panel** to check **port status**. Shutdown and no shutdown operations are provided. See the figure.

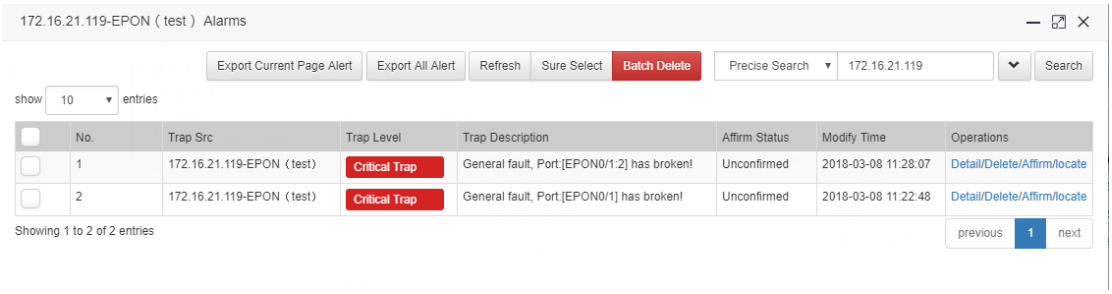
3.7 Config

Click **Operation-> Config** and choose one certain option, click **Operations** to realize the configuration.



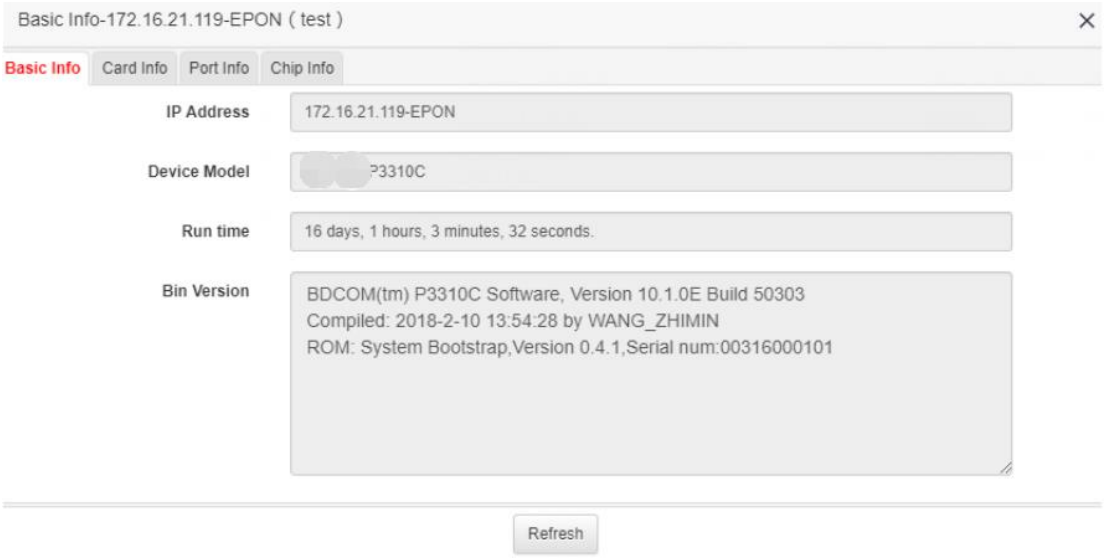
3.8 Alarms

Click **Operation->Alarms** to see the alarms information of the device.



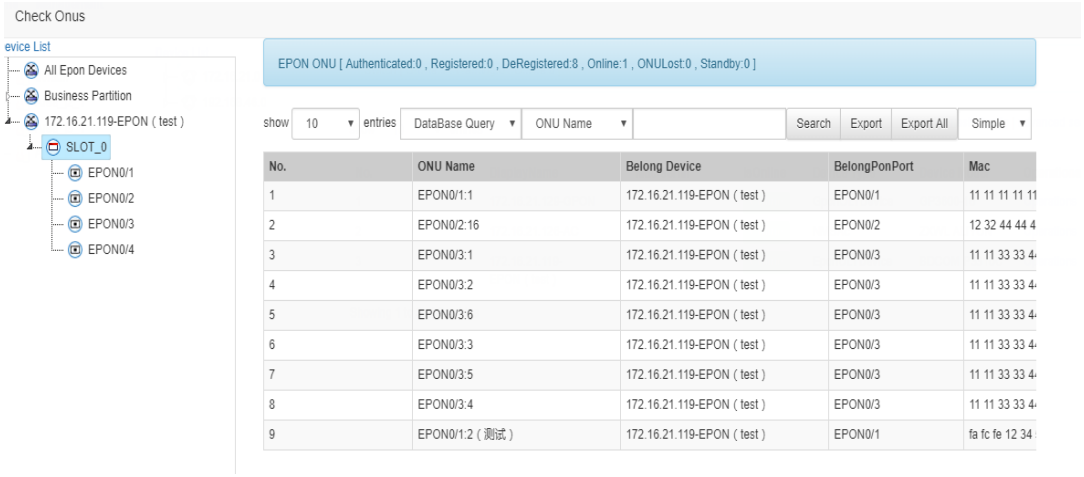
3.9 Basic Info

Click **Operation->Basic Info** to see the basic information.

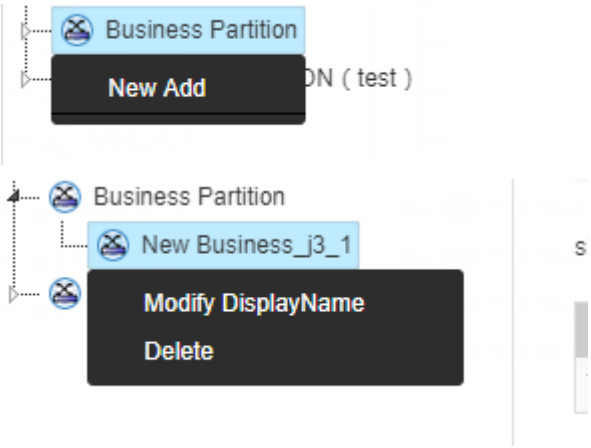


3.10 Check Onus

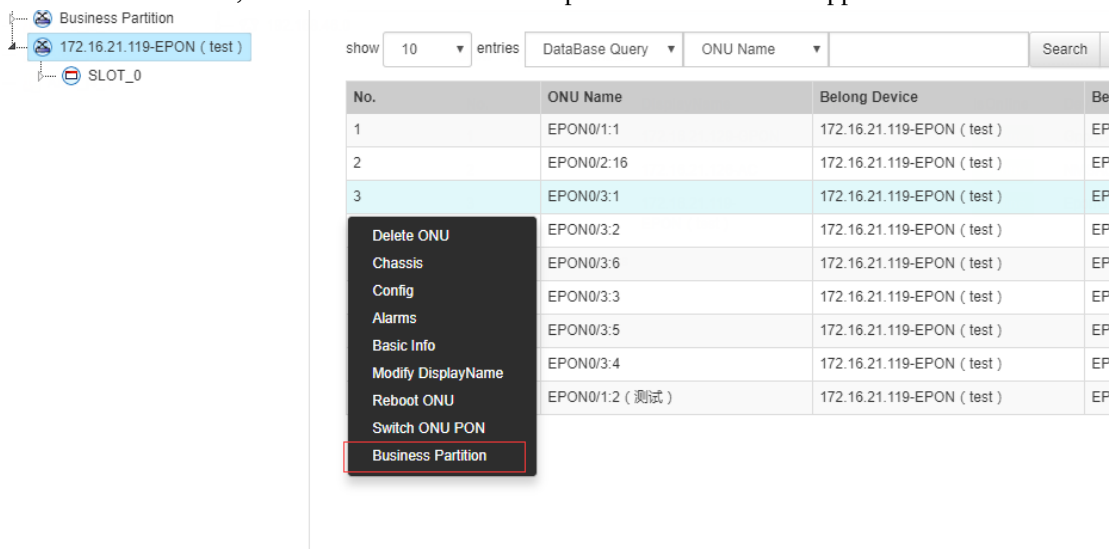
Click **Operation->Check Onus** to configure and retrieve on OLT ONU list.



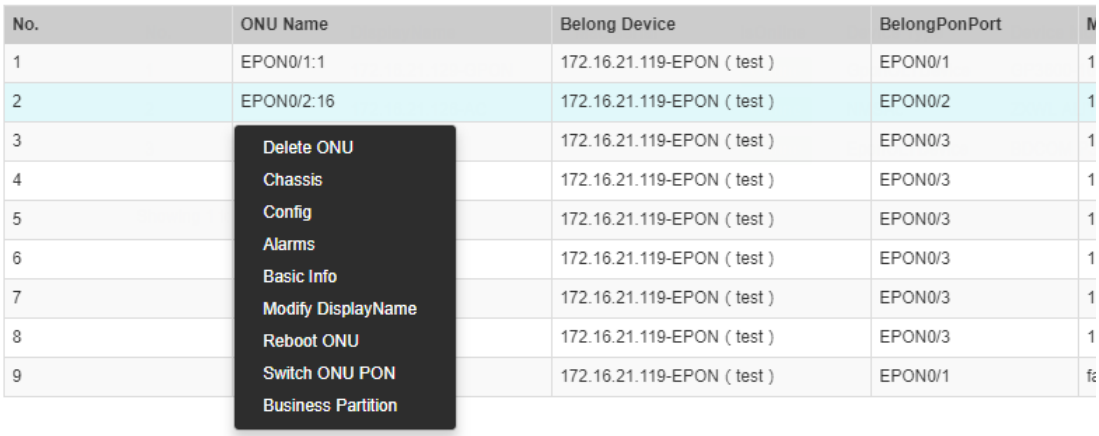
Below the device list tree are 3 main nodes: **All Epon Device, Business Partition, Epon(test)**. Click **All Epon Device** to search all onu; **Business Partition** to divide onu into different business so as to statistics search. Right click **Business Partition** to add new business. Choose the certain business, right click to delete or rename it. See the figure.



Select one onu, click **Business Partition** to put the onu below the appointed business.

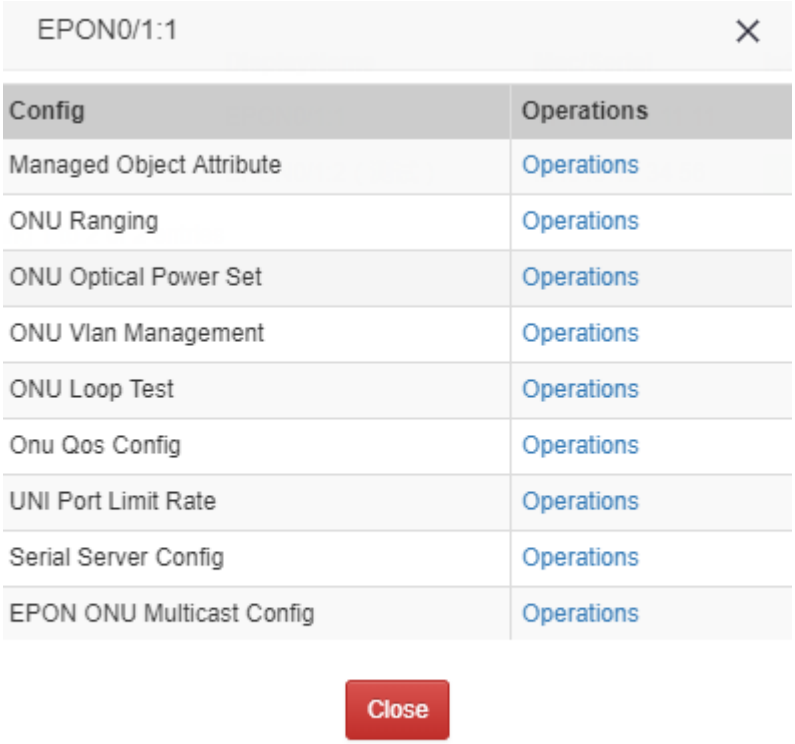


Click the onu, and the menu will pop up. See the figure.



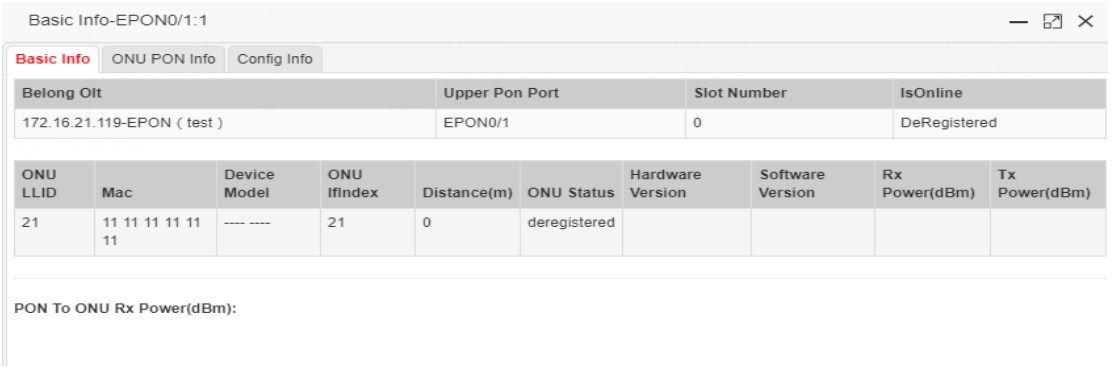
Delete ONU: Remove the onu from database or log off the device;
Chassis: Check onu port status.

Config: Configure the onu. See the figure for details.



Alarms: Check the alarms. Refer to **3.8 Alarms** for details.

Basic Info: Check **ONU IfIndex**, **Distance**, **Config Info** and SFP. See the figure.



Modify DisplayName: Modify ONU display names so as to manage them.

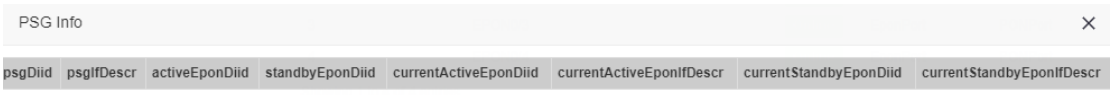
Reboot ONU: Remote control ONU reboot.

Switch ONU PON: ONU active-standby switch between PSG or Hand in Hand.

Business Partition: Configure business for ONU.

3.11 PSG Info

Click **Operations->PSG Info** to see the PSG information.



3.12 Save Config

Click **Operations->Save Config** to save the operation.

3.13 Http To Device

Click **Operations->Http To Device** to log in to the device.

3.14 Https To Device

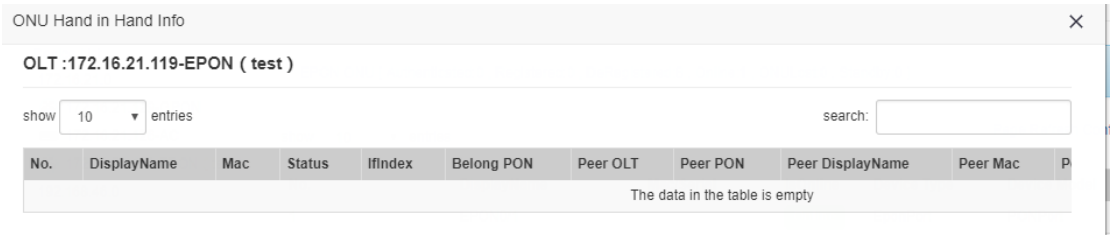
Click **Operations->Https To Device** to log in to the device.

3.15 Telnet To Device

Click **Operations->Telnet To Device** to log in to the device.

3.16 ONU Hand in Hand Info

Click **Operations->ONU Hand in Hand Info** to check the client information. See the figure.

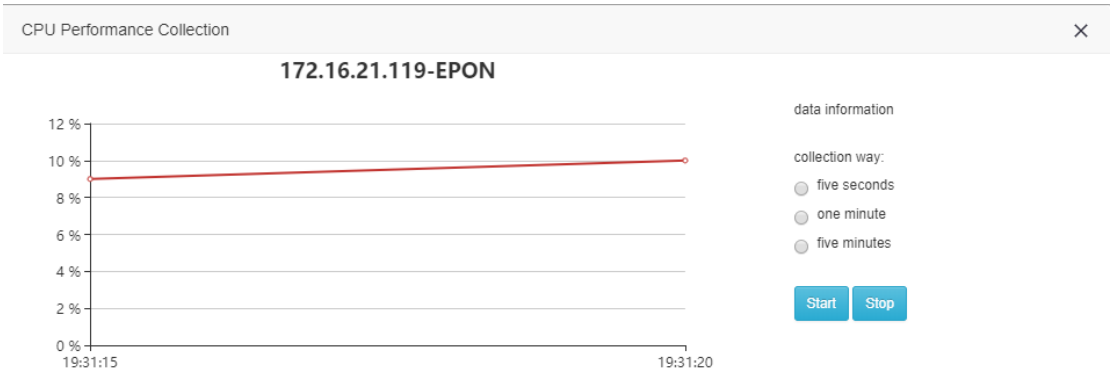


3.17 Reboot Device

Click **Operations->Reboot Device** to remotely control the reboot.

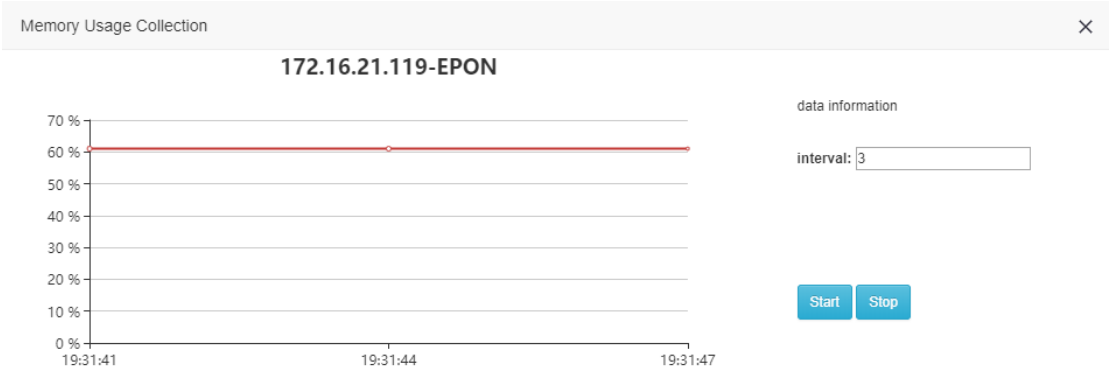
3.18 CPU Performance Collection

Click **Operations->CPU Performance Collection** to check CPU loading conditions. See the figure.



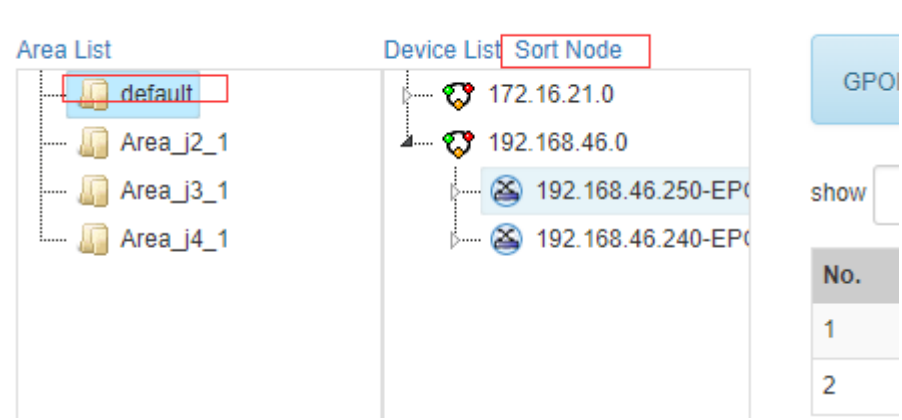
3.19 Memory Usage Collection

Click **Operations->Memory Usage Collection** to check the memory usage of the device. See the figure.

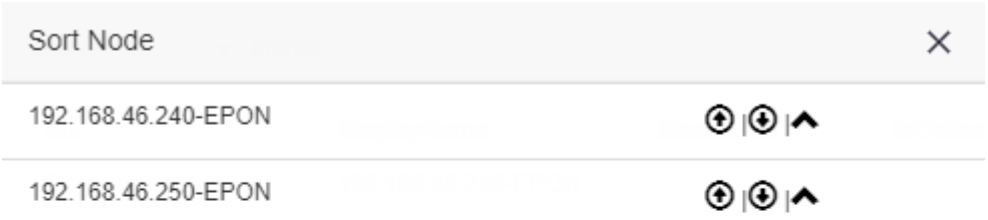


3.20 Device List Sort Node

Click **default** to sort net nodes and OLT nodes display order in net tree. See the figure.



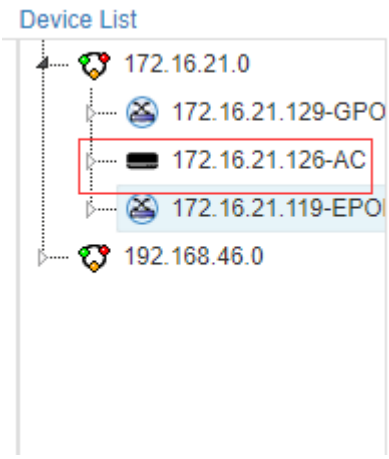
Click the certain buttons to sort nodes and save it. For sorting net nodes, click **Sort Node**. (Caution: after sorting, all tree nodes in every area will change together, each sort for each area is temporarily non supported.).

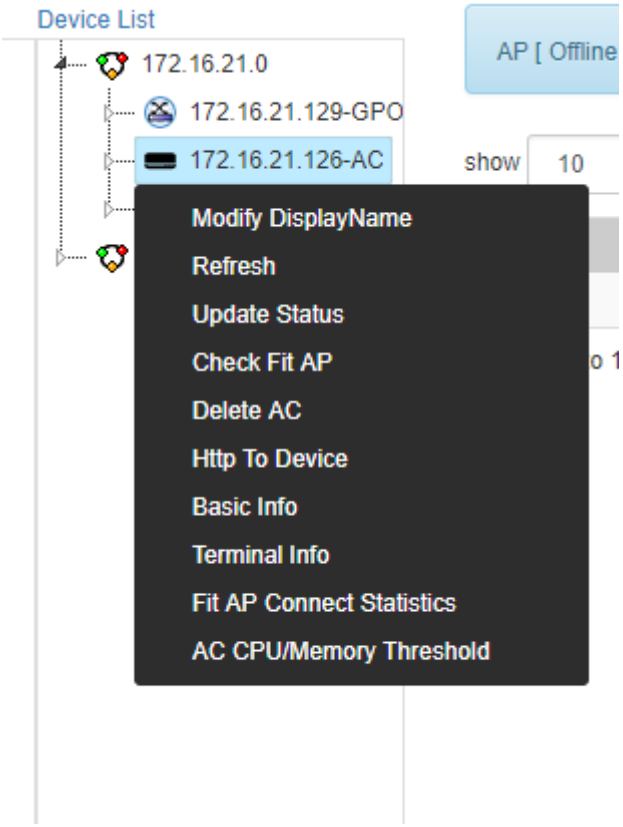


3.21 AC/AP

3.21.1 AC

Enable **Device List**, **-AC** will be presented. Right click it to check its functions.

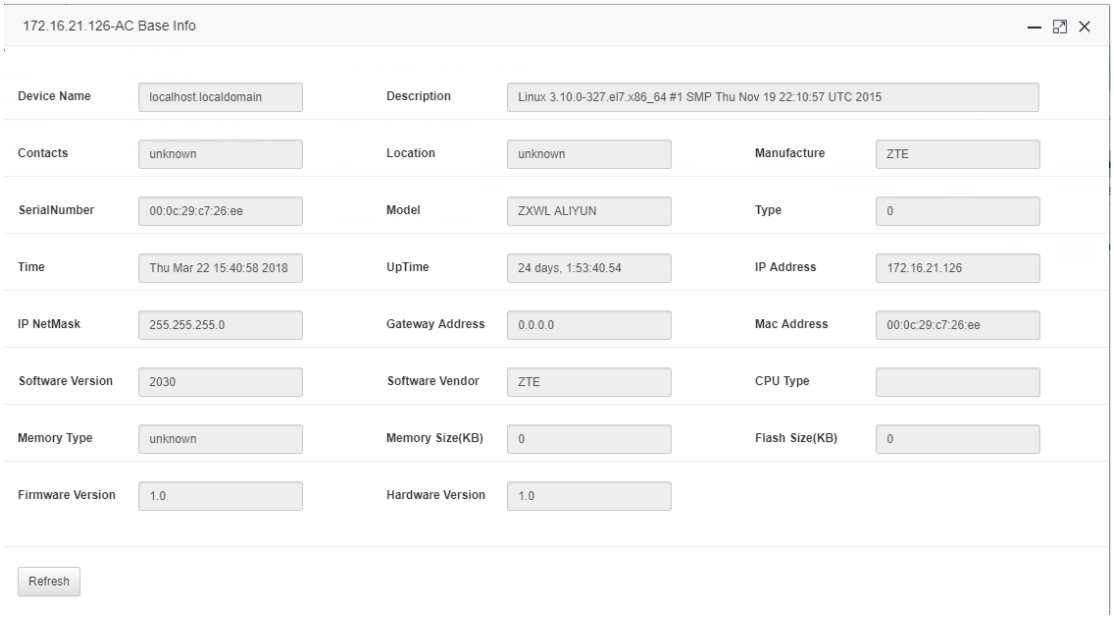




Delete AC: Clear AC devices from NMS database to rediscover.

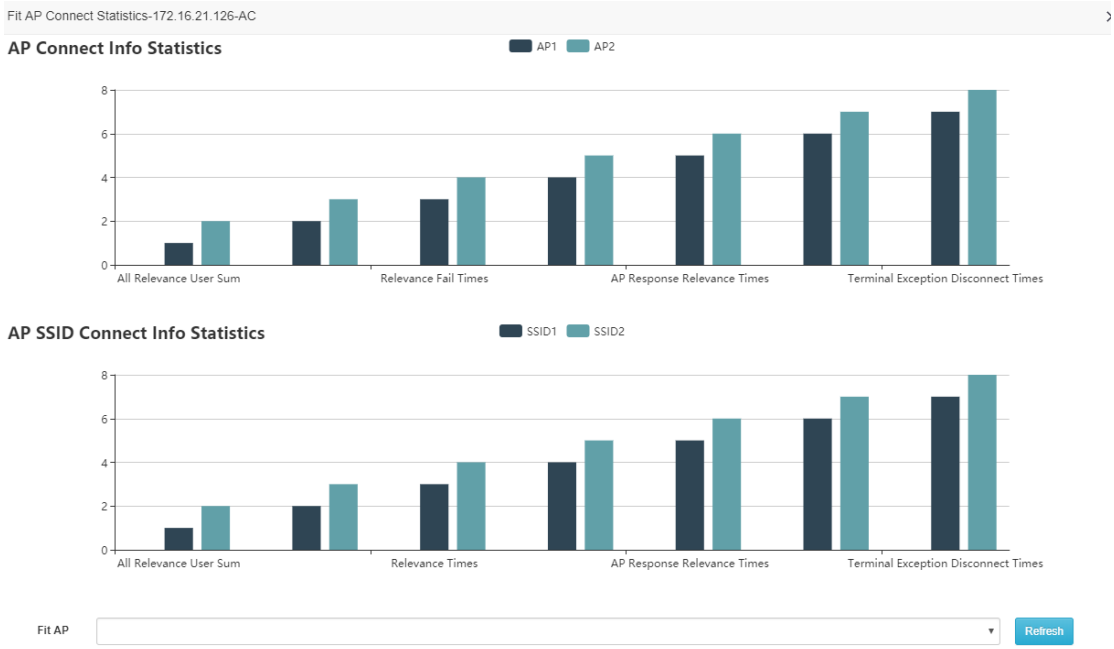
Http To Device: Log in to AC devices and configure the device through web. See the figure.

Basic Info: Check **AC Base Info**, including **Software Version**, **Hardware Version**, **Manufacture**, **UpTime**, etc. See the figure.



Terminal Info: Check all devices wirelessly connected to AP. See the figure.

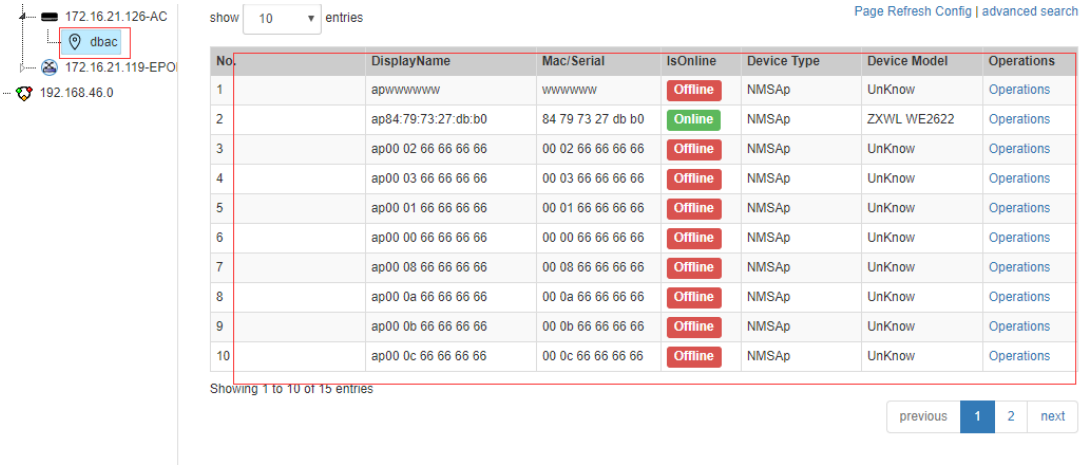
Fit Connect Statistics: Respectively count connecting terminal and SSID of every AP. See the figure.



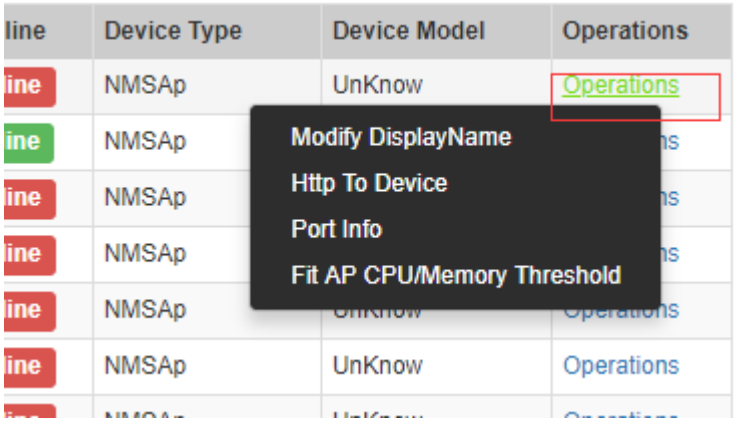
AC CPU/Memory Threshold: Set the CPU of the device and memory alarm threshold. See the figure.

3.21.2 AP

dbac: The lower level node of AC, shows the field, followed by AP device.

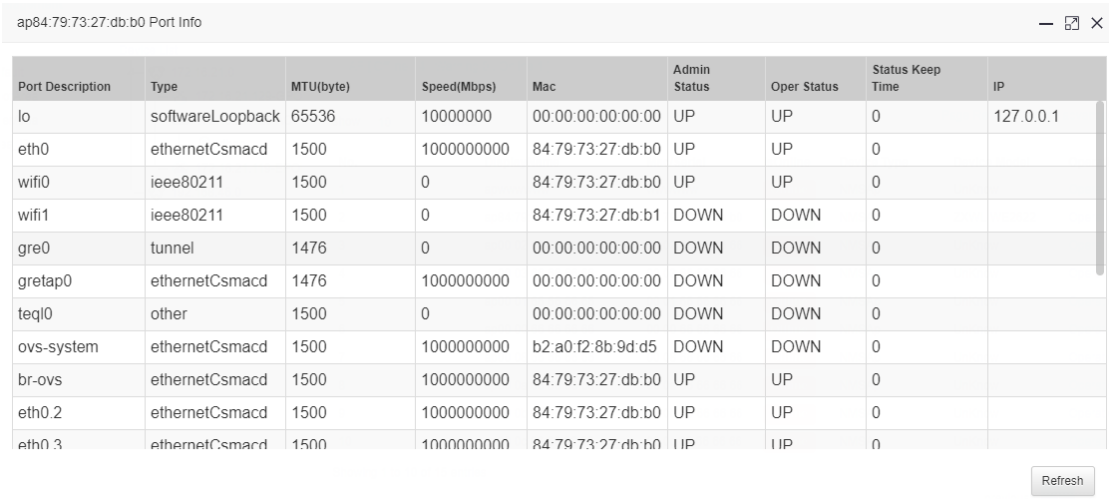


Click one selected AP to pop up the function menu. See the figure.



Modify DisplayName: With Http to Device, is familiar with AC.

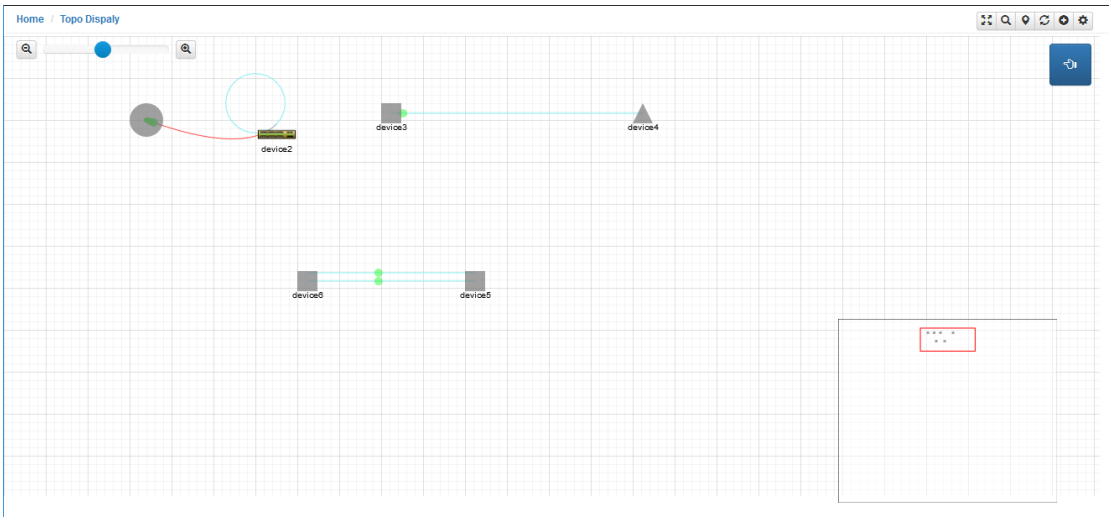
Port Info: Check all port attributes of AP. See the figure.



Fit AP CPU/Memory Threshold: Set AP CPU/Memory Threshold, if exceeded, the device will send alarms to NMS.

4 Topo Display

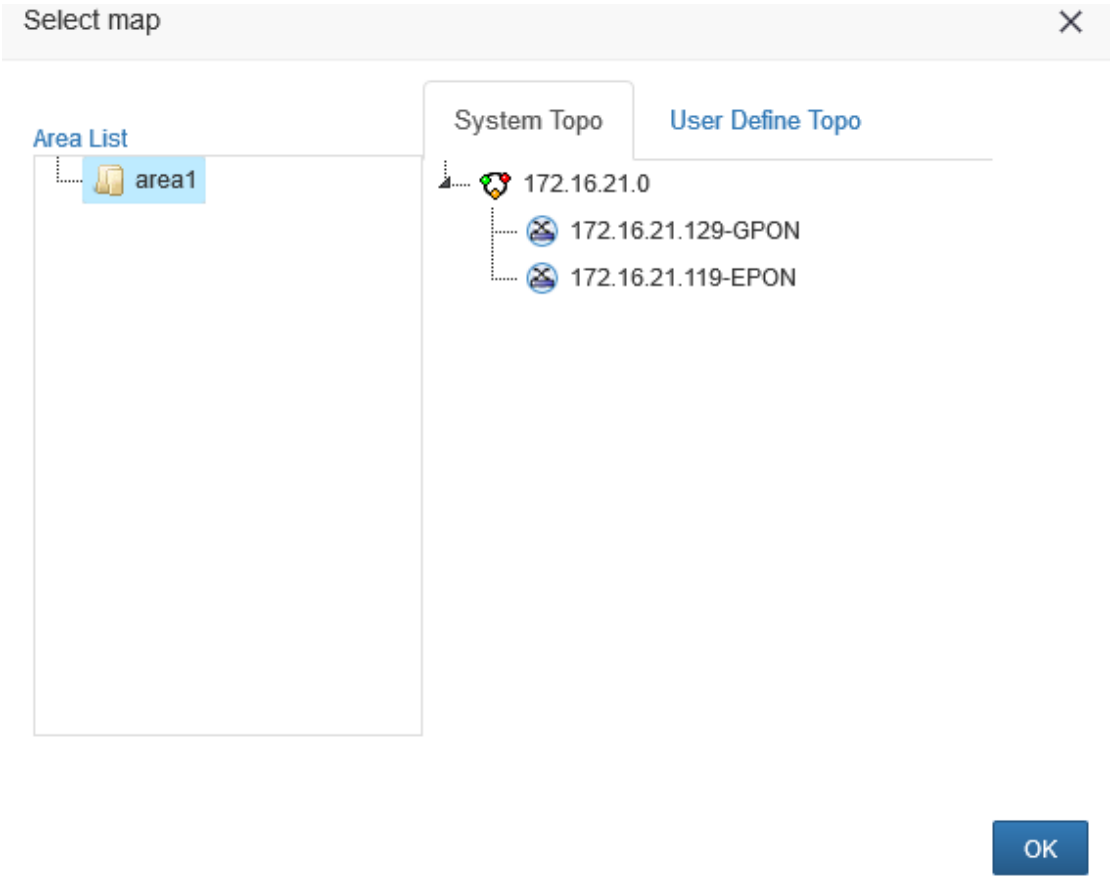
Click **Network Elements->Topo Display**. See the figure. An topology example is displayed. Tool bar and choice buttons are on the top right.



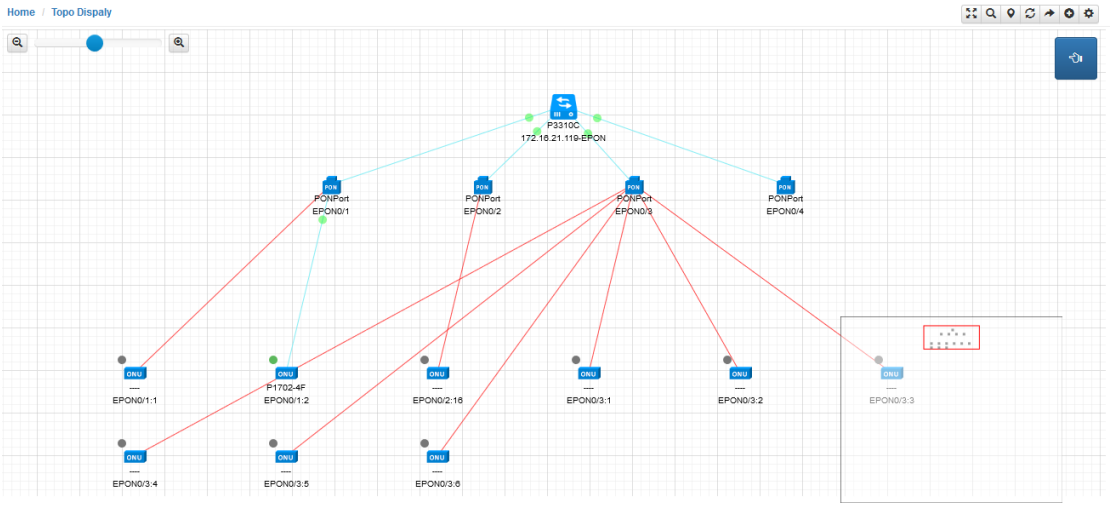
4.1 Select map

Click  . **Area List** is on the left; topo list right, including **System Topo** and **User Define Topo**. **System Topo** only display network reality discovered by NMS but does not support edition. If necessary, turn to **User Define Topo** so as to edit and save the location and attachments.

Choose network topology, topology and link status of all switches in the network will be displayed. Choose OLT topology, link and status between OLT and ONU will be displayed.



The following figure is OLT topology.

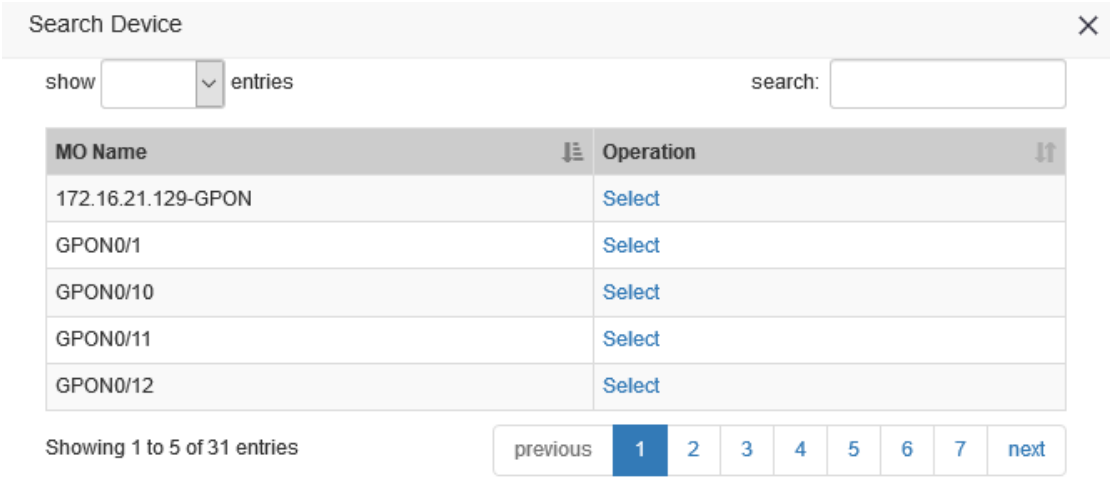


4.2 Search Device

If a lot of nodes exist in Topo, click  to locate one certain node.

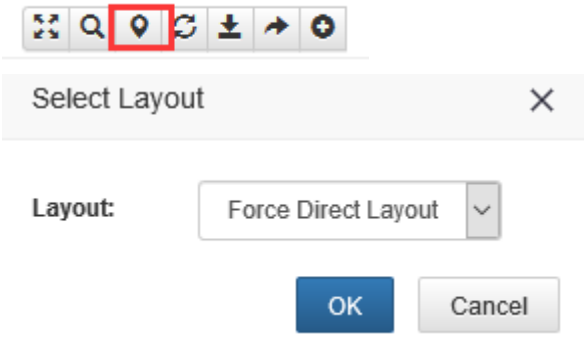
The list of all devices in Topo will pop up, you can locate any node in the list. Click **Select** to

make the selected one display in the centre of the Topo.



4.3 Select Layout

If the automatic layout of the current topology is unsatisfying, click  to relayout the topology. Only oriented layout algorithm is supported. See the figure.



4.4 Refresh

If you need retrieve the latest information about the topology, click  . Attention: Such a function takes a long time to get the latest information from the device side and update the network management database. If the latest database is needed, click the previous **Select** to reopen the diagram.

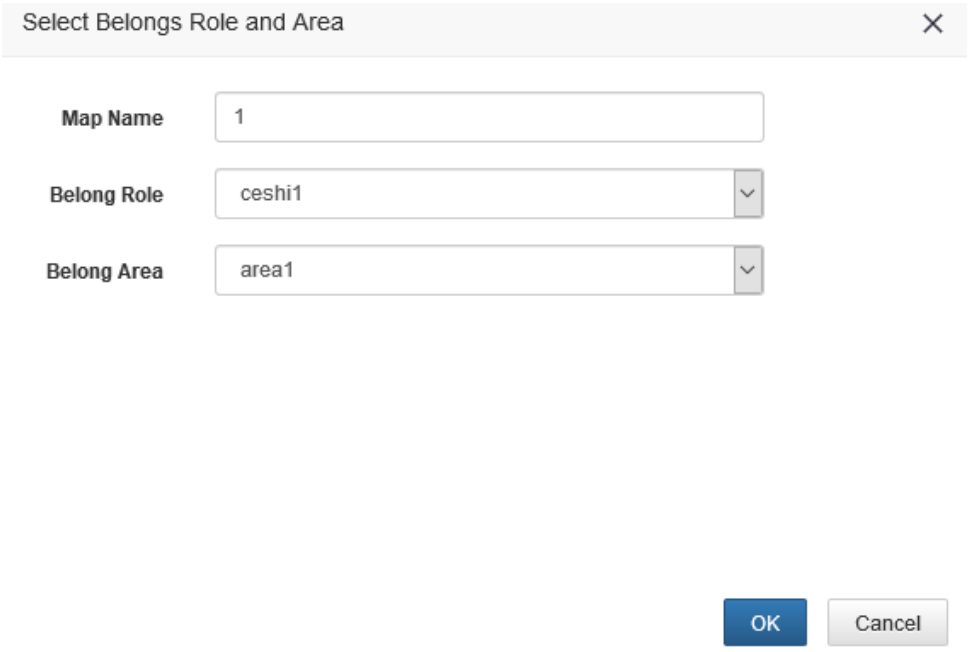
4.5 Save

Click  to save the current topology as a picture to local.

4.6 Select Belongs Role and Area

NMS defined two Topo types: One is **System Topo**, the other is **User Define Topo**. **System Topo** does not support edition. If necessary, turn to **User Define Topo** so as to edit. After the turning, the real status of the device and links are displayed.

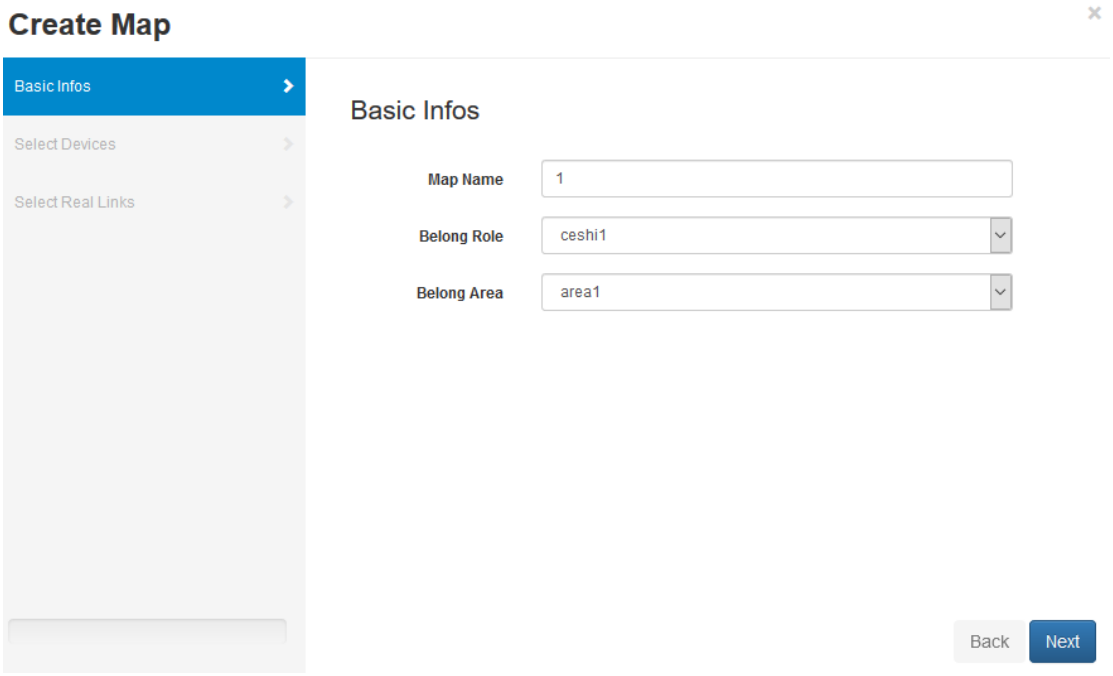
Click  . See the figure. Enter **Map Name**, **Belong Role**, and **Belong Area**. Click **OK**, a self-defined topology will show up in the corresponding area. Attention: only users having selected the role before have access to browse.



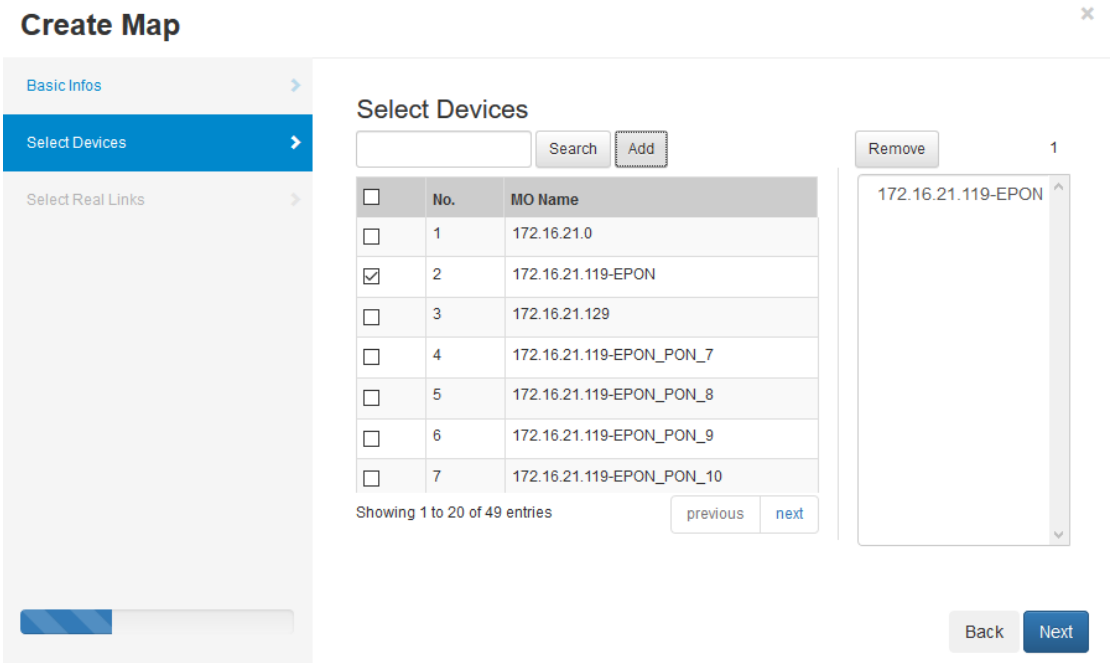
4.7 Create Map

Based on the reality, users can select some devices to create a user-defined topology operation.

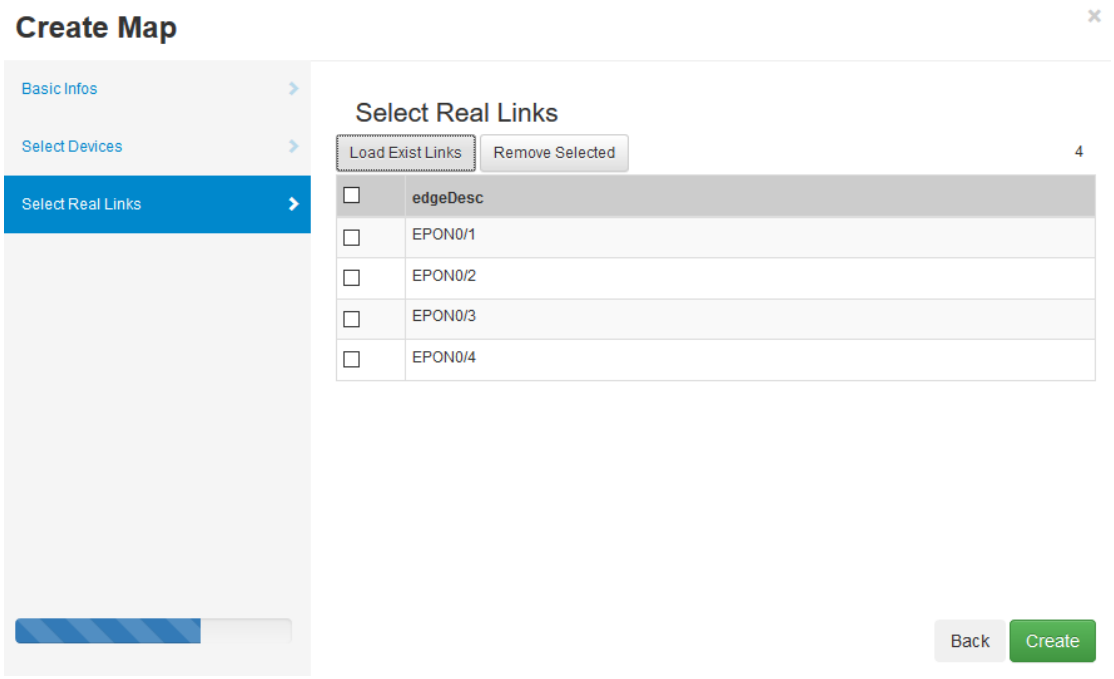
The 1st step: Enter the **Map Name**, **Belong Role**, and **Belong Area**. Click **Next**.



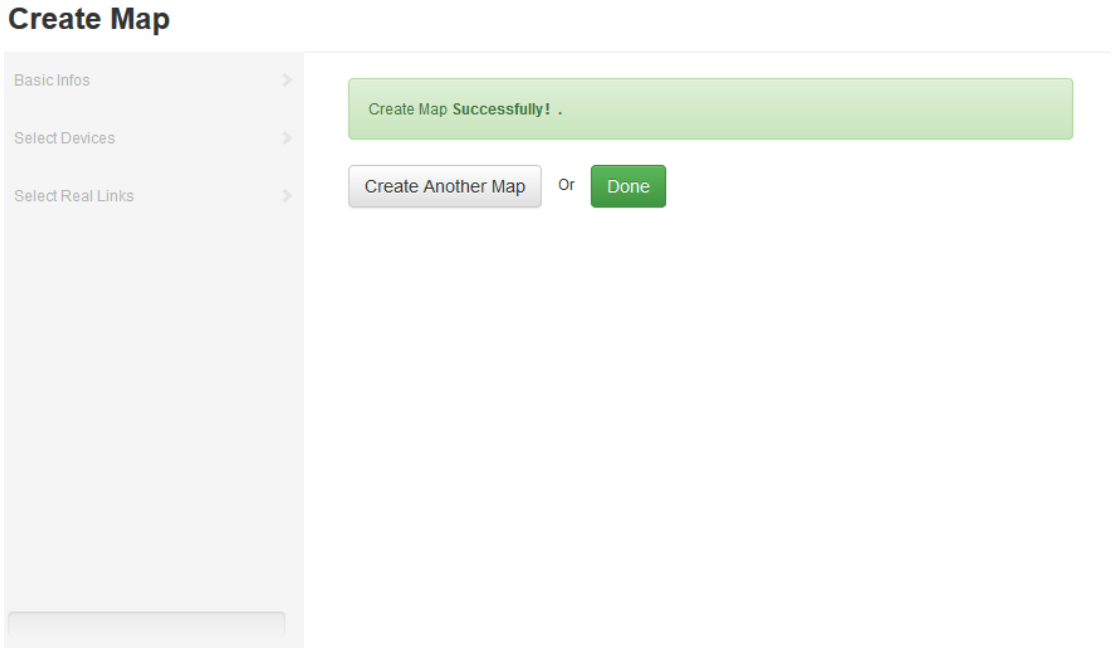
The 2nd step: Tick the device in the middle table and click **Add** to load it on the right list. If misoperating, select it on the right list and click **Remove**. The devices on the right list will finally be included in Map when creating it. Click **Next**.



The 3rd step: Load the links discovered by NMS in the previous step so as to generate the association among the devices when creating **User Define Topo**. See the figure. Tick some link and click **Remove Selected**. The rest links will be included in **Create Map**. After selection, click **Create**.

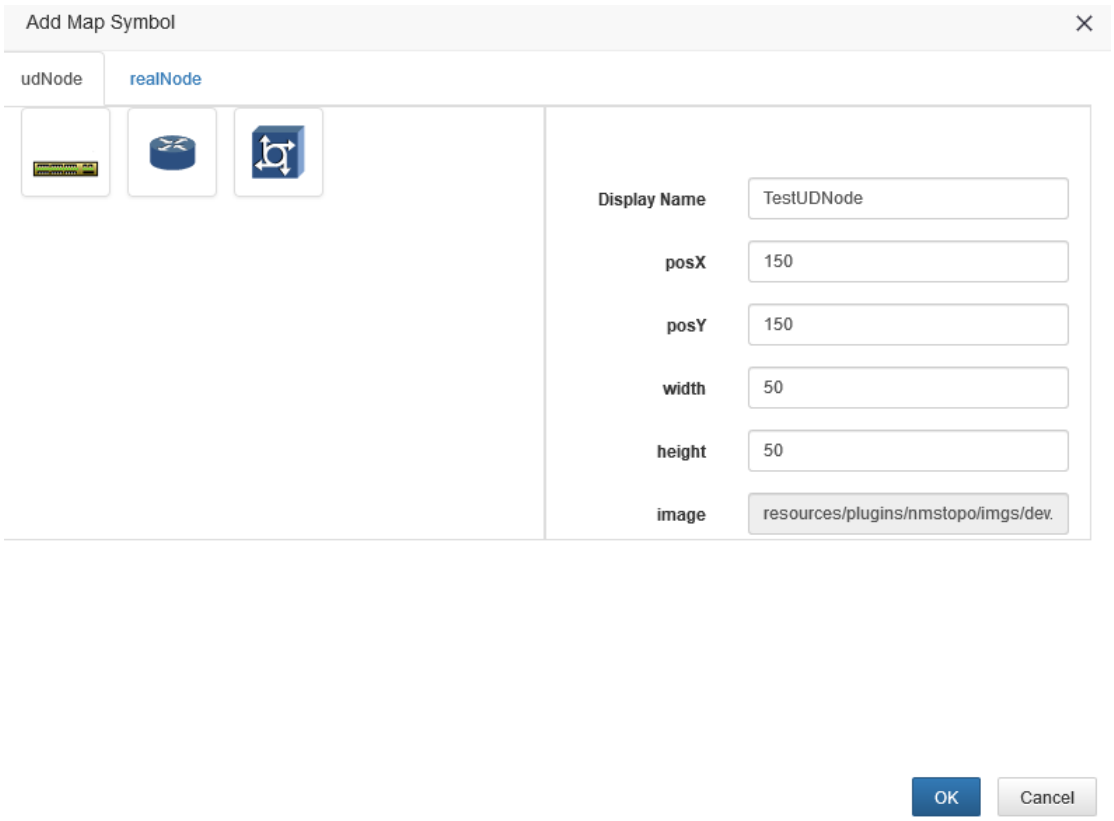


The result.

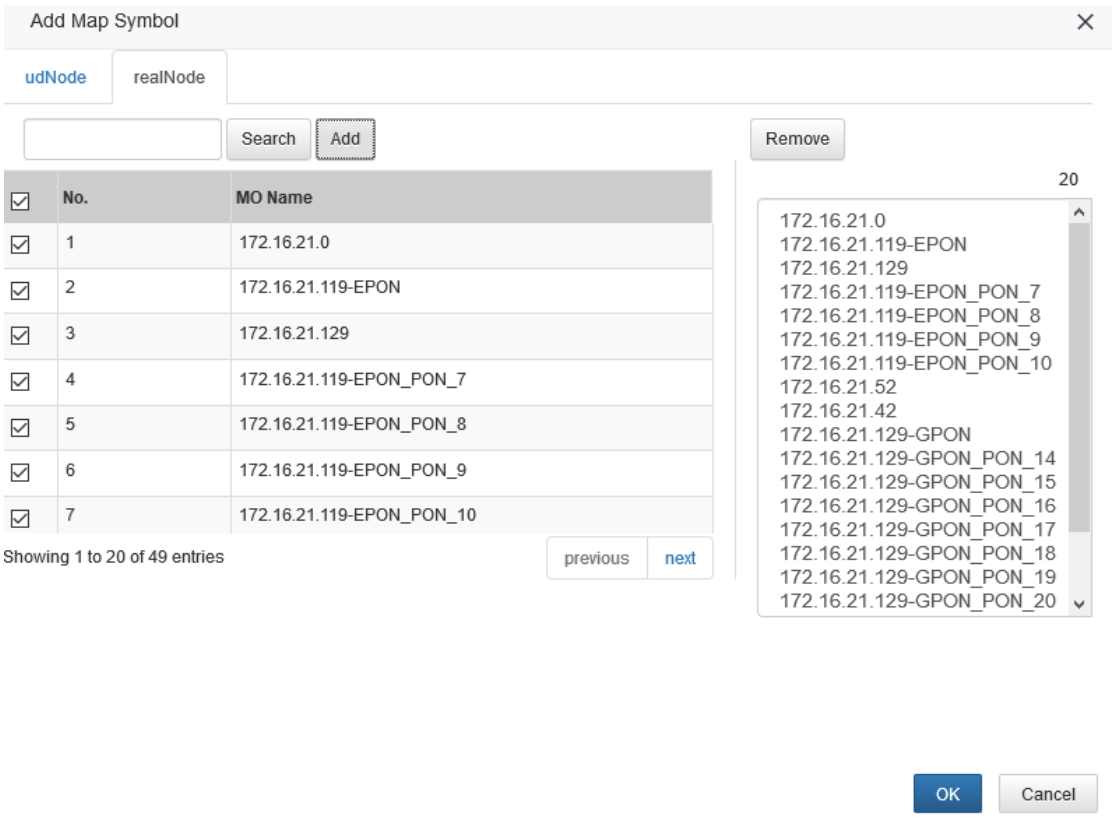


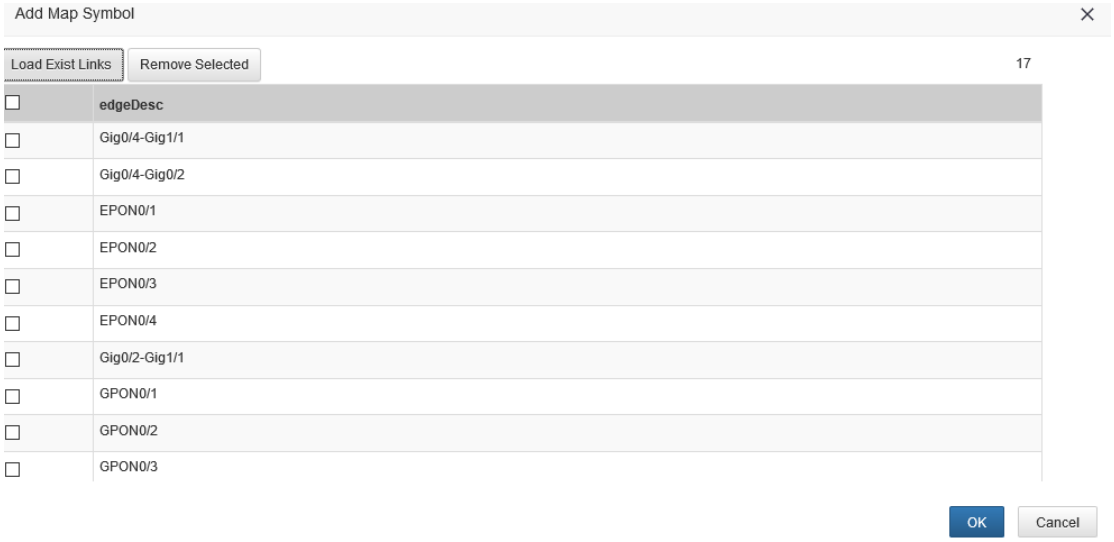
4.8 Add Map Symbol

Enable one self-defined map, click , and see the figure.



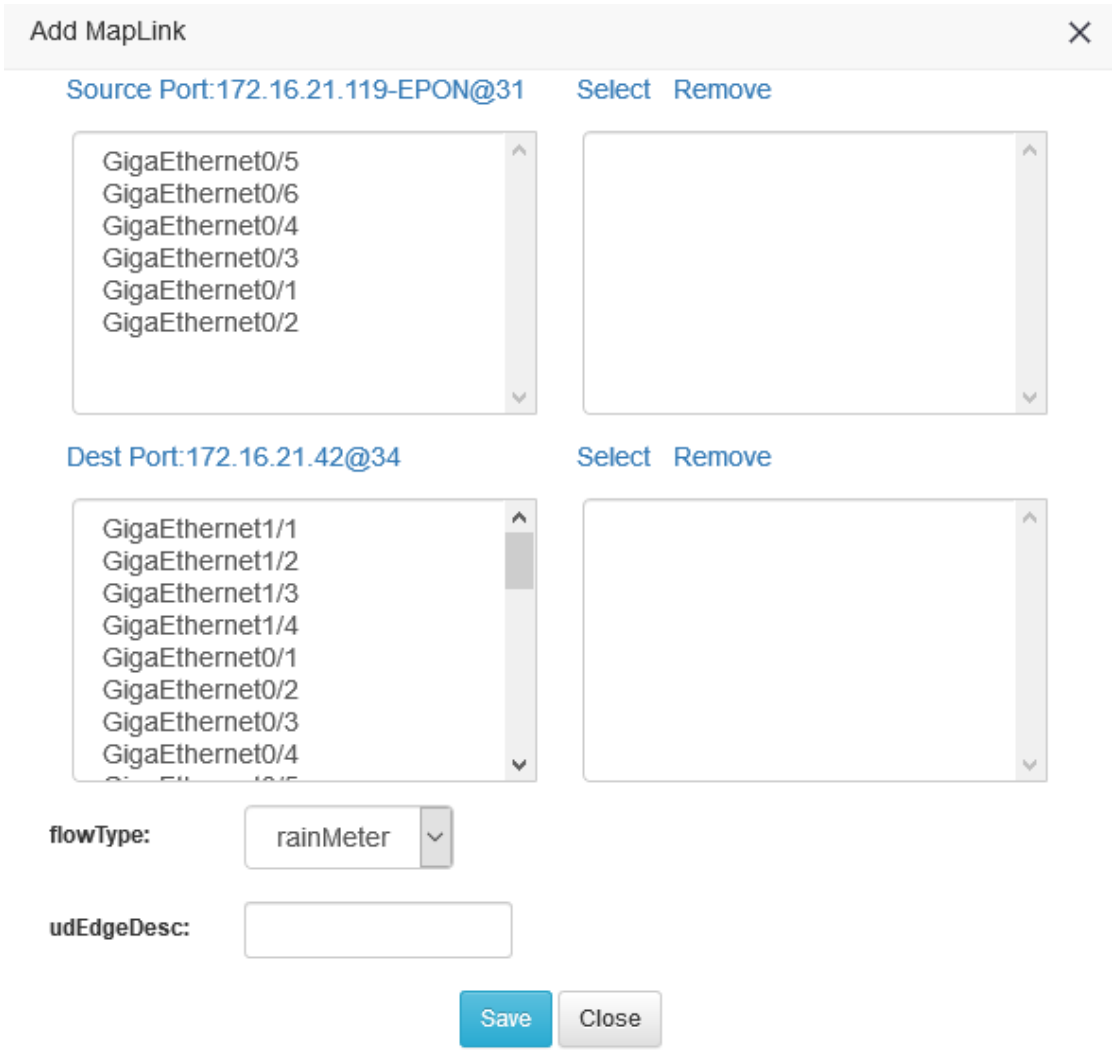
The added symbols have 2 types: 1. Completely self-defined while NMS does not maintain its state. Just click the symbol and input the basic information; 2. Managed by NMS with NMS maintenance. Tick in the table, click **Add**. In the right list are devices adding to the map. After confirmation of links selection, click **OK**.





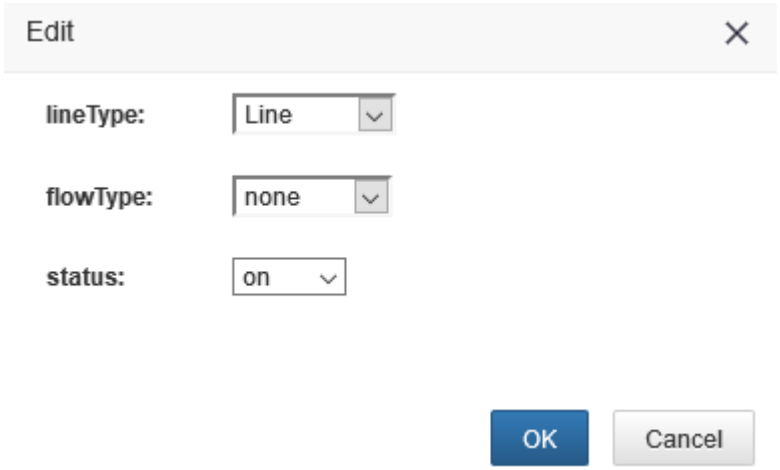
4.9 Add MapLink

Enable one self-defined map, press **Ctrl** and click two nodes that need to be wired up. click  . See the figure. Double click the certain port on the left and **Save**. (If no ports are loaded, no selection.)

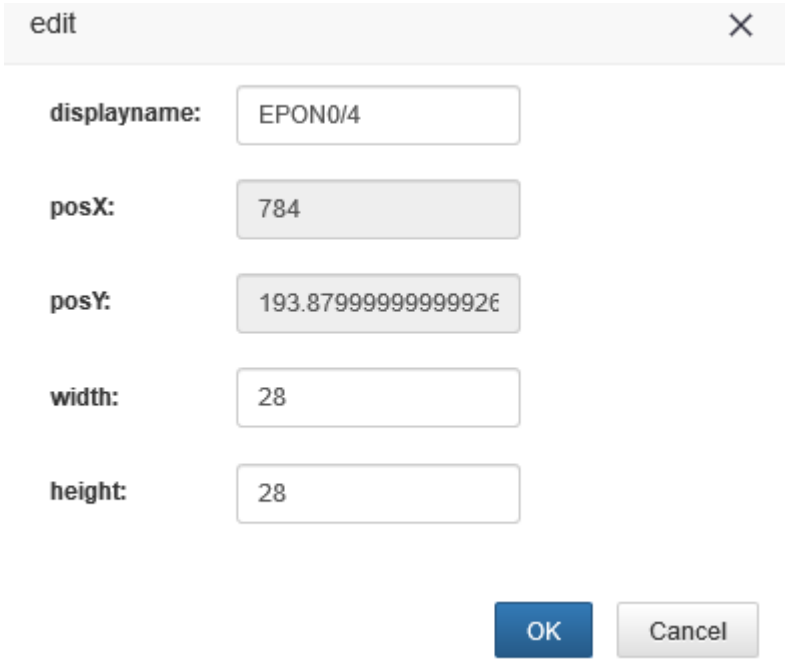


4.10 Edit

Enable one self-defined map, select one link and click  . See the figure.



If elements are selected instead of links, the interface is shown as the following.



4.11 Delete User Define Topo elements

Enable one user define topo, select one link or node, click  .

4.12 Select the saving location

Enable one user define topo, adapt all location of nodes and click  .

4.13 Delete the User Define Topo

Enable one user define topo, click  .

5 Fault Management

When being operated, devices may face faults. Checking the certain fault benefits NMS. The fault device with solutions can be located based on fault information.

Here comes an explanation: **Warning Trap**:

The initial level of **Warning Trap**:

Critical, **Major**, **Minor**, **Warning**, **Clear**, **Info**, **Unknown**

Critical: Red signal. The device may break down or the port is unlinked.

Major: Nodes break down.

Minor: Nodes break down.

Warning: Nodes break down.

Info: Blue signal. No device break down.

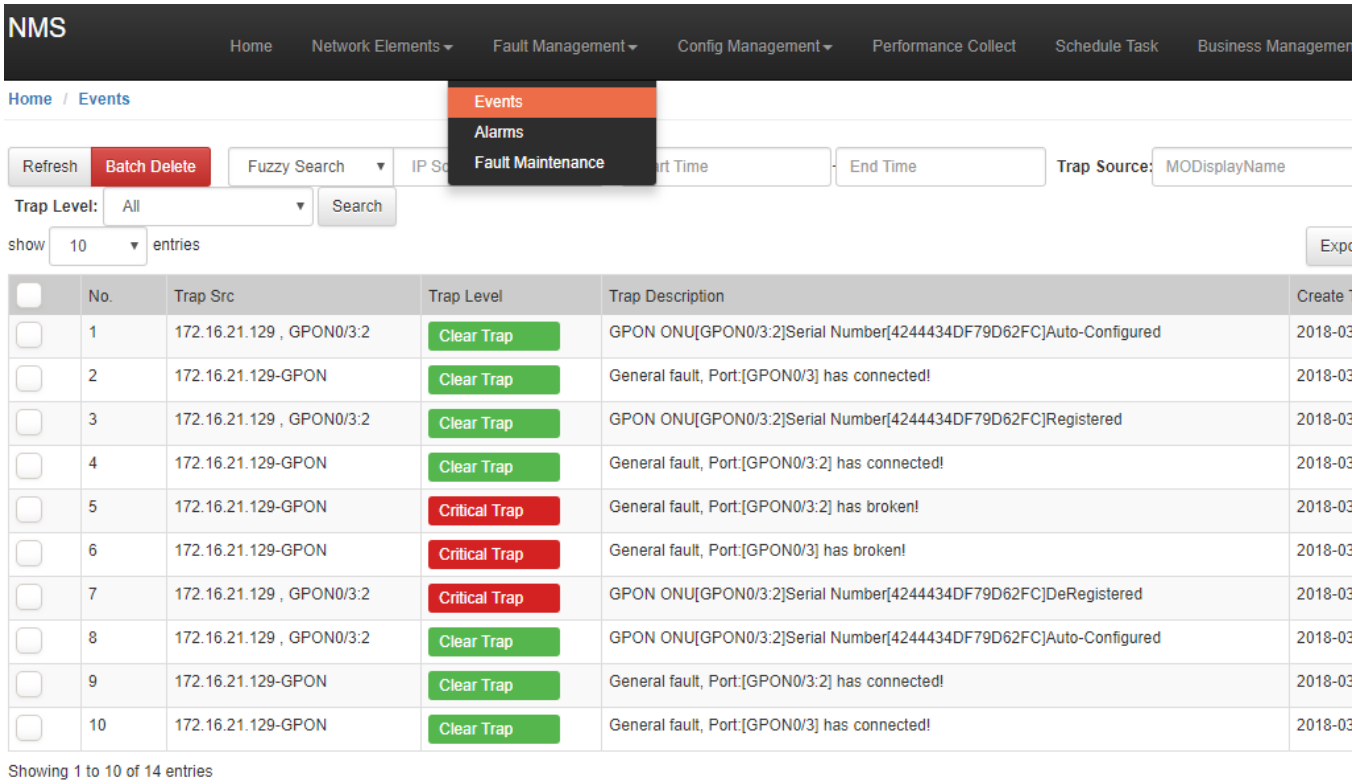
Unknown: NMS cannot identify the warning.

Clear: Green signal. After responding to **Critical**、**Major**、**Minor**, **Clear** will show up, informing that the device is out of warning trap and return to normal.

NMS provides detailed fault information, including events and warnings.

5.1 Events

Click **Fault Management->Events**. Operations like filtering, exporting, deleting, positioning, etc. are enabled. See the figure.



5.1.1 Search

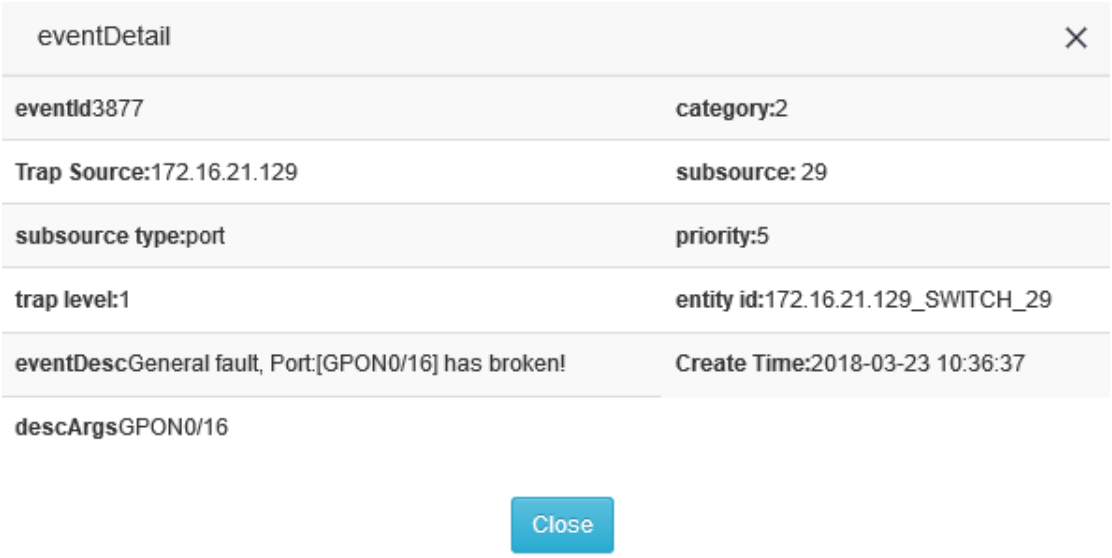
You can search in precise and fuzzy conditions. Fill in the conditions and click **Search**.

5.1.2 Delete

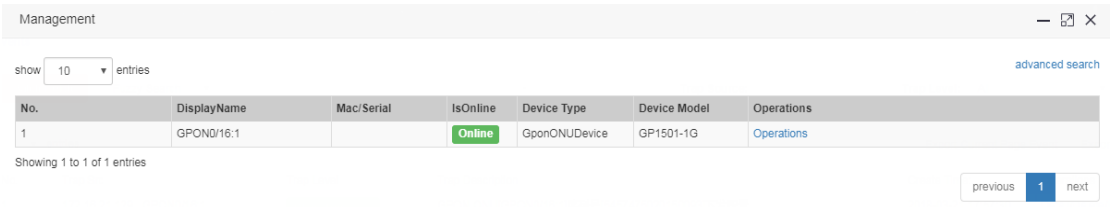
Tick in the **Alarms** table, click **Batch Delete** for batch deletion or just click **Delete** in entry operation bar for single deletion.

5.1.3 Detail

Click the hyperlink in **eventDetail** to display the event details. See the figure.



Click the hyperlink in **Events** to display **Management**. See the figure.



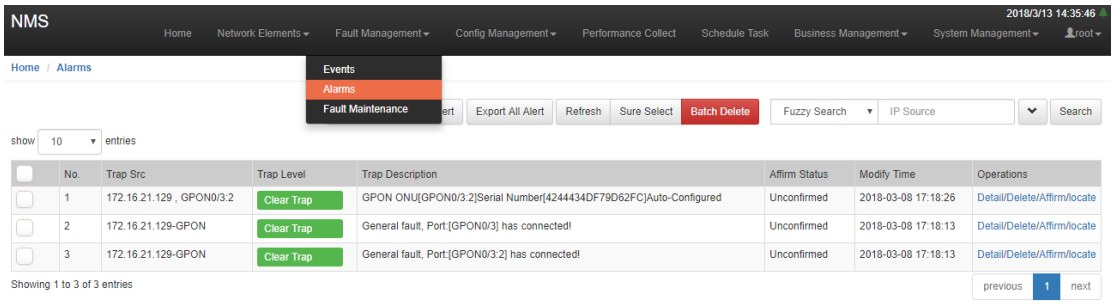
5.1.4 Export Current Page Event & Export All Event

Click **Export Current Page Event** and the information will be saved in Excel format. Click **All Event** to export all event information to local.

5.2 Alarms

Click **Fault Management->Alarms** to enable the interface. Operations like filtering,

exporting, deleting, positioning, etc. are enabled. See the figure.



5.2.1 Search

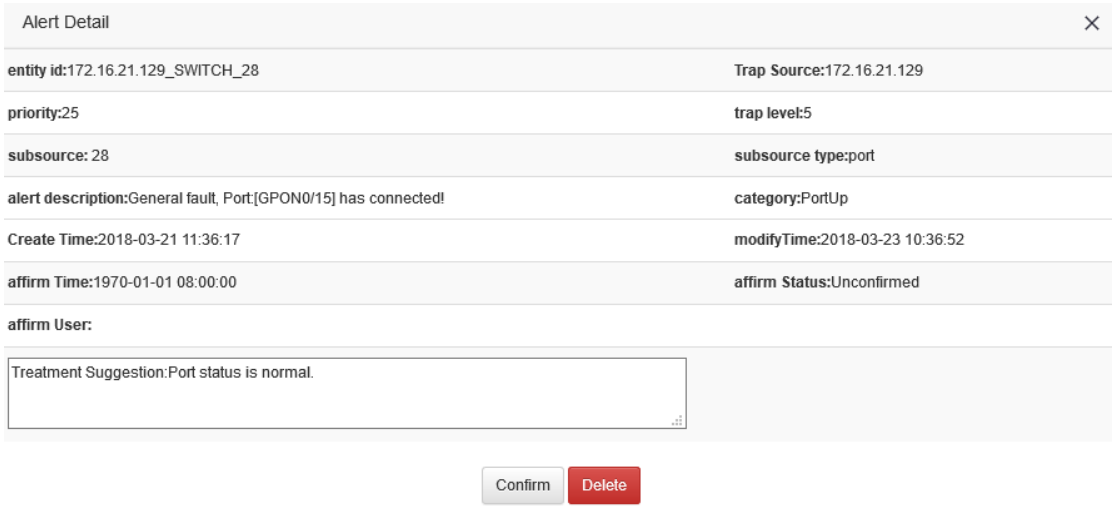
You can search in precise and fuzzy conditions. Fill in the conditions and click **Search**; on the left, more condition list can be displayed/undisplayed.

5.2.2 Delete

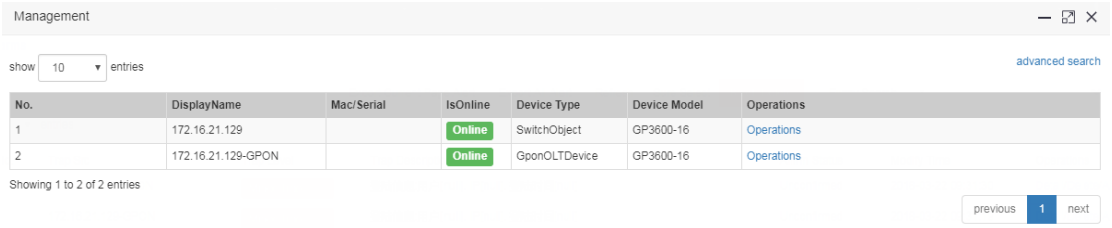
Tick in the **Alarms** table, click **Batch Delete** for batch deletion or just click **Delete** in entry operation bar for single deletion.

5.2.3 Detail

Click **Alert Detail** to display the alert details. See the figure.



Click the hyperlink in **Alert Detail** to enable **Management**.



5.2.4 Sure Select

Tick alerts in entry check box, and click **Batch Affirm** for batch affirmation; click **Affirm** for single affirmation.

5.2.5 Export Current Page Alert & Export All Alert

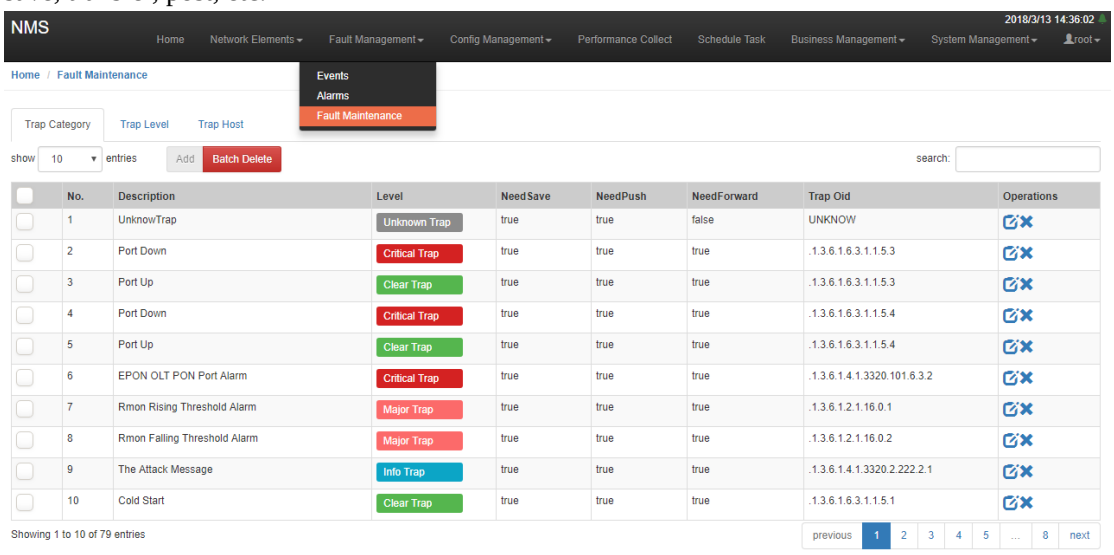
Click **Export Current Page Alert** and the information will be saved in Excel format. Click **All Alert** to export all alert information to local.

5.3 Fault Maintenance

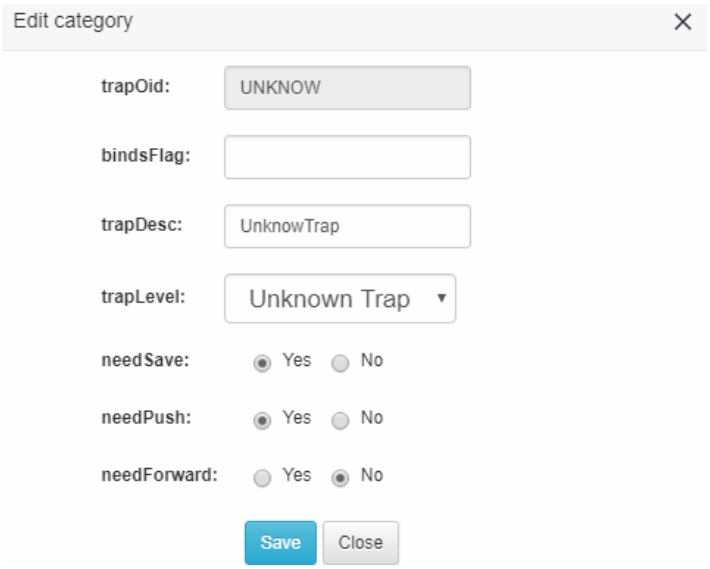
Click **Fault Management->Fault Maintenance** to enable the in interface.

5.3.1 Trap Category

On **Trap Category**, **Fault Maintenance** interface, one certain alarm can be set in terms of save, transfer, post, etc.

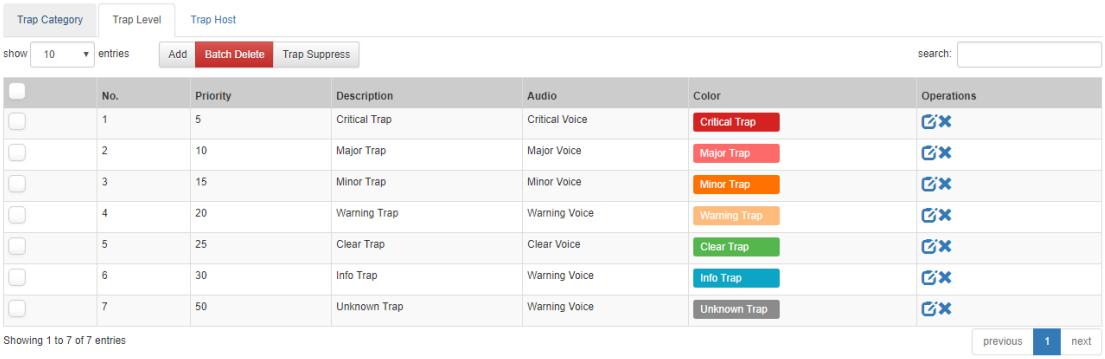


Click any , and see the figure. **bindsFlag** is not recommended to be edited. It identifies the level of **Warning Trap** based on binding variables. Besides, **Description**, **Level**, etc. can be set.

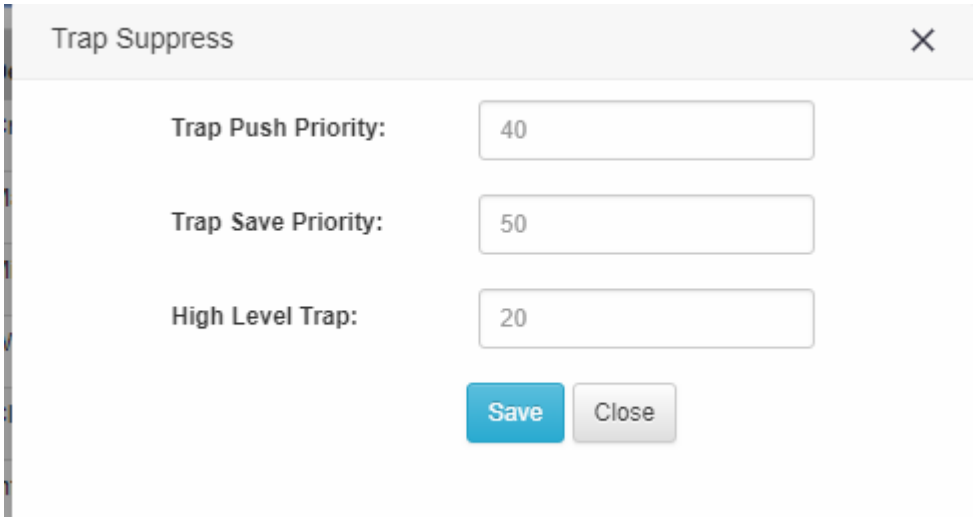


5.3.2 Trap Level

Some levels can be self-defined and bound with categories. Set **Priority**, **Color** and **Description**. The less the priority value, the higher the priority level. Click **Trap Suppress** to set the strategies associated with the priority.



Click **Trap Suppress**. See the interface. For example, the trap will be pushed if the priority is less than or equal to 40. If the priority is less than or equal to 40, the trap will be stored in the database for retrieval analysis. If the priority is less than or equal to 20, the trap will be considered as a senior trap and pushed to the client display.

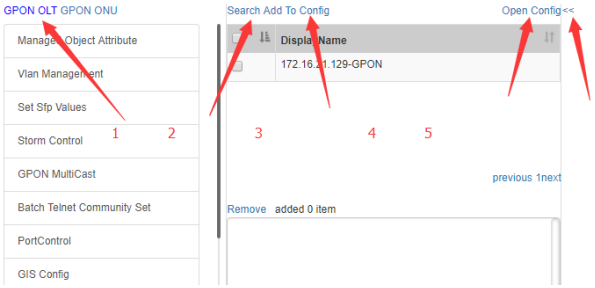


5.3.3 Trap Host

If the trap needs hosting, click **Add** in **Trap Level**.

6 Config Management

Click **Config Management** in the navigation bar. Choose **Epon Config** or **Switch Config** to enable the list. The overall configuration steps are basically the same. Therefore, the steps are introduced based on **Gpon Config**. Enable **Gpon Config**, and see the following.



1 First select OLT or ONU, and then set the corresponding configuration;

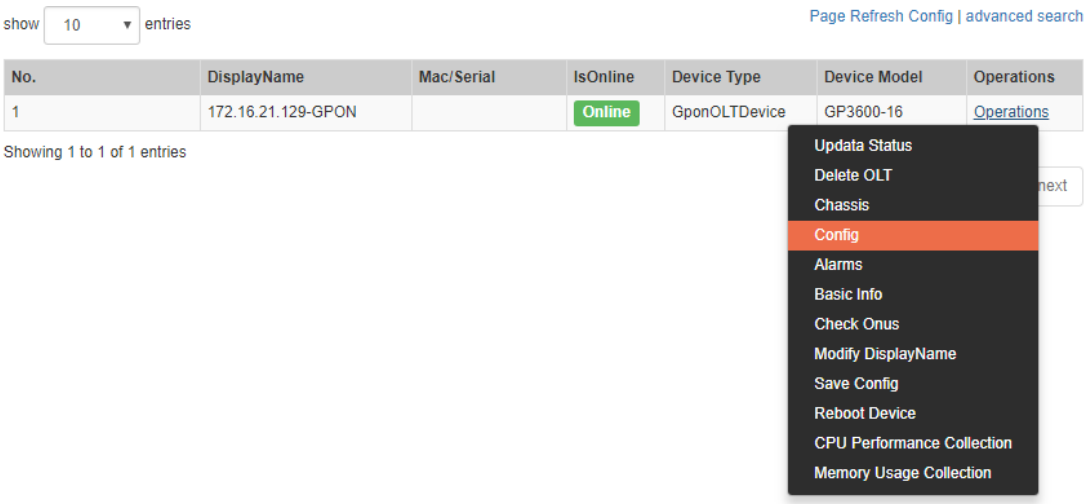
2 Select the device that need configuring in the middle table; quickly locate it by **Search**;

3 Double click the target device or click **Add To Config**;

4 Click **Open Config** to enable the configuration;

5 <<: Hide the left device selection interface.

The basic steps are the above. You can also click **Management Element->Config** to configure.

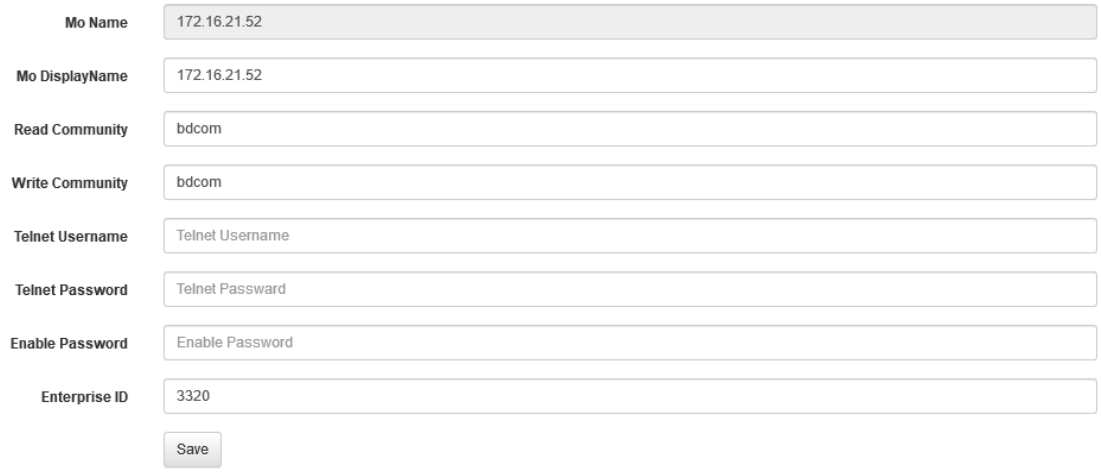


6.1 Switch Device

6.1.1 Managed Object Attribute

Managed Object Attribute helps modify basic information saved through **Network**

Elements, including Mo DisplayName, Read/Write Community（required in SNMP）, telnet basic information （the same to ssh）, Enterprise ID (modification is not recommended for communication failure between NMS and devices). Enable the interface, fill in the form and save it.

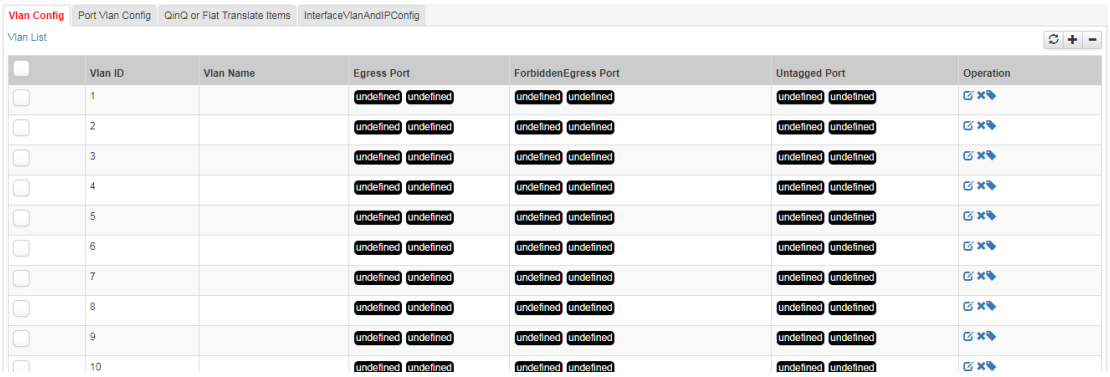


6.1.2 Vlan Management

VLAN（Virtual Local Area Network）is a kind of new data exchange technology which divides the LAN equipment from logic into network segments to realize virtual working group. It is mainly used in switches and routers, but mainstream applications are still in the switch. However, not all switches have this function; only those with 3rd layer above in VLAN protocol have this function, referred to their instructions.

VLAN helps solve the problem that the switch cannot limit the broadcast when making LAN interconnection. It can divide a LAN into multiple logical LAN – VLAN, each of which is a broadcast domain. In a VLAN, the inter-host communication is the same as in a LAN, while the VLAN cannot communicate directly, so that the broadcast message is limited in a VLAN.

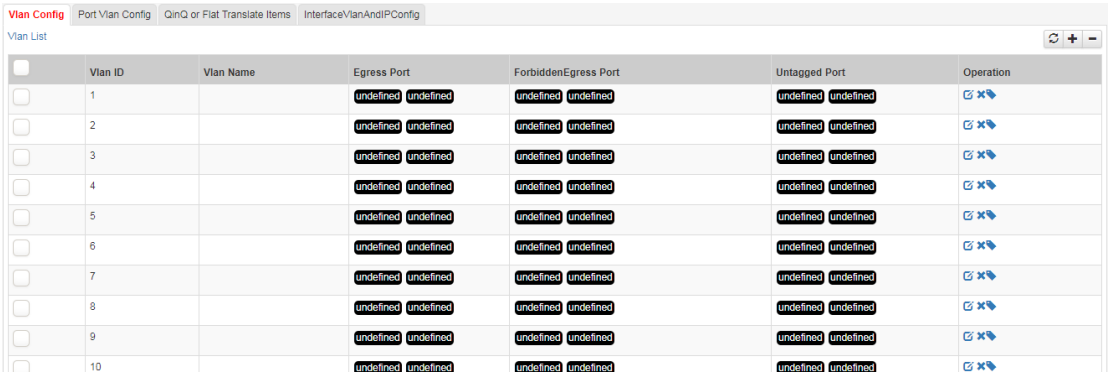
Click **Vlan Management**. See the figure.



Vlan Management includes **Vlan Config**, **Port Vlan Config**, **QinQ or Flat Translate Items** and **InterfaceVlan&IPConfig**.

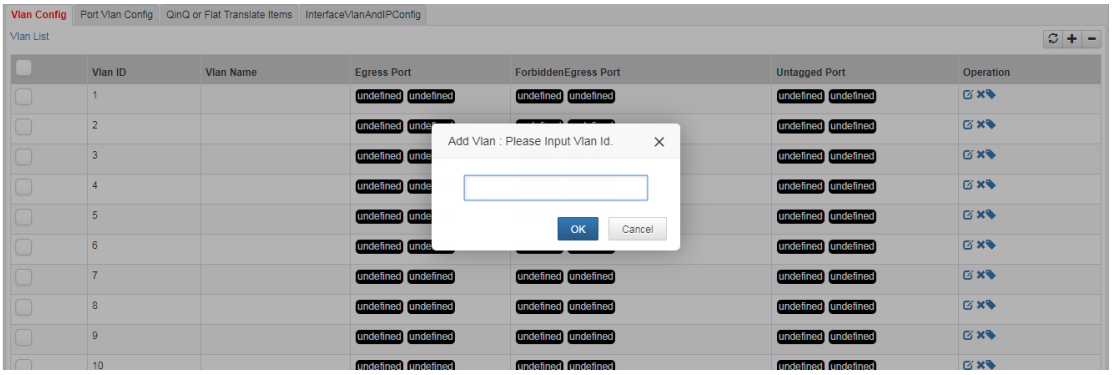
6.1.2.1 Vlan Config

See the figure.



◆ Add VLan

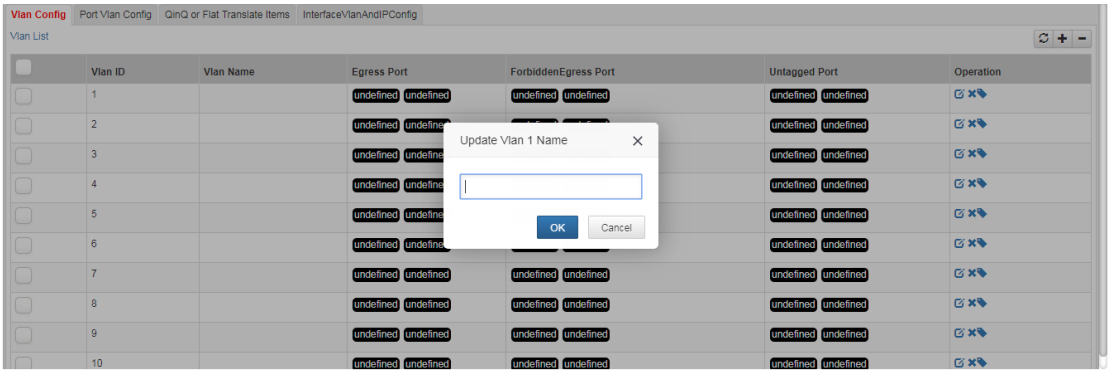
Click ..



Enter Vlan ID and click OK to add one Vlan, but the existing Vlan ID cannot be add.

◆ Update Vlan 1 Name

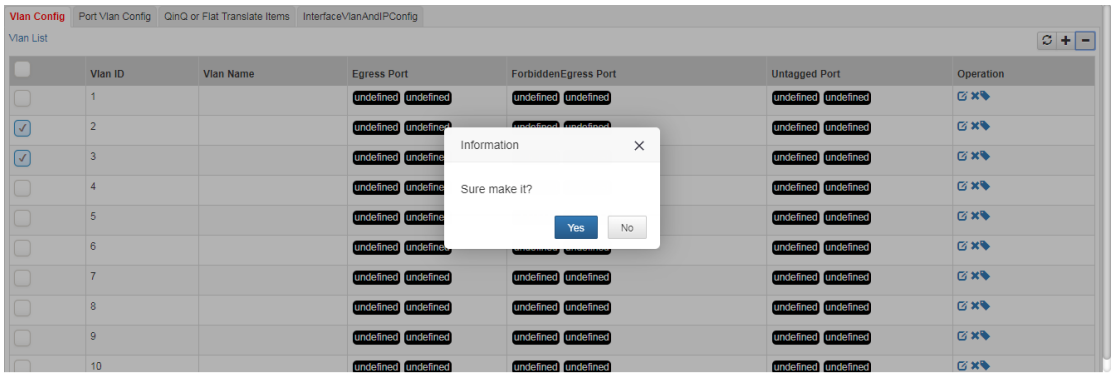
On **Vlan Config**, select one vlan and click . See the figure.



Note: Vlan ID with 1 cannot be updated.

◆ Delete one or batch Vlans

click or select one or batch Vlans and click . See the figure.



Click **Yes** to sure delete the selected Vlan or not.

◆ Refresh

Click  to regain Vlan information from the device.

Note: There are four parts in the screen table;

Vlan Id: Represent each Vlan;

Vlan Name: Distinguish Vlans and benefit administrator management;

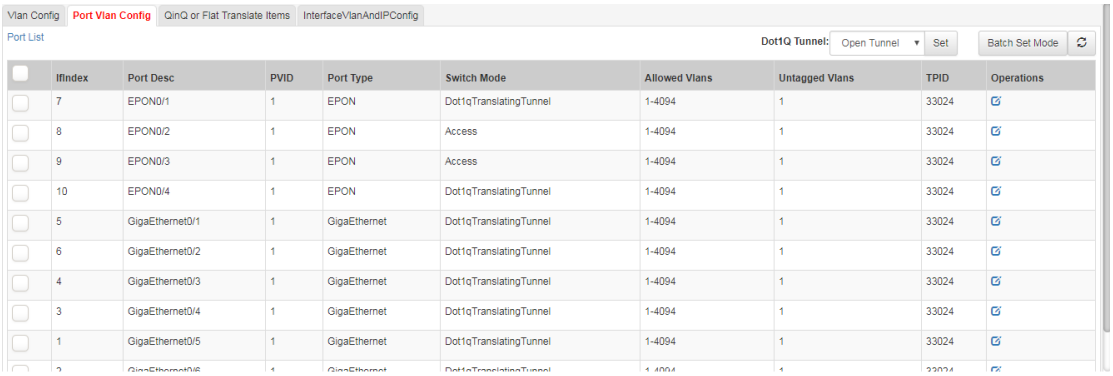
Egress Ports: Included in the Vlan ports. Double click to check;

ForbiddenEgressPorts: Excluded in the Vlan ports. Double click to check;

UntaggedPorts: Untagged ports.

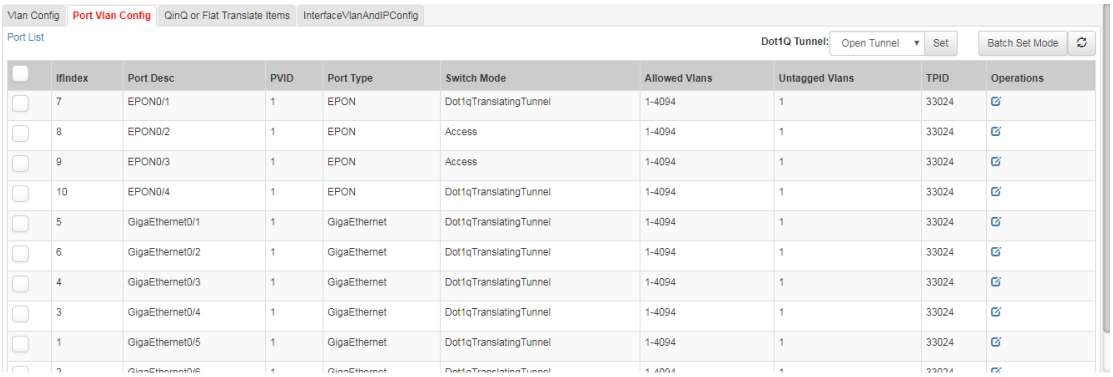
6.1.2.2 Port Vlan Config

Click **Port Vlan Config** to switch the configuration screen. See the figure.



PVID (Port-base Vlan ID) is Vlan ID of the port, relating to VlAN TAG when a port sends and receives data frame. There are 2 types of the switch ports: 1. ACCESS, directly connecting the device at access layer; 2. TRUNK, for aggregation between the devices. ACCESS is characterized by a flow that only conforms to PVID. Different from ACCESS, Trunk has one intrinsic VLAN of its own, sending connection data or controlling flow among devices like cdp and bpdu. Data frames from the device itself are not tagged when they are sent out because VID is pvid, resulting in the tag remove, while when the end receives untagged data frames, it will tag the frames with VLAN of its own. Check the forwarding table. If the destination address is based on the end, remove the tag; if not, forward to other TRUNKs and remove the tag. (Because a switch only has one eigen removed tag of VLAN pvid=vid.).

The table shows **PVID**, **Port Type**, **Switch Mode**, **Allowed Vlans** and **Untagged Vlans**. Select any line, click, the configuration interface will pop up, see the figure.



Only when **Switch Mode**: **Trunk**, to configure **Allowed Vlan** and **Untagged Vlan** is accessible. Input value: **1,3,5,7** or **1,3-5,7** or **1-7**. The specific operation is as follows.

Allowed Vlan 1-9: set the allowed vlans as vlan1-vlan9

Allowed Vlan add 1-9: add the allowed vlans, vlan1-vlan9

Allowed Vlan except 1-9: except vlan1-vlan9, the rest are allowed vlans

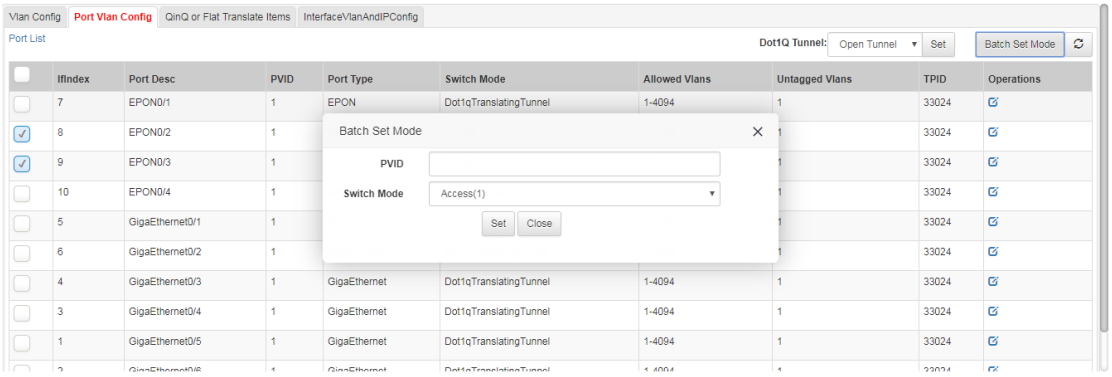
Allowed Vlan remove 1-9: delete allowed vlans from vlan1-vlan9

Allowed Vlan all: set vlan1-vlan4094 as allowed vlans

Allowed Vlan none: no allowed vlans

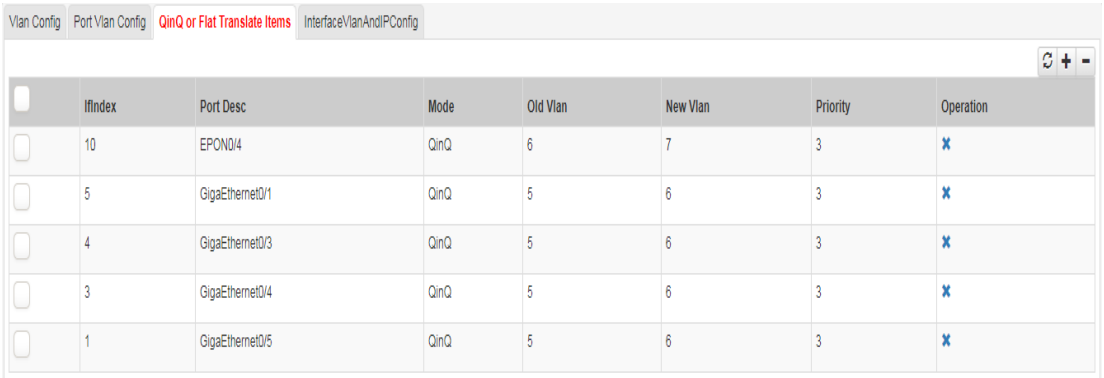
The same operations to **Untagged Vlan**.

Batch Set Mode allows batch set mode. See the figure.



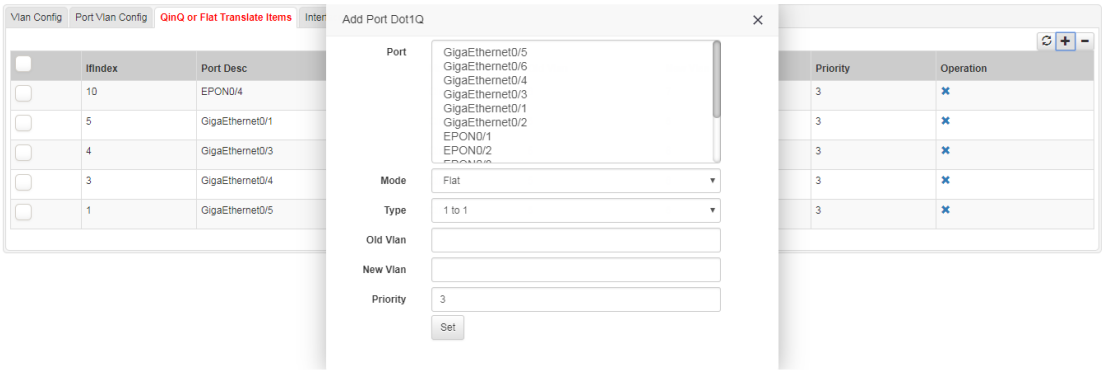
6.1.2.3 QinQ or Flat Translate Items

Shift to **QinQ or Flat Translate Items** and see the figure.



- Add

Click  .



1.**Port**: Select one port to configure;

2.**Mode**: Two modes are available: Flat and QinQ;

3.**Old Vlan**: Input a separate vlanid such as 1 or 2; multiple vlanid, such as 1-10. Multi-input can only be used in the format "1-10";

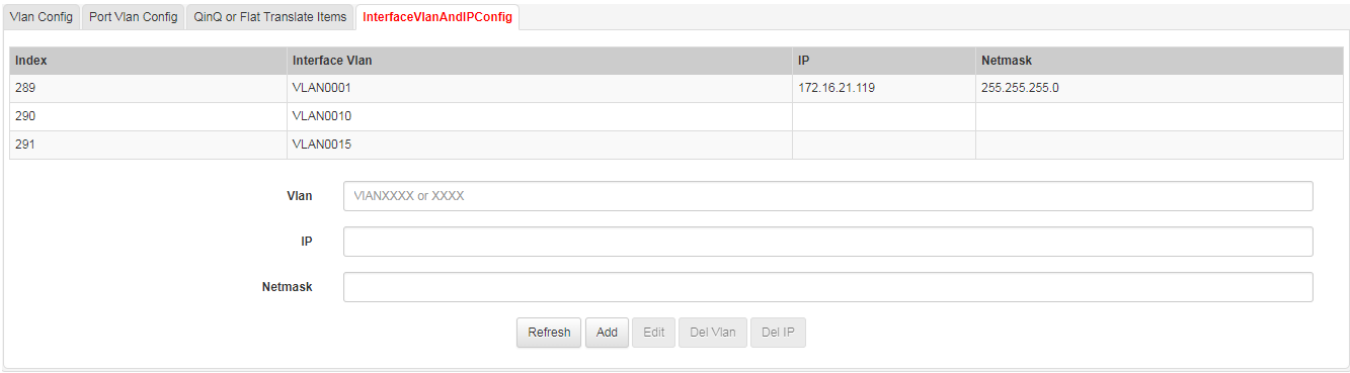
4.**New Vlan**: Input only one vlanid like 1;

5.**Priority**: 8 levels, from 0 to 7.

After filling in the table, click **Set**. Click  to delete certain items you want to delete.

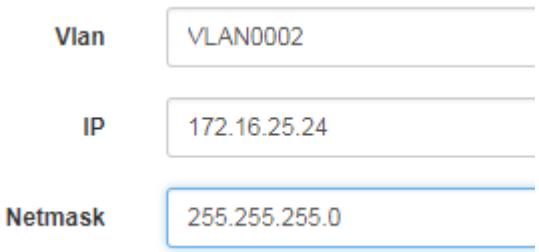
6.1.2.4 InterfaceVlanIPConfig

Shift to **Interface&Vlan IP**, see the figure.



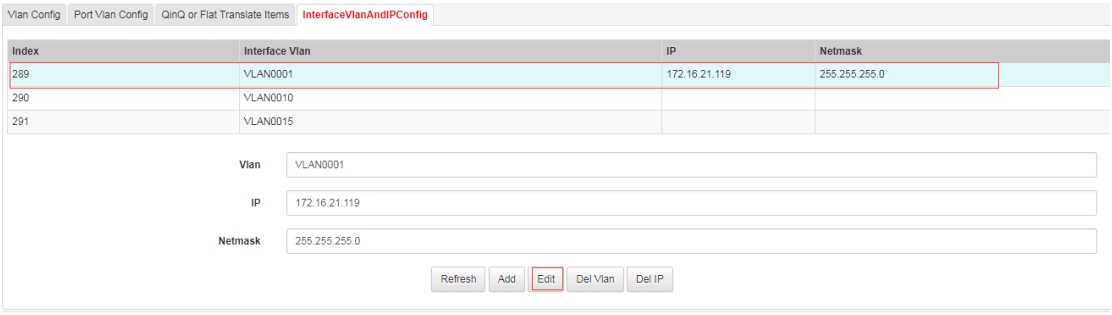
◆ Add

After filling, click **Add** to create VLAN0002 port, as well as its IP. You can just fill in **Vlan** without **IP** or **Netmask** only to create vlan.



◆ Edit

Click any column in **InterfaceVlanAndIPConfig** to edit **IP** snd **Netmask**. Click **Edit** to save.



◆ Delete

1.Del Vlan

Select any column on **Interface Vlan**. Click **Del Vlan** to delete Vlan and IP

2.Del IP

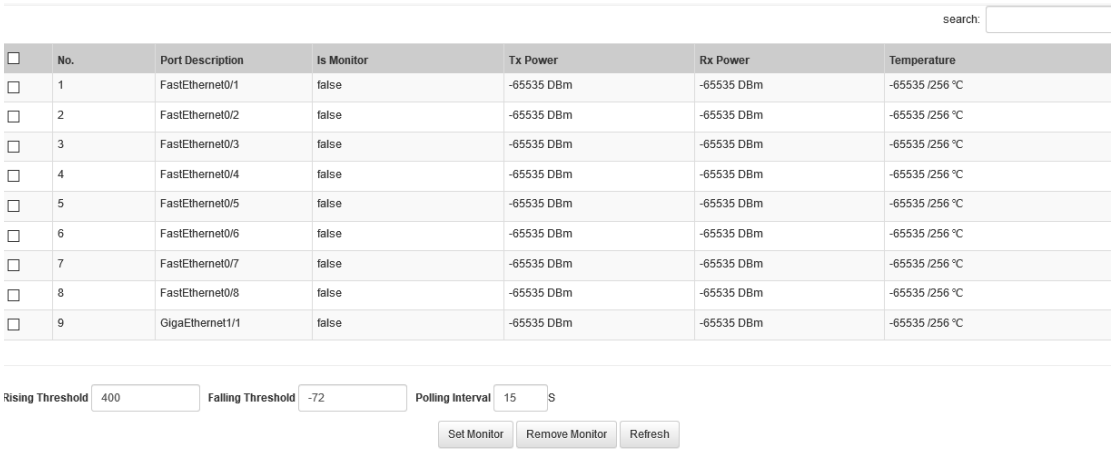
Select any column on **Interface Vlan**. Click **Del IP** to delete IP and netmask except Vlan.

6.1.3 Batch Telnet Community Set

It can batch configure Telnet(SSH) and SNMP Community of all devices in NMS. Enable the interface, and see the figure. Click **Save** to update Telnet and SNMP information.

6.1.4 Switch PON Port Monitor

This function is mainly aimed at setting monitoring threshold when switch optical ports receive and transmit optical power. If the optical power exceeds the threshold, to realize monitoring, the device will report to the NMS terminal. See the figure.



Set Monitor steps:

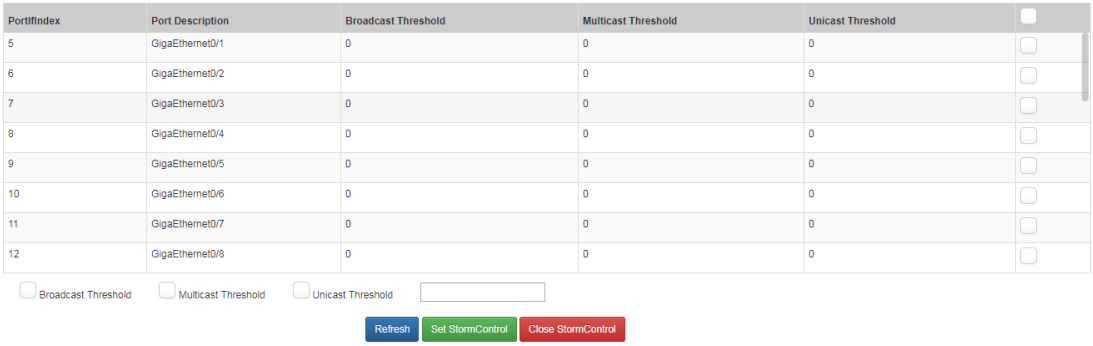
1 Tick ports; 2 Enter **Rising/Falling Threshold** and **Polling Interval**; 3 Click **Set Monitor**.

Remove Monitor steps:

1 Tick ports; 2 Click **Remove Monitor**.

6.1.5 Storm Control

Expand **Storm Control** to configure threshold value. Tick the types of threshold, fill in the threshold, and tick one or more check boxes in the last column. If **Storm Control** is disenabled without filling in the value, the threshold value of selected ports will be set as 0. See the figure.

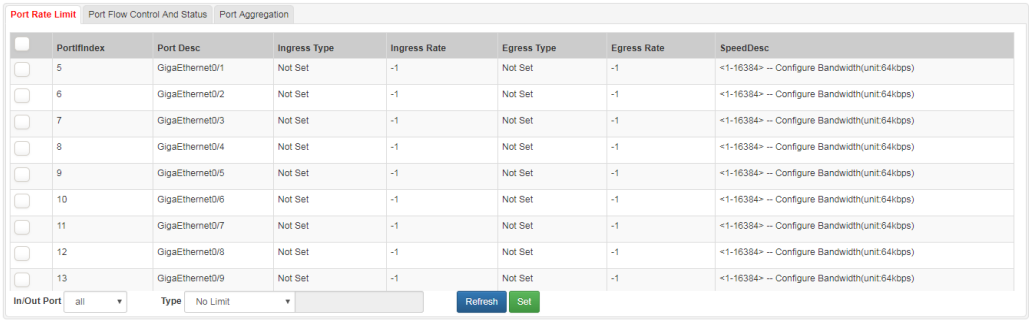


6.1.6 Port General Control

Expand the control interface to enable **Port Rate Limit**, **Port Flow Control And Status**, **Port Aggregation**.

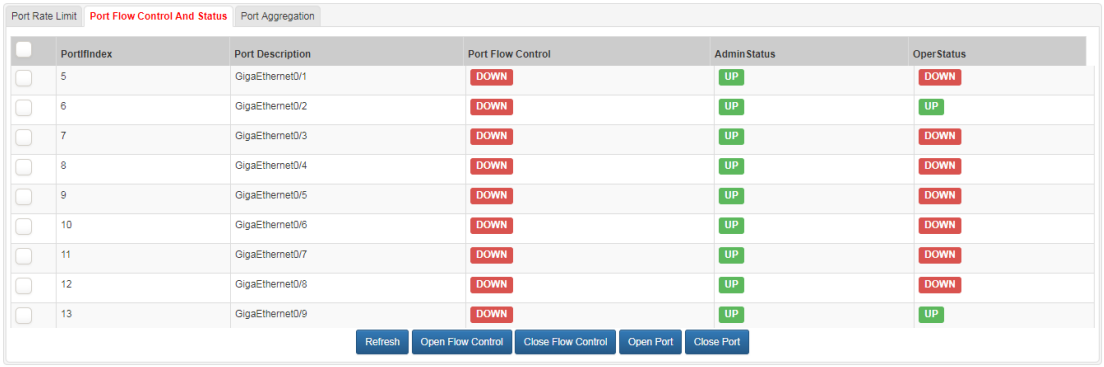
Port Rate Limit:

First tick in **PortIfIndex**, select in **In/Out Port** and **Type**. Click **Set**. See the figure.



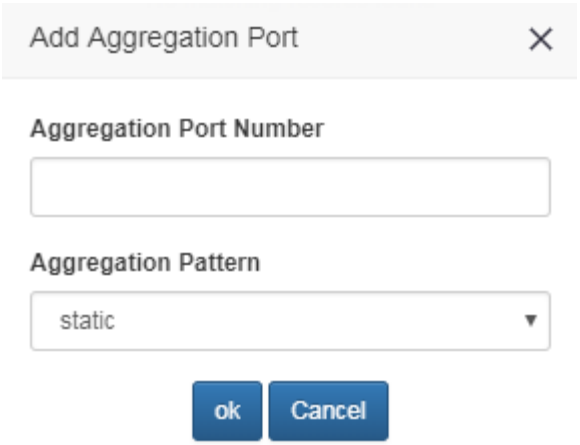
Port Flow Control And Status:

Tick in the first column. Click the bottom buttons: **Open Flow Control**, **Close Flow Control**, **Open Port** and **Close Port**. See the figure.

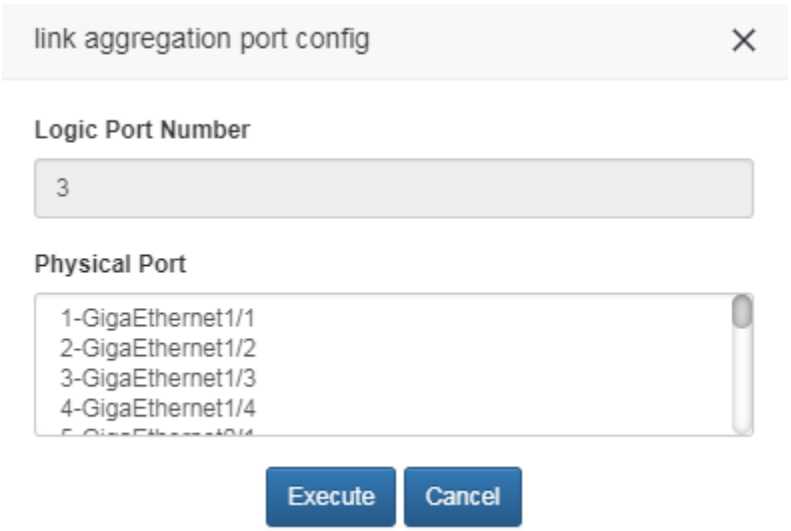


Port Aggregation:

Click **Add** to add aggregation ports.

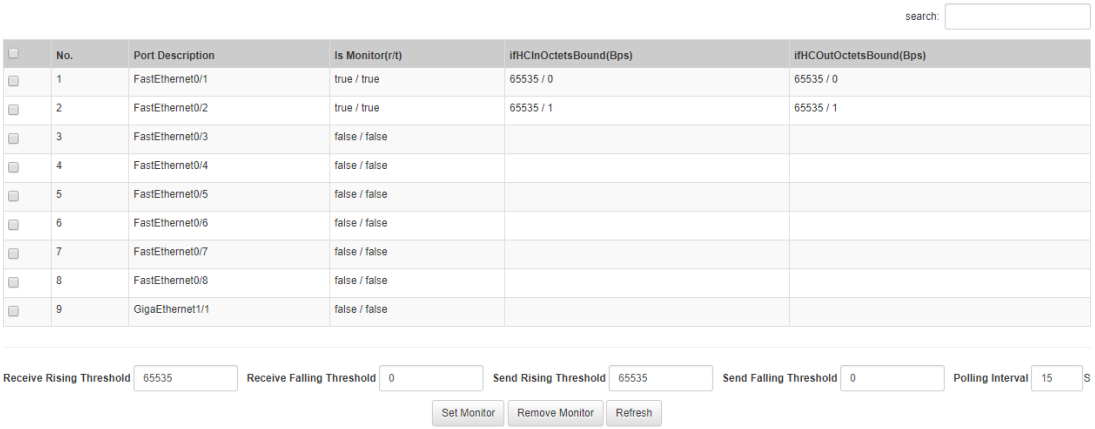


Tick in the first column. Click **link aggregation port config**.



6.1.7 Transmission Rate Monitor

Its main function is to monitor when the switch sends and receives flow. See the figure.



- **Set Monitor**

Select at least one port in the first column, fill in the bottom blanks: Receive/Send Rising Threshold, Receive/Send Falling Threshold and Polling Interval. Click **Set Monitor**. See the first 2 lines of the figure.

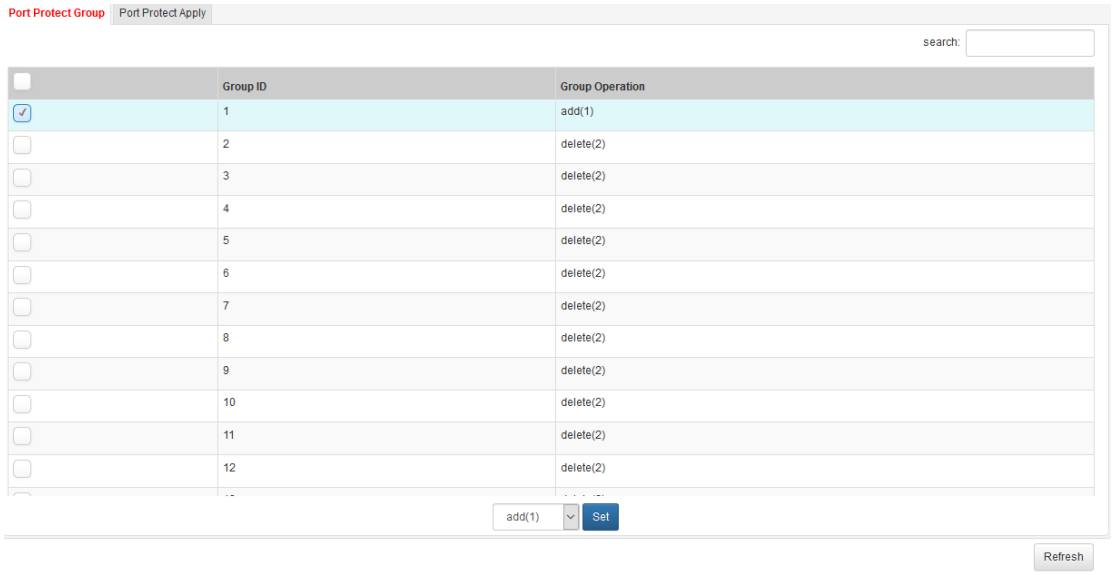
- **Remove Monitor**

Select at least one port in the first column, click **Remove Monitor**.

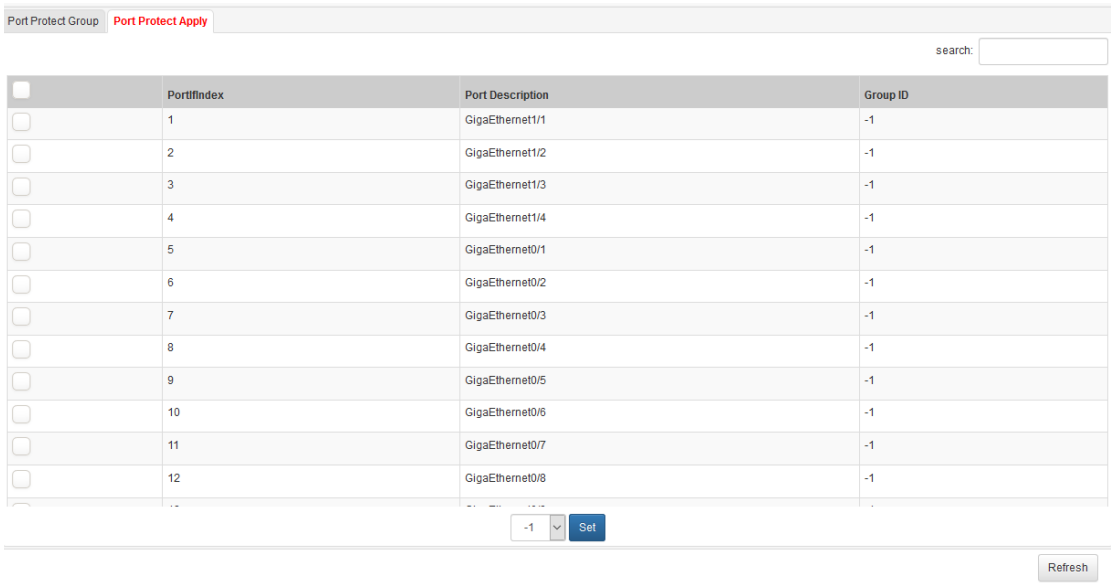
6.1.8 Port Protect Group

Such a function has 2 parts: 1. **Port Protect Group**; 2. **Port Protect Apply**.

See the figure. Click one ID, as well as **add** or **delete** to enable or disenable the selected protect group.



See the figure. Tick the port, and select the protect group requiring to be added in the drop-down list below. Click **Set**.



6.1.9 ACL Config And Application

ACL（Access Control List）is a list of instructions for the router and switch interface, used for controlling the in/out data packages.

This section introduces the ACL module operation in the network management system in detail.

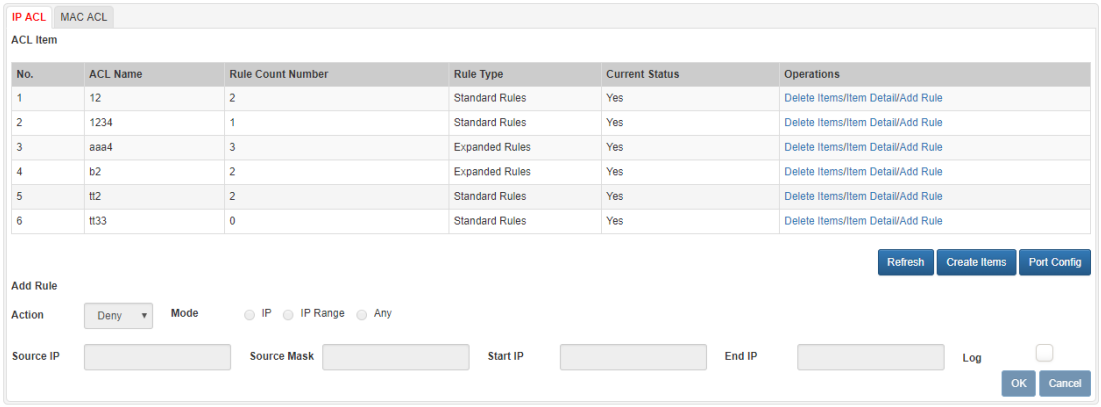
Types of ACL :

- IP ACL
- MAC ACL

Based on operation, types of ACL:

- New ACL
- Rules for configuring ACL
- Apply ACL:
  - Issued to PON
  - Issued llid
  - Issued ONU

To create new ACL（IP ACL，MAC ACL）, enable **ACL Config And Application**. See the figure.



6.1.9.1 Create IP ACL

Select IP ACL on **IP ACL**, click **Create Items** to create a ACL item. On the pop-up, enter ACL name and type.

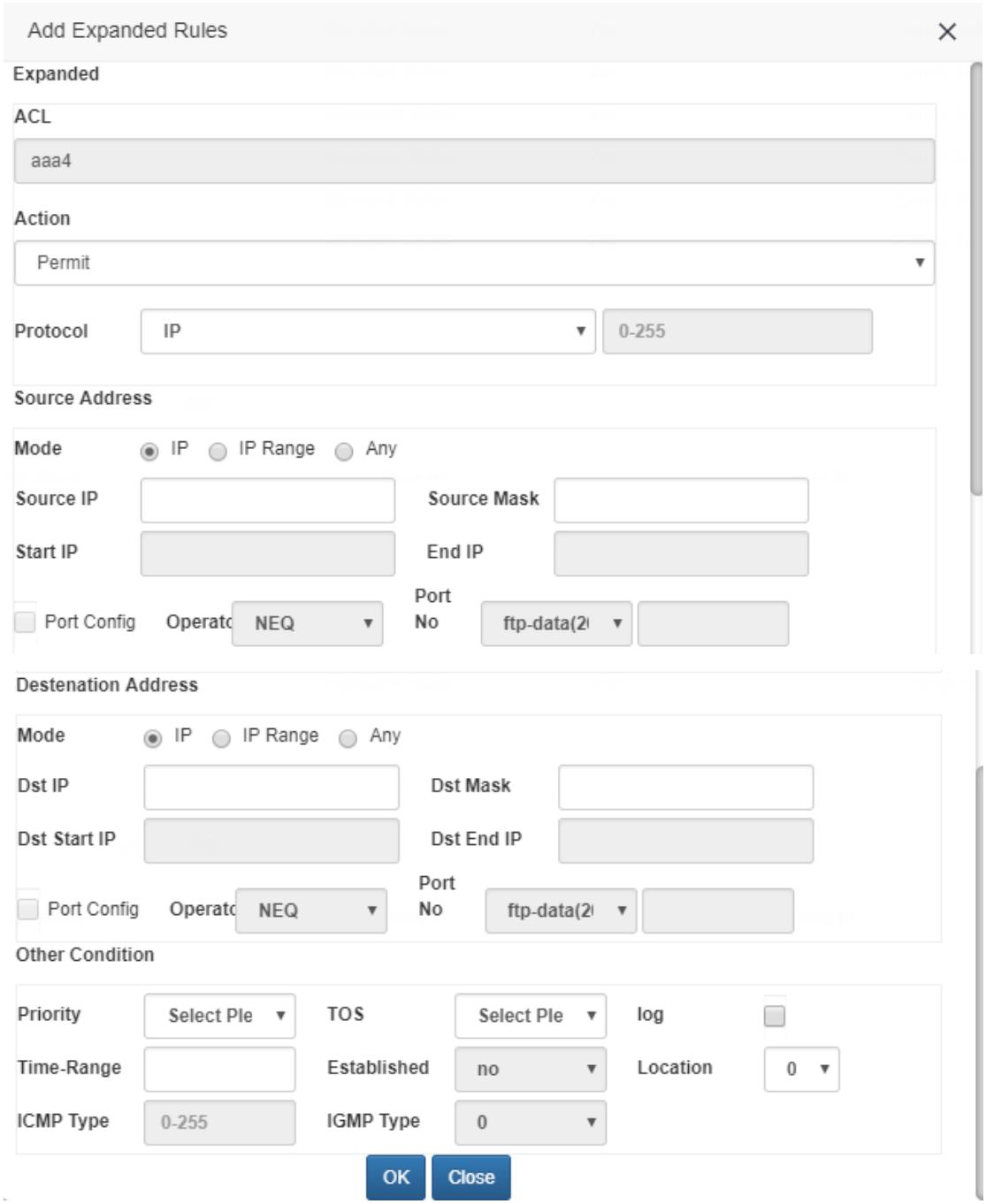
After creating an ACL item, the item will be added into the interface **ACL Config And Application**, but the amount of rules is 0. So click **Add Rule** to add the rules.

1. **Standard Rules**

   Click **Add Rule** to set rules. Click **OK**.

2. **Expanded Rules**

   Click **Add Rule** to set rules. The following interface will pop up.



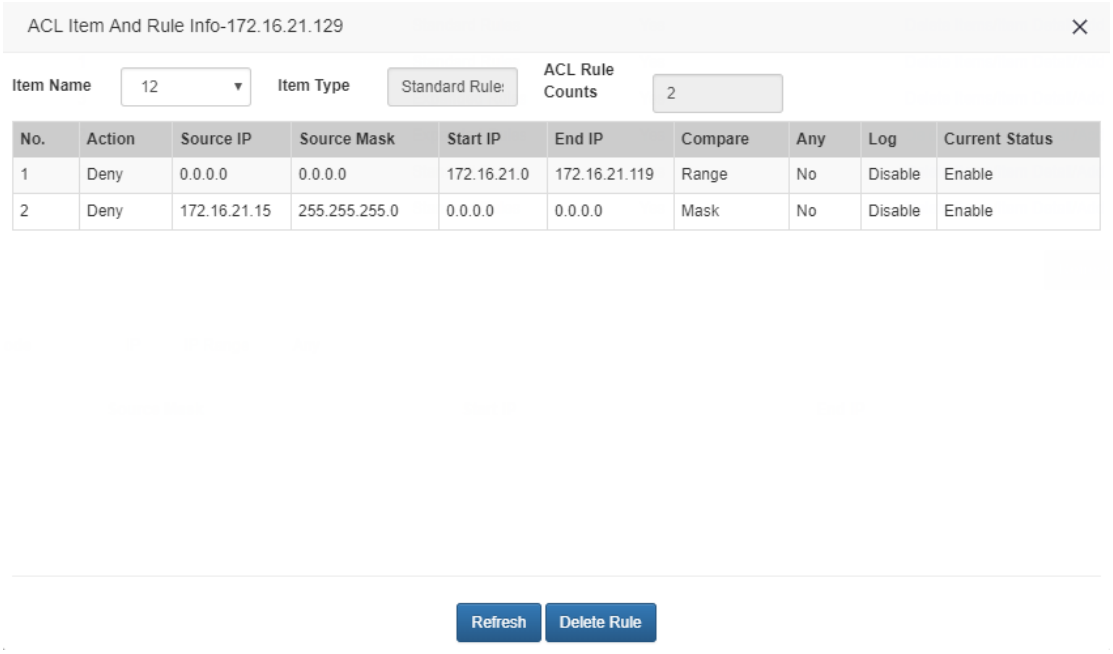
Click **OK**.

When it comes to MAC ACL creation and rule add, please refer to IPACL operation instructions.

6.1.9.2 Search and Delete IP ACL

- Search IP ACL information

In ACL item list, click **Item Detail** in the checked line to get **ACL Item And Rule Info**. See the following interface.



The fields in the form is the standard rule information. If necessary, select any **ACL** by clicking the drop-down list of **Item Name**.

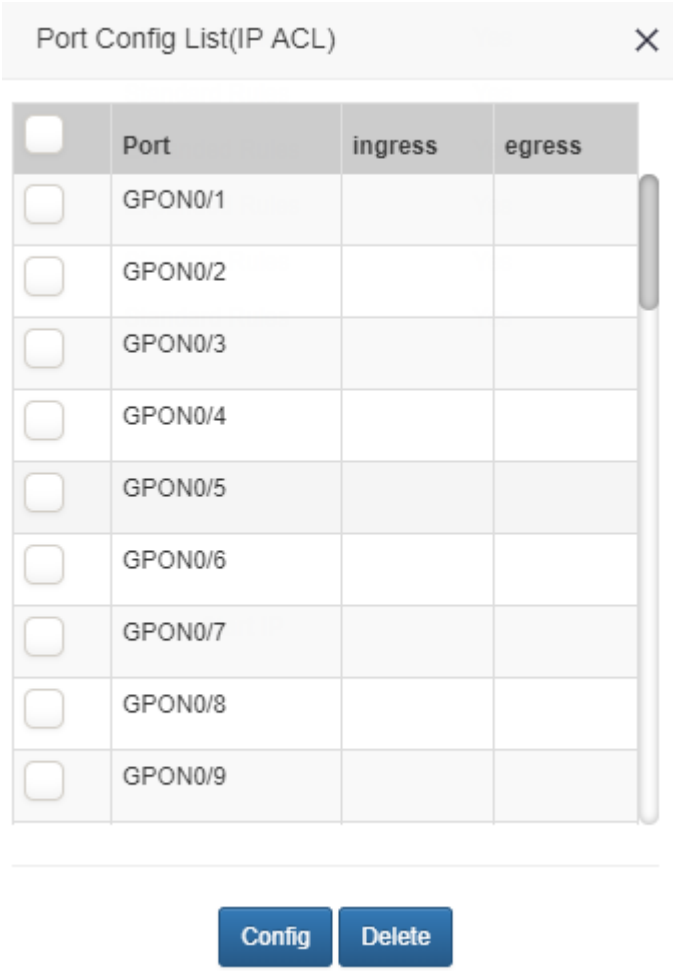
Note: select one rule and click **Delete Rule** to remove the rule.

- Delete ACL

In ACL, click **Delete Rule** to delete the selected item.

6.1.9.3 Port Config List (IP ACL)

Applying IP ACL is a way to send the created IP ACL to the PON, realizing filtering. Click **Port Config**, **Port Config List(IP ACL)** will pop up. See the figure.



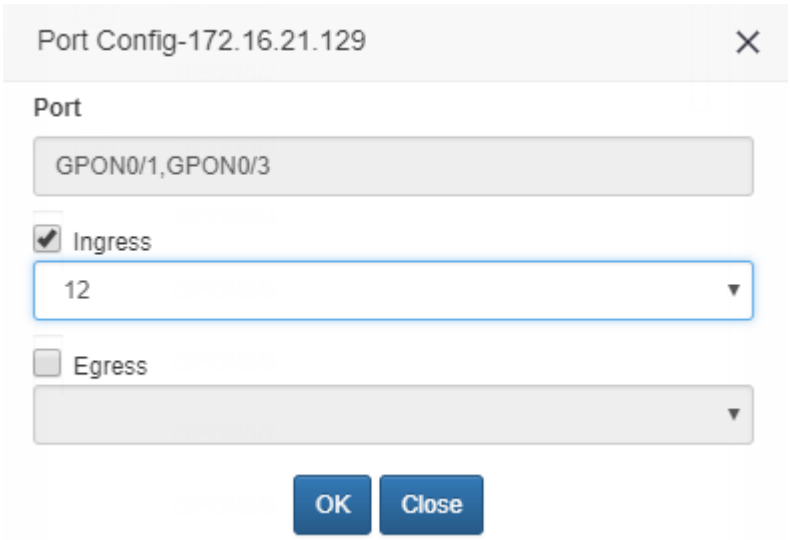
Configuration steps:

- **Config**

It is used to configure **ACL** to **ingress** and **egress** of **PON**. Refer to the above configuration steps (Batch is available.), click **Config** to configure the **ACL** sent to **ingress** and **egress**. Finally click **OK**. See the figure.

Ingress: Entrance for ACL

Egress: Exit for ACL



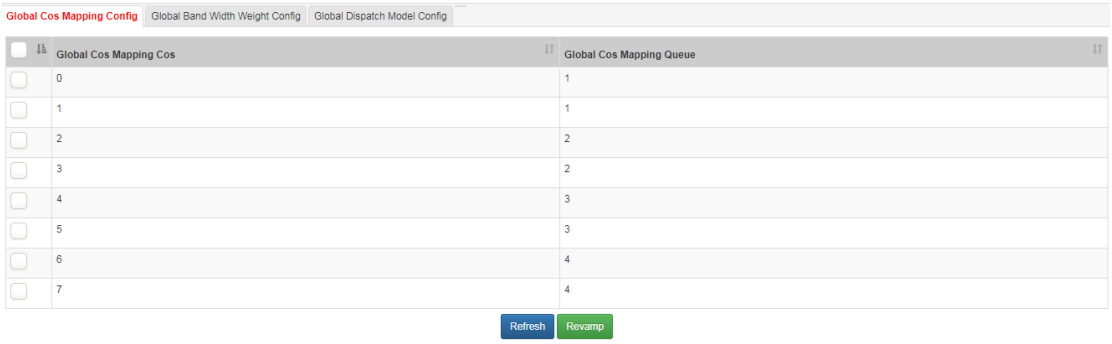
- Delete

It is used to delete the **ACL** configured in **ingress** and **egress**. Select **PON** on **Port Config List (IP ACL)** interface, click **Delete** to delete the selected **ACL**.

In terms of **MAC ACL** configuration, please refer to IP ACL operation instruction.

6.1.10 QoS Queue and Scheduling Mode config

Click **QoS queue and scheduling mode config**, see the figure.

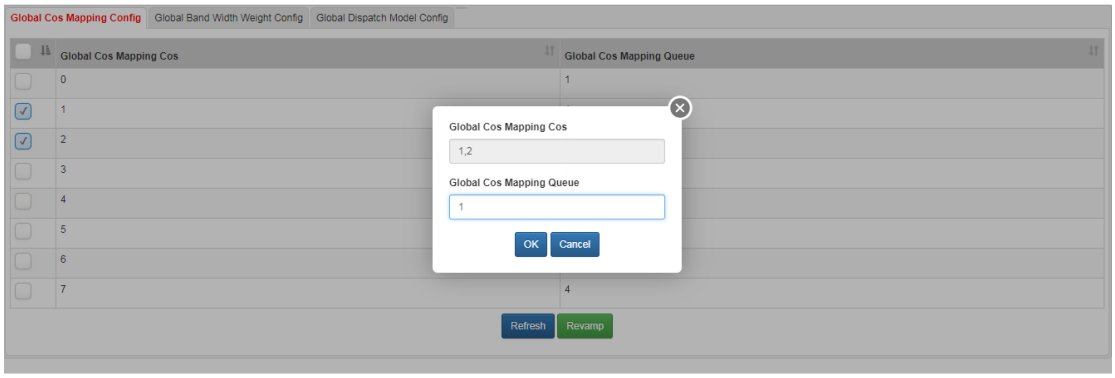


6.1.10.1 Global Cos Mapping Config

Its interface is shown as the above.

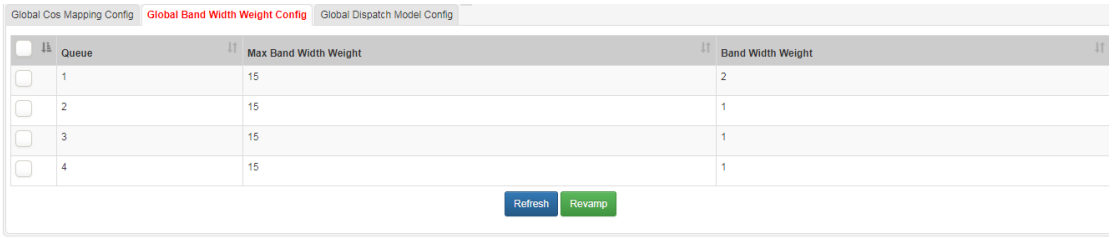
- Refresh

Select one or more items in the form, click **Refresh**.



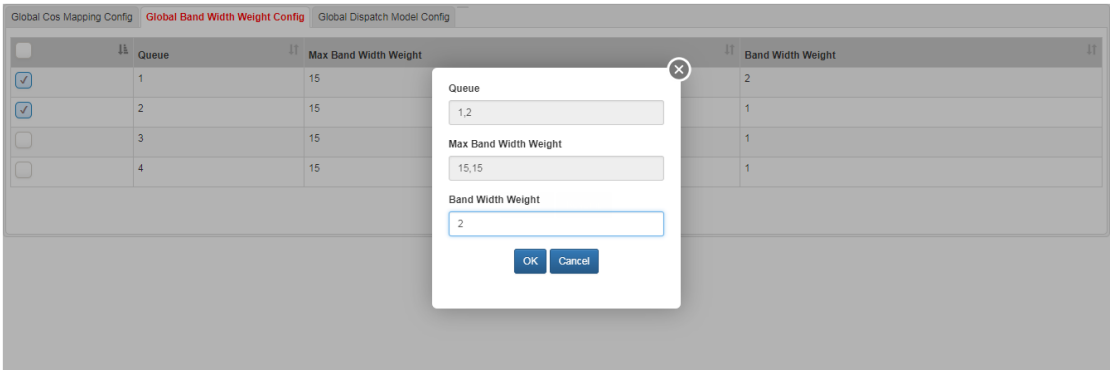
6.1.10.2 Global Band Width Weight Config

Click **Global Band Width Weight Config**, and see the figure.



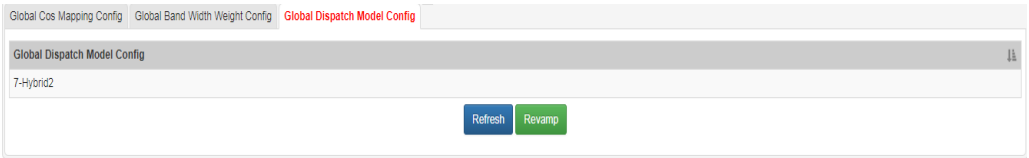
- Refresh

Select one or more items in the form, click **Refresh**.



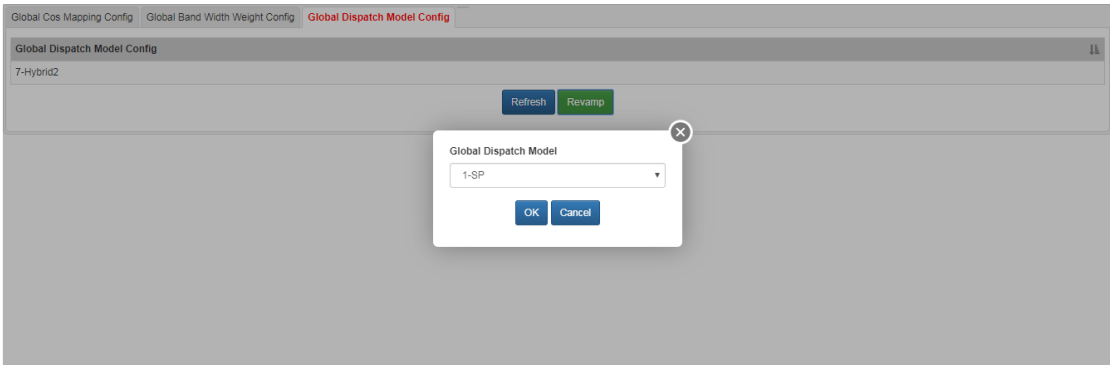
6.1.10.3 Global Dispatch Model Config

Click **Global Dispatch Model Config**, see the figure.



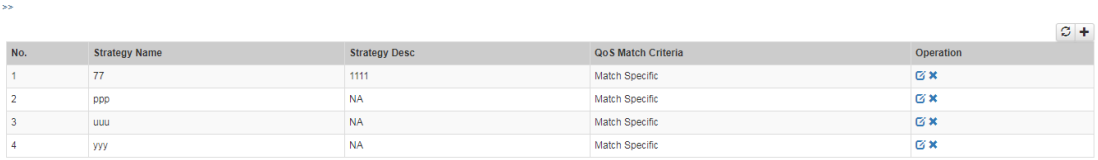
- Refresh

Select one or more items in the form, click **Refresh**.



6.1.11 QoS Strategy Config

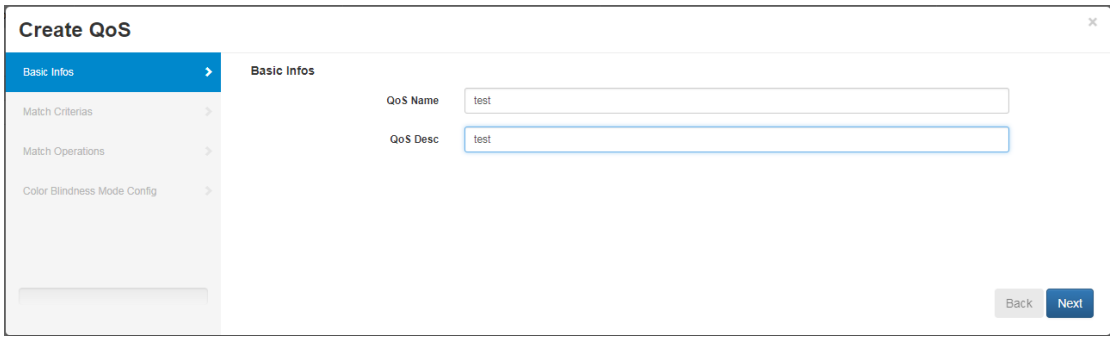
Click **QoS Strategy Config**, see the figure.



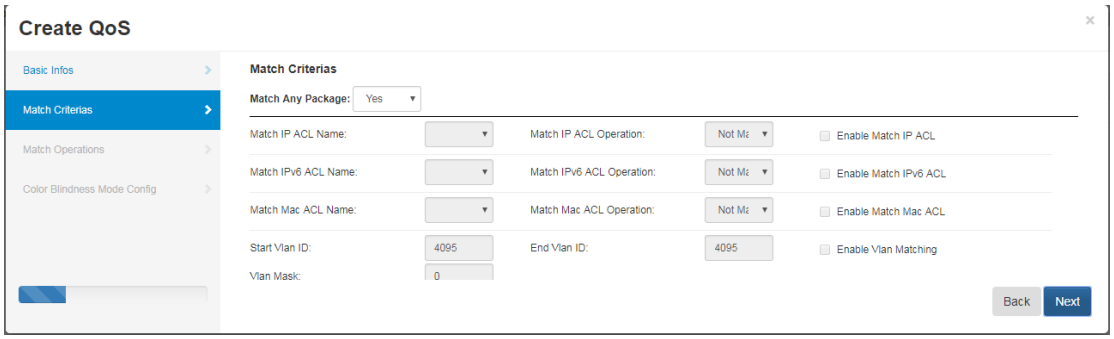
No.	Strategy Name	Strategy Desc	QoS Match Criteria	Operation
1	77	1111	Match Specific	
2	ppp	NA	Match Specific	
3	uuu	NA	Match Specific	
4	yyy	NA	Match Specific	

◆ Add

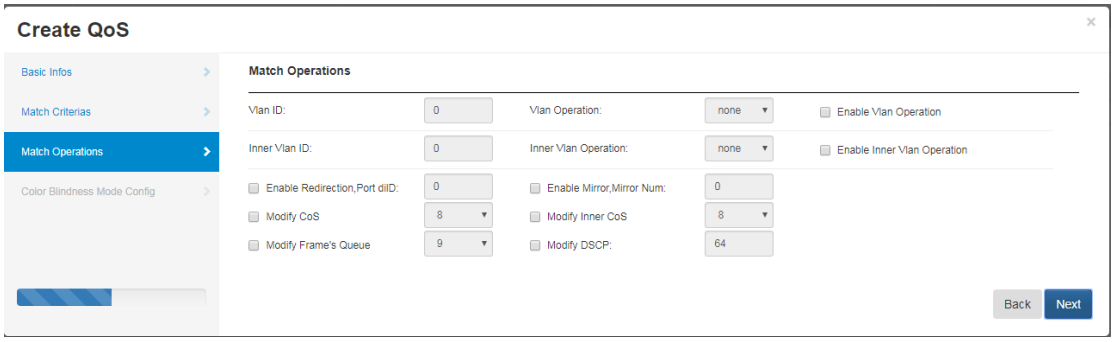
Click to pop up the configuration wizard.



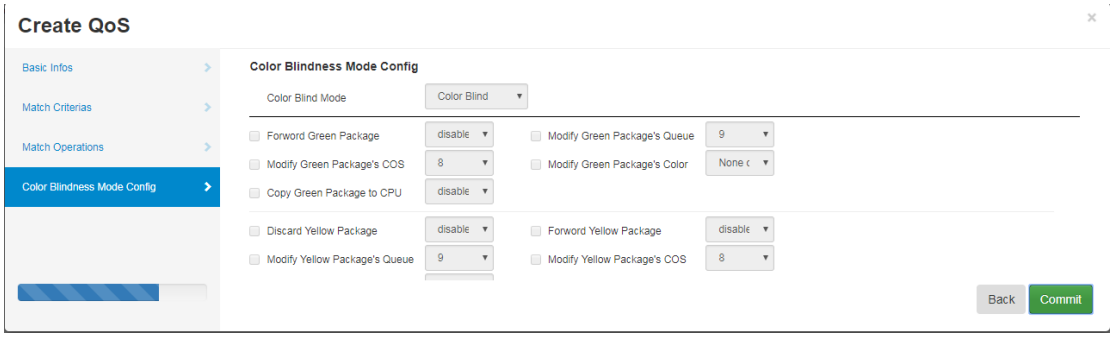
Next, match criterias.



Next, match VLAN, CoS, MAC. See the figure.



Next, enable **Color Blindness Mode Config**. See the figure.



Click **Commit** to manage to add Qos Strategy.

◆ Edit

Click to edit the strategy.

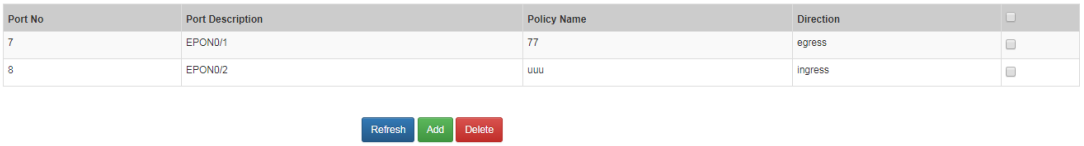
◆ Delete

Click to delete the strategy.

6.1.12 QoS Port

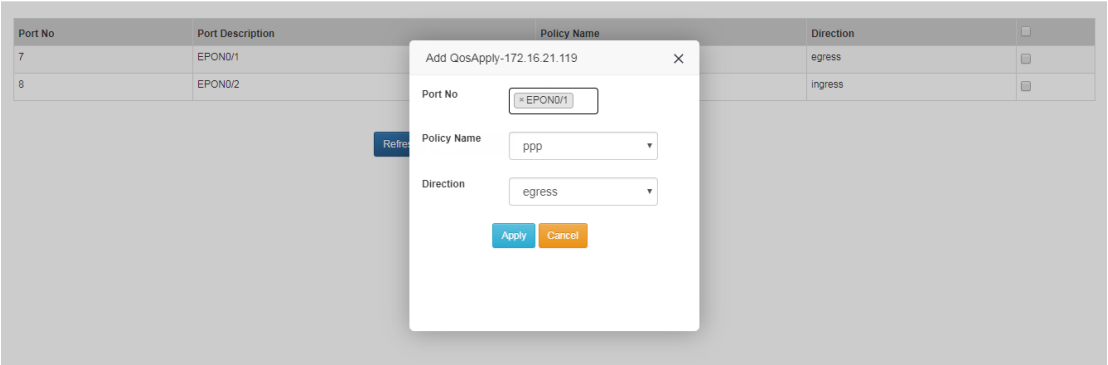
QoS Strategy can be applied to some port. One port can apply several strategies, while one strategy can be applied to several ports. In the same port, the earlier the strategy is applied, the more prioritized it will be. That is, if the message matches two policies at the same time, the action of the first matching strategy should be taken.

Click **QoS Port Ap**. See the figure.



◆ Add

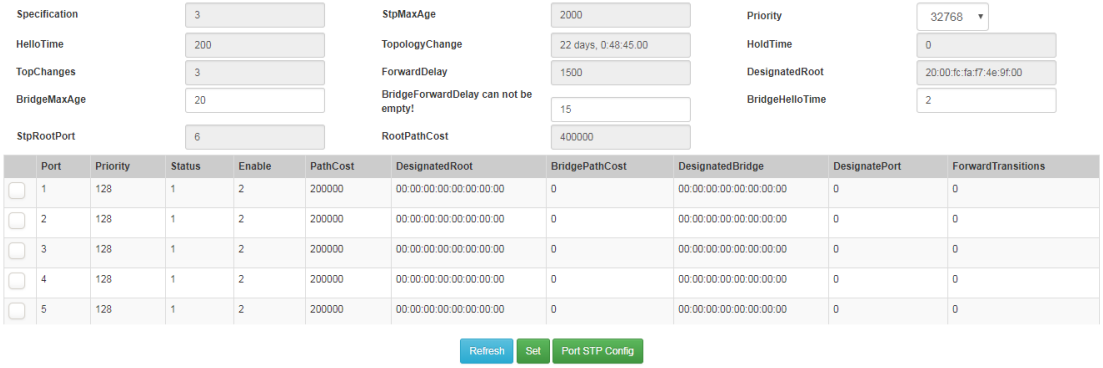
Click **Add**, and see the figure.



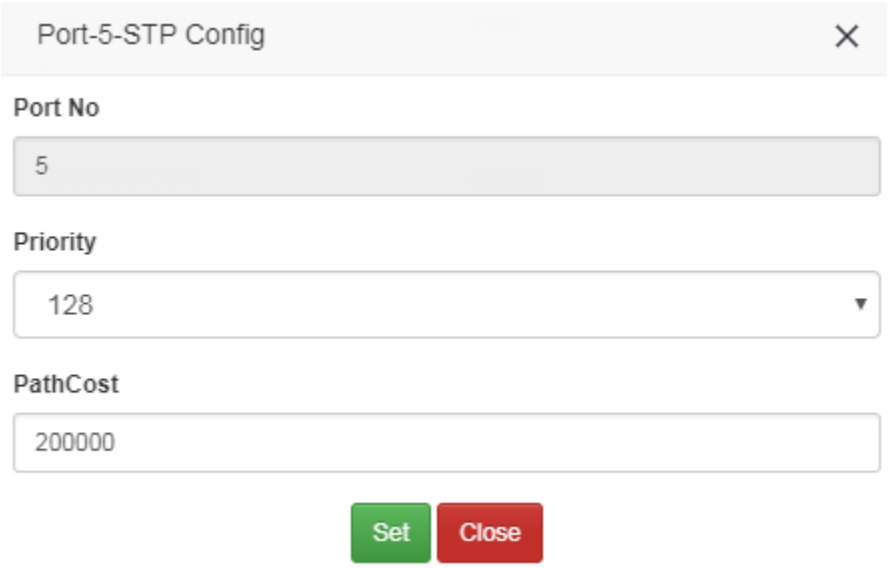
Select **Port** and its strategy, click **Apply** to apply the strategy in port.

6.1.13 STP Config

Refresh the form values above the form, and click **Set** to set STP. See the figure.

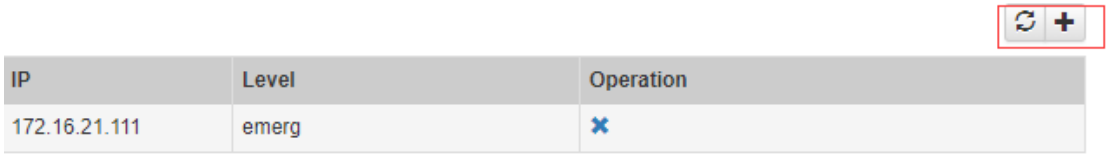


Tick the port in the first line. Click **Port STP Config** to configure the STP. See the figure.

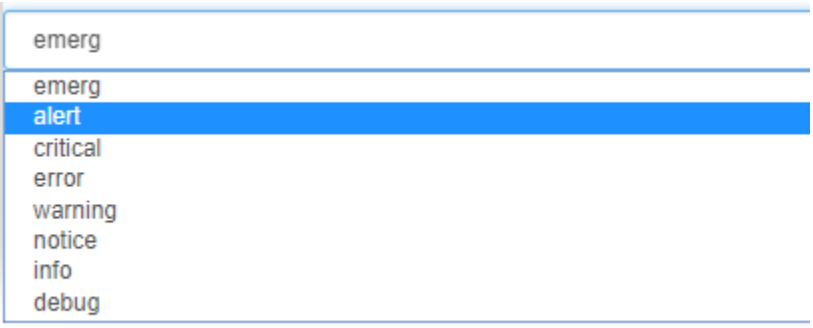


6.1.14 Syslog Server Config

Syslog Server Config is mainly used for the designated device to send Syslog. See the following interface.

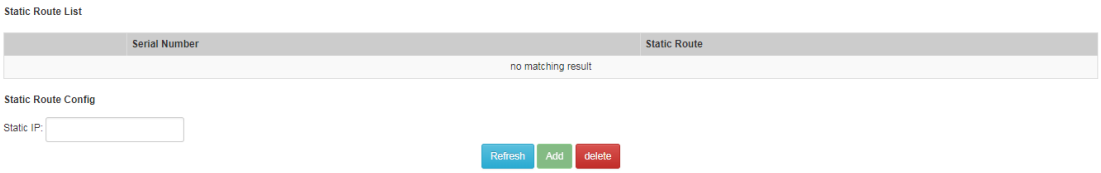


Refresh and Add buttons are on the top right corner. The Add interface is shown in the following. 8 levels: **emerg**, **alert**, **critical**, **error**, **warning**, **notice**, **info**, **debug**, ranking from high to low. Syslog level of the device above or equal to the set level will be sent to the specified IP.



6.1.15 Static Route Config

Fill in **static IP**, click **Add** to add the static route. Tick in the first line and click **delete** to delete batch. See the figure.



6.2 EPON Device

6.2.1 Managed Object Attribute

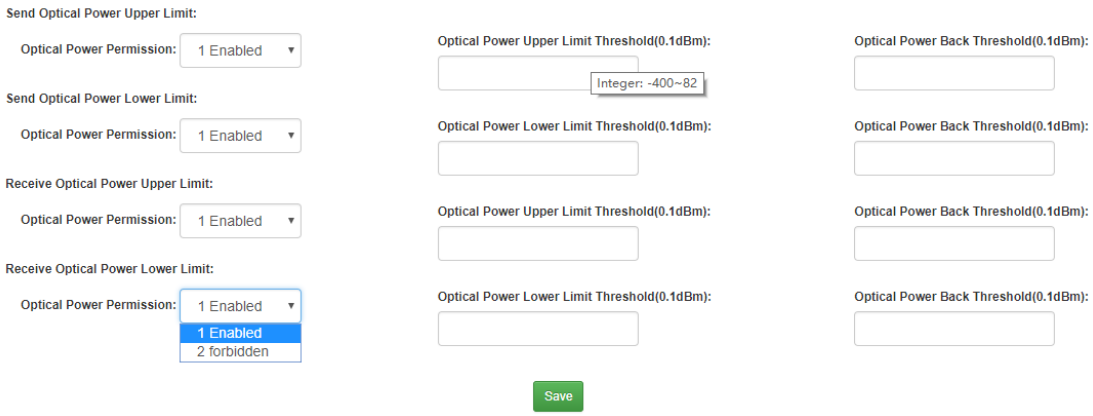
Please refer to section 6.1.1.

6.2.2 Vlan Management

Please refer to section 6.1.2.

6.2.3 OLT PON Optical Power Batch Set

Select **OLT** and **ONU Optical Batch Set**. The following interface will pop up.



Threshold unit is 0.1dBm, between -400 and 82. Click **Save** to batch set all the ONU optical power threshold under OLT.

6.2.4 Batch Telnet Community Set

Please refer to section 6.1.3.

6.2.5 Storm Control

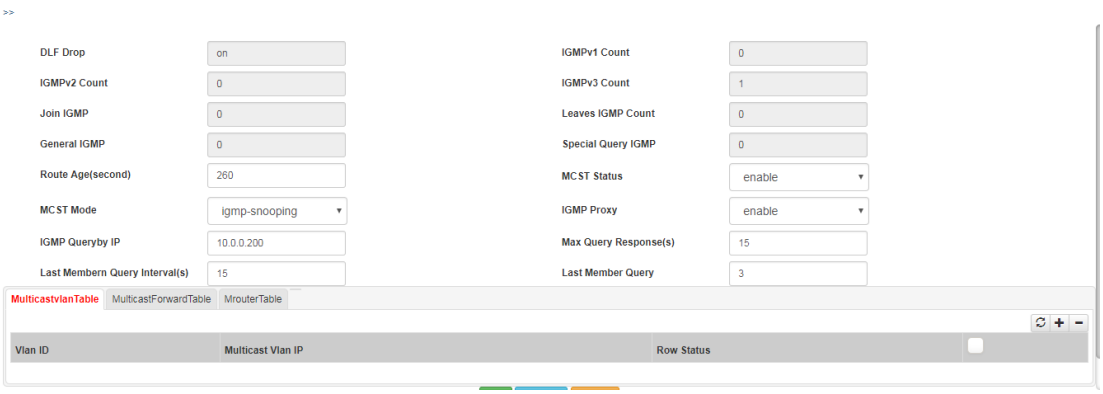
Please refer to section 6.1.5.

6.2.6 MultiCast

Multicast transmission: A point-to-point network connection is implemented between the sender and each recipient. If a sender transfers the same data to multiple recipients at the same time, only the same packet is copied. It improves data transfer efficiency and reduces the congestion in the backbone network.

IGMP runs between the host and the multicast router directly connected to the host. The host uses IGMP to tell the local router that it wants to join and receive information about a particular multicast group, while the router periodically queries the members of a given group within the LAN whether it is active（that is, whether the network still has members belonging to a multicast group）, realizing the collection and maintenance of network group membership. 3 IGMP versions: IGMPv1, IGMPv2, IGMPv3.

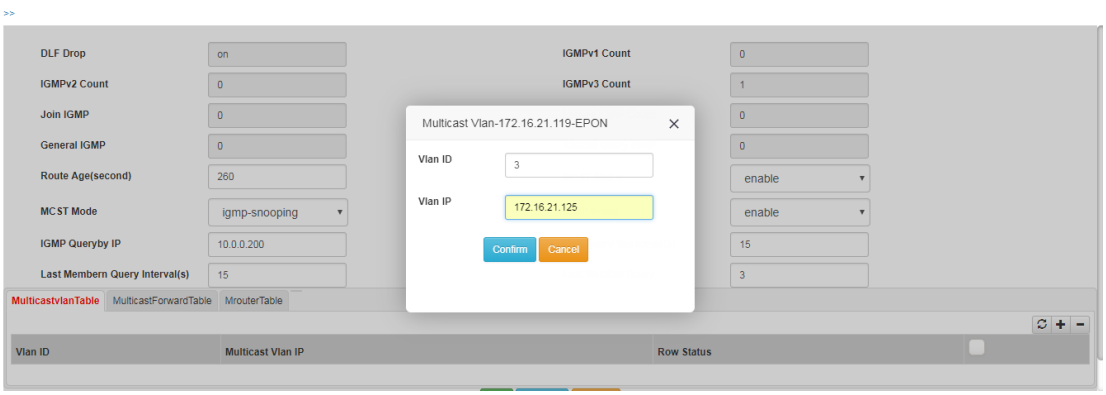
OLT multicast configuration is the configuration of some global attributes for OLT group. Click **Multicast Set**, and see the figure.



Note: The gray part on the left cannot be modified.

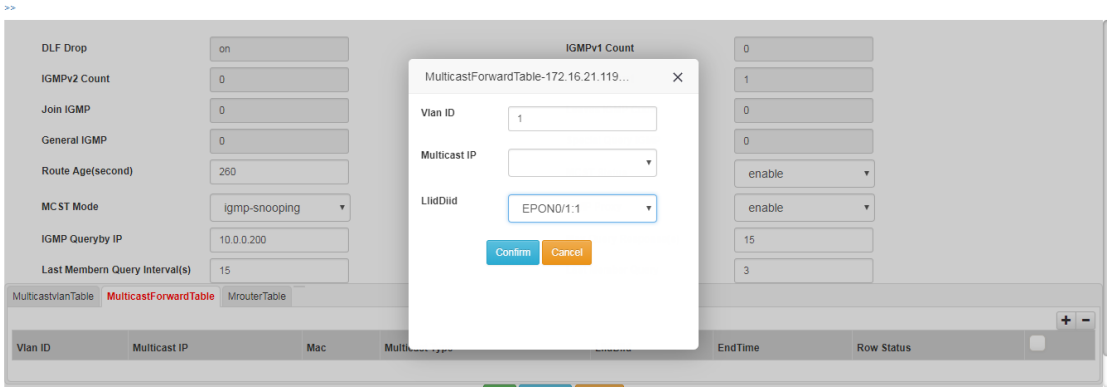
◆ Add **MulticastVlanTable**

Click  , see the figure.



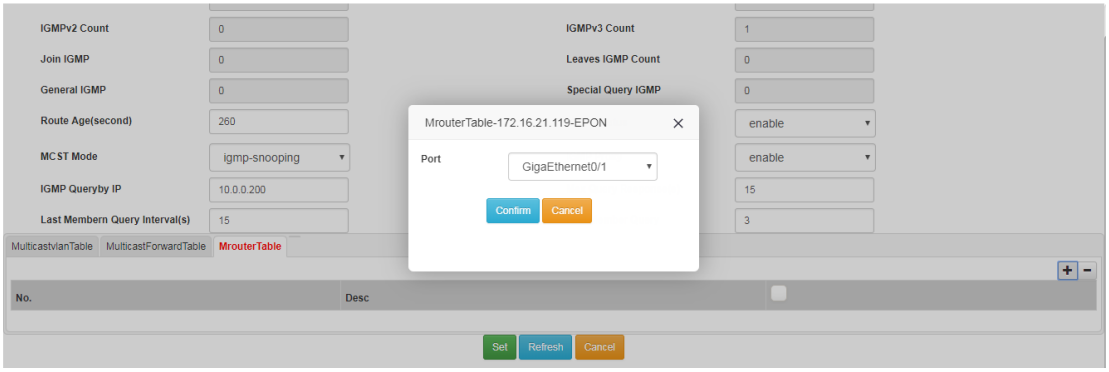
◆ Add **MulticastForwardTable**

Click **MulticastForwardTable** to shift the interface. Click  .



◆ Add **MrouterTable**

Click **MrouterTable** to shift the interface. Click ✚. See the figure.

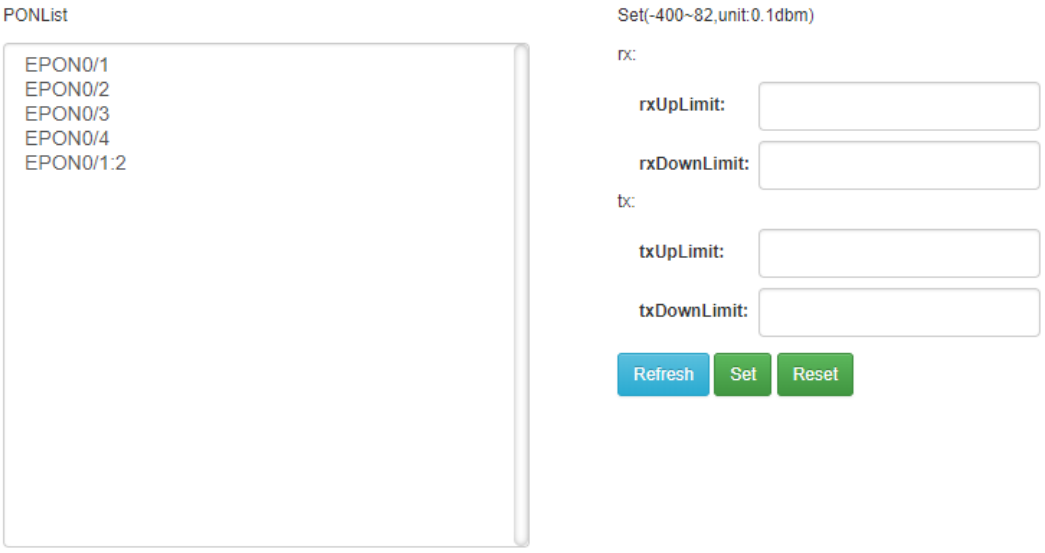


6.2.7 PortControl

Please refer to section 6.1.6.

6.2.8 PON Power Limit

See the figure.



In **PONList**, double click selected PON to load the lower limit of the light power of the current PON. The default celling value of the sending light power is 82, and the default floor value is -400. Adapt based on reality and click **Set**. Click **Reset** to restore the light power of the PON to the default value.

6.2.9 QoS Global Cos And Bandwidth

Please refer to section 6.1.10.

6.2.10 QoS Strategy Config

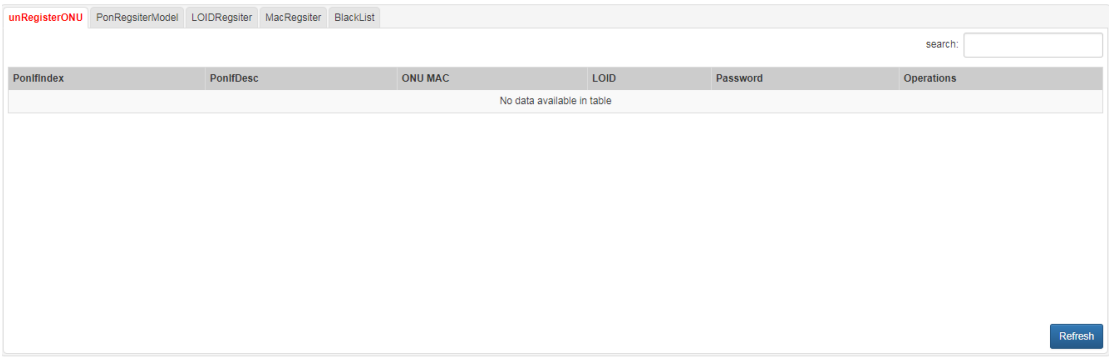
Please refer to section 6.1.11.

6.2.11 PonPortQosApply

Please refer to section 6.1.12.

6.2.12 ONU Auth Mode

Click **ONU Auth Mode**. See the figure.



Including: **unRegisterONU**, **PonRegisterModel**, **LOIDRegister**, **MacRegister**, **BlackList**.

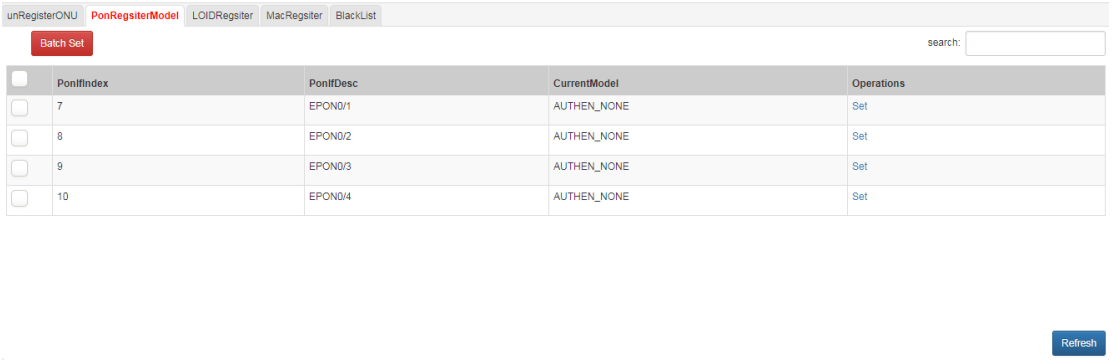
6.2.12.1 unRegisterONU

See the above figure.

The states of ONU: 1: **authenticated**, 2: **registered**, 3: **deregistered**, 4: **auto_config**. The state shown above is all registered ONUs. Click **Bind** to bind ONU. No registered ONU devices in OLT, so no data list is displayed in the figure.

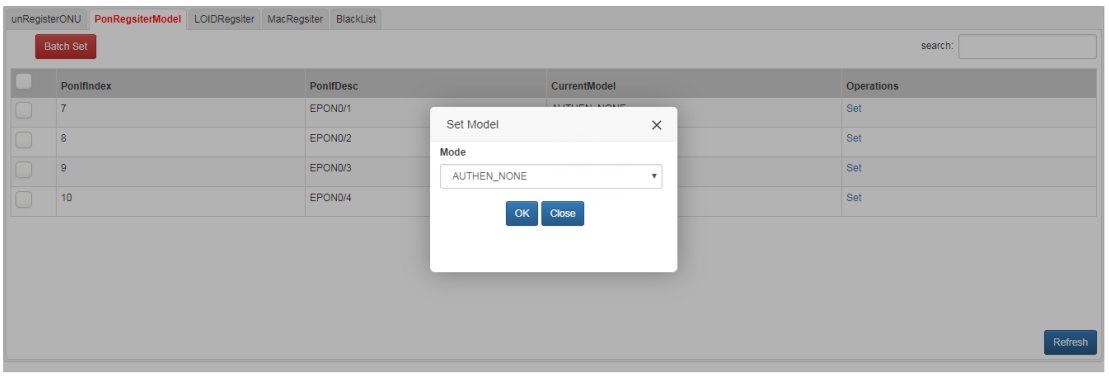
6.2.12.2 PonRegisterModel

Click **PonRegsiterModel**. See the figure.



◆ Set

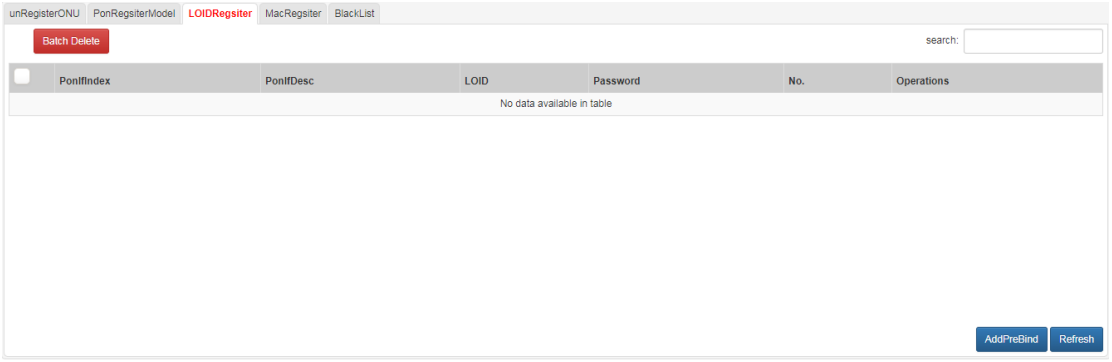
Click **Set** and see the following pop-up.



Select one mode to set.

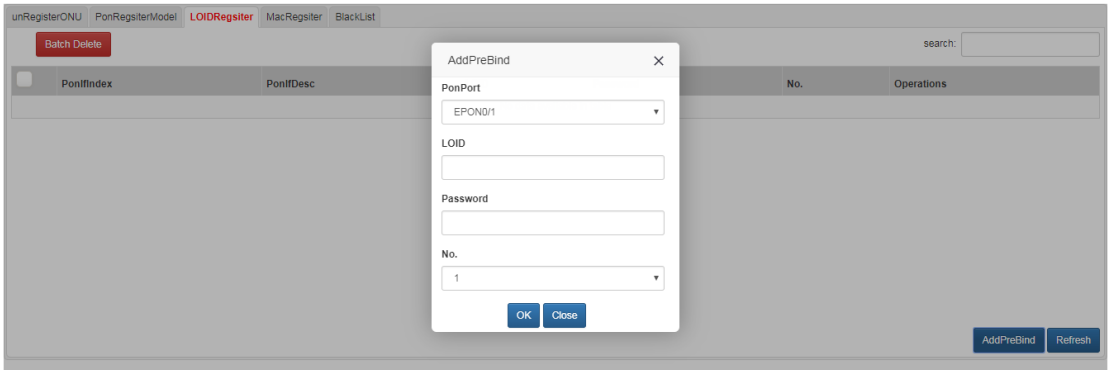
6.2.12.3 LOIDRegister

Click **LOIDRegister**, and see the interface.



◆ Add

Click **AddPreBind** to add.

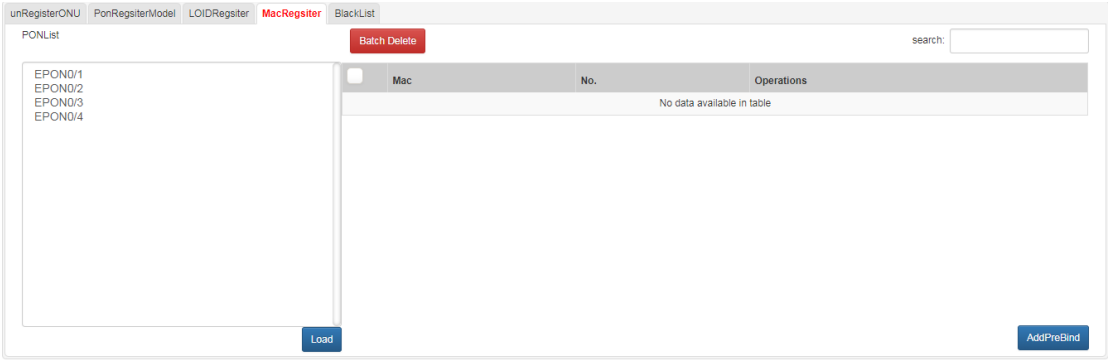


◆ Delete

Click **Delete** or **Batch Delete** in **Operation**.

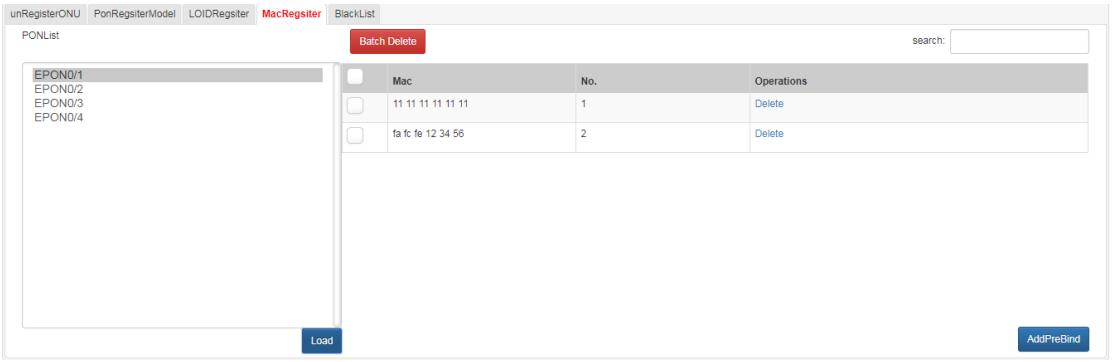
6.2.12.4 MACRegister

Click **MACRegister** to shift the following interface.



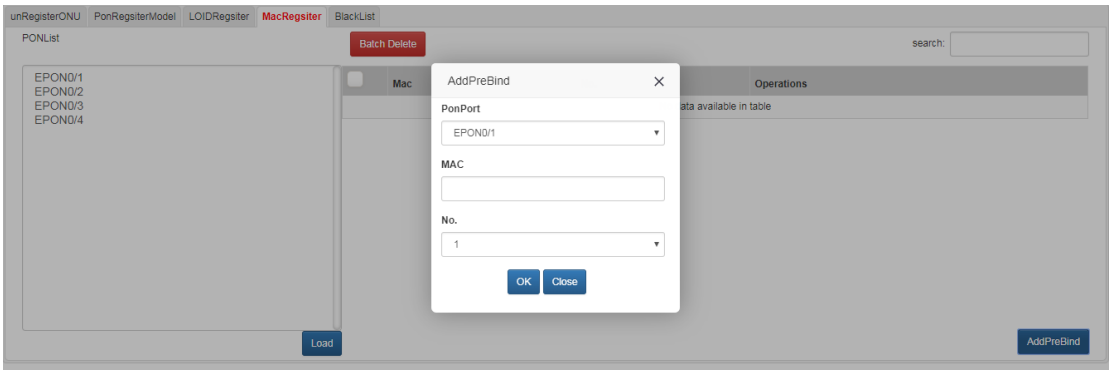
◆ Load

Select PON in **PONList**, and click **Load** to check the bound ONU.



◆ Add

Click **AddPreBind** to add.

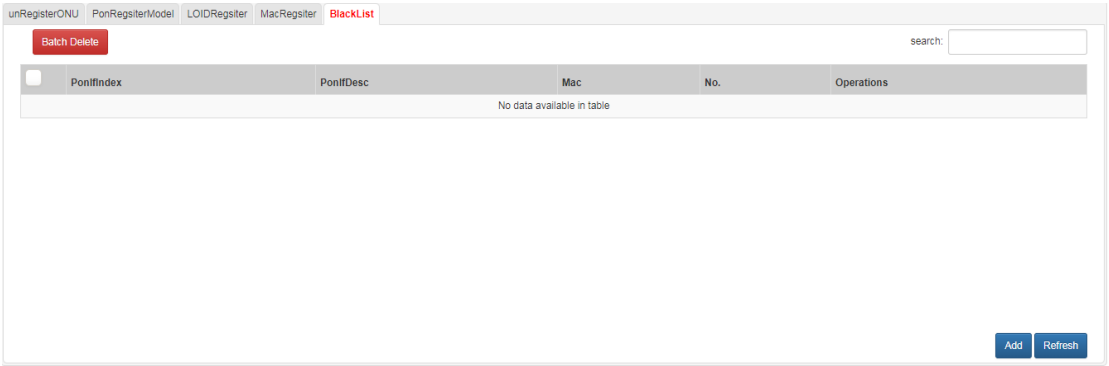


◆ Delete

Click **Delete** or **Batch Delete** in **Operation**.

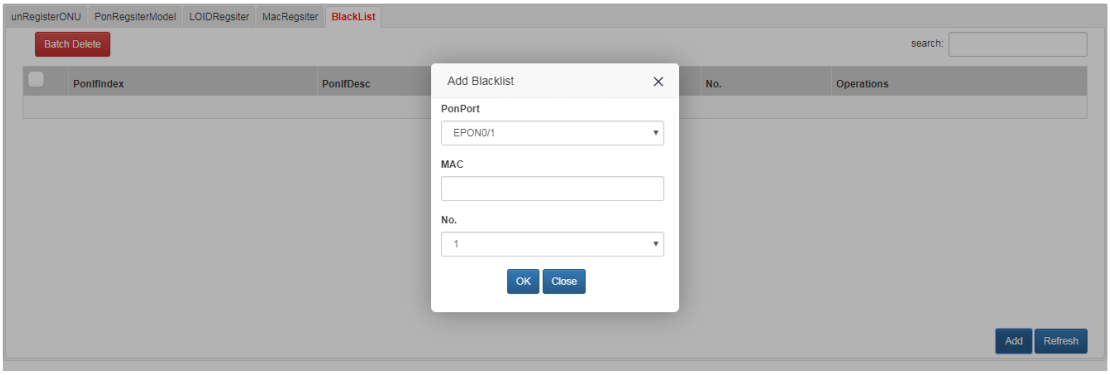
6.2.12.5 BlackList

Click **BlackList**.



◆ Add

Click **Add** to add.



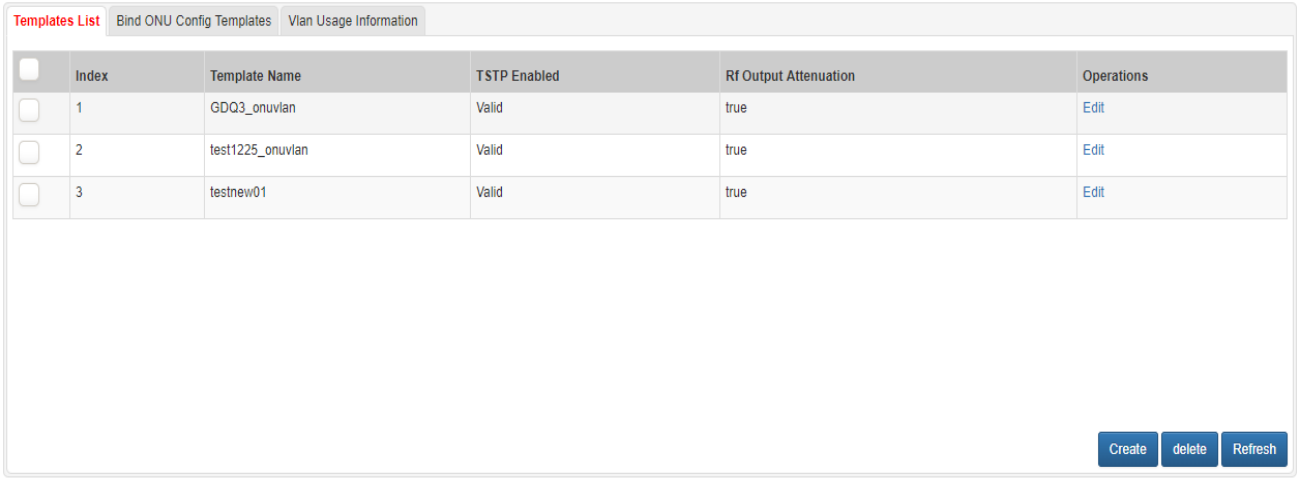
6.2.13 ACL Config And Application

Please refer to section 6.1.9.

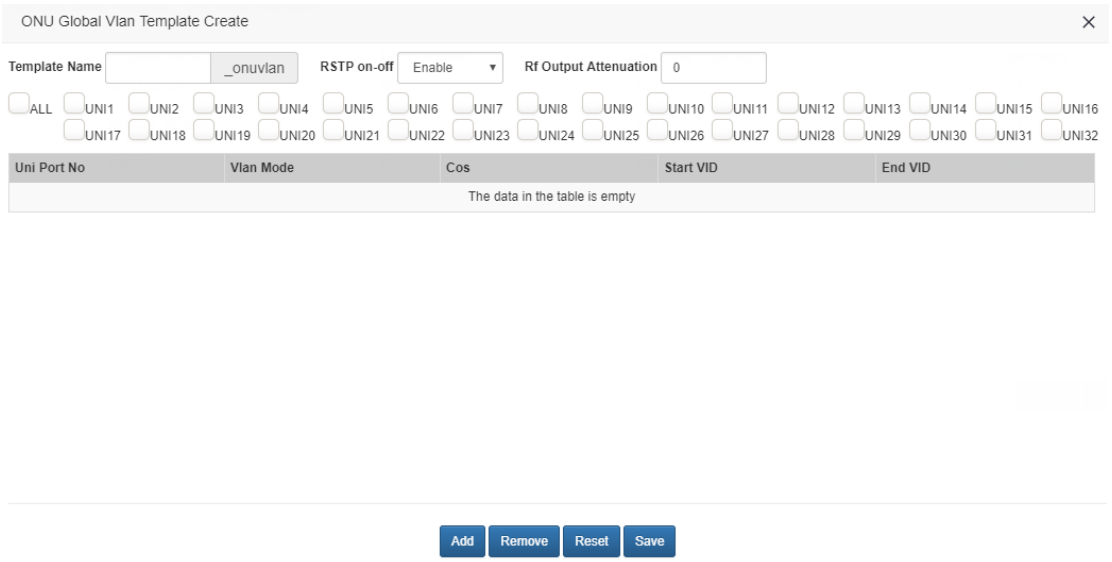
6.2.14 ONU Global Vlan Config Template

6.2.14.1 Templates List

Click **Templates List** to enter the interface. See the figure.



- Create template
  Click **Create** to enter the following interface.



Input **Template Name**, select **UNI**, and click **Add**. The selected UNI port will be added to the middle table of the page. **Remove** can delete the selected line in the form(The operation is not saved at this time.). **Reset** can reset the interface into no added data state. **Save** will save all operation.

- Edit

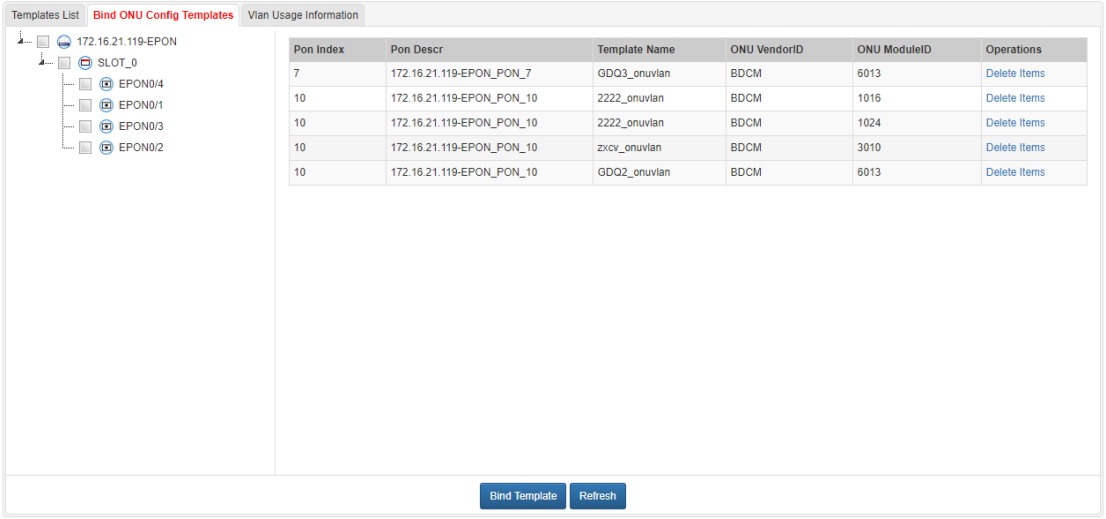
  Select one line in **TemplateList**, and click **Edit** to enable the edition interface, the same operation as **Create**.

- Delete

  Select one or more items and click **Delete** to delete it.

6.2.14.2 Bind ONU Config Templates

Click **Bind ONU Config Templates** on top left to enable the interface. See the figure.



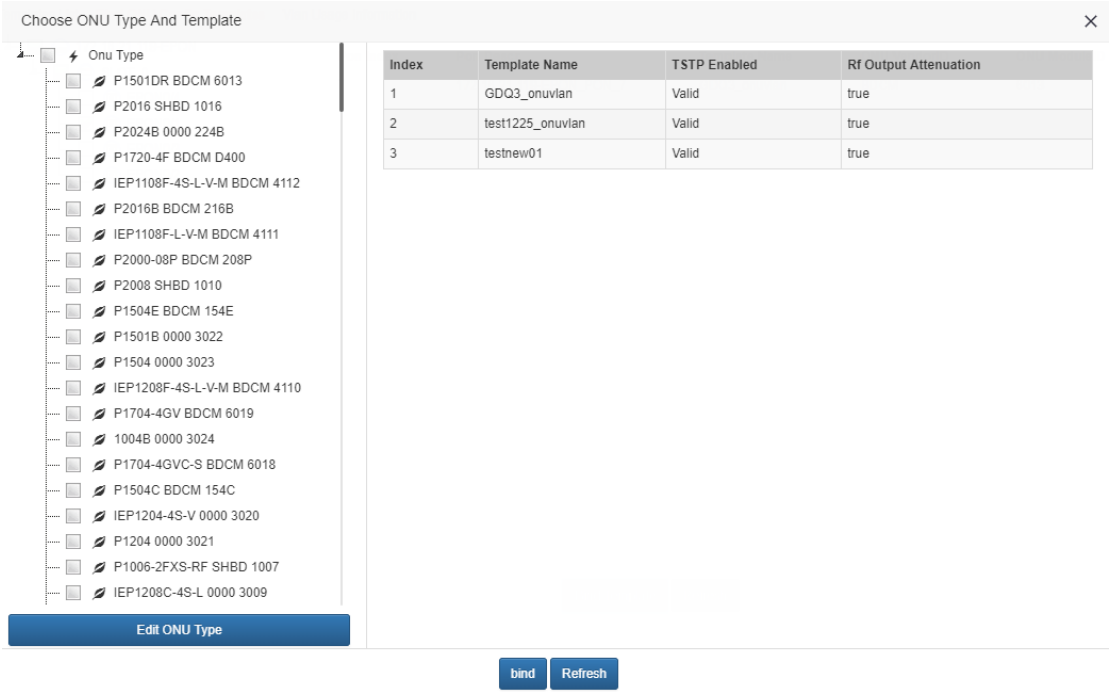
- Check bound templates

  During the initialization of **Bind ONU Config Templates**, all bound templates of PON are displayed. Click PON in the left tree node to display the bound template of the selected

PON.

- Bind

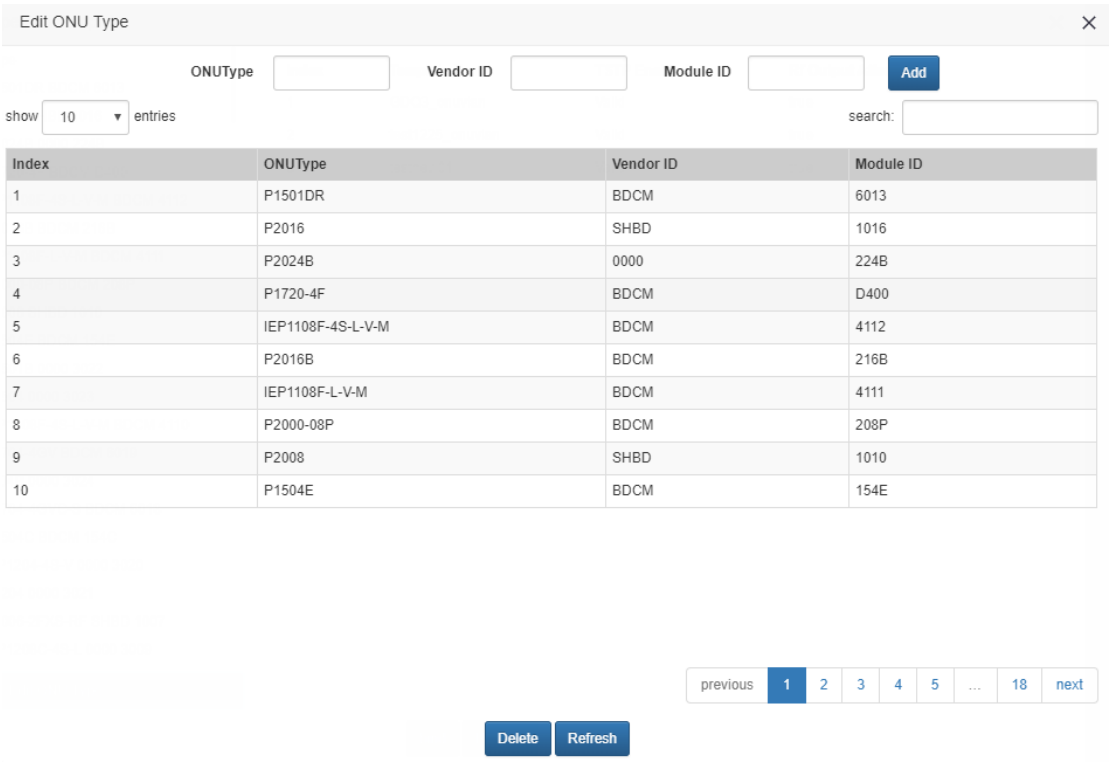
Select at least one PON on the left tree. Click **bind**.



Select at least one of the ONU types on the left, select one right template and click **bind**. The corresponding ONU type of the selected PON can be successfully bound to the template.

- Edit ONU Type

Select **ONUType** and click **Edit ONU Type** to enable the interface. See the figure.



◆ Add

Enter **ONUType**, **Vendor ID**, **Module ID** and click **Add**.

- Delete

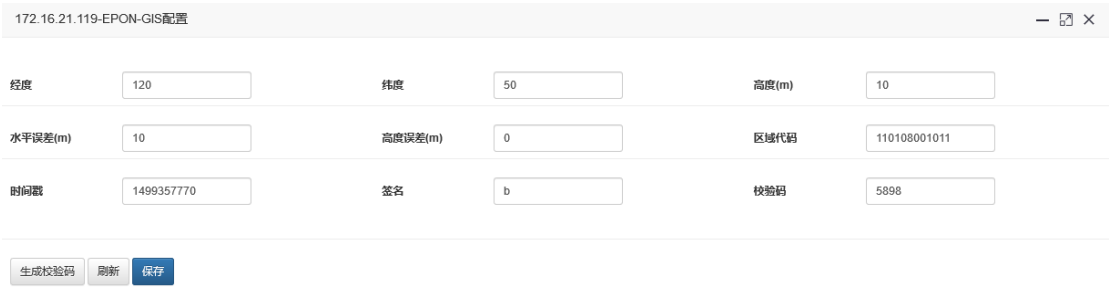
  Select the ONU type to be deleted(ctrl+left-click to select more) and click **Delete**.

6.2.14.3 Vlan Usage Information

Click **Vlan Usage Information** to enable the interface to check the bound templates.

6.2.15 GIS Config

Through this function, GIS can be configured. The configuration interface is shown in the following.

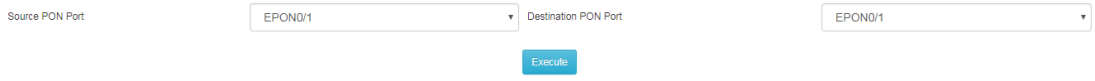


6.2.16 Static Route Config

Please refer to section 6.1.15.

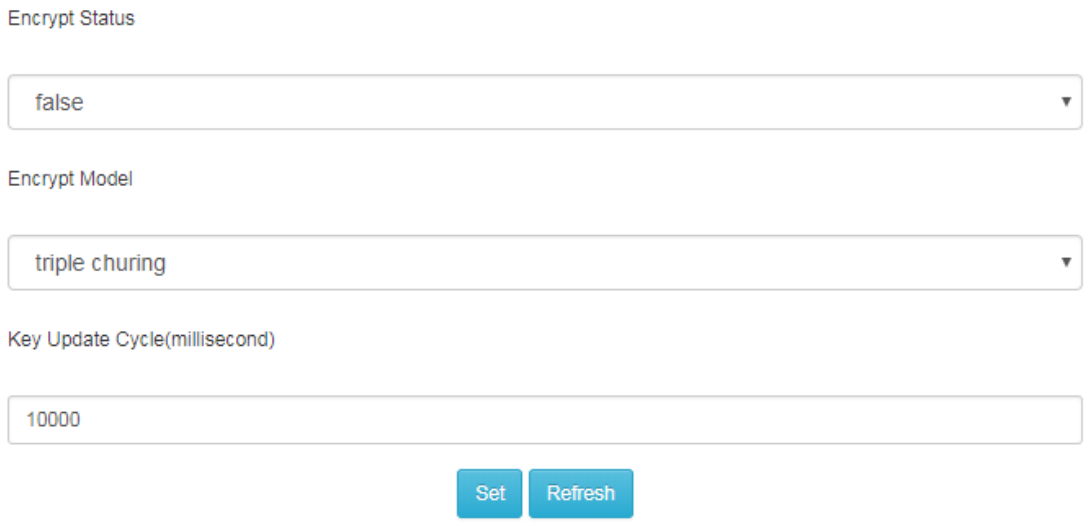
6.2.17 PON Port Cleft Grafting

Select **Source PON Port** and **Destination PON Port**. Click **Execute**.



6.2.18 OLT Encryption Config

Select **Encrypt State** and **Encrypt Model**, refresh **Key Update Cycle** and click **Set**.



6.2.19 Switch PON Port Monitor

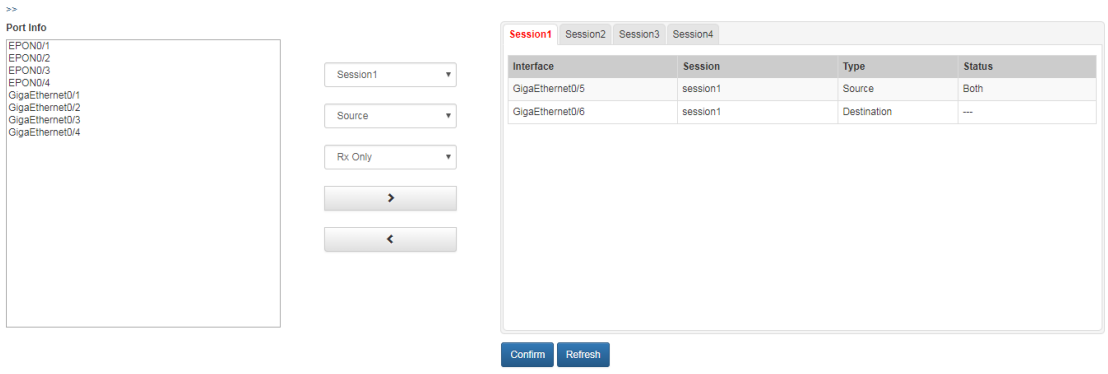
Please refer to section 6.1.4.

6.2.20 STP Config

Please refer to section 6.1.13.

6.2.21 OLT Port Mirror

Select **OLT Port Mirror**. See the interface.



Session, **Type**, **Status** are drop-down selection boxes.

Session: four types: Session1, Session2, Session3, Session4; Type: **Source**—the current original port, **Destination**— destination port to which the configuration port information is copied; **Status**: **Rx Only**—Only the mirror receiving port configures information, **Tx Only**—Only the mirror sending port configure information, **Both**—both have 3 definitions.

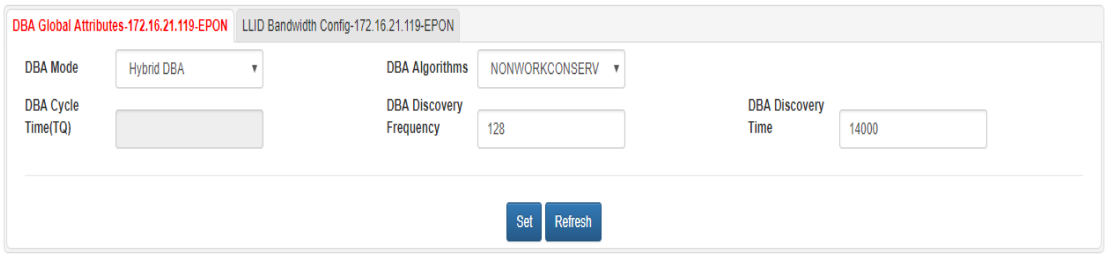
Multiple port information can be configured as source port information, while only one can be destination port, that is, the destination port copies the configuration information for multiple source ports. **Session1,2, 3, 4** represent that the device supports such four configuration rules at most.

6.2.22 DBA Config

DBA is a mechanism for the dynamic allocation of uplink bandwidth within a time interval of "microseconds or milliseconds". EPON's DBA setting is the upstream flow for each ONU.

6.2.22.1 DBA Global Attributes-172.16.21.119-EPON

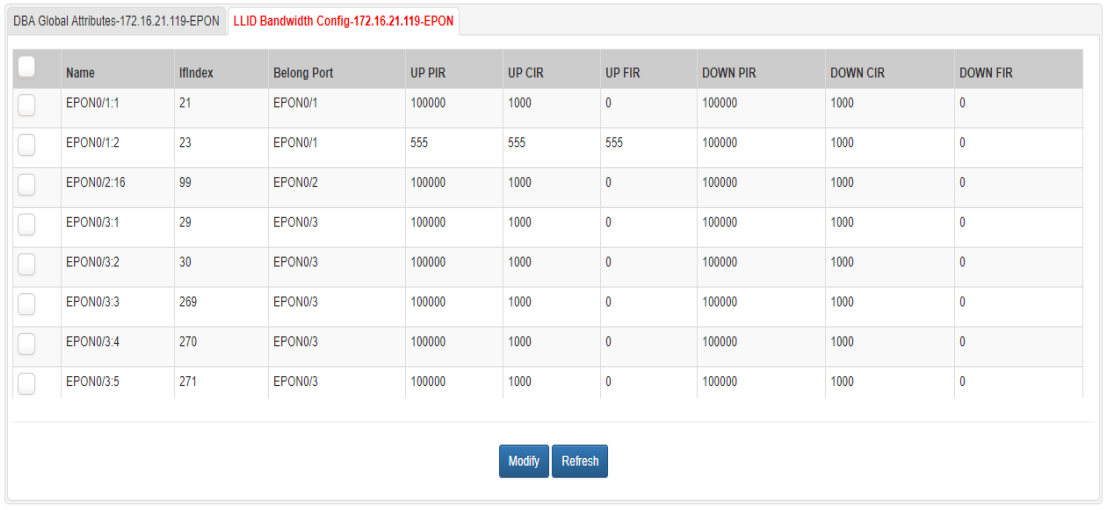
As is shown in the following figure.



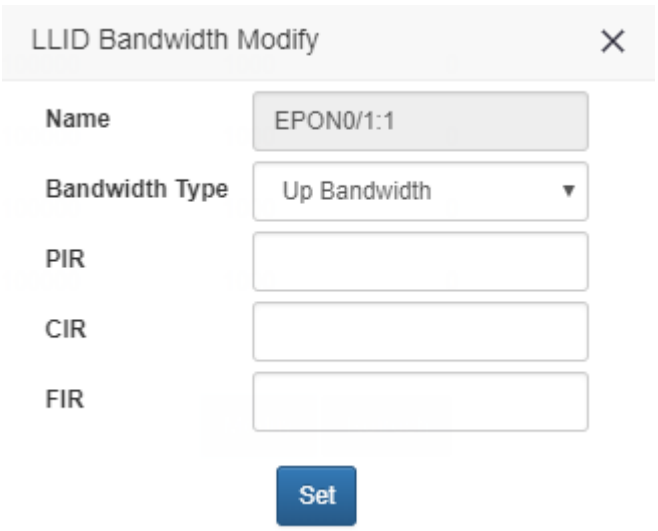
The above figure shows the global attributes of OLT DBA. Click **Set** to configure the attributes; **Refresh** to retrieve the latest value from the device. During configuration, when DBA Mode is set as **Hybird DBA** and **Software DBA with dynamic cycletime**, **DBA Cycle Time** cannot be configured.

6.2.22.2 LLID Bandwidth Config-172.16.21.119-EPON

Click **LLID Bandwidth Config**, and see the figure.



Select one or more items, click **Modify** and the following figure will pop up.



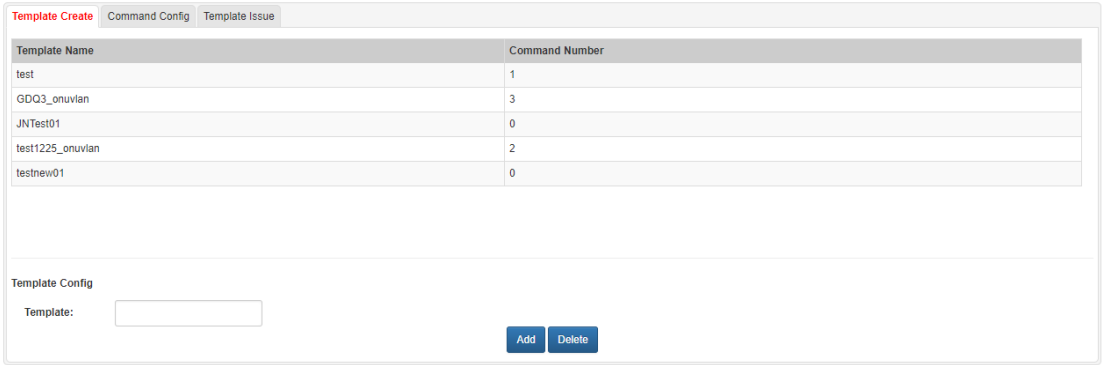
Bandwidth Type, **CIR** and **FIR** can be modified. If **DBA Mode** is **Hardware DBA**, **FIR** cannot be modified. Select **Bandwidth Type**: **Up Bandwidth/Down Bandwidth**. Click **Set**. Normally, the interface will be shut down.

6.2.23 Syslog Server Config

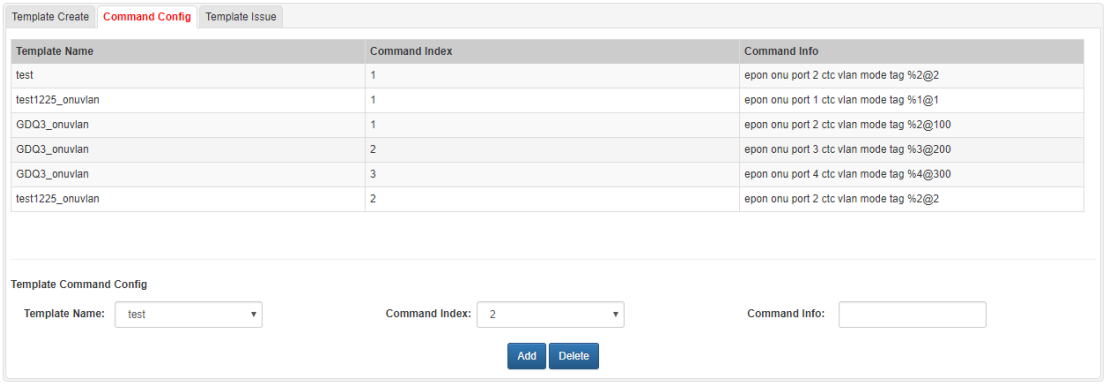
Please refer to section 6.1.14.

6.2.24 ONU Configure Template

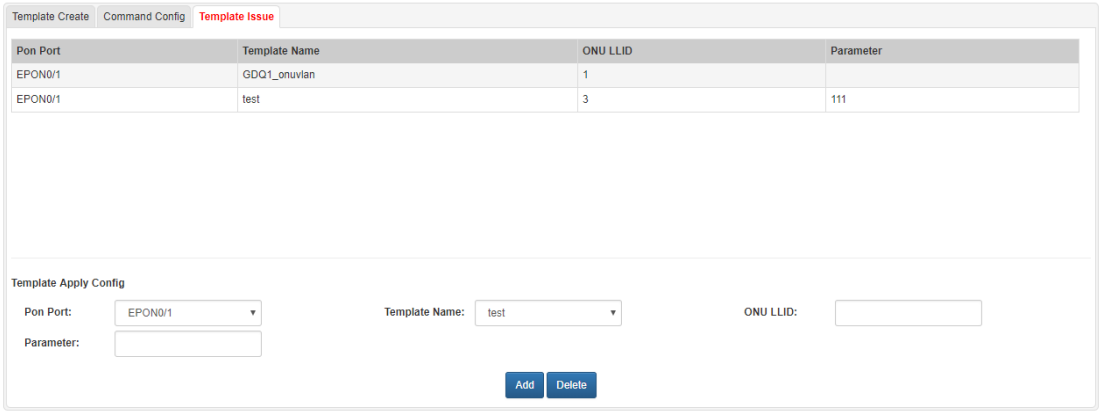
Click **ONU Configure Template**, and select **Template Create**. Set **Template Name** as **test**, click **Add** to add the template to the list. Select the test template line and click **delete** to delete the template. See the figure.



Click **Command Config**, select **test** in the **Template Name** drop-down selection box, fill in the command in **Template** textbox. Click **Add** to add the command into the list. Select the item and click **Delete**. See the following figure.



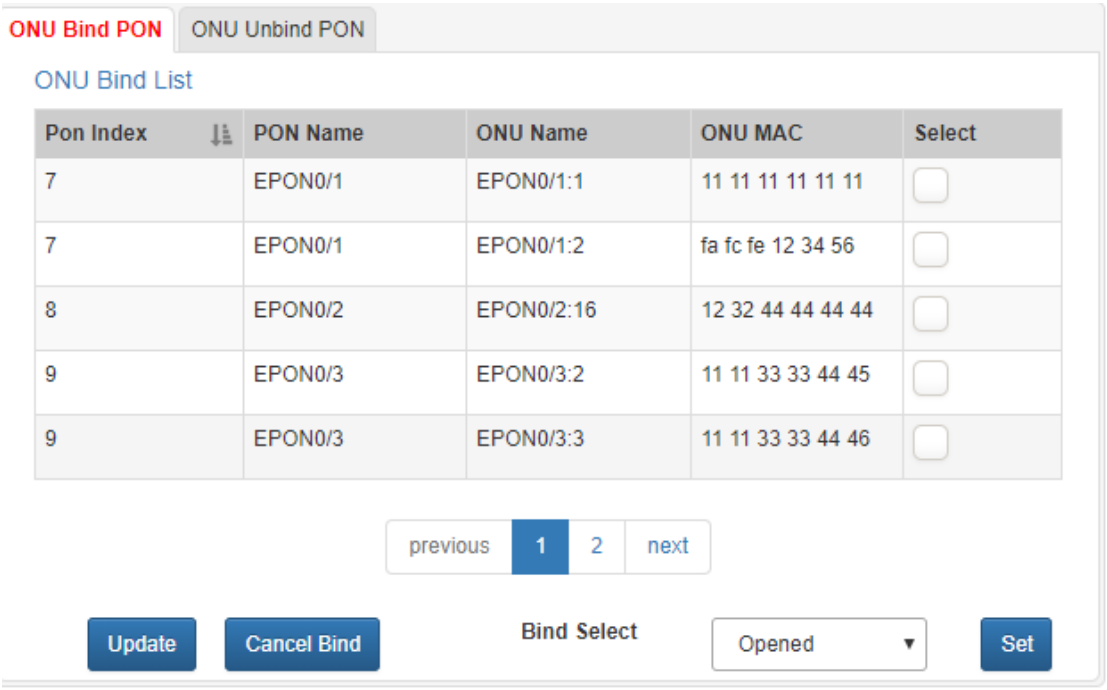
Click **Template Issue**, select one template in the apply list. Fill in the text to be modified in **Template Apply Config**. Click **Modify** to finish the modification. If you click **Add** after filling in information in **Template Apply Config**, the information will be added into the apply list. Click the certain item, click **Delete** to delete it. See the figure.



In **Parameter** textbox, fill in the parameters required by the command in **Command Config**.

6.2.25 ONU Bind PON

In **ONU Bind PON** are static ONUs. If ONU is offline, the bind will not be cancelled. Unbound ONU are dynamic. If ONU is offline, the bond will be cancelled. So you can bind ONU or cancel directly the bind.

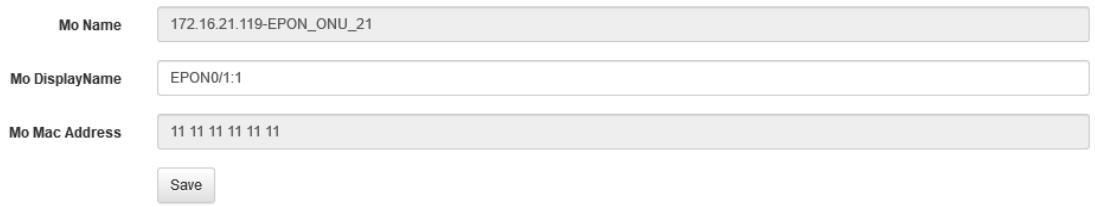


6.2.26 Port Protect Group

Please refer to section 6.1.8.

6.2.27 ONU Managed Object Attribute

It is used in modifying **Mo Name**. The interface is shown in the following. Click **Save** to save.



6.2.28 ONU Ranging

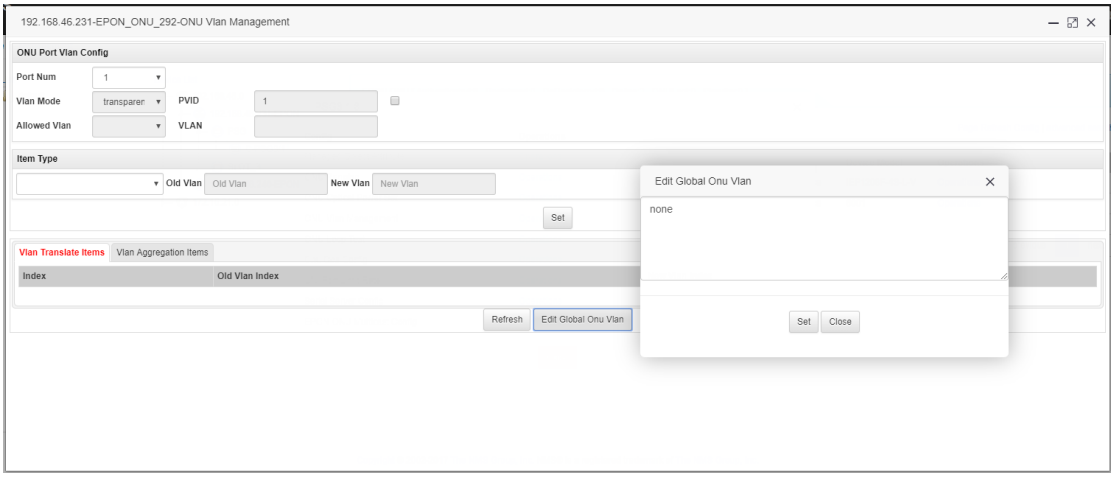
Display the page to present the distance between the selected ONU and OLT, as well as ONU state. Click **Refresh** to refresh.

6.2.29 ONU Optical Power Set

Refer to **ONU Optical Power Set** for details.

6.2.30 ONU Vlan Management

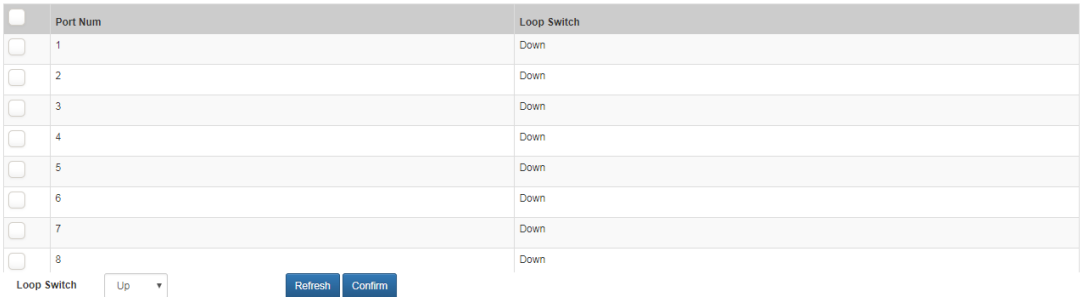
It is used to configure ONU Port Vlan, including **Vlan Mode**, Vlan value in trunk, as well as the deletion and addition of **Vlan Translate Items** and **Vlan Aggregation Items**. **Edit Global Onu Vlan** is also supported.



Based on your needs, configure ONU Port Vlan and delete or add **Vlan Translate Items** and **Vlan Aggregation Items**.

6.2.31 ONU Loop Test

Select **ONU Loop Test**. See the figure.



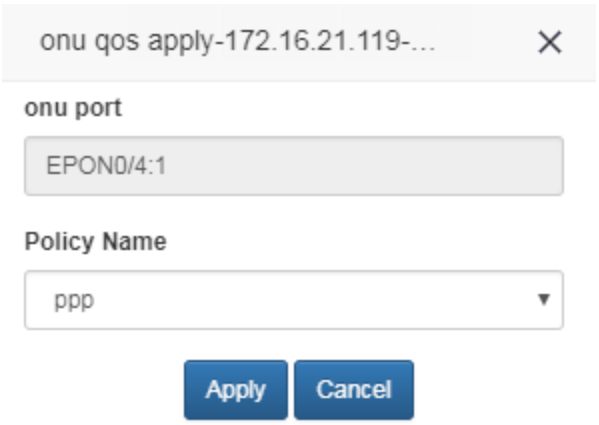
Set **Loop Switch** as Up or Down.

6.2.32 ONU QoS Config

Display the interface to configure **ONU QoS Apply** and **UNI Port QoS Apply**.

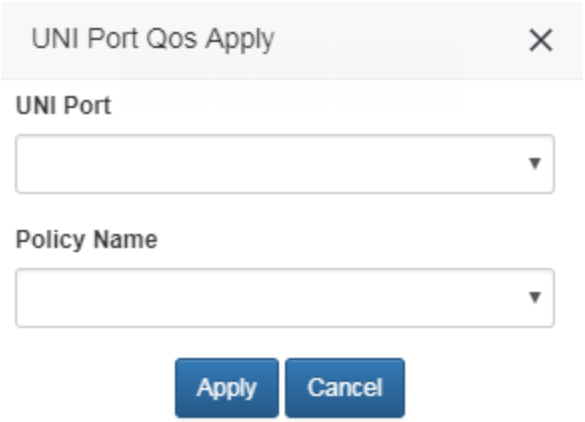
ONU Qos Apply:

Click **Add**, select **Policy Name** and click **Apply**. See the figure.



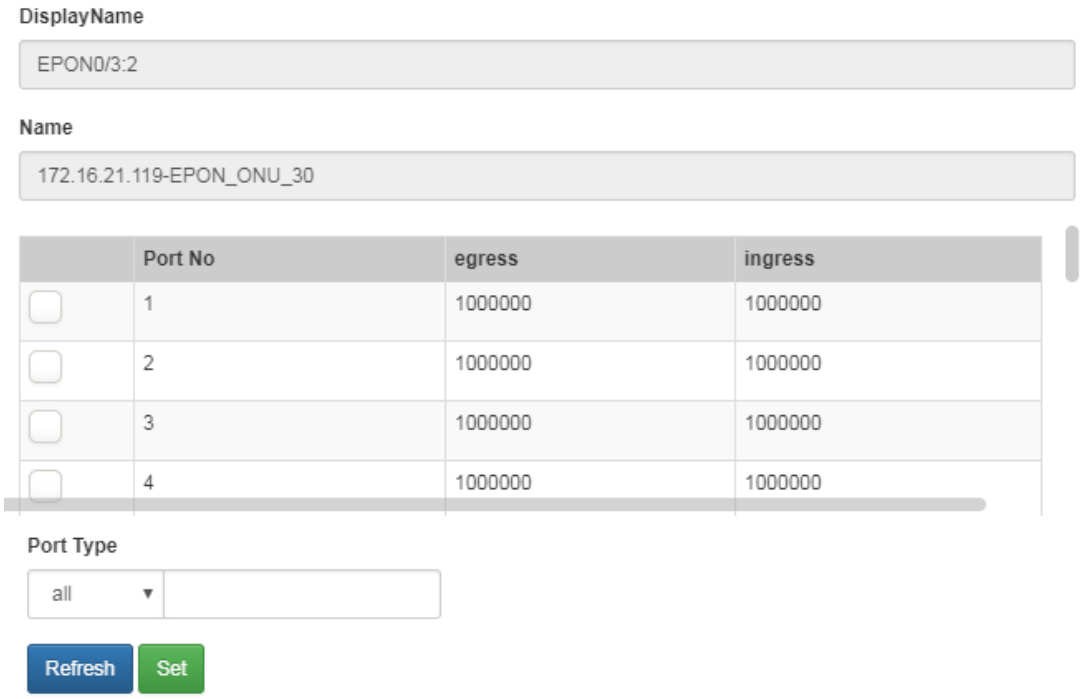
UNI Port Qos Apply:

Click **Add**, select **UNI Port** and **Policy Name** and click **Apply**. See the figure.



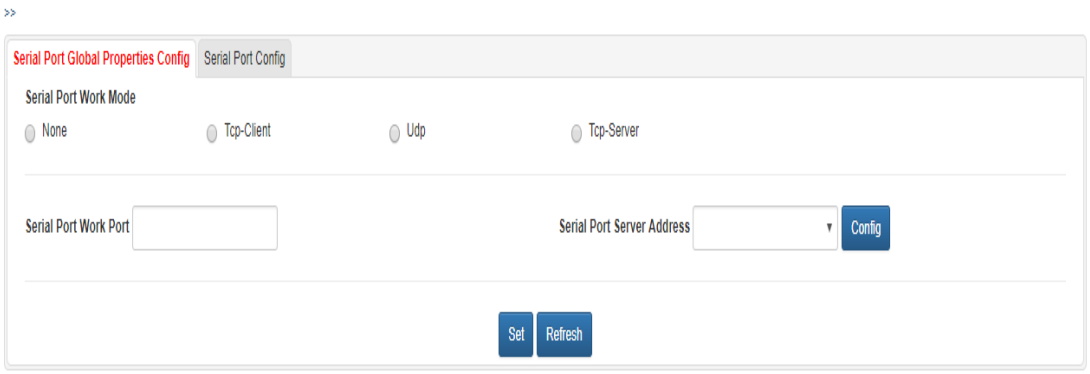
6.2.33 ONU UNI Port Limit Rate

Tick in the first check box, select **Port Type**, fill in setting values and click **Set**. Click **Refresh** to refresh. See the figure.

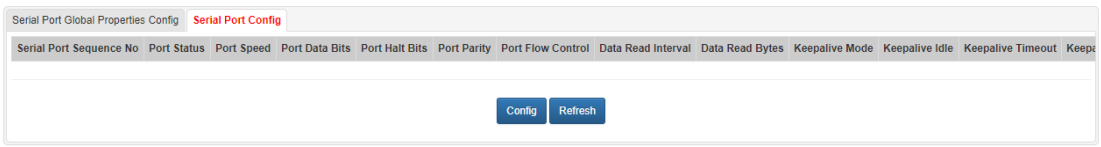


6.2.34 Serial Server Config

OLT serial configuration includes **Serial Port Global Properties Config** and **Serial Port Config**. Click **Serial Port Config** to enable the interface. Select **Serial Port Server Config** in OLT including serial ports to enable the following interface.



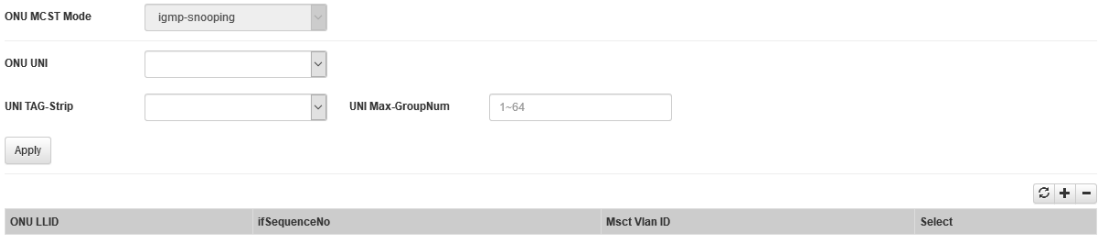
The above are session configuration, aiming at OLT ports. Click **Serial Port Config** to enable the following interface.



Click one line in the form, that is some serial port so as to enable button **Config**. Click **Config** to pop up configuration interface aiming at the serial port.

6.2.35 EPON ONU Multicast Config

EPON ONU Multicast Config is used to set **UNI TAG-Strip** and **UNI Max-GroupNum**. Add Msct Vlan items for ONU. See the figure.



To set the values of **UNI TAG-Strip** and **UNI MAX-GroupNum**, first select one UNI port in **ONU UNI** pull-down list and then fill in **UNI TAG-Strip** and **UNI MAX-GroupNum**. Click **Apply** to send the configuration.

Click + to add Msct Vlan items. Tick the data in the form. Click − to delete it.

6.3 GPON Config

6.3.1 Managed Object Attribute

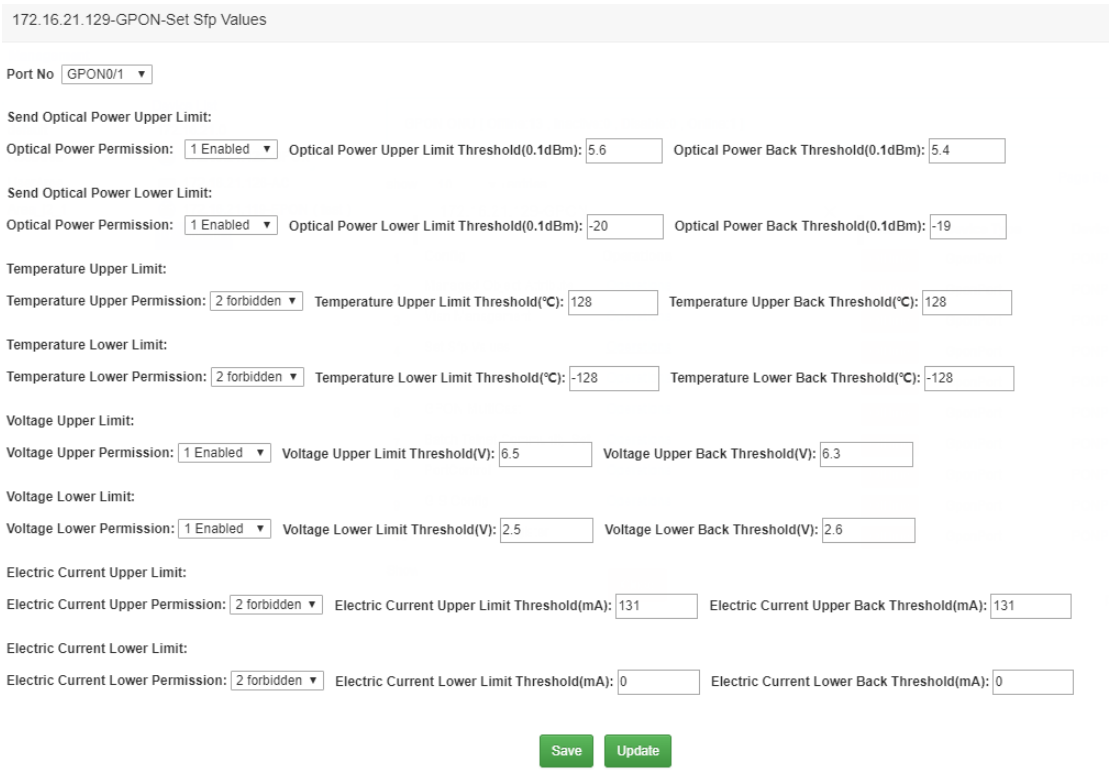
Please refer to section 6.1.1.

6.3.2 Vlan Management

Please refer to section 6.1.2.

6.3.3 GPON-Set Sfp Values

It is mainly used to set Temperature Upper Limit, Voltage Upper Limit, Voltage Lower Limit, Electric Current Upper Limit and Electric Current Lower Limit, enabling NMS to receive alarms. The configuration interface is shown as the following.

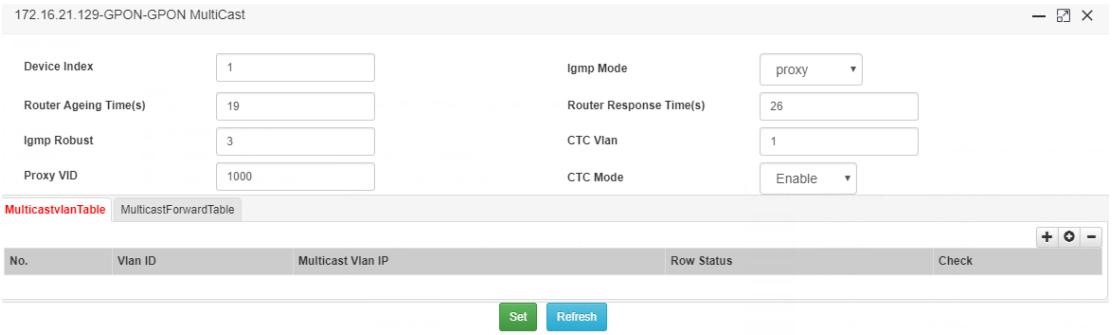


6.3.4 Storm Control

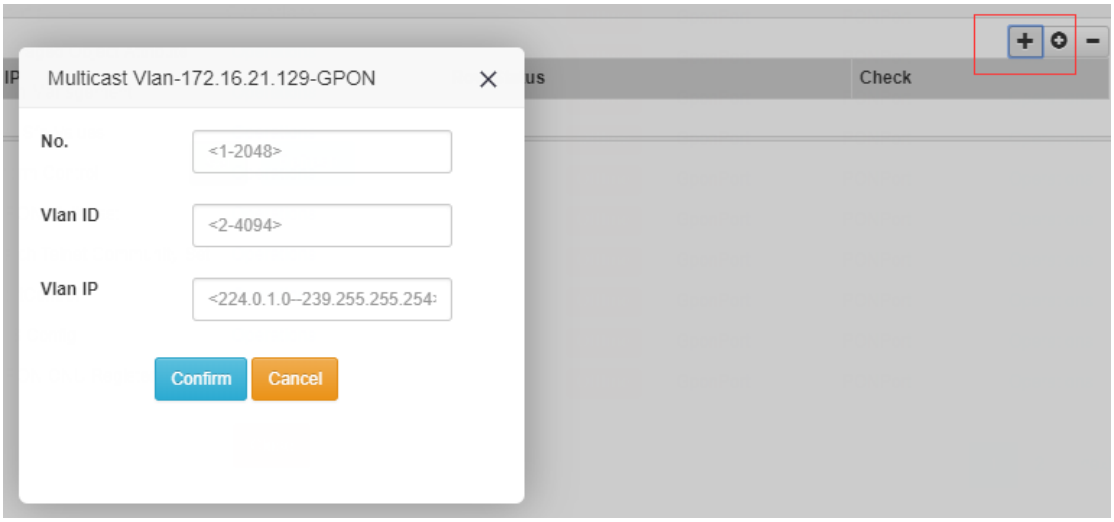
Please refer to section 6.1.5.

6.3.5 GPON MultiCast

The configuration interface is as the following.



Click  on the right to add **Multicast Vlan**.



6.3.6 Batch Telnet Community Set

Please refer to section 6.1.3.

6.3.7 Port Rate Limit

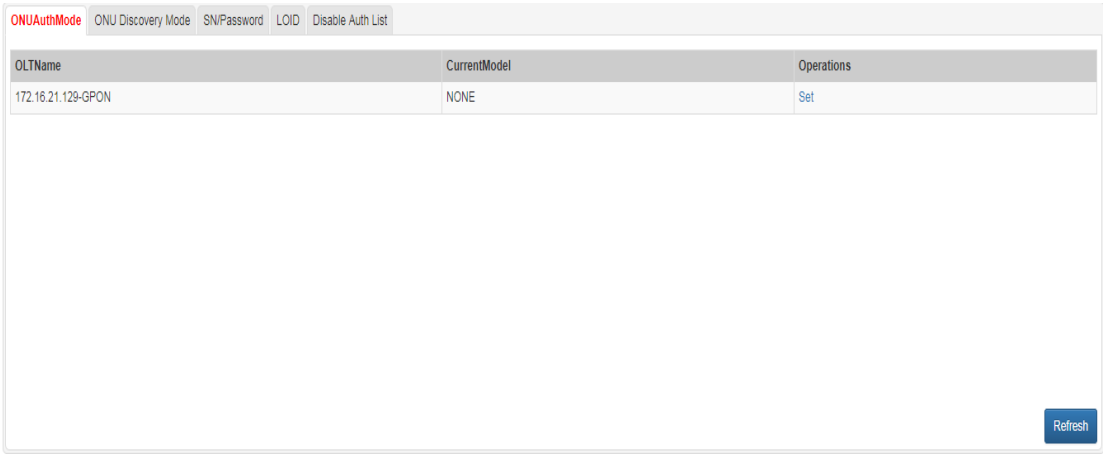
Please refer to section 6.1.6.

6.3.8 GIS Config

Please refer to section 6.2.15.

6.3.9 GPON ONU Register

Click **GPON ONU Register** and the interface is shown in the following.



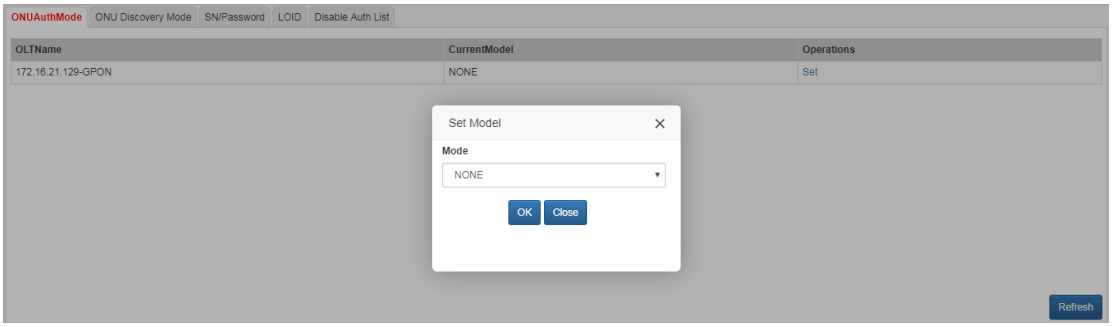
GPON ONU Register includes **ONUAuthMode**, **ONU Discovery Mode**, **SN/Password**, **LOID**, **Disable Auth List**.

6.3.9.1 ONUAuthMode

ONUAuthMode interface is shown in the following.

◆ Set

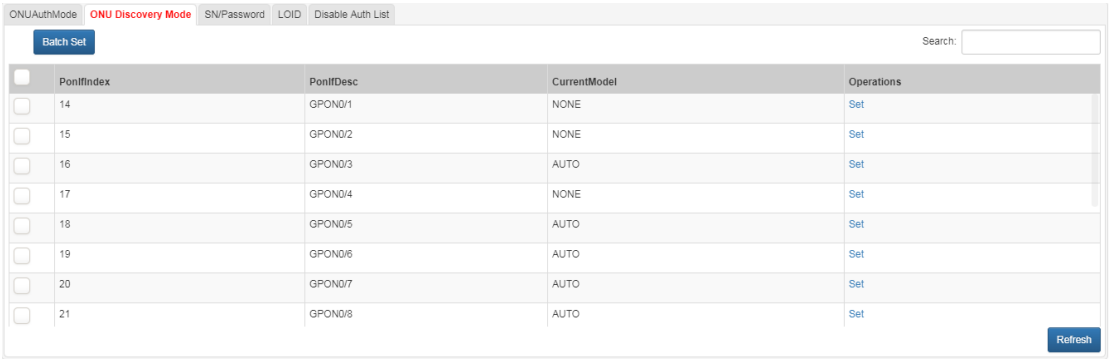
Click **Set** to enable **Set Model**. See the figure.



Mode: **NONE**, **SN**, **SN/PASSWORD**, **LOID**.

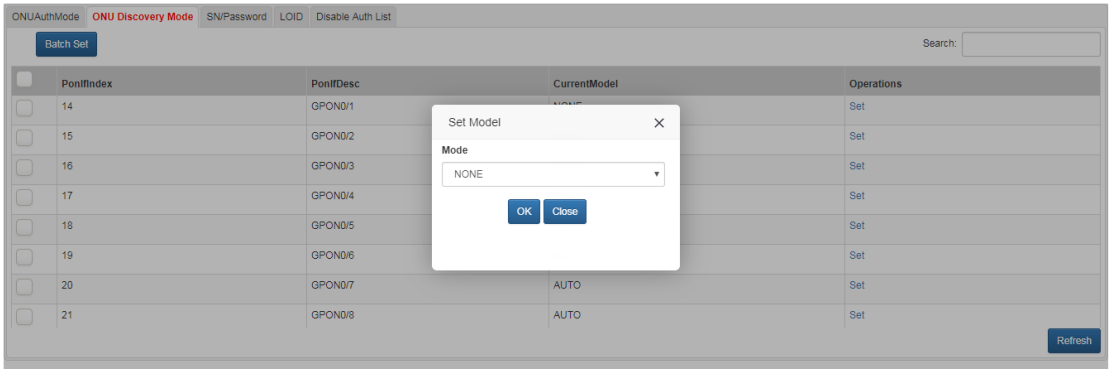
6.3.9.2 ONU Discovery Mode

ONU Discovery Mode interface is shown in the following.



◆ Set

Click **Set** to configure the single pop-up interface.



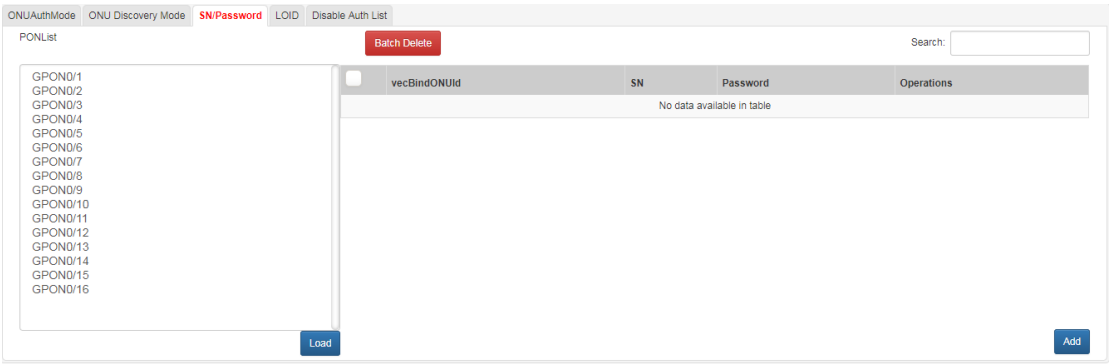
Mode: **NONE, AUTO, MANUAL**.

◆ Batch Set

Tick multiple lines, click **Batch Set.**

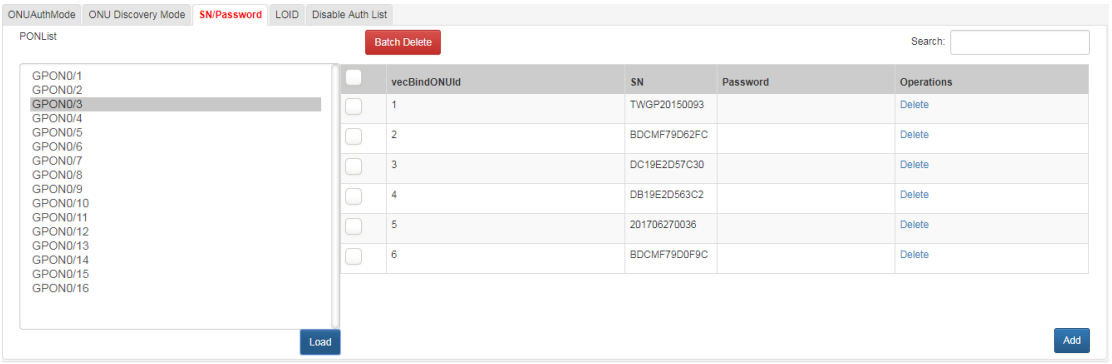
6.3.9.3 SN/Password

click **SN/Password**, see the figure.



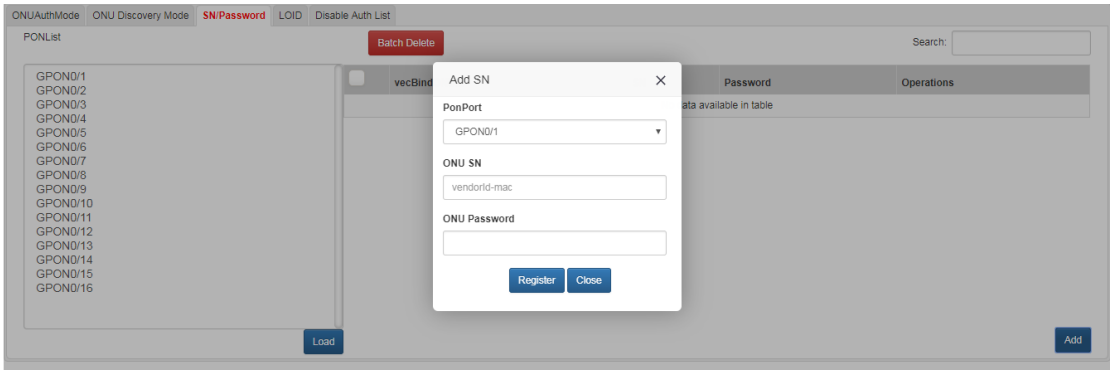
◆ Load

Select one PON in the list. Click Load and ONU bound in the selected PON will be presented in the right form. See the figure.



◆ Add

Click **Add** to pop up the interface.

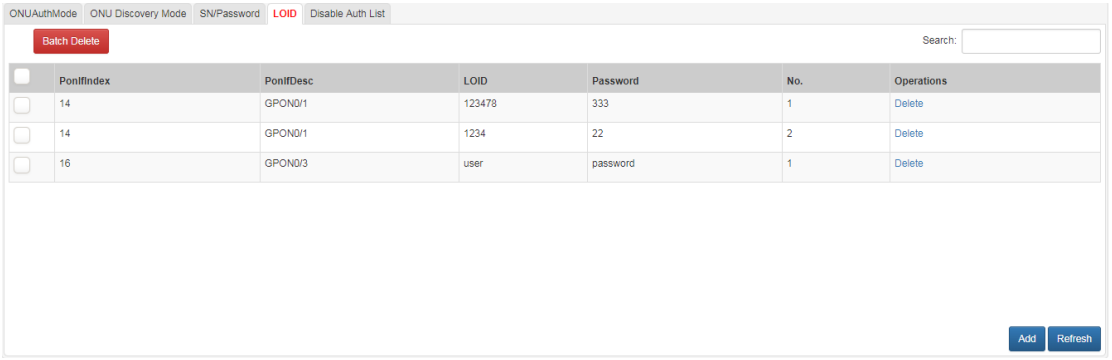


◆ Delete

Click **Delete** in **Operations** or select multiple lines for batch delete.

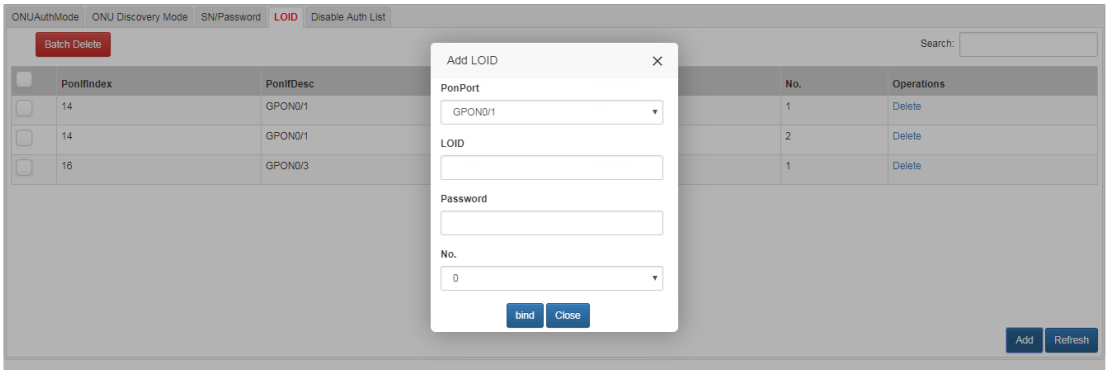
6.3.9.4 LOID

Click **LOID**. See the figure.



◆ Add

Click **Add** to pop up the interface.

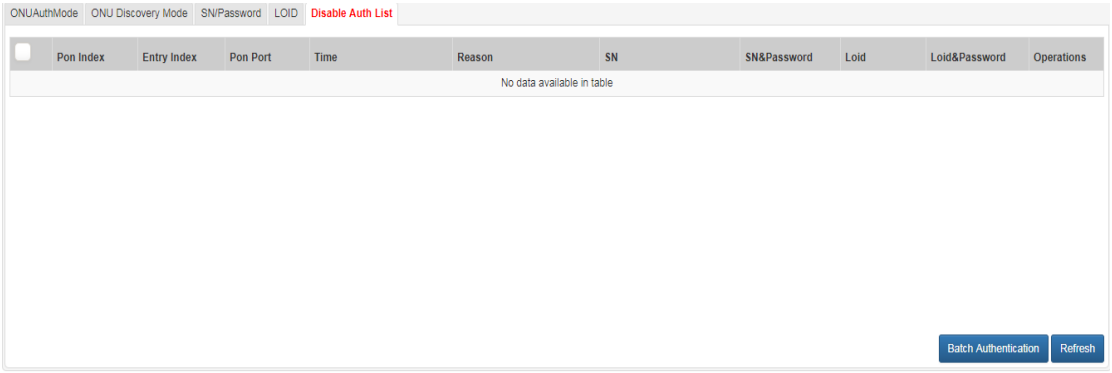


◆ Delete

Click **Delete** in **Operations** or select multiple lines for batch delete.

6.3.9.5 Disable Auth List

Click **Disable Auth List**. See the figure.



◆ Authentication

Click **Authentication** in **Operations** or select multiple lines for **Batch Authentication**.

6.3.10 ACL Config And Application

Please refer to section 6.1.9.

6.3.11 GPON ONU Configure Template

Please refer to section 6.2.24.

6.3.12 Syslog Server Config

Please refer to 6.1.14.

6.3.13 QoS Queue and Scheduling Mode Config

Please refer to section 6.1.10.

6.3.14 QoS Strategy Config

Please refer to section 6.1.11.

6.3.15 QoS Port

Please refer to section 6.1.12.

6.3.16 Static Route Config

Please refer to section 6.1.15.

6.3.17 STP Config

Please refer to section 6.1.13.

6.3.18 OLT Port Mirror

Please refer to section 6.2.21.

6.3.19 Port Protect Group

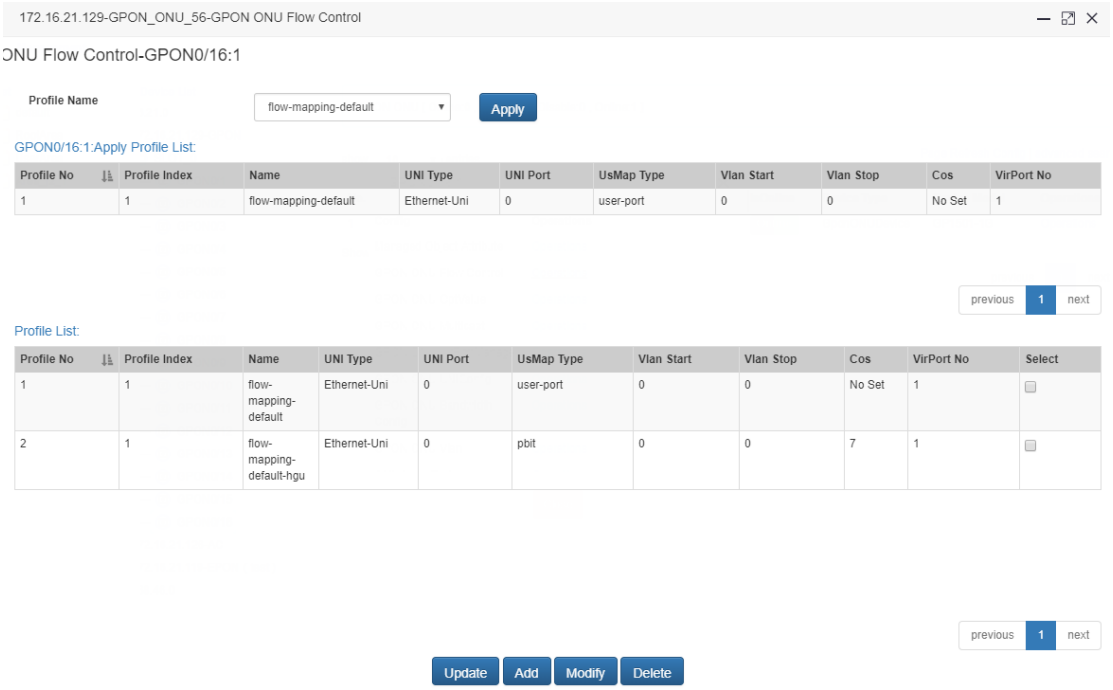
Please refer to section 6.1.8.

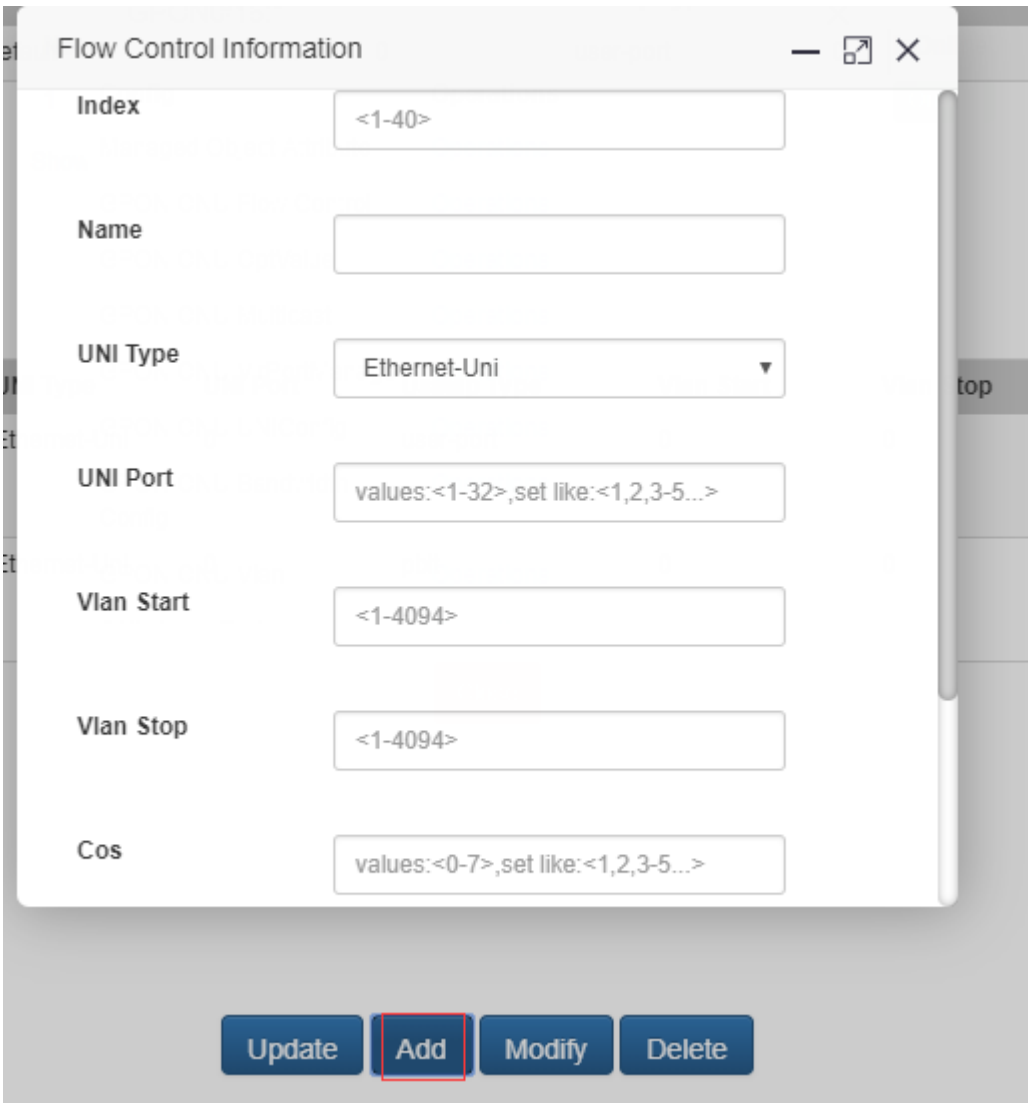
6.3.20 ONU Managed Object Attribute

Please refer to section 6.2.27.

6.3.21 GPON ONU Flow Control

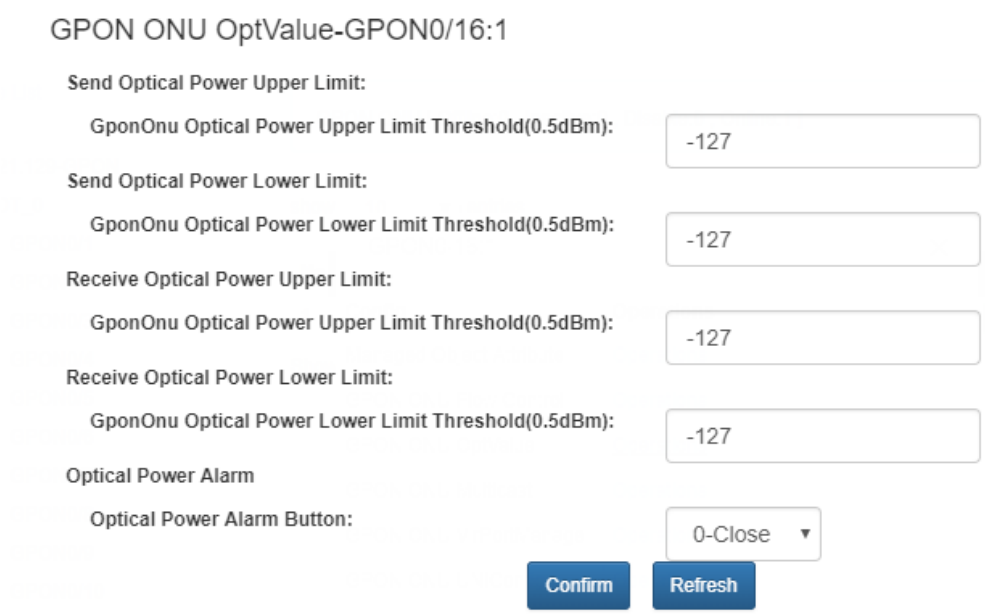
GPON ONU Flow Control takes effect in the form of a configuration file. New configuration files can be created in advance and then applied. See the figure.





6.3.22 GPON ONU OptValue

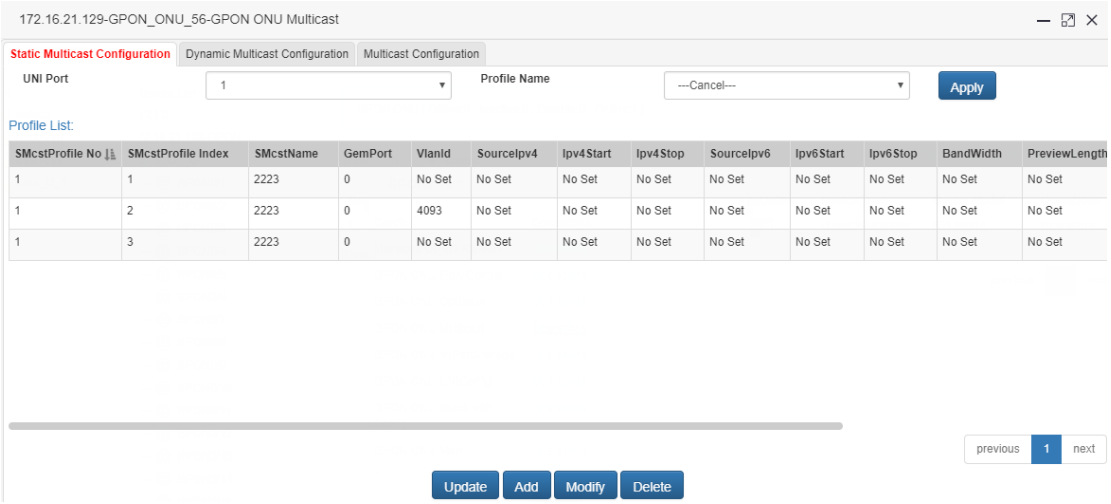
It is used to set **Send/Receive Optical Power Upper/Lower Limit** and **Optical Power Alarm**. The interface is shown below.

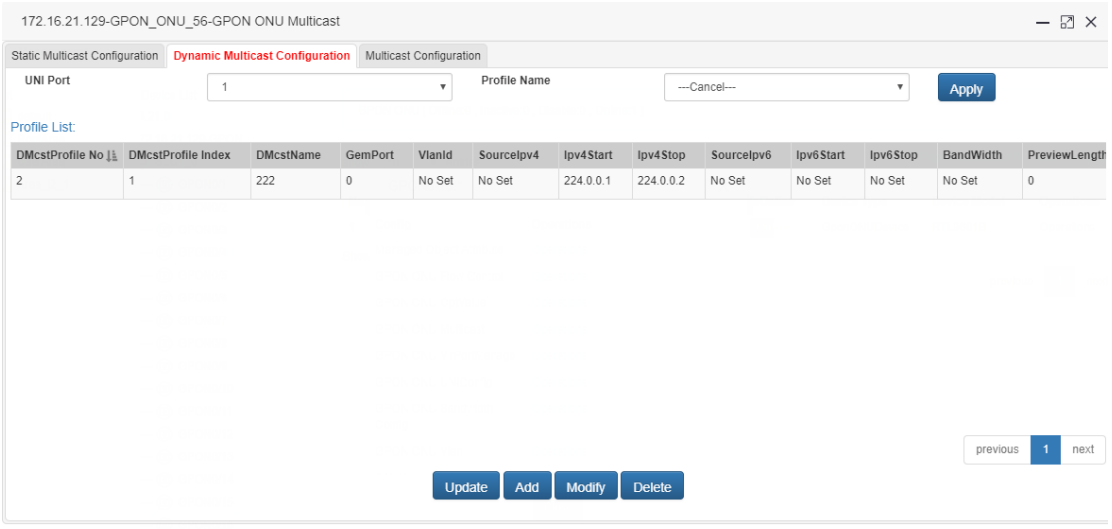


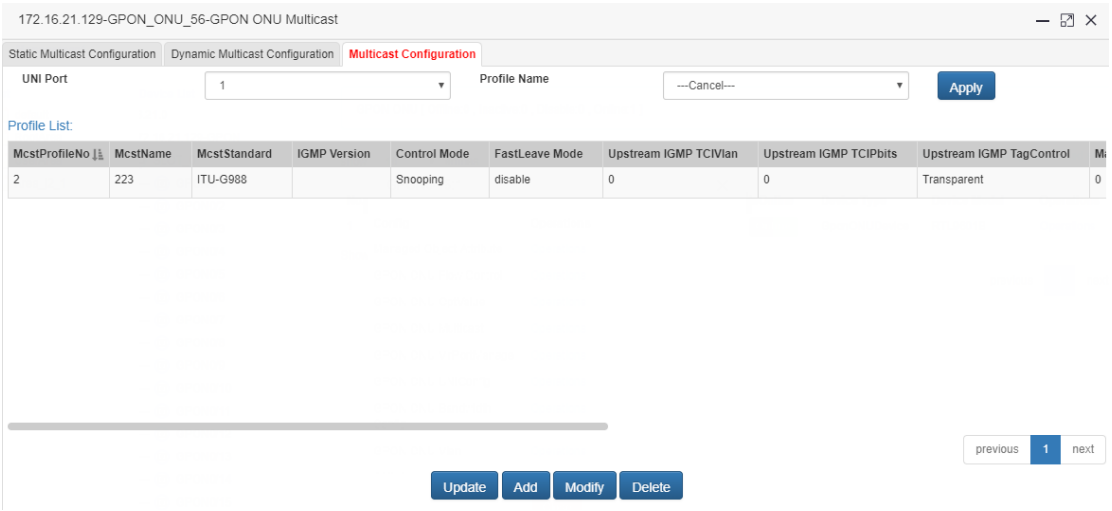
6.3.23 GPON ONU Multicast

GPON ONU Multicast: **Static Multicast Configuration**, **Dynamic Multicast Configuration**, **Multicast Configuration**. The interface is shown below.

First add configured files and then apply it to send multicast configuration.





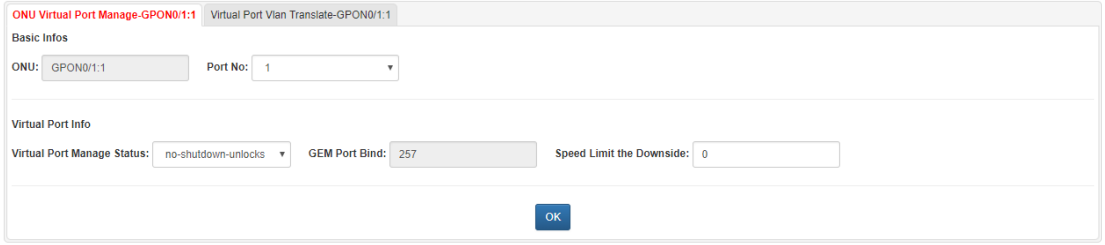


6.3.24 GPON ONU VirPortManage

GPON ONU VirPortManage includes **ONU Virtual Port Manage** and **Virtual PORT Vlan Translate**.

6.3.24.1 ONU Virtual Port Manage

ONU Virtual Port Manage interface is shown below.

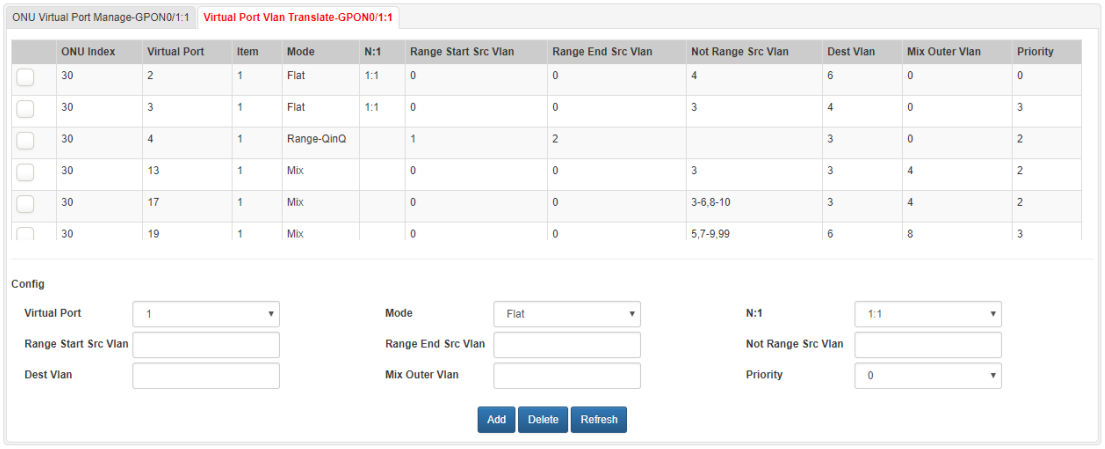


Select **Port No.** and set Vitual Port Manage Status as **no-shutdown-unlocks/shutdown-locks**.

Fill in **Speed Limit the Downside** and click **OK**.

6.3.24.2 Virtual PORT Vlan Translate

Virtual PORT Vlan Translate interface is shown below.



- Add

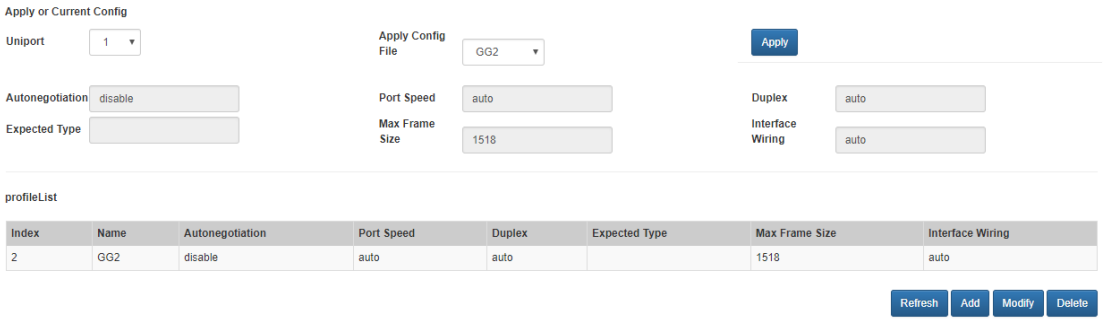
  In the second half of the interface, fill in the information of the virtual port to be added according to the input box. Click **Add** to present the added information in the first half of the interface.

- Delete

  Click the first column selection box to select a row and click **Delete** to delete the item.

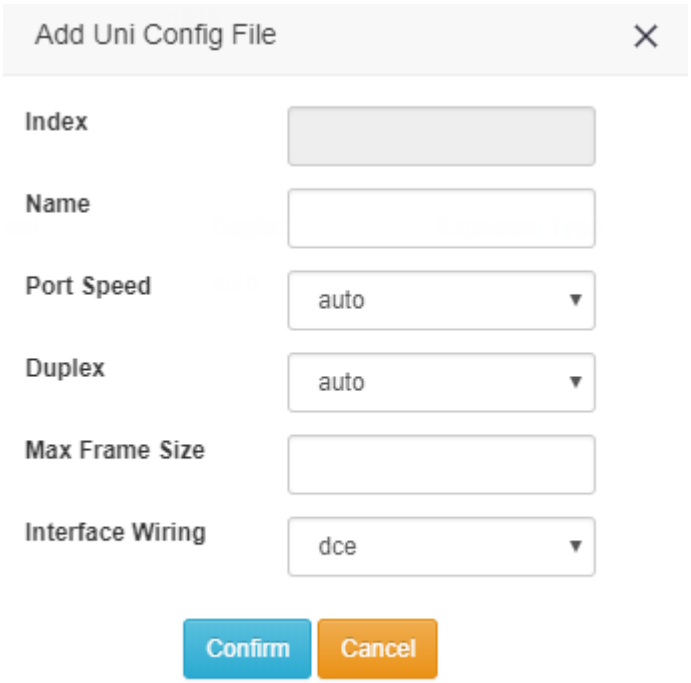
6.3.25 GPON ONU UNIConfig

GPON ONU UNIConfig interface is shown below.



- Add

  Click **Add** to enable the following interface.



Fill in **Name** and configuration basic information. Click **Confirm** to add it. Check it in **Add Uni Config File**.

- Refresh

  Select a row in the configuration file list. Click **Refresh** and the following steps are the same as **Add**.

- Delete

  Select a row in the configuration file list. Click **Delete** to delete it.

- Apply/Current Config

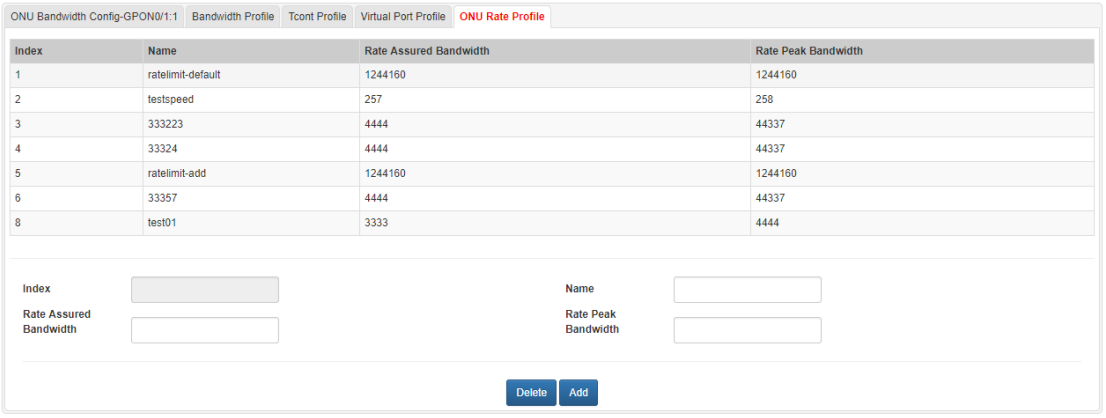
  Select **Uniport** and the configuration file to be applied. Click **Apply** and check its current information.

6.3.26 GPON ONU Bandwidth Config

- **GPON ONU Bandwidth Config** concludes filling in the configuration file and application profile. The overall steps are **ONU Rate Profile** -> **Virtual Port Profile** or **Tcont Profile** -> **Bandwidth Profile** -> **ONU Bandwidth Config**.

6.3.26.1 ONU Rate Profile

Click **ONU Rate Profile** to enable the following interface.



- Add

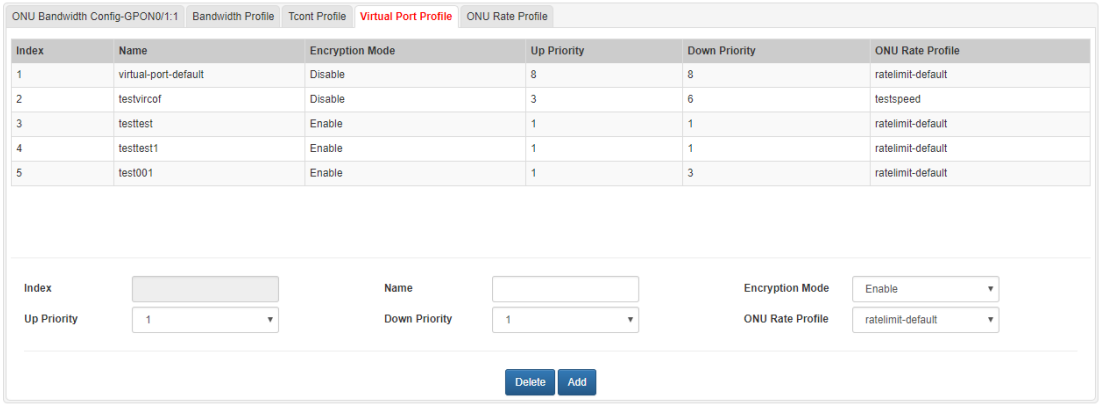
Fill in **Name** in the second half of the interface. And set the rate to ensure the bandwidth and the rate peak bandwidth（Ensure that the bandwidth is not greater than the peak bandwidth.）. Cick Add and it will be shown in the first half.

- Delete

Click the selected row in the list, and click **Delete** to delete it.

6.3.26.2 Virtual Port Profile

Click **Virtual Port Profile** to enable the following interface.



- Add

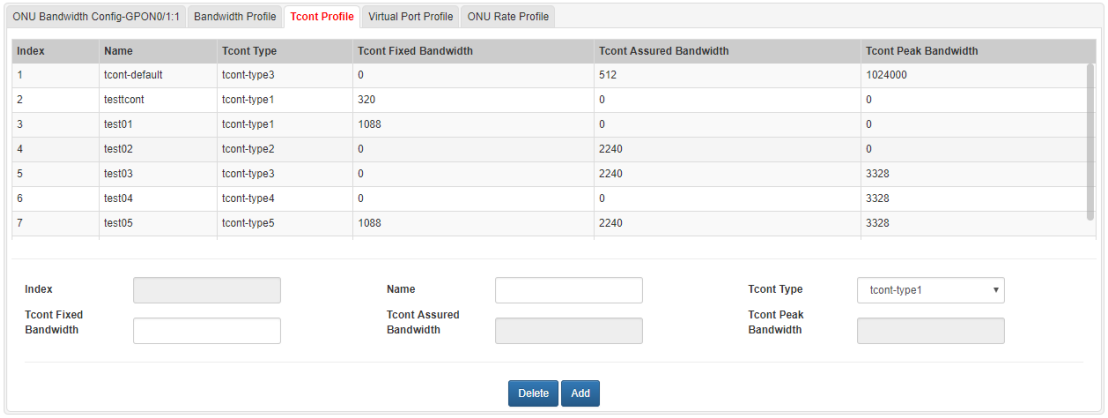
Fill in **Name** in the second half of the interface. Select the configuration items to configure the completed ONU rate profile. Click **Add**.

- Delete

Click the selected row in the list and click **Delete**.

6.3.26.3 Tcont Profile

Click **Tcont Profile** to enable the interface.



- Add

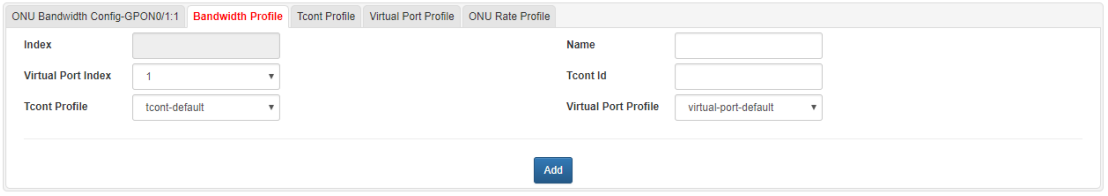
Fill in **Name** in the second half of the interface. Select Tcont Type (Different Tcont Type can be configured with different types of bandwidth). Click Add to add it and it will show up in the first half.

- Delete

Click the selected row in the list and click **Delete**.

6.3.26.4 Bandwidth Profile

Click **Bandwidth Profile** to enable the interface.

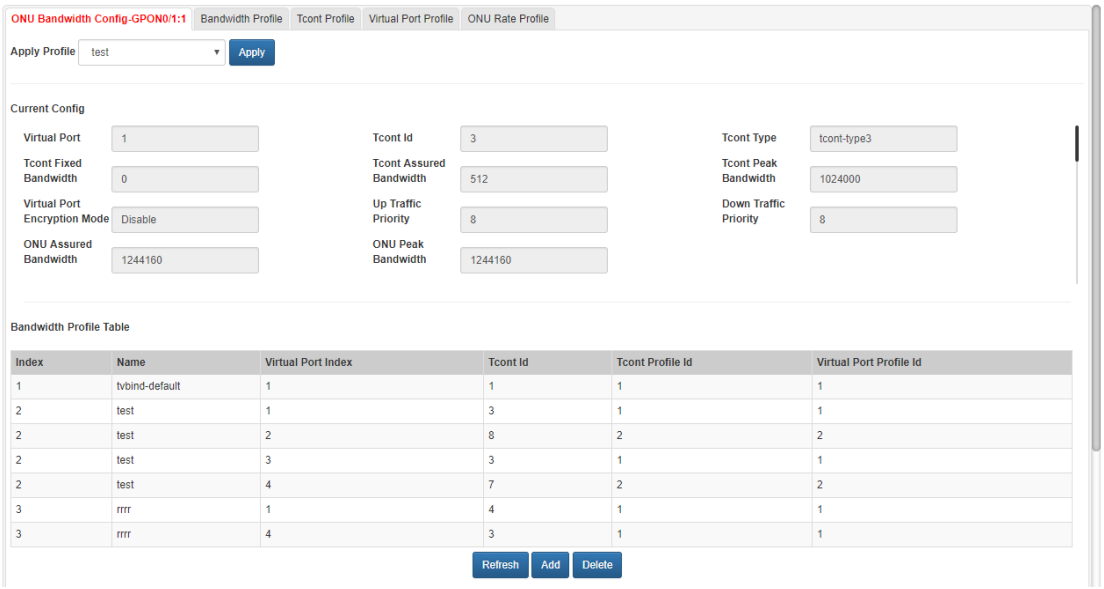


- Add

Fill in **Name**, select **Index**, fill in **Tcont Id (1-8)** and select **Tcont Profile** and **Virtual Port Profile**. Click Add to apply it in **Bandwidth Profile**.

6.3.26.5 ONU Bandwidth Config

Click **ONU Bandwidth Config** to enable the interface below.



- Apply Profile

  Select a bandwidth profile in the top **Apply Profile** selection box and click **Apply**. You can check the state in **Current Config**.

- Bandwidth Profile Table

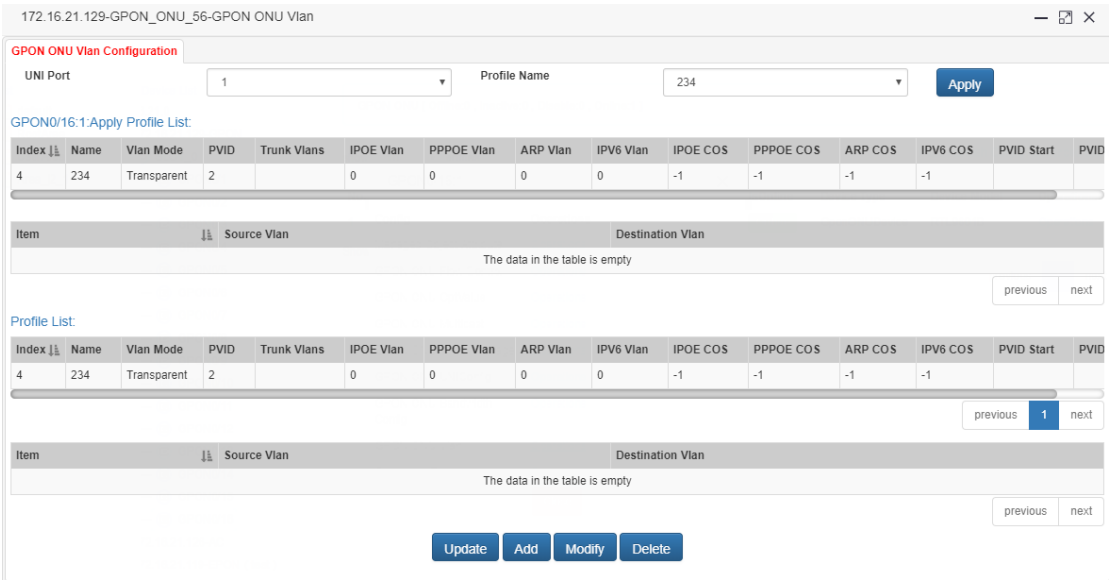
  In **Bandwidth Profile Table**, each bandwidth profile and virtual port Index will be presented. Click one line to check the detailed configuration of virtual port in the current profile.

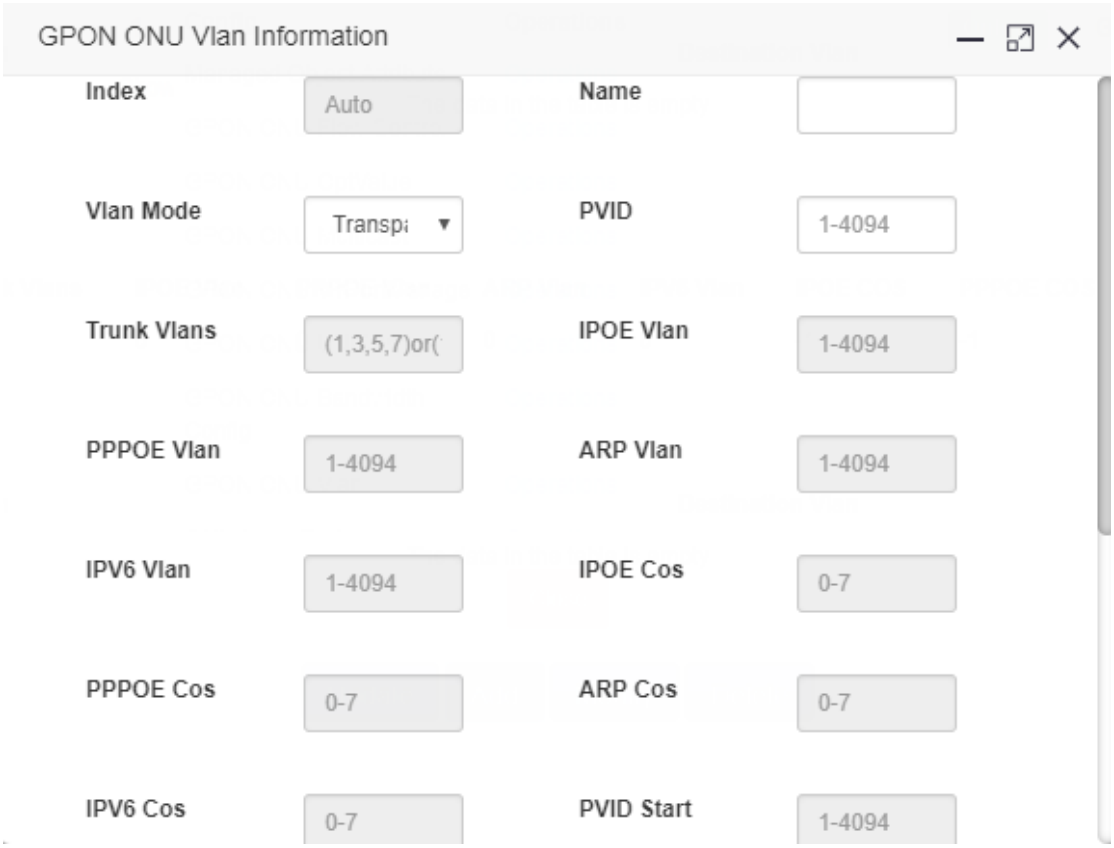
- Add

  Click Add to enable **Bandwidth Config**.

6.3.27 GPON ONU Vlan

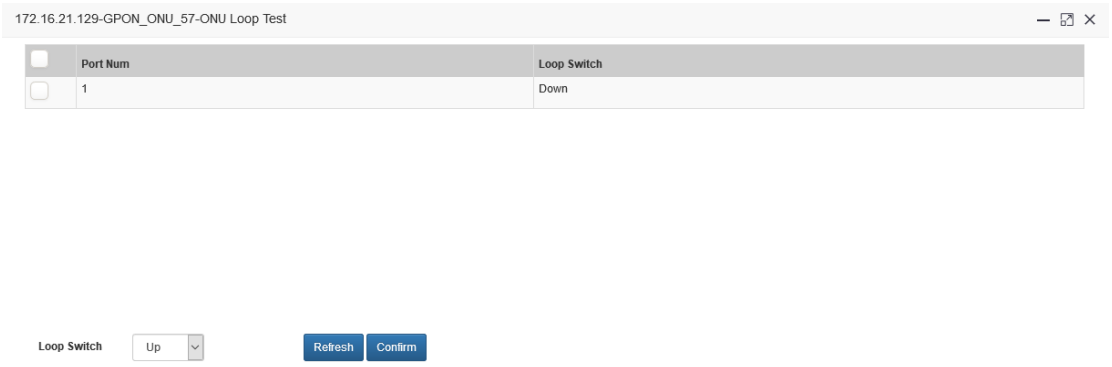
Vlan Configuration takes effect when applying template. First add the template and apply itto ONU UNI port.





6.3.28 ONU Loop Test

ONU Loop Test interface is shown below. Tick UNI port, select the loop switch in pull-down list. Click **Confirm** to set it.



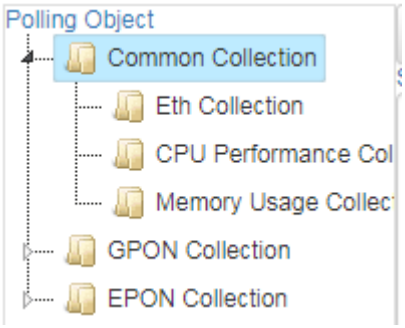
7 Performance Collect

Performance Collect is introduced in the chapter. It means within a certain period of time, operation parameters can be checked and displayed through statistical graph on the interface to learn about the operation state during this time.

The content includes **Real-time Collection**, **Timing Collection** and **History Collection**. **Real-time Collection**: **Common Collection**, **GPON Collection** and **EPON Collection**, etc. Click **Performance Collection** in navigation bar to enable the interface.

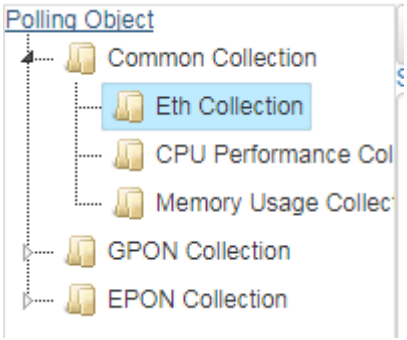
7.1 Common Collection

Find the tree menu on the left, and click **Polling Object**->**Common Collection**.

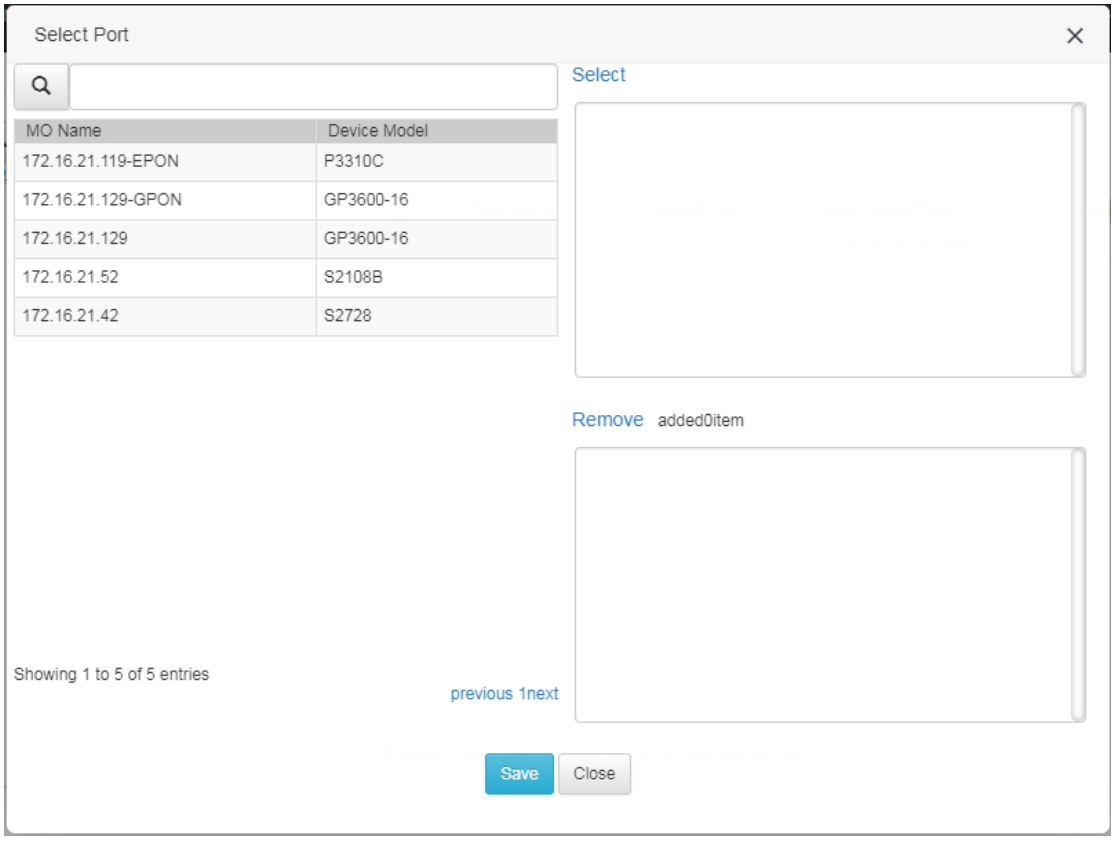


As is shown above, **Common Collection** includes **Eth Collection**, **CPU Collection**, **Memory Usage Collection**.

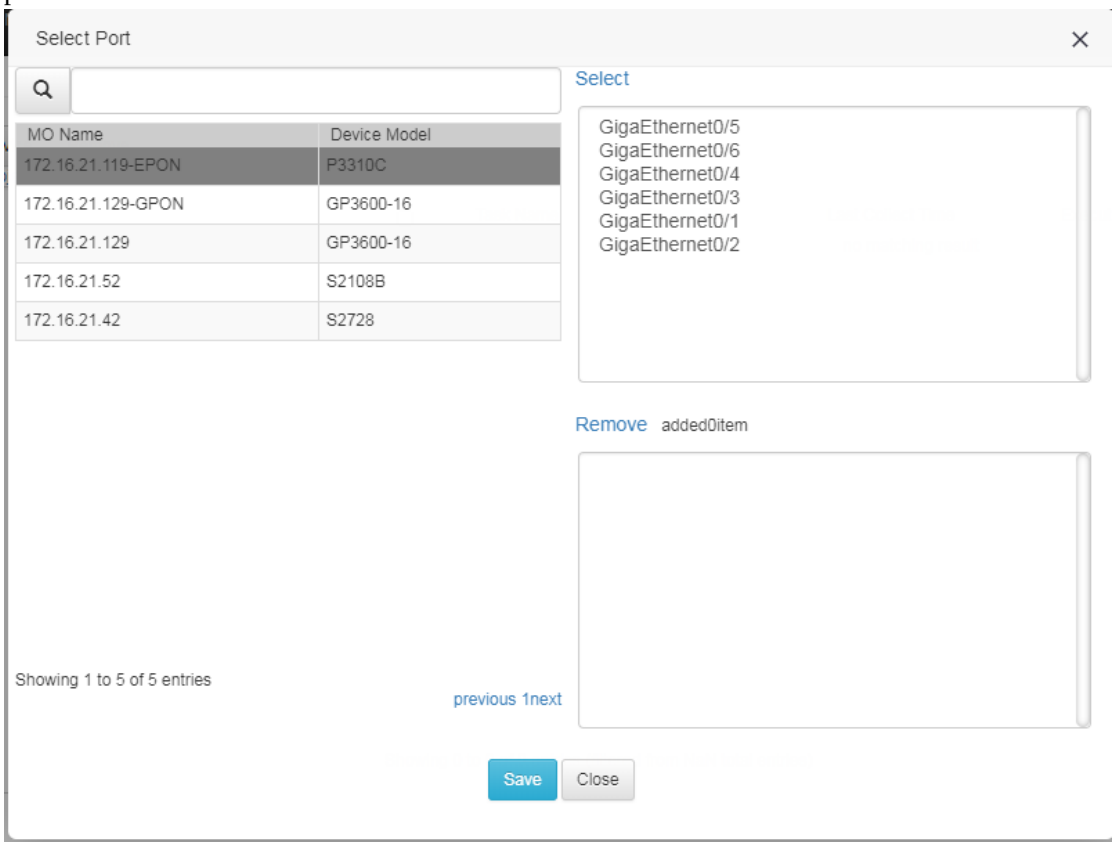
7.1.1 Eth Collection



As is shown above, click **Common Collection** -> **Eth Collection** to enter the **Select Port**.

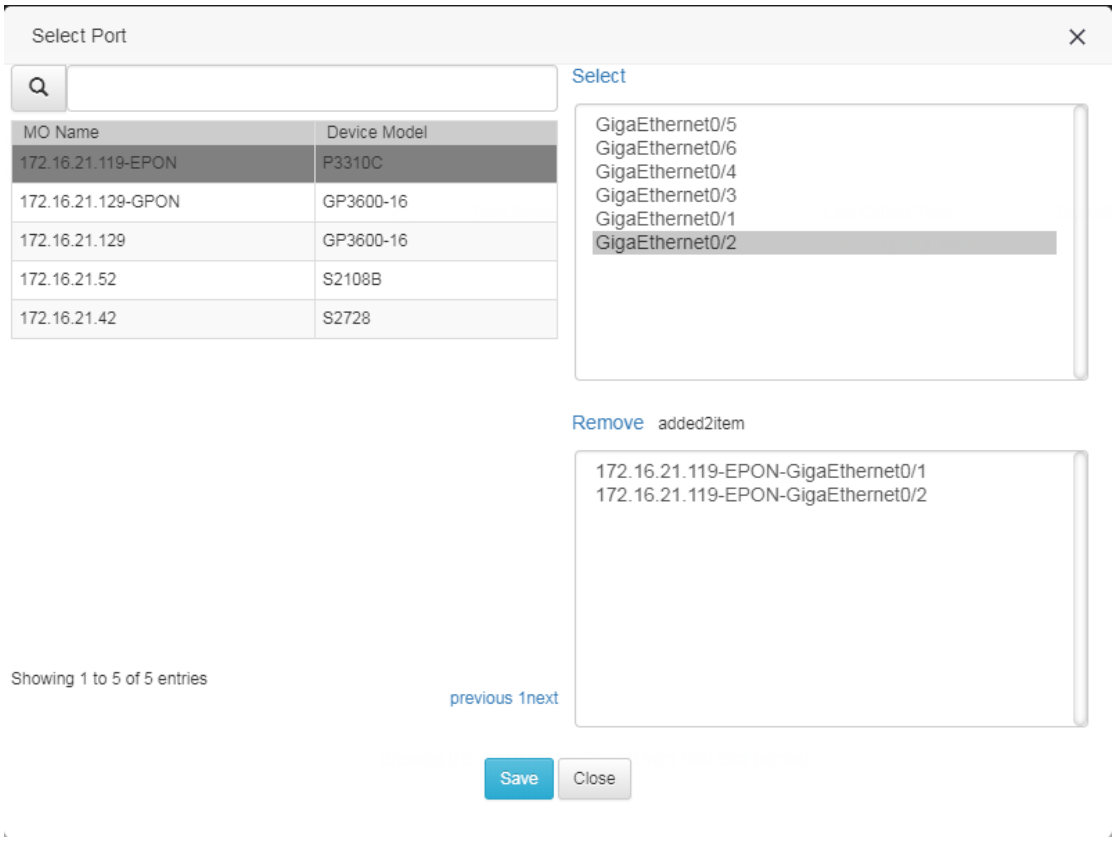


As is shown above, device list is shown on the left, click the device there and all Ethernet ports are shown on **Select**.



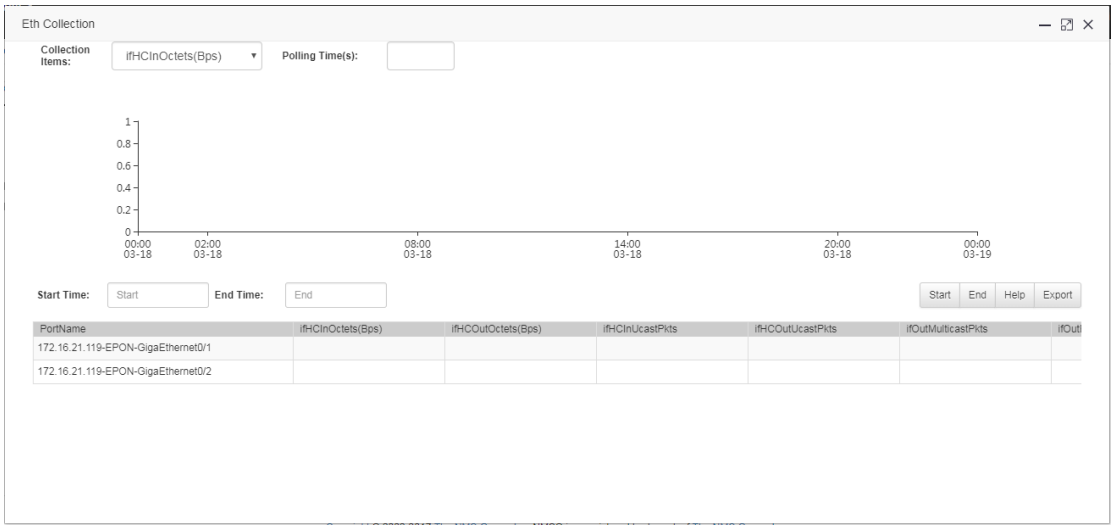
Double click the port or click Select to add it, and the added port will be displayed in the list

box under **Select**.



Double click the selected ports in the list box or click **Remove** to remove the ports. Click **Save**. The selected ports will be displayed in **Selected Object**.

Click **Real-time Collection** to enable the interface.



The collection interface includes **Collection Items, Polling Time, Start, End.**

Collection Items: The selected collection items will be drawn in the above diagram.

Polling Time: Collection time interval, in which the shortest time is 10 seconds.

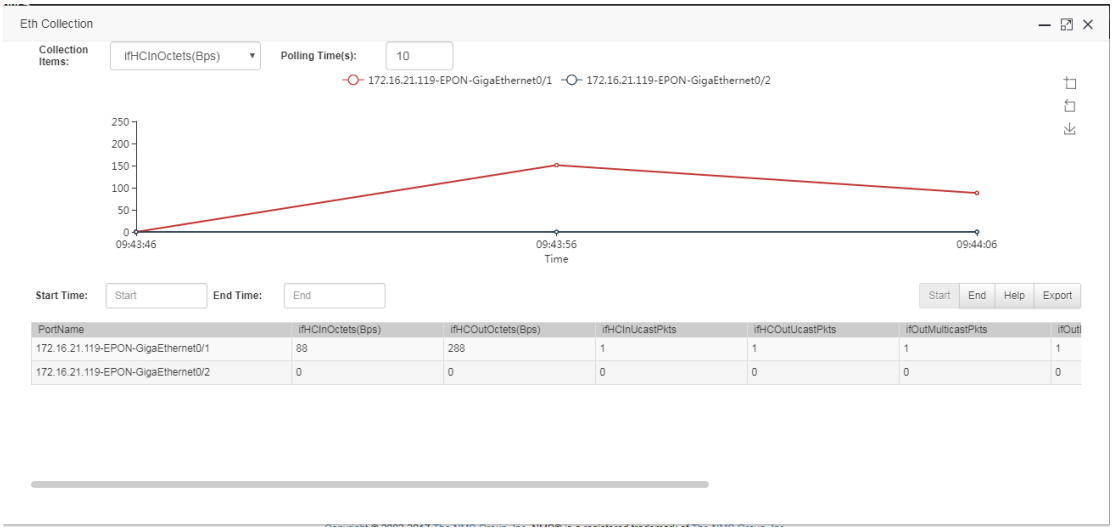
Start: Start the collection.

End: End the collection.

Export: Export the data from the table below into an excel file.

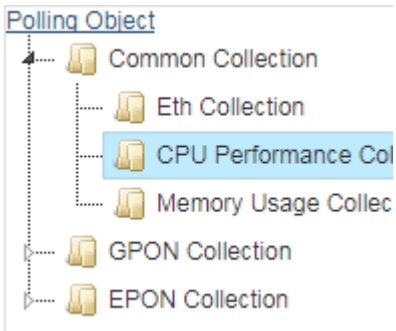
Start Time, **End Time**: Set the start/end collection time. Without set, collection will work all the time until you click **End** or disable the collection interface.

Select **Collection Items**, fill in **Polling Time**, and click **Start** to do the collection. The interface is shown as below.

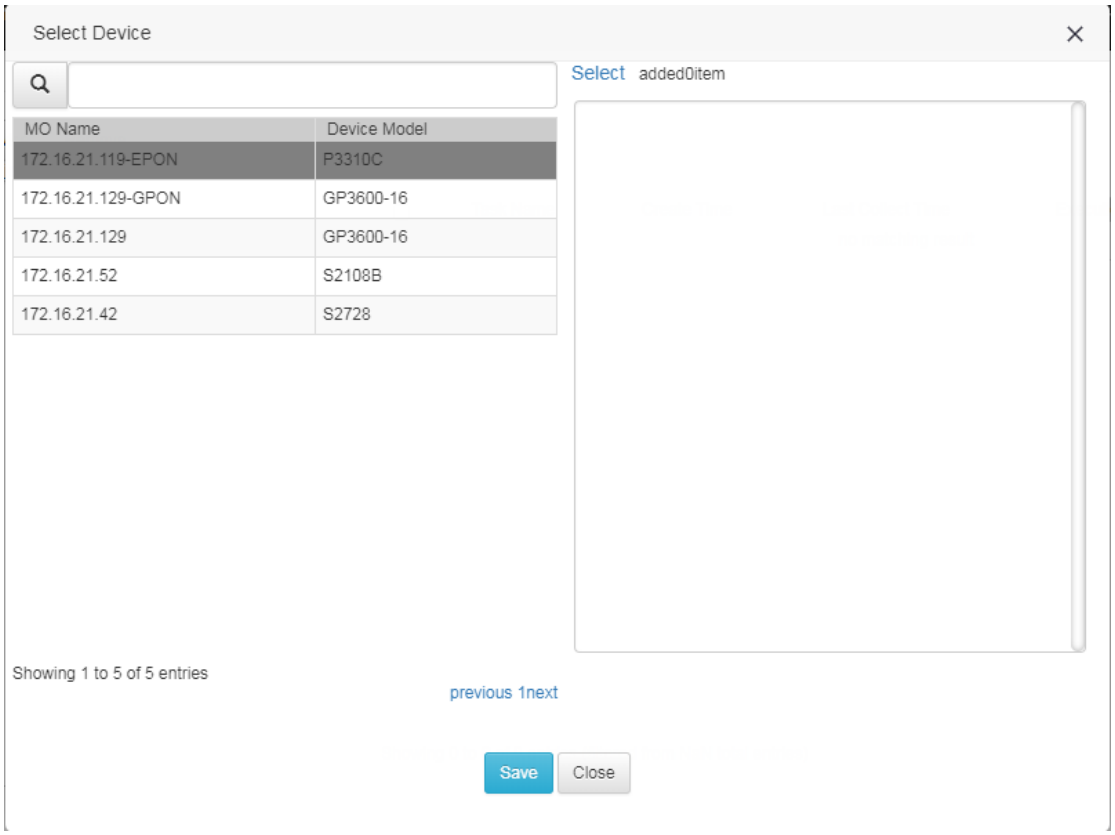


The collection data has two parts: Above is curve chart, showing the real-time data of **Collection Items**; below shows the table statistics of flow information about each collection port. The port names in the table correspond to each port, and the other columns correspond to the collection items.

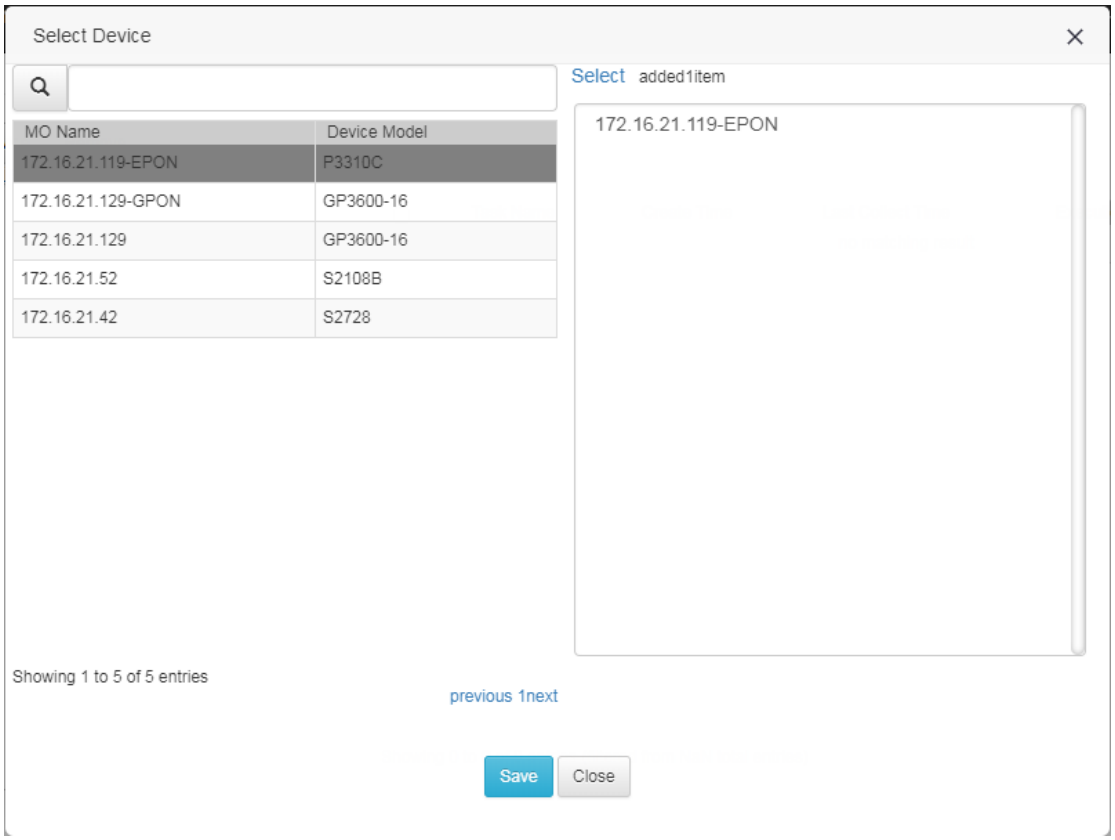
7.1.2 CPU Performance Collection



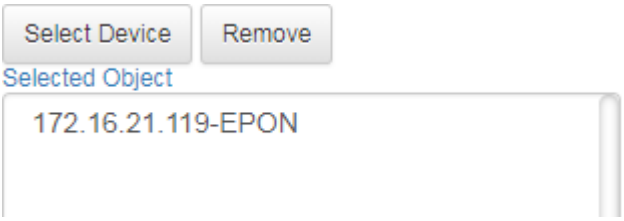
As is shown above, click **Common Collection->CPU Performance Collection** to enable **Select Device**.



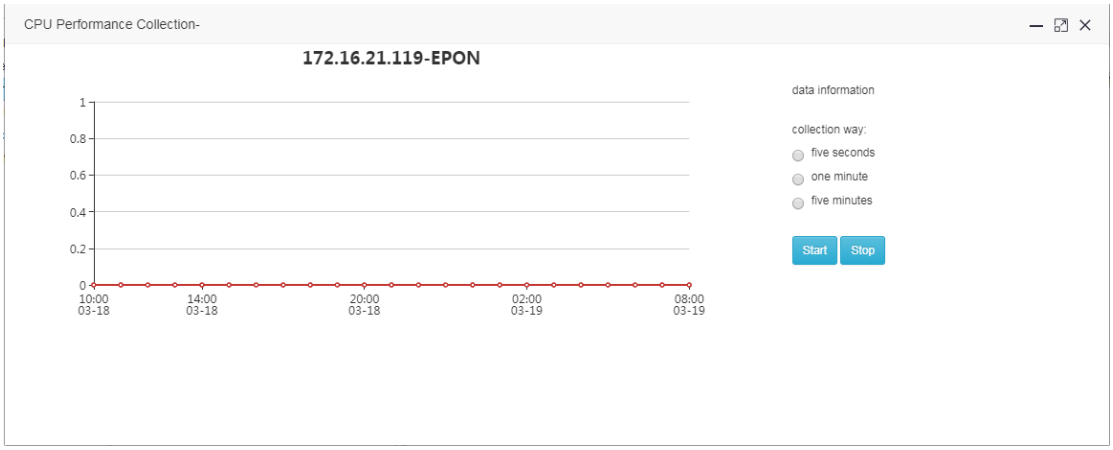
Select the device on the left, and click **Select** to add it.



Click **Save**. The selected ports will be displayed in **Selected Object**.



Click **Real-time Collection** to enable the interface.



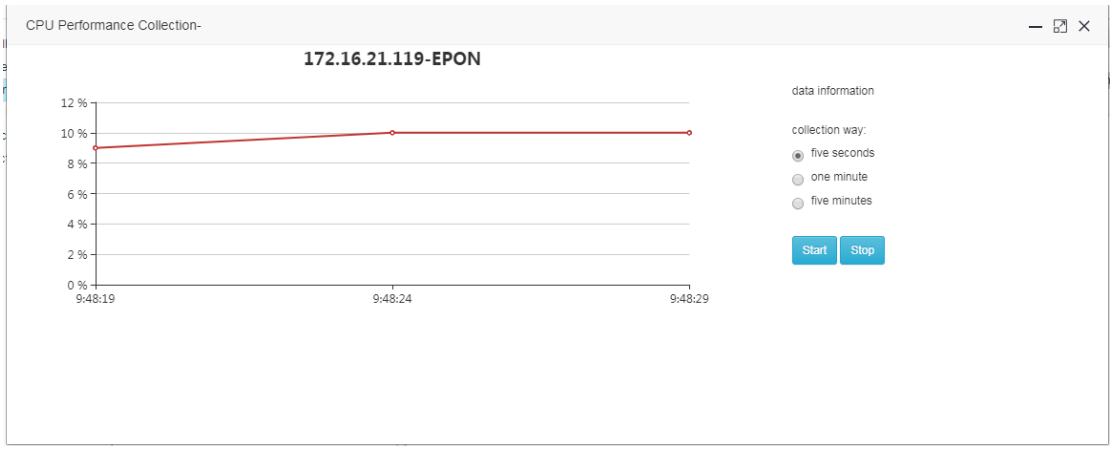
The interface concludes **collection way, Start, Stop.**

collection way: collection time interval

Start: to start

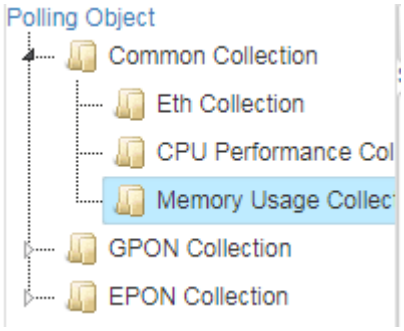
Stop: to stop

Select one collection way, click Start to enable the collection. The interface is shown as below.



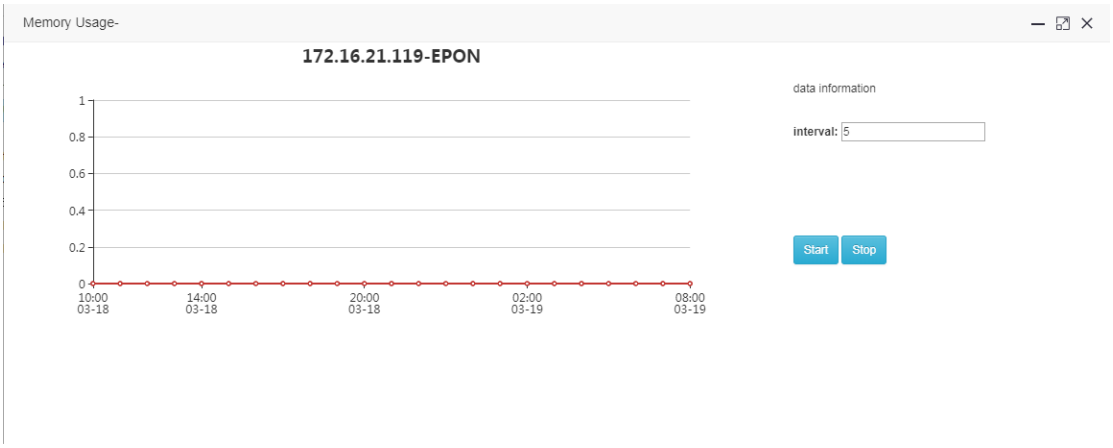
The left-hand chart shows real-time changes in CPU usage.

7.1.3 Memory Usage Collection



As is shown above, click Common Collection->Memory Usage Collection to enable Selected Object. The selection steps are the same as 7.1.2 **CPU Performance Collection**.

After selection, click **Real-time Collection** to enable the interface. See the figure.



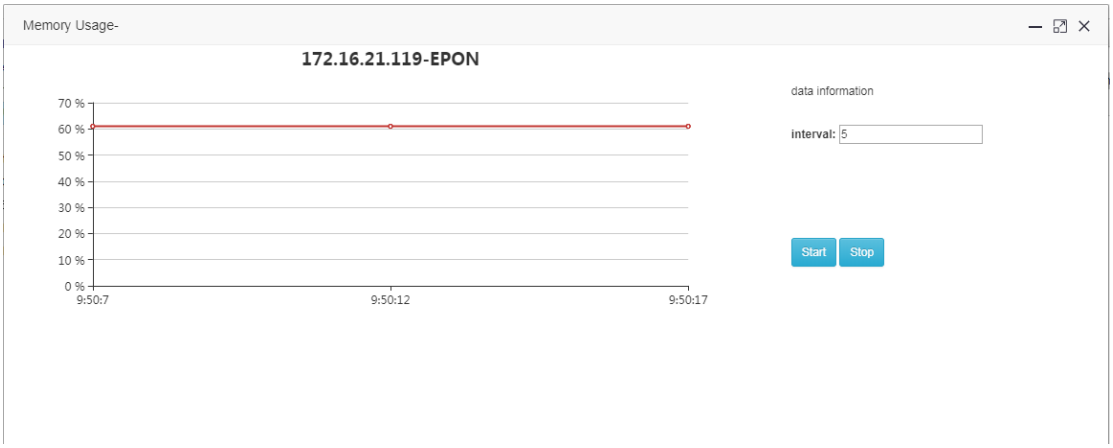
The interface includes **interval, Start, Stop.**

interval: collection time interval

Start: to start

Stop: to stop

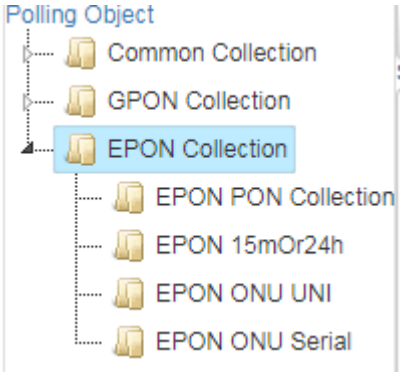
Select **interval** and click **Start** to do the collection. The interface is below.



The left diagram shows real-time changes in memory usage.

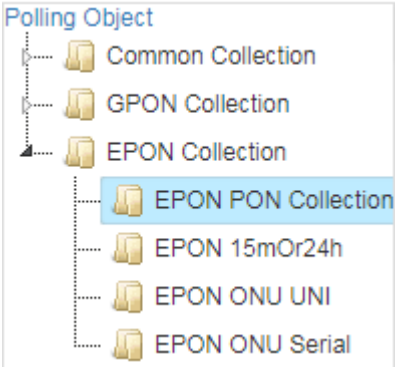
7.2 EPON Collection

Click **Polling Object->EPON Collection** in the tree list of left NMS interface.



As is shown above, **EPON Collection**: **EPON PON Collection**, **EPON 15mOr24h**, **EPON ONU UNI**, **EPON ONU Serial**.

7.2.1 EPON PON Collection



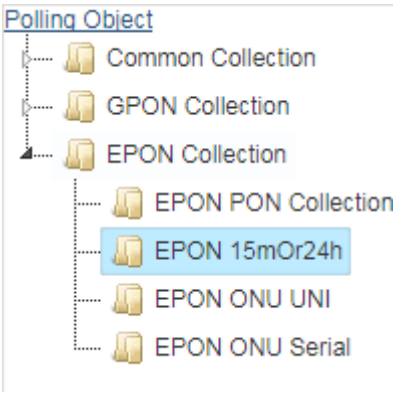
As is shown above, click **EPON Collection** -> **EPON PON Collection** to enter the interface.

The selection steps are generally the same as 7.1.1 **Eth Collection** besides that in the selection list show EPON PON ports.

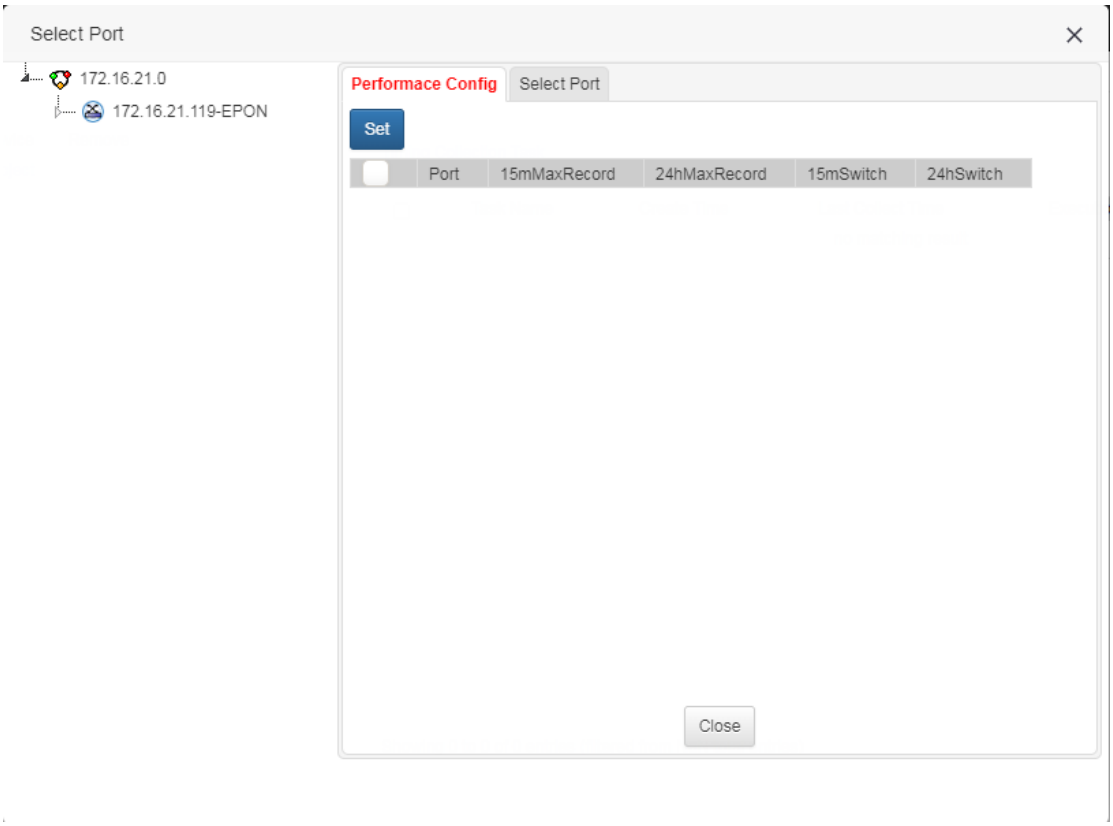
After saving the selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

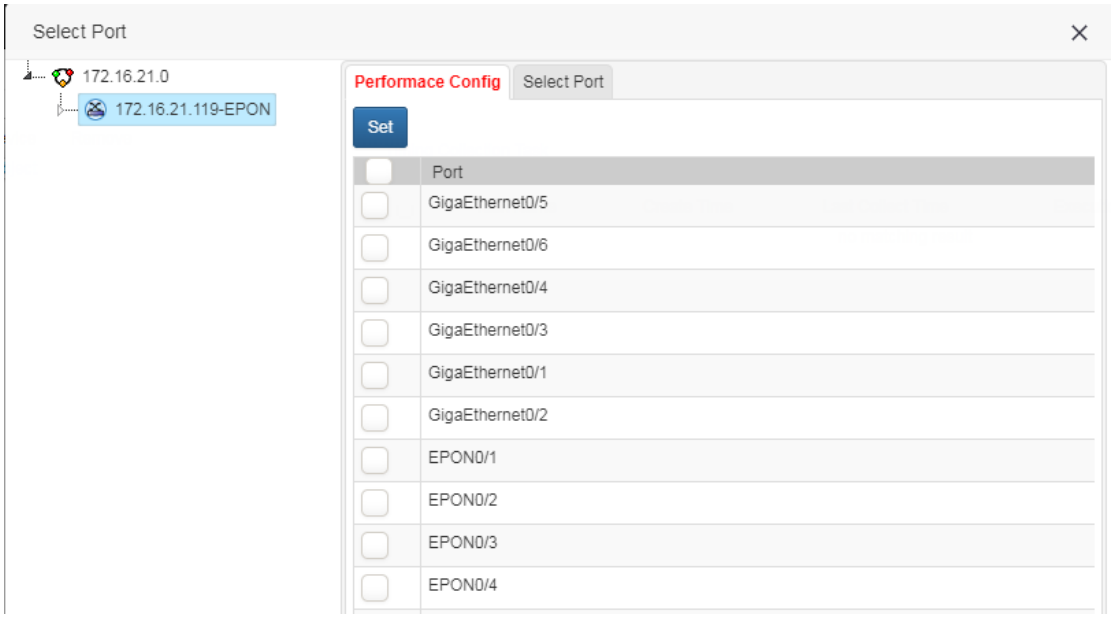
7.2.2 EPON 15mOr24h



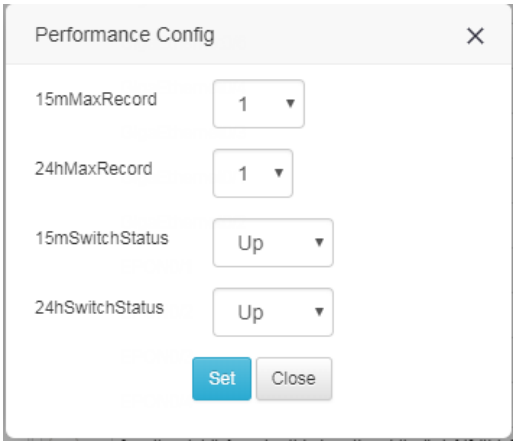
As is shown above, click **EPON Collection->EPON15mOr24h** to enter the selection interface.



A tree list of devices is on the left area, EPON devices supported here. **Performace Config** and **Select Port** are on the right. Click EPON devices, all port configuration will be displayed in **Performace Config**.

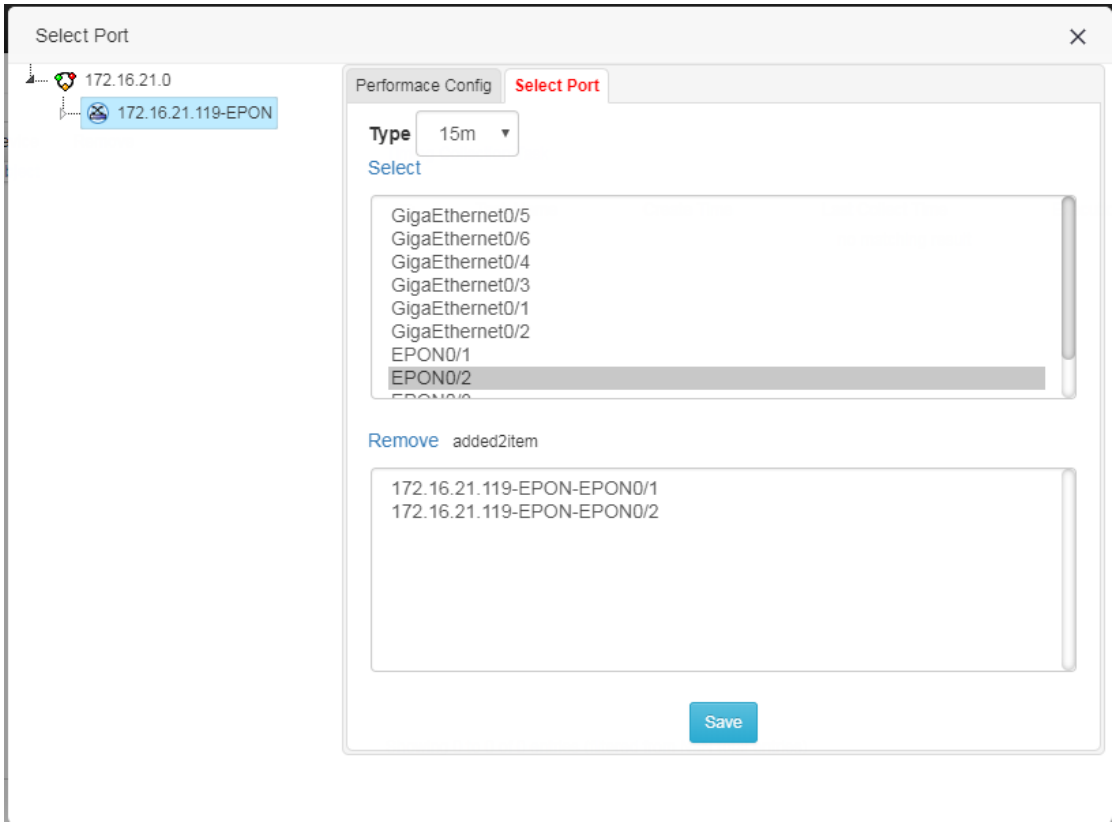


Tick the port, and click **Set** to enable the configuration interface.



On the interface, select **MaxRecord**, **15m/24hSwitchStatus** to be configured.

Click **Select Port** and enable the interface.

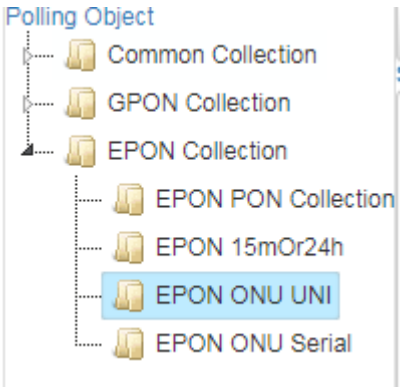


Click **Select** or double click the port to be added. **Type**: 15m or 24h. Click **Save**.

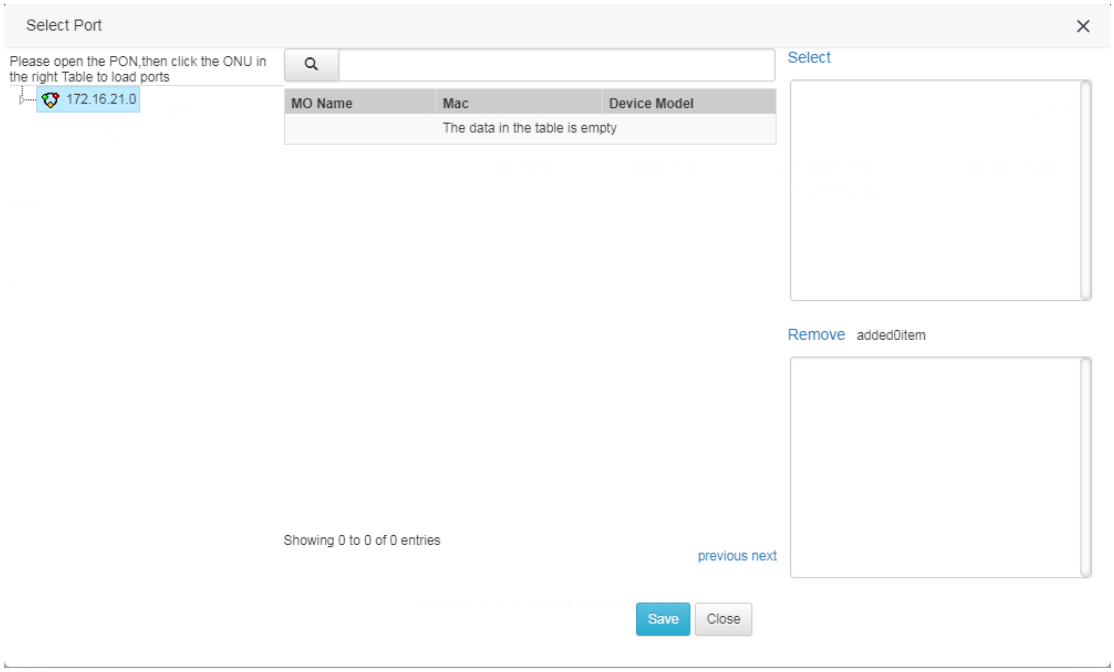
After save, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.2.3 EPON ONU UNI

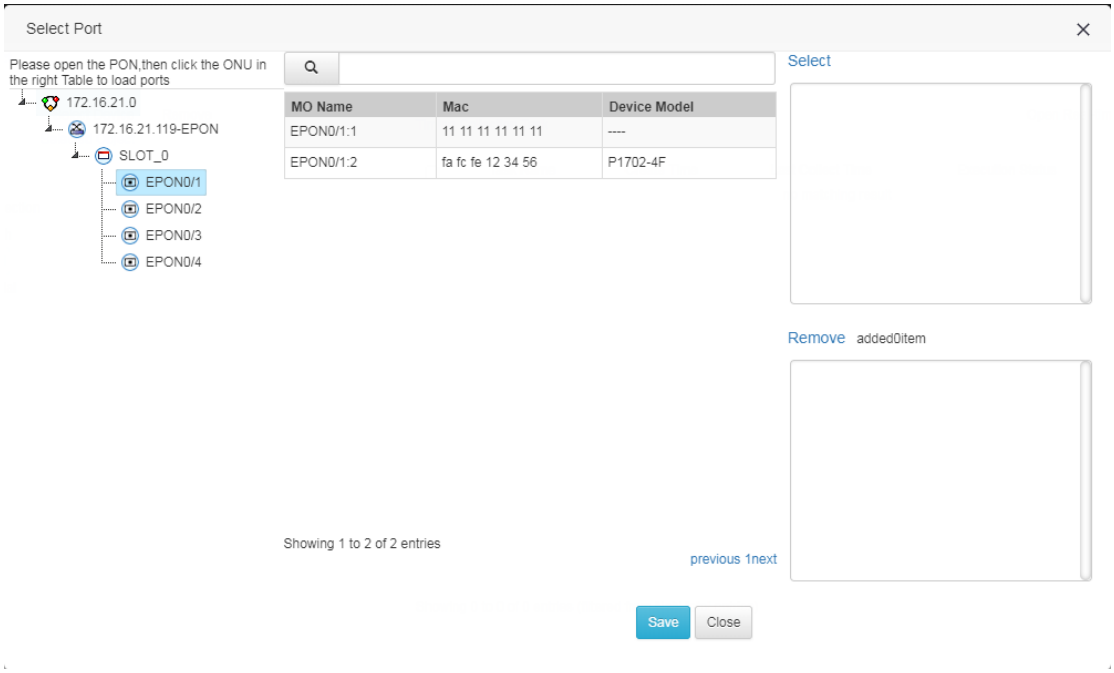


As is shown above, click **EPON Collection->EPON ONU UNI Real-time Statistics** to enable the interface.

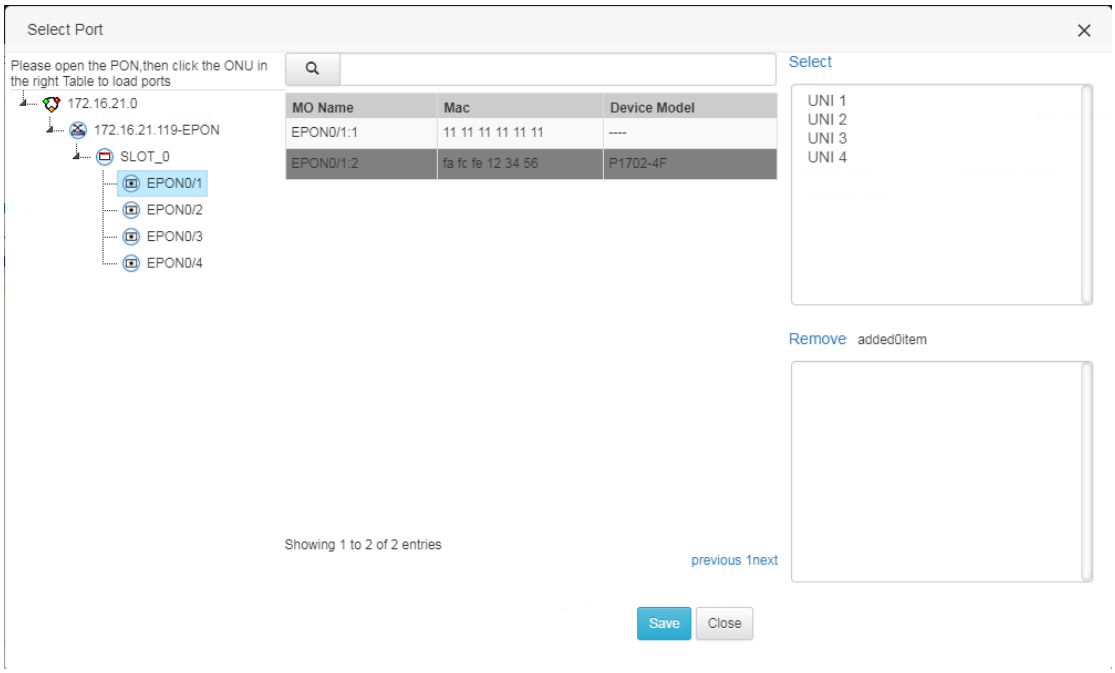


A tree list of devices is on the left area, EPON devices supported here; **ONU** on the centre; **UNI** on the right.

Display the left tree, and click **PON**.

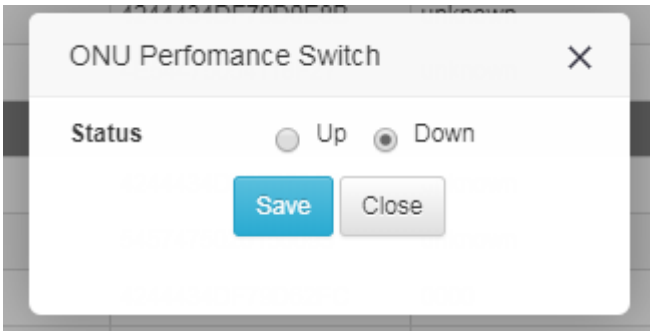


As is shown in the figure, the form may display **PON ONU**, and click the **ONU**.



The **UNI** port is shown in the right selection bar. Double click the **UNI** or click **Select** to save it.

When adding the port, if **ONU Performance Switch** is **Down**, the following interface will pop up.



Set **ONU Performance Switch** as **Up** to enable **add** again.

After selection and save, click **Real-time Collection** to enable the interface.

OnuCollection includes **Polling Time**, **Start**, **End**, **Export**.

Polling Time: Interval;

Start: To start;

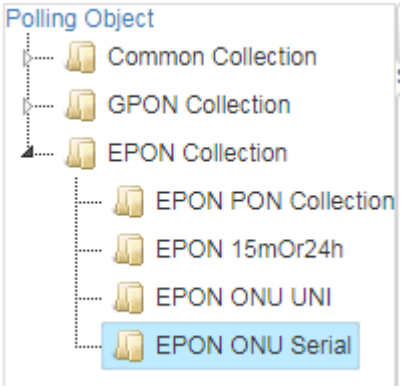
End: To end;

Export: to export EXCEL.

OnuCollection covers 3 diagrams: **AllOctets**, **ifHCInOctets**, **ifHCOutOctets**. Click them to shift.

After setting **Polling Time**, click **Start** to collect.

7.2.4 EPON ONU Serial



As is shown above, click **EPON Collection->EPON ONU Serial** to enable the interface.

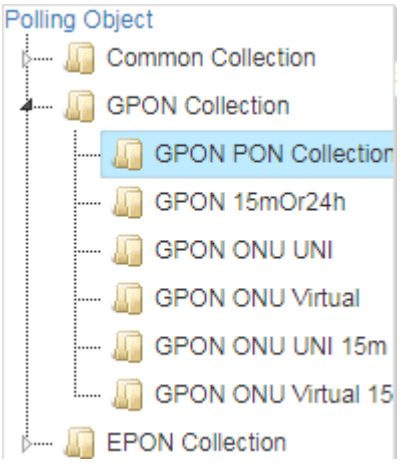
The selection steps are almost the same as 7.1.2 **EPON ONU UNI Real-time** besides that in the selection list show EPON PON serials.

After save, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3 GPON Collection

7.3.1 GPON PON Collection



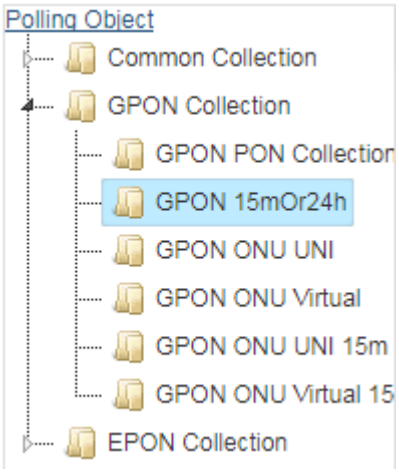
As is shown above, click **GPON Collection->GPON PON Collection** to enable **Select Port**.

The selection steps are almost the same as 7.1.1 **Eth Collection** besides that in the selection list show GPON PON.

After selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3.2 GPON 15mOr24h

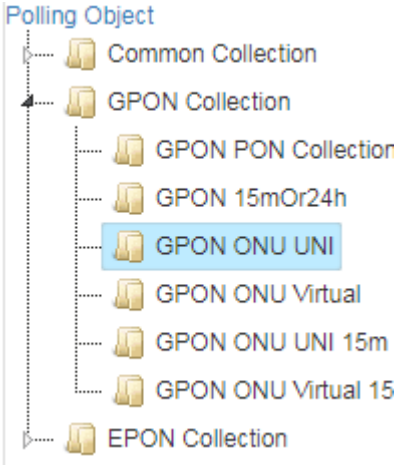


As is shown above, click **GPON Collection->GPON 15mOr24h** to enable the interface.

The port selection and performance configuration steps are the same as 7.2.2 **EPON 15mOr24h**. After selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3.3 GPON ONU UNI

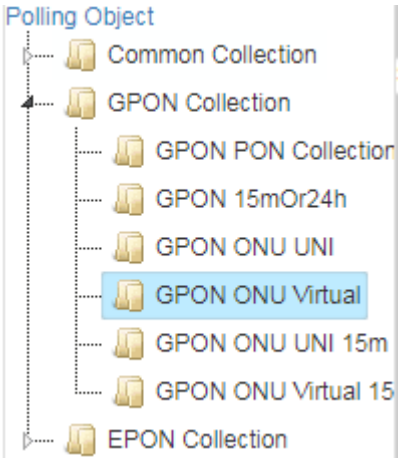


As is shown above, click **GPON Collection->GPON ONU UNI Real-time** to enable the interface.

The selection steps are the same as 7.2.3 **EPON ONU UNI Real-time**. After selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3.4 GPON ONU Virtual

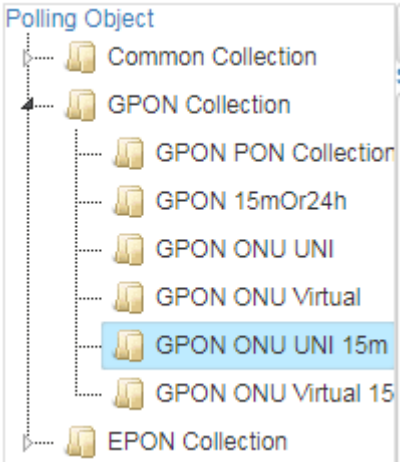


As is shown above, click **GPON Collection->GPON ONU Virtual** to enable the interface.

The selection steps are the same as 7.2.3 **EPON ONU UNI Real-time**. After selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3.5 GPON ONU UNI 15m

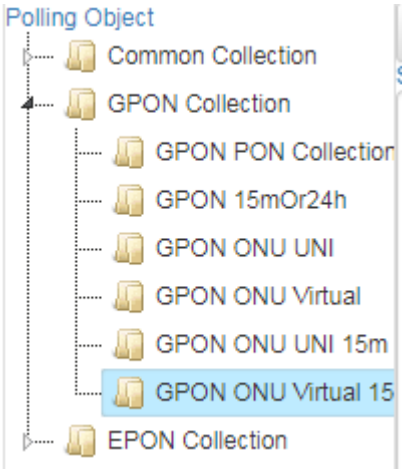


As is shown above, click **GPON Collection->GPON ONU UNI 15m** to enable the interface.

The selection steps are the same as 7.2.3 **EPON ONU UNI Real-time**. After selection, click **Real-time Collection** to enable the interface.

The collection steps are the same as 7.1.1 **Eth Collection**.

7.3.6 GPON ONU Virtual 15m



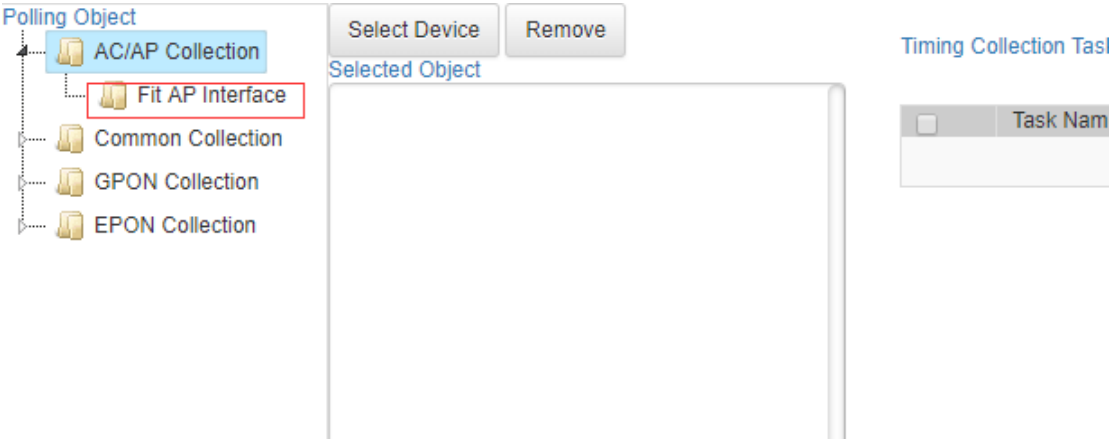
As is shown above, click **GPON Collection->GPON ONU Virtual 15m** to enable the interface.

The selection steps are the same as 7.2.3 **EPON ONU UNI Real-time**. After selection, click **Real-time Collection** to enable the interface.

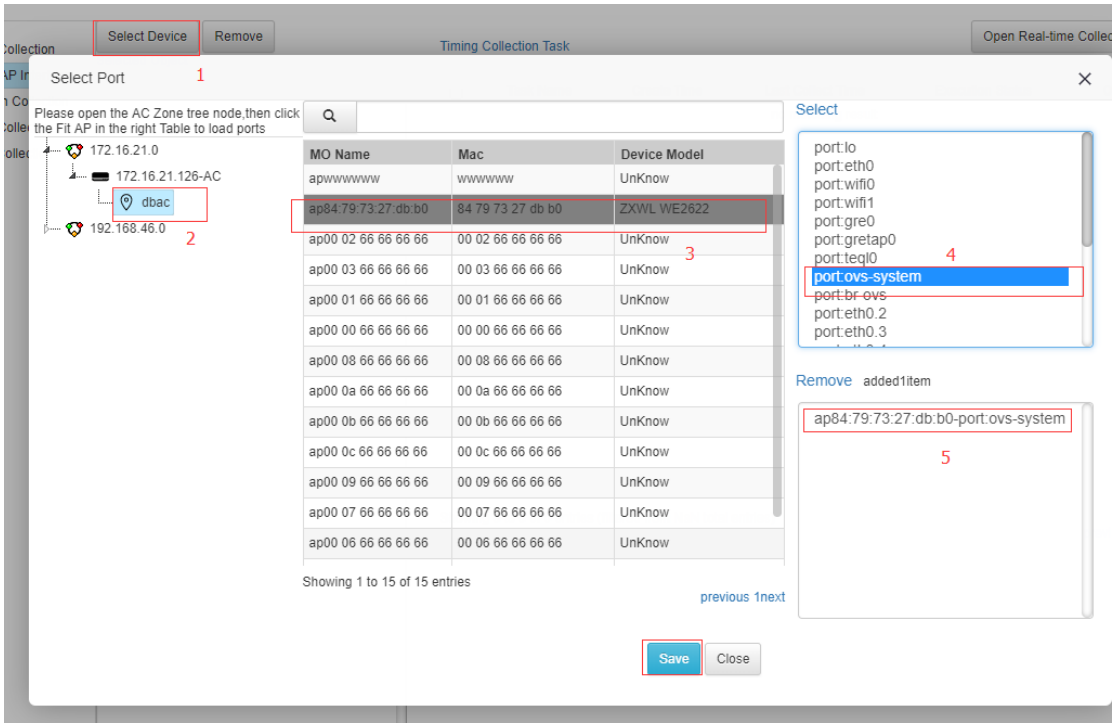
The collection steps are the same as 7.1.1 **Eth Collection**.

7.4 AC/AP Collection

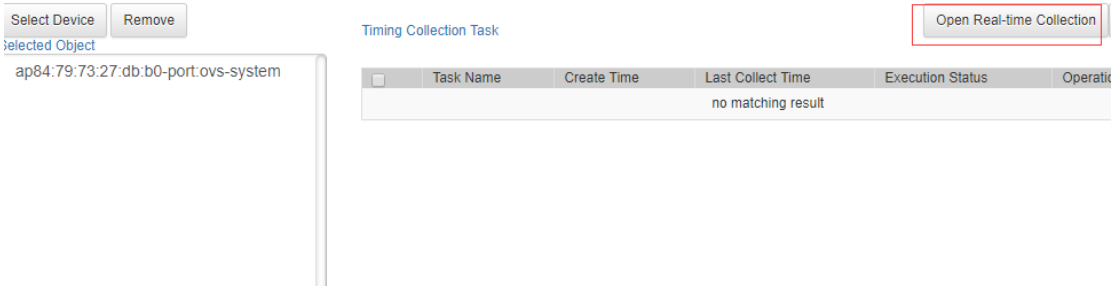
It is used to count **Fit Ap interface** performance. The interface is shown below.



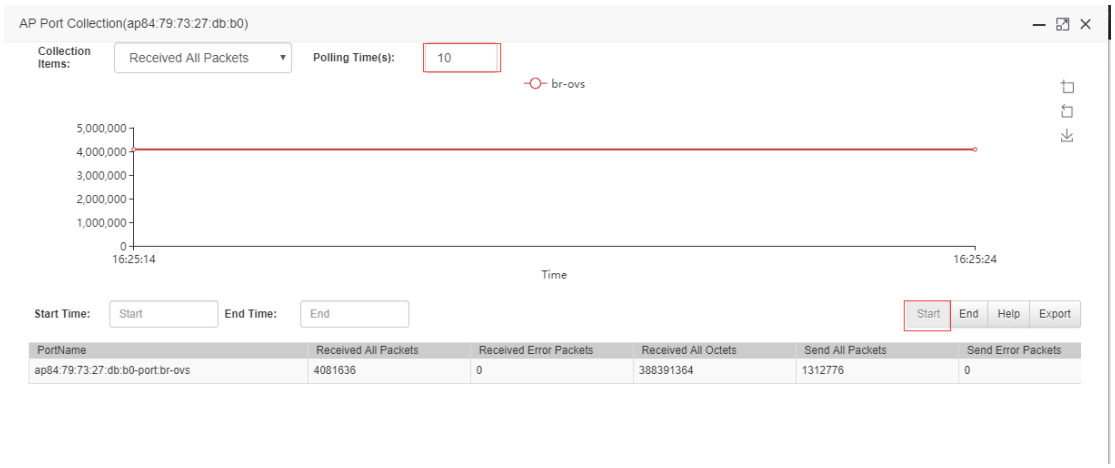
In **Select Device**, select AC device. Click **dbac** to display **AP** device list. Click one certain AP device to present AP port. Double click it to add it to 5. Click **Save**.



After save, AP port can be checked. Click **Open Real-time Collection**.



The following interface will pop up. Set **Polling Time** and **Collection Items**. Click Start to enable the collection. See the figure.



No need for collection, click **End** to export the data.

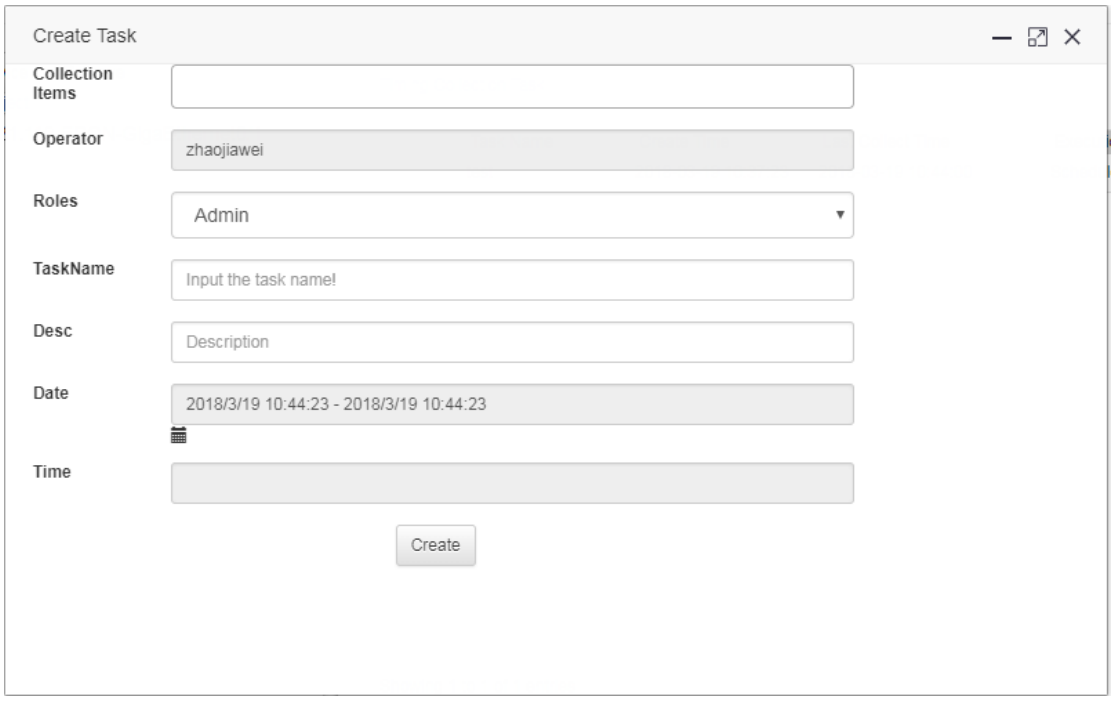
7.5 Timing Collection

Collection Items for **Create Task** include **Eth Collection**, **CPU Performance Collection**, **Memory Usage Collection**, **PON Collection**, **EPON ONU UNI Real-time Statistics**, **EPON ONU Serial Real-time Statistics**, **GPON ONU UNI Real-time Statistics**, **GPON ONU Serial Real-time Statistics**.

Steps for **Create Task**:

（1）Select the port or device. (The same steps as above **Select Port**.)

（2）Click **Create** in the right to enter the interface.



See the figure:

The interface covers **Collection Items**, **Operator**, **Roles**, **TaskName**, **Desc**, **Date**, **Time**.

Collection Items: the collected items

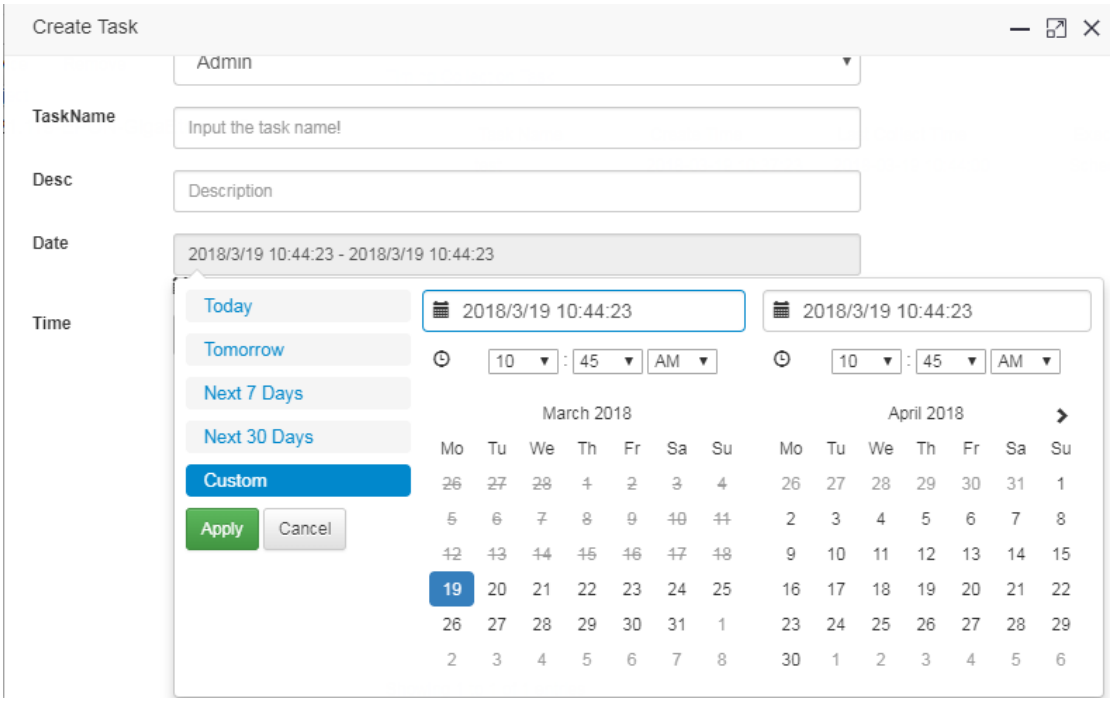
Operator: the current operator

Roles: the current roles

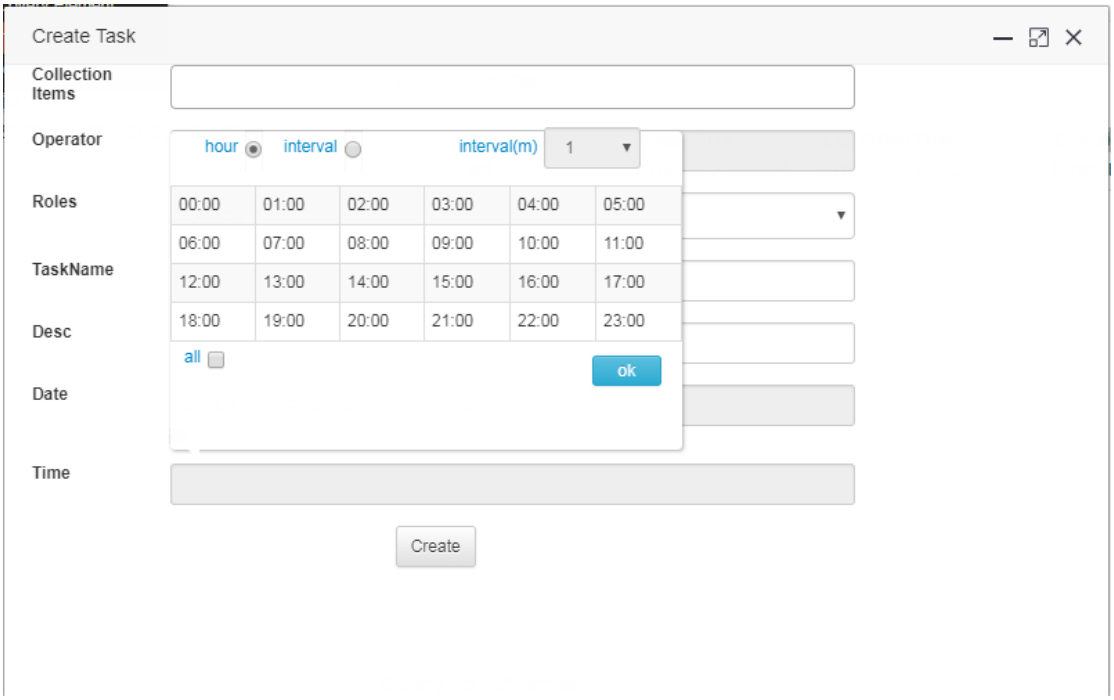
TaskName: the collected task name

Desc: the description of the collected task

Date: as is shown below, select the start and end date

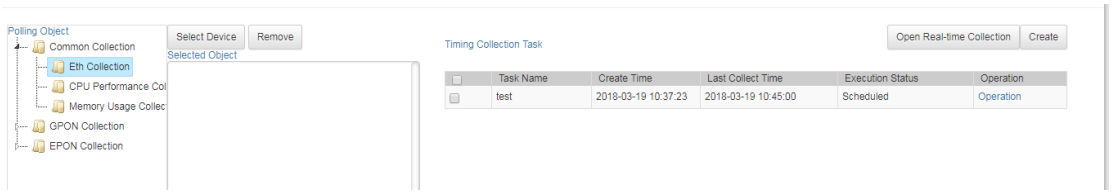


Time: As is shown below, select the interval or time of the task

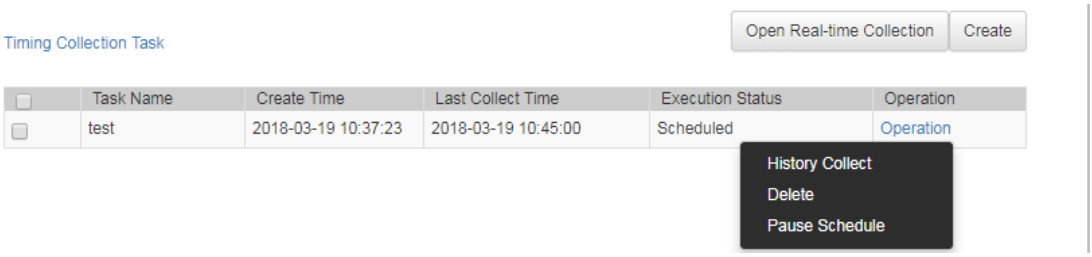


（3）Click **Create** to make it.

（4）Click the items in the left tree list, the collection task will be displayed in the right form. See the figure.



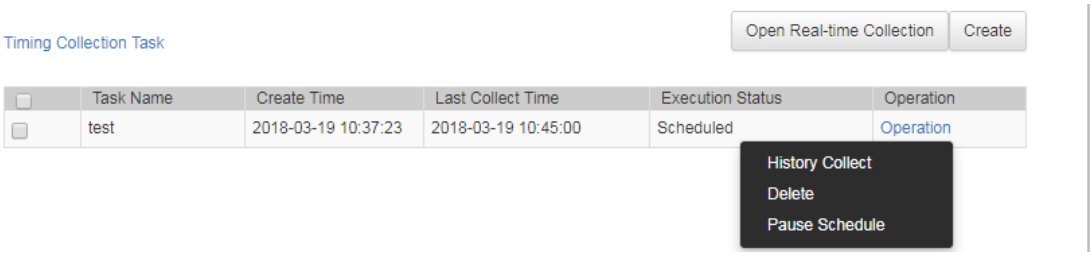
（5）Click **Operation** in the form to pause or delete.



7.6 History Collect

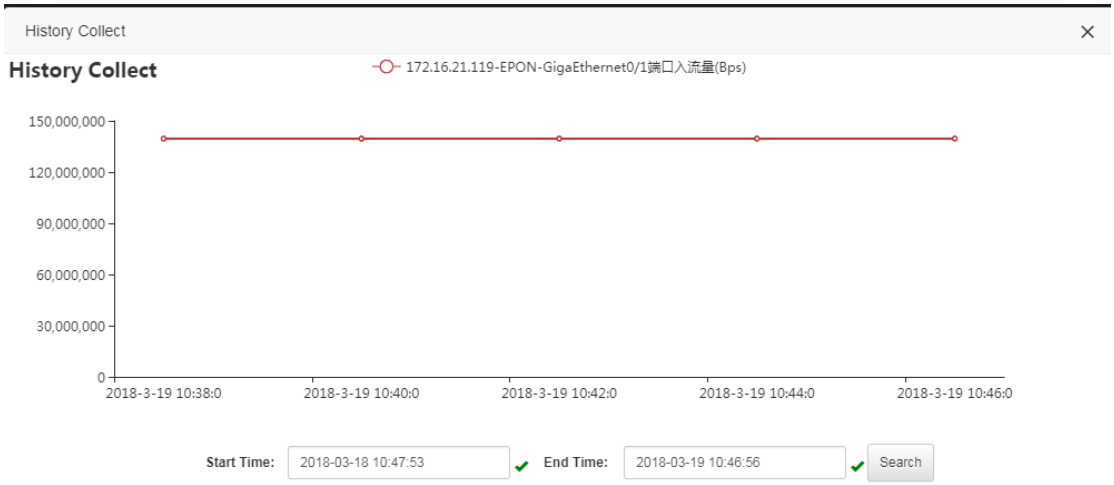
History Collect is operation data of the device in a certain period of history. It means history data collected from the device at a certain interval (configurable) by the network management system background program.

Click **Operation** in **Timing Collection Task** to check history collect.



The interface is as follows.

Select **Start Time** and **End Time** to check history collect.


History Collect
History Collect
172.16.21.119-EPON-GigaEthernet0/1端口入流量(Bps)
150,000,000
120,000,000
90,000,000
60,000,000
30,000,000
0
2018-3-19 10:38:0
2018-3-19 10:40:0
2018-3-19 10:42:0
2018-3-19 10:44:0
2018-3-19 10:46:0
Start Time:
2018-03-18 10:47:53
End Time:
2018-03-19 10:46:56
Search

8 Schedule Task

Schedule Task provides users with some simple visual task management configuration, support batch processing and the function of timing to perform some tasks, helping users to reduce repetitive operations and flexible time for task execution.

It consists of three main categories: a）Upgrade Task；b）Backup Task；c）System Task. For Upgrade Task and Backup Task, NMS supports users to perform task creation, update, delete, etc.; for System Task, when NMS performs such task in normal operation, such task only partially supports users with polling interval refresh, not allowing users to create and delete such task.

Main configuration items for Upgrade Task and Backup Task:

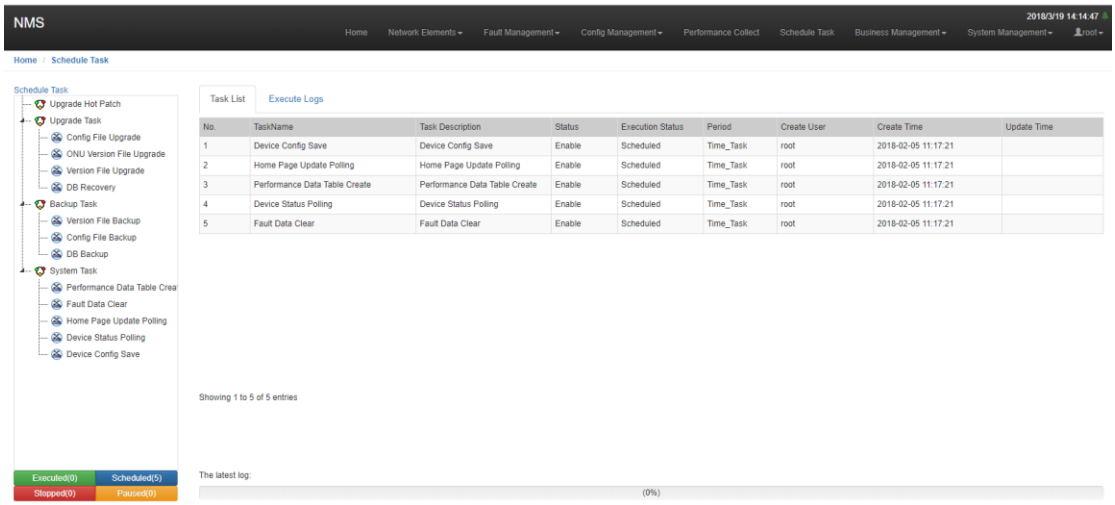
- Config File Upgrade
- Version File Upgrade
- DB Recovery
- ONU Version File Upgrade

Main configuration items for System Task:

- Performance Data Table Create
- Fault Data Clear
- Home Page Update Polling
- Device Status Polling
- Device Config Save

Particularly stating, for tasks requiring upgrades or backups of files on the device, firstly the user needs to set the Telnet user name and password in the properties of the selected device, because the username and password must be entered correctly when NMS performs the task, logging on to the device via Telnet or SSH mode when performing the task. (The NMS default Telnet and SSH login username and password are the same.).

The detailed description is shown in the figure below.



8.1 Create Task

For Upgrade Task and Backup Task, tasks can be created based on needs. The creation of

each task will then be described in detail.

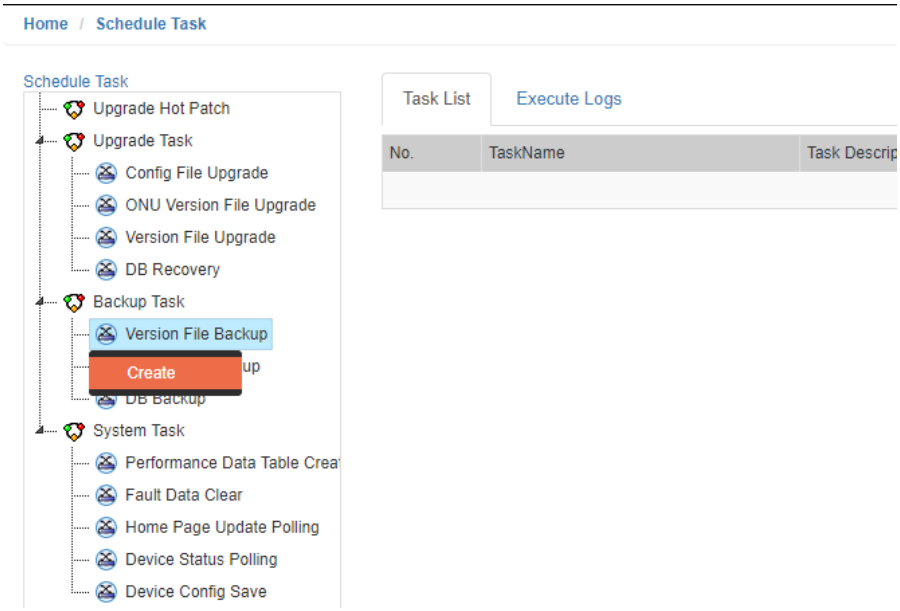
8.1.1 Create Backup Task

Backup Task is a backup of some files or data on a device or system so as to ensure that the equipment or system is configured or data restored at some special time while the service is operated normally.

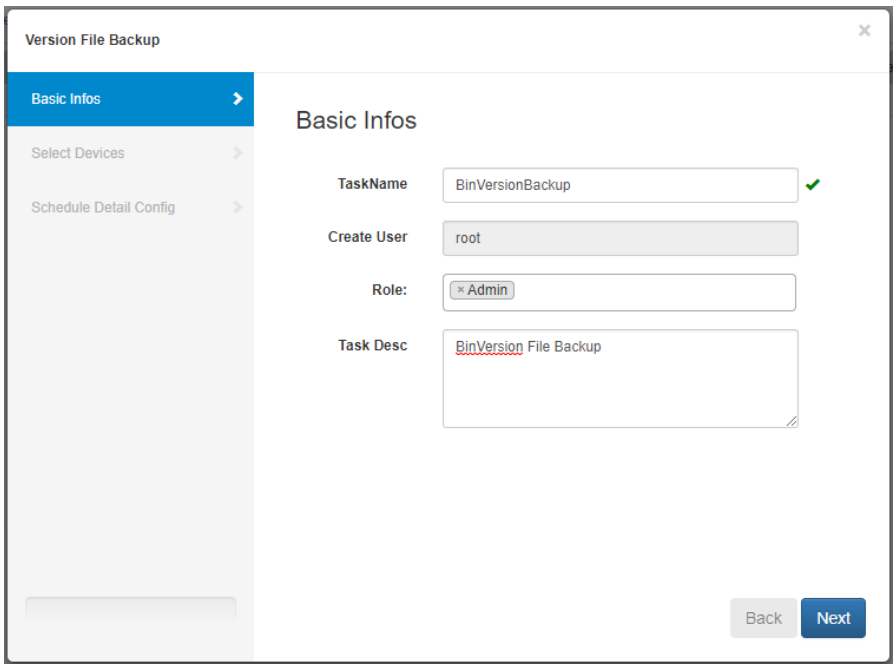
8.1.1.1 Create Version File/Config File Backup

Creat Version File Backup and **Config file Backup** are basically the same; the only difference is that the list of files is different when selecting files. It will be illustrated in detail referring to **Version File Backup**.

1) Click **Schedule Task** on **Home** to enter the management interface. Select **Version File Backup** from left tree nodes, and right click it to enable **Create**. Click **Create** to enable the create guideline.



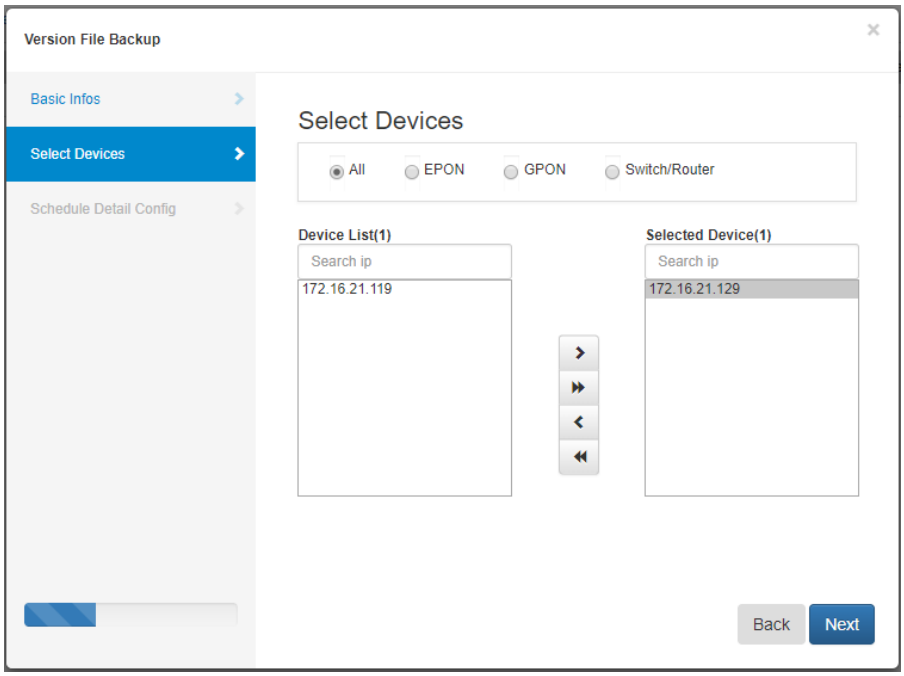
2) The guideline is shown below. On this page, it requires users to input **TaskName** and **Task Description**. Meanwhile, the roles visible to the task must be selected.



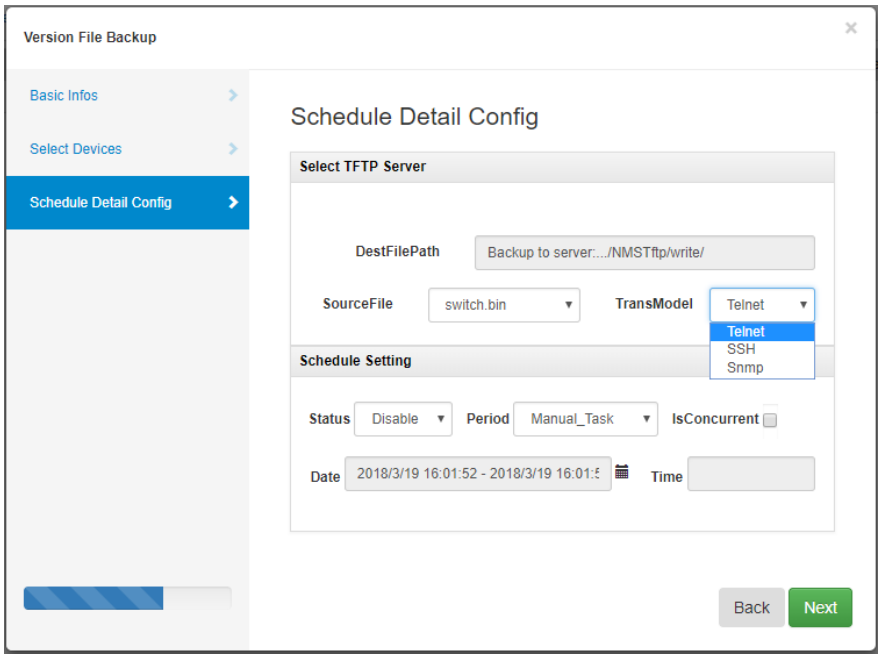
After filling in the Basic Infos, click **Next**.

3) Next is **Select Devices**, that is the backup of the files requiring backup. When selecting devices, filter the selected files based on device types or input ip address **Device List** to do real-time search.

On the left list is **Device List** while right is **Selected Device**. Users can select and counter select the devices through the displayed buttons or double clicking the devices. After that, click **Next**.



4) Third is mainly about **Select TFTP Server** and **Schedule Setting**. See the following interface.



The parameters are defined as follows:

DestFilePath: The saved destination of the backup

SourceFile: The files requiring backup from the device

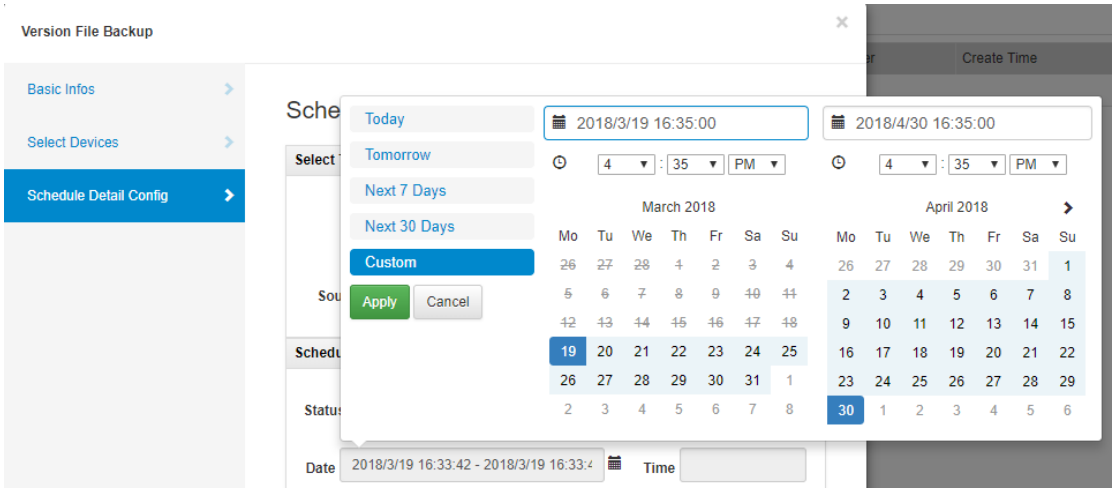
TransModel: Protocols through which NMS backups files. NMS currently supports three models: **Telnet**, **SSH**, **Snmp**.

Status: The status of tasks after creation, including **Disable** and **Enable**. **Disable**: The disabled task will not be executed although it has been created. **Enable**: The enabled task can be executed.

Period: The mode of the task, including **Manual Task** and **Timing Task**. For **Manual Task**, it requires users to click the task to modify it after selecting the task. For **Timing Task**, it is executed periodically according to the preset time.

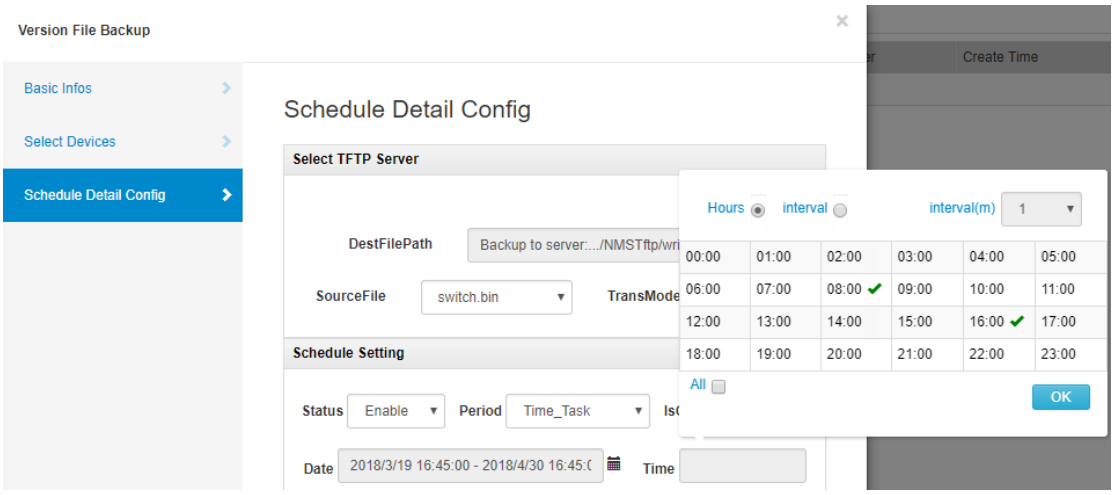
IsConcurrent: Whether the multiple way of execution is permitted in the overlapping time or not. For example, one task takes 10 seconds to execute but its period was set as 5 seconds before. If **IsConcurrent** is enabled, the second execution of the task will start with the first one is still on, that is, one task runs multiply in the overlapping time. No **IsConcurrent** is favorable.

Date: The executed time of the task, that is execution is only on in certain period. Only when **Period** is set as **Timing Task**, **Date** is enabled to set. See the following interface.

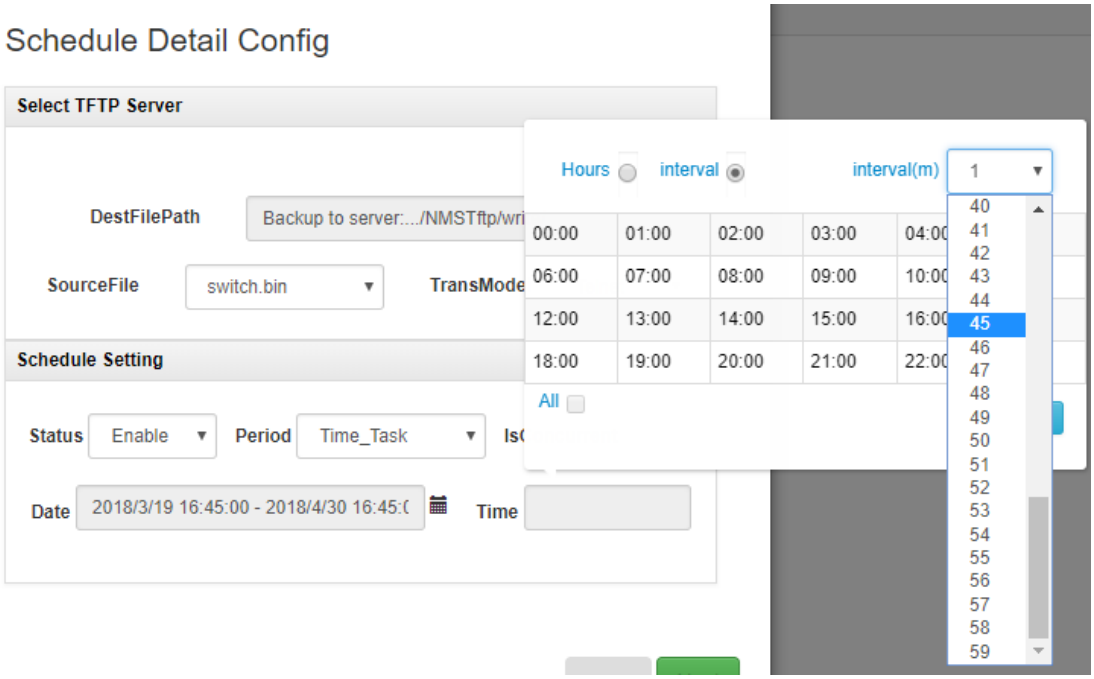


Select the start and end of time, and click **Apply**. Or select Next 7 Days, Next 30 Days, etc. to do quick set.

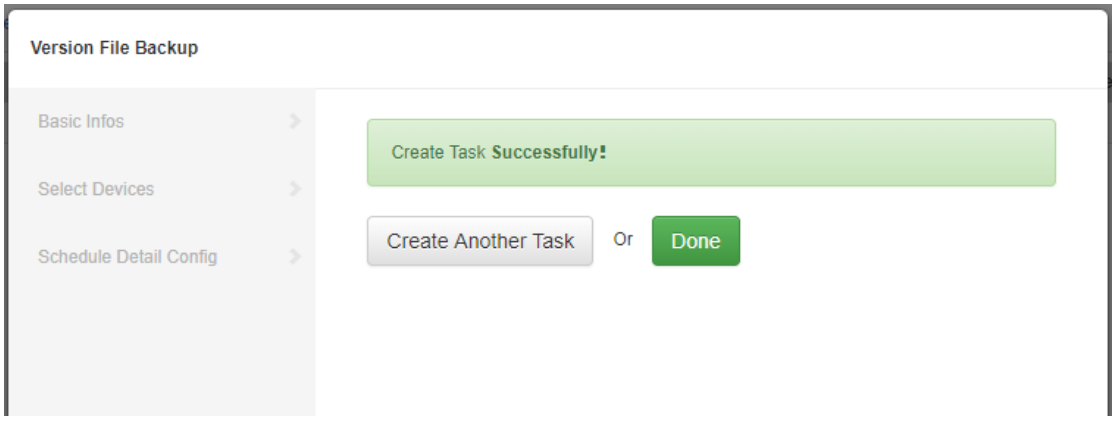
Time: The executed period of the task. Only when **Period** is set as **Timing Task**, **Time** is enabled. See the figure.



The modes of interval: 1. Execute at the appointed hours; 2. Execute every few minutes. In the above figure is displayed the execution at 8 am and 4 pm. If the interval needs setting, click **interval** first, then specific minutes. See the figure.



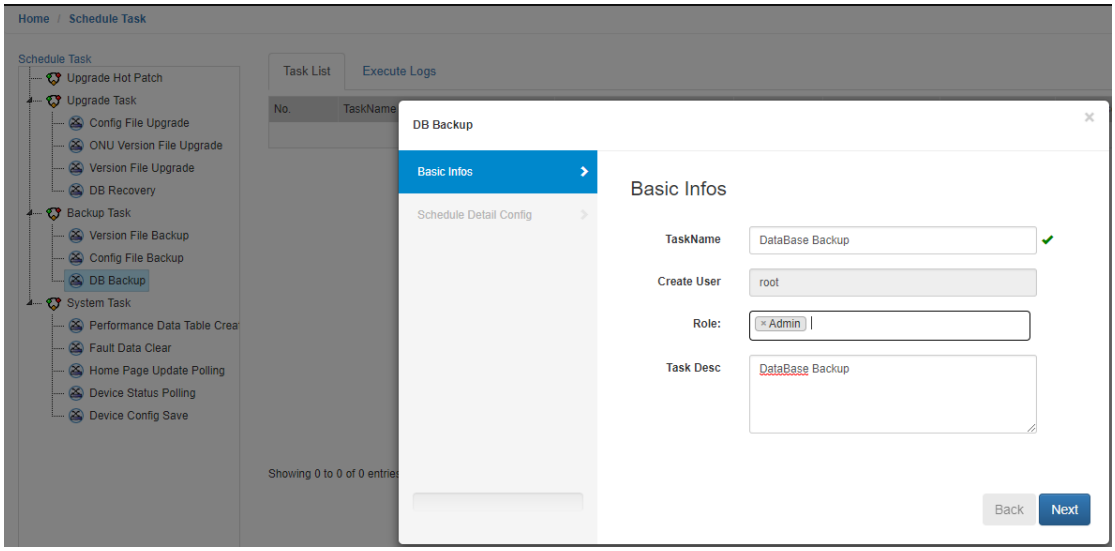
5) After setting, click **Next** to check whether the task is created successfully or not. See the figure.



8.1.1.2 DB Backup

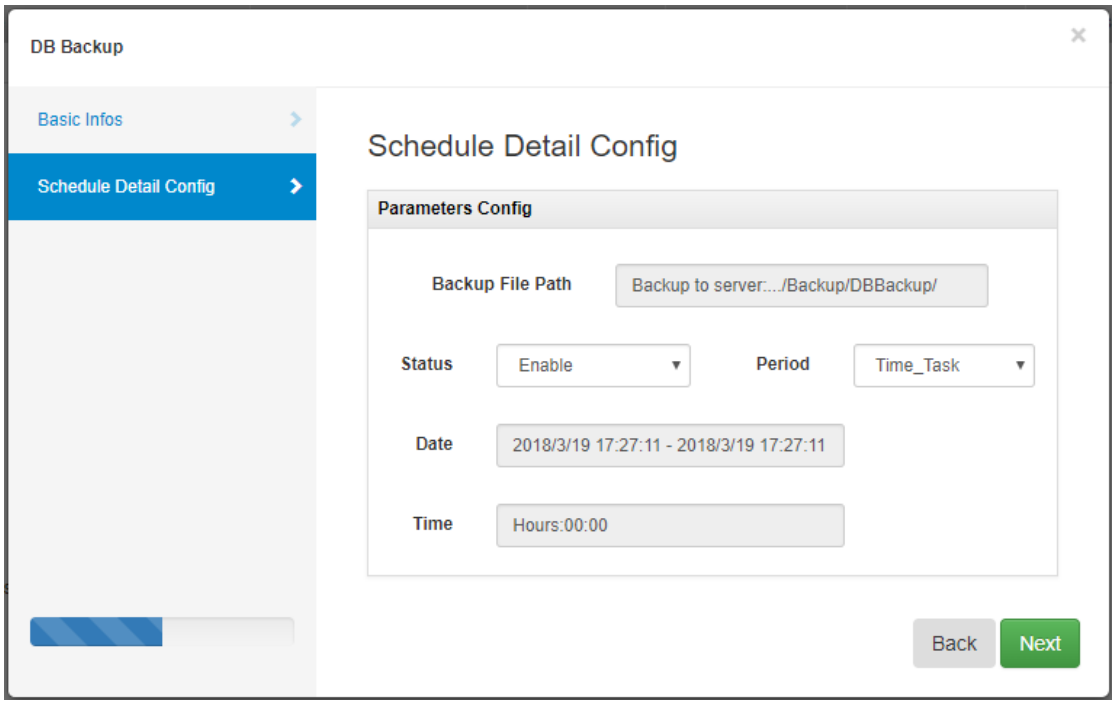
DB Backup is used to backup the data in the database of NMS, in case that the data can be recovered when NMS fails.

1) Select **DB Backup** in **Schedule Task**. Right click to enable **Create**. Click it to enter the created guideline.

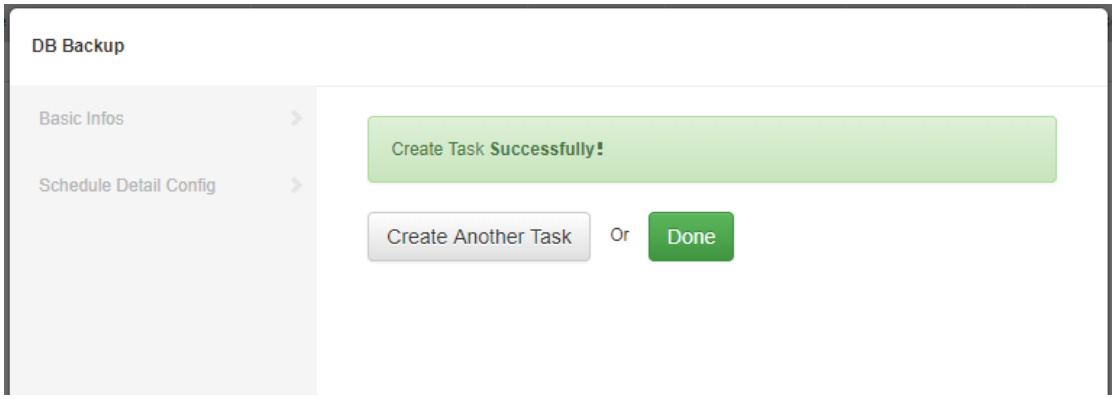


Basic Infos should correspond to that of **Version File Backup**. Please refer to **create Version File Backup**. After filling in the form, click **Next**.

2) Next is **Schedule Detail Config**. The specific parameters are the same as that of **Version File Backup**. Please refer to that.



3） After modification, click Next to check whether the task is created successfully or not. See the figure.



8.1.2 Create Upgrade Task

Create Upgrade Task mainly aims at upgrading the version and configuration, as well as recovering the data of NMS database. (The source of the data must be NMS database backup.)

8.1.2.1 Create Version File Upgrade/Config File Upgrade/ONU Version File Upgrade

To create **Version File Upgrade**, **Config File Upgrade**, **ONU Version File Upgrade**, three of them share the generally same steps. The steps will be illustrated in detail with **Version File Upgrade**.

1） Select **Version File Upgrade** on **Schedule Task**, and right click it to enable **Create**. Click **Create** to enable the create guideline.

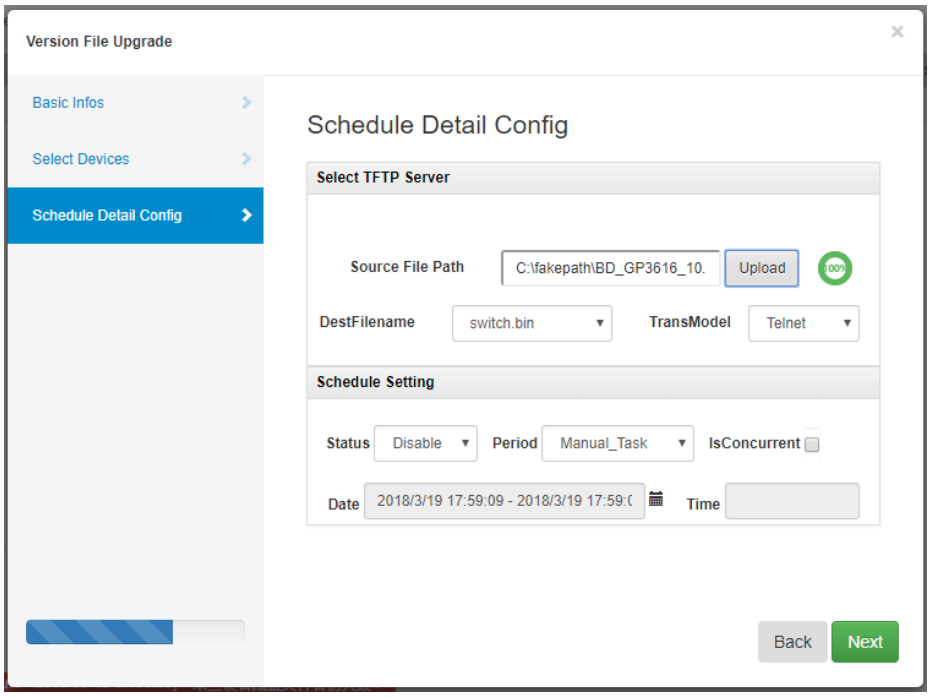
2） To fill in Basic Infos, refer to **Creat Version File Backup**.

3） To select the device, refer to **Creat Version File Backup**.

4） To modify **Schedule Setting**, here introduce in detail some specific parameters. refer to **Creat Version File Backup** for general parameters.

Source File Path: Due to the upgrade here, it requires users to upload version files. Click on the input box to select the version file, and click **Upload** to upload user's file to NMS server. It is **Bin** file that upgrade uses it when the task is executed.

DestFileName: The file to be upgraded. When execution is on, the file will be replaced by the uploaded file.

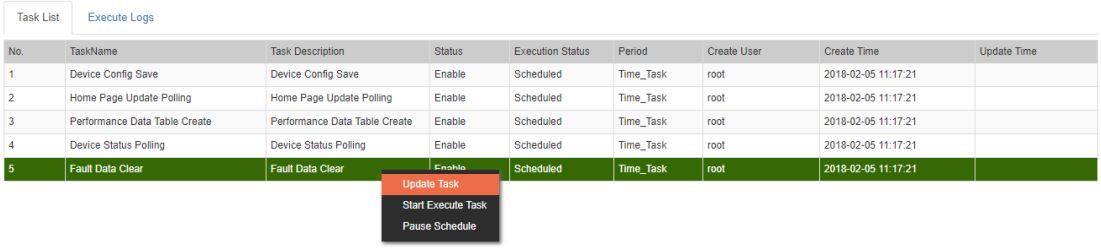


5） After configuring scheduling parameters, click Next to check whether the task is created successfully or not.

8.1.3 System Task

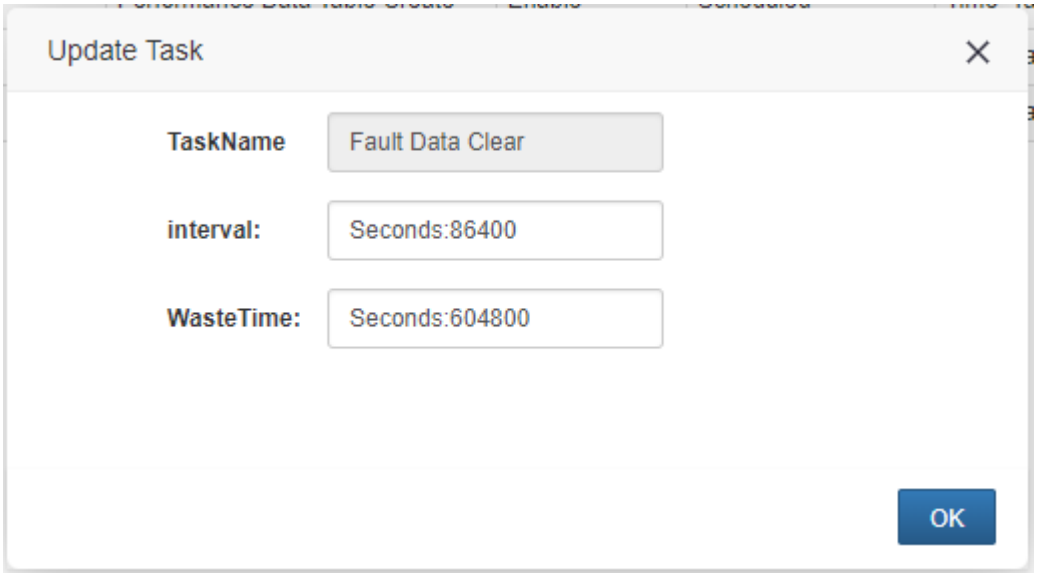
System Task means a series of default tasks created by NMS to support the normal operation of NMS, not supporting users to create or delete any of them but refresh the polling time of some task based on some needs. It will be illustrated in detail with **Fault Data Clear**.

Select **Fault Data Clear** in Task List. Right click it to pop up the menu list, which includes **Upgrade Task**, **Start Execute Task**, and **Pause Schedule**. See the figure.



The three operations are explained in detail below.

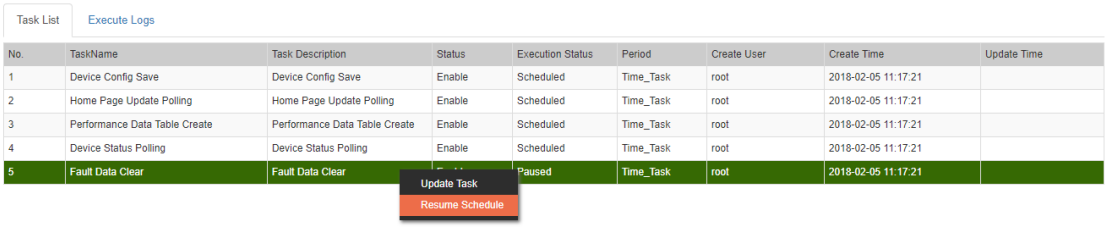
Upgrade Task: To upgrade the task, mainly refreshing the polling interval. See the figure.



Here, **interval** means the executed interval of the task, whose unit is **second**, and users just refresh the seconds when setting; WasteTime means the alarms during which period should be deleted. As is shown in the above, 604800 means the deletion of history alarm since 7 days ago in NMS.

Start Execute Task: To start the execution at once, which can be used to immediately execute some tasks having not been at the polling time.

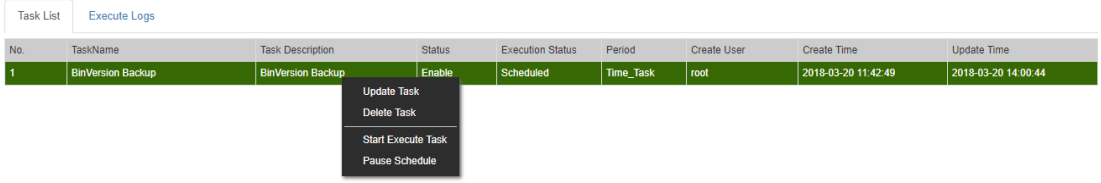
Pause Schedule: To pause the schedule of some task, that is, if the task need scheduling still, click **Resume Schedule**. See the figure.



8.2 Task List

After creation, some operations to the created tasks are supported by NMS, including **Update Task**, **Delete Task**, **Start Execute Task**, **Pause Schedule** and **Resume Schedule**. It will be illustrated with **Version File Backup**.

Select the task to be operated in **Task List**, and right click the operation items. See the figure.



Update Task: To update the task, which is the same as **Create Task**. Users can update the created tasks based on needs, including Task Description, the selection of the device, transmission mode

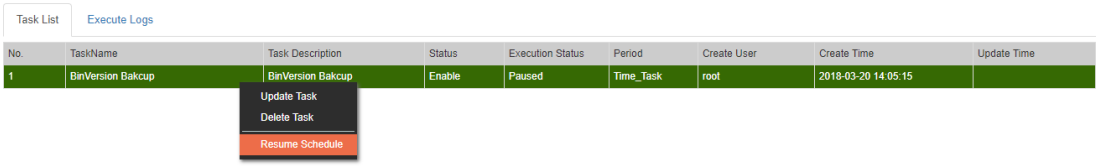
and update the scheduling time.

Delete Task: To delete the created task

Start Execute Task: To start the execution at once, which can be used to immediately execute some tasks having not been at the polling time.

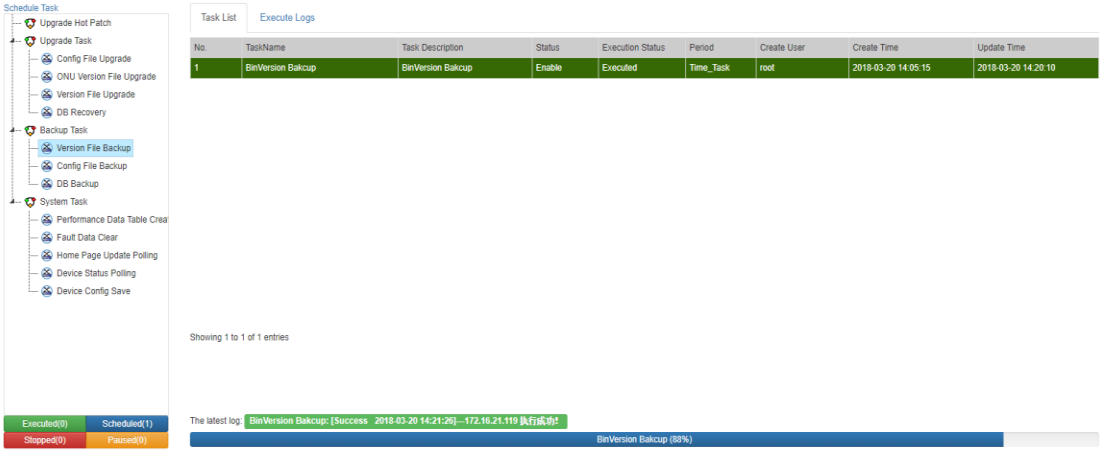
Pause Schedule: To pause the schedule of some task, that is, if the task need scheduling still, click **Resume Schedule**.

Resume Schedule：To schedule some task set as **Pause Schedule**. See the figure.

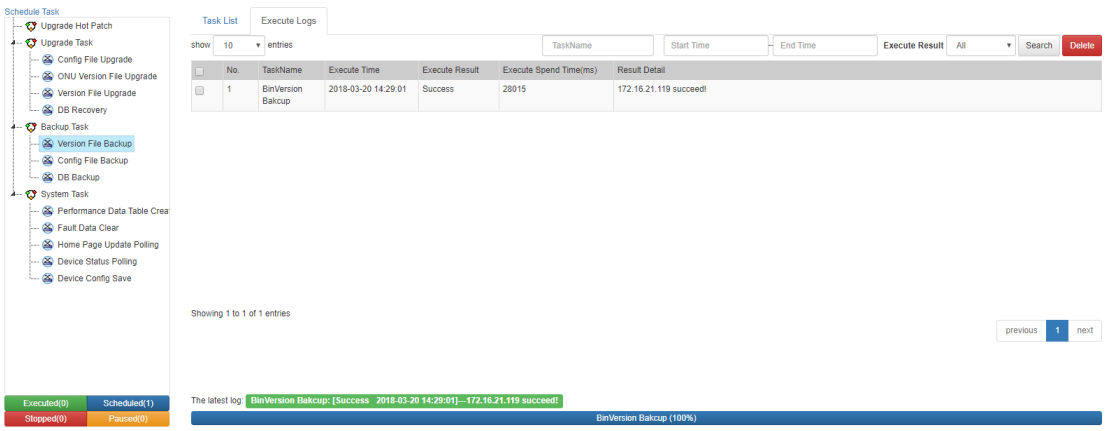


8.3 Execute Logs

Execute Logs is used to display the executed results of some tasks excluding NMS tasks. Users can search the executed results and specific information of the created tasks. During execution, click progress bar to check the execution condition. See the figure.



The results is shown below. Filtrate according to **TaskName**, **Execute Time**, **Execute Result**.



9 Business Management

9.1 Active EPON ONU

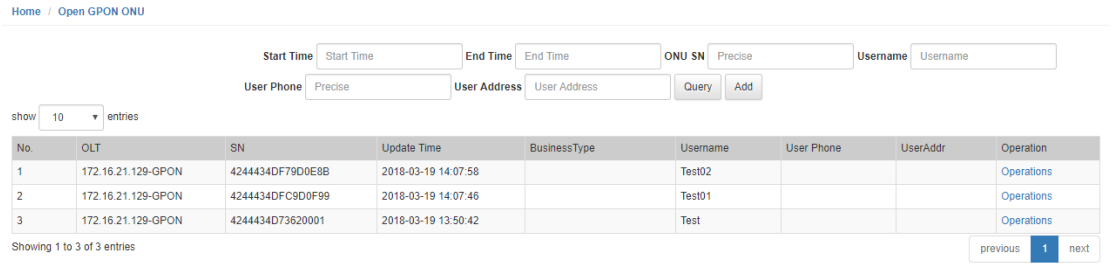
Refer to the *Operation Manual*.

9.2 EPON Business Type Management

Refer to the *Operation Manual*.

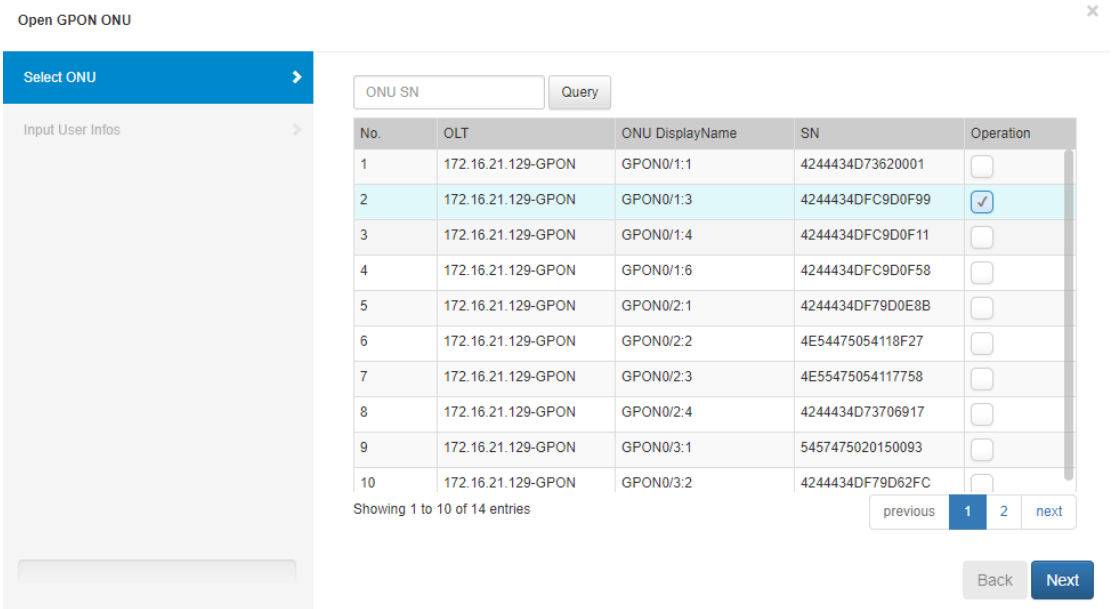
9.3 Active GPON ONU

Click **Business Management->Active GPON ONU** to enable the interface. Its main functions are selecting the ONU model for user information binding, retrieval, and locating OLT/ONU. See the figure.

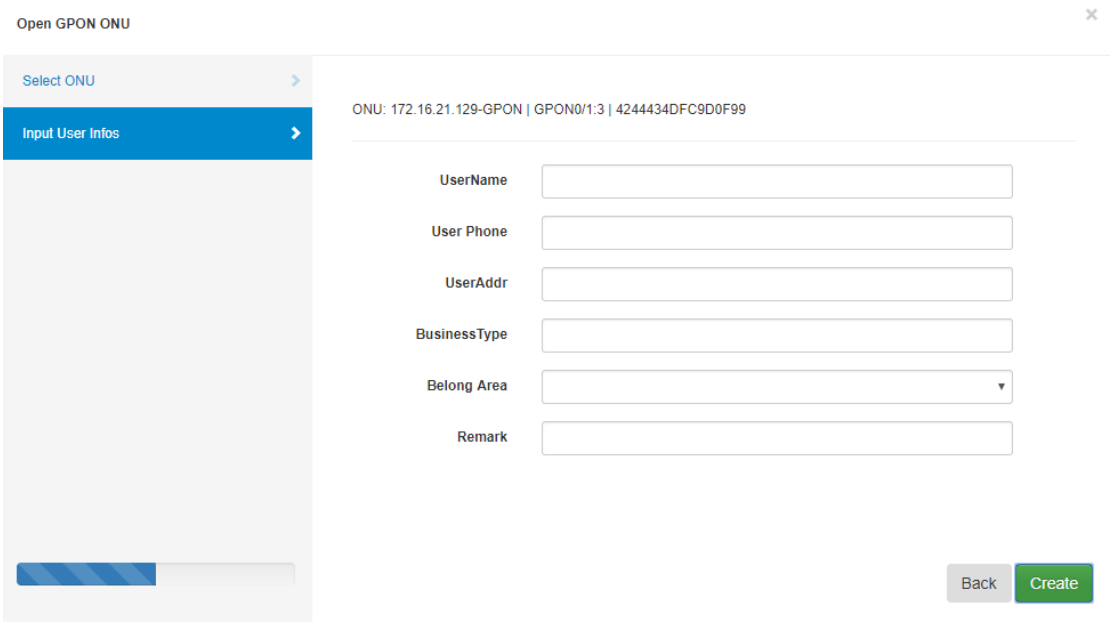


- Add

  Click **Add** to enable the following interface.



Select one ONU detail(Users can retrieve based on ONU SN.). Click **Next**. See the interface.

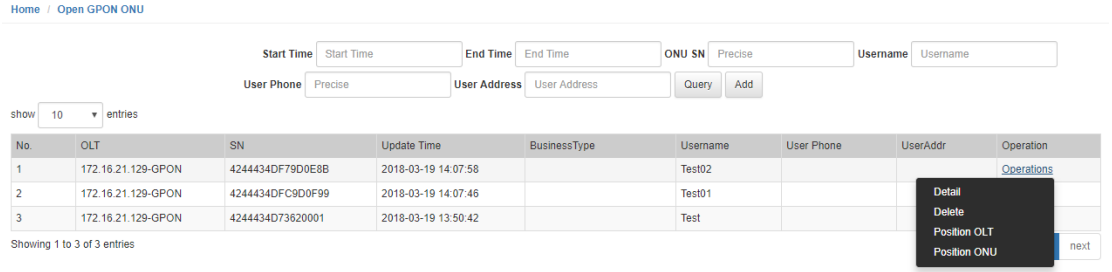


Input user information, and click Create to make it.

- Query

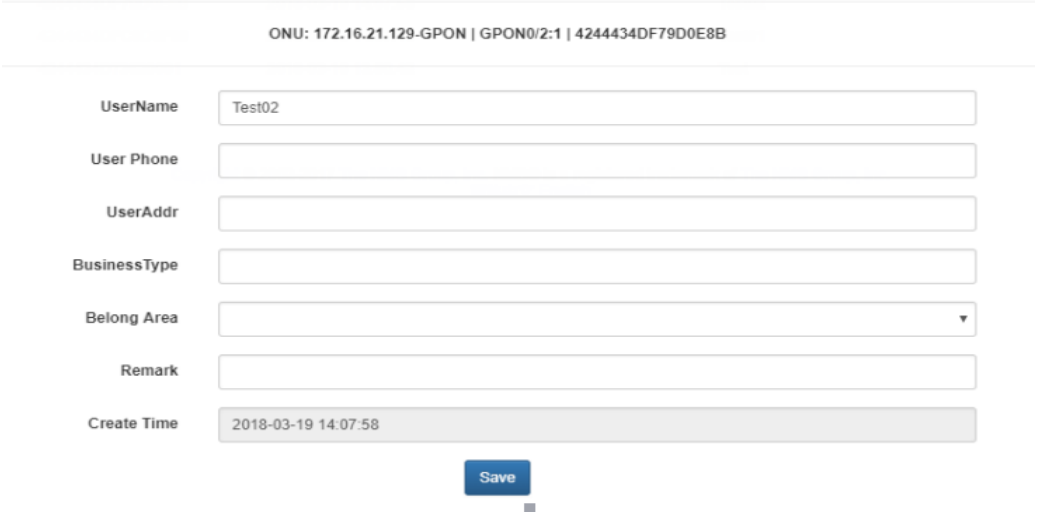
  On **Open GPON ONU**, input the details on the first half and click **Query**.

  Select one line. Click **Operations**. See the figure.



- Detail Display

  Click **Detail Display**. See the figure.



Users can check or edit the information. Click **Save** to save it.

- Delete

Click **Delete** to delete the open information.

- Locate OLT
  Click **Locate OLT** to enable the OLT management interface.
- Locate ONU
  Click **Locate ONU** to enable the ONU management interface.

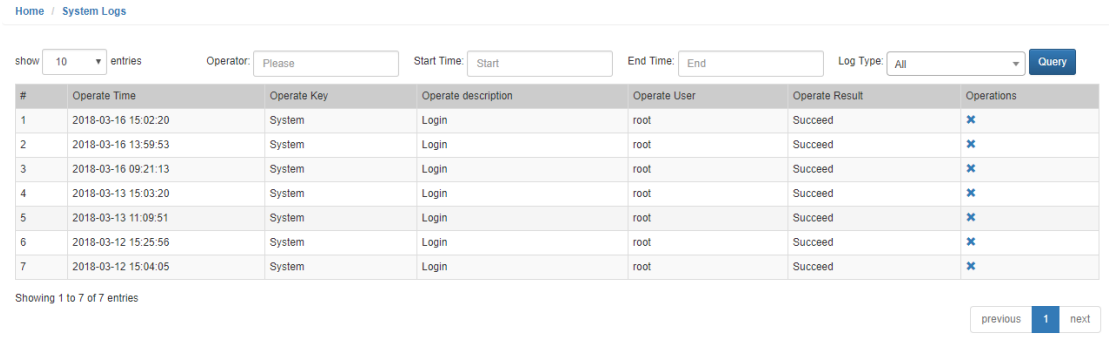
9.4 App Download

Refer to Operation Manual.

10 System Management

10.1 System Logs

Click **System Management->System Logs** to enable the interface. It mainly records the user's relatively sensitive operation to the system and device, such as login/out, add/delete, refresh, etc. See the figure below.



Conditions for Query:

1. **Operator**: To fill in the exact operator, or the query will cover all.
2. **Start/End Time**: The period of the operation, or the query will cover all.
3. **Log Type**: To select the type, or the query will cover all.

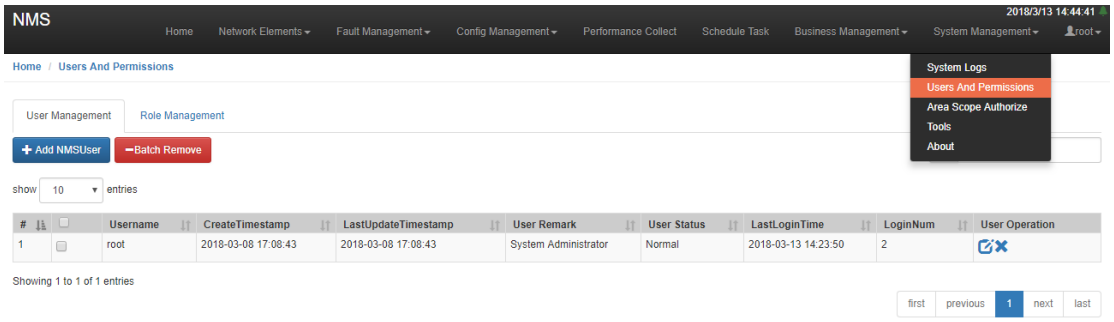
After selection, click **Query**.

Click **Delete** to delete the record.

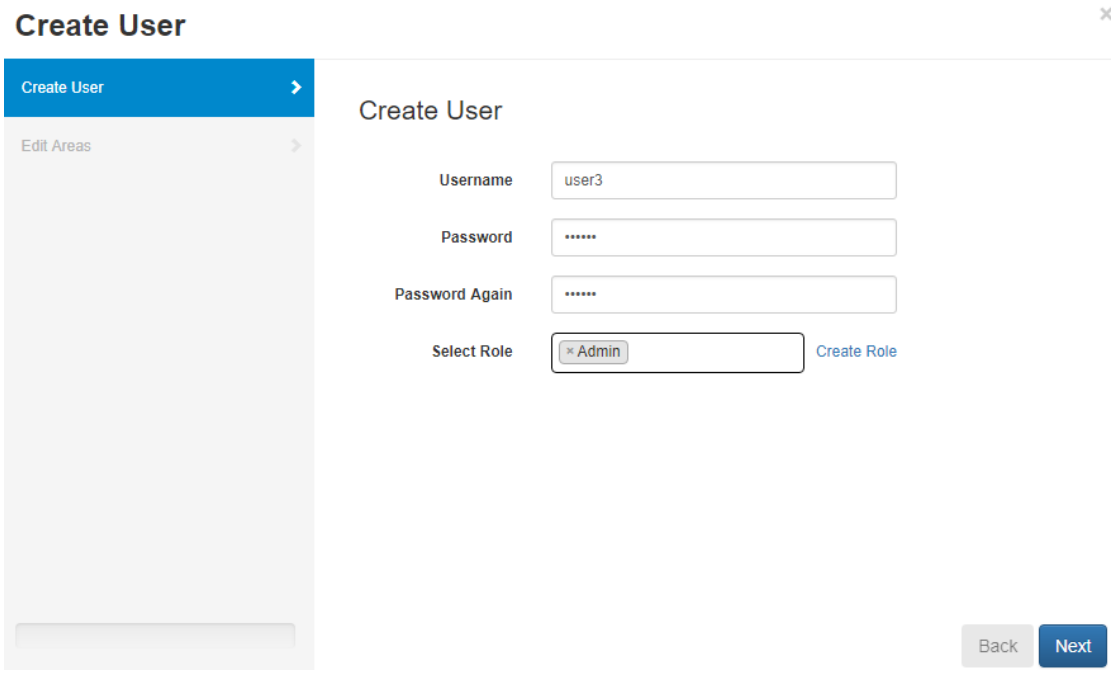
10.2 Users And Permissions

10.2.1 Add NMSUser

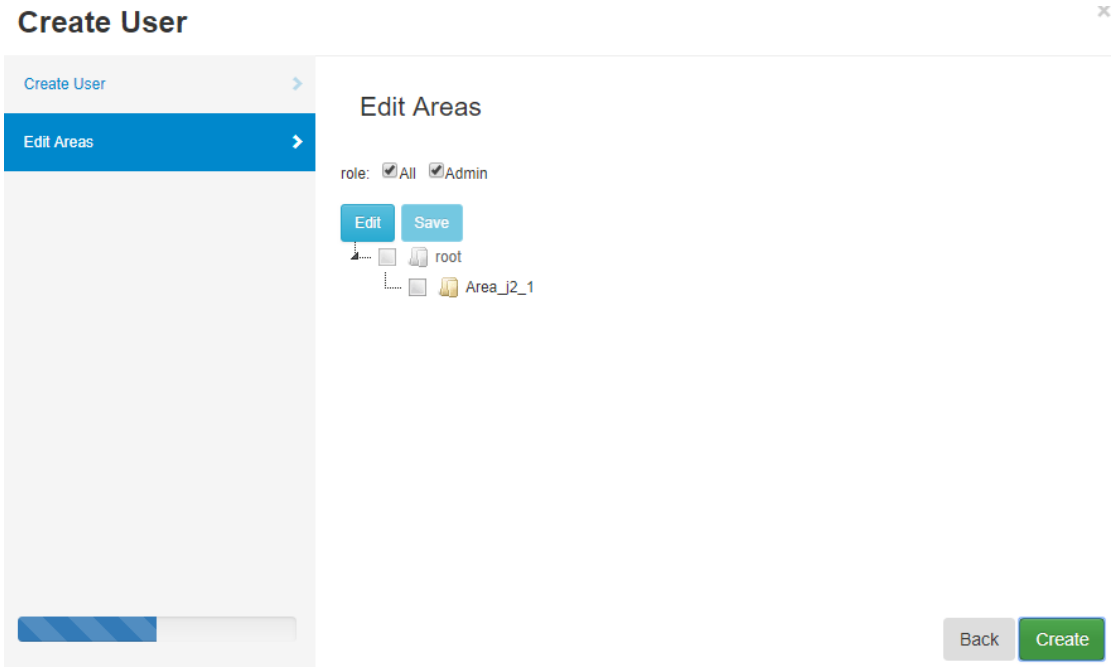
Click **System Management->Users And Permissions** to enable the interface. See the figure.



Click **Add NMSUser** to pop up the guideline. See the figure. Fill in the **Username** and **Password** and **Select Role** to enable **Next**.



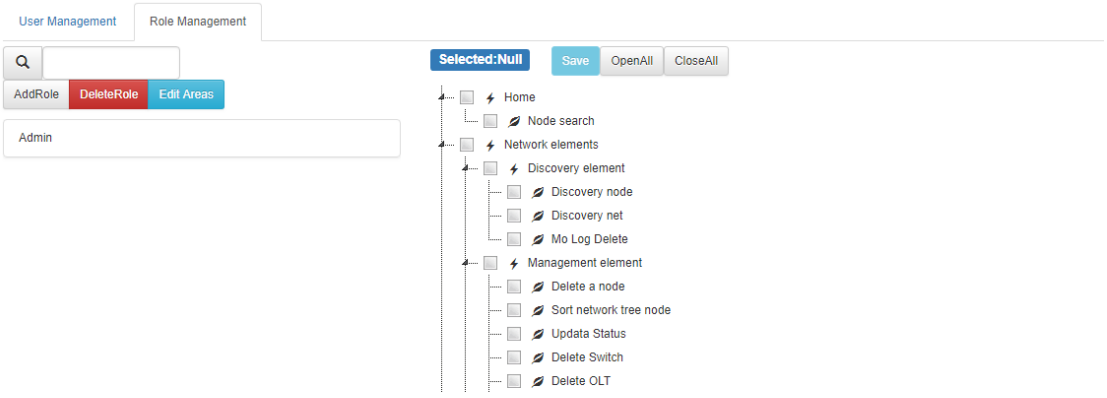
The interface shows below. The initial area covers all. If the user requires more, click **Edit**, selecting a single role to grant an area. Then click **Save**.



After finishing the above steps, click **Create**.

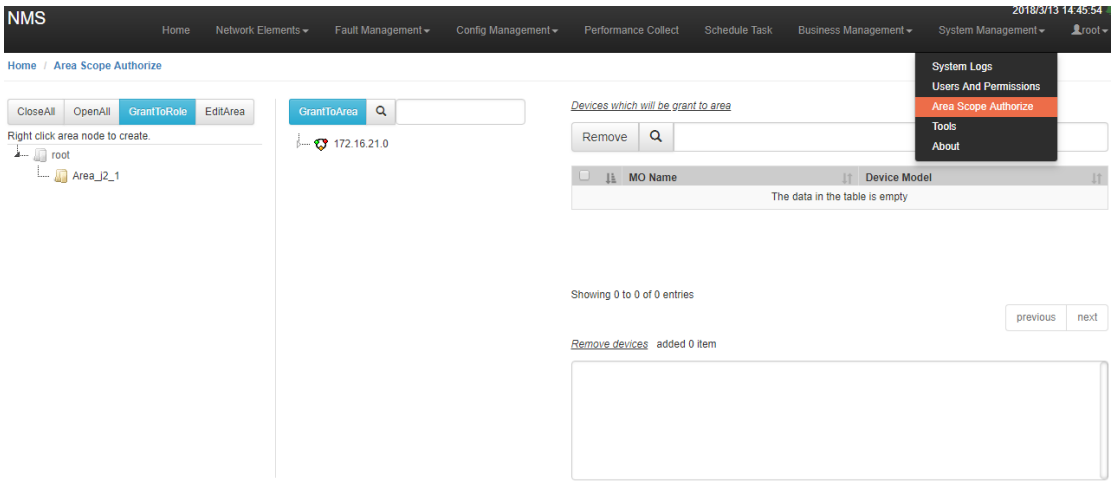
10.2.2 Role Management

Click **Role Management** to enable the interface which includes AddRole, DeleteRole, BindRole(To grant new areas, please enter **Edit Area**).



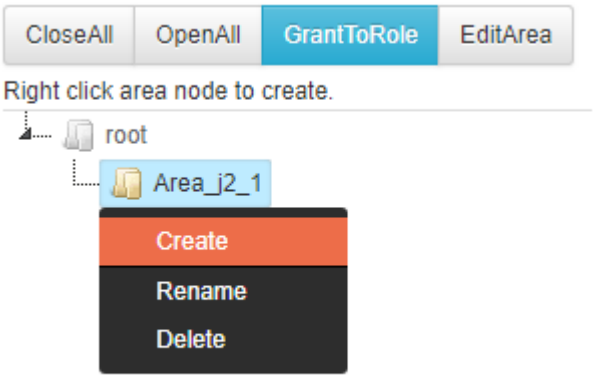
10.3 Area Scope Authorize

Click **System Management->Area Scope Authorize** to enable the interface. After finishing the following steps, authorize the role to the user to control user's access to the device, realizing the area management.



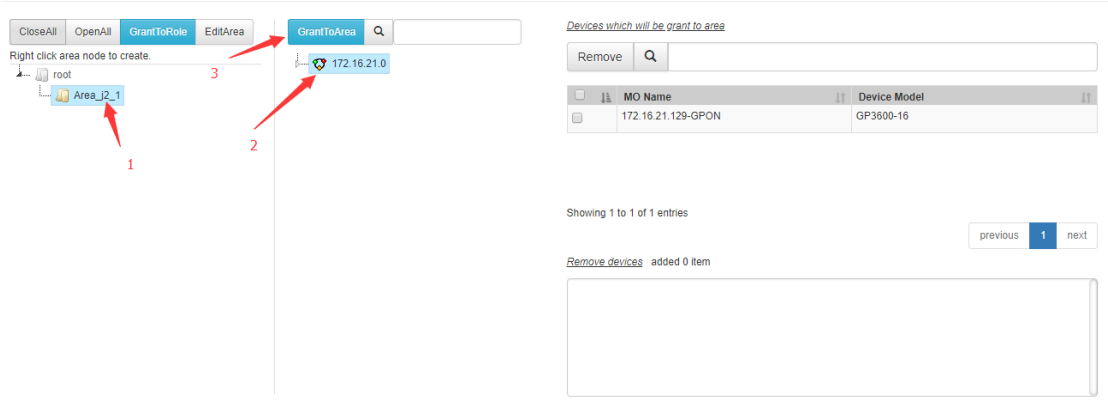
10.3.1 Create Area

On the left of the above figure is a tree structure of **Area**. Right click the certain nodes to create. Users can rename or delete it later.



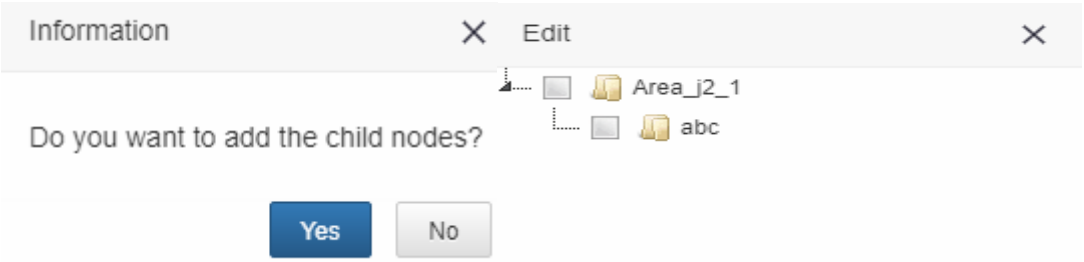
10.3.2 GrantToArea

On the middle of the interface is device tree. After creation, select the corresponding area and the devices to be granted. Click **GrantToRole** to make it. (For further filtering, select the corresponding data in the right form; click Remove, NMS will exclude the removed devices when granting.) See the figure.

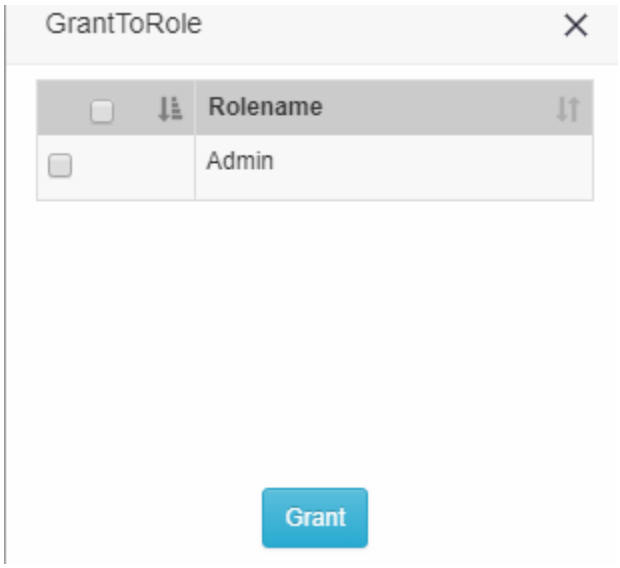


10.3.3 GrantToRole

First select the area, and click **GrantToRole**. If the selected area includes child nodes, NMS will give a notice whether to add the child nodes or not. The selection of Area interface will pop up.

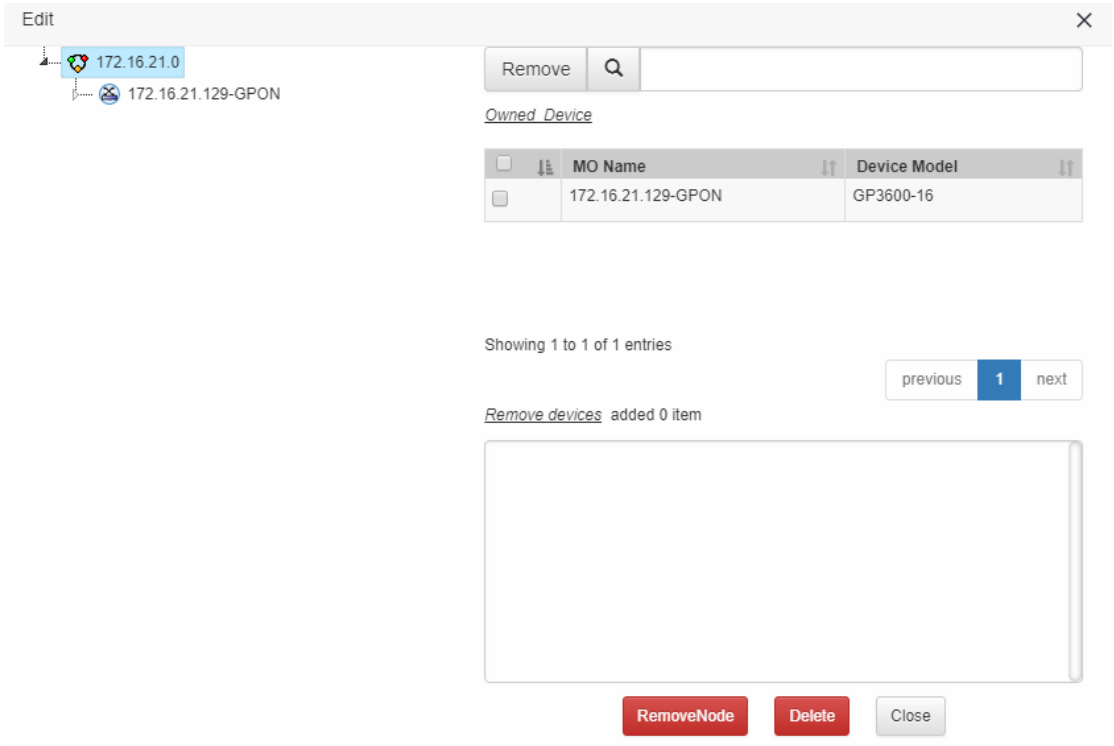


After selecting nodes, click **Yes** to select roles. Click **Grant** to grant the area to the role. (If deleting some area from the role, please return to **Users And Permissions**.)



10.3.4 Edit

If the included device in Area requires removing, 1. Select one area; 2. Click edit buttons to enable the interface. See the figure.



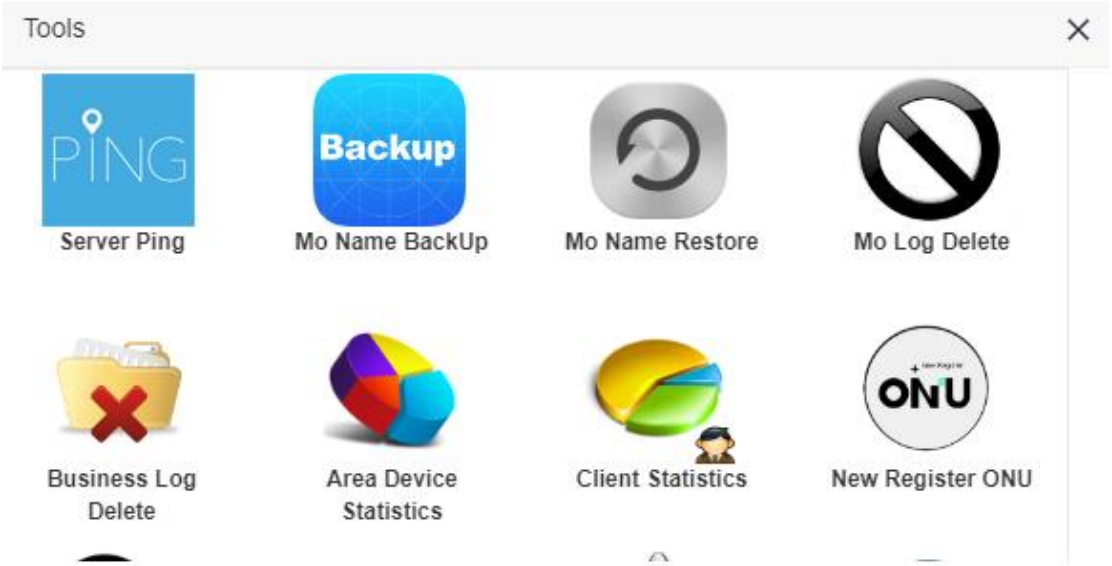
2 strategies of deletion are offered:

1. Remove directly the nodes and child nodes. Select the corresponding nodes on the left tree, and then click **RemoveNode**.
2. Remove one certain node. Select the corresponding nodes on the left tree, and their child nodes will show on the right form. Select the nodes and click **Remove**, the nodes to be removed will be displayed below. After confirmation, click **Delete** to remove the

nodes and their child nodes.

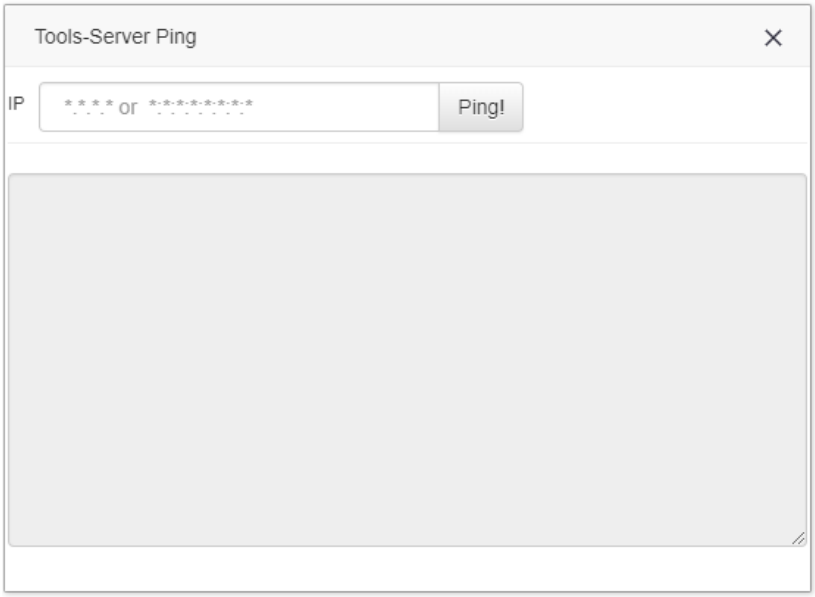
10.4 Tools

NMS includes some small tools for network management. Click **System Management->Tools** to enable the interface. See the figure.



10.4.1 Server Ping

It provides users with operation through **Tools-Server Ping**. It is mainly used to check whether the device is connected to **Server Ping** or not. See the following.



10.4.2 Mo Name BackUp

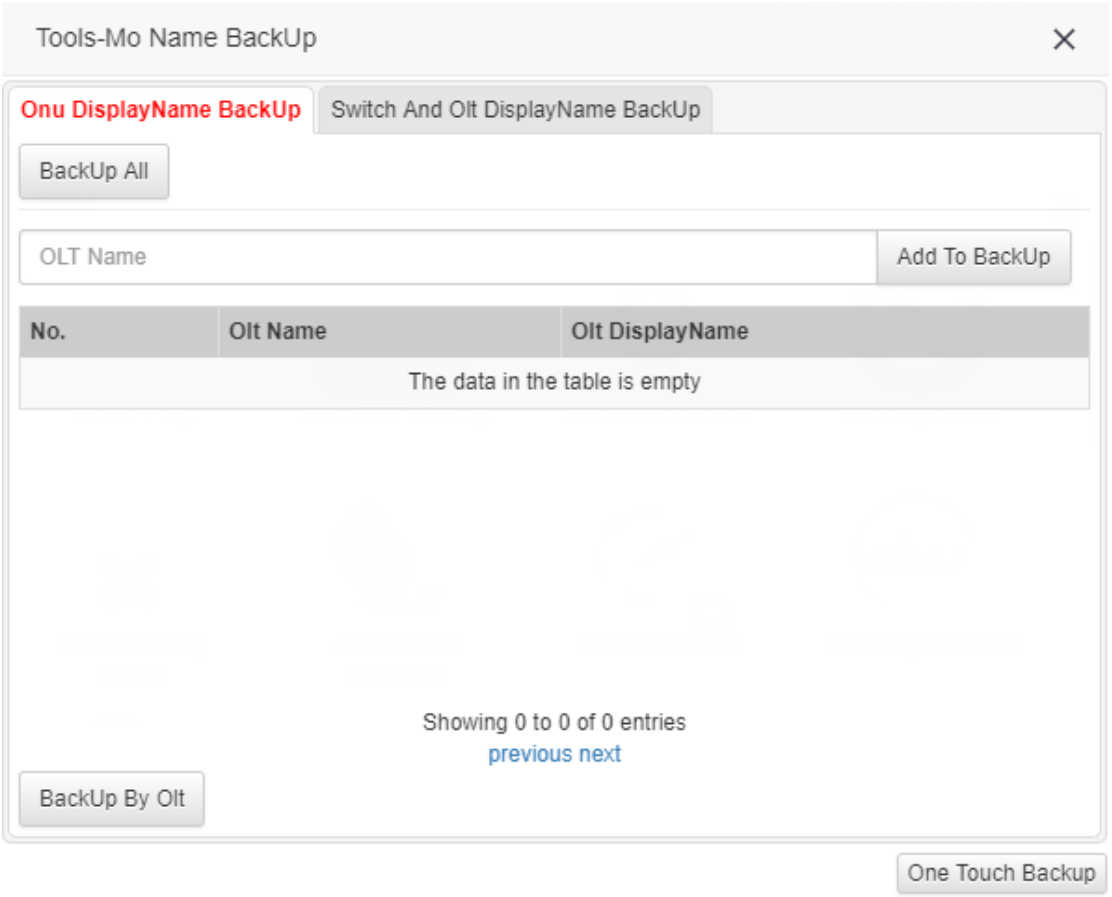
It is used to create the backup for displayed names of managed items. The backup file is in the form of **.xls**. See the figure.

	A	B	C	D
1	No.	IP(or ONU Mac)	Mo DisplayName	Device Type
2	1	172.16.21.119-EPON	172.16.21.119-EPON	EponOLTDevice
3	2	172.16.21.129-GPON	172.16.21.129-GPON	GponOLTDevice
4	3	172.16.21.129	172.16.21.129	SwitchObject
5	4	172.16.21.52	172.16.21.52	SwitchObject
6	5	172.16.21.42	172.16.21.42	SwitchObject
7	6	11 11 11 11 11 11	EPON0/1:1	EponONUDevice
8	7	fa fc fe 12 34 56	EPON0/1:2	EponONUDevice

1. **Onekey Backup**: Click **Onekey Backup** to create backup for all displayed names of OLT and ONU, in the form of **.xls**.

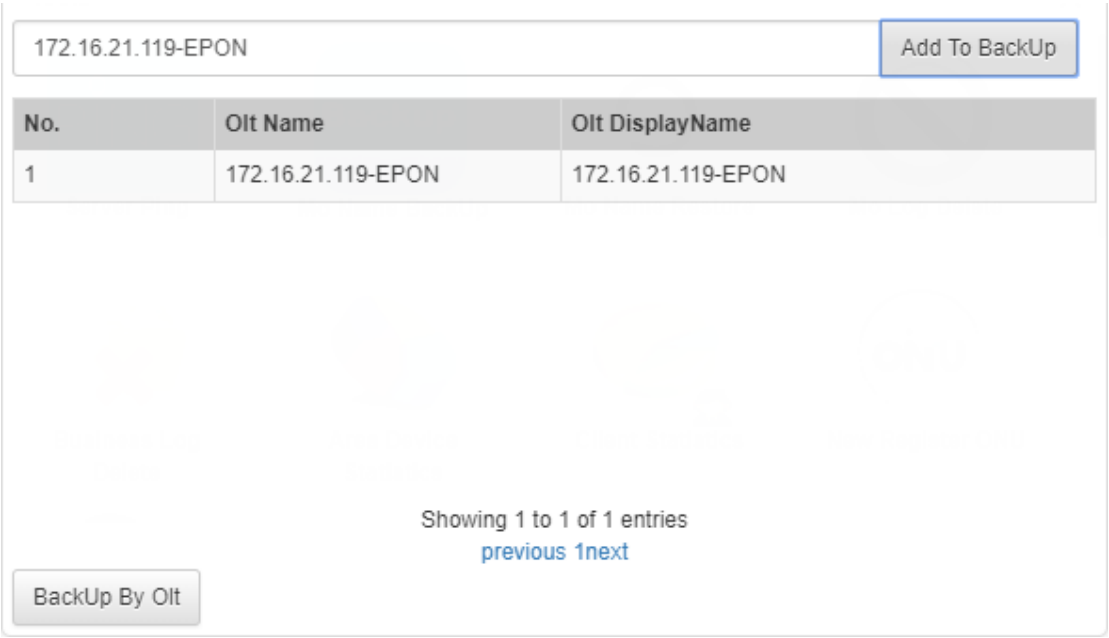
10.4.2.1 ONU DisplayName BackUp

See the figure.



1. **Backup All**: Click **Backup All** to create backup for all ONU display names.
2. **Backup By Olt**: Input **OLT Name** to match obscurely all managed nodes. See the figure.

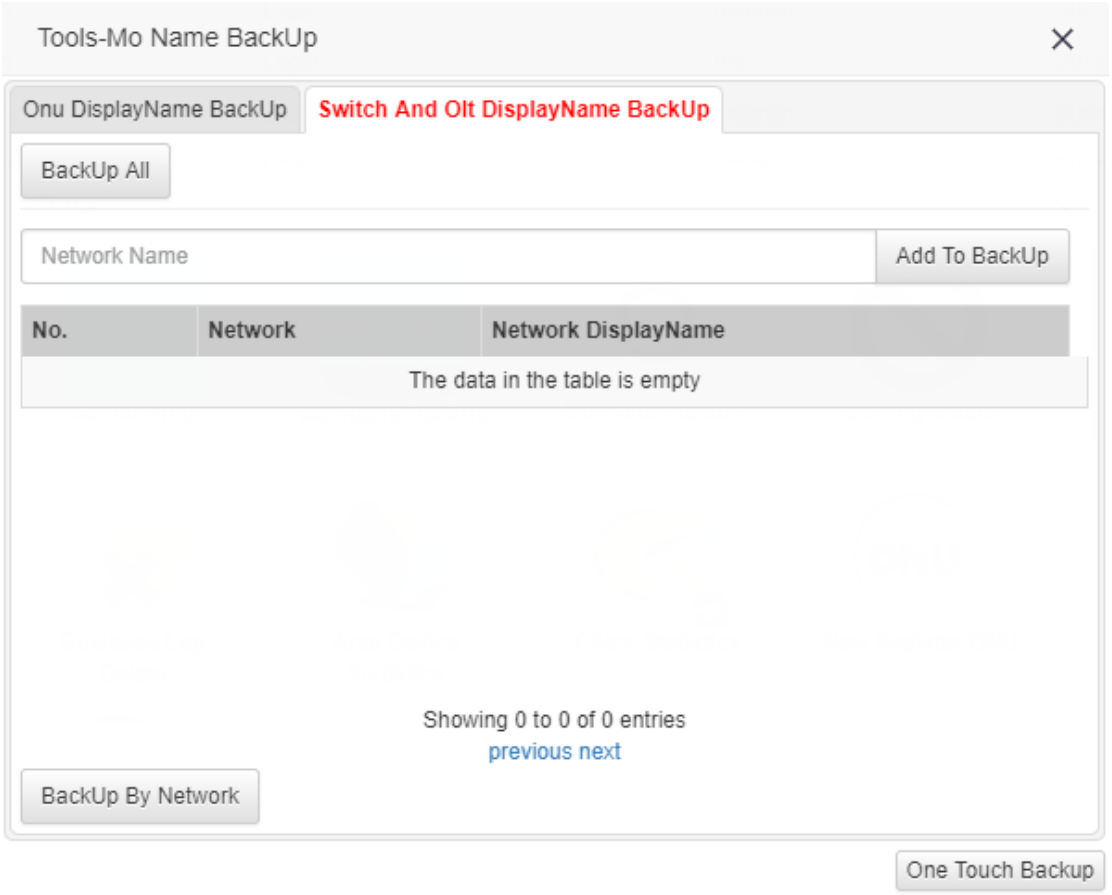
Click **Add To BackUp** to add the selected OLT to the list. See the figure.



Click **BackUp By Olt** to create backup for all OLT ONU display names in the form of **.xls**.

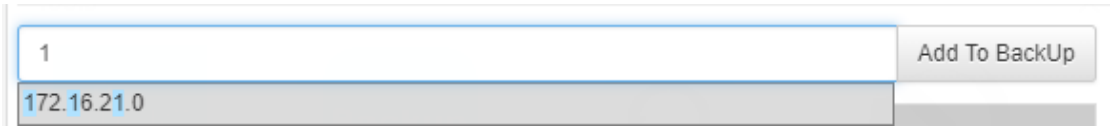
10.4.2.2 Switch And Olt Display Name BackUp

Click **Switch And Olt Display Name BackUp**. See the figure.

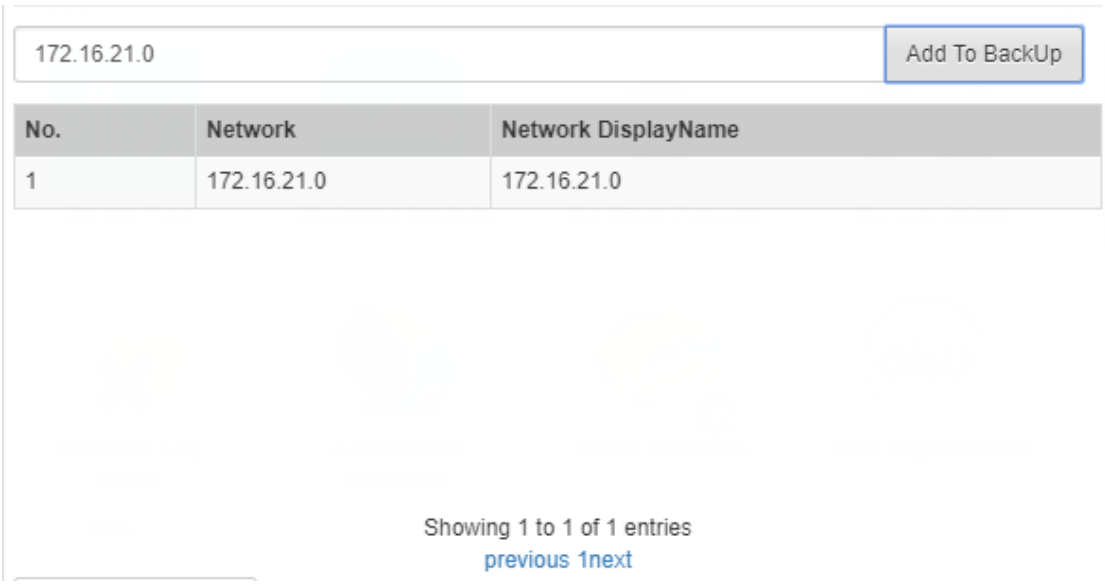


1. **BackUp All**: Click **BackUp All** to create backup for all current **Switch And Olt Display Name**.

2. **BackUp By Network**: Input Network Name needing backup to match obscurely all managed nodes. See the figure.



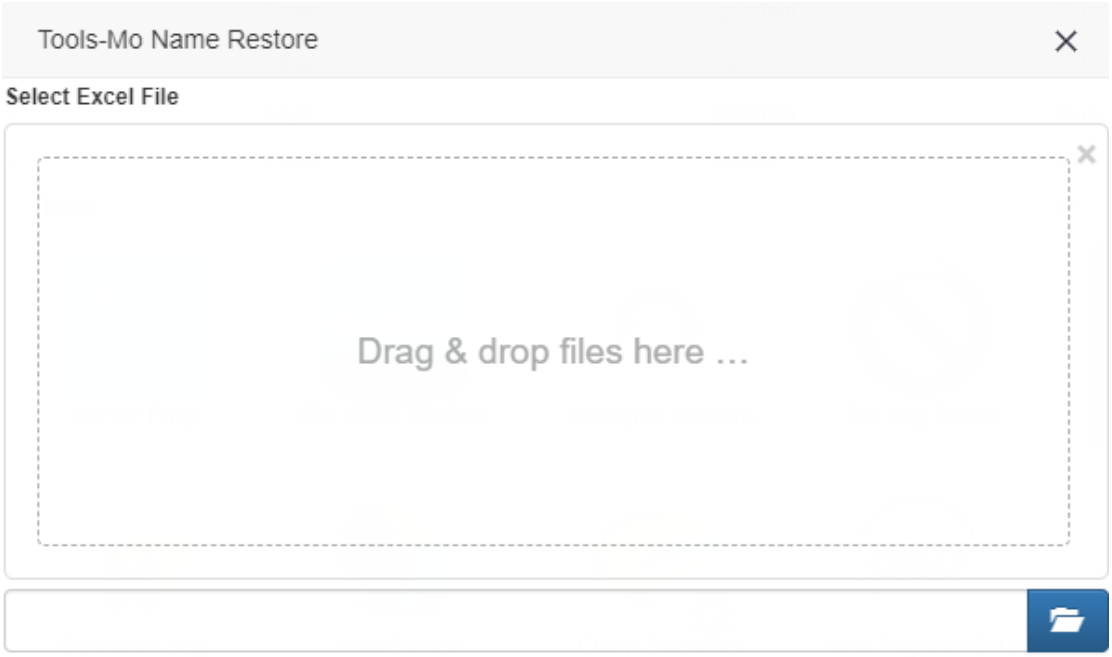
Click **Add To BackUp** to add the selected network nodes to the list. See the figure.



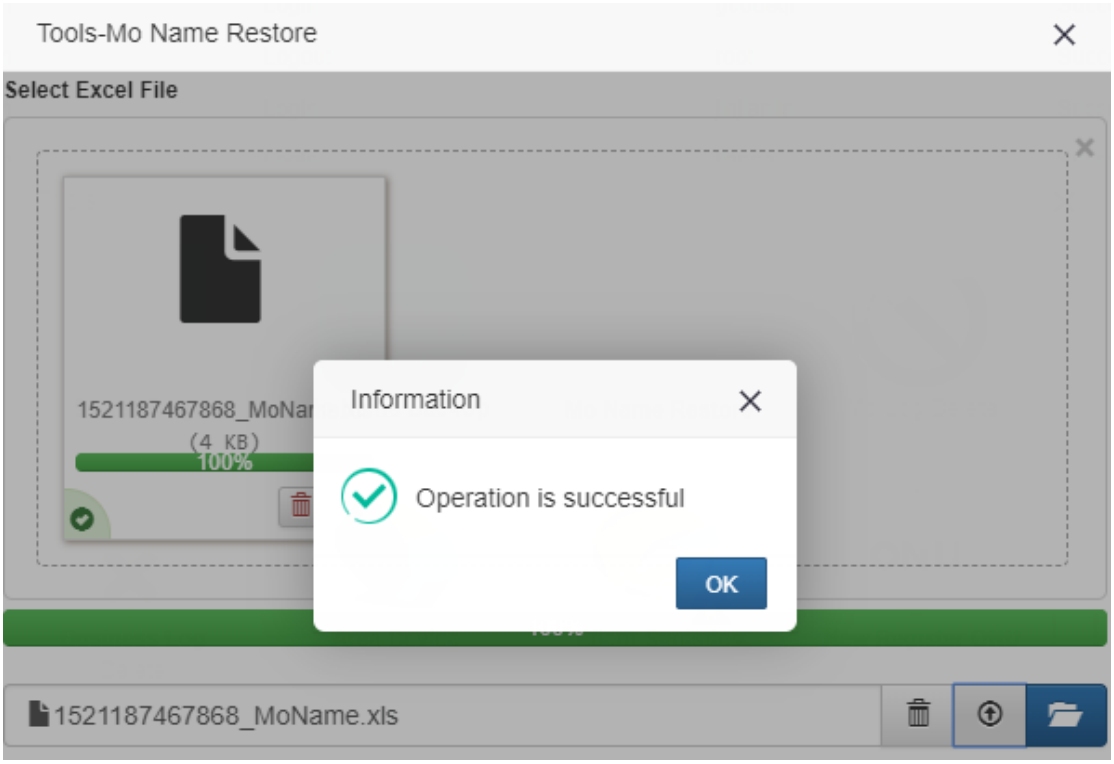
Click **BackUp By Network** to create backup for all switch and olt display name in the form of **.xls**.

10.4.3 Mo Name Restore

With the display name backup in 10.4.2, display names of the discovered devices can be restored. See the figure.

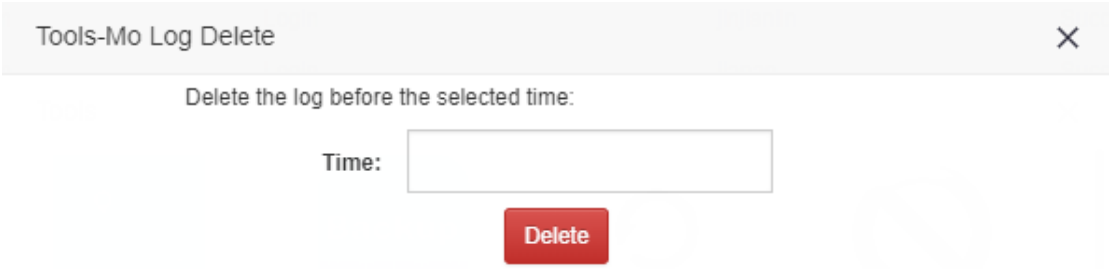


Click the selection button of files or pull the backup files into  . The display name of the managed devices can be restored. See the figure.



10.4.4 MO log Delete

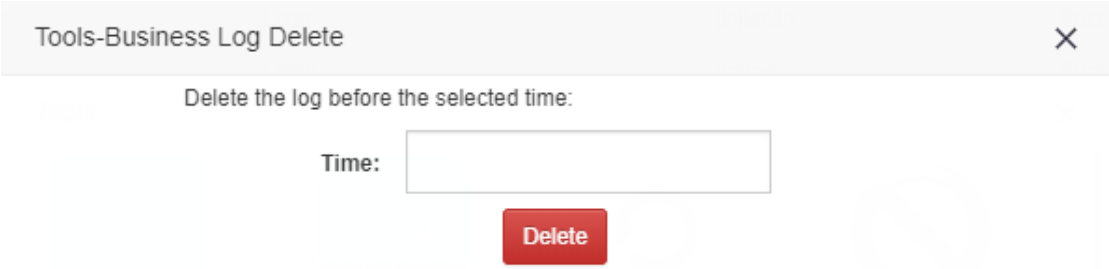
See the figure.



Select the time to be deleted. Click **Delete** to batch delete the MO logs corresponding to the time in **Discovery**.

10.4.5 Business Log Delete

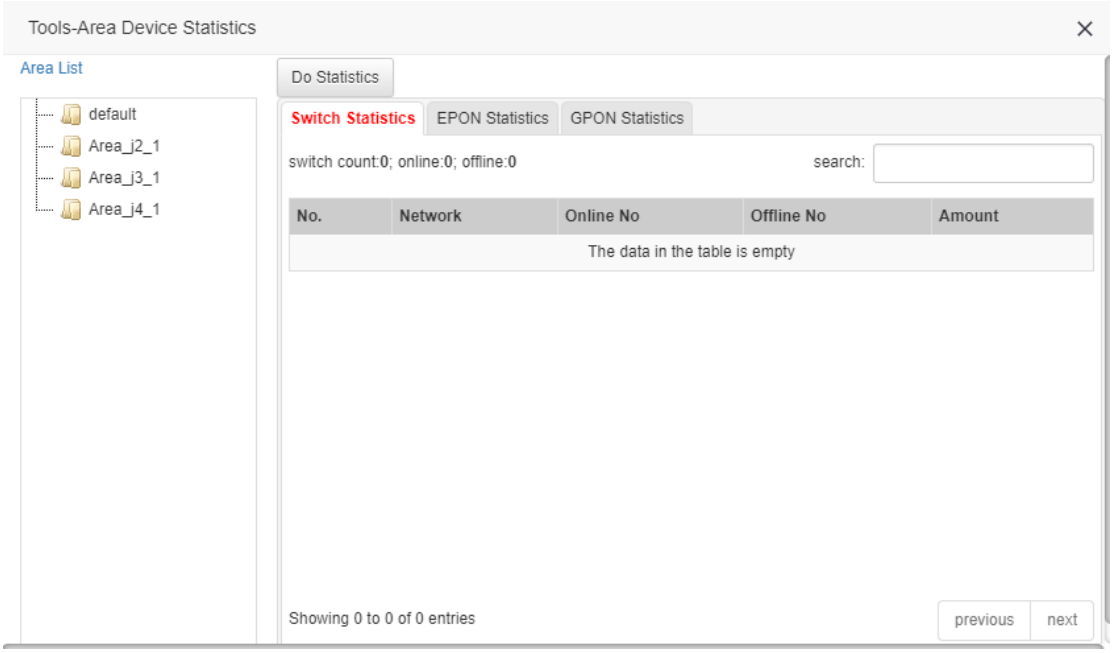
See the figure.



Select the time to be deleted. Click **Delete** to batch delete the logs corresponding to the time.

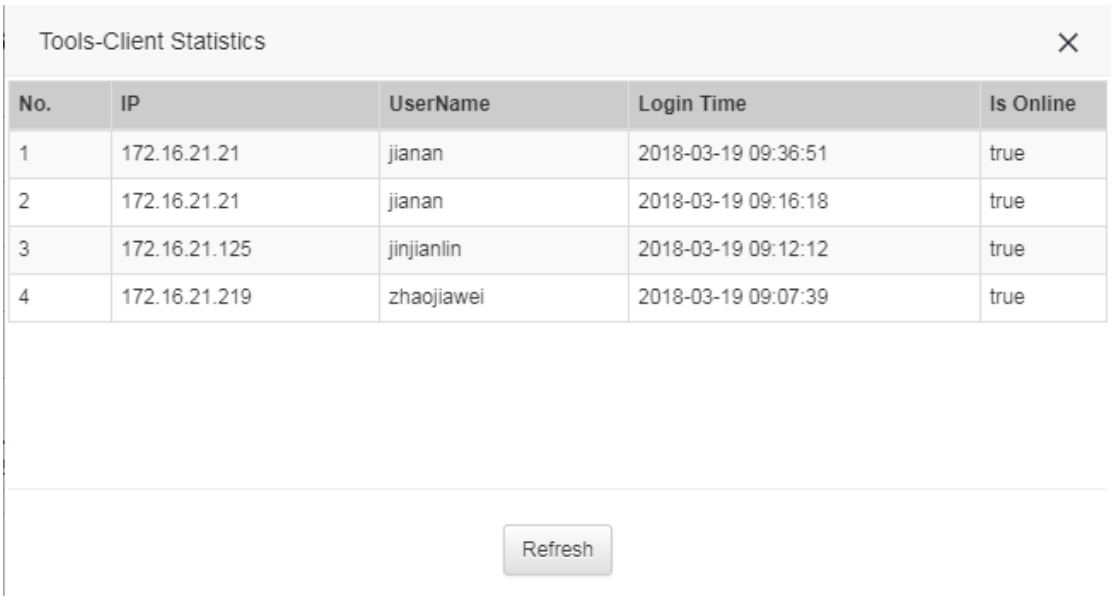
10.4.6 Area Device Statistics

Do statistics about **online/offline/switch count** according to device types (GPON/EPON/Switch). See the figure.



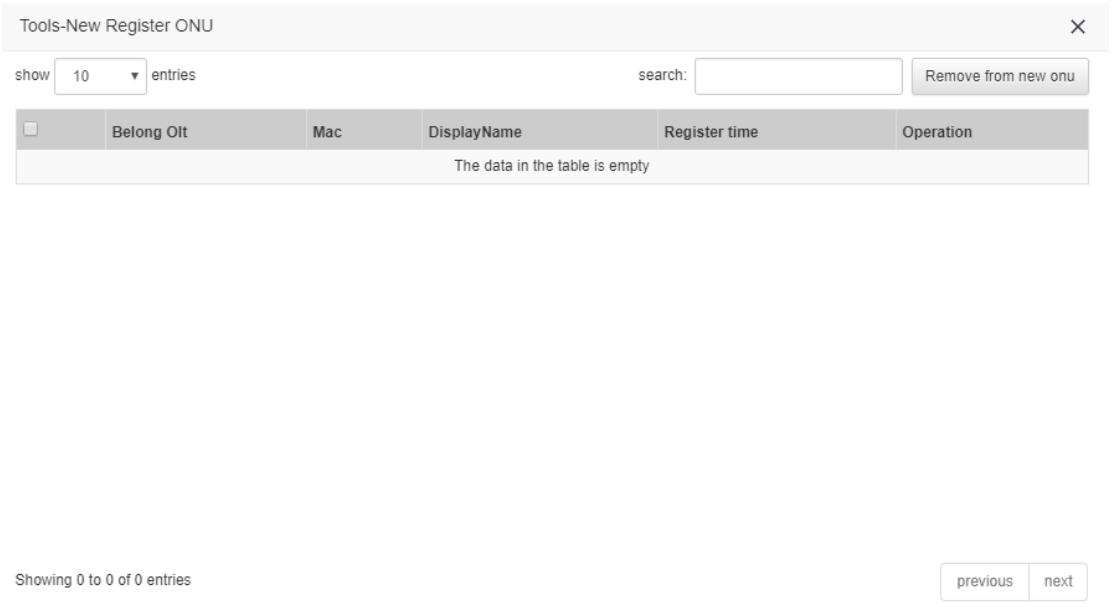
10.4.7 Client Statistics

It can do client statistics. Click **System Management->Tools->Client Statistics**. See the figure.



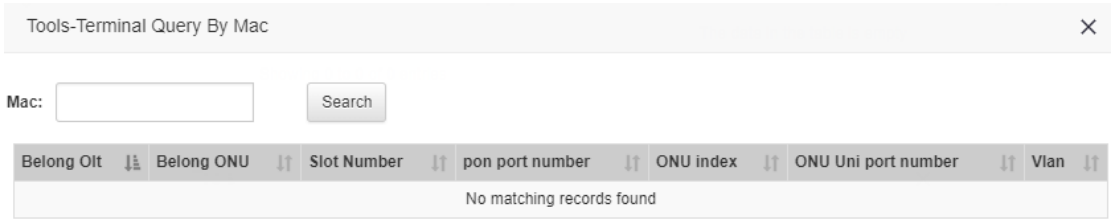
10.4.8 New Register ONU

New registered ONU will show on the interface so that ONU can be easier enabled and remarked. When ONU is new registered, the alarms of the port bind will show, which represents the displayed ONU. So make sure to receive the alarms.



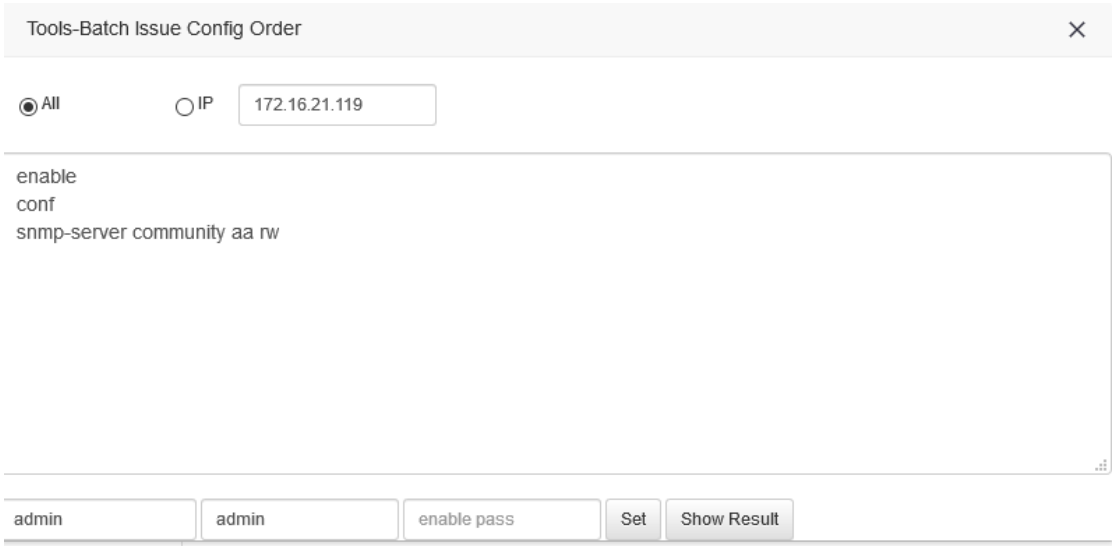
10.4.9 Terminal Query By Mac

Based on mac bottom allied with ONU, do terminal query of **Belong Olt**, **Belong ONU**, **Slot Number**, **pon port number**, with lateral support of the device. See the figure.



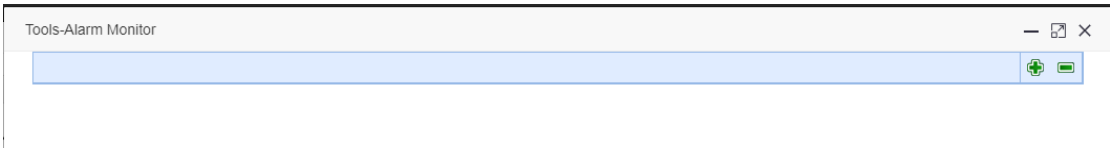
10.4.10 Batch Issue Config Order

Enable **Tools-Batch Issue Config Order**. First select configured device: **All** and **IP**. All: Configure all devices in NMS database; IP: Configure single IP device managed by NMS. After selecting the device, input username and password of **telnet** on the below page. When necessary, the password of **enable** should be input together. Input the command to be configured on the middle page. Click **enter** every time when each command is input. After input all, click **Set**. The sending time depends on the amount of devices. Please wait patiently until **Operation is successful** shows up. Click **Show Result** to check whether the configuration of each device is successful or not.

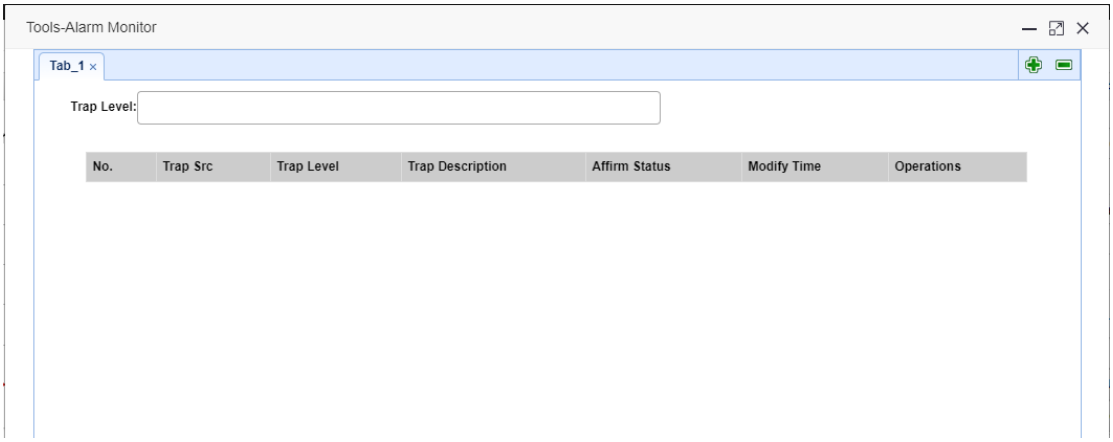


10.4.11 Alarm Monitor

It can monitor alarms and filter the levels of alarms. Click **System Management->Tools->Alarm Monitor**. See the figure.



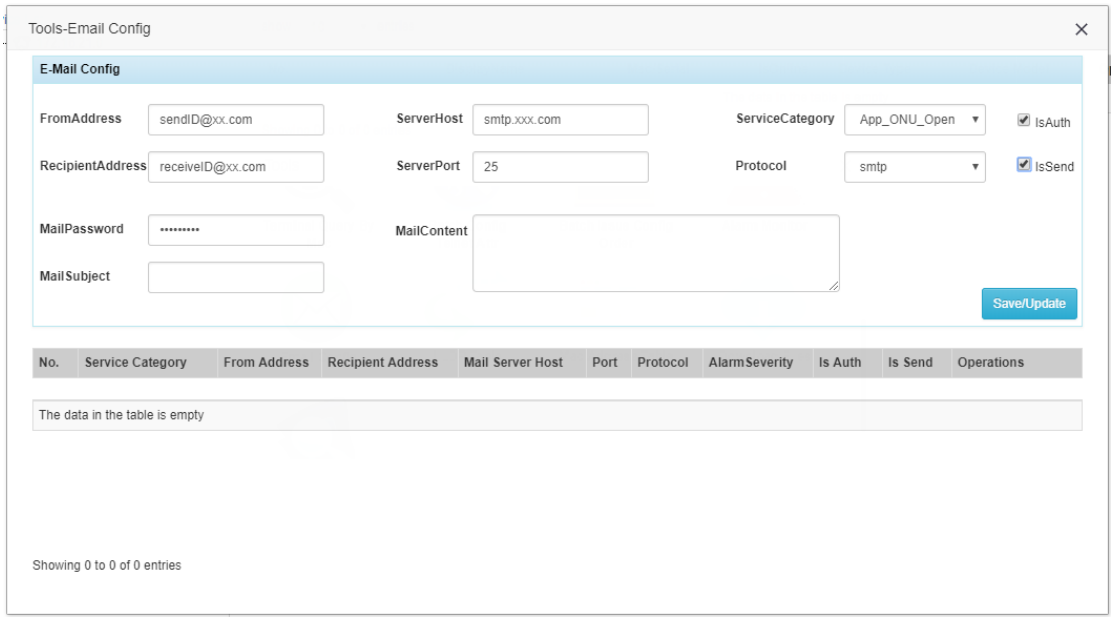
Click  to create a monitoring form and select the levels of alarms to be monitored so as to enable the monitor. If multiple forms are necessary, click  to create more. (Caution: Upon enabling **Alarm Monitor**, the real-time display of the alarms will be screened and all alarms will be displayed after being filtered on the interface.)



See the figure. In **Trap Level**, select the level of filtering. Only if the traps correspond to the selected level, it will show in the below form.

10.4.12 EMAIL Config

It mainly aims at informing the traps on NMS and offers of ONU application. Users can pre configure the e-mail based on their needs. See the figure.

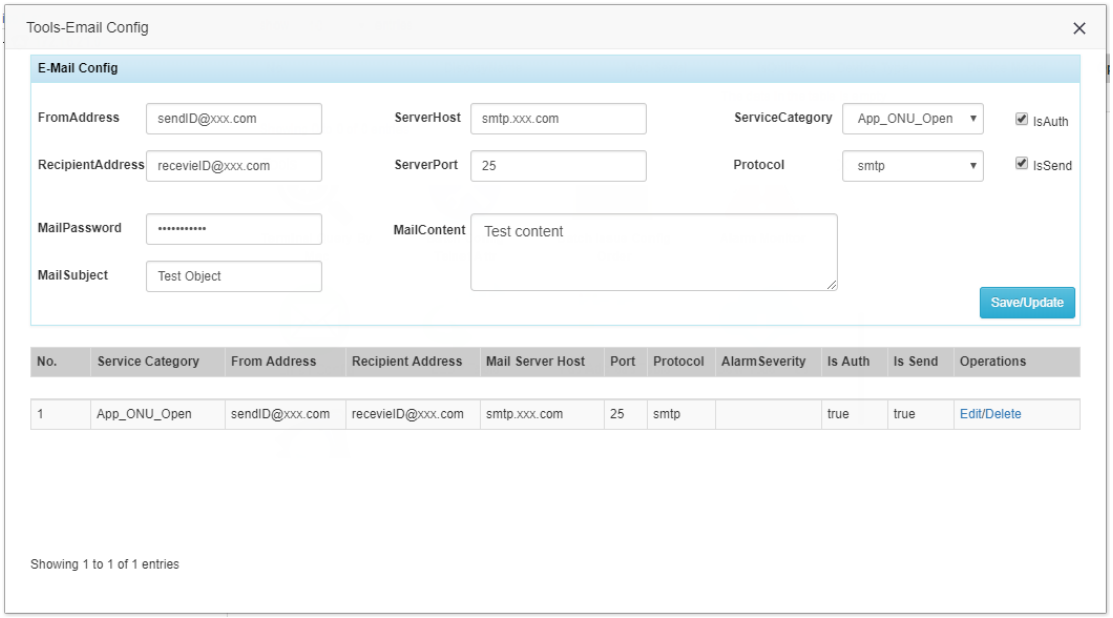


Parameters of configuration:

FromAddress: The address from which emails are sent;

ServerHost: The address of the host server;

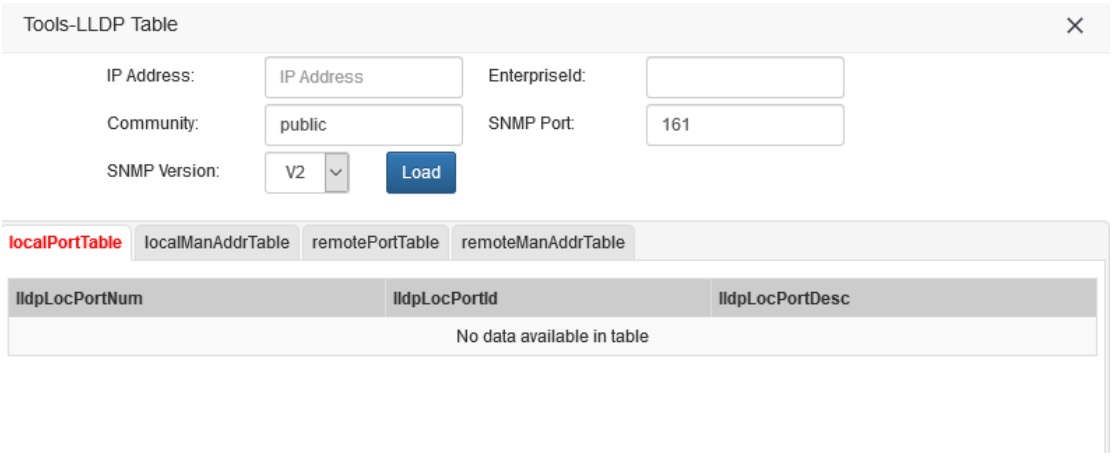
ServiceCategory: The service targeted by the configuration of the emails. NMS 本 offers two services: **ONU-Open** and **Alarm**. If **Alarm** is selected, the configuration only aims at **Alarm**, that is, upon receiving alarms, NMS will send emails to the appointed recipient email.
RecipientAddress: The address to receive emails;
ServerPort: The port number to send the email account server;
Protocol: The protocol adopted by the email sending;
MailPassword: The login password of emails;
MailSubject: The subject of emails;
MailContent: The content of emails;
IsAuth: Whether the authentication of user ID should be sent with emails or not.
IsSend: The switch of sending emails. If it is not selected, the email will not be sent even when the **ServiceCategory** is enabled. So select it for sending emails.
After filling in all information, click Save/Update to enable email service. Meanwhile, you can check the configured email categories in the form. See the figure.



It also support the upgrade and deletion for created emails. From the figure above, **Edit/Delete** is offered in the end column. Click **Edit** to do upgrade, refilling the configuration of the mail service to the configuration bar. Users can modify it based on their needs. Click **Save/Update** after modification.

10.4.13 LLDP Table

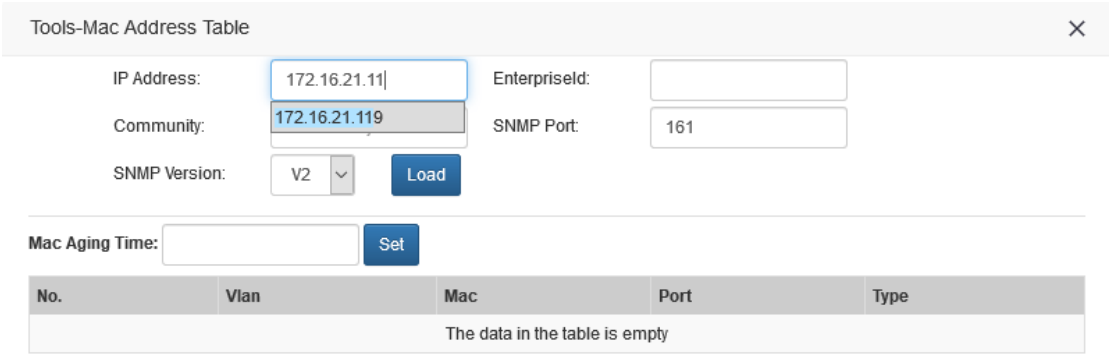
It is used to help check the LLDP connection between the network topology of the switch. See the figure.



Input **IP Address**, **Enterpriseld** (In **Managed Objects Properties** in **Config**, the ID can be checked.), and **Community**. Click **Load** to acquire LLDP information.

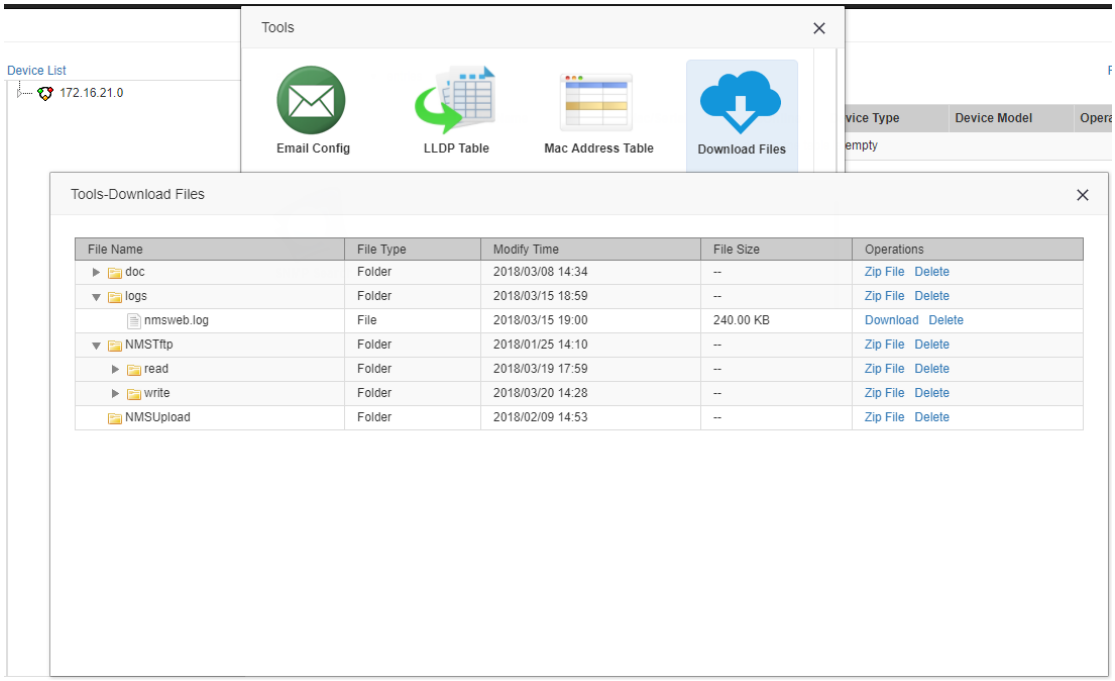
10.4.14 MAC Address Table

It is used to check Mac Address information and supports the setting of **Mac Aging Time**. Input IP Address. If the pull-down list is displayed, select one item on it, and NMS will automatically load **Enterpriseld**, **Community**, **NMP Port**. If not, please fill in the information manually. After filling, click **Load** to check **Mac Address Table**. If **Mac Aging Time** needs setting, click **Set**. (Unit: s)



10.4.15 Download Files

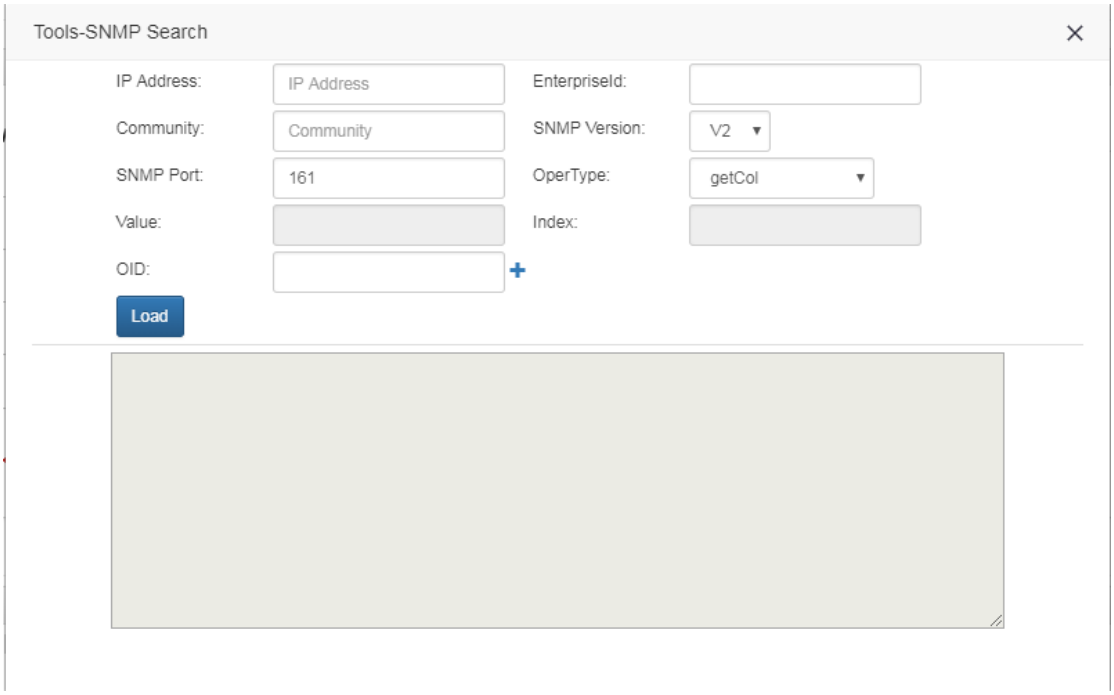
It offers some files to users in loading and deletion tasks. Whether the file is accessible to load or not depends on the configuration of NMS. See the figure.



From the figure, the interface is displayed in the form of tree graph. Click the folder in the first column to display the files. It only support one single file to be downloaded instead of the folder. But the folder can be downloaded after compression.

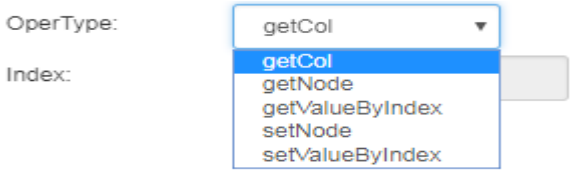
10.4.16 SNMP Search

It can help search and assign the nodes or lines of **mib**. Click **System Management->Tools->SNMP** to enable the interface. See the figure.



Search steps:

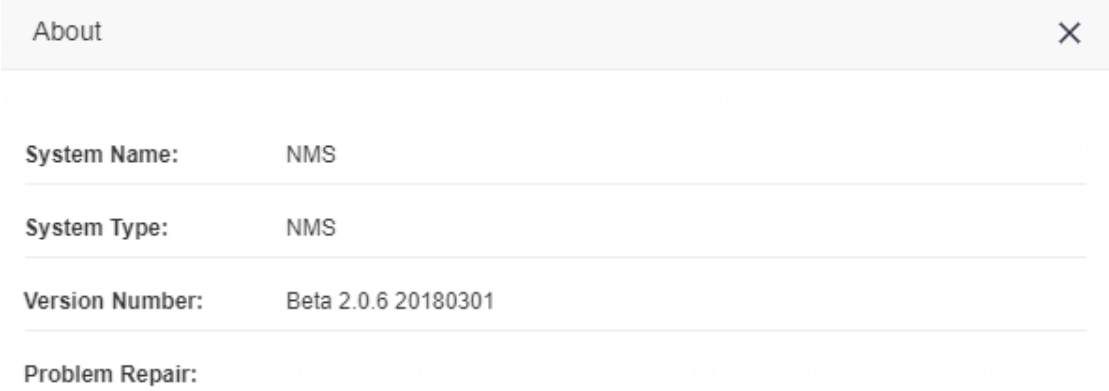
1. Fill in **IP Address**, **Enterpriseld**, **Community**, **SNMP Port**.
2. Select **OperType**



3. Fill in **OID**, click **Load** for search. (If **value** and **index** are selected, the **value** and **index** should be input.)

10.5 About

Click **System Management->About** to enable the interface. See the figure.



10.6 Caution

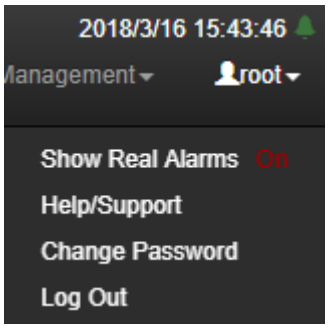
A summary of the overall domain management steps:

1. Discover device
2. Create area
3. Grant to area
4. Create role
5. Grant to role
6. Create user and appoint role

Step 2, 3 must be operated on the regional authorization interface.(Step3 can be granted in discovering devices, and NMS will automatically send the discovered device to the area.) Step4, 5, 6 can be finished in the guideline of **Create User**.

11 root

Hover the mouse on **root** on the top right corner to display the pull-down list. See the figure.



11.1 Show Real Alarms On/Off

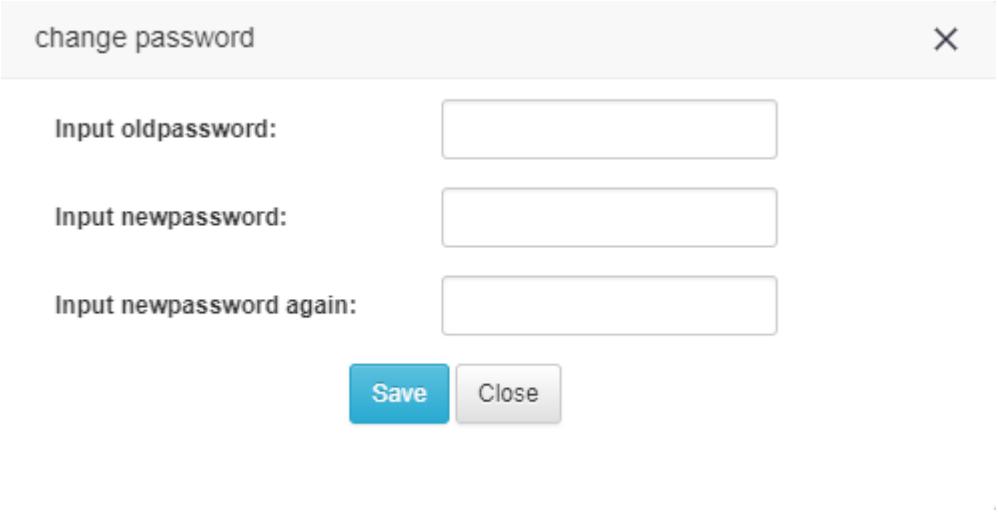
Its state: **On/Off**. **On**: The real-time alarms will pop up; **Off**: No pop-up.

11.2 Help/Support

Refer to *NMSWeb2.0 Operation Manual*.

11.3 Change Password

Click **change password** to pop up the following interface.



Input the old password, then input new password twice(The amount of characters is over 6.) and click **Save**.

11.4 Log Out

Click **Log out** to exit the system. Return to the login interface.