# M6200 Series
# NE Configuration Manual



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# Preface

### Overview

| Chapter | Description |
|---|---|
| Preface | This chapter introduces contents, version information and explanation of special symbols. |
| 1 Preparation Before Configuration | This chapter describes the preparation work required before configuring network NEs. |
| 2 Create A Network | This chapter introduces how to build a network environment. |
| 3 NE & Board Configuration | This chapter introduces the detailed configuration method of all the boards on NE. |
| 4 Alarm Management | This chapter introduces the current alarm and history alarm of NE and NMS system. |
| 5 Configuration Example of WDM Transmission | This chapter introduces configuration method and example of WDM point-to-point transmission. |
| 6 Configuration Example of OSC Channel | This chapter introduces how to use OSC channel to manage configuration methods and examples. |
| Abbreviation | Abbreviation indication. |

### Product Version

| Product Number | Version Number |
|---|---|
| M6200 Series | R6.3.10 |

### Symbol Conventions

The following symbols may be found in this document. They are defined as follows:

| Symbol | Description |
|---|---|
| DANGER | DANGER indicates a hazard with a high level or medium level of risk which, if not avoided, could result in death or serious injury |
| WARNING | WARNING indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury |
| CAUTION | CAUTION indicates a potentially hazardous situation that, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. |
| Tip | Provides a tip that may help you solve a problem or save time. |
| Note | Provides additional information to emphasize or supplement important points in the main text. |

# 1. Preparation Before Configuration

## 1.1. Configuration Process

When configuring M6200 devices on M Series system, some rules and orders must be followed.

If the whole project and its configuration are initially created, please refer to process in Figure 1- 1 to complete the operation. If the project has been created, only the configuration of one NE or single disk needs to be changed, please perform the operation according to relevant content of chapters in Figure 1- 1.

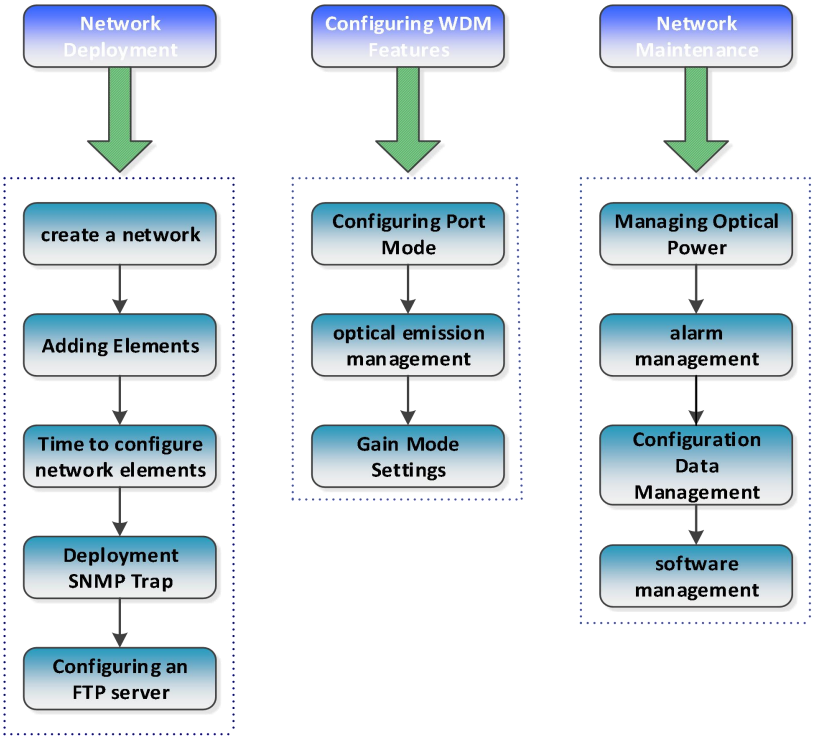



Figure 1- 1 M6200 Configuration Process

M Series system mainly contains operations such as parameter configuration of port mode and optical amplifier as well as alarm query and configuration information query etc.

**NOTE**

***It is recommended that the configurations of M Series equipment be completed according to the sequence of operation in the flowchart (Figure 1-1).***

## 1.2. Connect NMS System & NE

For different network connection components, there are multiple connection modes between M Series network management computer and M6200 network NEs. The connection mode of "directly connected network line + HUB + directly connected network line" is the most commonly used. You can also directly connect M Series

network management computer with M6200 network NEs by using cross network cable or directly connected network cable.

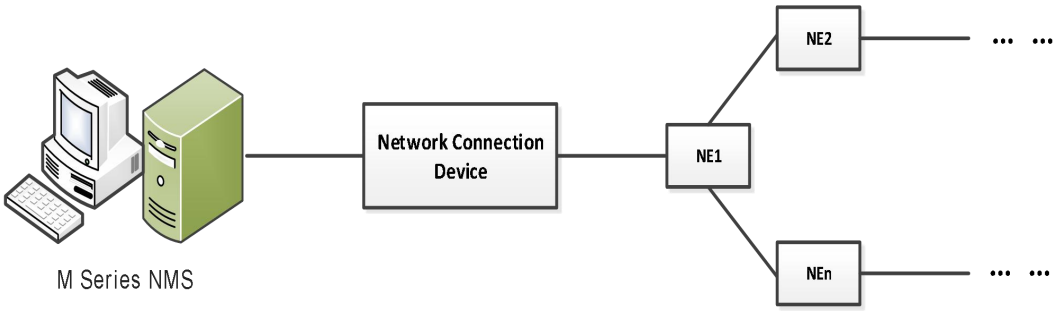



Figure 1- 2 Schematic Diagram of Connection Between NMS System and NE

Prerequisite

The deployment of network cables between the NMS system and NE has been completed.

Steps

Here we take the connection mode of "directly connected network cable + HUB + directly connected network cable" as an example to introduce the steps to connect the NMS system and the network NEs:

- Turn on the network management computer and take a network cable to connect one end to the network card interface of the host computer, and connect the other end to the Ethernet port of HUB.
- Take another network cable. Connect one end to the Ethernet port of HUB and connect the other end to MGMT1/2/3/4 ports of NMU board for M Series equipment.
- Check on the network management computer to see if the network cable is connected to a device network card; if not, connect the network cable to another network card of the network management computer.

# 1.3. Start Network Management Service

Prerequisite

Ensure that the M Series system has been installed on the network management host.

## 1.3.1. Start Server End Program

Double click on *"MNS Server"*  on the network management computer, the"NMS"server window pops up. Then double click on*"Start NMS Server"*, as shown in Figure 1- 3.

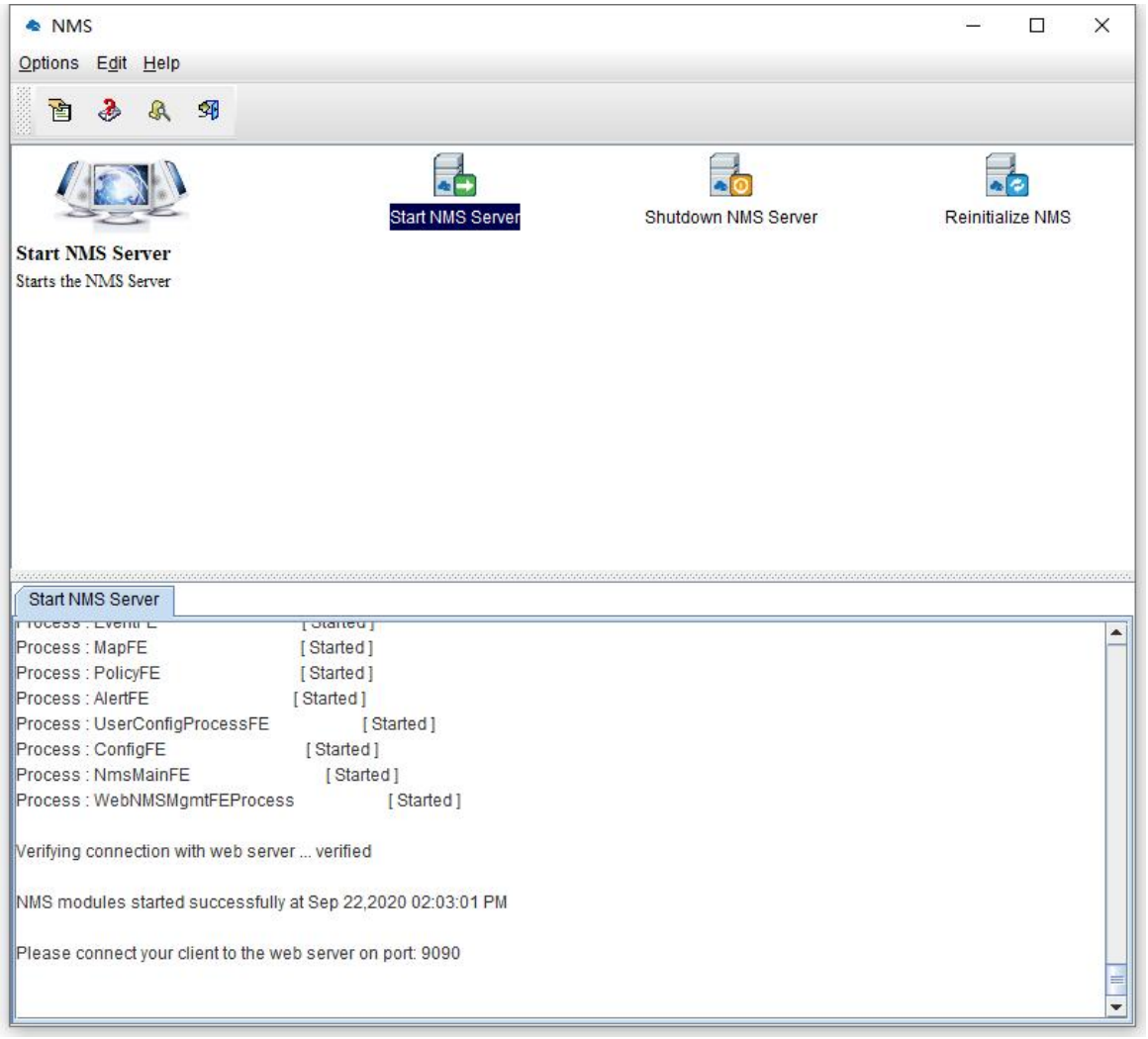



Figure 1- 3 Start NMS Server

# 2. Create Network

Create network topology, that is, create corresponding network model of actual project according to the configuration of actual engineering (such as networking, single site configuration etc.), so as to realize the monitoring of devices.

Before creating a network topology, operators need to know the relevant engineering configuration files, including:

- Information such as the NE type and single disk configuration of each site.
- Network topology of engineering.
- Service scheduling and protection scheme.

If an operator only needs to add a network NE to an existing project, he only needs to know the location and topological connection of the network NE in the actual network.

It will introduce the creation steps of the network topology according to the configuration process in the following passage. Moreover, it will focus on the parameter configuration related to M6200 in each step, and only the sections of the reference book will be provided for the common configuration steps for each device. M Series-related software was pre-installed when the network management host was manufactured. When the network management host was turned on, the network topology could be created according to the configuration process. This chapter includes the following content:

- Create Network Flow
- Login NMS Interface
- Create Nodes
- Add NE
- Establish Network NE connection
- Management of Network NEs
- Check Configuration Data
- Save Configuration Data

## 2.1. Network Creation Process

The topology of subnet, network NE and fiber cable can be created in M Series system. Network NE data can be configured. The single board parameters can be checked or modified, and further the subnet, network NE or fiber cable can be managed by M Series NMS.

To create network, you can take the following process as reference:

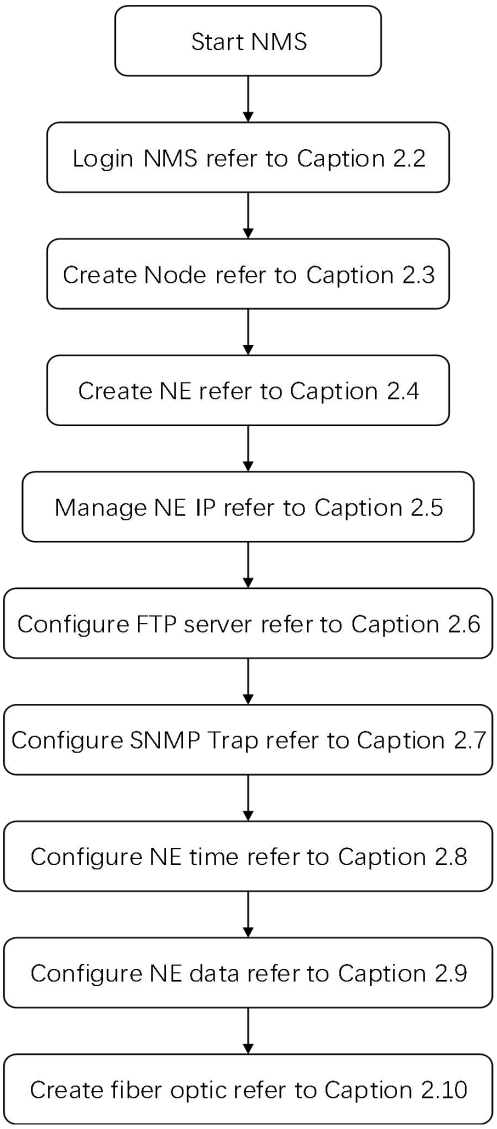



Figure 2- 1 Create Flow Chart of Network Topology

## 2.2. Login NMS Interface

Prerequisite

The installation of NMS system is completed, and NMS server has been started.

Steps

Open the Google Chrome browser and enter localhost:9090 in the address bar (If you log on to the NMS host, you can use this address.) or xxx.xxx.xxx.xxx:9090 (for remote NMS host). Enter your user name and password to login. The user name is root, and the password is public.

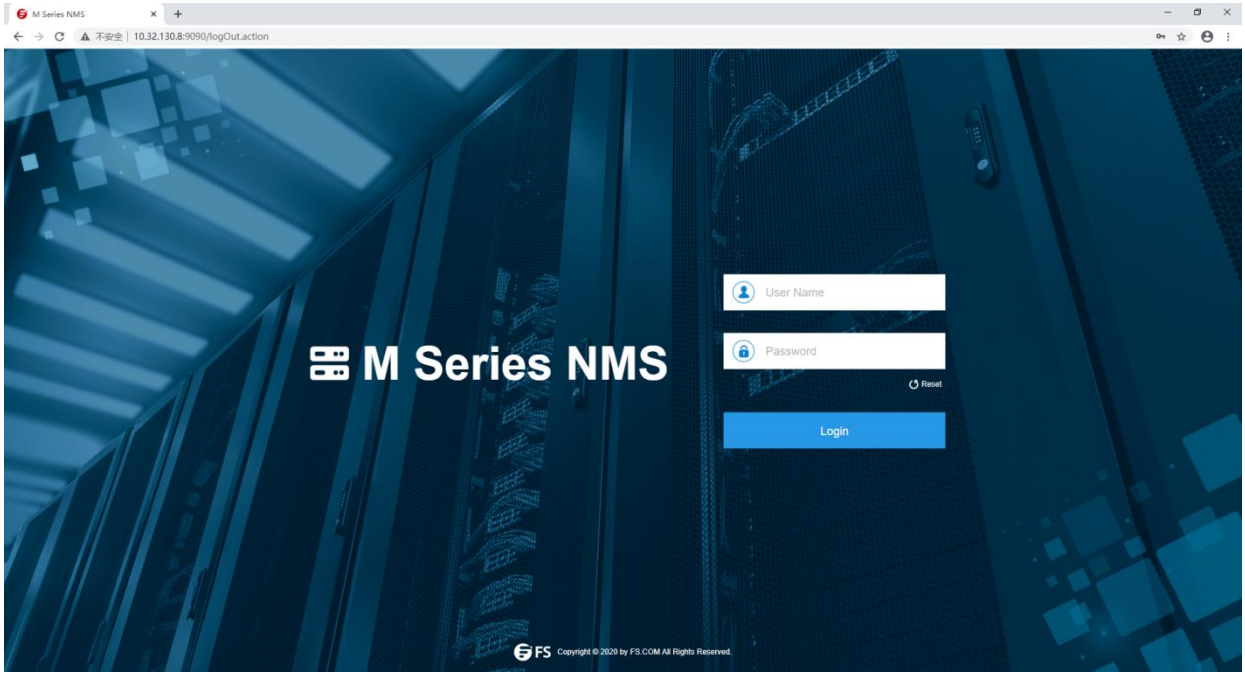



Figure 2- 2 Login NMS System

## 2.3. Create Node

Click on"*Global View*"or click on "*Configuration Management*"on the top after clicking on"*Global View*" , and then click on"*Add Group*". Input node name and description information. The description information can be blank. After that, click on "*Apply*".

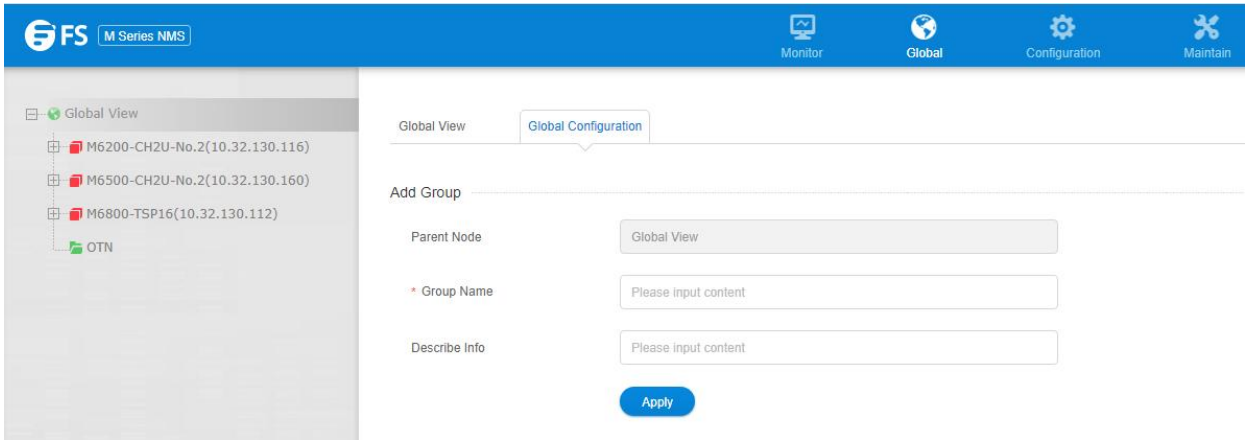



Figure 2- 3 Add Node

Click on the created node and then click on the right side of the *"Group Configuration"*, you can continue to add children, enter the name of the child node, click *"Apply"*.

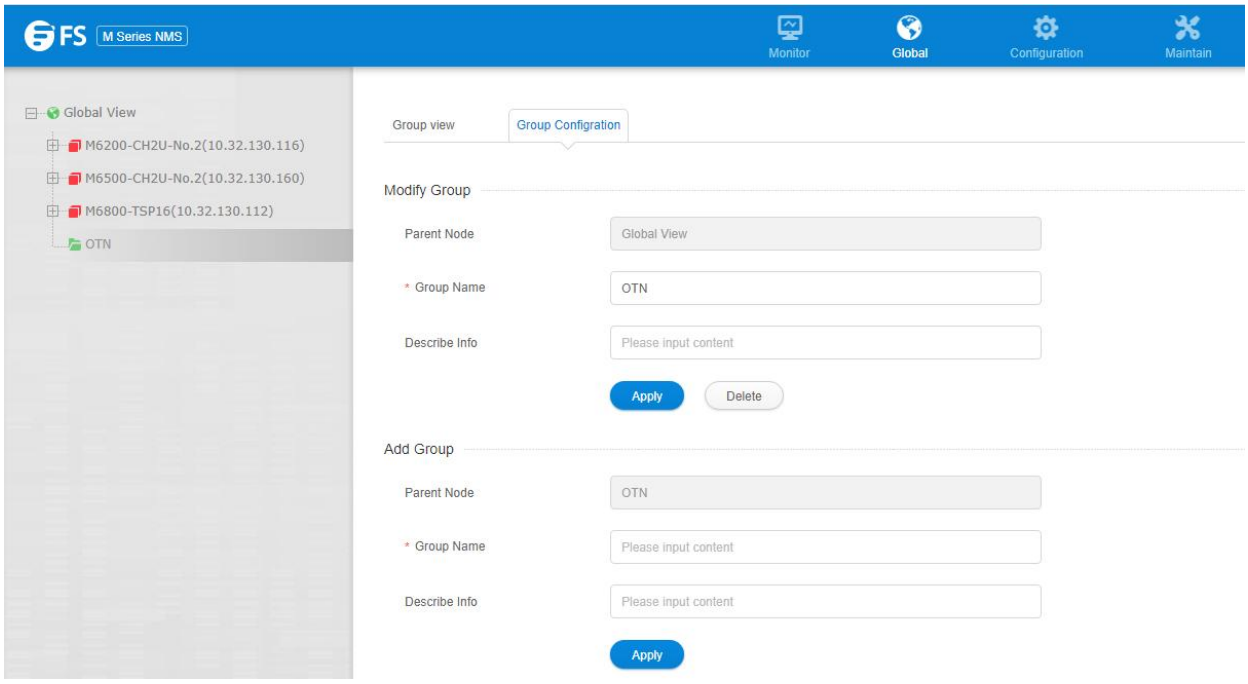



Figure 2- 4 Add Child Node

Click on the created child node, then click *"Group Configuration"*, then click *"Delete"* to delete the node, click *"Apply"* to delete the node.

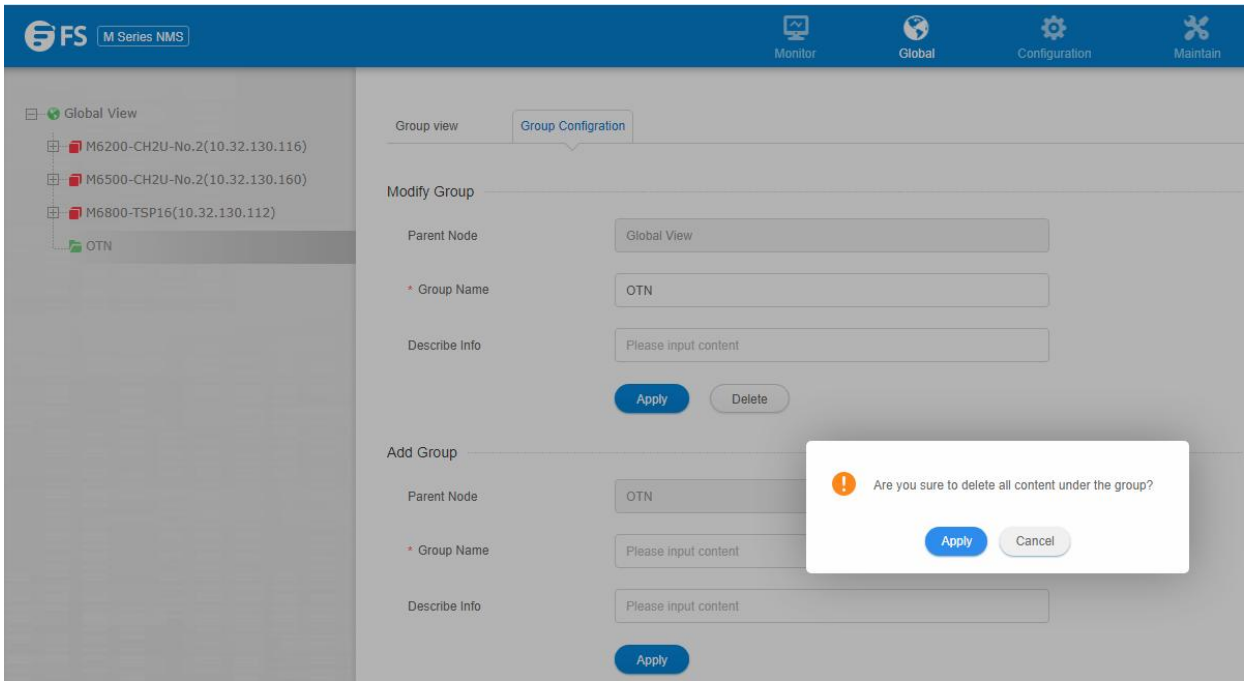



Figure 2- 5 Delete Child Node

**NOTE**

***The operation steps to delete node are the same as that to delete child node. You only need to select the parent node.***

# 2.4. Create NE

## 2.4.1. Add NE

Click the added node and then click *"Group Configuration"* on the right, under *"Add NE"*, enter the NE name, IP address of the NE,subnet mask, Trap host name, Trap host IP address, and click *"Apply"*.

Click on the node which has been added, then click on"*Group Configuration*". Enter the NE name, NE IP address, subnet mask, Trap host name, Trap host IP address, and click on"*Apply*".

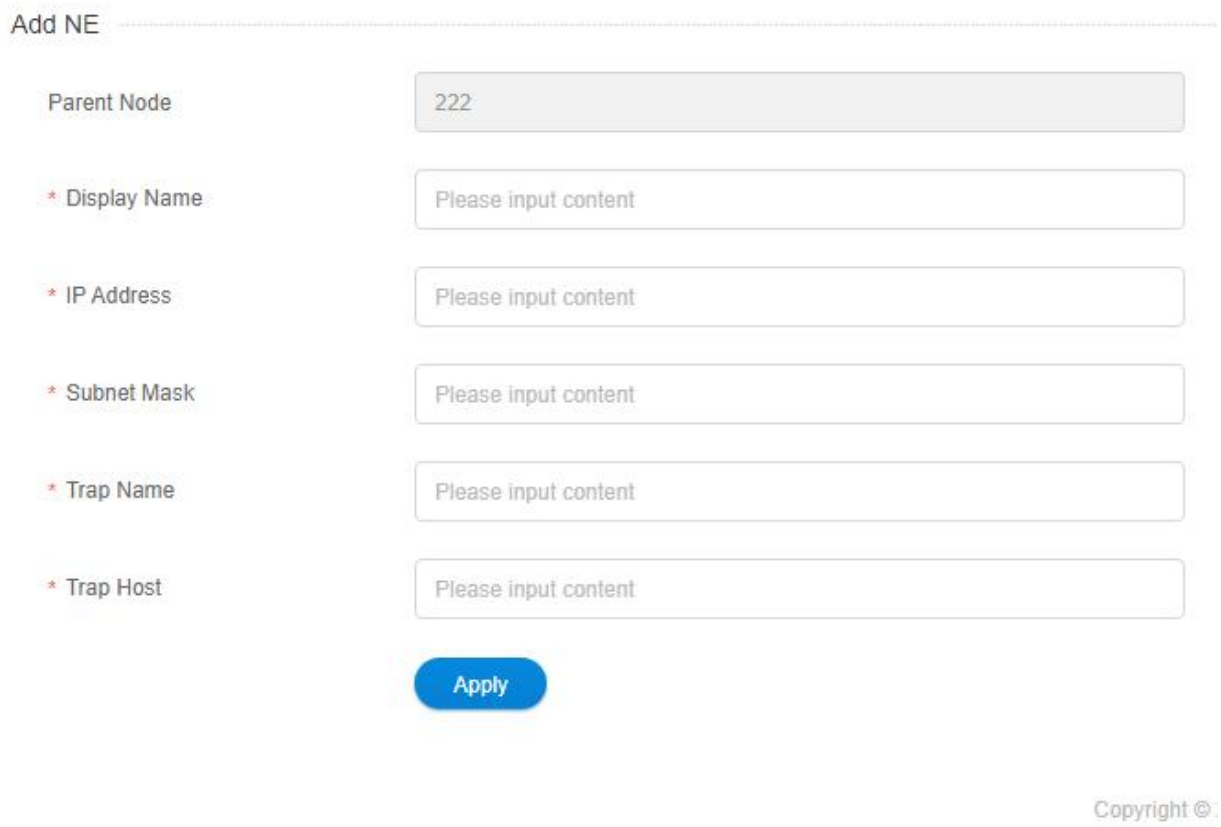



Figure 2- 6 Add NE

Note: The IP address of the trap host is the IP address of the network management server.

## 2.4.2. Modify NE

Click on the NE which has been added and select *"NE Management"* to modify the NEs description name.

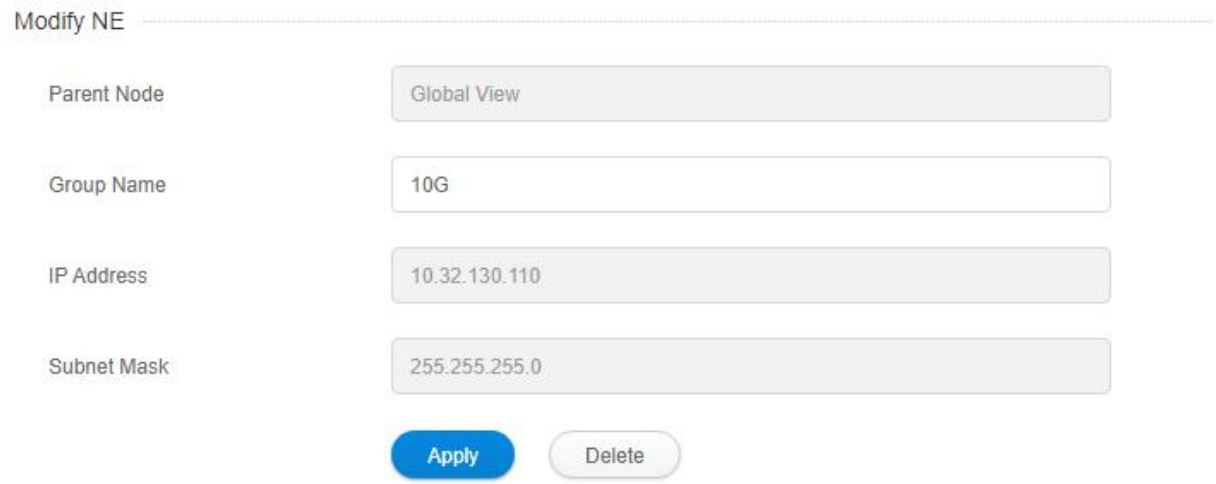



Figure 2- 7 Modify NE

### 2.4.3. Delete NE

Click on the added NE and then click on "*NE Management*" on the right, and then click *"Delete"* at the bottom of the *"Modify NE"* module.

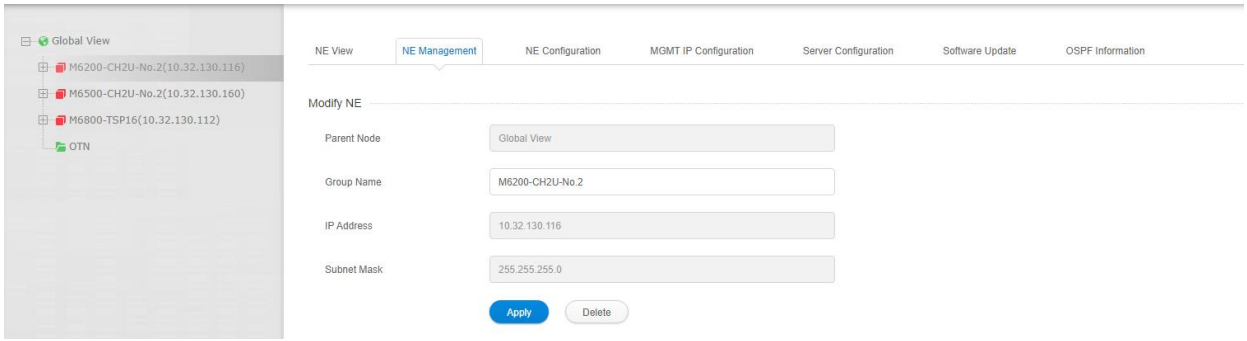



Figure 2- 8 Delete NE

### 2.4.4. Add Single Board

Select an empty channel on the added NE,click on the empty channel and configure the card mode in the *"Card Mode Configuration"* module on the right.

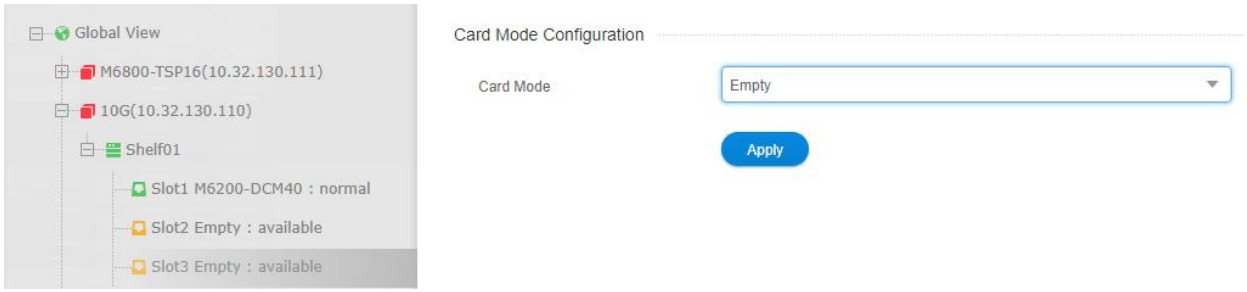



Figure 2- 9 Add Single Board

In the card mode configuration interface, open the drop-down box, select the mode of card you want to configure, then click *"Apply"*, and then select *"Apply"* at the pop-up prompt box.




Figure 2- 10 Select Needed Board Mode

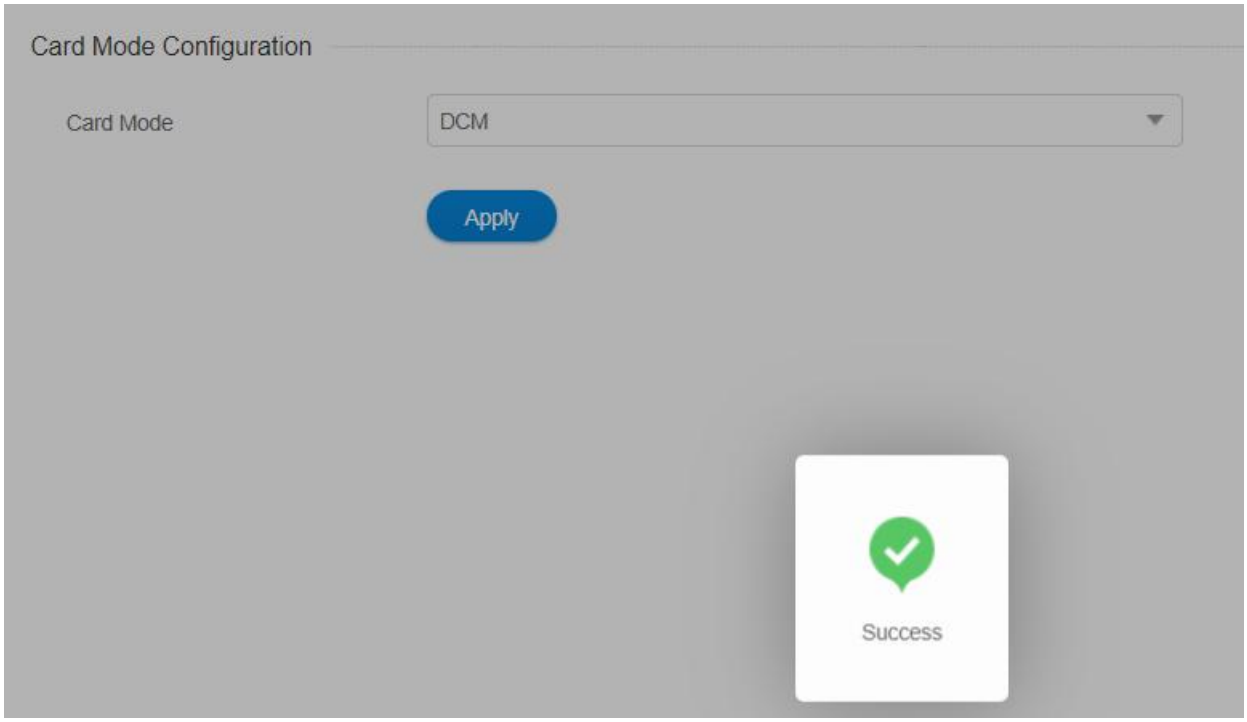



Figure 2- 11 Add a line-card successfully

**NOTE**

***The pre-configuration of board can only be realized when the slot is not occupied.***

### 2.4.5. Delete Single Board

The deleted board has no single-board crossover or no cross-board crossover service exists.

Click the added veneer and then click "*Delete*" in the "*Remove Board*" module on the right.

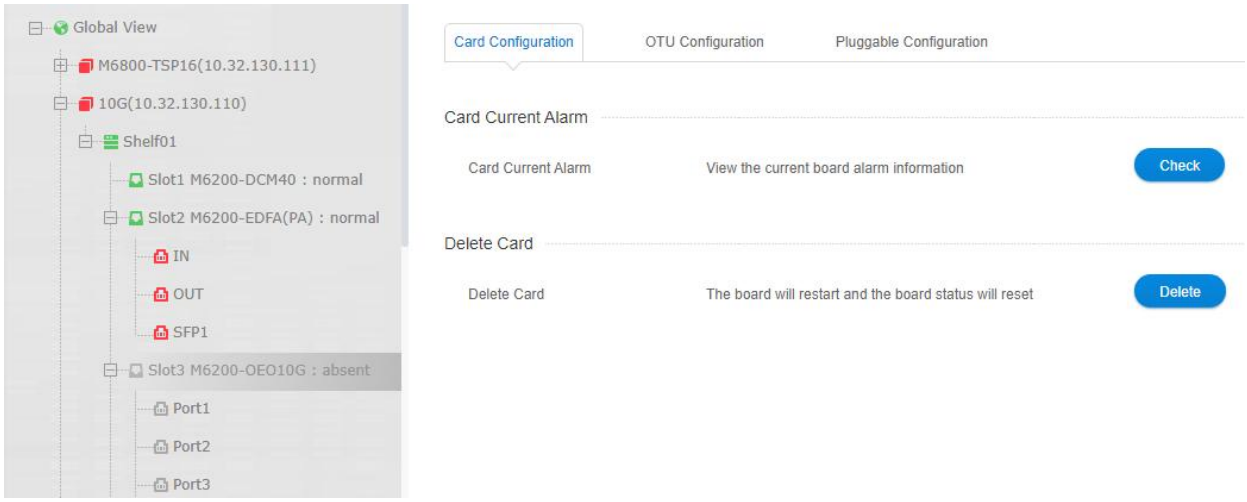



Figure 2- 12 Delete Single Board

# 2.5. Manage NE IP

## 2.5.1. Node IP Configuration

Click on the added network NE and click on "*MGMT IP Configuration*" on the right.

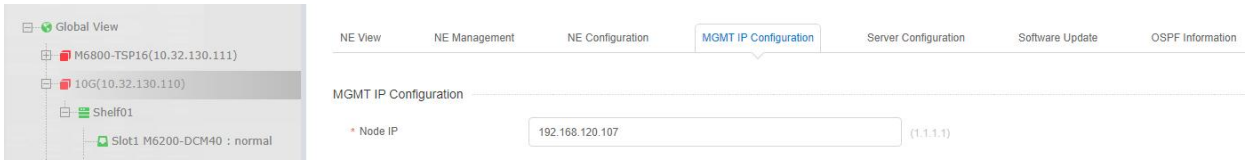



Figure 2- 13 NE IP Configuration Interface

Enter the "*MGMT IP Configuration*" interface, enter the IP address of the node, and then click "*Apply*".

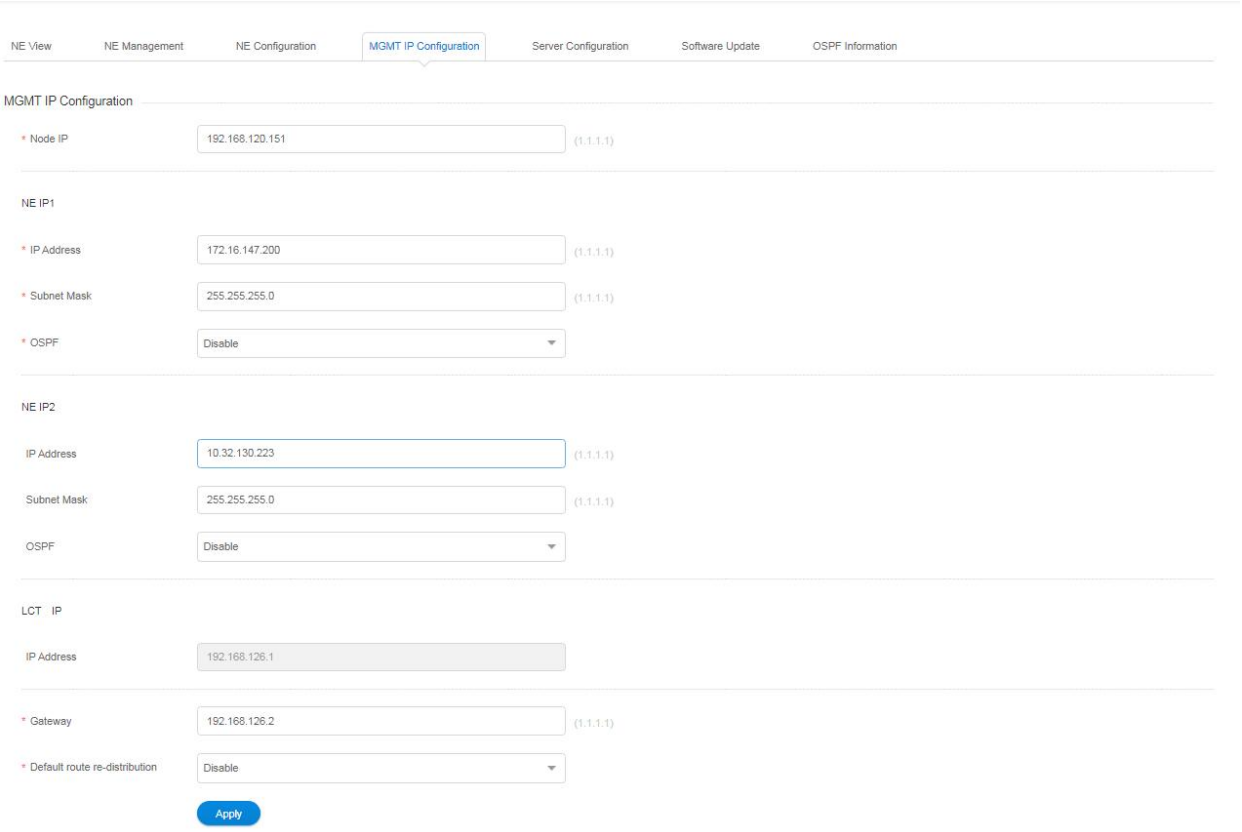



Figure 2- 14 Node IP Configuration

### 2.5.2. NMS IP1 Configuration

Click the added network NE → Click "*MGMT IP Configuration*" → "*NMS IP1*".




Figure 2- 15 NMS IP1 Configuration

### 2.5.3. NMS IP2 Configuration

The steps are the same as those of NMS IP1 configuration.

### 2.5.4. Local NMS IP Configuration

The default IP address of local NMS is 192.168.126.1.These parameters cannot be changed.




Figure 2- 16 Local NMS IP Configuration

### 2.5.5. Gateway Configuration

Click the added network NE → Click "*MGMT IP Configuration*" → Local network management IP module. Enter the gateway IP and click "*Apply*".

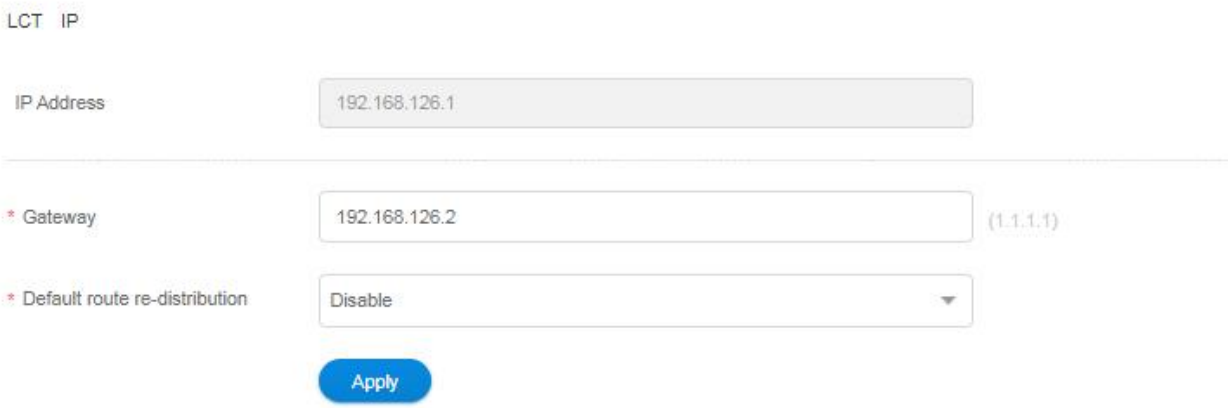



Figure 2- 17 Gateway Configuration

## 2.6. Configure FTP Server

Click the added NE → Click "*Server Configuration*" on the right, enter the FTP server IP address in the setting value and click "*Apply*".




Figure 2- 18 Configure FTP Server

## 2.7. Configure SNMP Trap

Click the added network NE → Click "*Server Configuration*" to configure, enter the SNMP Trap configuration module, and click "*Apply*".

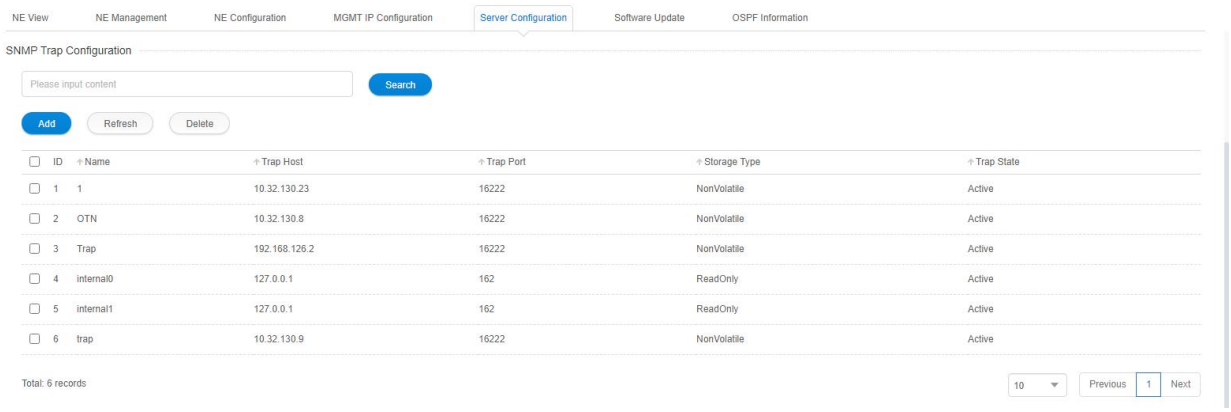



Figure 2- 19 Configure SNMP Trap

# 2.8. Configure NE Time

## 2.8.1. Configure NTP Server

Click the added network NE → Click "*Server Configuration*" on the right, and configure it in the "*NTP Configuration*" module.

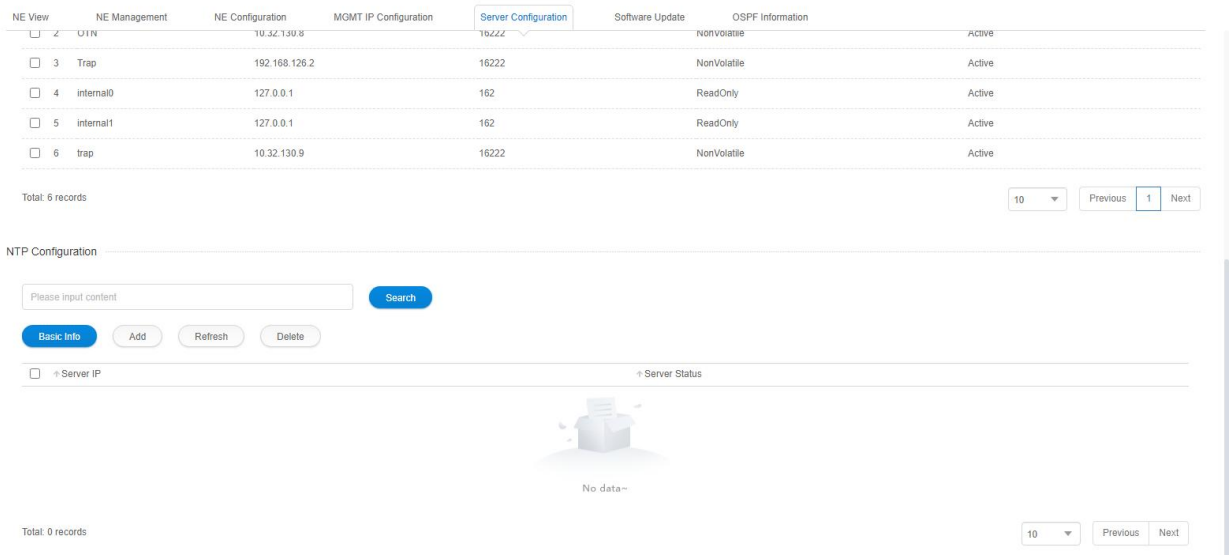



Figure 2- 20 NTP Configuration

Click "*Add*", enter the NTP server IP, click "*Apply*" and the configuration is successful.




Figure 2- 21 Successful Configuration of NTP

**NOTE**

***The purpose to configure NTP time is to make the reporting time of the current alarm be the same as the local computer time.***

### 2.8.2. Configure NE Time

Click the added NE → Click "*NE Configuration*" on the right side and configure it in the "*NE Time Configuration*" module.

In the "*NE Time Configuration*" module, set the current NE time and click "*Apply*".

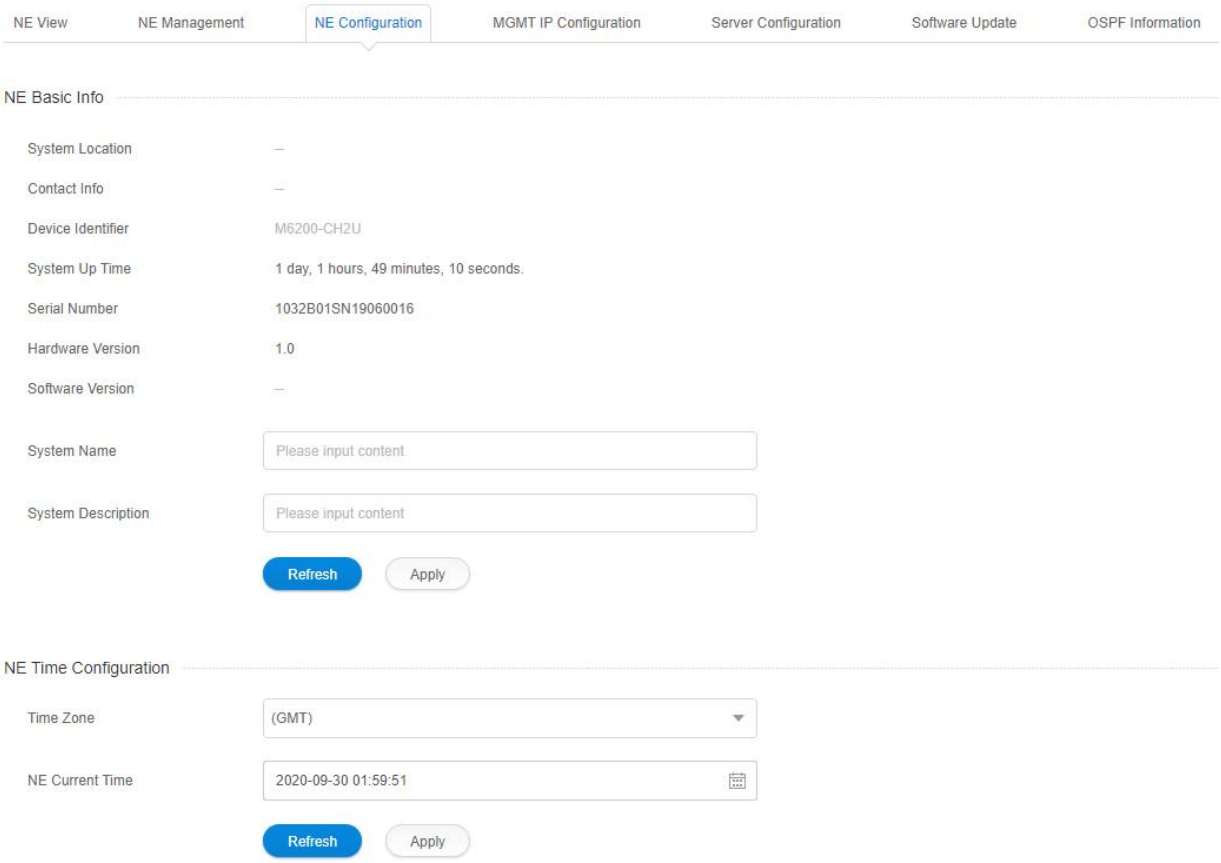



Figure 2- 22 NE Time Configuration

## 2.9. Configure NE Data

### 2.9.1. Save NE Configuration

Click the added NE → click "*NE Configuration*" on the right, and then click "*Save*" in the "*NE Configuration Management*" module.

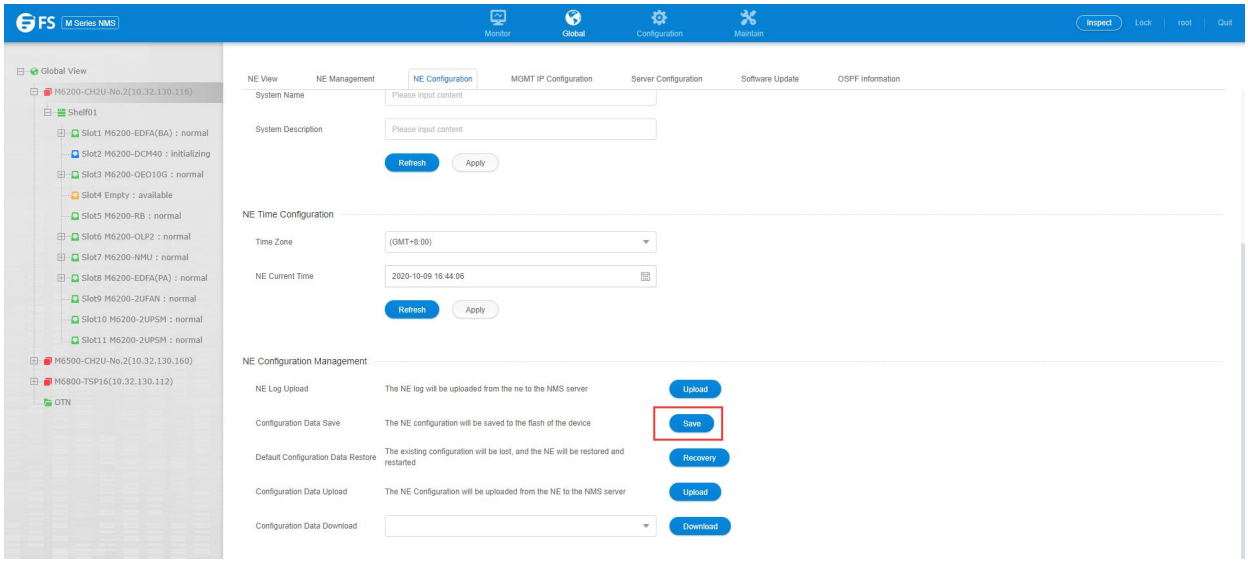



Figure 2- 23 Save NE Configuration

## 2.9.2. Upload NE Configuration

Click the added NE → click "*NE Configuration*" on the right, and then click the "*Configuration Data Upload*" upload button in the NE Configuration Management module.

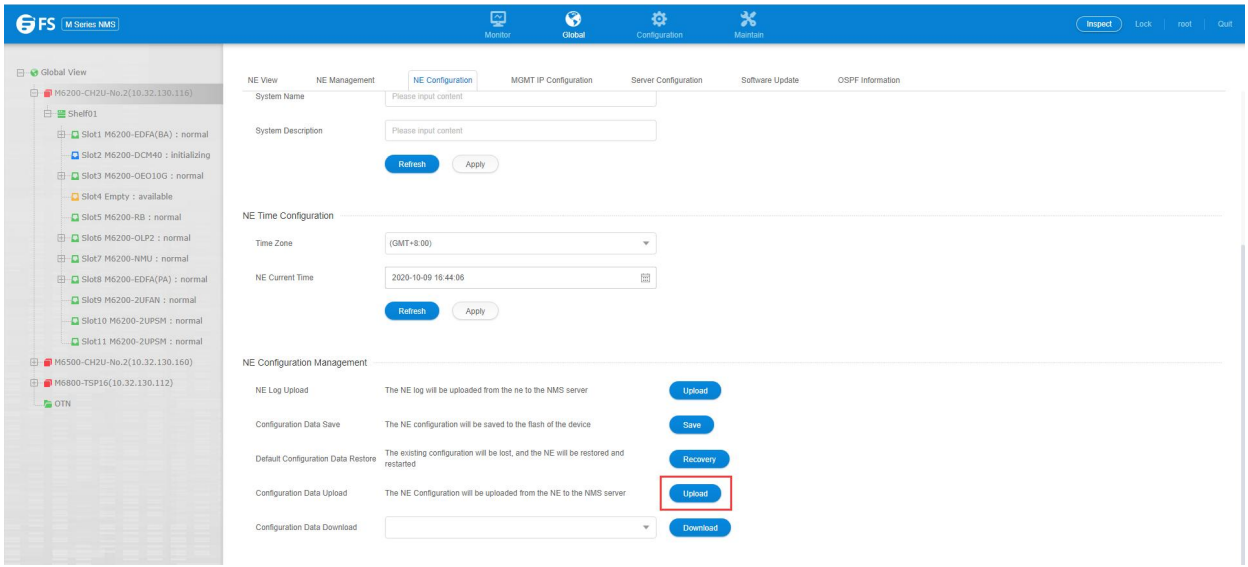



Figure 2- 24 Upload NE Configuration

***The input file name for NE upload configuration cannot include special characters and Chinese characters.***

***After successful upload, the saved configuration can be viewed under the folder of【Installation Directory→TFTP→configure】.***

## 2.9.3. Download NE Configuration

Click the added NE → click *"NE Configuration"* on the right, and then click the *"Configuration Data Download"* download button in the NE Configuration Management module.




Figure 2- 25 Download NE Configuration

**NOTE**

***The configurations which are not for the NE cannot be selected during the download of NE configurations. This illegal operation will lead to abnormal network NEs.***

### 2.9.4. Restore NE Default Configuration

Click the added NE → click "*NE Configuration*" on the right, and then click the "*Default Configuration Data Restore*" button in the NE Configuration Management module.

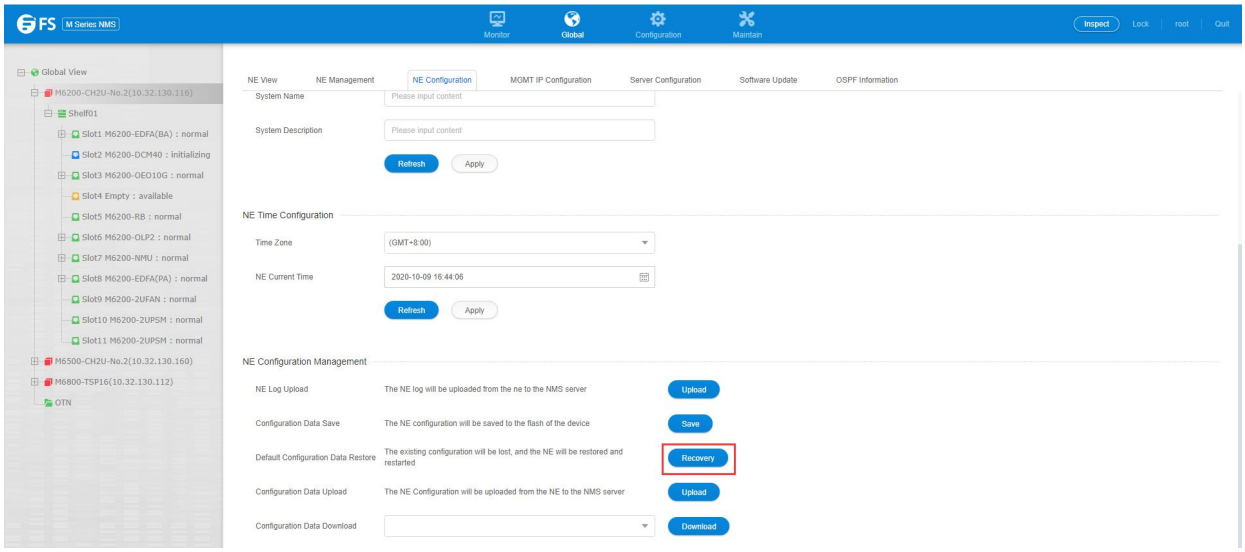



Figure 2- 26 Restore NE Default Configuration

**NOTE**

***When the default configuration of the network NE is restored successfully, the board configuration of all slots on the network NE will turn to the default configuration. Please operation with caution.***

## 2.10. Create Fiber Optic

### 2.10.1.Adjust NE Layout

Click on*"Global View"*and click on NE or node in the global view and then drag it to the right place.

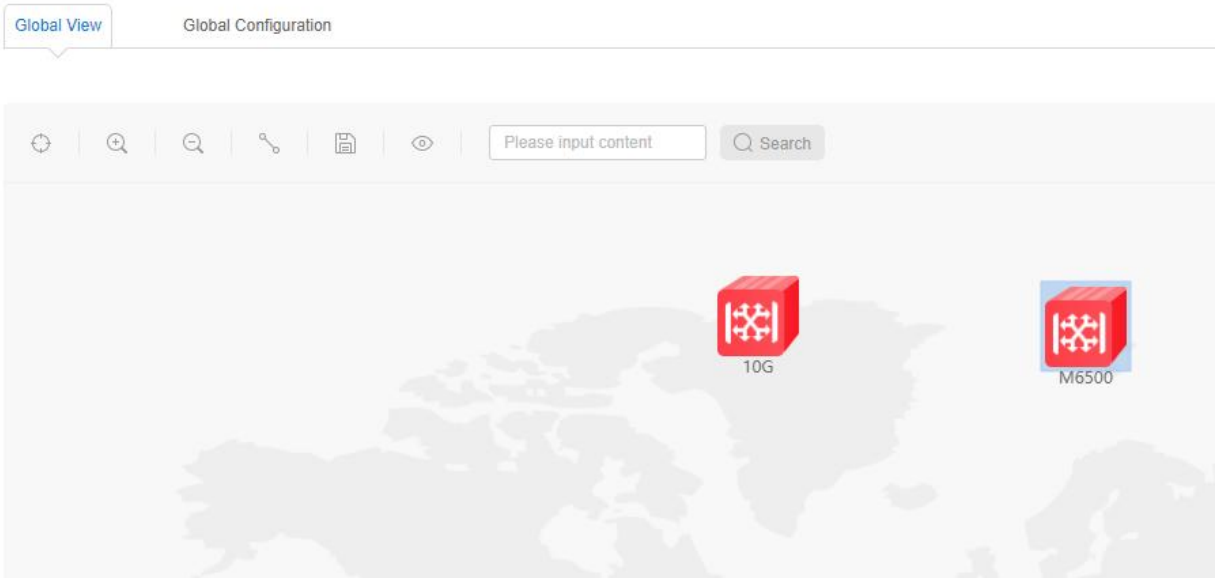



Figure 2- 27 Adjust NE Layout

## 2.10.2.Create Connection between NEs

Left-click on the "*Connect*" button in the global view.

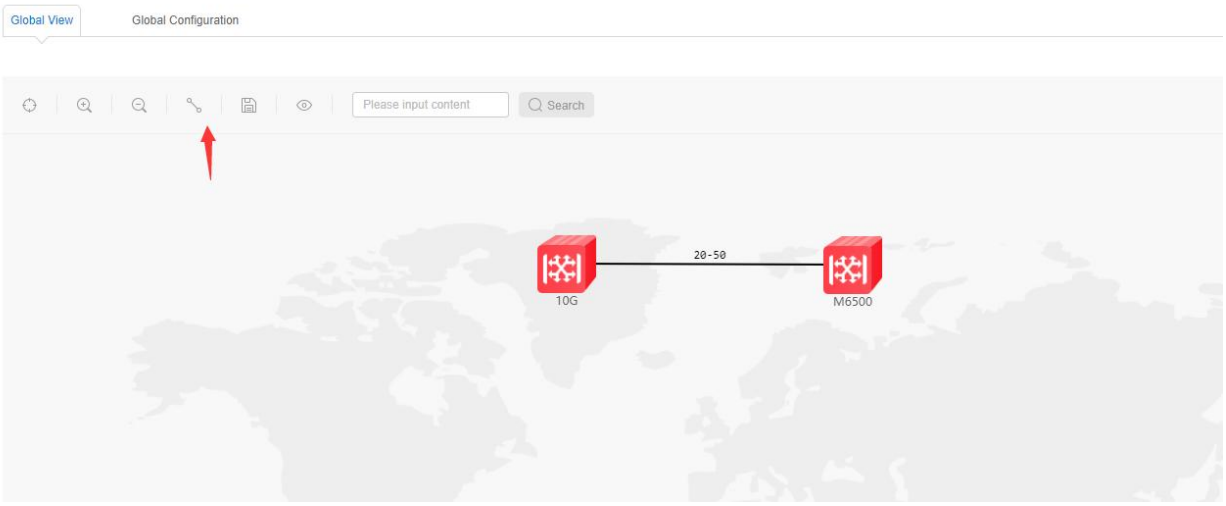



Figure 2- 28 Click on“Connect”Button

Input name, NE IP address, chassis number, slot number and port number in the pop-up, and then click on“*Apply*”.

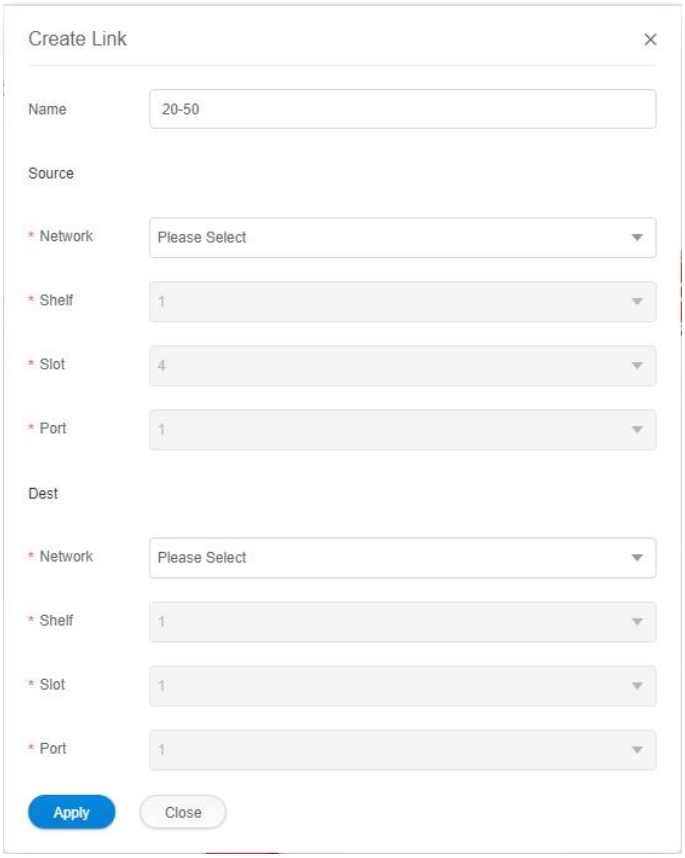



Figure 2- 29 Create Connection between NEs

### 2.10.3.Save Layout

Left-click on the "*Save Coordinates*" button in the global view.




Figure 2- 30 Save Layout

# NE & Board Configuration

**Prerequisite**

1. Network devices and lines are normal.

2. NE and NMS system have been configured.

3. NMS server has been running and logged into the NMS system.

## 2.11. Chassis Information

Select the network NE,click *"Shelf01"* and select *"Shelf Information"* to open the frame information interface, you can view the frame type, temperature and other information in this interface, as shown in Figure 3-1.

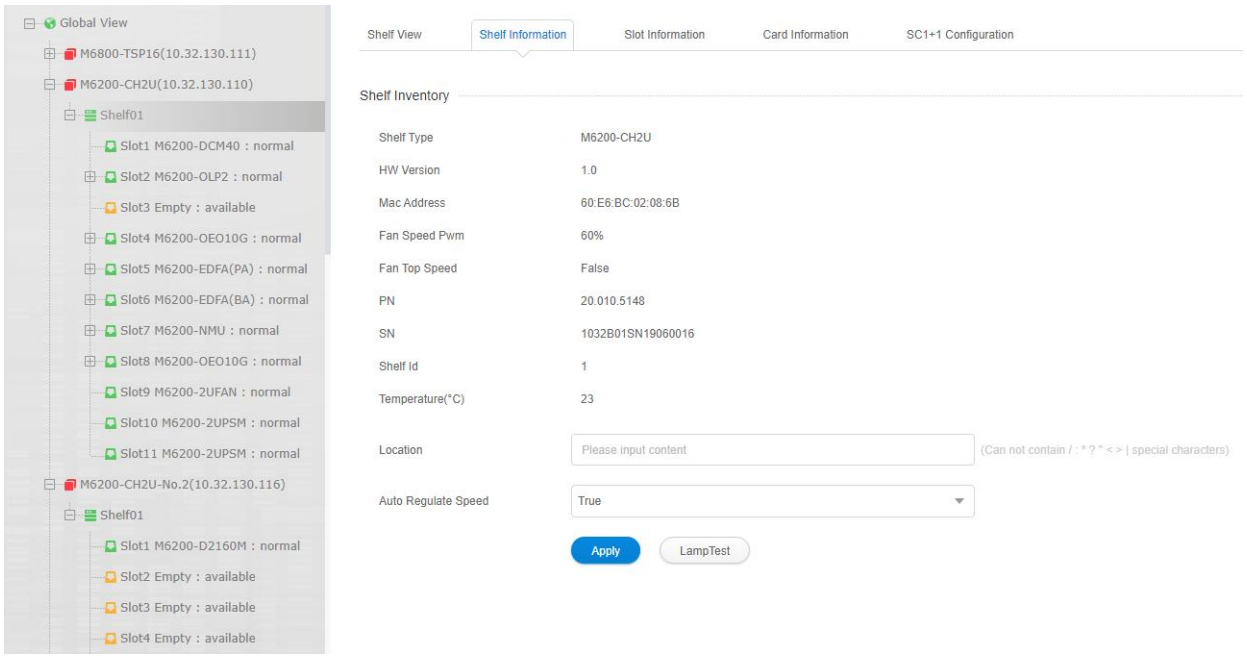



Figure 3- 1 Operation Steps to View Chassis Information

### 2.11.1.M6200-CH2U

The chassis information interface of 2U device is as shown in the figure below:

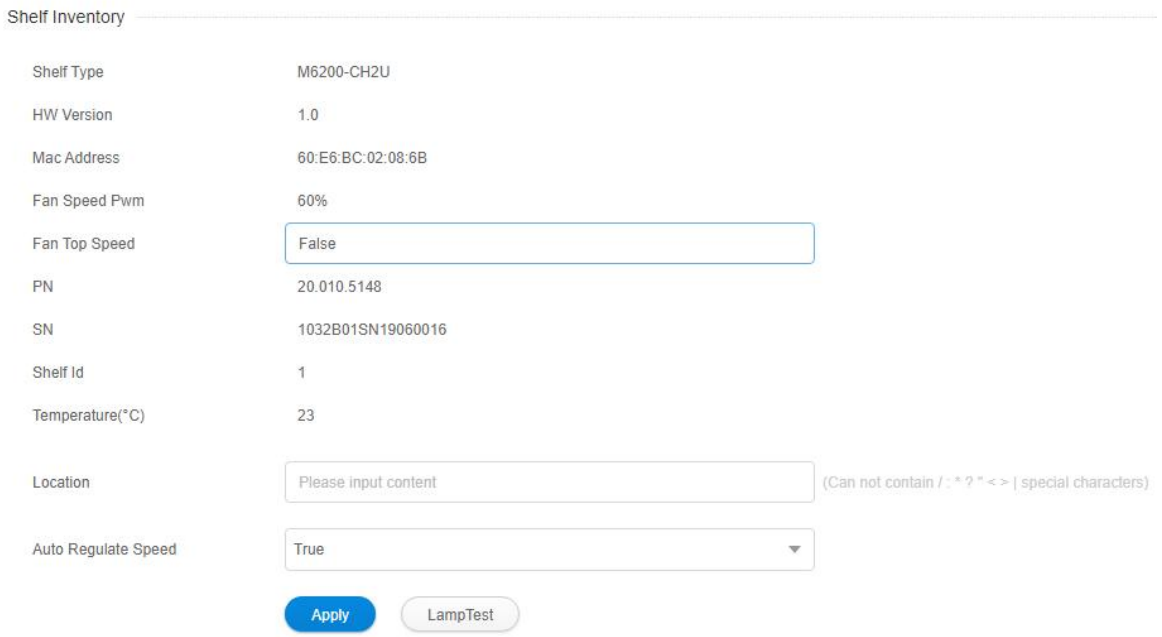



Figure 3- 2 M6200-CH2U Chassis Information

## 2.11.2.M6200-CH5U

The chassis information interface of 5U device is as shown in the figure below:

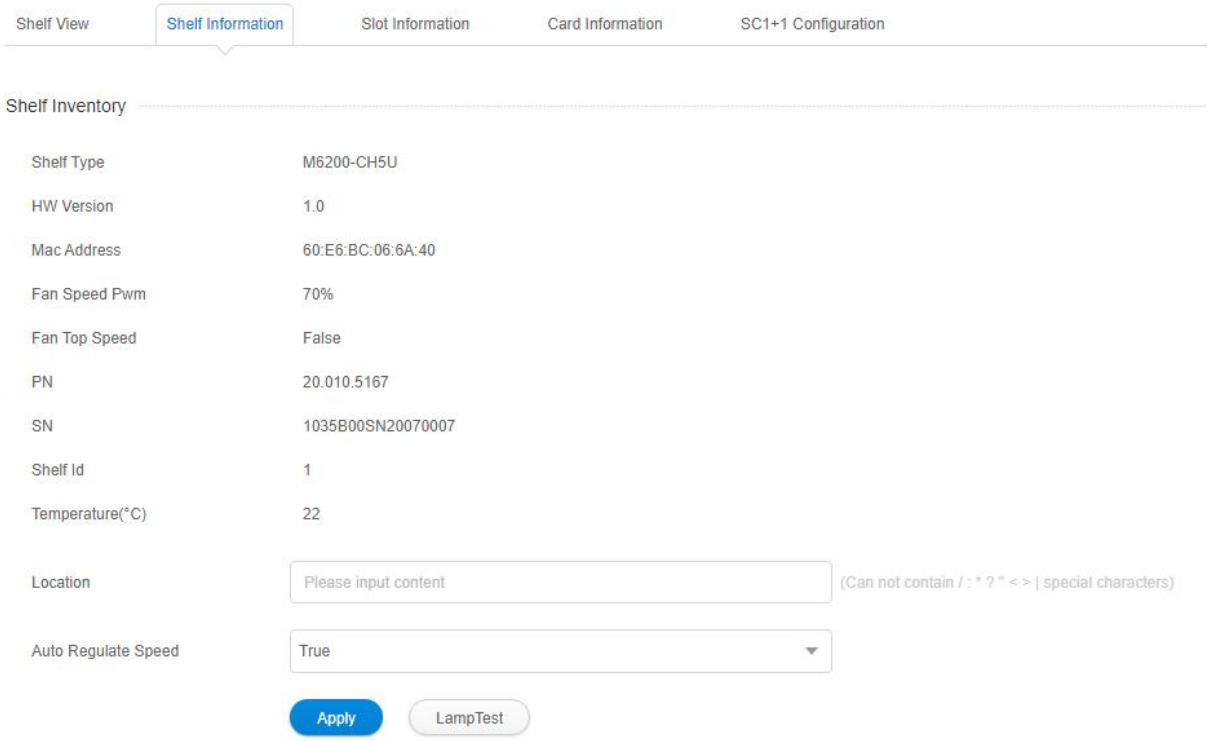



Figure 3- 3 M6200-CH5U Chassis Information

## 2.12. Board Information

Click on "*Card Information*" to view the board information.

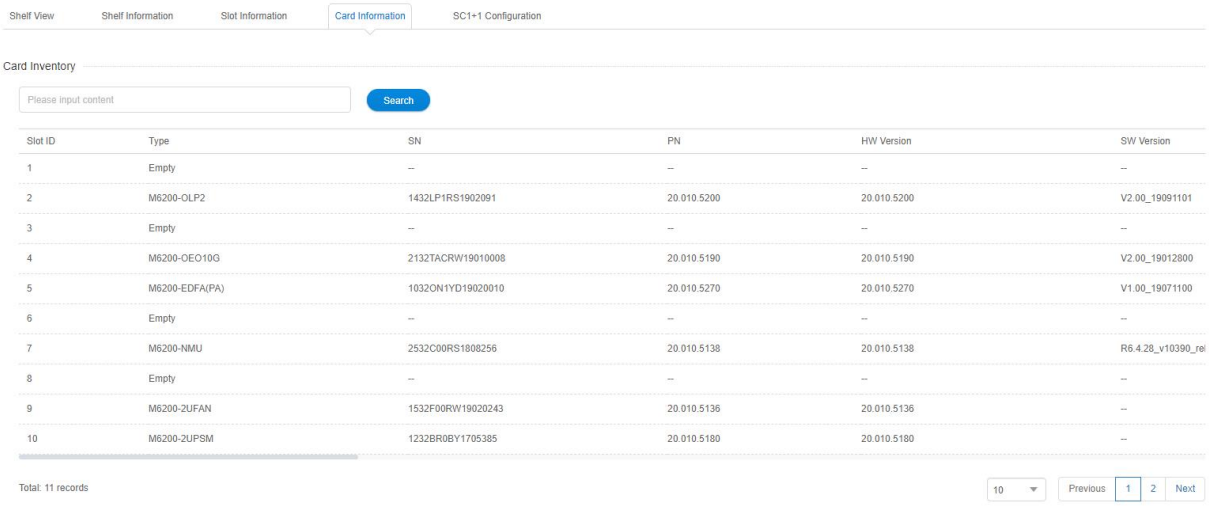



Figure 3- 4 Operation Steps to View Board Information

The board information interface is as shown in the figure below. Information such as board type of each slot, hardware version, software version, Kernel version, Uboot version, CPLD version, central temperature and outlet temperature can be viewed in this interface.

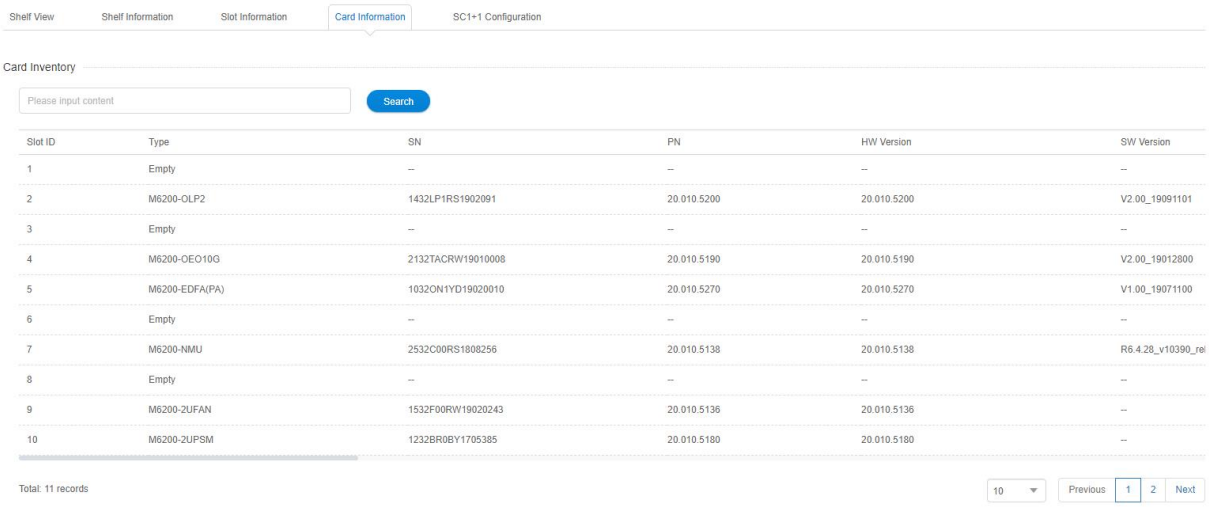



Figure 3- 5 Board Information

## 2.13. Optical Module Configuration

The operation steps to view optical module information are as follows:

Select NE - Channel, right-click "*Port*" and select "*Pluggable Configuration*" menu, as shown in the following figure.

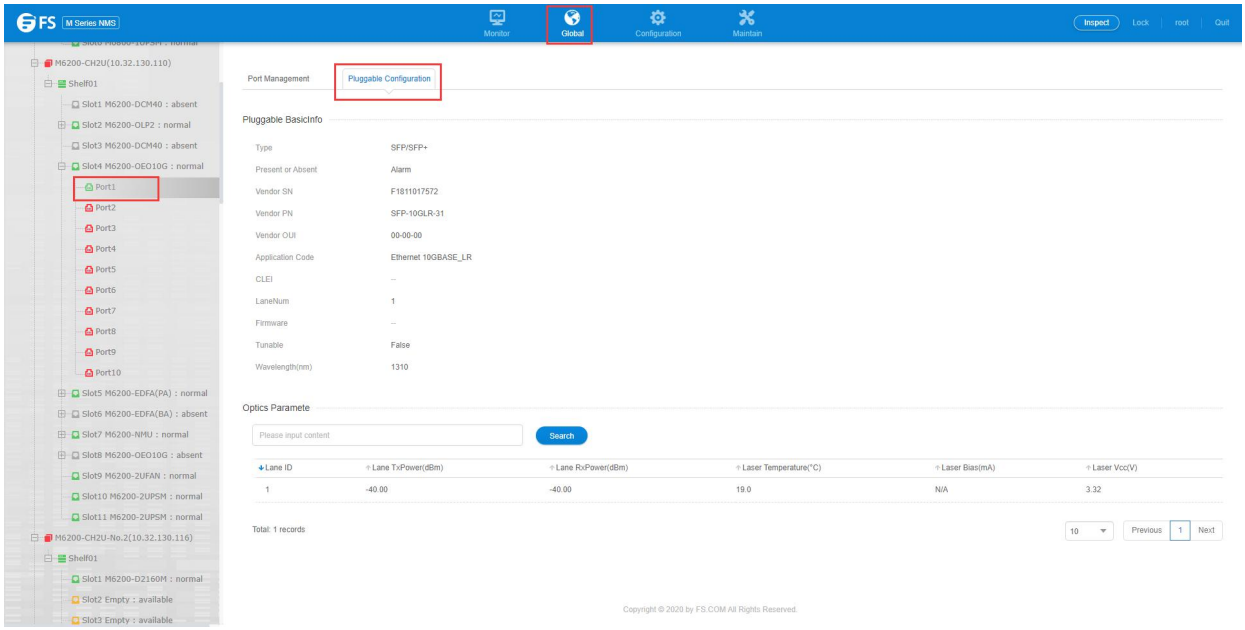



Figure 3- 6 Optical Module Configuration

## 2.13.1.SFP/SFP+ Optical Module Information

M Series NMS system SFP and SFP+ optical module information is not separately distinguished, and the XFP optical module information is similar to it.

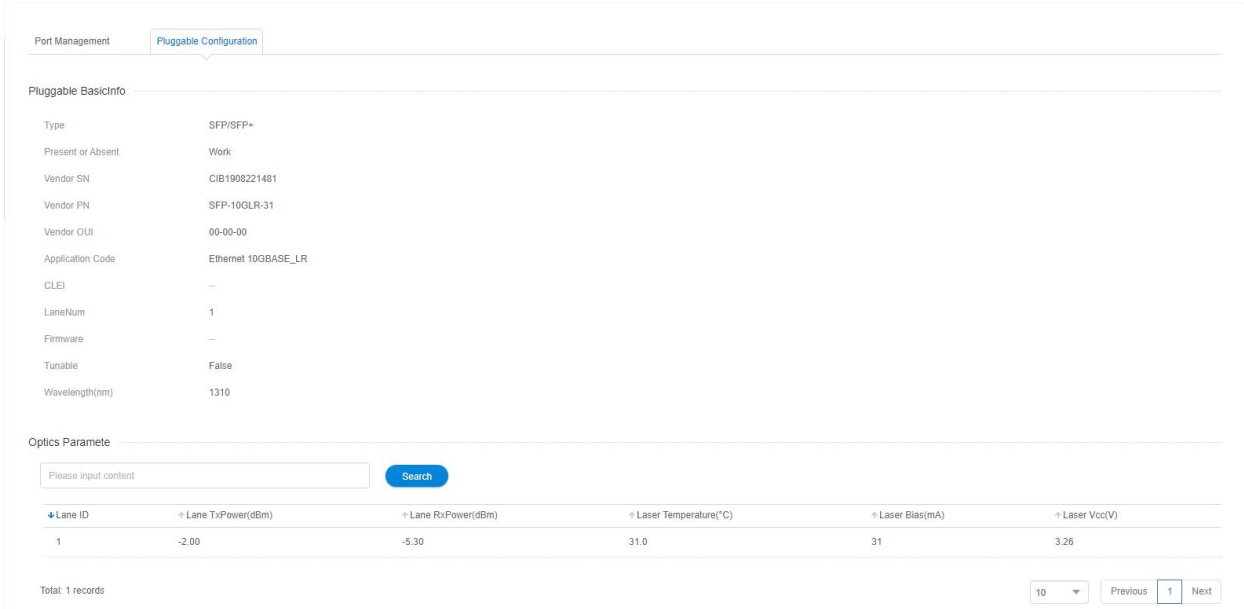



Figure 3- 7 Basic Information of SFP/SFP+ Optical Module




Figure 3- 8 Parameter Information of SFP/SFP+ Optical Module

# 2.14. NMU Board

## 2.14.1.NMU Board Introduction

M6200-NMU board is the NMU board for M6200 chassis. It supports status management and service configuration of backplane, power supply, fan and line cards. It also supports SNMP V2 general network management interface, Trap alarm reporting and flexible networking management of electrical/optical ports.

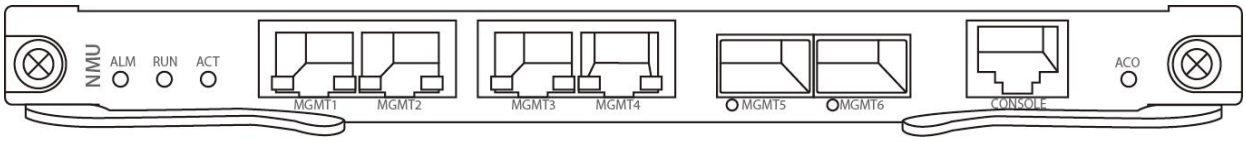



Figure 3- 9 Front Panel of NMU Board

Table 3- 1 Indicator Light Information of NMU Board

| Item | Meaning | Indicator Light Status | Description |
|---|---|---|---|
| ALM | Alarm Light | Red Light Always ON | There is alarm of NE. |
| | | Slow Flash of Red Light | There is Latch_open alarm of the NMU board. |
| | | Always OFF | There is no alarm of NE. |
| RUN | System Running Light | Always OFF | The software is not started. |
| | | Quick Flash of Green Light | The software has started and the board works normally. |
| ACT | Active/Standby Status Light of NMU Board | Green Light Always ON | NMU is Active. |
| | | Green Light OFF | NMU is Standby. |

## 2.14.2.View and Configure NMU Board Information

Left click to select the M6200-NMU board, click "*Check*" in the current alarm column of the board to view the current alarm information.

## 2.14.3.NMU Port Configuration

Select the network NE M6200-NMU card, open the NE tree, and click "*MGMT5*" to select "*Port Management*" and "*Pluggable Configuration*", as shown in the following figure.

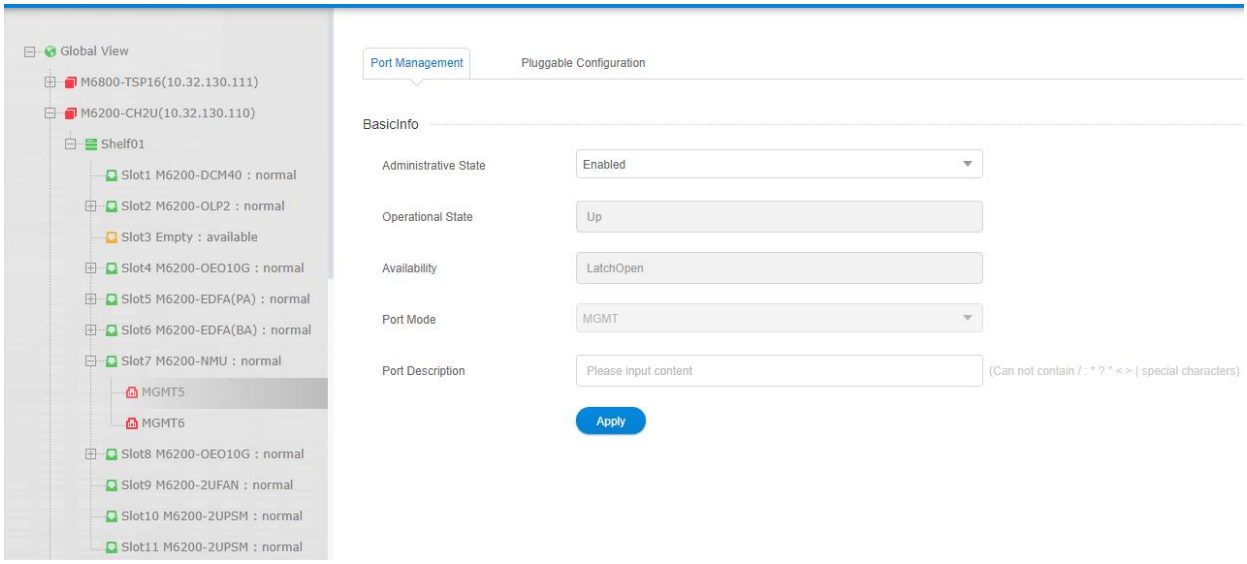



Figure 3- 10 NMU Port Configuration

In port management, the basic configuration information of the port can be viewed and the port management status can be configured.

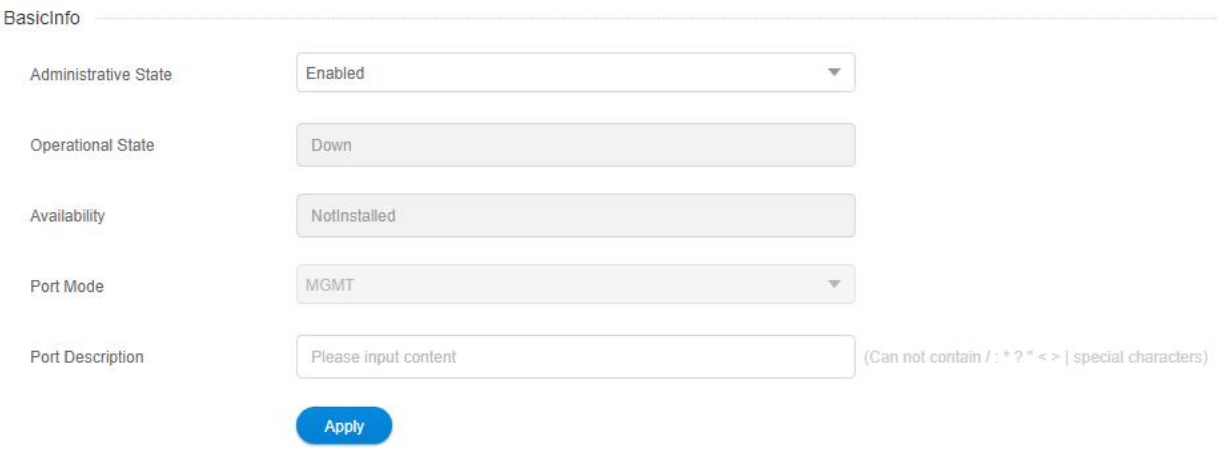



Figure 3- 11 NMU Port Configuration

Click on the port and select*"Pluggable Configuration"*, you can view the basic configuration information of the optical modules and the parameter information of the current optical module.




Figure 3- 12 Basic Information of Optical Transceiver

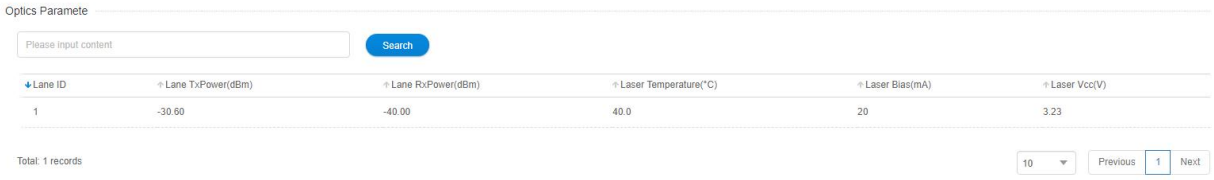



Figure 3- 13 Basic Information of Optical Transceiver

# 2.15. 10G Cross Conversion Board--OEO10G Board Configuration

## 2.15.1.OEO10G Board Introduction

M6200-OEO10G is a 10G multi-functional cross conversion board for wavelength conversion of optical fiber links, optical signal amplification, optical line protection and intelligent cross conversion of optical lines launched by our company. It adopts the conversion principle of optical-electrical-optical to regenerate optical signals, so as to realize the regenerative amplification and wavelength conversion of optical signals. It can realize wavelength division multiplexing (WDM) transmission, wavelength conversion and OEO signal amplification with C/DWDM multiplexer/demultiplexer, which is especially suitable for optical communication systems such as 155M-10G/s, SDH/SONET and Ethernet. It provides fast and low-cost transmission schemes for optical fiber relay and transmission lines with scarce optical fiber resources. Moreover, it can realize 1+1 protection of 10G port and can support intelligent cross scheduling of optical lines.

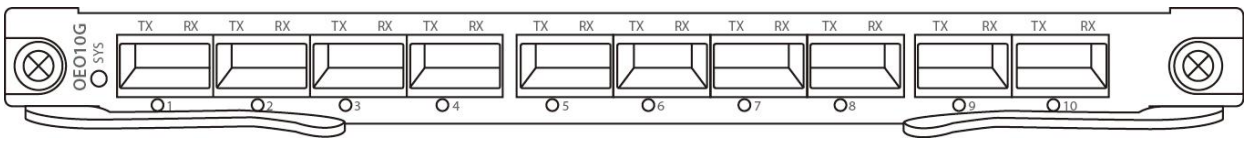


Figure 3- 14 Front Panel of OEO10G Board

There are five port modes for OEO10G:

- Port Amplification
- Adjacent Cross Connection
- 1+1 Protection
- Broadcast
- Free Mode

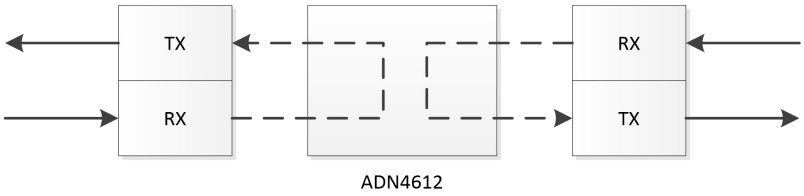



Figure 3- 15 Port Amplification Mode of OEO10G

Port Amplification Mode: Optical signals are input from RX port of port1, and are output from TX port of port1 after conversion by the internal chip. That is the port loop mode, and the source of the port is the port itself.

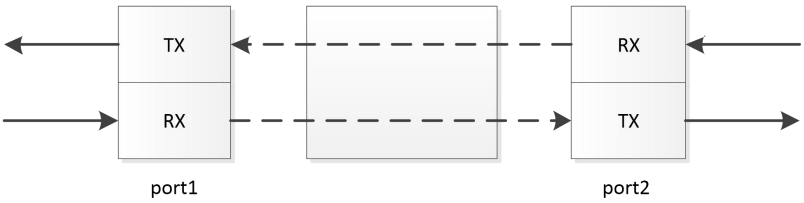



Figure 3- 16 Adjacent Cross Connection Mode of OEO10G

Adjacent Cross Connection Mode: Optical signals are input from RX port of port1 and are output from TX port of port2. That is, the source of port1 is port2 and the source of port2 is port1.

In adjacent cross connection mode, the corresponding relationships between ports are: port1-port2,

port3-port4, port5-port6, port7-port8 and port9-port10。

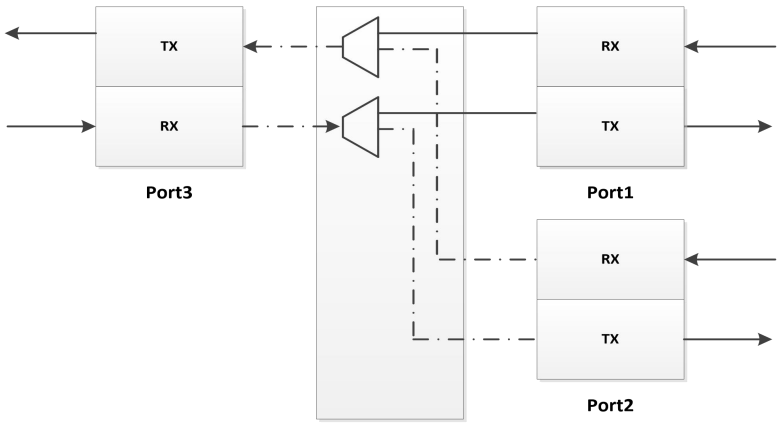



Figure 3- 17 OEO10G 1+1 Protection Mode

1+1 protection mode: In the mode that optical signals are transmitted simultaneously over the two channels and it selects to receive the optical signals from one of the two channels, that is to say, port3 is the service port, port1 and port2 are line ports, which are used for the switch between primary and secondary channels. The source of port1 and port2 is port3. port1 is the primary channel and port2 is the secondary channel.

For 1+1 protection mode, the corresponding relationships between ports are: port3-port1/2, port6-port4/5 and port9-port7/8.

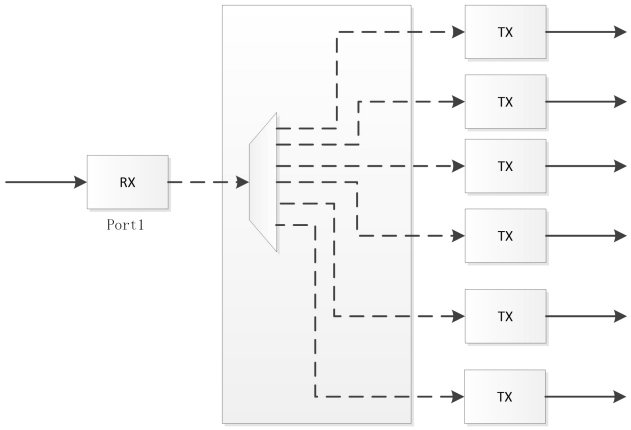



Figure 3- 18 Broadcast Mode of OEO10G

Broadcast Mode: Optical signals are input from RX of port1 and are output from TX of port1-port10, that is, port1 is the source port of port1-10.

Free Mode: Optical signals are input from RX of a certain port, and they can be set to be output from TX of any port. That is, the source of the port can be selected by the user.

Table 3- 4 Indicator Light Information of OEO10G Board

| Item | Meaning | Indicator Light Status | Description |
|---|---|---|---|
| SYS | Alarm/System Running Light | Quick Flash of Red Light | There is mismatch alarm of the board. |
| | | Slow Flash of Red Light | There are other alarms of the board. |
| | | Slow Flash of Green Light | The board works normally and there is no alarm. |
| PORT (1~10) | Port Light | Green Light ON | The port is enabled and there are optical signals received at the port. |
| | | Red Light ON | The port is enabled and there is no optical signal received at the port. |
| | | OFF | The port is not enabled. |

## 2.15.2.View and Configure OEO10G Board Information

Click on the board and select *"Board Current Alarm"*, you can view the current alarms of the board (including alarms of the board and the port).

Click on the board and select*"Reset Board Status"*, the factory configuration of the board can be restored.

Click click on the board and select*"OEO10G Configuration"*, you can enter OEO10G configuration interface, as shown in the figure below:

Left click to select M6200-OEO10G board, select "*Card Configuration*", you can view the current alarms of the board (including the alarms of the board and ports). Click the Reboot button of "Board Cold Start" to restore the factory configuration of the board. Select "*OTU Configuration*" to enter the OTU configuration interface. Select "*Pluggable Configuration*", you can enter the optical module configuration interface, as shown in the following figure.

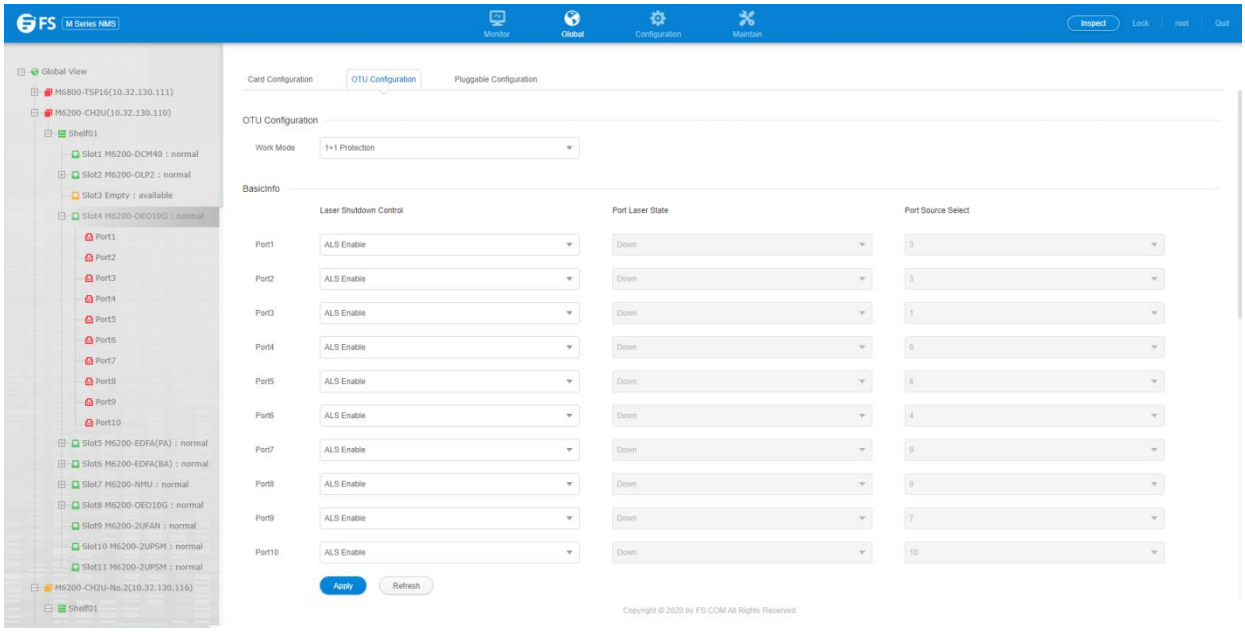



Figure 3- 19 OEO10G Configuration

**TIP**

***There are five work modes of OEO10G, which respectively are port amplification, adjacent cross connection, 1+1 protection, broadcast and free mode.***

Table 3- 5 Corresponding Relationship

between OEO10G ALS (Automatic Laser Shutdown) Status and Port Status

| ALS (Automatic Laser Shutdown) Status | Port Status |
|---|---|
| ALS Function Disabled | Port TX Forced ON |
| ALS Function Enabled | Whether Port TX emits light depends on the port source. If there are optical signals received by the port source, port TX emits light, otherwise, it does not emit light. |
| Forced OFF | Port TX Forced OFF |

**NOTE**

***In port amplification mode, both forced shutdown and no light shutdown are valid for the port.***

***In adjacent cross connection mode, forced shutdown is valid for the port and no light shutdown is valid for adjacent ports.***

***In 1+1 protection mode, forced shutdown is valid for the port and no light shutdown is valid according to the corresponding primary/secondary status.***

***In broadcast mode, forced shutdown is valid for the port and no light shutdown is valid according to the port source.***

***In free mode, forced shutdown is valid for the port and no light shutdown is valid according to the port source.***

*"Work Mode"*cannot be modified in the previous four modes, but the port source can be changed freely in free mode.

The number of the drop-down menu of*"Work Mode"*corresponds to the port of the board, as shown in the figure below:

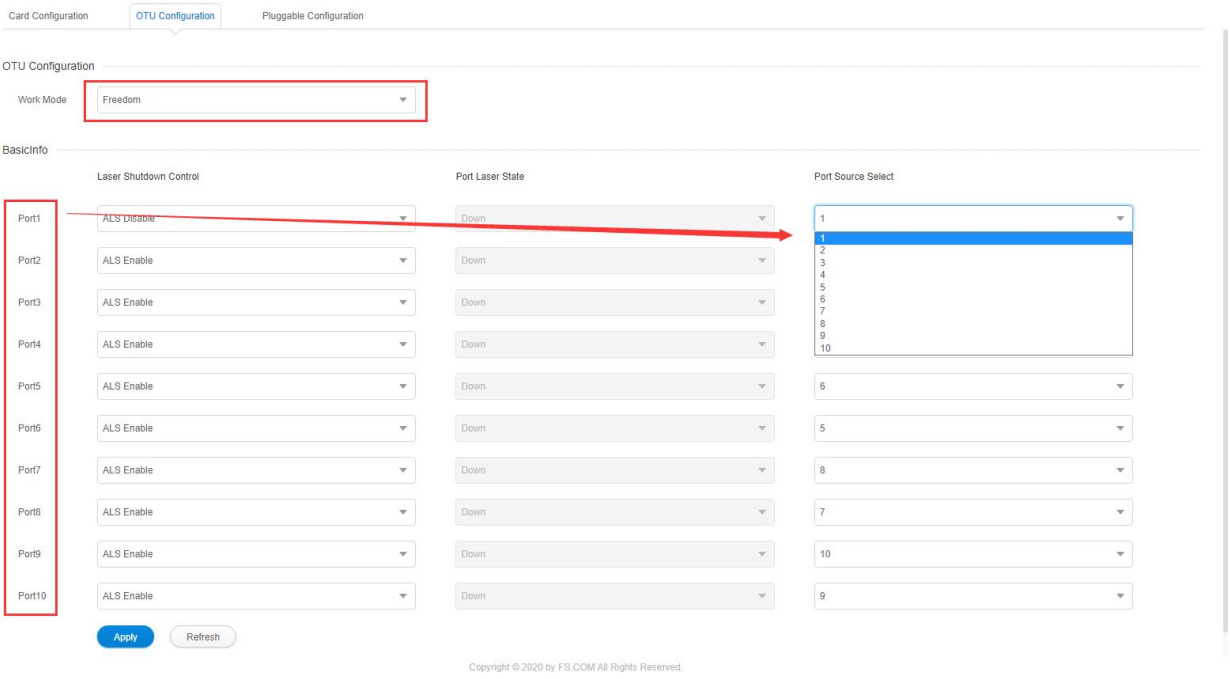



Figure 3- 20 OEO10G Port Source Selection

## 2.15.3.OEO10G Port Configuration

Select the network NE - OEO10G card, open the network NE tree, and left-click "*Port 1*" to select "*Port Management*" and "*Pluggable Configuration*", as shown in the following figure.

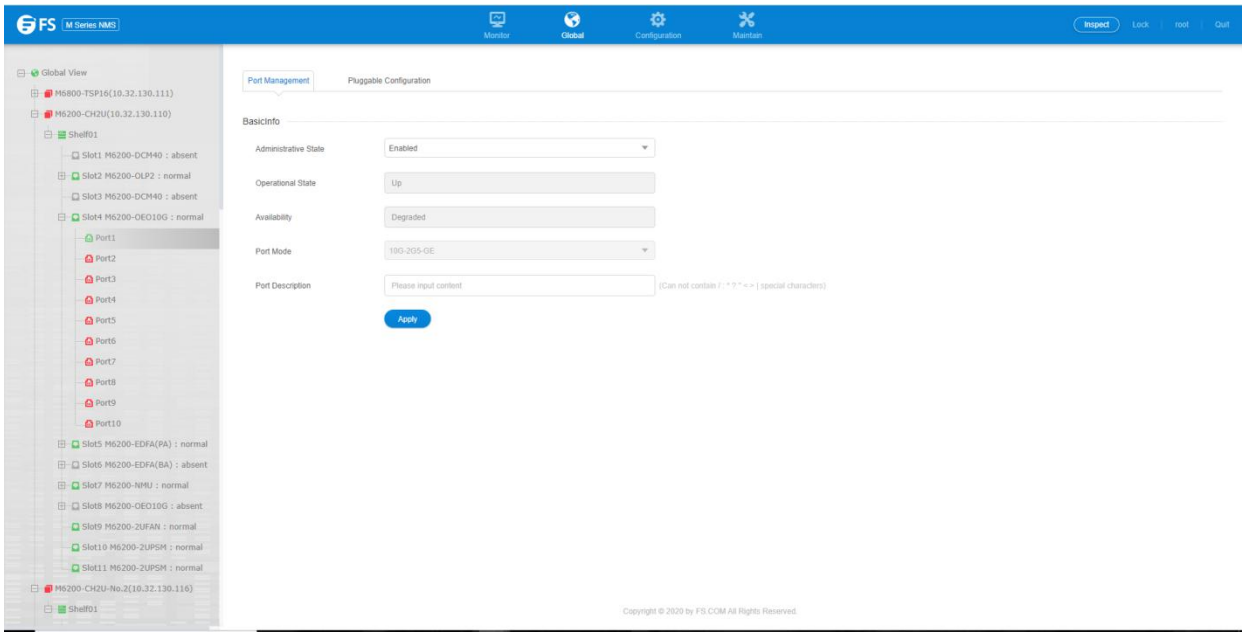



Figure 3- 21 OEO10G Port Configuration

In port management, you can view the basic information of the port.

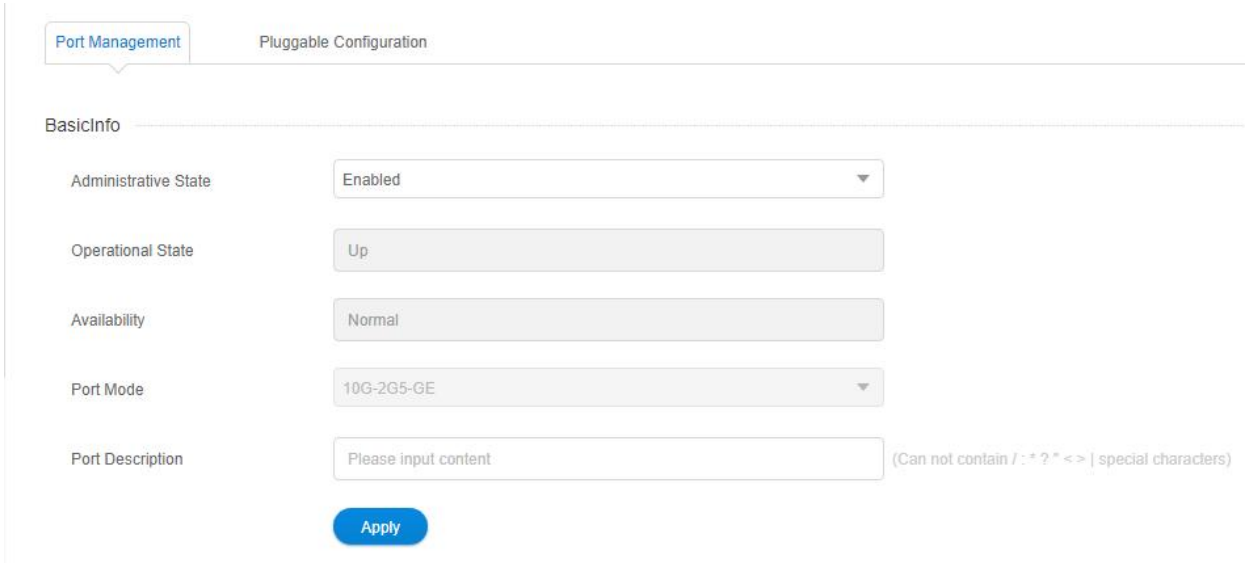



Figure 3- 22 Basic Information of OEO10G Port

Click on the port and select*"Pluggable Configuration"*, you can view the basic configuration information of optical modules and the parameter information of current optical module.




Figure 3- 23 Basic Information of OEO10G Optical Transceiver

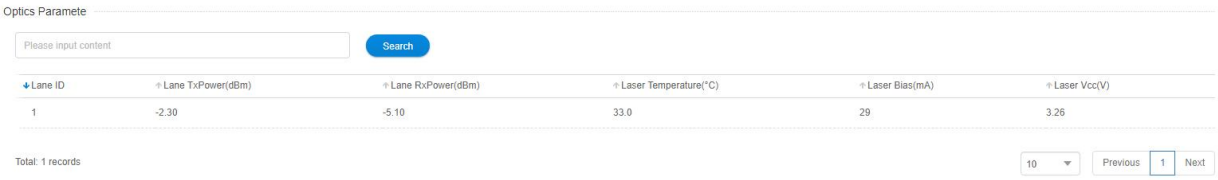



Figure 3- 24 Parameters of OEO10G Optical Transceiver

# 2.16. Optical Line Protection Board--OLP1+1 Board Configuration

## 2.16.1.OLP 1+1 Board Introduction

M6200-OLP2 system can monitor the power status of service optical fibers in real time. When the power of the service optical fibers is lower than the threshold value, it can automatically switch to the secondary optical fiber. The optical protection system will provide users with a more stable, flexible and secure transmission network, which has been widely used in backbone networks and important business routes.

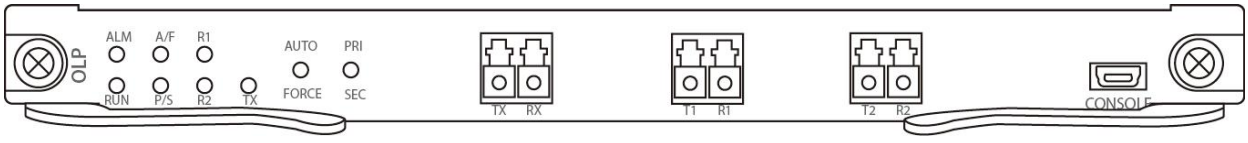



Figure 3- 25 Front Panel of OLP1+1 Board

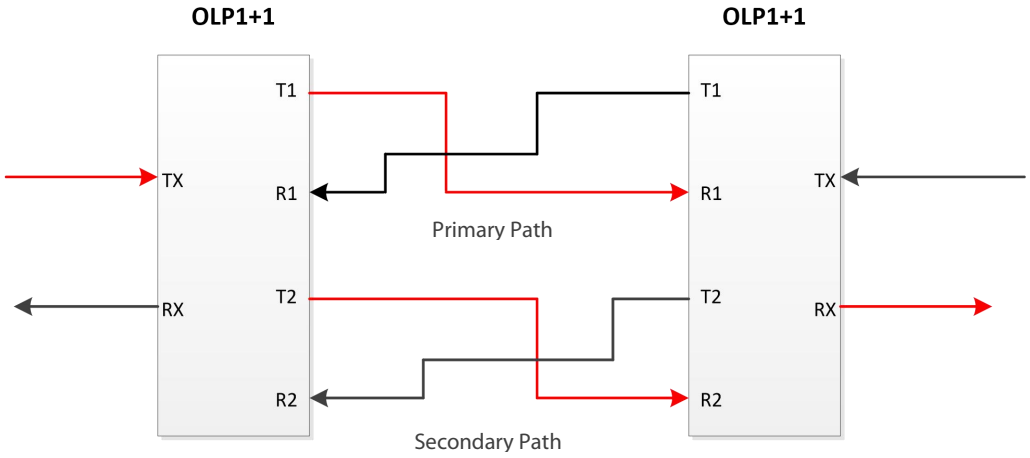



Figure 3- 26 Schematic Diagram of OLP 1+1

Table 3- 6 Indicator Light Information of OLP 1+1 Board

| Item | Meaning | Indicator Light Status | Description |
|---|---|---|---|
| ALM | Alarm Indicator Light | ON | There is alarm. |
| | | OFF | There is no alarm. |
| RUN | Running Indicator Light | Slow Flash of Green Light | The board works normally. |
| | | OFF | The board works abnormally. |
| Auto/Force | Mode Indicator Light | ON | Automatic Work Mode |
| | | OFF | Manual Work Mode |
| Pri/Sec | Primary/Secondary Path Indicator Light | ON | It works on the primary path. |
| | | OFF | It works on the secondary path. |
| R1 | Optical Power Indicator Light of Port R1 | ON | There are optical signals at Port R1. |
| | | OFF | There is no optical signal at Port R1. |
| R2 | Optical Power Indicator Light of Port R2 | ON | There are optical signals at Port R2. |
| | | OFF | There is no optical signal at Port R2. |
| Tx | Optical Power Indicator Light of Port TX | ON | There are optical signals at Port Tx. |
| | | OFF | There is no optical signal at Port Tx. |

Table 3- 7 Port Description of OLP 1+1 Board

| Item | Meaning | Description |
|---|---|---|
| TX | Port TX | The input port of the board which is connected with the transmission equipment. |
| RX | Port RX | The output port of the board which is connected with the transmission equipment. |
| T1 | Output Port 1 | The output port of the primary path of the board, which is split from TX and is connected with R1 port of the opposite end. |
| R1 | Input Port 1 | The input port of the primary path of the board, which is connected with T1 port of the opposite end and selects to output to RX port. |
| T2 | Output Port 2 | The output port of the secondary path of the board, which is split from TX and is connected with R2 port of the opposite end. |
| R2 | Input Port 2 | The input port of the secondary path of the board, which is connected with T2 port of the opposite end and selects to output to RX port. |

## 2.16.2.View and Configure OLP 1+1 Board Information

Select OLP 1+1 on the NE tree to access the board management related page, as shown below.

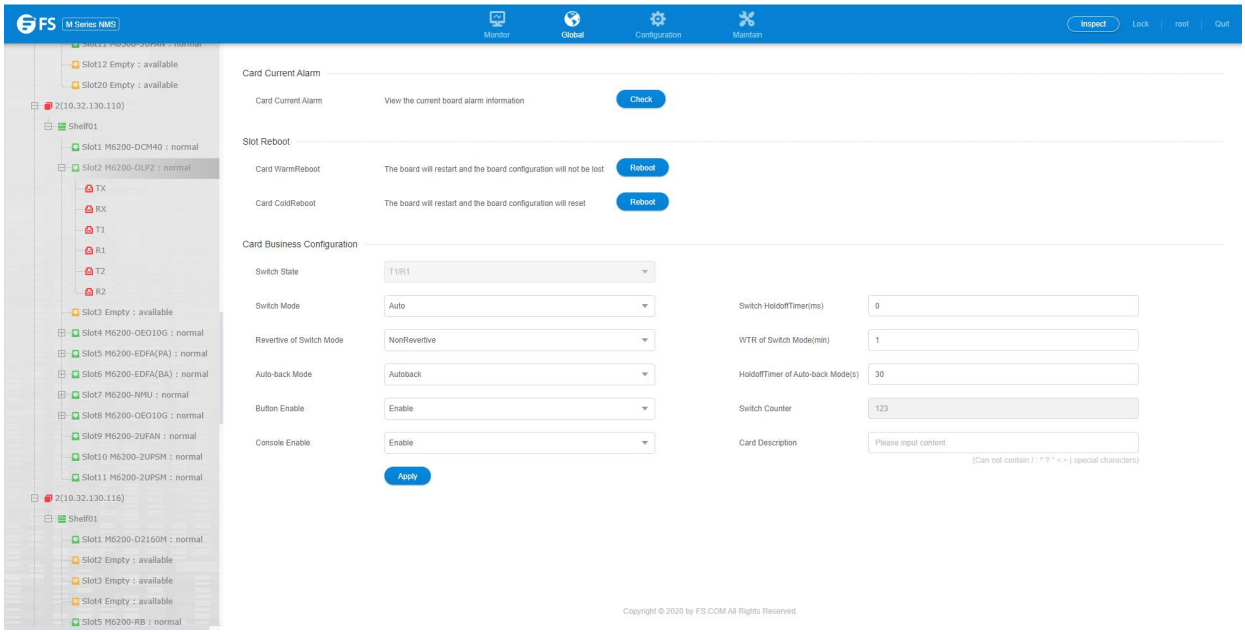



Figure 3- 27 OLP 1+1 Board Management Menu

Click "*Check*" in the "*Card Current Alarm*" column, you can view the current alarms of the board (including the alarms of the board and ports). The following figure shows the current alarms of the board.




Figure 3- 28 Current Alarm of OLP 1+1

Click "*Reboot*" in the "*Card ColdReboot*" column to restore the factory configuration of the card.

In *"Card Business Configuration"*, you can view and set switch mode,button enable,consloe enable,card descripiton and other configurations.

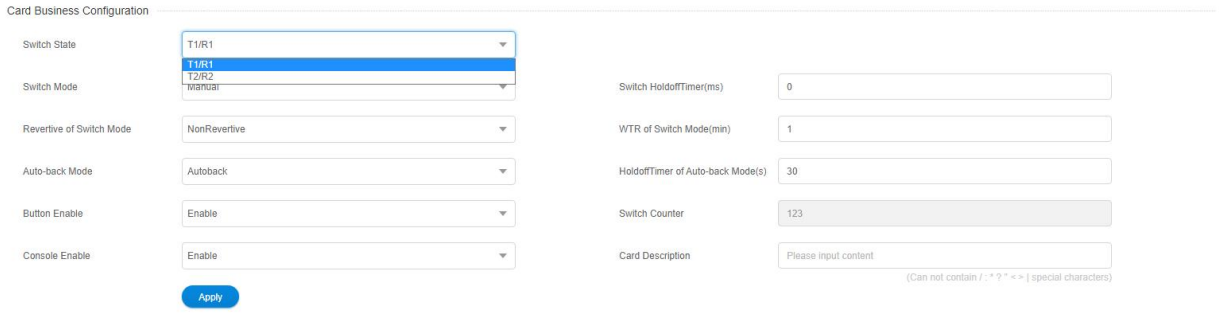



Figure 3- 29 OLP 1+1 Board Configuration

Right-click on the board and select *"Switch State"*, only if the board's operating mode is manual, you can use the switch command to switch the board's operating line.

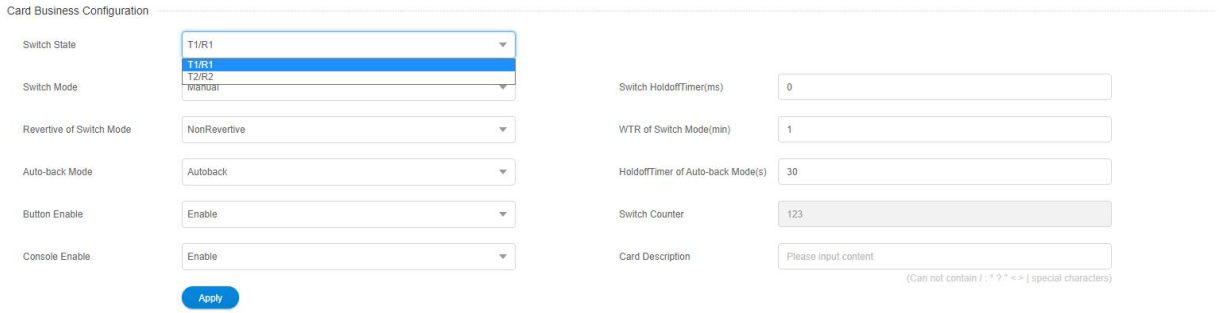



Figure 3- 30 OLP 1+1 State Switching

**Note:** The M6200 OLP 1+1 can be programmed to switch in 3 different modes:

- **In Revertive mode,** the OLP will switch from a primary signal to a backup signal when the primary signal fails. Upon restoration of the primary signal, the OLP will switch back.
- **In Non-Revertive mode,** neither signal is primary. The OLP will switch to the alternate signal when the signal it is using fails but will not revert to the original signal upon restoration. A failure of the new signal it is utilizing will however cause it to switch back to the original signal.
- **In Manual mode**, no automatic switch will take place. The network operator must manually switch the OLP from one signal to the other in M Series NMS management software.

Select the port you want to manage, and in the "*BasicInfo*" column, you can set the port management status and port mode (OLP2 card prohibits modifying the port mode).

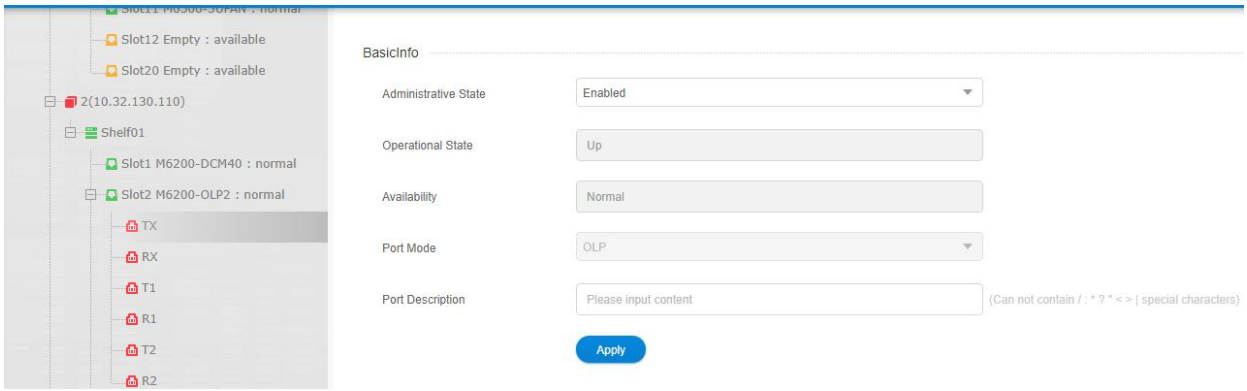



Figure 3- 31 OLP 1+1 Basic Information

In the "*Port Configuration*" column, you can read the optical power of the port in real time and set the wavelength, threshold and description information of the port.

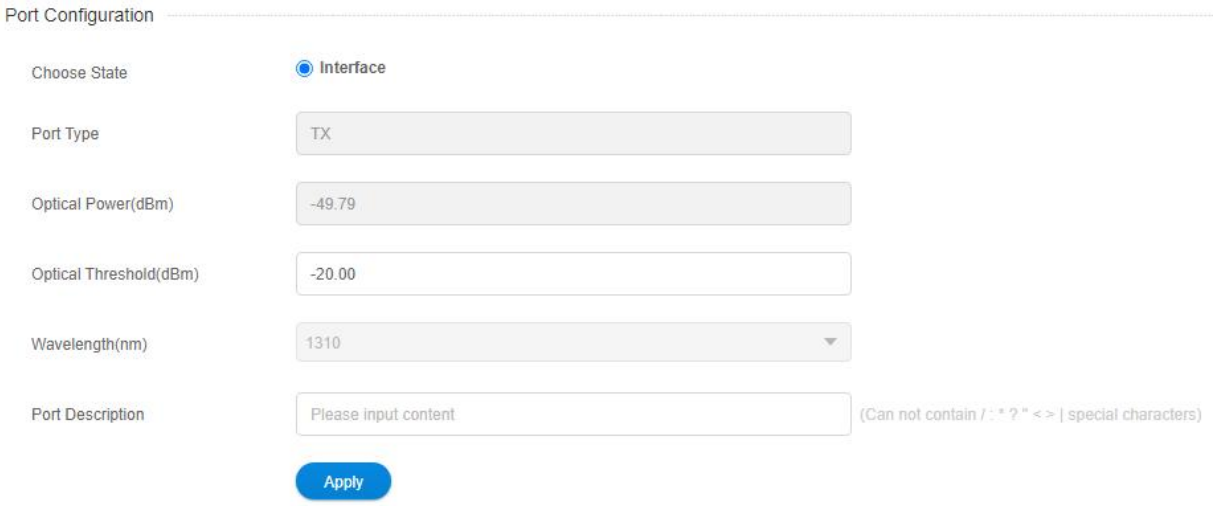



Figure 3- 32 OLP 1+1 Interface Settings

# 2.17. Optical Amplification Module--EDFA(BA) Board Configuration

## 2.17.1.EDFA(BA) Board Introduction

M6200-EDFA(BA ) board is a single-channel optical amplifier launched by our company. It can regenerate multi-wavelength optical signals in C-band, thus extending the transmission distance of signals. WDM transmission can be realized with DWDM multiplexer/demultiplexer. It is especially suitable for long-distance trunk network, MAN, access network and various SDH/PDH transmission systems.

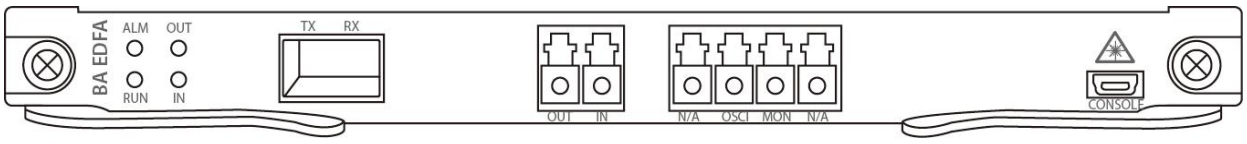


Figure 3- 33 Front Panel of EDFA(BA ) Board

Table 3- 8 Indicator Light Information of EDFA(BA ) Board

| Item | Meaning | Indicator Light Status | Description |
|---|---|---|---|
| ALM | Alarm Indicator Light | ON | There is alarm of the board. |
| | | OFF | There is no alarm. |
| | | Quick Flash of Red Light | The board does not match with the pre-configurations, that is, there is mismatch alarm of the board. |
| RUN | Running Indicator Light | Slow Flash of Green Light | The board works normally. |
| | | Red Light ON | The board works abnormally. |
| In | Input Indicator Light | Green Light ON | The input is normal. |
| | | Red Light ON | There is alarm of the input. |
| Out | Output Indicator Light | Green Light ON | The output is normal. |
| | | Red Light ON | There is alarm of the output. |

Table 3- 9 Port Description of EDFA(BA ) Board

| Item | Meaning | Description |
|---|---|---|
| In | Input Port IN | The input port of the board. |
| Out | Output Port OUT | The export port of the board. |
| MON | Monitoring Channel | Monitoring channel |
| OSC | Optical Supervisory Channel | Optical supervisory channel (Use the channel according to the collocation module). |

### 2.17.2.View EDFA(BA ) Board Information

Left click to select M6200-EDFA(BA) board, select "*Card Configuration*", click "*Check*" on the current alarm column of the board to view the current alarm of the board (including the board and port alarms), as shown below.

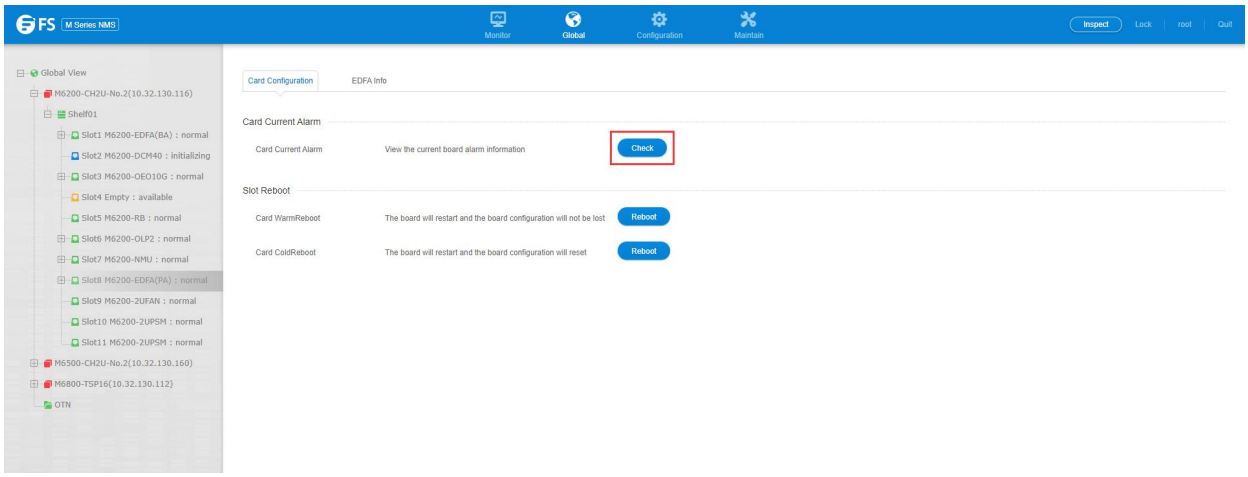



Figure 3- 34 EDFA(BA ) Current Alarm

To restart the card, click *"Reboot"* in the column of *"Card ColdReboot"* to restore the factory configuration of the card.

Click on the board and select*"EDFA Info"*, you can view and configure EDFA(BA ) board information.

Select*"EDFA Info"*, you can view information such as OA module version, gain and function type etc.




Figure 3- 35 EDFA(BA )-OA Basic Information

Select*"EDFA Configuration"*, you can view the control mode, gain, optical power of input/output ports and their corresponding alarm threshold of the current OA module. Moreover, control mode setting function is provided. (For detailed setting method, please see Configuration Method of Control Mode for EDFA(BA ) Board.)

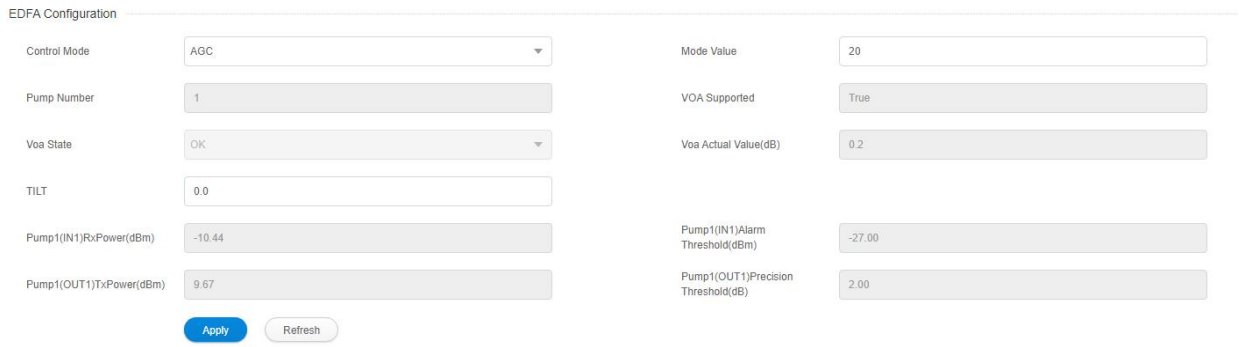



Figure 3- 36 EDFA(BA )-OA Configuration

Select*"Pump Info"*, you can view operating parameters of OA module, such as working current and module temperature etc.




Figure 3- 37 EDFA(BA)-Pump Information

### 2.17.3.Configuration Method of Control Mode for EDFA(BA ) Board

On the board and select *"EDFA Info"* in the *"EDFA Configuration"* column, select the control mode behind the drop-down menu, select the mode you want to set, set the parameter values of the mode you want to modify, and click "Apply".

There are three general control modes:

- Automatic gain control
- Automatic power control
- Disabled

The mode parameter is a default value given according to the adaptation of different modules and there is a built-in range. When the set value is not in this range, the user will be prompted to set the range.

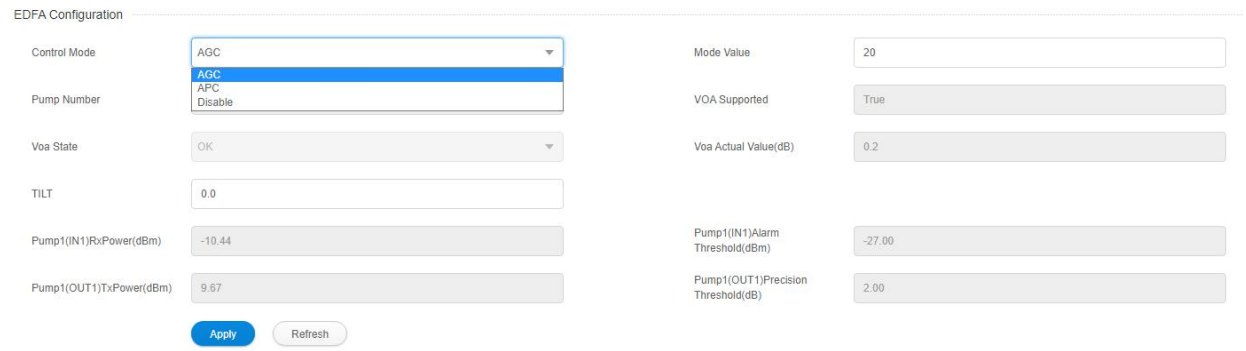



Figure 3- 38 EDFA(BA )-OA Configuration

If you receive a prompt message <Success>, the mode is successfully set.

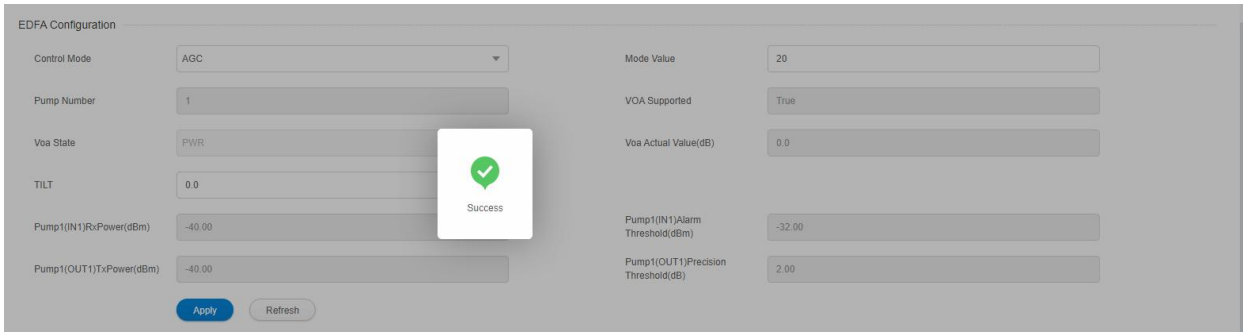



Figure 3- 39 EDFA(BA )-Successfully Modify the Control Mode

If you receive a warning message, it indicates that the mode setting failed. Please reset it according to the parameters in the warning message.

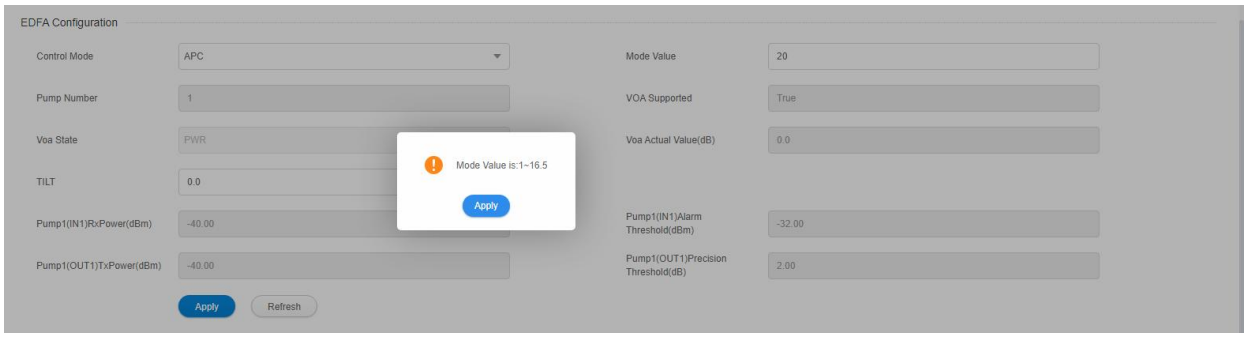



Figure 3- 40 EDFA(BA )-Modify Mode Parameters

# 2.18. Optical Amplification Module--EDFA(PA) Board Configuration

## 2.18.1.EDFA(PA) Board Introduction

M6200-EDFA(PA) board is a single-channel optical amplifier launched by our company. It can regenerate multi-wavelength optical signals in C-band, thus extending the transmission distance of signals. WDM transmission can be realized with DWDM multiplexer/demultiplexer. It is especially suitable for long-distance trunk network, MAN, access network and various SDH/PDH transmission systems.

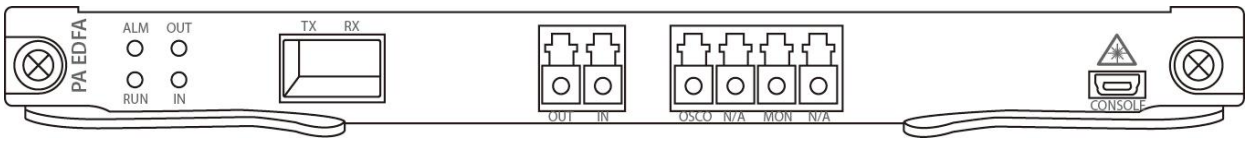



Figure 3- 41 Front Panel of EDFA(PA) Board

Table 3- 8 Indicator Light Information of EDFA(PA) Board

| Item | Meaning | Indicator Light Status | Description |
|---|---|---|---|
| ALM | Alarm Indicator Light | ON | There is alarm of the board. |
| | | OFF | There is no alarm. |
| | | Quick Flash of Red Light | The board does not match with the pre-configurations, that is, there is mismatch alarm of the board. |
| RUN | Running Indicator Light | Slow Flash of Green Light | The board works normally. |
| | | Red Light ON | The board works abnormally. |
| In | Input Indicator Light | Green Light ON | The input is normal. |
| | | Red Light ON | There is alarm of the input. |
| Out | Output Indicator Light | Green Light ON | The output is normal. |
| | | Red Light ON | There is alarm of the output. |

Table 3- 9 Port Description of EDFA(PA) Board

| Item | Meaning | Description |
|---|---|---|
| In | Input Port IN | The input port of the board. |
| Out | Output Port OUT | The export port of the board. |
| MON | Monitoring Channel | Monitoring channel |
| OSC | Optical Supervisory Channel | Optical supervisory channel (Use the channel according to the collocation module). |

## 2.18.2.View EDFA(PA) Board Information

Left click to select M6200-EDFA(PA ) board, select "*Card Configuration*", click "*Check*" on the current alarm column of the board to view the current alarm of the board (including the board and port alarms), as shown below.

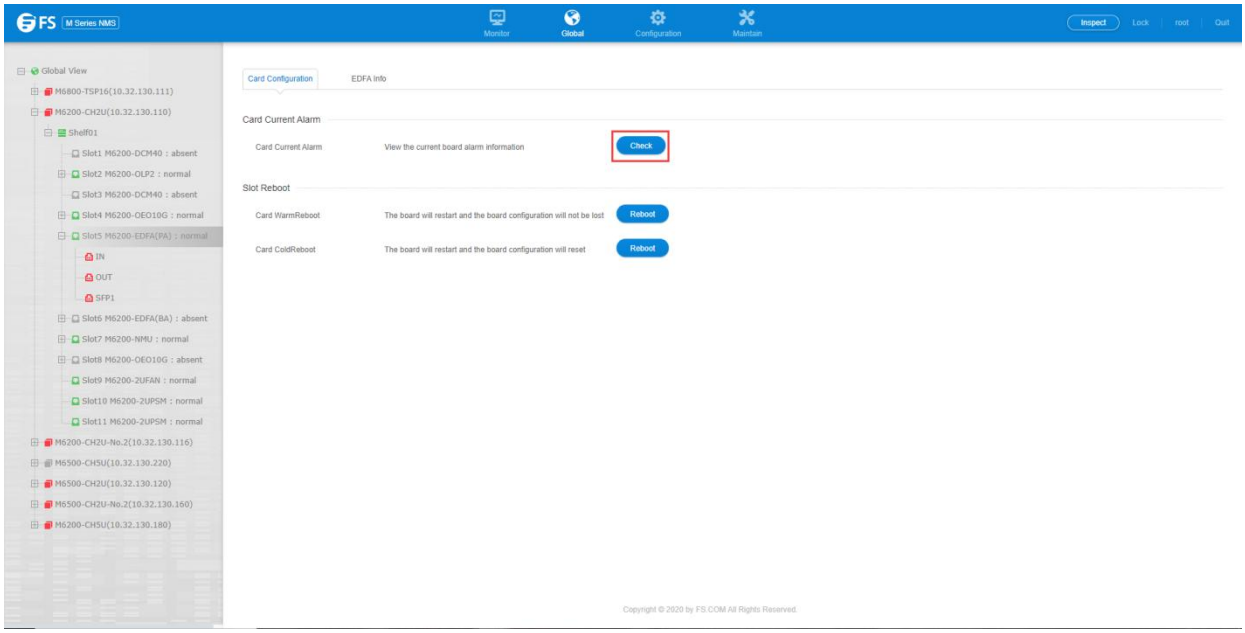



Figure 3- 42 EDFA(PA) Current Alarm

To restart the card, click "*Reboot*" in the column of "*Card ColdReboot*" to restore the factory configuration of the card.

Click on the board and select*"EDFA Info"*, you can view and configure EDFA(BA ) board information.

Select*"EDFA Info"*, you can view information such as OA module version, gain and function type etc.




Figure 3- 43 EDFA(PA)-OA Basic Information

Select*"EDFA Configuration"*, you can view the control mode, gain, optical power of input/output ports and their corresponding alarm threshold of the current OA module. Moreover, control mode setting function is provided. (For detailed setting method, please see Configuration Method of Control Mode for EDFA(PA ) Board.)

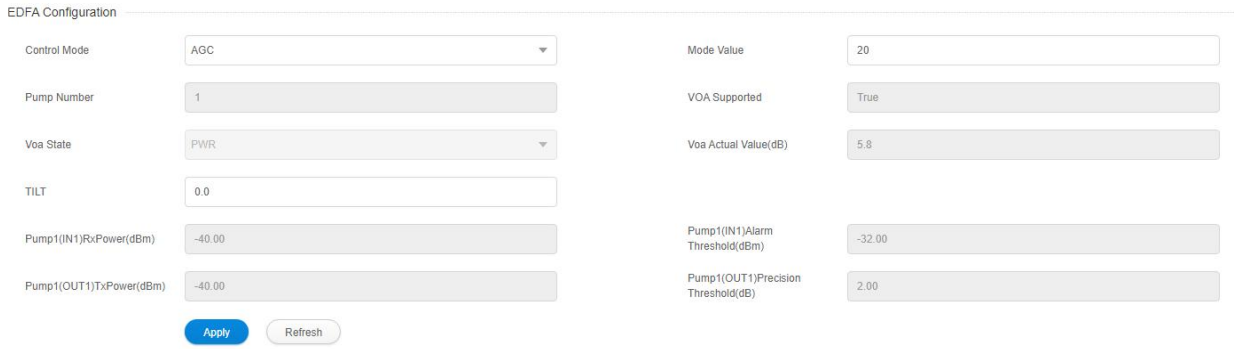



Figure 3- 44 EDFA(PA)-OA Configuration

Select*"Pump Info"*, you can view operating parameters of OA module, such as working current and module temperature etc.

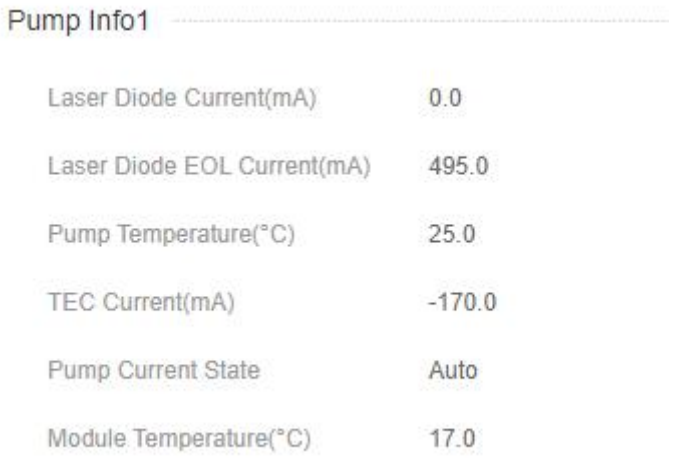



Figure 3- 45 EDFA(PA)-Pump Information

## 2.18.3.Configuration Method of Control Mode for EDFA(PA) Board

On the board and select *"EDFA Info"* in the *"EDFA Configuration"* column, select the control mode behind the drop-down menu, select the mode you want to set, set the parameter values of the mode you want to modify, and click "Apply".

There are three general control modes:

- Automatic gain control
- Automatic power control
- Disabled

The mode parameter is a default value given according to the adaptation of different modules and there is a built-in range. When the set value is not in this range, the user will be prompted to set the range.

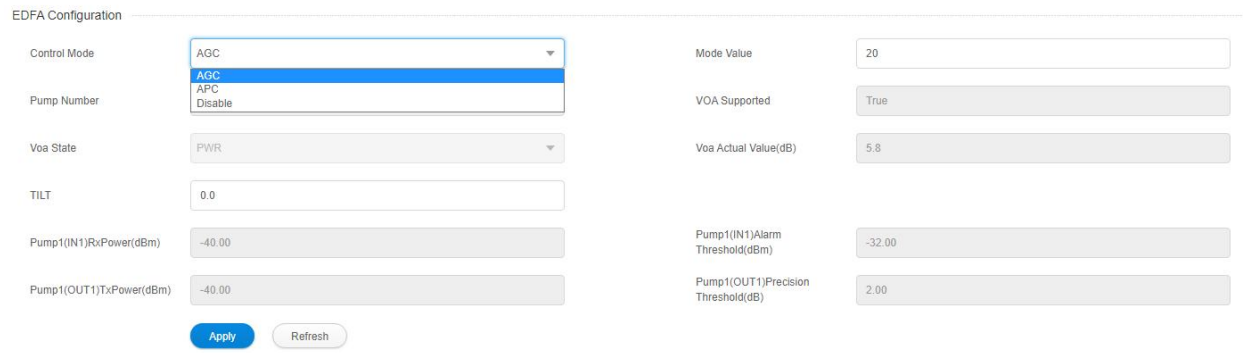



Figure 3- 46 EDFA(PA)-OA Configuration

If you receive a prompt message <Success>, the mode is successfully set.

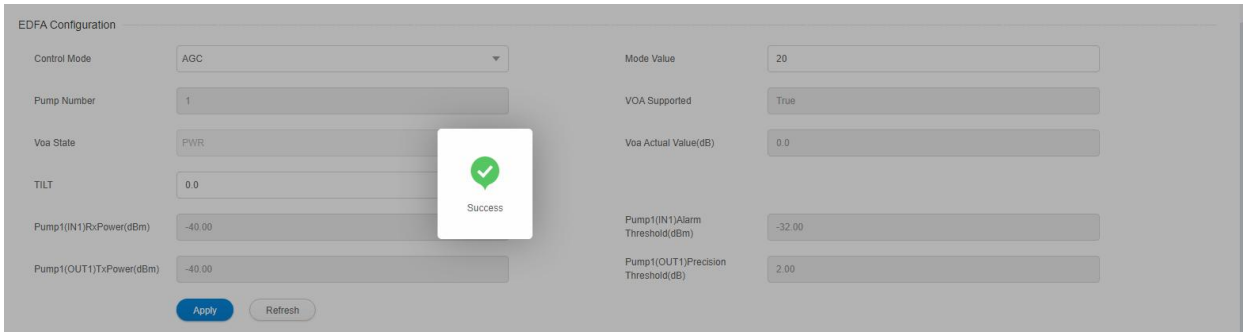



Figure 3- 47 EDFA(PA)-Successfully Modify the Control Mode

If you receive a warning message, it indicates that the mode setting failed. Please reset it according to the parameters in the warning message.

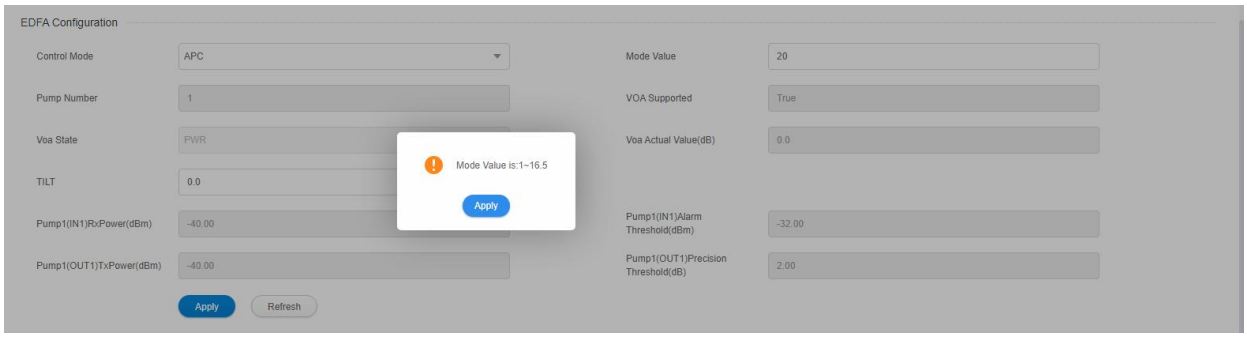



Figure 3- 48 EDFA(PA)-Modify Mode Parameters

# 2.19. WDM Board--MUX/DEMUX Configuration

## 2.19.1.MUX/DEMUX Board Introduction

M6200-MUX/DEMUX board is a DWDM multiplexer launched by our company. It can be used to multiplex/demultiplex DWDM channels, which greatly saves customers' optical fiber resources. The network configuration can be flexibly changed according to customers' needs.

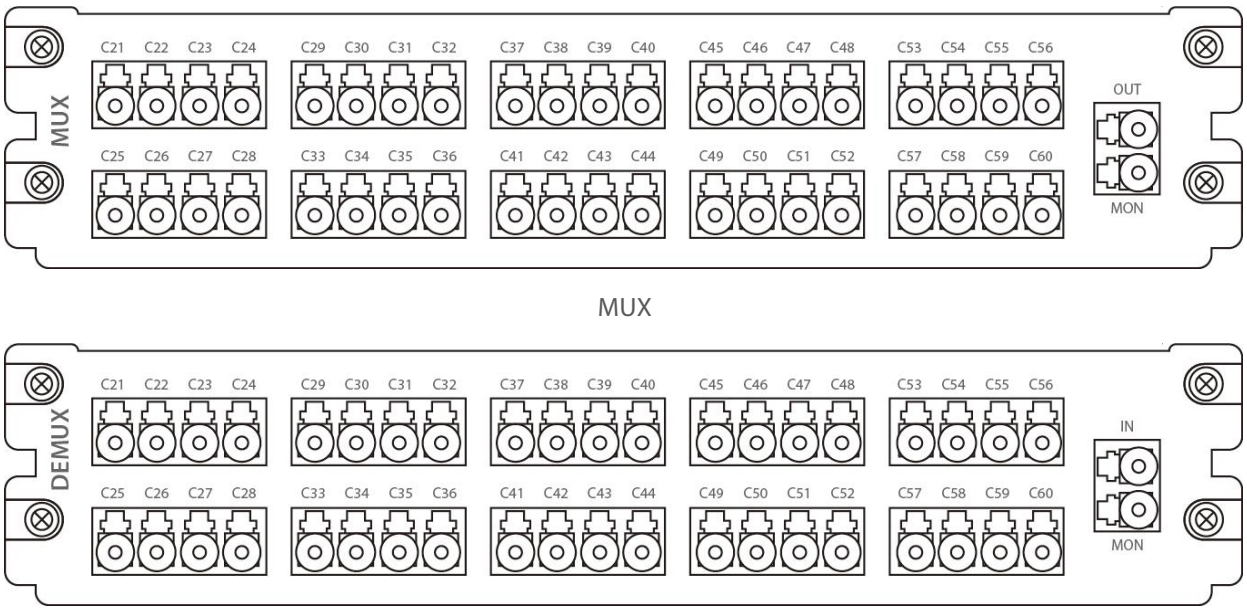



Figure 3- 49 Front Panel of MUX/DEMUX Board

### 2.19.2.View MUX/DEMUX Board Information

Select "*Card Current Alarm*" to view the current alarm of the board.

Left click to select M6200 MUX/DEMUX board, click "Check" to view the board's current alarms (including the board and port alarms), as shown below.

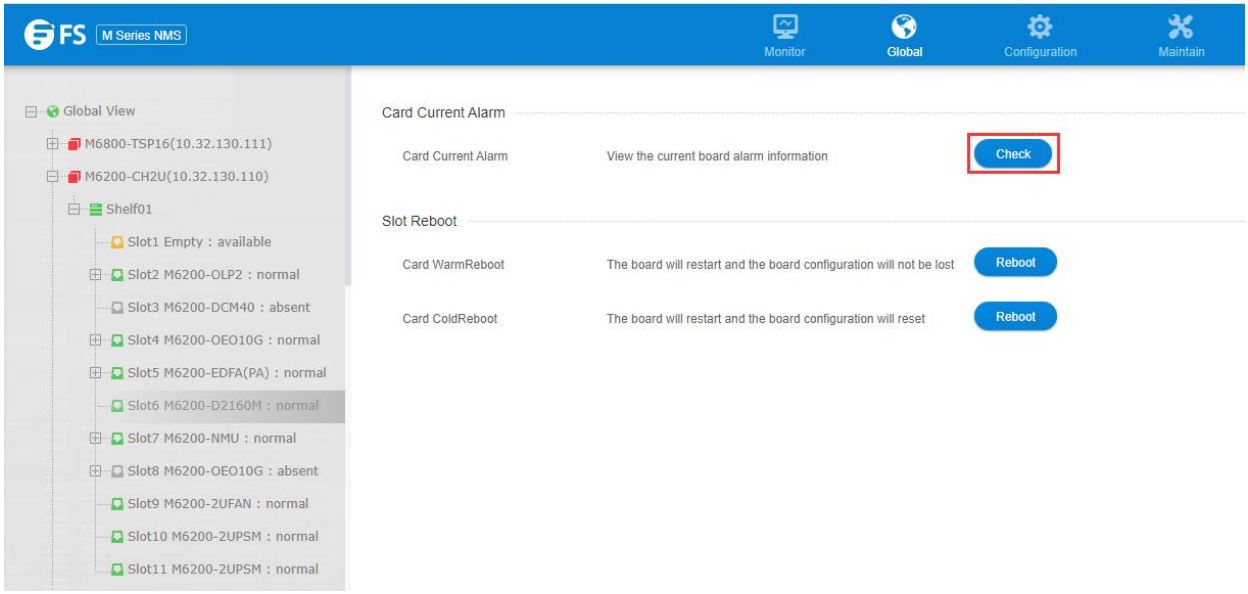



Figure 3- 50 View the board's current alarms

## 2.20. DCM Module Configuration

### 2.20.1.DCM Board Introduction

M6200-DCM40 board provides fixed chromatic dispersion compensation for high-speed metro core, regional, and extended long haul DWDM networks, and it can be used to compensate dispersion on standard single-mode optical fiber (SMF) across the entire C-Band.

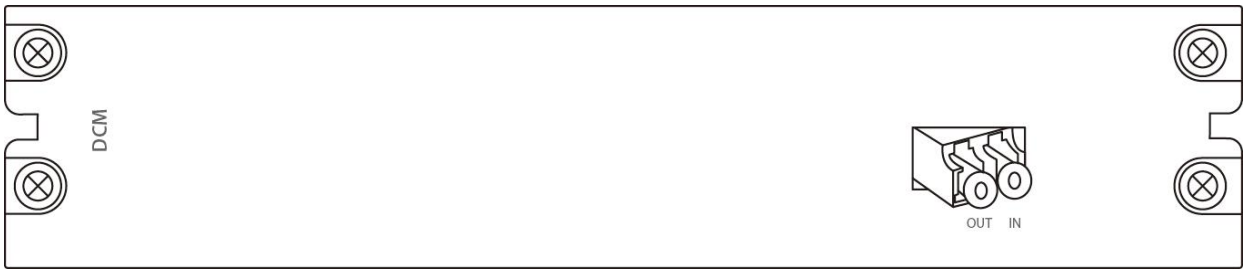



Figure 3- 51 Front Panel of DCM40 Board

## 2.20.2.View DCM Board Information

Select "*Card Current Alarm*" to view the current alarm of the board.

Left click to select M6200-DCM40 board, click "View" to view the board's current alarms (including the board and port alarms), as shown below.

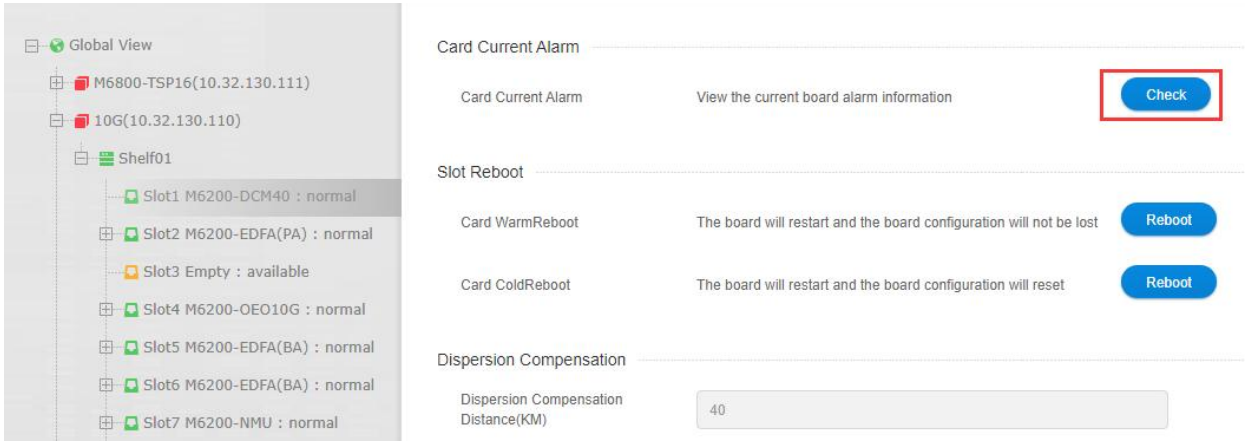



Figure 3- 52 View the board's current alarms

# 3. Alarm Management

## 3.1. Alarm Management Introduction

The alarm management function is a functional group that manages the faults of various network devices managed by the NMS system during the operation of the system. The managed fault is commonly called alarm.

The NMS alarm management function manages two types and four levels of failures. The two types are equipment alarm and communication alarm. The four levels are emergency, primary, secondary and warning.

## 3.2. Main Interface of Alarm Management

After logging in the NMS system, click on the navigation bar – left click on the "*Alarm Management*" menu -- the alarm management sub-menu appears, which includes: current alarm, history alarm, alarm configuration, alarm notification configuration, alarm mailbox server configuration and enable sound.

**TIP**

***In the upper right corner of the NMS main interface, alarm statistics are displayed, including the total number of alarms and the number of alarms at all levels.***

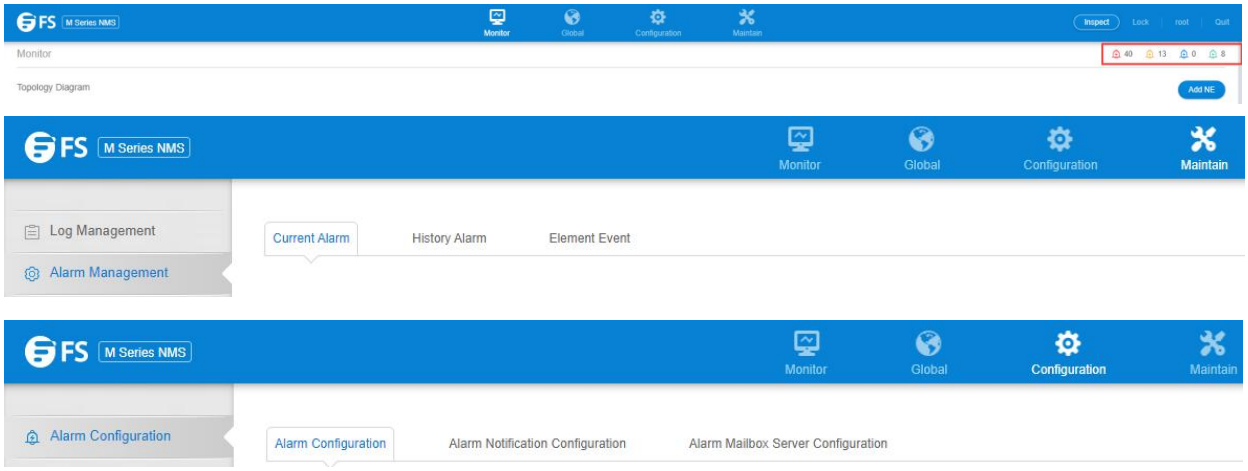



Figure 4- 1 Alarm Management

### 3.2.1. Current Alarm

Click *"Maintain"* in the top navigation bar -> *"Alarm Management"* in the left navigation bar -> *"Current Alarm"* in the sub-menu to enter the current alarm page. As shown in the figure.

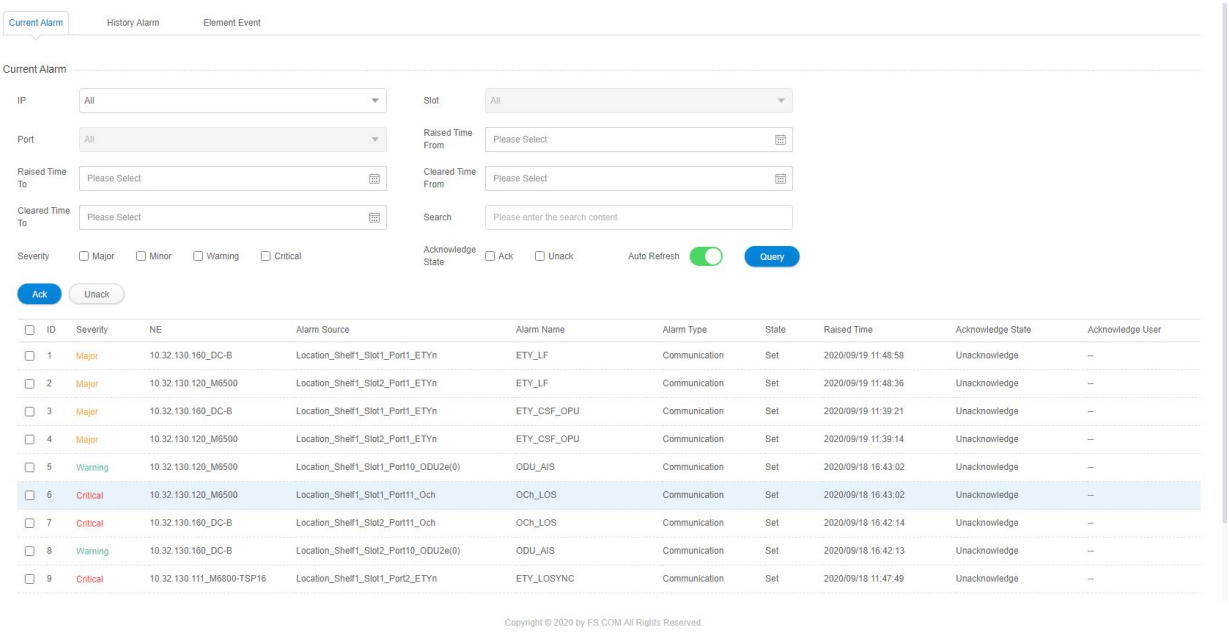



Figure 4- 2 Current Alarm

The area at the bottom right of the table allows you to filter the number of alerts displayed on the current page, and the number of alerts per page can be adjusted to 10, 20, 50 and 100.



Figure 4- 3 Show Number of Current Alarms

The middle right area under the navigation bar is *"Ack"*, *"Unack"*, button, which functions as.

The *"Ack"* button is used to confirm the selected alert. By selecting the check box to the left of the selected alert, and clicking the *"Ack"* button, all the selected alerts will be in the status of confirmation. The confirmation status of the alert is *"Acknowledge"*, The *"Ack"* button in the operation bar changes to *"Unack"*. The specific operation is as follows: Select the alarm to be confirmed → Click *"Ack"* button → Click *"Apply"* → Alarm confirmation.

**TIP**

***Because the current page will refresh once in 10 seconds, the selected alarm will become unchecked after refreshing if it is not confirmed in time.***

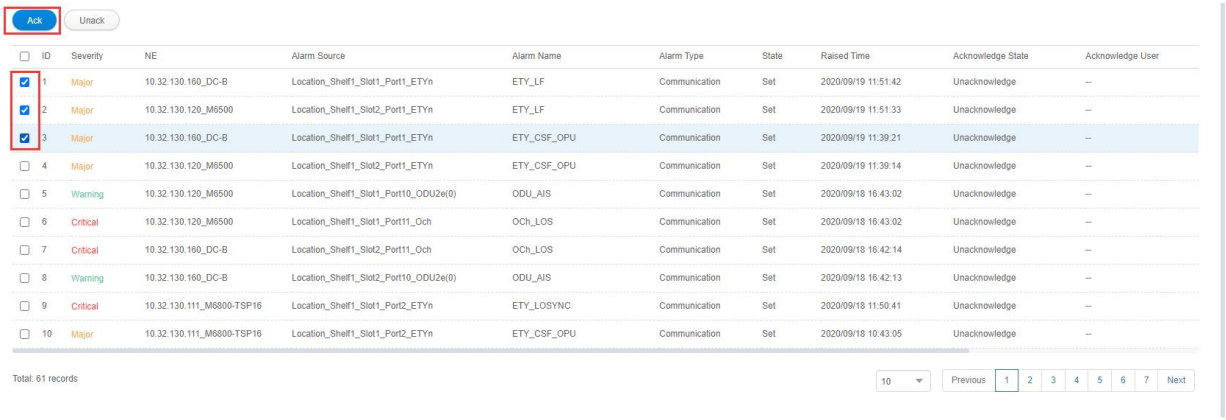



Figure 4- 4 Select to Confirm Current Alarm

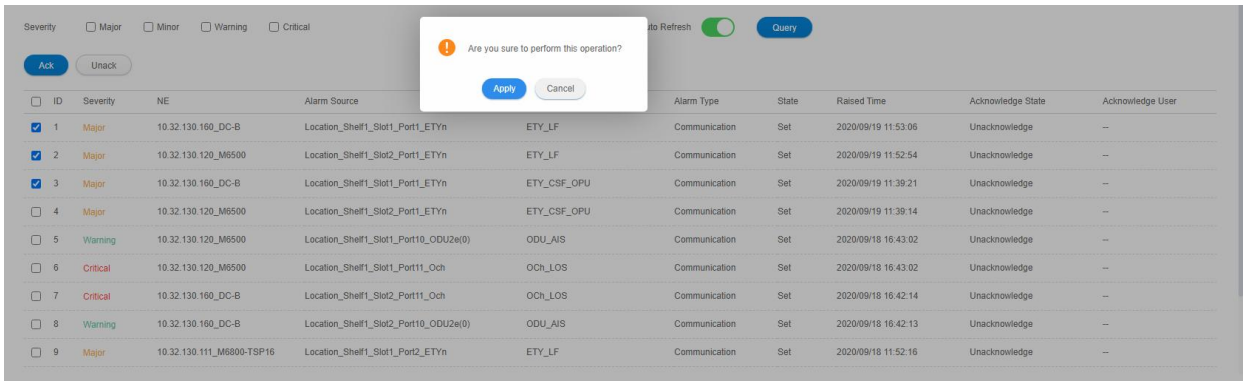



Figure 4- 5 Carry Out Confirmation of Current Alarm

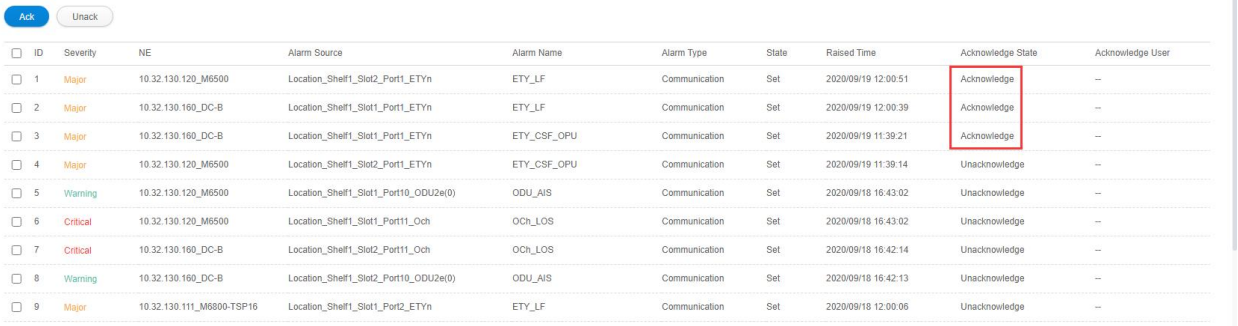


Figure 4- 6 Complete Confirmation of Current Alarm

The function of *"Unack"* button is to cancel the confirmed alarm, and make it return to the unconfirmed state. Its operation method is similar to the confirmation alarm: select the alarm to cancel the confirmation of the alarm → click the "Unack" button → click "Apply" → the alarm is not confirmed.

**TIP**

***Because the current page will refresh once in 10 seconds, the selected alarm will become unchecked after refreshing if it is not confirmed in time.***

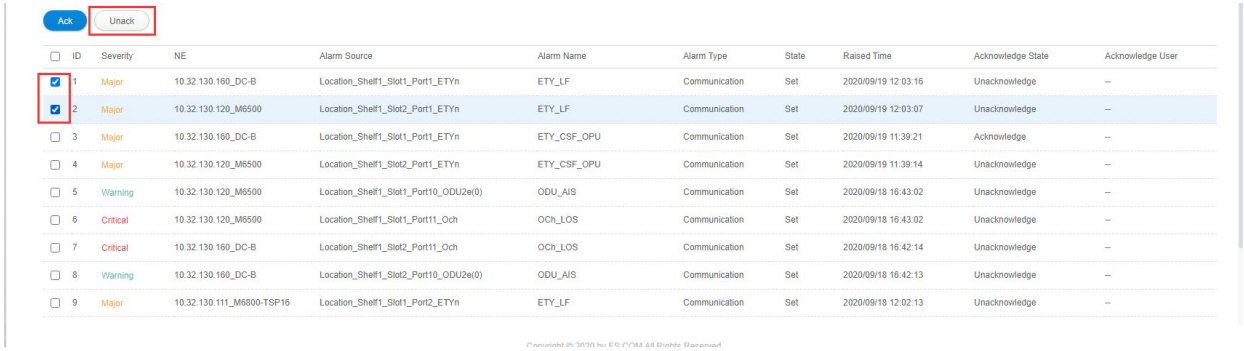



Figure 4- 7 Cancel Confirmation of Current Alarm

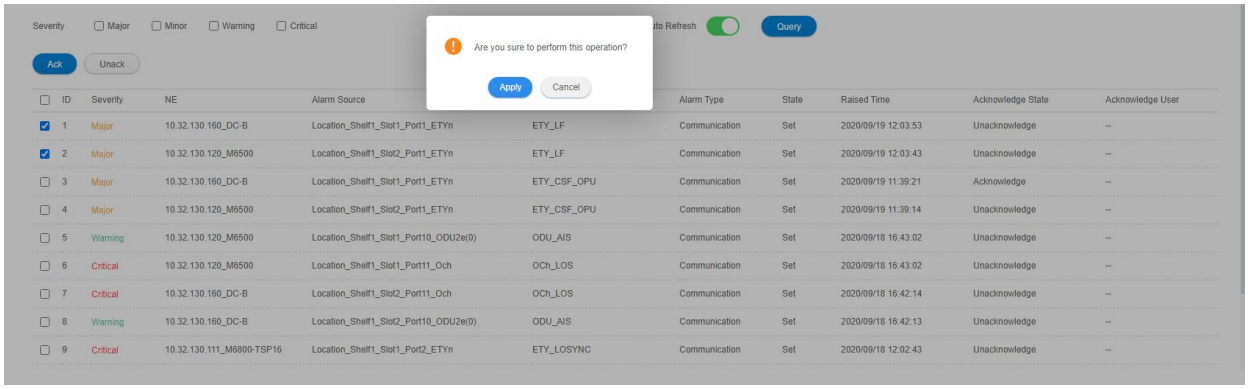



Figure 4- 8 Cancel Confirmation

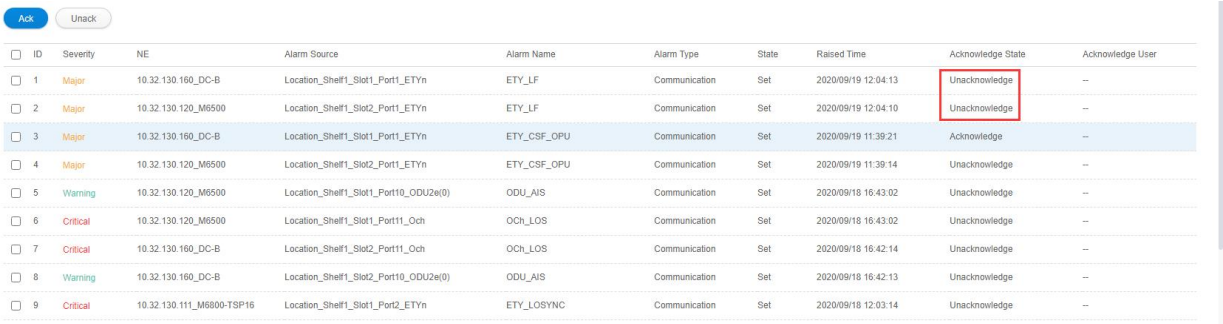



Figure 4- 9 Complete Confirmation Cancellation of Current Alarm

The *"Query"* button can use known conditions to view and operate the specified alarm, the filtering conditions include: the IP NE,the specified IP slot, the specified port under the specified slot, the alarm creation time (i.e., the alarm generation time period), the alarm clear start and stop. The time; the level of the alert; the

acknowledgement status of the alert. A single filter can be used alone, or several filters can be combined to filter out the desired alarms. For example, the following figure shows.

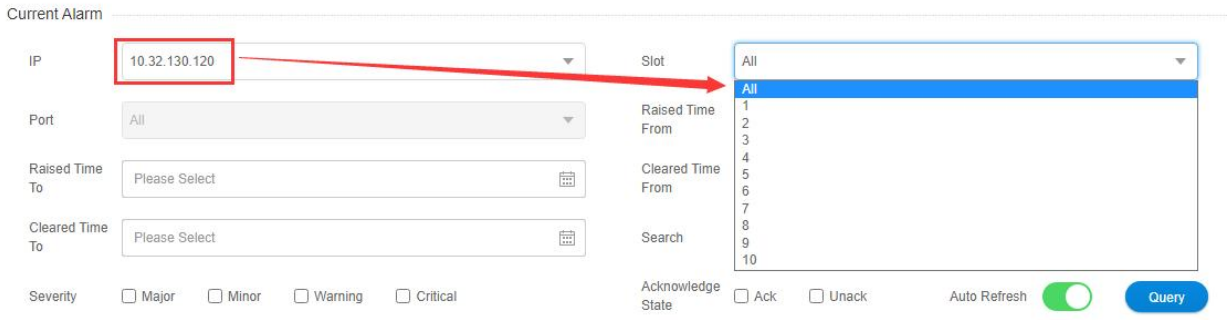



Figure 4- 10 IP Filter Current Alarm

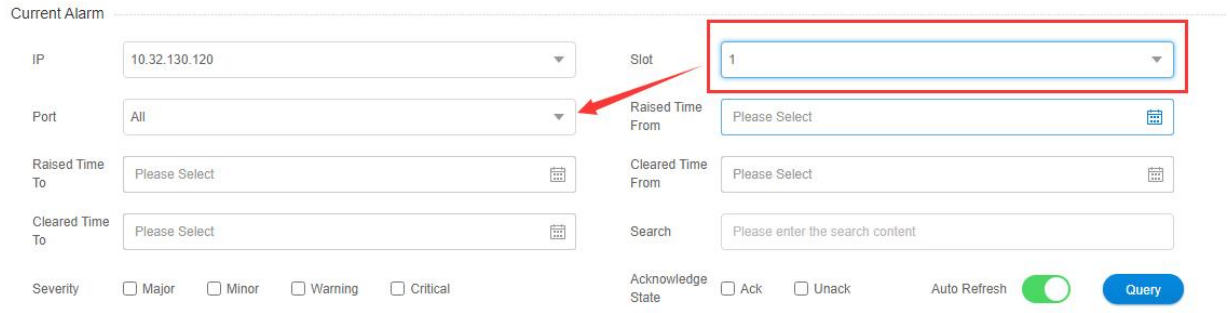



Figure 4- 11 Filter Current Alarm for Slots & Ports

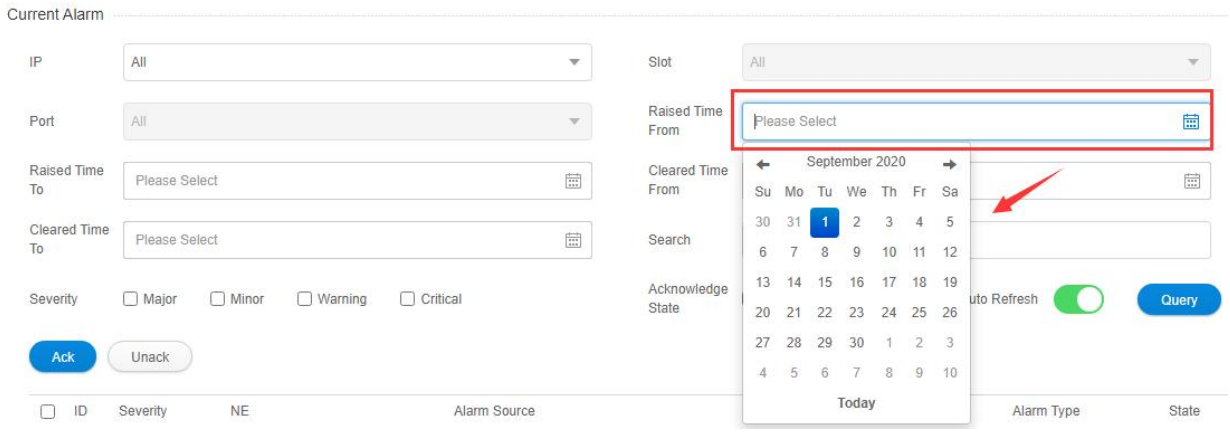



Figure 4- 12 Create Time to Filter Current Alarm




Figure 4- 13 Filter Current Alarm According to Alarm Level & Confirmation Status

**NOTE**

***The method to filter IP, slot and port is: IP→Slot→Port or IP→Slot or IP. It is not allowed to select slot or port separately.***

The function of"*All*"check box is to show all alarms for all NE devices.

*"Auto Refresh"* button is a button which can move right and left (It can switch from refresh to close or from close to refresh by clicking the button.) The current page is refreshed every 10 seconds when it is in Refresh state and the current page is not refreshed when it is in Close state.

The upper-right area of the navigation bar is the search area: By entering specified content, it can get all the alarms that contain that content, as shown in the following figure.

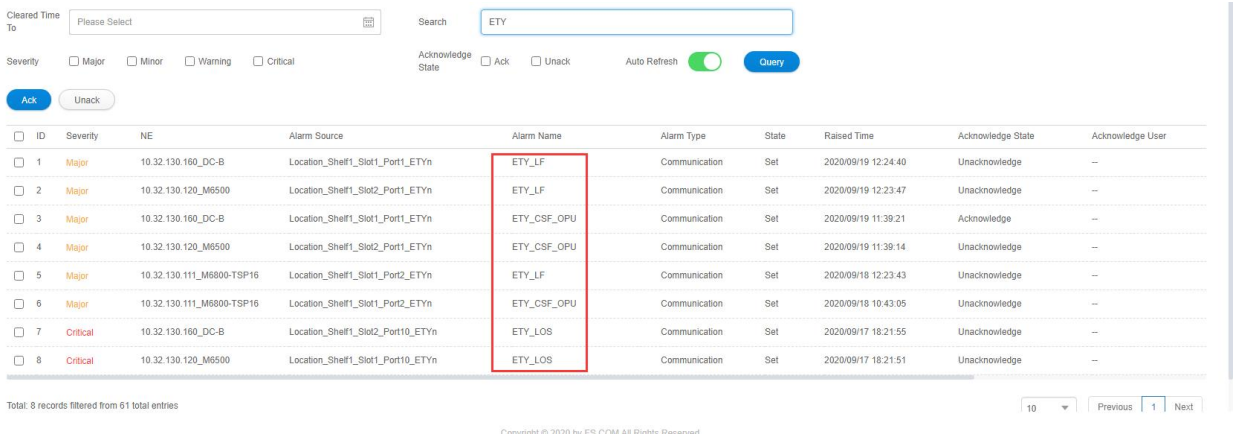



Figure 4- 14 Search Current Alarm

The bottom middle area is the alarm display part of the current alarm, the table header from left to right: check the box, ID, Severity, NE, Alarm Source, Alarm Name, Alarm Type, State, Raised Time, Acknowledge State, Acknowledge User, Acknowledge Time, Operation.

- The check boxes are used to check or uncheck specific alarms, or you can use the first check box to select all alarms for the current page.
- The serial number is the target number of the alarm and is incremented starting from 1.
- There are four warning levels, identified by different colors: emergency (red), primary (orange), secondary (blue) and warning (cyan).
- A NE is the IP address of the network device generating the alarm.
- The alarm source is information about the specific slot or port of the NE that generated the alarm.
- Alarm name, alarm type, status, generation time, confirmation status, confirmation person, confirmation time content is relatively simple, do not repeat here.
- Details, when clicked, this alert will open a popup window to display the details of the alert. The details include: NE, alarm source, alarm name, alarm reason, recommended action, alarm type, alarm level, status, generation time, clear time, confirmation status, acknowledgement person, and acknowledgement time. The NE, alarm source, alarm name, alarm type, status, generation time, clearing time, confirmation status, confirming person, confirmation time and the contents of the table header are the same, the cause of the alarm refers to the cause of the current alarm, and the recommended measures are links. page, you can see the possible causes of alarms and recommended actions to help engineers troubleshoot problems.
- Details, when clicked, this alert will open a popup window to display the details of the alert. The details include: NE, Alarm Source, Alarm Name, Probable Cause, Recommend Measures, Alarm Type, Severity, State, Raised Time, Cleared Time, Acknowledge State, Acknowledge User, Acknowledge Time.Where the NE, Alarm Source, Alarm Name, Alarm Type,, Severity, State, Raised Time, Cleared Time, Acknowledge State, Acknowledge User, and Acknowledge Time are consistent with the contents of the table header,the reason for the alarm refers to the reason for the current alarm, and the recommended

measures are the content of the link,clicking on the "Document Links" will generate a warning document page in a new browser window,it is possible to see the possible causes of alarms and recommended measures to help engineers troubleshoot problems.

- Confirmation has the same function as "Ack" and "Unack" buttons respectively, but the icon buttons in the operation bar are only available for alarms on the line.

### 3.2.2. History Alarm

Click *"Maintain"*in the top navigation bar -> "Alarm Management" in the left navigation bar -> "History Alarm" in the sub-menu to enter the history alarm page. As shown in the figure.

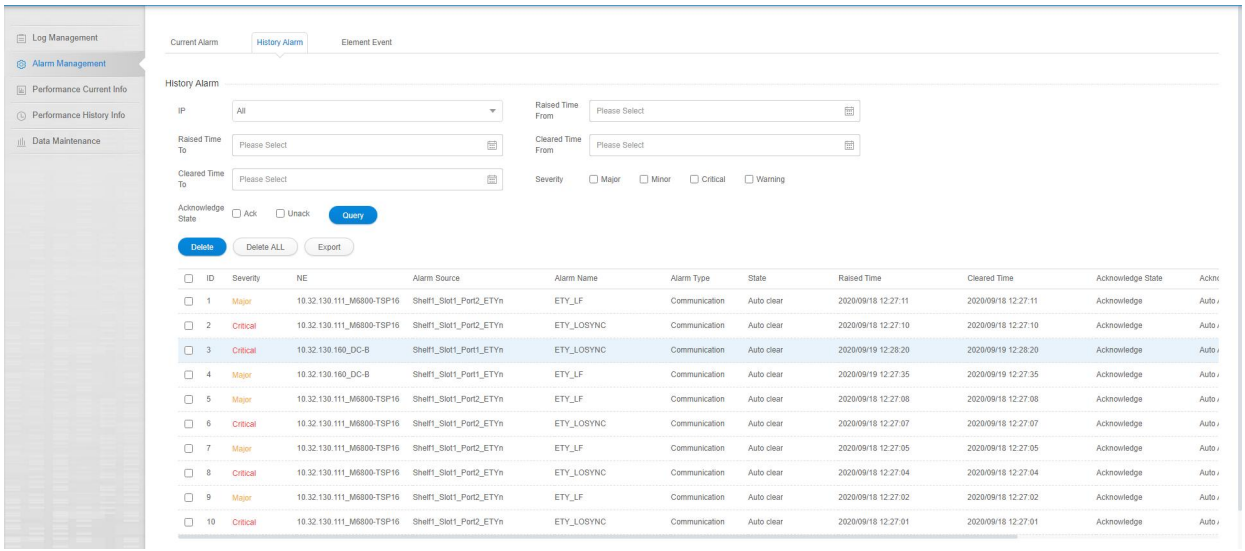



Figure 4- 15 History Alarm

The number of alerts displayed on the current page can be filtered in the right-hand area under the navigation bar, and the number of alerts per page can be adjusted to 25, 50, 75 and 100.

The Delete, Delete All, Export buttons are shown in the right area of the navigation bar.

- Functions of"*Query*" button-sand "*All*" check box are the same as the functions of those buttons in the current alarm.
- The function of"*Delete*"button is to delete the selected history alarm, as shown in the following figure.

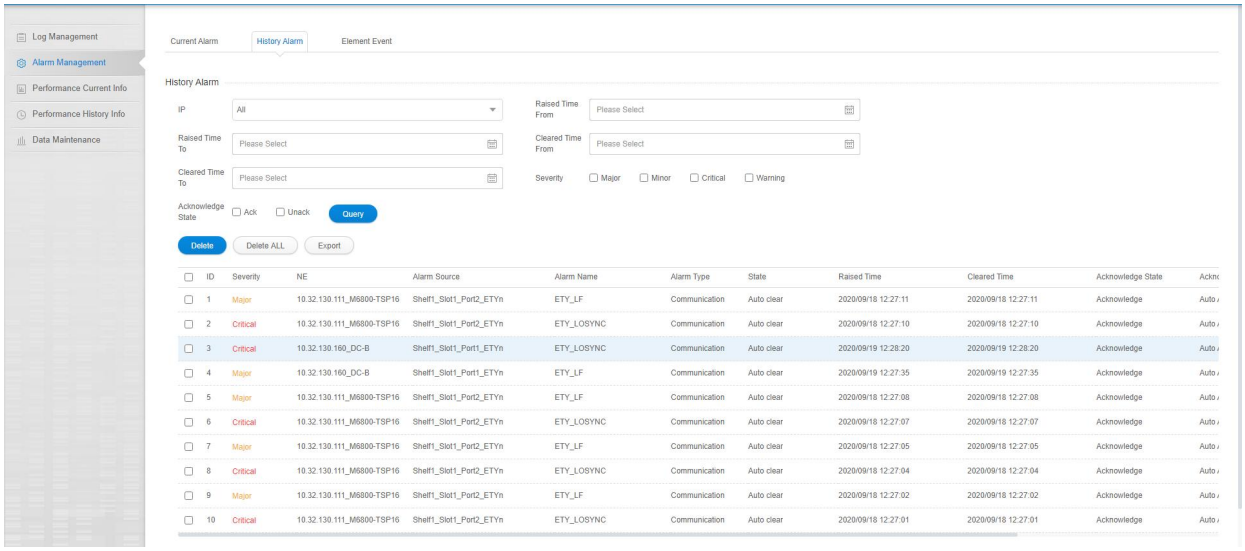
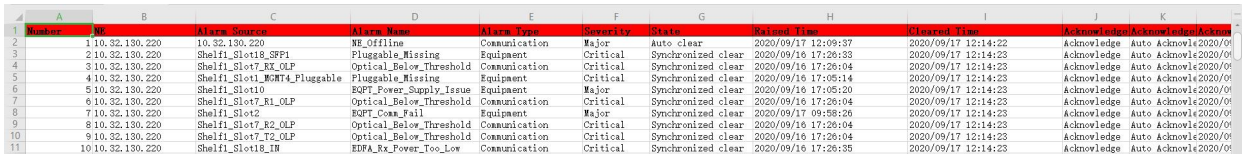



Figure 4- 16 Delete History Alarm

- The function of"*Delete All*"button is to delete all the history alarms.
- The function of"*Export*" button is to export all the history alarms. A dialog box pops up after clicking the Export button. Enter the name of the file you want to save in the dialog box. After saving, it will prompt to save the path. The exported data is saved in Excel format.



| Number | NE | Alarm Source | Alarm Name | Alarm Type | Severity | State | Raised Time | Cleared Time | Acknowledge | Acknowledge |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10.32.130.220 | 10.32.130.220 | NE_Offline | Communication | Major | Auto clear | 2020/09/17 12:09:37 | 2020/09/17 12:14:22 | Acknowledge | Auto Acknowle2020/0 |
| 2 | 10.32.130.220 | Shelf1_Slot18_SFP1 | Pluggable_Missing | Equipment | Critical | Synchronized clear | 2020/09/16 17:26:33 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 3 | 10.32.130.220 | Shelf1_Slot7_RX_OLP | Optical_Below_Threshold | Communication | Critical | Synchronized clear | 2020/09/16 17:26:04 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 4 | 10.32.130.220 | Shelf1_Slot1_MGMT4_Pluggable | Pluggable_Missing | Equipment | Critical | Synchronized clear | 2020/09/16 17:05:14 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 5 | 10.32.130.220 | Shelf1_Slot10 | EQPT_Power_Supply_Issue | Equipment | Major | Synchronized clear | 2020/09/16 17:05:20 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 6 | 10.32.130.220 | Shelf1_Slot7_R1_OLP | Optical_Below_Threshold | Communication | Critical | Synchronized clear | 2020/09/16 17:26:04 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 7 | 10.32.130.220 | Shelf1_Slot2 | EQPT_Comm_Fail | Equipment | Major | Synchronized clear | 2020/09/17 09:58:26 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 8 | 10.32.130.220 | Shelf1_Slot7_R2_OLP | Optical_Below_Threshold | Communication | Critical | Synchronized clear | 2020/09/16 17:26:04 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 9 | 10.32.130.220 | Shelf1_Slot7_T2_OLP | Optical_Below_Threshold | Communication | Critical | Synchronized clear | 2020/09/16 17:26:04 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |
| 10 | 10.32.130.220 | Shelf1_Slot18_IN | EDFA_Rx_Power_Too_Low | Communication | Critical | Synchronized clear | 2020/09/16 17:26:35 | 2020/09/17 12:14:23 | Acknowledge | Auto Acknowle2020/0 |

Figure 4- 17 Export History Alarm

**TIP**

***The path to save the data is: NMS Installation Root Directory →report_out Folder →historyAlarm Folder →File Name.xls.***

The lower area of the navigation bar is the display section of the history alarm. From left to right in turn, the table header is: check box, details, serial number, NE, alarm source, alarm name, alarm type, alarm level, status, generation time, clearance time, confirmation status, confirmer and confirmation time. (The functions are the same as that in the current alarm. Here we will not go into much detail.)

**TIP**

***In history alarm details, there is no recommended measure and linked document.***

***There are three types of alarm clearance states, which are automatic clearance, manual clearance and synchronous clearance.***

***For the confirmation state, it can only be "confirmed" state.***

***There are two types of confirmers, which are automatic confirmation and current login user confirmation, such as root.***

# 3.3. Alarm Configuration

## 3.3.1. Alarm Configuration

Click on"*Alarm Configuration*"in the submenu to enter the alarm configuration page, as shown in the figure below:

Click *"Configuration"* in the top navigation bar -> *"Alarm Configuration"* in the left navigation bar -> *"Alarm Configuration"* in the sub-menu to enter the alarm configuration page. As shown in the figure.

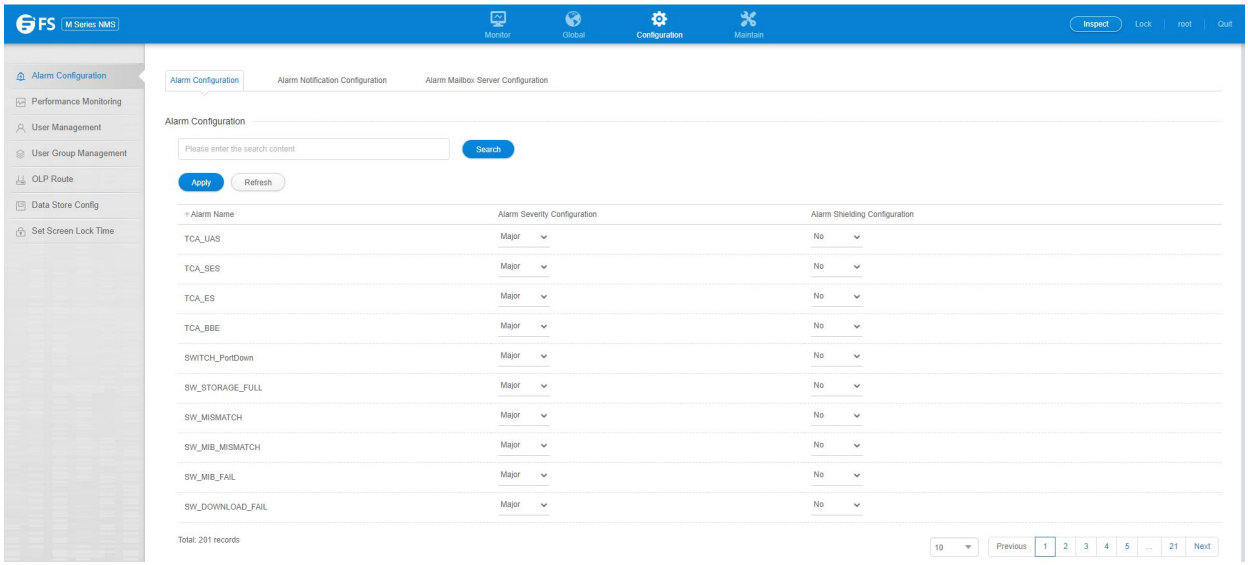



Figure 4- 18 Alarm Configuration

The number of alerts displayed on the current page can be filtered in the right-hand area under the Alert Configuration table.




Figure 4- 19 Number of Alarms Displayed in Alarm Configuration

The left side of the table is the search function. By typing in the specified content and clicking on the search NE,you can get all the alarms containing that content, as shown in the following figure.

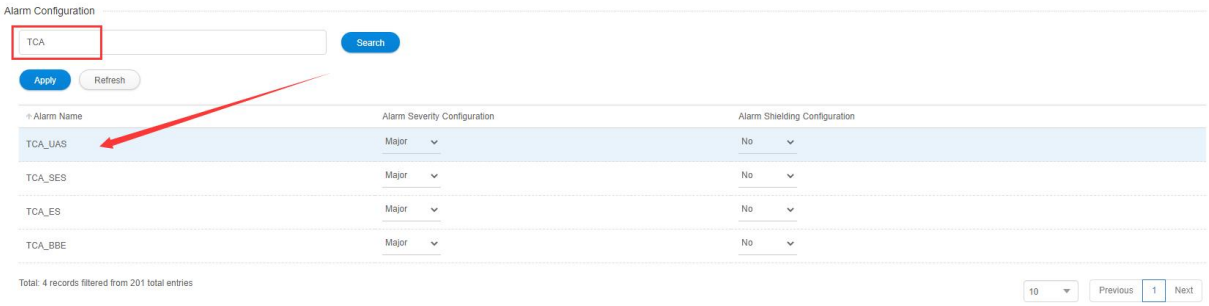



Figure 4- 20 Searching Function in Alarm Configuration

The header of the alarm configuration table data is: Alarm Name, Alarm Severity Configuration, Alarm Shielding Configuration.

- Alarm Name: All the alarms on NE are contained in alarm name.
- Alarm Level Configuration: The specified alarm level can be set for the specified alarm. There are four optional levels: emergency, primary, secondary and warning. (The alarm level before configuring is the default level.)
- Alarm Shielding Configuration: It can shield the specified alarm. After the alarm is shielded, if the alarm is generated on NE, it will not be displayed on the NMS system. (By default, all the alarms are not shielded.)

### 3.3.2. Alarm Notification Configuration

Click *"Configuration"* in the top navigation bar -> *"Alarm Configuration"* in the left navigation bar -> *"Alarm Notification Configuration"* in the sub-menu, in the Alarm Notification Configuration module. As shown in the figure.

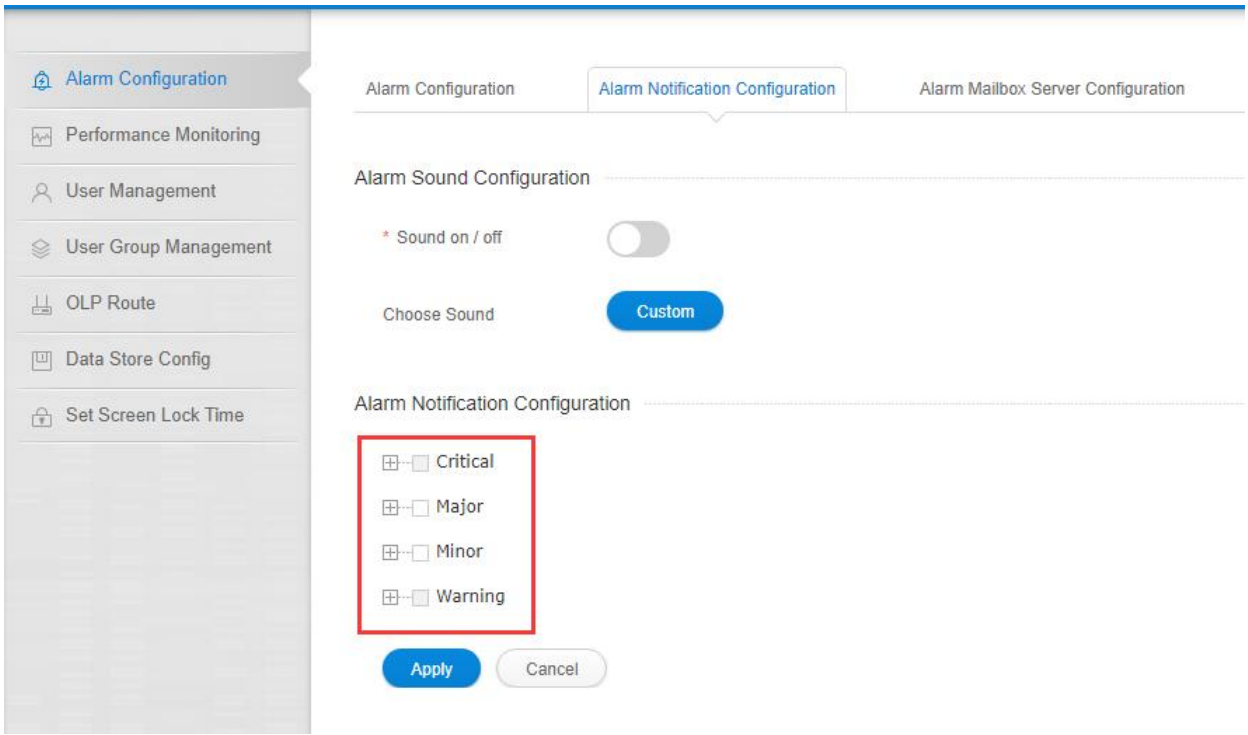


Figure 4- 21 Alarm Notification Configuration

**NOTE**

***The alarm notification configuration is an alarm configuration for alarm mail notifications, and by default only the alarm at the emergency level is checked (that is, the mail receives only the alarm notification at the emergency level).***

After expanding the Emergency Level Alarm Tree, you can find that by default all the Emergency Level Alarms are selected. The designated alarms or all the alarms can be checked or the check can be canceled. In application, it will only receive the generation and elimination information of the selected alarm in the mail system.

### 3.3.3. Alarm Mailbox Server configuration

Click *"Configuration"* in the top navigation bar -> *"Alarm Configuration"* in the left navigation bar -> *"Alarm mail server configuration"* in the sub-menu to enter the page of alarm mail server configuration. As shown in the figure.

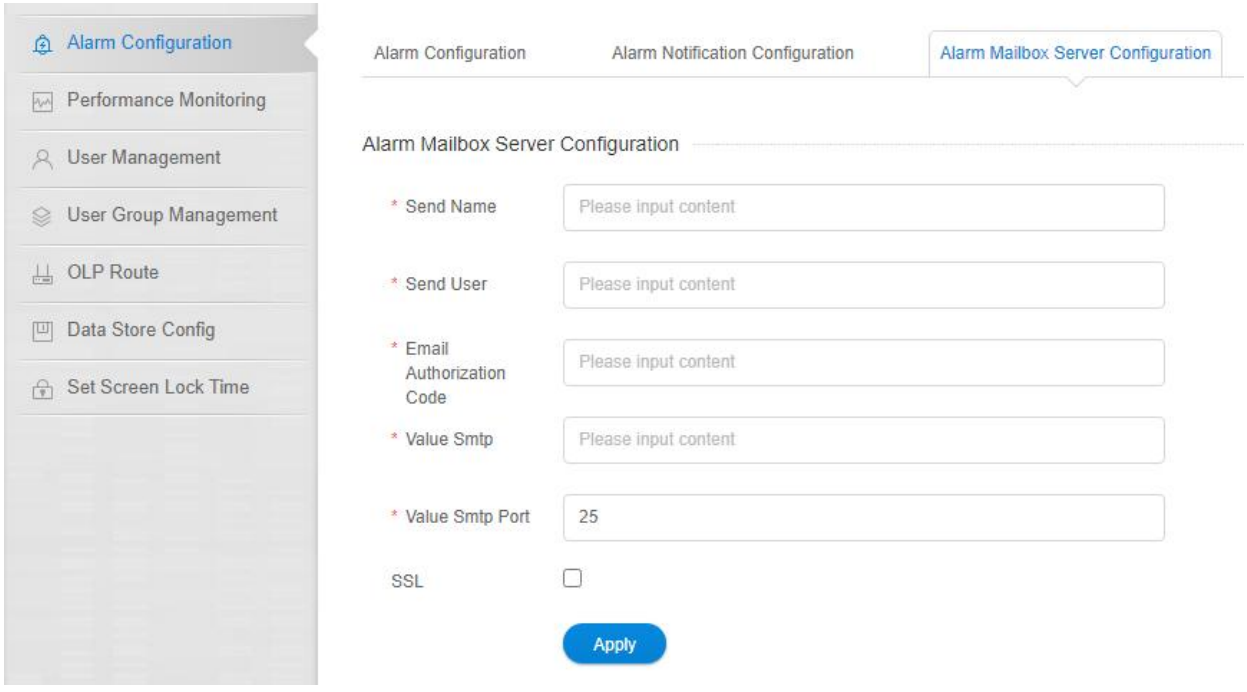



Figure 4- 22 Alarm Mailbox Server Configuration

The function of alarm mailbox server configuration is: configure a mailbox as server mailbox, and then change information in navigation bar→Configuration→User Management→(Assign user column) and fill in an email address to receive alarm notification. In this way, the alarm generated by the NE (after the configuration in the previous section) will be sent to the mailbox server through the mailbox server to receive the alarm email.

**NOTE**

***For different types of mailboxes, SMTP addresses and port numbers are different. Before setting the server mailbox, please check to confirm the server mailbox type and the SMTP information to be used.***

### 3.3.4. Enable the Alarm Sound

Click *"Configuration"* in the top navigation bar → *"Alarm Configuration"* in the left navigation bar → *"Alarm Notification Configuration"* in the sub-menu, in the alarm sound configuration module. As shown in the figure.

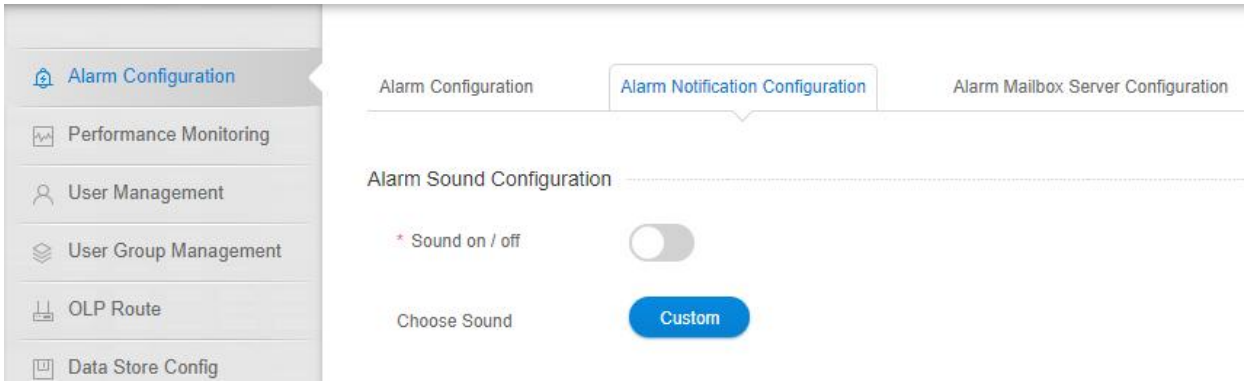



Figure 5-23 Alarm sound configuration

Enable sound function means when there is an alarm on the NMS system, the NMS server will continue to issue an alarm sound after enabling this function, so as to indicate that there is an alarm on the NMS system. Currently, the NMS system only has function to enable or disable the sound.

**TIP**

***There are four kinds of alarm sounds, which correspond to emergency alarm, main alarm, secondary alarm and warning alarm respectively, but when the NMS system enables the sound, only the highest level alarm sound is prompted. When the alarm level changes, the alarm sounds also change (for example, the current alarm level is emergency and main, it will prompt the highest level alarm sound which is emergency alarm sound. If at that time the alarm at the emergency level disappears, then it will turn to the main alarm sound).***

# 4. WDM Transmission Configuration Example

Point-to-point transmission is widely used in data interconnection of inter-provincial backbone network, metropolitan area network, bank outlets and securities business outlets. It can also be used in the interconnection of primary and secondary computer room data for IDC computer room. In short, where there is a shortage of optical fiber resources, we can use the WDM transmission system, which not only solves the problem of resource shortage, but also greatly solves the problem of cost savings caused by renting optical fibers or laying optical cables.

## 4.1. Configuration Example

Taking the point-to-point transmission scheme as an example, the use of M6200-2U equipment saves optical fiber resources. It adds a standby optical fiber to the original line, so that it can provide 1+1 protection of optical lines to multi-wavelength service by using OLP board, which ensures the stability of the entire link and maximizes the safety of the optical fiber.

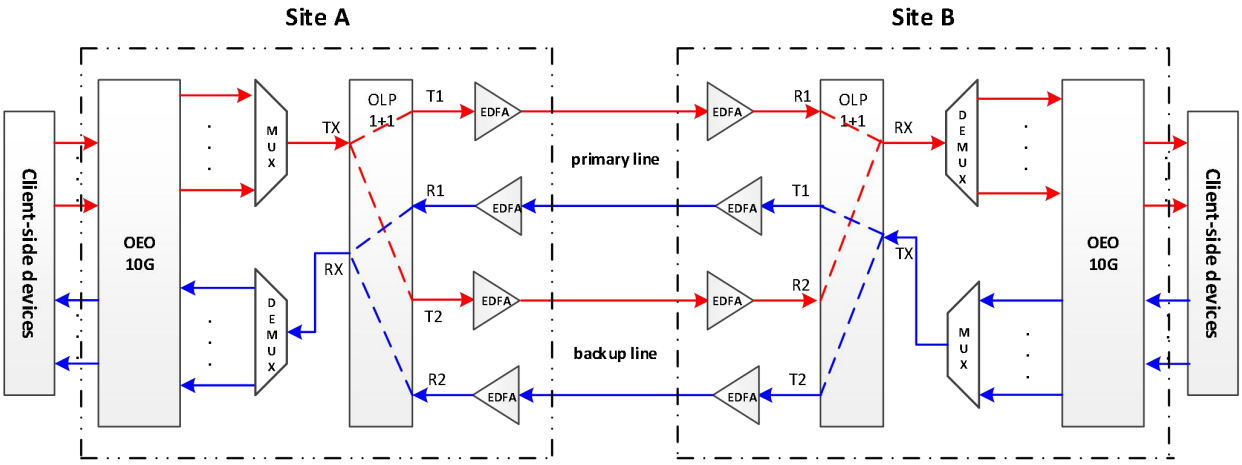



Figure 5- 1 Schematic Diagram of Point-to-Point Transmission

## 4.2. Configuration Example Description

Multiple services of Site A enter OEO10G service board and adjacent cross connection mode is used to convert the data traffic into CWDM/DWDM wavelength for transmission. OMU board is used to multiplex the signals from each channel. After the multiplexing, the signals are transmitted to TX port of OLP. The optical fiber is divided into two channels by OLP, which are respectively transmitted from Port T1 and Port T2 and transmission is realized after amplification by BA.

After the signals are transmitted to Site B, they are amplified by PA. The signals of the primary channel are selected and received by RX port of OLP. OMU board is used to demultiplex the signals to multi-wavelength CWDM/DWDM services. The services are connected to OEO10G board and adjacent cross connection mode is used to convert the CWDM/DWDM services into common services. After that, the services are transmitted to the client device.

The process of the transmission protection from Site B to Site A is the same. So far, the optical transmission, optical amplification and optical protection of the whole link are completed. When the primary optical fiber is normal, it is used for transmission. When fault occurs to the primary optical fiber, OLP board will switch the

service to the secondary optical fiber for transmission, so as to ensure the uninterrupted operation and the stability of the service.

## 4.3. Configuration Rules

**Hardware Configuration Rules**

- Selection of Boards: For each group of protection, one OLP1+1 board with protection function is usually correspondingly configured on the network NEs at both ends of the service.
- Protection Capability: Each OLP1+1 board can realize 1+1 protection of one group of lines.
- Slot Configuration: OLP1+1 board can be installed in the service board slot of M6200 chassis.
- System Requirement: It is required to provide two independent optical channels between the devices at the two points of the channel.
- Optical Fiber Connection: Please refer to the above Schematic Diagram of Point-to-Point Transmission in the configuration example.

**NMS Configuration Rules**

- The network NE information configured in NMS should be consistent with the planning program in the actual project.
- In“Board Configuration”, you can configure parameters such as switch mode, mode recovery, switch time delay, automatic switch back and automatic switch back time delay of OLP1+1 board. It is required that the parameters of OLP1+1 boards at both the local and opposite ends of optical line 1+1 protection must be the same.

# 5. OSC Network Management Channel Configuration Example

OSC network management channel management is mainly used for long-distance transmission, and there is no interconnected switching network between sites. By using this technology, network management monitoring of remote devices for long-distance transmission can be realized under the condition of saving optical fiber resources.

## 5.1. Configuration Example

Taking the point-to-point transmission with relay scheme as an example, network management monitoring of relay sites and remote sites needs to be realized when using M6200 Series equipment. Management through in-band OSC channel not only saves optical fiber resources, but also realizes the capability to monitor remote devices. The commonly used wavelength of OSC channel is 1510nm, so we take 1510nm as an example.

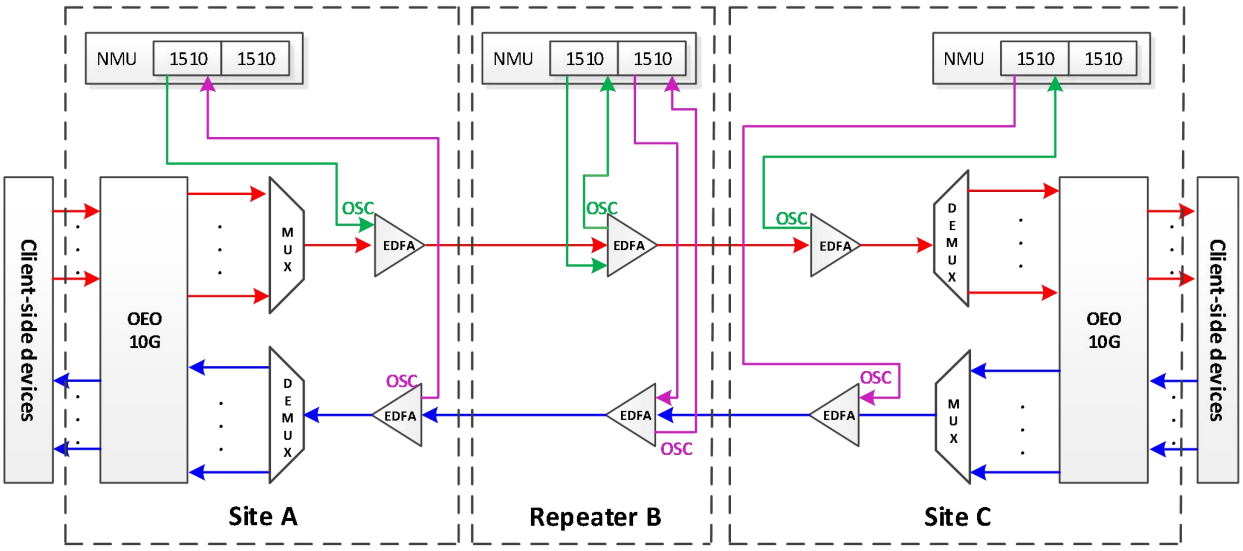



Figure 6- 1 Schematic Diagram of Point-to-Point Transmission

## 5.2. Configuration Example Description

Optical signals at 1510nm from Site A are transmitted to EDFA-OSC channel through the NMU optical channel, and reach the relay point B through line transmission. Optical signals are output to the NMU optical channel at 1510nm of the relay point B through EDFA-OSC channel of the relay point B. At this time, OSC channel of A-B has been opened. That is, equipment of Site B can be managed by Site A. Optical signals at 1510nm are transmitted to EDFA-OSC channel through the NMU optical channel of the relay point B, and then reach Site C through line transmission. Optical signals are output to the NMU optical channel at 1510nm of Site C through EDFA-OSC channel of Site C. At this time, OSC channel of B-C has been opened. That is, equipment of the relay point B and Site C can be simultaneously managed by Site A.

The OSC supervisory from Site C to Site A is the same. Equipment of Site A and Site B can be simultaneously managed by Site C.

## 5.3. Configuration Rules

**Hardware Configuration Rules**

- Selection of Boards: BA EDFA and PA EDFA are selected as amplifier boards (with OSC channel monitoring).
- Slot Configuration: EDFA boards can be installed in the service board slot of M6200 chassis.
- Optical Fiber Connection: Please refer to the above schematic diagrams in the configuration examples.

**NMS Configuration Rules**

- The network NE information configured in NMS should be consistent with the planning program in the actual project.
- Different IP addresses in the same network segment need to be assigned for relay point devices and remote devices.

# Abbreviation

**This table introduces some Acronym definition. It mainly includes:**

| Abbreviation | Description |
|---|---|
| CDR | Clock and Data Recovery |
| CWDM | Coarse Wavelength Division Multiplexing |
| DCM | Dispersion Compensation Module |
| DWDM | Dense Wavelength Division Multiplexing |
| GE | Gigabit Ethernet |
| GUI | Graphical User Interface |
| IP | Internet Protocol |
| LOS | Loss of Signal |
| NE | Network Element |
| NTP | Network Time Protocol |
| OA | Optical Amplifier |
| OCh | Optical Channel |
| OLA | Optical Line Amplifier |
| OLP | Optical Line Protection |
| OMU | Optical Multiplexer Unit |
| OPA | Optical Pre-Amplifier |
| OSC | Optical Supervisory Channel |
| OSNR | Optical Signal-to-Noise Ratio |
| OTN | Optical Transport Network |
| SNMP | Simple Network Management Protocol |
| XFP | 10-Gigabit Small Form-Factor Pluggable |