

# PoE Switch Trouble Shooting

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Models: S3410 Series; S5860-24XB-U

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## PoE Power Failure Troubleshooting

### 1. Problem Description

PoE devices cannot provide power to PD devices (such as APs).

### 2. Possible Cause of Failure

- 1) Cable problems, or use non-standard wire sequence cables
- 2) The switch opens PoE configuration problem
- 3) Non-standard PD compatibility issues;
- 4) Confirm whether the power supply mode of the PD device and the switch are consistent
- 5) Insufficient power of equipment

### 3. Quick Collection and Inspection Plan

#### 3.1 Confirm Fault Phenomenon

##### 3.1.1 Confirm the Time Point of Failure

whether it appears suddenly after running for a period of time, or it appears immediately after deployment;

##### 3.1.2 Confirm the Scope of The Failure

Is it possible that multiple switches are unable to supply power, or a single switch; whether all powered devices on a switch cannot be powered, or are some powered devices;

##### 3.1.3 Confirm the Faulty Equipment Information

- 1) Confirm the model of the switch in question and the model of the powered device that cannot be powered;
- 2) Collect the number of powered devices connected to a switch port, and the power consumption of the powered devices. If it is an AP, you need to confirm what are the loads of the on-site AP except for its own bare metal, external antennas, etc.

#### 3.2 If it fails to supply power just after deployment, you need to confirm whether there is a compatibility problem between the PD device and the switch

##### 3.2.1 Power Supply/Receiving Wire Sequence

- 1) Some of our switches support power supply with data lines (1, 2, 3, 6), and some switches support power supply with idle lines (4, 5, 7, 8);
- 2) Therefore, it is necessary to confirm whether the powered device only supports the data line or only the idle line to receive power, or whether the data line idle line supports both;

##### 3.2.2 Power Supply/Receiving Current, Voltage

Confirm the power supply current and voltage range of our switch, as well as the current and power supply range of the powered device, and check whether there is incompatibility.

##### 3.2.3 Replace the Network Cable to Observe

Find 1-2 faulty power receiving equipment, replace the network cable between the switch and the power receiving equipment with the self-contained Cat5e cable test, you need to ensure the quality of the self-contained network cable;

(PoE power supply has higher requirements for network cables. The network cables at the customer site may be produced in batches, and the quality problems of batch network cables are not excluded)

## 4. Check the Switch Configuration

### 4.1 Confirm Whether the Interface is Powered on by PoE

```
Switch#show run int Gx/y           // Check whether the interface is enabled with PoE enable; GX/Y indicates the specific interface
number, and the configuration needs to be adjusted according to the customer environment
Switch(config)#int Gx/y           //GX/Y indicates the specific interface number, the configuration needs to be adjusted
according to the customer environment
Switch(config-if-GigabitEthernet x/y)#PoE enable           //Enable the PoE power supply function
```

### 4.2 Try to Enable the Switch PD Device Compatibility Function

**Note:** Using this command on a port that has not received a PD device may cause the peer device to be burnt by wrong power-on. Make sure that the port uses this command when connecting to the PD device.

```
Switch# show PoE interface fastEthernet [interface-id]
```

**Check whether the legacy option is enabled or disabled. If it is disabled, enable the compatibility function to check whether the fault is resolved. The command is as follows:**

```
Switch(config)#int Gx/y           //GX/Y indicates the specific interface number, the configuration needs to be adjusted
according to the customer environment
Switch(config-if-GigabitEthernet x/y)#PoE legacy           //Open the PD device compatibility function of the port
Switch(config-if-GigabitEthernet x/y)#no PoE legacy         //disable the PD device compatibility function of the port
```

### 4.3 Check the Remaining Power Supply and Power Supply Mode of the Switch

**Note:** When the power management mode is switched, all PoE ports will be powered off, and the ports will be powered on again according to the new power management mode. The operations here need to undergo a risk assessment and must not affect the customer's business.

```
Switch#show PoE powersupply           // Check whether the current power supply mode of the switch is automatic mode
or energy saving mode
Switch(config)#PoE mode energy-saving           // try to change the power supply mode of the switch to energy saving mode,
if you want to change back to automatic mode, the command is PoE mode auto
```

### 4.4 Try to Set the Disconnection Detection Mode of the Switch

**Note:** The disconnection detection mode affects the judgment criterion of AP disconnection, which may affect the power supply status of the PoE, and there are certain risks. Before execution, it is necessary to confirm with the customer clearly, and must not affect customer business.

```
Switch(config)#PoE disconnect-mode {ac | dc}           //Modify the switch disconnection detection mode observation (AC and DC)
```

## 5. Show Command to Confirm Basic Information

**Turn on the log display switch first**

```
Switch#terminal monitor
Switch#conf t
Switch(config)#logging on
Switch(config)#logging console
Switch(config)#logging monitor
```

**The following is collected in privileged mode (Switch#)**

```
show version
```

```
show run
show int status
show mac-address-table
show mac-address-table count
show int count rate
show int count summary
show PoE interfaces GX/Y //GX/Y indicates the specific fault interface number, the configuration needs to be adjusted according
to the customer environment; check the power supply status of the faulty port
show PoE interface configuration
show PoE interface status //Need to collect several times during failure, it is best to collect once every 5s, collect 5 times
show PoE powersupply //Need to collect several times during failure, it is best to collect once every 5s, collect 5 times
show running-config interface GX/Y //GX/Y indicates the specific fault interface number, the configuration needs to be adjusted
according to the customer environment
show temperature
show log
```

**Detailed steps/principles:****Step 1: Check whether the switch and AP are well grounded**

Confirm the grounding of the device: if the AP is placed indoors or outdoors, is the switch grounded (the switch is a power supply device, if it is not grounded, it will affect the AP's presence detection due to power frequency voltage interference of the power grid, which may cause the AP to fail to supply power), Whether the AP shell is grounded (if the AP is a plastic shell, it does not need to be grounded, if it is a metal shell, it needs to be grounded). If it is not grounded, please connect it to the ground to confirm whether the fault is eliminated. If the fault disappears, the positioning is ended.

**Step 2: Check whether the network cable between the switch and the AP is faulty**

- 1) Check whether the network cable is firmly inserted
- 2) Replace a normal network cable to see if the fault disappears, and use a standard cable sequence cable for the cable;
- 3) Provide the length of the network cable at the time of failure. If the network cable is too long, it may affect the power supply, shorten the connection length between the switch and the AP, and see if the failure disappears. After checking and confirming above, see if the failure is eliminated. If the fault disappears, the positioning is ended.

**Step 3: Check if the AP is faulty**

Connect the faulty AP to another port that can normally supply power or another switch device, and confirm whether the AP can supply power. If there is still a fault, it means that the AP device is faulty. Please replace the AP device and try.

**Step 4: Check whether the PoE switch is faulty**

If conditions permit, replace the power supply of the PoE adapter, or the switch that can normally supply power to the AP to supply power to the AP, and confirm whether the fault is recovered. If the fault persists, it means that it is not a problem of the PoE switch, and the positioning is ended.

**Step 5: Check whether the device is enabled with the PoE power supply function**

```
Switch# show PoE interface gx/y
```

Check whether the power enabled and power status options are on or off. If it is off, enable the PoE function to check whether the fault is resolved. The command is as follows:

Command	Effect
Switch# configure	Enter global configuration mode
Switch(config)# interface gigabitEthernet interface-id	Enter interface configuration mode and specify the physical port to be configured
Switch(config-if)# PoE enable	Enable remote power supply of the port
Switch(config-if)# no PoE enable	Turn off the remote power supply of the port

If the fault is resolved after starting this command, the positioning is ended.

#### Step 6: Check whether the PoE is turned on in energy saving mode

On PoE switches that support the 802.3at standard, the down-link APs may use the 802.3at standard. PoE+ power supply (an AP needs to allocate 30w power) will consume a lot of power, which may cause some APs to be unable to supply power due to insufficient power supply. Change the management mode of the device from automatic mode to energy saving mode

Set the device's power management mode to energy-saving mode:

```
Switch# configure
Switch(config)# PoE mode energy-saving
```

**Note:** The power management mode is switched, all PoE ports are powered off, and the ports are powered on again according to the new power management mode. It should be noted here that operations must be conducted after evaluating risks.

#### Step 7: Try the switch to enable the PD device compatibility function

```
Switch# show PoE interface fastEthernet [interface-id]
```

Check whether the legacy option is enabled or disabled. If it is disabled, enable the compatibility function to check whether the fault is resolved. The command is as follows:

Command	Effect
Switch# configure	Enter global configuration mode
Switch(config)# interface fastEthernet interface-id	Enter interface configuration mode and specify the physical port to be configured
Switch(config-if)# PoE legacy	Open port PD device compatibility function
Switch(config-if)# no PoE legacy	Disable the PD device compatibility function of the port

If the fault is resolved after starting this command, the positioning is ended.

**Note:** PoE currently widely uses the industry standards IEEE 802.3af and 802.3at. In practical applications, PD devices are all kinds of different types, and it is inevitable that there are PoE devices that do not meet the standards. The switch provides PoE compatible commands, which can be compatible with some non-standard PoE devices.

Note that when opening this command:

- PoE devices that do not meet the standard, the Class rating is uniformly displayed as 0.
- If this command is not set and a non-standard PD device is inserted, the non-standard PD device will not be powered on, and the system will not have any prompt information.
- For the case where compatible non-standard PD devices take effect globally, if no PD device is inserted in the port, turn off the remote power supply function of the port.

**Note:** Using this command on a port that is not connected to a PD device may cause the peer device to be burnt by wrong power-on. Make sure that the port uses this command when accessing the PD device.

**Step 8: Check whether the maximum output power of the port is greater than the reference power of the AP**

In automatic mode and energy saving mode, setting the maximum power can limit the maximum output power of the port. When the power of the port exceeds the set maximum power for a certain period of time, the power supply to the port stops, the device on the port is powered off, and the port's LED light displays as yellow. After 10 seconds, the port will be powered on again. If the port power still exceeds the maximum power, the port will be powered off again and continue to cycle through this process. If you find the above situation, please increase the maximum output power of the port, the command is as follows:

Command	Effect
Switch# configure	Enter global configuration mode
Switch(config)# interface fastEthernet interface-id	Enter interface configuration mode and specify the physical port to be configured
Switch(config-if)# PoE max-power int	Set the maximum power of the port to be in the range of <0-30>, the unit is watt, and it can be set to 1 decimal place.
Switch(config-if)# no PoE max-power	Turn off the maximum power setting of the port

If the fault is resolved after revising the maximum power of the port, the positioning is ended.

**Step 9: Try to set the disconnection detection mode of the switch**

The PoE switch uses the disconnection detection function to determine whether the PD device has been disconnected. The device supports two detection modes, AC and DC modes.

AC disconnection detection mode is to detect that the port impedance is greater than a specific value and hold it for a period of time to think that the PD device connected to a port has been disconnected.

DC disconnection detection mode is to detect that the port current is less than a specific value and hold it for a period of time to think that the PD device connected to a port has been disconnected.

You can use the following command to set the disconnection detection mode. Perform the following configuration in global mode. Users can also configure specific devices.

Command	Effect
Switch# configure	Enter global configuration mode
Switch(config)# PoE disconnect-mode {ac   dc}	Set the disconnection detection mode of the PoE switch to ac mode or dc mode

**Note:** The disconnection detection mode affects the judgment criterion of AP disconnection, which may affect the power supply status of the PoE, and there are certain risks, which need to be confirmed before execution.



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