10G GPON OLT System Troubleshooting

www.huawei.com

HUAWEI

Objectives

- Upon completion of this course, you will be able to:
  - Know the basic procedure of system troubleshooting
  - Master the basic methods of system troubleshooting
  - Troubleshoot the common system faults

Contents

HUAWEI

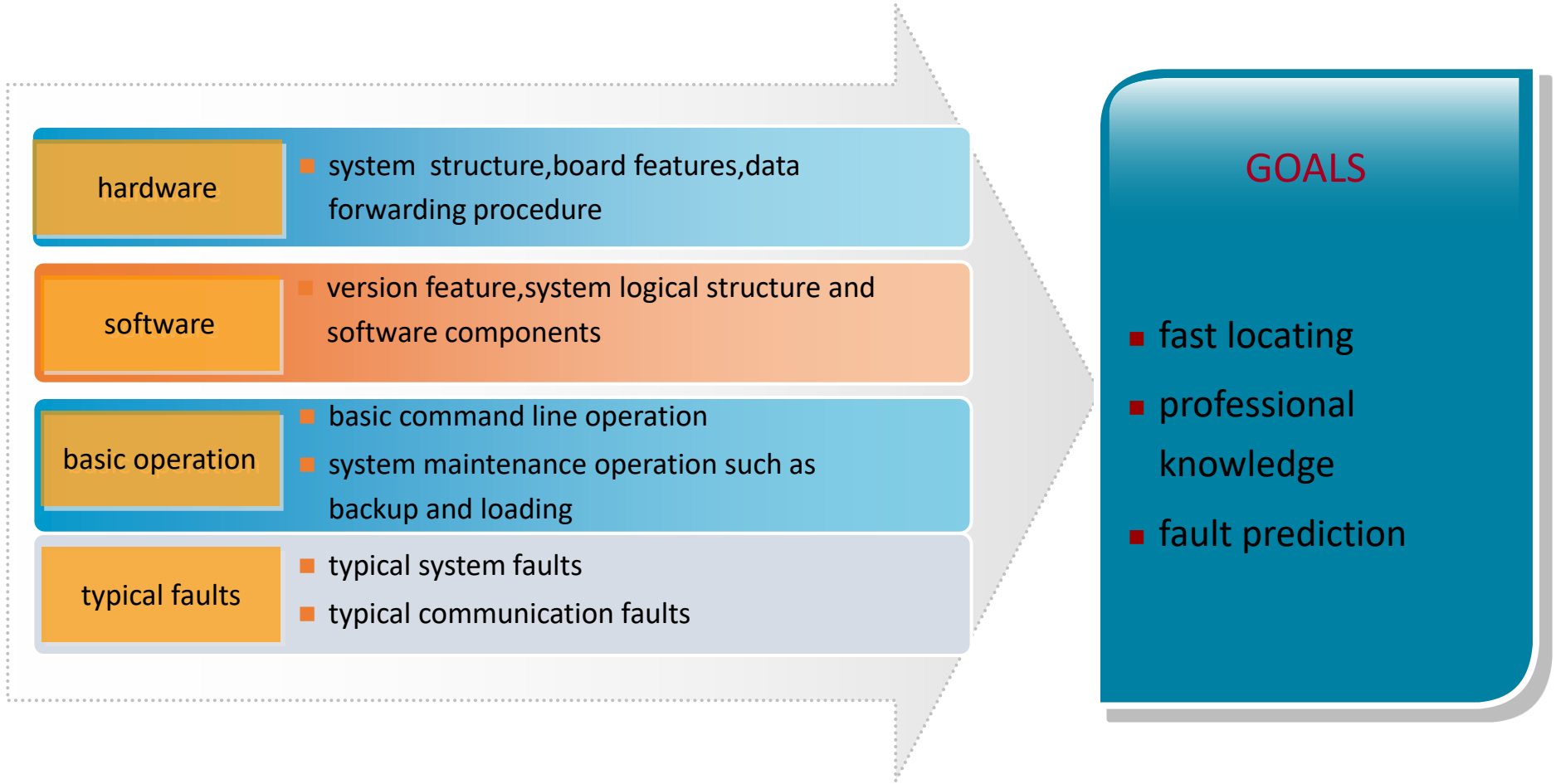
10G GPON System Troubleshooting Overview

System faults mainly refer to the service faults caused by host system failures, registration problems, or upgrade problems.

During the practical application, system faults mainly includes :

Host software fault	Mismatch of software version Failure of version upgrading
Board fault	Service board failed to communicate with the control board Board aging or be damaged
Communication with NMS failed	Incorrect configuration of network management parameters Uplink fault

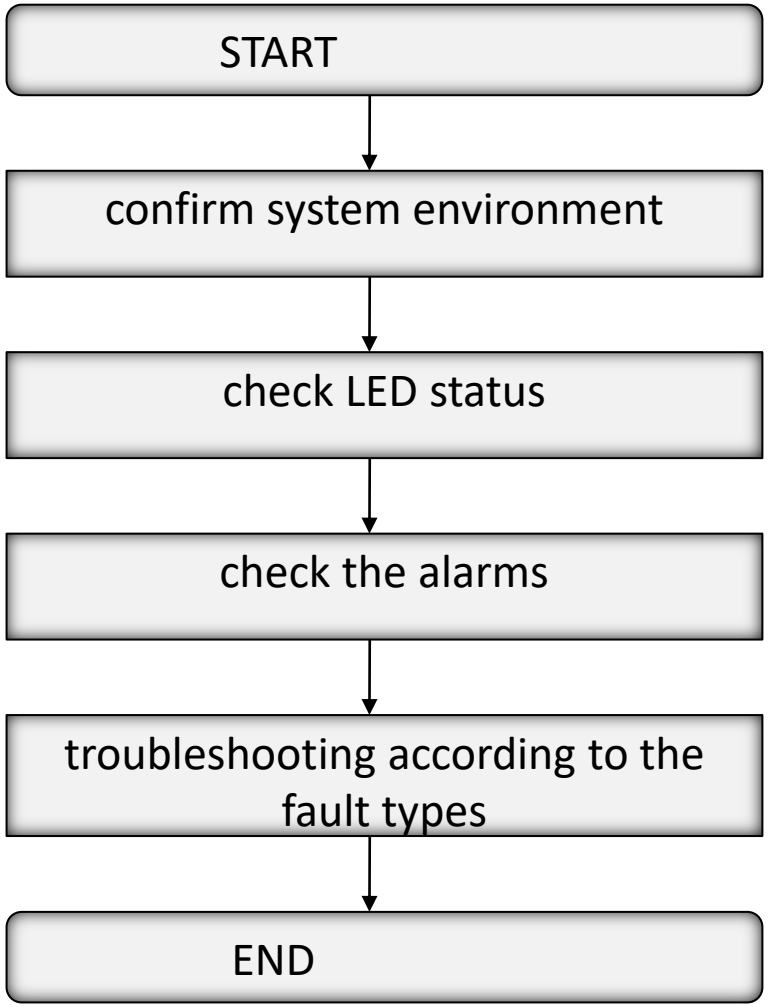
Preparations



HUAWEI

Contents

System Troubleshooting Procedure



Confirm System Environment

Check whether the power supply is normal and whether it conforms to the project standard.

Check whether the temperature inside the room, cabinet and board is very high.

Check whether it is clean inside the cabinet and whether there is very much dust inside the cabinet.

In FAN mode, run the **display fan alarm** command to check whether the fan is normal.

Check whether the cabinet and the cable distribution frame are connected properly to the ground.

Checking the LED Status

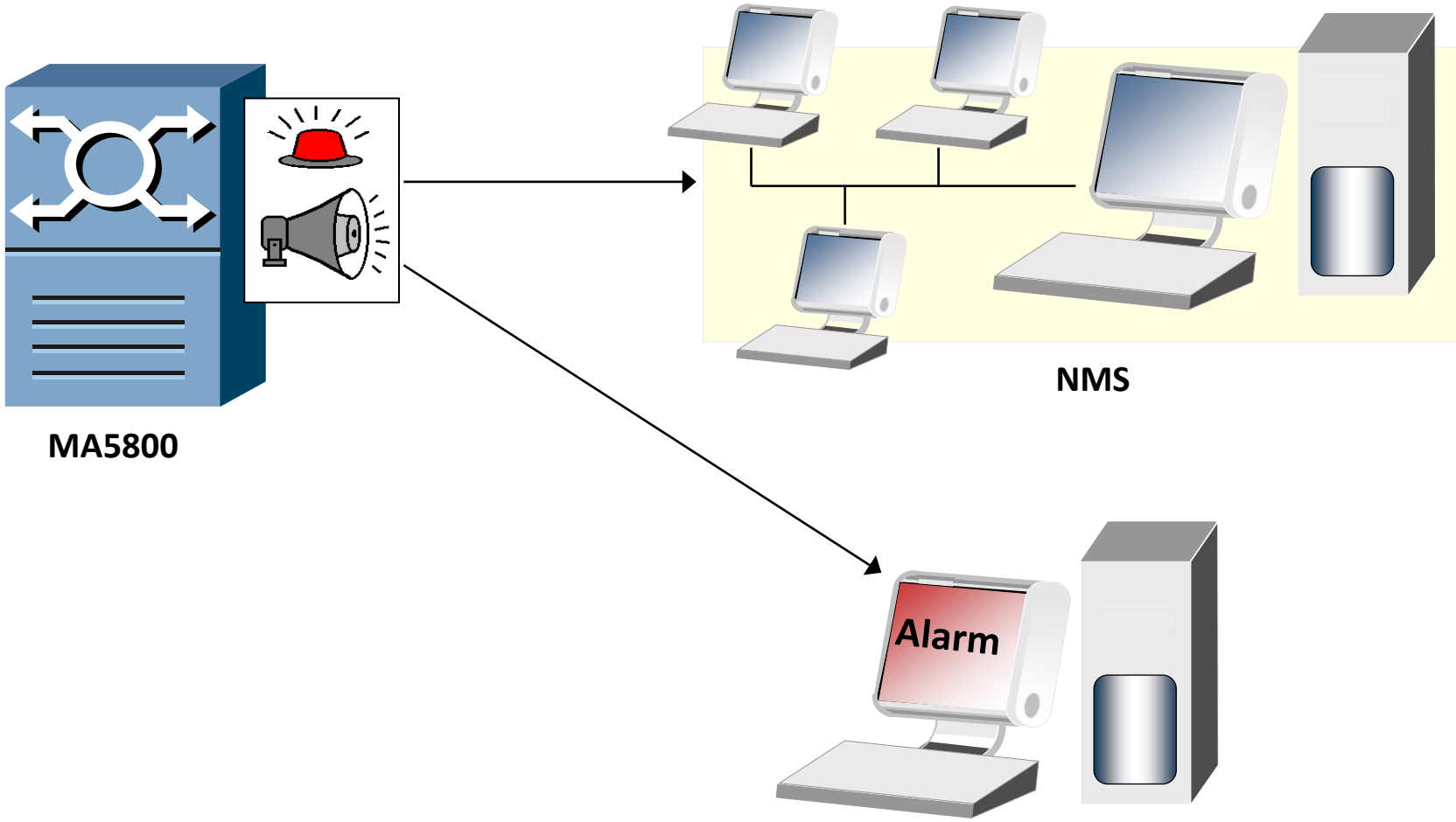
RUN/Alarm

Act

RUN/Alarm

PON

Checking Alarms



Checking Alarms

- How to obtain alarm information:
  - NMS alarm panel
  - To query by running command ”display alarm history” in the host
  - LED indicator on the panel of the boards

Alarm classification	Alarm level	Alarm reason
communication service quality mistake of processing equipment and hardware environment	critical major minor warning	all kinds

Checking Alarms

display alarm history all

ALARM 1031 FAULT MAJOR 0x2e314020 EQUIPMENT 2020-01-14 17:58:59+08:00

ALARM NAME : The optical transceiver of the PON port is absent

SRVEFF : SA

PARAMETERS : FrameID: 0, SlotID: 4, PortID: 0

DESCRIPTION : The optical transceiver of the PON port is absent and the service is interrupted

CAUSE : (1) The optical transceiver does not exist

(2) The optical transceiver is inserted loosely

ADVICE : (1) Check whether the optical transceiver exists in the PON port

(2) Ensure the optical transceiver is inserted tight

--- END

Tips: We can query the alarm according to alarm ID, alarm serial number, alarm type, alarm time, alarm level.

Troubleshooting According To The Fault Types

- After the analysis of the fault, troubleshoot it according to the classification and execute correct procedure, to ensure the system run normally. Suppose the problem still there, contact HUAWEI supporting.

  - Customer Service TEL: (+86)0755-28560000 4008302118
  - Email：support@huawei.com
  - Technical website：http://support.huawei.com
    - Meanwhile， Please collect and provide the following information：
      - detailed name of the fault site （full name）
      - your name,telephone number
      - concrete time of the fault happened
      - detailed description of the fault
      - host software version
      - what have been done after the fault and the corresponding results

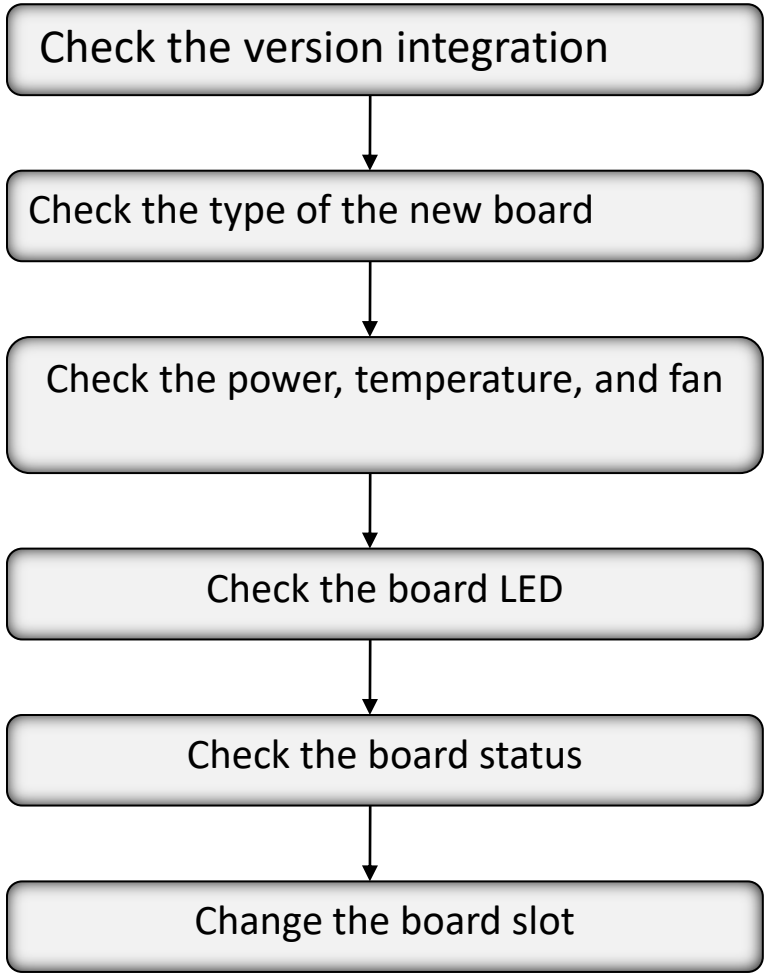
Category and Cause of Common Faults

S/N	Fault Category	Possible Cause
1	Board registration failure	◆The board version and the host version do not match. ◆The slot has been registered with board, and does not support upgrade between the two boards. ◆The slot of the board is loose. ◆The power, temperature, and fan are faulty. ◆The board is damaged.
2	Inband NMS disconnection	◆The NMS version and the device version do not match. ◆The upper layer device is faulty. ◆The upstream board is faulty. ◆The transmission line is faulty. ◆The NMS data configuration is incorrect (such as community name, access list, MTU). ◆There is no route between the device and NMS. ◆The transmission format is not compatible.

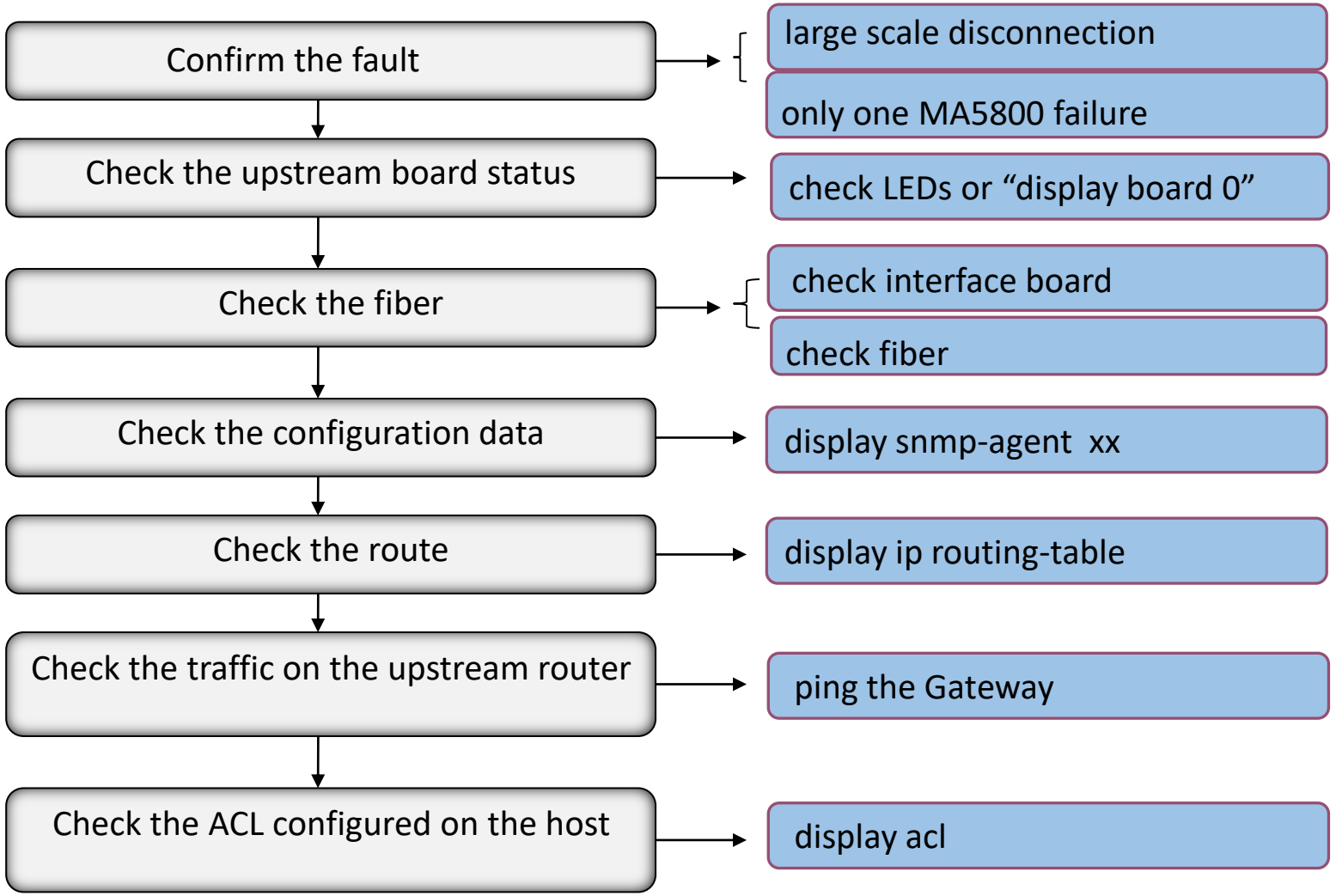
Category and Cause of Common Faults

S/N	Fault Category	Possible Cause
3	Repeated reboot of the control board	◆The components of the control board are damaged. ◆The backplane pins are damaged. ◆The environment and the fan are faulty. ◆The subscriber ring network is faulty. ◆The control board is not inserted tightly. ◆The CPLD, BIOS and the programs are loaded incorrectly.
4	Switchover failure	◆The active/standby software versions do not match. ◆The active/standby hardware versions do not match. ◆The standby board or the upstream port is faulty. ◆The data between the active/standby control boards is not synchronized sufficiently. ◆The system is saving configuration.

Board Registration Failure



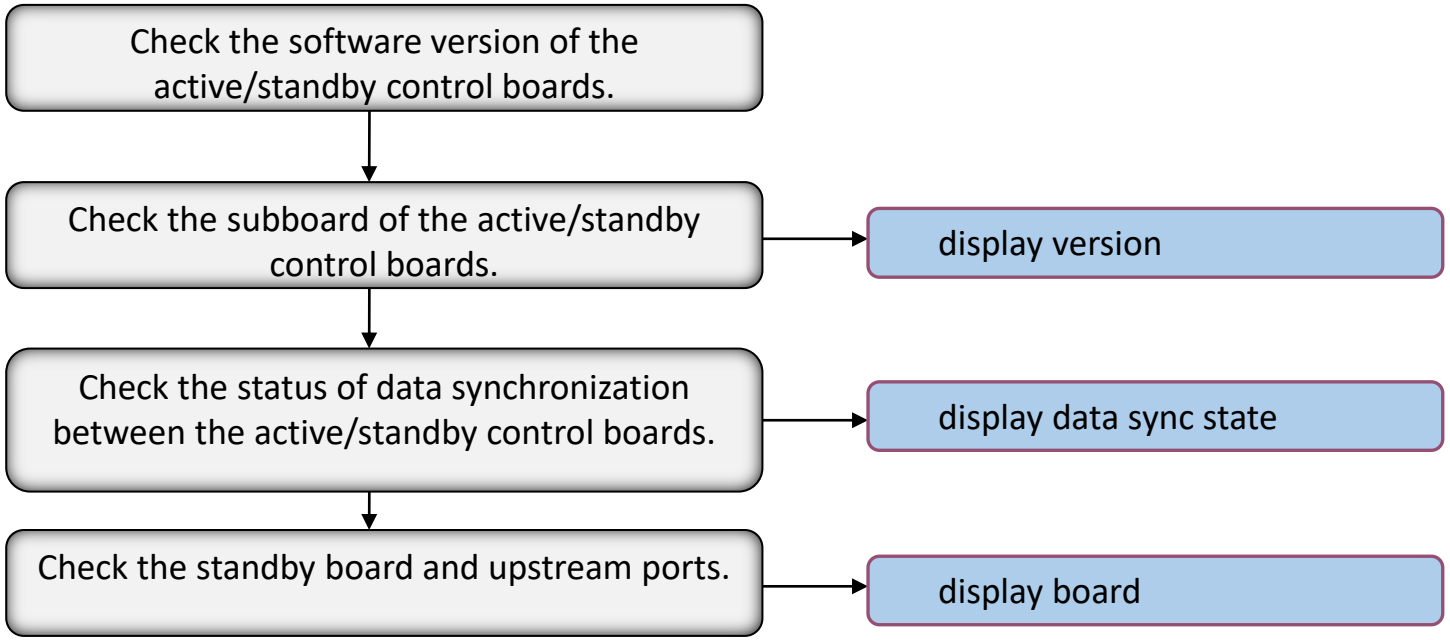
Inband NMS Disconnection



Repeated Reboot of the Control Board

- The possible causes are as follows:
  - The components of the control board are damaged
  - The backplane pins are damaged
  - The environment and the fan are abnormal
  - The subscriber ring network is faulty
  - The control board is not inserted tightly
  - The loaded version is incorrect

Switchover Failure



Q&A

1. What’s the procedure of common system troubleshooting?
2. When active/standby board Switchover is failed , what should do?

categorize fault

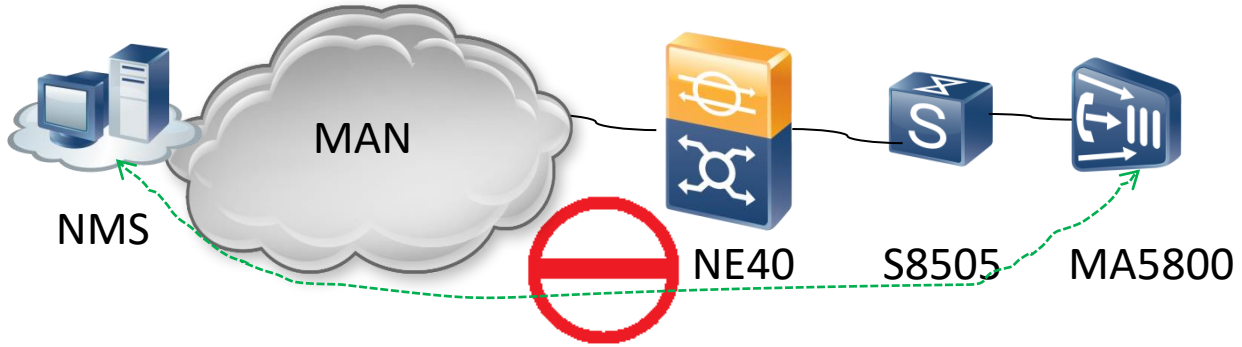
Contents

Case1 NMS Fails To Manage The Device

- Fault description:

The equipment room of an office is powered off abnormally several times. After the OLT starts up, the NMS fails to manage the OLT. After logging in to the OLT, the engineers find that certain data is lost and the versions are inconsistent.

- Alarm information
  - communication failed between OLT and NMS， OLT reset alarm
- Cause analysis
  - OLT hardware problem
  - OLT incorrect version
  - The configuration on the OLT is incorrect.



Case1 NMS Fails To Manage The Device

- Judge the range of fault:
  - Because OLT was powered off and rebooted， all the data that hadn’t been saved got lost ， so the fault may be caused by incorrect configuration.
- Locate the problem:
  - Check the upper layer devices and connections, all of them normal and users’ service normal as well.
  - Check the hardware, run normally
  - Check the inband management data configuration, all correct
  - Because that was a new installed OLT, the engineer upgraded the version after the installation, but when we checked the version, discovered that was still previous version.

Case1 NMS Fails To Manage The Device

- Troubleshooting:
  - The OLT was newly installed (less than two days) and was upgraded through command lines. The system resets after the program was loaded, whereas the database was not loaded. The rollback was in the "enabled" state. The OLT fails to start up for several times due to abnormalities and rolls back to the previous version. It can be determined that the OLT rolls back. Reload the version through the BIOS or command lines.

Experience & Conclusion ：

After the upgrading of the version, we’d better disable the rollback function in avoid of the program auto rollback.

Case2 MA5800 Fails to Send Trap Message

- Description
  - One MA5800 can be added to NMS successfully, NMS can also manage the NE , but can not receive any alarm message of the device. Capture packet on the uplink port of MA5800, there is no trap message.
- Alarm
  - No
- Cause analysis
  - OLT hardware fault
  - The link between OLT and NMS fault
  - OLT disabled the “trap report” function
  - Other SNMP parameters incorrect

Case2 MA5800 Fails to Send Trap Message

- Troubleshooting
  - OLT can run normally, exclude hardware fault
  - OLT can ping NMS successfully, indicate that NMS is reachable
  - Check the SNMP configuration on MA5800：

    1.snmp-agent community read public

    2.snmp-agent community write private // read/write community

    3.snmp-agent target-host trap-hostname U2000 address 192.168.2.8 udp-port 162 trap-paramsname huawei //destination IP address of trap message with the port number 162

    4.snmp-agent trap enable standard //enable trap function

    5.snmp-agent trap source vlanif 28 //set the source of trap message

    6.snmp-agent sys-info version v1 //set SNMP version

Case2 MA5800 Fails to Send Trap Message

- discover one command was missed:

  7.snmp-agent target-host trap-paramsname huawei v1 securityname WangGuan

  //trap-paramsname in this command must keep the same with the trap-paramsname in command 3, the value can be set to be any string.

After we run the command above, the NMS can receive trap message from OLT normally.

Experience & Conclusion:

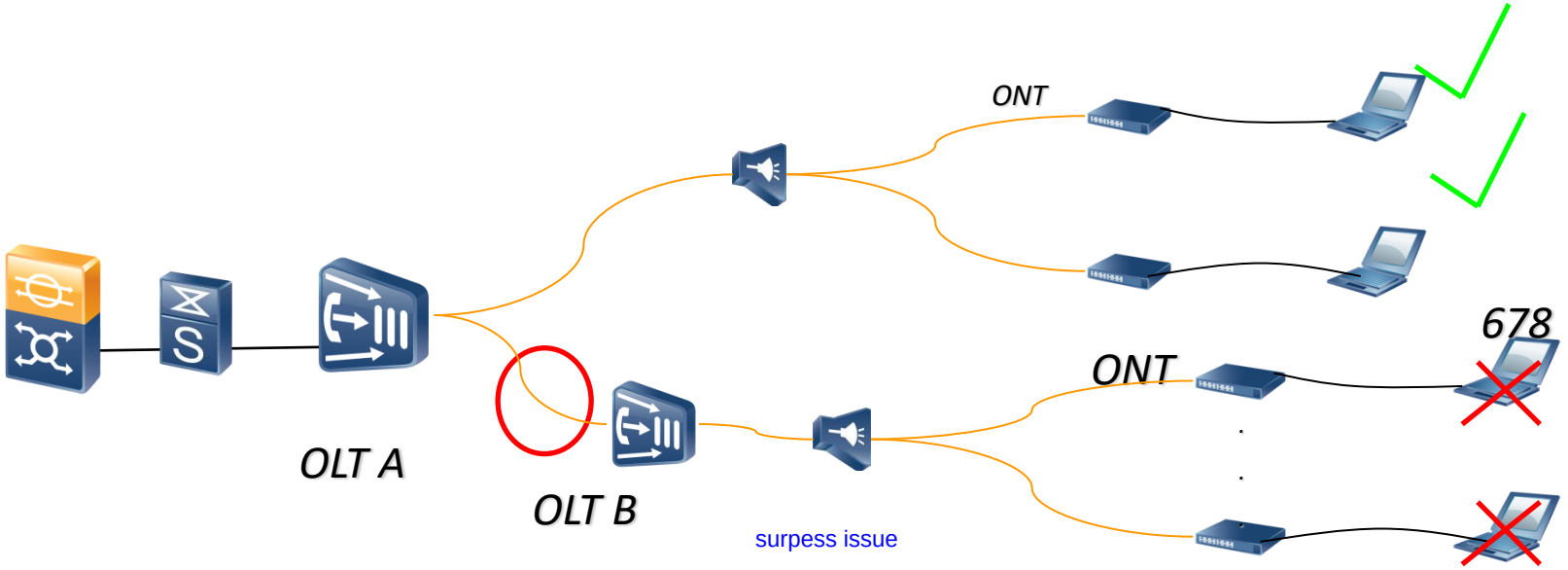
Many engineer easily to forget the command “snmp-agent target-host trap-paramsname”. But actually this command is very important, the NMS can not receive trap message in case of incorrect configuration or missing.

Case3 Failure of Dialing on the Cascaded Devices

- Description

  Dialing by users of the upper layer MA5800 is normal while the users of the cascaded MA5800s may fail to dial up in peak hours. The system prompts 678 error for the user dialing, but the online users can access the Internet in the normal state.

- Alarm
  - No



Case3 Failure of Dialing on the Cascaded Devices

- Judge the range of fault:

  The possible causes are as follows:

  - The uplink board/port is faulty.
  - The tail fiber is faulty.
  - Too many virus and broadcast packets make the PPPoE packets of the users cannot be reported.

- Troubleshooting
  - Replace the uplink board, but the fault still persists.
  - Replace the tail fiber, but the fault still persists.
  - Perform packet capture and analysis on the BRAS. If the user succeeds in dialing, the PPPoE packets can be captured on the BRAS. If the user fails to dial up, the PPPoE packets cannot be captured on the BRAS. It indicates that the PPPoE packets of the user have not been sent to the BRAS.

Case3 Failure of Dialing on the Cascaded Devices

- Troubleshooting
  - Perform mirroring packet capture on the uplink port of the cascaded MA5800. The PPPoE packets of the user can be captured. It indicates that the PPPoE packets have been reported and are discarded at the upper layer MA5800.
  - Check the configuration of the upper layer MA5800. It is found that the broadcast suppression function is enabled on the cascaded sub slots. After the broadcast suppression function is disabled, dialing becomes normal.

Experience & Conclusion:

As the broadcast suppression function is enabled on the upper layer MA5800, in peak hours too many broadcast packets are sent from the user end and the PPPoE packets cannot be processed in time. Thus, the user could fail to dial up.

Q&A

1. What are the possible causes that the service board can not be registered?
2. What are the possible causes that the main control boards repeated reboot?

Summary

- PON system troubleshooting procedure
- Categorized common system fault and processing methods
- Typical system faults and troubleshooting

Acronyms and Abbreviations

- ACL: Access Control List
- SNMP: Simple Network Management Protocol
- BIOS: Basic Input Output System
- LED: Low Emitting Diode

Thank You

www.huawei.com