

XGSPON ONU Stick SFP+ 8311

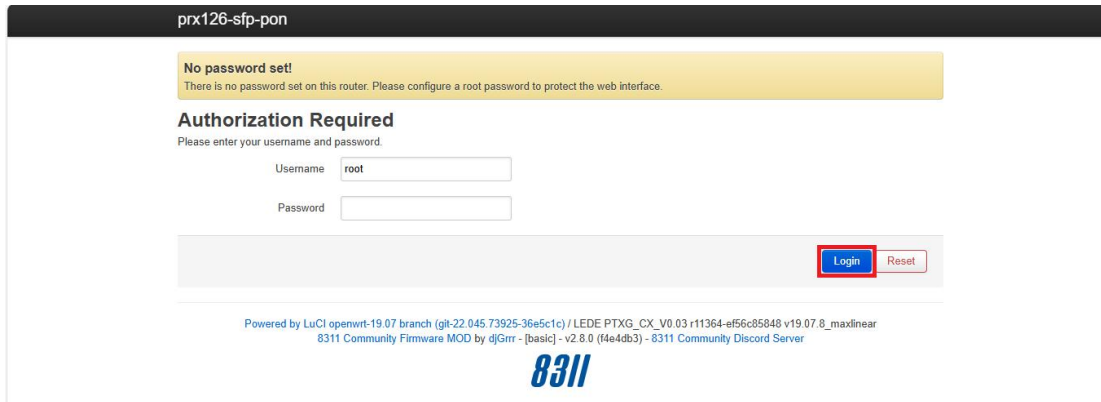
Firmware Version User Guide

1. Preparation:

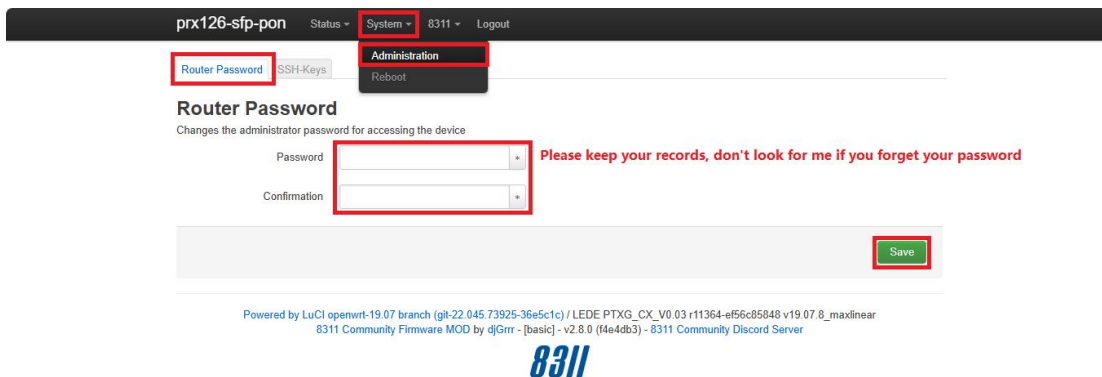
- (1) Computer, network cable;
- (2) A switch or router that supports 10G optical ports.

2. Connect XGSPON STICK ONU:

- (1) Connect the computer's network cable and XGSPON ONU Stick SFP+ to the switch, set the computer's IP address to be in the same subnet as XGSPON ONU Stick SFP+: 192.168.11.2.
- (2) Enter 192.168.11.1 in the web browser, follow the prompt to switch to HTTPS. There is no password default; click the "Login" button to log in.



- (3) Set the XGSPON ONU Stick SFP+ password in the menu path: 8311 --> System --> Administration --> Router Password Tab:
Password Tab:



3. Configuration Instructions:

(1) Set PON mode: Current firmware supports switching between XGS-PON and XG-PON modes.

(2) Set OMCI: Includes Vendor ID, Equipment ID, Hardware Version, Software Version A, Software Version B, OMCC Version, MIB File (the default /etc/mibs/prx300_1U.ini supports Huawei OLT).

It is recommended to first enter simple verification information for testing; if it fails, proceed to more detailed settings (Vendor ID, Equipment ID, Hardware Version, etc.).

(3) Authentication Configuration: LOID, LOID + MAC, SN, Password, SN + Password.

(4) The Password (Ploam Password / Registration ID) value must be converted to hexadecimal format. Online tools such as the following can assist in the conversion:

<https://coding.tools/cn/ascii-to-hex>

ASCII to Hex Online Tool - Coding.Tools

<https://hack-gpon.org/ascii-hex>

ASCII and Hex Converter | Hack GPON

ASCII and Hex converter



Last Modified: 2023/10/10 • 2 Contributors

Tool for converting between ASCII and Hex

ASCII To Hex

ASCII

Glue/Separator (empty for the format 0x0123456789ABCDE, `` for the format 0x01 0x23 0x45 0x67 0x89 0xAB 0xCD 0xEF)

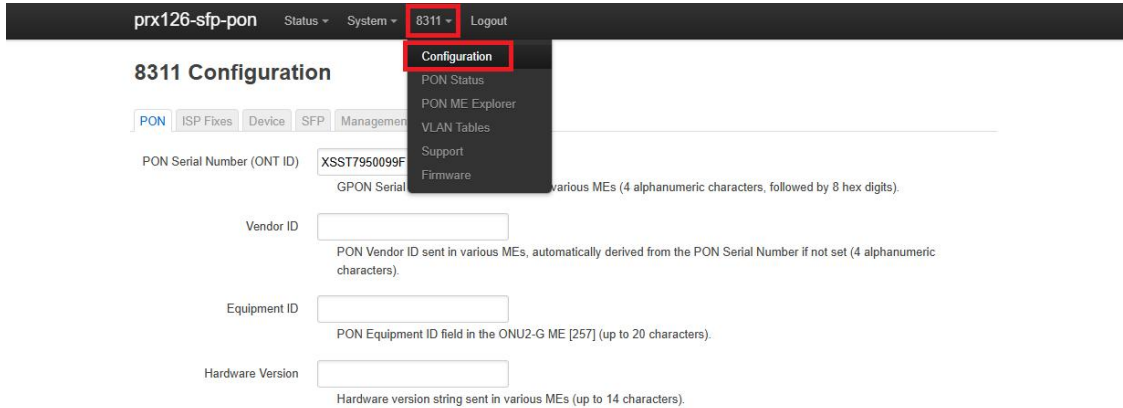
Calculate!

3132333435363738 is the converted hexadecimal value (excluding 0x)

HEX Result

4. Steps to Configure:

Menu Location: 8311 --> Configuration --> PON.

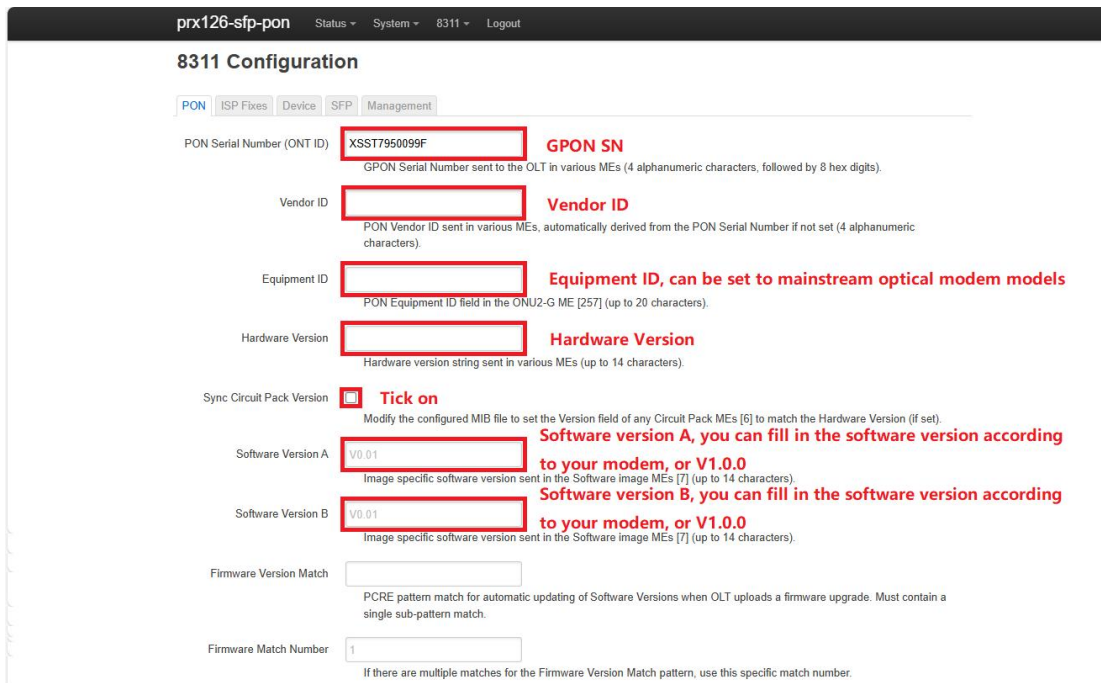


The screenshot shows the '8311 Configuration' page with the 'Configuration' menu open. The menu options are: PON Status, PON ME Explorer, VLAN Tables, Support, and Firmware. The 'PON' tab is selected in the main configuration area. The 'PON Serial Number (ONT ID)' field is populated with 'XSST7950099F'. Below it, the 'GPON Serial' field is empty, with a note: 'GPON Serial Number sent to the OLT in various MEs (4 alphanumeric characters, followed by 8 hex digits)'. The 'Vendor ID' field is empty, with a note: 'PON Vendor ID sent in various MEs, automatically derived from the PON Serial Number if not set (4 alphanumeric characters)'. The 'Equipment ID' field is empty, with a note: 'PON Equipment ID field in the ONU2-G ME [257] (up to 20 characters)'. The 'Hardware Version' field is empty, with a note: 'Hardware version string sent in various MEs (up to 14 characters)'.

It is recommended to verify information first and modify only if it fails.

For example, if your ISP only uses SN for authentication, you only need to fill in the SN for verification. Input Vendor ID, Equipment ID, Hardware Version, etc., to communicate with XGSPON OLT. Below is an example; you can refer to the status page info of your previous optical modem for details.


Input the SN in the first field; PON SN refers to the device SN.



The screenshot shows the '8311 Configuration' page with several fields highlighted by red boxes and red text instructions. The 'PON Serial Number (ONT ID)' field is highlighted with the value 'XSST7950099F' and the label 'GPON SN'. The 'Vendor ID' field is highlighted with the label 'Vendor ID'. The 'Equipment ID' field is highlighted with the label 'Equipment ID, can be set to mainstream optical modem models'. The 'Hardware Version' field is highlighted with the label 'Hardware Version'. The 'Sync Circuit Pack Version' checkbox is checked and labeled 'Tick on'. The 'Software Version A' field is highlighted with the value 'V0.01' and the label 'Software version A, you can fill in the software version according to your modem, or V1.0.0'. The 'Software Version B' field is highlighted with the value 'V0.01' and the label 'Software version B, you can fill in the software version according to your modem, or V1.0.0'. The 'Firmware Version Match' field is empty. The 'Firmware Match Number' field is highlighted with the value '1'.

The default is XGSPON mode; if needed, you can switch to XGPON mode.

Remember to click "Save."



Override active firmware bank

Override which software bank is marked as active in the Software image MEs [7].

Override committed firmware bank

Override which software bank is marked as committed in the Software image MEs [7].

PON Mode **XGS-PON** **PON mode setting**
 PON mode of operation. This is where you can choose between XGS-PON (the default) or XG-PON.

OMCC Version **0xA3** **OMCC version, the current MIB only supports versions above 0xA0**
 The OMCC version to use in hexadecimal format between 0x80 and 0xBF. Default is 0xA3

OMCI Interoperability Mask
 The OMCI Interoperability Mask is a bitmask of compatibility options for working with various OLTs. The options are:
 1 - Force Unauthorized IGMP/MLD behavior
 2 - Skip Alloc-IDs termination upon T-CONT deactivation
 4 - Drop all packets on default Downstream Extended VLAN rules
 8 - Ignore Downstream Extended VLAN rules priority matching
 16 - Convert Traffic Descriptor PIR/CIR values from kbyte/s to kbit/s
 32 - Force common IP handling - apply the IPv4 Ethertype 0x0800 to the Extended VLAN rule matching for IPv6 packets
 64 - It is unknown what this option does but it appears to affect the message length in omci_msg_send.

Registration ID (HEX) **Ploam Password/Registration ID, please fill in the converted hexadecimal value (if the operator is Password authentication, fill in; otherwise, leave it blank)**
 Registration ID (up to 36 bytes) sent to the OLT, in hex format. This is where you would set a ploam password (which is contained in the last 12 bytes).

Logical ONU ID **If it is LOID certification, fill it in, otherwise leave blank**
 Logical ONU ID presented in the ONU-G ME [256] (up to 24 characters).

Logical Password
 Logical Password presented in the ONU-G ME [256] (up to 12 characters).

MIB File
 MIB file used by omcid. Defaults to /etc/mibs/prx300_1U.ini (U-SFU, V-HGU)

PON Slot
 Change the slot number that the UNI port is presented on, needed on some ISPs.

IP Host MAC Address
 MAC address sent in the IP host config data ME [134] (XX:XX:XX:XX:XX:XX format).

IP Host Hostname
 Hostname sent in the IP host config data ME [134] (up to 25 characters).

IP Host Domain Name
 Domain name sent in the IP host config data ME [134] (up to 25 characters).

MIB files cannot establish a dial-up connection by default. Try modifying other fields, then save and reboot the XGSPON ONU Stick SFP+.

If modifying the MIB causes a freeze and you cannot access the webui:

1) Some MIB modifications may trigger a freeze (due to a "unbrickable uboot" setup).

Follow these steps:

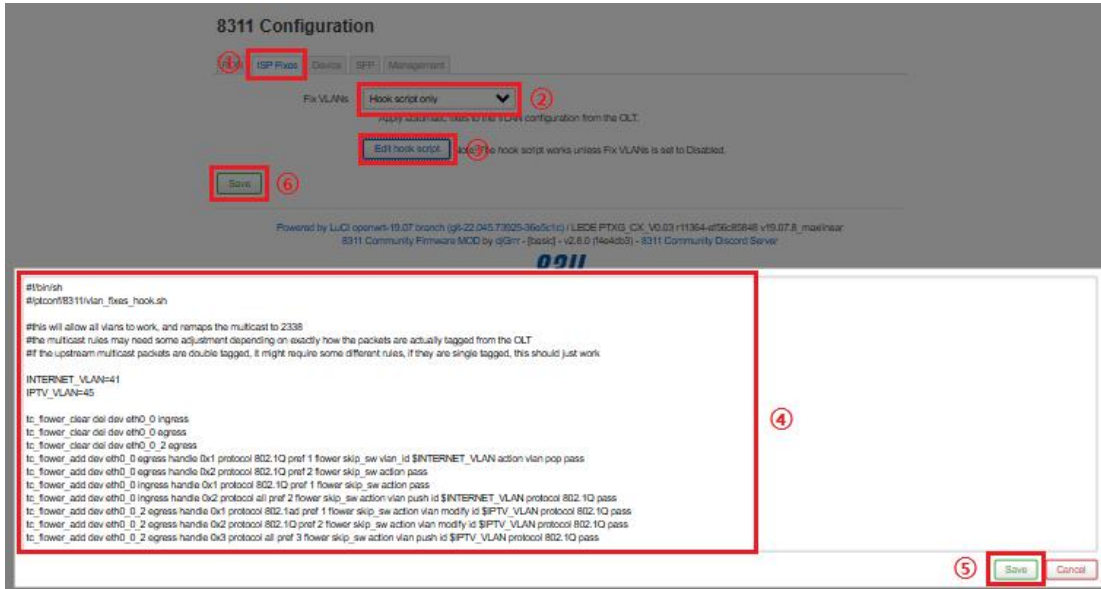
2) Ping 192.168.11.1 on your computer. Unplug and replug the XGSPON ONU Stick SFP+. Once the ping succeeds, quickly access the web UI, revert the MIB to default, save, and reboot the device. You have only ~20 seconds to complete this before it freezes again.

5. VLAN Configuration

Menu Location: 8311 → Configuration → ISP Repair

(1) Under Fix VLANs, select "Hook Script Only".

(2) Click Step 3 in the image below, open Edit Hook Script, and verify that the script matches the example shown.



8311 Configuration

ISP Fix VLANs Device SFP Management

Fix VLANs: Hook script only

Apply what-if rules to the VLAN configuration from the OLT.

Edit hook script

Save

Powered by LuCI openwrt-19.07 branch (git-22.045.73525-965c1c) / LUCI FTAG, CK_V0.03 r11364-af56c8584e-y19.07.8_maxlinear
8311 Community Firmware MOD by g3rr - [beta] - v2.8.0 [f4e4db3] - 8311 Community Discord Server

```
#!/bin/sh
#ptconf/8311/vlan_fixes_hook.sh

#this will allow all vlans to work, and remaps the multicast to 2338
#the multicast rules may need some adjustment depending on exactly how the packets are actually tagged from the OLT
#if the upstream multicast packets are double tagged, it might require some different rules, if they are single tagged, this should just work

INTERNET_VLAN=41
IPTV_VLAN=45

tc_flow_clear del dev eth0_0 ingress
tc_flow_clear del dev eth0_0 egress
tc_flow_clear del dev eth0_0_2 egress
tc_flow_add dev eth0_0 egress handle 0x1 protocol 802.1Q pref 1 flower skip_sw vlan_id $INTERNET_VLAN action vlan pop pass
tc_flow_add dev eth0_0 egress handle 0x2 protocol 802.1Q pref 2 flower skip_sw action pass
tc_flow_add dev eth0_0 ingress handle 0x1 protocol 802.1Q pref 1 flower skip_sw action pass
tc_flow_add dev eth0_0_2 ingress handle 0x2 protocol all pref 2 flower skip_sw action vlan push id $INTERNET_VLAN protocol 802.1Q pass
tc_flow_add dev eth0_0_2 egress handle 0x1 protocol 802.1ad pref 1 flower skip_sw action vlan modify id $IPTV_VLAN protocol 802.1Q pass
tc_flow_add dev eth0_0_2 egress handle 0x2 protocol 802.1Q pref 2 flower skip_sw action vlan modify id $IPTV_VLAN protocol 802.1Q pass
tc_flow_add dev eth0_0_2 egress handle 0x3 protocol all pref 3 flower skip_sw action vlan push id $IPTV_VLAN protocol 802.1Q pass
```

Save Cancel

```
1 #!/bin/sh
2 #ptconf/8311/vlan_fixes_hook.sh
3
4 #this will allow all vlans to work, and remaps the multicast to 41
5 #the multicast rules may need some adjustment depending on exactly how the packets are actually tagged from the OLT
6 #if the upstream multicast packets are double tagged, it might require some different rules, if they are single tagged, this should just work
7
8 INTERNET_VLAN=41 41 is the VLAN for internet access, it needs to be changed to my own
9 IPTV_VLAN=45 45 is the VLAN for IPTV service, it needs to be changed to your own
10
11 tc_flow_clear del dev eth0_0 ingress
12 tc_flow_clear del dev eth0_0 egress
13 tc_flow_clear del dev eth0_0_2 egress
14 tc_flow_add dev eth0_0 egress handle 0x1 protocol 802.1Q pref 1 flower skip_sw vlan_id $INTERNET_VLAN action vlan pop pass
15 tc_flow_add dev eth0_0 egress handle 0x2 protocol 802.1Q pref 2 flower skip_sw action pass
16 tc_flow_add dev eth0_0 ingress handle 0x1 protocol 802.1Q pref 1 flower skip_sw action pass
17 tc_flow_add dev eth0_0 ingress handle 0x2 protocol all pref 2 flower skip_sw action vlan push id $INTERNET_VLAN protocol 802.1Q pass
18 tc_flow_add dev eth0_0_2 egress handle 0x1 protocol 802.1ad pref 1 flower skip_sw action vlan modify id $IPTV_VLAN protocol 802.1Q pass
19 tc_flow_add dev eth0_0_2 egress handle 0x2 protocol 802.1Q pref 2 flower skip_sw action vlan modify id $IPTV_VLAN protocol 802.1Q pass
20 tc_flow_add dev eth0_0_2 egress handle 0x3 protocol all pref 3 flower skip_sw action vlan push id $IPTV_VLAN protocol 802.1Q pass
21 If your broadband has not activated the IPTV service, then delete the 9th, 13th, 18th, 19th, and 20th lines before uploading to the cat stick
```

6. MAC and IP Modification

prx126-sfp-pon Status System 8311 Logout

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

8311 Configuration

PON ISP Fixes Device SFP Management

IP Address: 192.168.11.1
Management IP address. Defaults to 192.168.11.1

Subnet Mask: 255.255.255.0
Management subnet mask. Defaults to 255.255.255.0

Gateway: 192.168.11.1
Management gateway. Defaults to the IP address (ie. no default gateway)

DNS Server:
Management DNS server.

Ping Daemon: ☒
Enables a daemon that will ping an ip every 5 seconds, which can help with accessing the stick.

Ping IP: 192.168.11.2
IP address to ping. Defaults to the 2nd IP address in the configured management network (ie. 192.168.11.2).

LCT MAC Address: 80:A5:79:50:09:9F **MAC CHANGES**
MAC address of the LCT management interface (XX:XX:XX:XX:XX:XX format).

Reverse ARP Monitoring: ☒
Enables a reverse ARP monitoring daemon that will automatically add ARP entries from the MAC address of received packets. This can help in reaching the management interface without using NAT.

Redirect HTTP to HTTPS: ☒ **Can be cancelled**
Automatically redirect requests to the WebUI over HTTP to HTTPS. Defaults to on.

Save

Powered by LuCI openwrt-19.07 branch (git-22.045.73925-36e5c1c) / LEDE PTXG_CX_V0.03 r11364-e156c85848 v19.07.8_maxlinear
8311 Community Firmware MOD by djGrr - [basic] - v2.8.0 (f4e4db3) - 8311 Community Discord Server

8311

7. Post-Setup Verification

Reboot the XGSPON ONU Stick SFP+ and check the Registration/Authentication Status.



PON Authentication Status / Optical Module Status / Optical Module Information Query:

prx126-sfp-pon Status ▾ System ▾ 8311 ▾ Logout

PON Status

Status Capability Alarms GEM Status GEM Stats ETH DS Stats ETH US Stats FEC Info GTC Info PS Status PSM Alloc Stats

PLOAM DS PLOAM US Optical Status Optical Info Burst Profile CQM CQM Q Map DP Ports DP QoS PPv4 Buffers PPv4 PPS

PPv4 Stats PPv4 Tree PPv4 QStats

```

Page: Status
OPTION                                VALUE
PON IP HW version                      : 7
PON IP FW version                      : 3.21.0.3.16-1674463172
PON IP SW version                      : 1.22.9
PON IP pontop version                  : 1.7.2

SW uptime                             : t.b.d

PON type active                        : t.b.d

PON capability                         : 000731f9
  GEM Ports                           : 256
  Allocations                         : t.b.d xGPON mode currently not supported
  LLIDs                               : t.b.d xEPON mode currently not supported

PON PLOAM Status                      : 01.1, Off-sync state
  
```

PON PLOAM Status:

05 indicates authentication success; router dialing is possible.

05 but unable to dial—check VLAN settings and ensure the XGSPON ONU Stick SFP+ has been rebooted.

01 indicates fiber disconnection or that the line is EPON.

02-03 indicates failed verification—check for incorrect or incomplete information and configurations.

04 indicates OLT rejection.

GEM Port Allocation: GEM ID/Alloc ID is the ONU ID assigned by OLT.

prx126-sfp-pon Status ▾ System ▾ 8311 ▾ Logout

PON Status

Status Capability Alarms **GEM Status** GEM Stats ETH DS Stats ETH US Stats FEC Info GTC Info PS Status PSM Alloc Stats

PLOAM DS PLOAM US Optical Status Optical Info Burst Profile CQM CQM Q Map DP Ports DP QoS PPv4 Buffers PPv4 PPS

PPv4 Stats PPv4 Tree PPv4 QStats

```

Page: GEM/XGEM Port Status
GEM Index  GEM ID  Alloc ID  Alloc ID st.  Data/OMCI  Max. Size  Encryption k.r.  Direction
0          30      30      Valid        OMCI        1980        None             DS + US
1         65534   n.a.     Invalid      Ethernet    4096        None             DS
2         1054   1054     Valid      Ethernet    2048        None             DS + US
3         1310   1054     Valid      Ethernet    2048        None             DS + US
4         1566   1054     Valid      Ethernet    2048        None             DS + US
5         1822   1054     Valid      Ethernet    2048        None             DS + US
  
```


prx126-sfp-pon Status ▾ System ▾ 8311 ▾ Logout

PON Status

Status Capability Alarms GEM Status GEM Stats ETH DS Stats ETH US Stats FEC Info GTC Info PS Status PSM Alloc Stats

PLOAM DS PLOAM US **Optical Status** Optical Info Burst Profile CQM CQM Q Map DP Ports DP QoS PPv4 Buffers PPv4 PPS

PPv4 Stats PPv4 Tree PPv4 QStats

Page: Optical Interface Status

OPTION	VALUE	
Optical transceiver temperature	: 36 deg C / 309 K	
Transceiver supply voltage	: 3.27 V	
Transmit bias current	: 11.74 mA	
Transmit power	: 5.08 dBm	XGSPON ONU Stick SFP+ temperature, transmit and receive power information.
Receive power	: -25.85 dBm	
Receiver status	: OK	
Transmitter status	: ENABLED	

If the XGSPON ONU Stick SFP+ shows status 05 and VLAN is correctly configured, router dialing is possible. Regarding temperature, aim to keep it below 80°C. Specific temperature details can be viewed in the interface.

If you need router VLAN dialing, modify the content of the UNTAG script

"vlan_fixes_hook.sh" as follows:

```
#!/bin/sh
```

```
tc_flow_clear del dev eth0_0 ingress
```

```
tc_flow_clear del dev eth0_0 egress
```

Other operations remain the same as the UNTAG script. Finally, set VLAN dialing in the router.