



USER GUIDE

Fiber OLT and ONT

Release 1.1.1



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About This Guide

This document provides detailed information about the Fiber OLT and ONT products, hardware, and supported features. The guide also explains how to deploy the product along with important safety measures. It is intended for system designers, system installers, and system administrators.

Purpose

The Fiber OLT and ONT product documents are intended to instruct and assist personnel in operation, installation, and maintenance of the equipment and ancillary devices. It is recommended that all personnel engaged in such activities must be properly trained.

Cambium Networks disclaims all liability whatsoever, implied or express, for any risk of damage, loss or reduction in system performance arising directly or indirectly out of the failure of the customer, or anyone acting on the customer's behalf, to abide by the instructions, system parameters, or recommendations made in this document.

Cross-references

References to external publications are shown in italics. Other cross-references, emphasized in blue text in electronic versions, are active links to the references.

This document is divided into topics that are divided into sections. Sections are not numbered but are individually named at the top of each page, and are listed in the table of contents.

Feedback

We appreciate feedback from the users of our documents. This includes feedback on the structure, content, accuracy, or completeness of our documents. To provide feedback, visit our support website: <https://support.cambiumnetworks.com>.

Important regulatory information

Complying with rules for the country of operation

USA specific information



Caution

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.



Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada specific information



Caution

This device complies with Innovation, Science and Economic Development Canada (ISED) license-exempt RSSs. Operation is subject to the following two conditions:

- This device may not cause interference; and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Renseignements spécifiques au Canada



Attention

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

European specific information

Cambium Networks Fiber OLT and ONT products are compliant with applicable European Directives required for CE marking:

- 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC; Radio Equipment Directive (RED).

- 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive).

EU Declaration of conformity

Hereby, Cambium Networks declares that the Cambium Networks Fiber OLT and ONT Series of Wireless Ethernet Bridge complies with the essential requirements and other relevant provisions of Directive 2014/53/EU. The declaration of conformity may be consulted at https://www.cambiumnetworks.com/eu_dofc.

United Kingdom (UK) specific information

Cambium Networks Fiber OLT and ONT products are compliant with applicable United Kingdom (UK) Regulations required for UKCA marking:

- Radio Equipment Regulations 2017 (SI 2017 No. 1206, as amended)
- Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (SI 2012 No. 3032, as amended) (RoHS)

For more details, check <https://www.elexon.co.uk/operations-settlement/unmetered-supplies/charge-codes-and-switch-regimes/>.

UK Declaration of conformity

Hereby, Cambium Networks declares that the Cambium Networks Fiber OLT and ONT Series of Wireless Ethernet Bridge complies with the essential requirements and other relevant provisions of Radio Equipment Regulations 2017 (SI 2017 No. 1206, as amended) The declaration of conformity may be consulted at https://www.cambiumnetworks.com/ukca_dofc.

Application firmware

Download the latest software and install it in the OLT and ONTs before deploying the equipment. Instructions for installing software are provided in this guide.

Ethernet networking skills

The installer must have the ability to configure IP addressing on a PC and to set up and control products using a web browser user interface (UI).

Specific expertise and training for professional installers

To ensure that the Fiber OLT and ONT Series is installed and configured in compliance with the requirements of the EU, ISEDC and the FCC, installers must have the radio engineering skills and training described in this section.

The Cambium Networks technical training program details can be accessed from the following link: <https://learning.cambiumnetworks.com/>

Legal and Open-Source Software statements

Refer to the *Fiber OLT and ONT™ Legal and Open-Source Guide* for:

- Cambium Networks end user license agreement
- Open-Source Software Notices.

Problems and warranty

Reporting problems

If any problems are encountered when installing or operating this equipment, follow this procedure to investigate and report:

1. Search this document and the software release notes of supported releases.
2. Visit the support website (<http://www.cambiumnetworks.com/support>).
3. Ask for assistance from the Cambium Networks product supplier.
4. Gather information from affected units, such as any available diagnostic downloads.
5. Escalate the problem by emailing or telephoning support.

Repair and service

If unit failure is suspected, obtain details of the Return Material Authorization (RMA) process from the support website (<http://www.cambiumnetworks.com/support>).

Hardware warranty

Cambium's standard hardware warranty is for one (1) year from the date of shipment from Cambium Networks or a Cambium distributor. Cambium Networks warrants that hardware will conform to the relevant published specifications and will be free from material defects in material and workmanship under normal use and service. Cambium shall within this time, at its own option, either repair or replace the defective product within thirty (30) days of receipt of the defective product. Repaired or replaced product will be subject to the original warranty period but not less than thirty (30) days.

To register positioner products or activate warranties, visit the support website. For warranty assistance, contact the reseller or distributor. The removal of the tamper-evident seal will void the warranty.



Caution

Using non-Cambium parts for repair could damage the equipment or void warranty. Contact Cambium for service and repair instructions.

Portions of Cambium equipment may be damaged from exposure to electrostatic discharge. Use precautions to prevent damage.

Security advice

Cambium Networks systems and equipment provide security parameters that can be configured by the operator based on their particular operating environment. Cambium recommends setting and using these parameters following industry-recognized security practices. Security aspects to be considered are protecting the confidentiality, integrity, and availability of information and assets. Assets include the ability to communicate, information about the nature of the communications, and information about the parties involved.

In certain instances, Cambium makes specific recommendations regarding security practices, however the implementation of these recommendations and final responsibility for the security of the system lies with the operator of the system.

Warnings, cautions, and notes

The following describes how warnings and cautions are used in this document and all Cambium Networks document sets:

Warnings

Warnings precede instructions that contain potentially hazardous situations. Warnings are used to alert the reader to possible hazards that could cause loss of life or physical injury. A warning has the following format:



Warning

Warning text and consequence for not following the instructions in the warning.

Cautions

Cautions precede instructions and are used when there is a possibility of damage to systems, software, or individual items of equipment within a system. However, this damage presents no danger to personnel. A caution has the following format:



Caution

Caution text and consequence for not following the instructions in the caution.

Notes

A note means that there is a possibility of an undesirable situation or provides additional information to help the reader understand a topic or concept. A note has the following format:



Note

Note text.

Caring for the environment

The following information describes national or regional requirements for the disposal of Cambium Networks supplied equipment and for the approved disposal of surplus packaging.

In the UK and EU countries

The following information is provided to enable regulatory compliance with the European Union (EU) directives and UK regulations identified and any amendments made to these directives and regulations when using Cambium equipment in the UK or EU countries:

- **Disposal of Cambium equipment** - European Union (EU) Directive 2012/19/EU Waste Electrical and Electronic Equipment (WEEE) and UK Statutory Instrument The Waste Electrical and Electronic Equipment Regulations 2013 No. 3113.

Do not dispose of Cambium equipment in landfill sites. For disposal instructions, refer to <http://www.cambiumnetworks.com/support/weee-compliance>

- **Disposal of surplus packaging** - Do not dispose of surplus packaging in landfill sites. In the EU and UK, it is the individual recipient's responsibility to ensure that packaging materials are collected and recycled according to the requirements of EU and UK environmental law.

In non-EU countries

In non-EU countries, dispose of Cambium Networks equipment and all surplus packaging in accordance with national and regional regulations.

Product Description

Cambium Fiber OLT

Cambium Fiber OLT is a GPON, XGS-PON, and Combo PON (GPON co-existing with XGS-PON) Optical Defined Networking (ODN) access OLT. Its high-performance access design focuses on SDN deployments. High-performance design of OLT is optimized for SDN deployments, ensuring maximum interoperability with both Cambium and third-party hardware and software systems.

Fiber OLT includes eight Combo PON interfaces to support both GPON (ITU-T G.984) and XGS-PON (ITU-T G.987) PON technologies, simultaneously. Cambium Fiber OLT is equipped with either 8 or 16 Combo PON interfaces which supports both GPON and XGS-PON technologies. This capability enables the aggregation of numerous last-mile customer connections, enhancing network scalability and flexibility. It is positioned as the central access controller within the GPON or XGS-PON network architecture. The OLT establishes the direct connections with both Cambium and third-party ONTs and ONTs distributed throughout the Optical Distribution Network (ODN). The OLT manages provisioning and delivery of broadband data, voice, and IP television services efficiently through the following devices:

- Optical Line Termination (OLT) - A network device that serves as the root element or up-link access controller for a Optical Access Network (OAN).
- Optical Network Unit (ONT) - A network element that terminates a leaf, or down-link element of the OAN for a subscriber or another wired or wireless access network.
- Optical Network Terminal (ONT) - Provides an OAN UNI or Optical Access Network Port for a single subscriber.

The carrier-grade, temperature-hardened compact hardware design of Fiber OLT provides service providers deployment flexibility for diverse environments. With this design, you can create network, achieve market goals of Fiber OLT, and satisfy future network needs.

Fiber OLT (as shown in [Figure 1](#)) with the temperature-hardened hardware has the following design features:

- 300 Gbps L2 and L3 non-blocking switching capacity
- 2 x SPF28 and 2 x QSFP28 uplink ports
- Operating temperature of -40°F to 149°F (-40°C to +65°C)
- 19 inch Rack Mount Ready 440 mm x 260 mm x 44.5 mm (17.32 in x 10.24 in x 1.75 in)
- 8 or 16 quad channel PON ports for simultaneous GPON and XGS-PON full duplex operation
- Dedicated compute module for ultimate performance and extended feature
- Advanced QoS, VLAN, and statistic engine for maximum performance and transparency.

Figure 1: *Fiber OLT (16 port and 8 port)*



Cambium Fiber ONT

Fiber Optical Network Terminal (ONT) terminates the OAN by providing a subscriber port. It serves as an interface between the fiber-optic network and an internal network of the customer. It is installed at the customer's premises. Cambium Fiber ONT is a key component in a Fiber to the Home (FTTH) or Fiber to the Premises (FTTP) deployment. [Figure 2](#) shows the Fiber Indoor ONT and [Figure 3](#) shows the Fiber Outdoor ONT.

Figure 2: Fiber GPON ONT and XGS-PON Indoor ONT

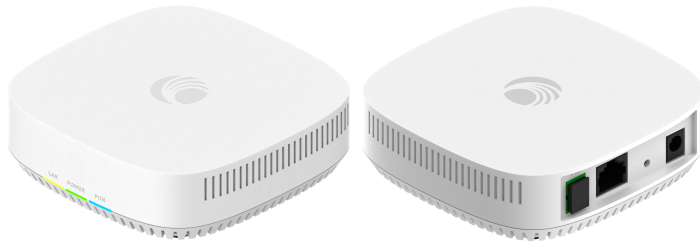


Figure 3: Fiber GPON ONT and XGS-PON Outdoor ONT



System Hardware

This section covers the hardware specifications and details for Cambium Fiber including the following subsections:

- [Cambium Fiber OLT](#)
- [Cambium Fiber ONTs](#)

Cambium Fiber OLT

Cambium Fiber OLT is used in the fiber-optic communication networks. It serves as the upstream endpoint of a Passive Optical Network (PON) and is reproducible for managing the access to the shared Optical Access Network (OAN) by provisioning the ONTs, broadcasting transmissions to each ONT and scheduling the upload times. It is a switch for a PON, which can then be transmitted to the individual subscribers. [Figure 4](#) shows the front panel view of Cambium Fiber OLT.

Figure 4: Front panel view of Cambium Fiber OLT

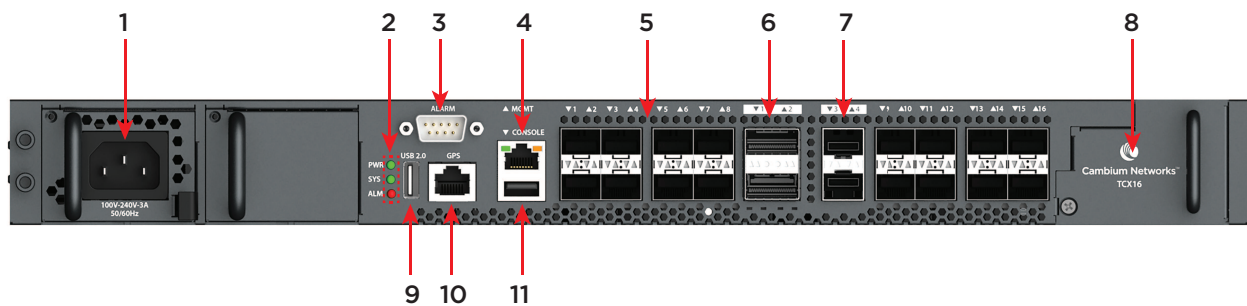


Table 1 lists and describes the components of Cambium Fiber OLT.

Table 1: Cambium Fiber OLT components

Item	Component	Description
1	Dual Power Modules	<p>Dual power module slots are used for redundancy. Connect AC/DC power sources to the modules.</p> <p>For AC power module:</p> <ul style="list-style-type: none"> • Operating voltage: 100 to 240 VAC, 50/60 Hz 3.5 Amps maximum. • Fuse: T6.3A 250 VAC. <p>For DC power module:</p> <ul style="list-style-type: none"> • Operating voltage: -38.4 to -72 V DC, normal -48 V input. There is no tolerance for the DC input voltage. • Maximum DC input current: 290 Watts; 7.56 Amps at -38.4 V DC.

Item	Component	Description
		<ul style="list-style-type: none"> Fuse: T10A 250 VAC.
2	LEDs	Indicates the status of the system.
3	Alarm	Male 9-pin external alarm for remote mounting.
4	Management port	Out of band 10/100/1000 BaseT management port for OLT management. DHCP assigned by default with fall back IP of 169.254.1.1.
5	1-16 Combo PON Downlink	16 Combo PON SFP+ PON ports, each slot supports a GPON, XGS-PON, or Combo-PON (GPON co-existing with XGS-PON) transceiver.
6	1-2 (QSFP28 Uplink)	Two QSFP28 slots, each supporting 1 x 100 GbE or 1 x 40 GbE. It also supports breakout with 1-4x 25GbE, 1-4x 10 GbE, and 1-4 1 GbE.
7	3-4 (SFP28 Uplink)	Two SFP28 slots, each supporting 1 x 25 GbE or 1 x 10 GbE. It also supports 1 x 1 GbE.
8	Swappable fan module	A swappable fan module to reduce the heat inside the Cambium Fiber OLT.
9	USB port 2.0	USB 2.0 media connection for file transfer.
10	GPS	Reserved for future Time-of-Day (ToD) and 1 Pulse-per-second (1 pps) timing use.
11	USB Console port	Use a terminal emulator such as Putty with the following settings 115200 baud rate, 8 data bits, no parity, 1 stop bit, and no flow control in conjunction with a USB Type A to Type A cable (included).

Cambium Fiber OLT (16 port and 8 port) provides the following interfaces:

- [PON ports](#)
- [OLT Uplink/NNI port](#)
- [Alarm interface](#)
- [GPS interface](#)
- [USB 2.0 interface](#)
- [Management interface](#)
- [Console port](#)
- [Light Emitting Diodes \(LEDs\)](#)



Note

1-16 AIO interface is applicable to 16-port OLT and 1-8 AIO interface is applicable to 8-port OLT.

PON ports

Fiber OLT is provided with 8 PON SFP+ (an SPF is only 1G) ports (1 through 8) and 16 PON SFP ports (1-8 and 9-16). These ports can be used with GPON, XGS-PON, and Combo PON (GPON co-existing with XGS-PON).

Characteristics of GPON

The following are the characteristics of GPON:

- Physical data rate of 1.244 Gbps in upstream
- Data rate of 2.48 Gbps in downstream
- Maximum split ratio of 1:128
- Downstream AES-128 bit encryption and natural upstream isolation due to the nature of splitters.
- Rogue ONT detection
- FEC downstream and upstream
- PON Protection Type B for high availability
- Supports up to 1024 GPON T-CONT/Alloc-ID per PON port
- Supports up to 4096 GPON GEM port-IDs per PON port.

Characteristics of XGS-PON

The following are the characteristics of XGS-PON:

- Physical data rate of 10 Gbps (9953 Mbps) upstream
- Data rate of 10 Gbps (9953 Mbps) downstream
- Maximum split ratio of 1:128 (can be firmware upgraded to 256)
- AES-128 bit Encryption downstream and upstream
- Rogue xONT detection
- FEC downstream and upstream
- PON Protection Type B for high availability
- Supports 2048 T-CONT/Alloc-ID per PON port
- Supports up to 8192XGEM port-IDs per PON port.

OLT Uplink/NNI port

Fiber OLT is equipped with two QSFP28 ports and another two SFP28 NNI (Upstream) ports. These ports are required for fiber connectivity and used with the SFP or QSFP modules (recommended by Cambium Networks).

NNI port characteristics

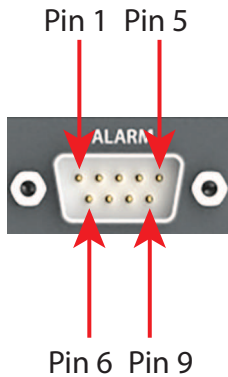
The following are the characteristics of NNI port:

- 2 x QSFP28 ports support:
 - 1 x 100 GbE
 - 1 x 40 GbE
 - 4 x 25 GbE (through breakout cable)
 - 4 x 10 GbE (through breakout cable)
 - 4 x 1 GbE (through breakout cable)
- 2 x SFP28 ports support:
 - 1 x 25 GbE
 - 1 x 10 GbE
 - 1 x 1 GbE
- Option to use some of the uplink interfaces for sub-tending to co-located OLT devices
- QSFP28 or SFP28 port supports Forward Error Correction (FEC) capabilities.

Alarm interface

Alarm interface is a nine pin D-type connector, which provides an external communication with the other devices to generate alarms. [Figure 5](#) shows the pin assignment of an alarm port. [Table 2](#) and [Table 3](#) describe the pin number and the corresponding descriptions.

[Figure 5](#): Pin assignment of the alarm port



[Table 2](#): Alarm input pin assignments

Alarm input	Pins	Description
1	3, 7	An open circuit for pins 3 and 7, indicates that there is no alarm on the connected device. Fiber OLT registers an alarm when the connected device closed the circuit.

Alarm input	Pins	Description
2	3, 8	An open circuit for pins 3 and 8, indicates that there is no alarm on the connected device. Fiber OLT registers an alarm when the connected device closed the circuit.
3	4, 9	An open circuit for pins 4 and 9, indicates that there is no alarm on the connected device. Fiber OLT registers an alarm when the connected device closed the circuit.
4	4, 5	An open circuit for pins 4 and 5, indicates that there is no alarm on the connected device. Fiber OLT registers an alarm when the connected device closed the circuit.

Table 3: Alarm output pin assignments

Alarm output	Pins	Description
Alarm out asserted	2, 6	Fiber OLT closes the circuit for pins 2 and 6, to indicate an alarm to a connected device or piece of equipment.
Alarm out deasserted	1, 6	Fiber OLT closes the circuit for pins 1 and 6, to indicate a no-alarm status to a connected device or piece of equipment.

GPS interface

GPS interface is reserved for future use. It enables Fiber OLT to connect to an external GPS device. It is also used to monitor the geographical location of Fiber OLT. [Table 4](#) describes the GPS port PIN numbers and corresponding descriptions. An RJ-45 (RS422) connector is used to connect to a GPS receiver to provide Time-of-Day (ToD) and 1 Pulse-per-Second (1 pps) timing information. [Figure 6](#) shows the GPS connector pin layout.

Figure 6: GPS interface

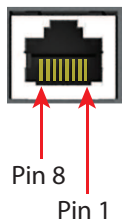


Table 4: GPS connector pin definitions

PIN number	Signal name	Description
1	Data out N	Reserved.
2	Data out P	Reserved.
3	Sync in N	Gets 1 PPS information through GPS antenna.
4	GND	Connects to chassis ground.
5	GND	Connects to ground.
6	Sync in P	Gets 1 PPS information through GPS antenna.
7	Data in N	Gets ToD information through GPS antenna.
8	Data in P	Gets ToD information through GPS antenna.

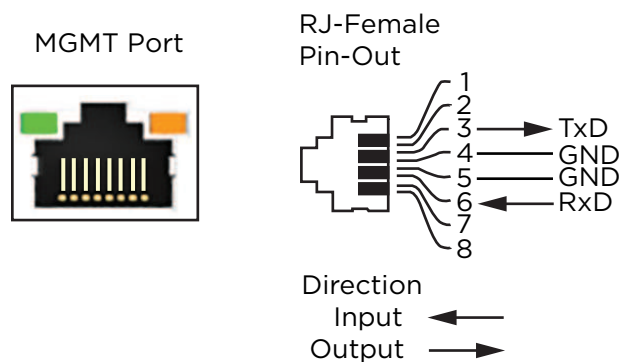
USB 2.0 interface

USB 2.0 interface is used for the x86 module. One USB slot is provided in the front panel of OLT for media connection used to transfer files.

Management interface

Management interface is an out-band management 100/1000-baseT Ethernet port (RJ45). It is used for local management. Connect the management interface directly by using an Ethernet cable. By default, the system is initially configured with DHCP lease for the IP address 192.168.0.1 with the renewal. If the DHCP renewal fails, the system continue to use 192.168.0.1. The interface is also configured with a recovery link local IP address of 169.254.1.1 with a subnet mask of 255.255.0.0. [Figure 7](#) shows the GbE management port.

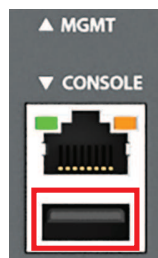
[Figure 7](#): Management interface



Console port

The USB console port provides a serial console access. Use a USB cable Type A male to A male cable, which is provided with the OLT package, to connect the console port to a USB port on the system. [Figure 8](#) shows the console port of Fiber OLT.

[Figure 8](#): Console port



For local management, use a system with terminal emulation software configured using the following parameters:

- VT100
- Terminal emulation
- 115200 bps
- No parity, 8 data bits, 1 stop bit

- No flow control
- UTF-8

Light Emitting Diodes (LEDs)

Three LED indicators are provided on the front panel of Fiber OLT to indicate the Power status (PWR), System Status (SYS), and an Alarm (ALM). [Figure 9](#) shows the LEDs in Fiber OLT. [Table 5](#) describes the system LED indications and their status.

Figure 9: LEDs in Fiber OLT



Table 5: Cambium Fiber OLT - LED indications

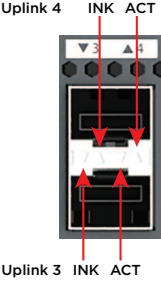
LED	Color	Status	Description
PWR	Green	ON	The power is ON.
		OFF	The power is OFF or there is a power failure.
SYS	Green	ON	Device is ON and it is functioning.
		Blinking	Device is booting.
		OFF	Device is not ready or failed.
ALM	Red	ON	Hardware failure is detected or an external alarm is received.
		OFF	Device is functioning normally.
Uplink 1 and 2	Green	ON	Uplink interfaces 1 and 2, each has four parallel data transmission lanes. Uplink interface 1 has lanes 0-3 when starting from 0 or 1-4 when starting from 1. Uplink interface 2 has lanes 4-7 when starting from 0 or 5-8 when starting from 1. Each lane has an LED that displays the uplink state. The lane is linked up, as shown in Figure 10 .
		OFF	The lane is not linked up.
Uplink 3 and 4 Link	Green	ON	Uplink interfaces 3 and 4, each has a link (LNK) LED and an activity (ACT) LED. A 25 GbE or 10 GbE link is up, as shown in Figure 11
		OFF	The Ethernet link is down.

LED	Color	Status	Description
Uplink 3 and 4 Activity	Green	Blinking	The interface is transmitting or receiving Ethernet traffic.
		OFF	The interface is not transmitting or receiving Ethernet traffic.
PON 1-16	Administrative status - Green (Left)	ON	Port is enabled.
		OFF	Port is administratively disabled or no link.
	Port status - Green (Right)	ON	Link is established.
		Blinking	Port is transmitting or receiving data.
		OFF	No link is established.
MGMT	Green (Left)	Blinking	The port is transmitting/to or receiving from an Ethernet device.
		ON	The port is connected at 1000 Mbps.
		OFF	The port is not connected at 1000 Mbps or to an Ethernet device.
	Amber (Right)	Blinking	The port is transmitting/to or receiving from an Ethernet device.
		ON	The port is connected at 100 Mbps.
		OFF	The port is not connected at 100 Mbps or to an Ethernet device.

Figure 10: Uplink 1 and 2 lane LEDs



Figure 11: Uplink 3 and 4 LNK and ACT LEDs



Cambium Fiber ONTs

Cambium Fiber ONTs terminate an Optical Access Network (OAN) providing a subscriber port intended for a single subscriber. This topic contains the following sections:

- [Indoor ONT](#)
- [Outdoor ONT](#)
- [Interfaces of indoor ONT](#)
- [Interfaces of outdoor ONT](#)
- [LEDs on ONT](#)

Indoor ONT

Figure 12 shows the front view of indoor ONT.

Figure 12: Front view of indoor ONT



Figure 13 shows the rear view of the indoor ONT.

Figure 13: Rear view of indoor ONT

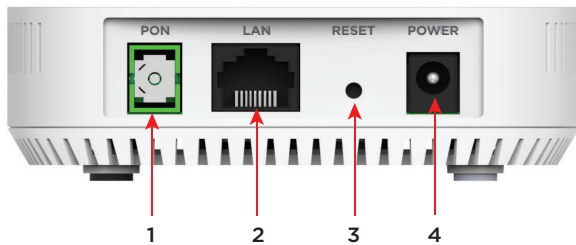


Table 6: Fiber indoor ONT components

Ports	Component	Description	
		GPON ONT (SGX Series)	XGS-PON ONT (SXX Series)
1	PON	GPON	XGS-PON
2	LAN	1 Gigabit Ethernet	2.5 Gigabit Ethernet

Ports	Component	Description	
		GPON ONT (SGX Series)	XGS-PON ONT (SXX Series)
3	RESET	Reset button	Reset button
4	POWER	Power button	Power button

Outdoor ONT

Figure 14 shows the front view of outdoor ONT.

Figure 14: Front view of outdoor ONT



Figure 15 shows the ports of outdoor ONT.

Figure 15: Outdoor ONT ports

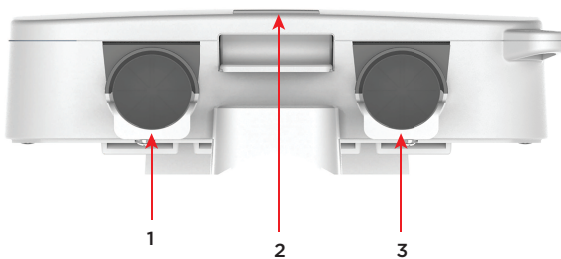


Table 7: Fiber outdoor ONT interfaces

Ports	Interfaces	Description	
		GPON ONT (SGT Series)	XGS-PON ONT (SXT Series)
1	PoE Ethernet Port	Power over Ethernet (PoE)	Power over Ethernet (PoE)
2	RESET	Reset button	Reset button
3	PON port	GPON	XGS-PON

Interfaces of indoor ONT

Table 8 describes the interfaces of indoor ONT.

Table 8: Indoor ONT interfaces

Interface	Description	
	GPON	XGS-PON
Speed	2.488 Gbps/1.244 Gbps	9.95328 Gbps
Downstream Wavelength	1480 - 1500	1575 ~ 1580
Upstream Wavelength	1290 - 1330	1260 - 1280
ONT TX power	0.5-5 dBm	4 dBm to 9 dBm
ONT ER min	> 10	6
ONT RX Sen	-28 dBm	-28 dBm
Receive Power Range	-28 dBm to -8 dBm	-28 dBm to -8 dBm
LAN	10/100/1000 Base-T Ethernet LAN	10/100/1000/2500 Base-T Ethernet LAN
Reset button	Short press to reboot (< 10 seconds) Long Press to reset to defaults (> 10 seconds)	Short press to reboot (< 10 seconds) Long Press to reset to defaults (> 10 seconds)
Power	12 VDC 1 Amp Power Jack 9.5 mm x 5.5 mm x 2.5 mm	DC power jack: 9.5 mm X 5.5 mm X 2.5 mm

Interfaces of outdoor ONT

Table 9 describes the interfaces of outdoor ONT.

Table 9: Outdoor ONT interfaces

Interface	Description	
	GPON	XGS-PON
PHY Rate	2.488 Gbps/1.244 Gbps	9.95328 Gbps/9.95328 Gbps
Downstream Wavelength	1490 nm	1577 nm
Upstream Wavelength	1310 nm	1270 nm
ONT TX power	0.5 dBm to 5 dBm	4 dBm to 9 dBm
ONT ER min	>10	6
ONT RX Sen	-28 dBm	-28 dBm
Receive Power Range	-28 dBm to -8 dBm	-28 dBm to -8 dBm
LAN	10/100/1000 Base-T Ethernet LAN	10/100/1000/2500 Base-T Ethernet LAN
Reset button	Short press to reboot (< 10 seconds) Long Press to reset to defaults (> 10 seconds)	Short press to reboot (< 10 seconds) Long Press to reset to defaults (> 10 seconds)
PoE Ethernet port	30V DC 0.5A Cambium PoE included reversible polarity supported	30V DC 0.5A Cambium PoE included reversible polarity supported

LEDs on ONT

Three LED indicators are provided on the front panel of ONTs to indicate the status of power, PON, and LAN. Table 10 describes the system LED indications and the status of GPON ONT.

Table 10: System LED indications for GPON ONT

LED	Color	Status	Description
POWER	Green	ON	The power is ON.
		OFF	The power is OFF or there is a power failure.
		Blinking	Booting.

LED	Color	Status	Description
PON	Blue/Red	Blue ON	PON link to O5 (Operational).
		Blue OFF	PON link down or no link is connected.
		Blue blinking	PON is attempting to link.
		Red ON	Optical transmitter of the device is powered off.
		Red blinking	Received optical power of the device is lower than the optical receiver sensitivity.
LAN	Green/Red	Green ON	1G link is up.
		Green OFF	Link is down.
		Green blinking	Indicates traffic.
		Red ON	10M/100M link is up.
		Red OFF	Link is down.
		Red blinking	Indicates traffic.

Table 11 describes the system LED indications and the status of XGS-PON ONT.

Table 11: System LED indications for XGS-PON ONT

LED	Color	Status	Description
POWER	Green	ON	The power is ON.
		OFF	The power is OFF or there is a power failure.
		Blinking	Booting.
PON	Blue/Red	Blue ON	PON link to O5 (Operational).
		Blue OFF	PON link down or no link is connected.
		Blue blinking	PON is attempting to link.
		Red ON	Optical transmitter of the device is powered off.
		Red blinking	Received optical power of the device is lower than the optical receiver sensitivity.

LED	Color	Status	Description
LAN	Green/Red	Green ON	1G/2.5G link is up.
		Green OFF	Link is down.
		Green blinking	Indicates traffic.
		Red ON	10M/100M link is up.
		Red OFF	Link is down.
		Red blinking	Indicates traffic.

Preparing for Configuration

This section provides basic information about the Fiber OLT and ONT products and the prerequisite tasks. This information helps you to set up the system before proceeding with the configuration of the Fiber OLT and ONT products.

This topic contains the following sections:

- [Safety precautions](#)
- [Regulatory compliance](#)
- [Configuring the management PC](#)
- [Accessing the Fiber OLT UI](#)

Safety precautions

Before installing Fiber OLT, ensure the following:

- Ensure that the rack is correctly and securely installed to prevent it from falling or becoming unstable.
- Dangerous voltage above 240V AC is always present while the Power Supply Module is plugged into an electrical outlet. Remove all rings, jewelry, and other potentially conductive material before working with this device.
- Never insert foreign objects into the chassis, power supply, or any other component, even when the power supply is turned OFF, unplugged, or removed.
- Ensure that the main power is fully disconnected from the device by unplugging all power cords from their outlets. For safety, verify that the power outlets and plugs are easily reachable by the operator.
- Do not handle electrical cables which are not insulated. This also includes network cables.
- Keep water and other fluids away from the equipment to minimize electrical hazards.
- Comply with electrical grounding standards during all phases of installation and operation of the product. Do not allow the equipment chassis, network ports, power supply, or mounting brackets to contact any device, cable, object, or person attached to a different electrical ground. Also, do not connect the device to external storm grounding sources.
- Perform installation or removal of the chassis or any module in a static-free environment. Proper use of anti-static body straps and mats are strongly recommended.
- Installation must be performed by a trained professional. Use only included / recommended cables, power cords, AC power supplies, and batteries. The power cord should not be used with other electric equipment than specified by Cambium Networks.
- Modules must be kept in anti-static packaging when it is not installed in the chassis.

- Do not ship or store this product near strong electromagnetic, electrostatic, magnetic, or radioactive fields.
- Do not disassemble the chassis.

Regulatory compliance

This topic describes the following:

- Compliance with safety standards lists the safety specifications against which the Fiber OLT and ONTs has been tested and certified. It also describes how to keep RF exposure within safe limits.
- Compliance with radio regulations describes how the Fiber OLT and ONTs complies with the radio regulations that are in force in various countries.



Caution

Intentional or unintentional changes or modifications to the equipment must not be made unless under the express consent of the party responsible for compliance. Any such modifications could void the user's authority to operate the equipment and will void the manufacturer's warranty.



Attention

Les changements ou modifications intentionnels ou non intentionnels à l'équipement ne doivent pas être effectués sauf avec le consentement exprès de la partie responsable de la conformité. De telles modifications pourraient annuler l'autorisation de l'utilisateur à faire fonctionner l'équipement et annulera la garantie du fabricant.

Compliance with safety standards

This section lists the safety specifications against which the Fiber OLT and ONTs are tested and certified. It also describes how to keep RF exposure within safe limits.

Electrical safety compliance

The following are the safety warnings:

- Class 1 LASER product and IEC 60825-1:2014
- Class 1 Consumer LASER Product and EN 50689:2021
- Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- The PoE (Power over Ethernet) devices that supply or receive power and their connected Ethernet cables must be all completely indoors.



Caution

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Hazardous Moving Parts. Keep body parts away from fan blades.
- The RJ-45 jacks are not used for telephone line connection.

- Use a UL listed or CSA Certified DC power source to connect to DC PSU.

Table 12: Safety compliance specifications

Region	Specification
USA	UL 62368-1
Canada	CSA C22.2 No.62368-1
Europe	EN 62368-1
International	CB certified IEC 62368-1 Edition 3

Calculation of power density

The following calculation is based on the ANSI IEEE C95.1-1991 method, as that provides a worst-case analysis.

Peak power density in the far field of a radio frequency point source is calculated as follows:

$$S = \frac{P \cdot G}{4\pi d^2}$$

Where:

S: power density in W/m²

p: maximum average transmit power capability of the radio, in W

G: total Tx gain as a factor, converted from dB

d: distance from point source, in m

Rearranging terms to solve for distance yields:

$$d = \sqrt{\frac{P \cdot G}{4\pi S}}$$

Calculated distances and power compliance margins

The following table displays recommended calculated separation distances, for the Fiber OLT and ONTs for Europe the USA and Canada. These are conservative distances that include compliance margins.



Note

Les tableaux suivants indiquent les distances de séparation recommandées calculées pour le Fiber OLT et ONTs pour l'Europe, les États-Unis et le Canada. Ce sont des distances prudentes qui incluent des marges de conformité.

At these and greater separation distances, the power density from the RF field is below generally accepted limits for the general population.



Note

À ces distances de séparation et à des distances supérieures, la densité de puissance du champ RF est inférieure aux limites généralement acceptées pour la population générale.

Fiber OLT and ONTs adheres to all applicable EIRP limits for transmit power when operating in MIMO mode. Separation distances and compliance margins include compensation for the antenna configuration of each product.



Note

L'ODU de la famille de plates-formes Fiber OLT et ONTs respecte toutes les limites EIRP applicables pour la puissance de transmission lors d'un fonctionnement en mode MIMO. Les distances de séparation et les marges de conformité incluent la compensation de la configuration d'antenne de chaque produit.



Note

The regulations require that the power used for the calculations is the maximum power in the transmit burst subject to allowance for source-based time-averaging.

The calculations above are based upon platform maximum EIRP and worst case 100% duty cycle.



Remarque

Les réglementations exigent que la puissance utilisée pour les calculs soit la puissance maximale de la rafale d'émission sous réserve de la moyenne temporelle basée sur la source.

Les calculs ci-dessus sont basés sur la PIRE maximale de la plate-forme et le pire des cas, un cycle de service de 100%.

Compliance with radio regulations

This section describes how the Fiber OLT and ONTs complies with the radio regulations that are in force in various countries.



Caution

Where necessary, the end user is responsible for obtaining any national licenses required to operate this product and these must be obtained before using the product in any particular country. Contact the appropriate national administrations for details of the conditions of use for the bands in question and any exceptions that might apply.



Attention

Le cas échéant, l'utilisateur final est responsable de l'obtention des licences nationales nécessaires pour faire fonctionner ce produit. Celles-ci doivent être obtenus avant d'utiliser le produit dans un pays particulier. Contactez les administrations nationales concernées pour les détails des conditions d'utilisation des bandes en question, et toutes les exceptions qui pourraient s'appliquer.



Caution

Changes or modifications not expressly approved by Cambium Networks could void the user's authority to operate the system.



Attention

Les changements ou modifications non expressément approuvés par les réseaux de Cambium pourraient annuler l'autorité de l'utilisateur à faire fonctionner le système.

Federal Communications Commission (FCC) EMC Statement

- This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference.
 - (2) This device must accept any interference received, including interference that may cause undesired operations.
- Changes or modifications not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.
- This equipment has been tested and found to comply with the limits for a Class B digital device,, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Innovation, Science and Economic Development Canada ICES Statement

CAN ICES-003(B) / NMB-003(B)

CE EMC Statement



Warning

This equipment is compliant with Class B of EN55032. In a residential environment this equipment may cause radio interference.

Fiber OLT and ONT - Sample product labels

Figure 16: Fiber 8 port OLT label

Cambium Networks™
Ashburton, TQ13 7UP, UK

TCX08
OLT, Combo PON, 8 Port

AC: Power Rating: 100 — 240V~, 50/60Hz, 3.5A max.
Power Consumption: 211 Watt max.
DC: Power Rating: -38.4V — -72V=, 7.56A max.
Power Consumption: 211 Watt max.

FCC This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

"Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"
"Apparaten skall anslutas till jordat uttag"
CAN ICES-003(A) / NMB-003(A)

Part No.: TCX08-0A00
Model No.: TCX08

MSN: F6KY006B8F0D
ESN: FC1165200000

Management MAC:
FC1165200370

MADE IN TAIWAN

Figure 17: Fiber 16 port OLT label

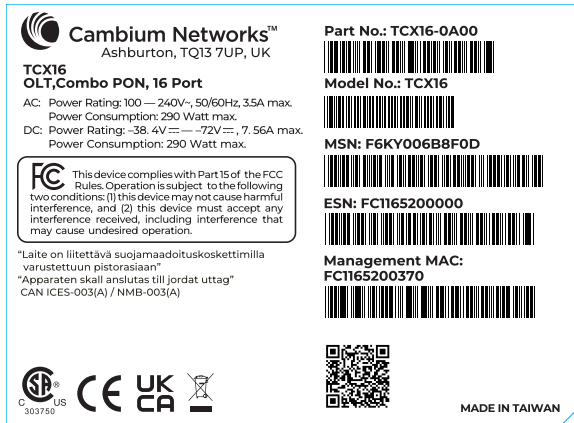


Figure 18: Fiber indoor GPON ONT back label

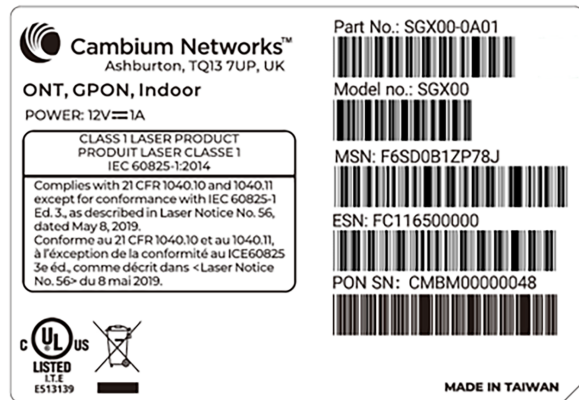


Figure 19: Fiber indoor XGS-PON ONT back label

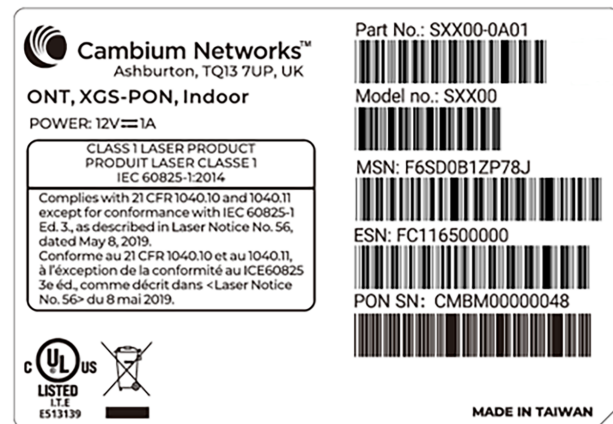


Figure 20: Fiber outdoor GPON ONT back label

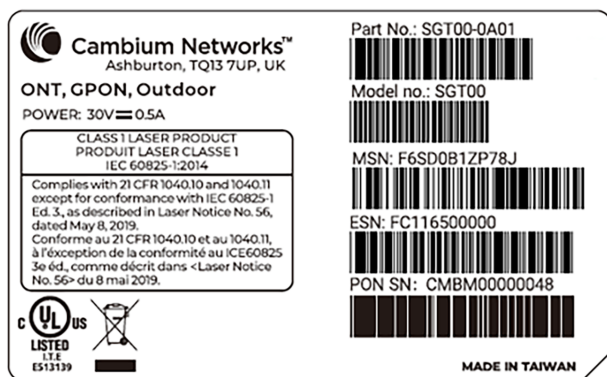
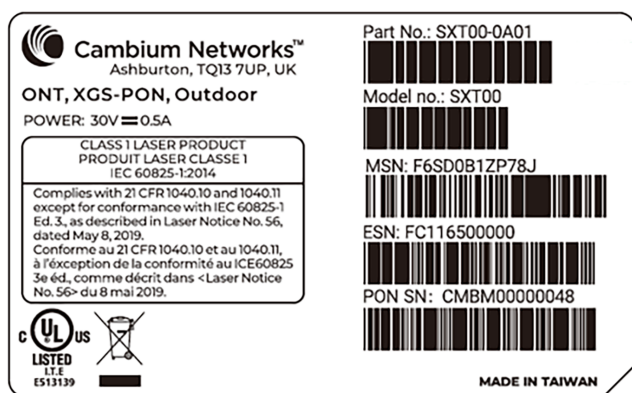


Figure 21: Fiber outdoor GPON ONT back label



X

Configuring the management PC

You must configure the PC (for example, using Windows PC) or laptop to set up the IP address (169.254.1.100) with a subnet mask of 255.255.0.0 to access the Cambium Fiber OLT on the link local address of 169.254.1.1. This configuration enables the PC to communicate with the OLT and ONTs.

To configure the management PC, perform the following steps:

1. On Windows PC, click **Start** > **Settings** > **Network & Internet**.

The **Network Status** page appears with multiple options on the left navigation column.

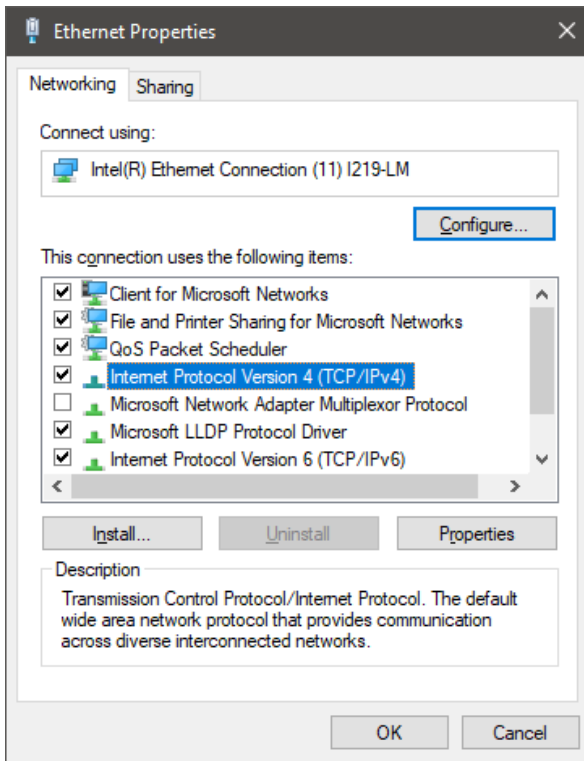
2. Select **Ethernet** > **Change adapter settings**.

The **Network Connections** page appears.

3. Select **Ethernet** and right-click to select **Properties**.

The **Ethernet Properties** dialog box appears with the **Networking** and **Sharing** tabs, as shown in Figure 22.

Figure 22: The Ethernet Properties dialog box



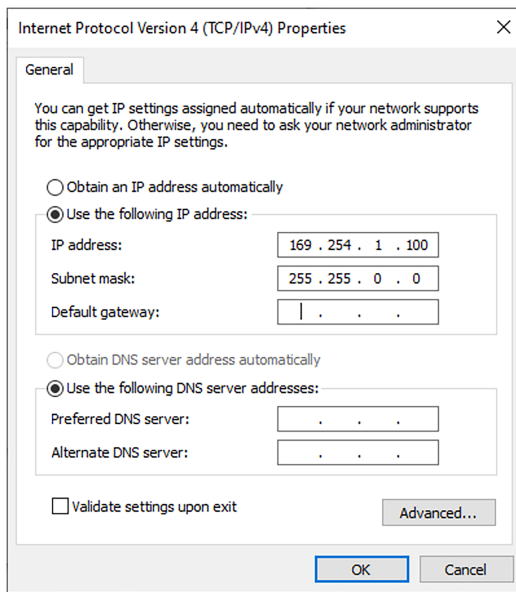
By default, the **Networking** tab is selected.

4. Select **Internet Protocol Version 4 (TCP/IPv4)** from the available list of connections (as shown in [Figure 22](#)).
5. Click **Properties**.

The **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box appears, as shown in [Figure 23](#).

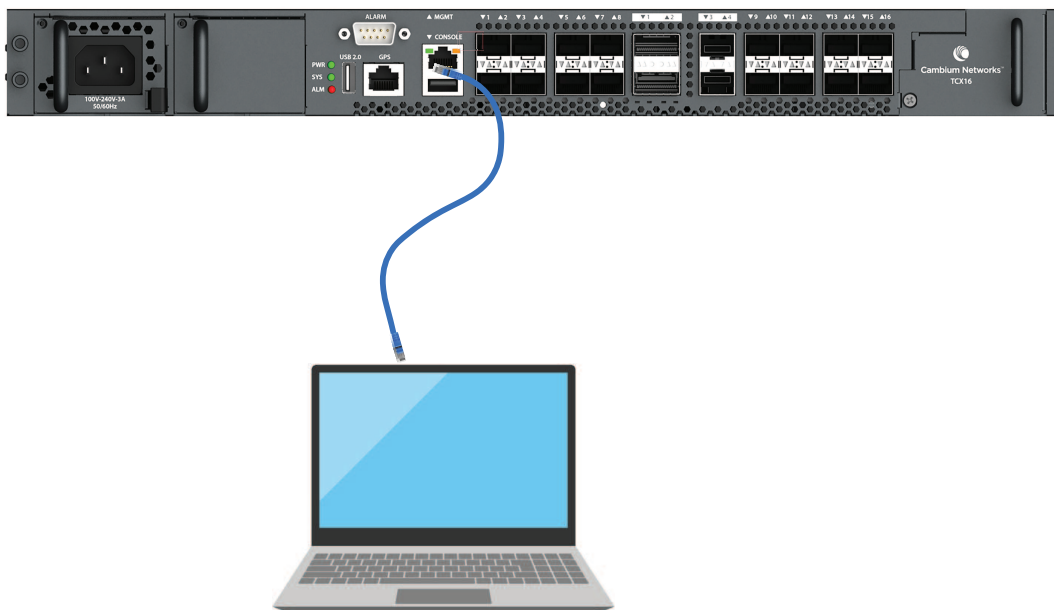
6. In the **Use the following IP address** section, type an appropriate IP address in the IP address text box as 169.254.1.X and a subnet mask as 255.255.0.0, avoiding 169.254.1.1. Example: 169.254.1.100.

Figure 23: The Internet Protocol Version 4 Properties dialog box



7. Leave the **Default gateway** text box blank and click **OK**.
8. Connect the PC to Fiber OLT management interface with an Ethernet cable, as shown in Figure 24.

Figure 24: PC connection with Fiber OLT



9. Ping *169.254.1.1* to confirm connectivity or open a browser and navigate to *169.254.1.1*, and verify the Fiber OLT IP is connected.

Accessing the Fiber OLT UI

To access the Fiber OLT UI, perform the following steps:

1. Open the browser, and paste <http://169.254.1.1/>.
The certificate warning dialog appears on the first connection.
2. Accept the self-signed certificate to proceed as the OLT .
The login page appears, as shown in [Figure 25](#).

Figure 25: The login page

3. Type an appropriate username and password:
Default username: **admin**
Default password: **admin**
4. Click **Login**.
5. After logging into the UI, the Status page appears, as shown in [Figure 26](#)

Figure 26: The Status page

System Info	
Date and Time:	14 February 2024 10:48:46
System Uptime:	1 day, 12 hours, 43 minutes, 6 seconds
CPU Usage:	0.1%
Memory Usage:	23.3%
SW Version:	1.0.0-RC6
Device Name:	TCX08-20-09-94
Electronic Serial Number:	FC11483204894
Serial Number:	942990021444
IP Address:	16.150.217.7
Device Agent Status:	CONNECTED







Thermal Status	
Name	Temperature
CPU Core	42.0 °C
BCM88470	62.7 °C
ASPEN#1	37.0 °C
ASPEN#0	36.0 °C

Fans Status	
Name	RPM
Chassis Fan 1	10325
Chassis Fan 2	10325
Chassis Fan 3	10404
Chassis Fan 4	10404
Chassis Fan 5	10384

UI controls

It is recommended to familiarize yourself with the UI controls (as described in [Table 13](#)). These UI controls are required for viewing, and managing Fiber OLT and ONT configurations.

Table 13: List of UI controls

UI Control	UI Control name	Description
	Change UI Theme	Toggle light and dark mode.
	Notifications	Displays the notifications.
	Undo Configuration	Reverts changes to the last saved state.
	Apply Configuration	To apply the configuration changes.
	Reboot Device	To restart or reboot the system from the UI.
	User Info	To log in and log out from the UI.

Viewing the Status page

After logging into the GUI, the Status page appears, as shown in [Figure 27](#). It describes the status information of Fiber OLT.

Figure 27: The Status page

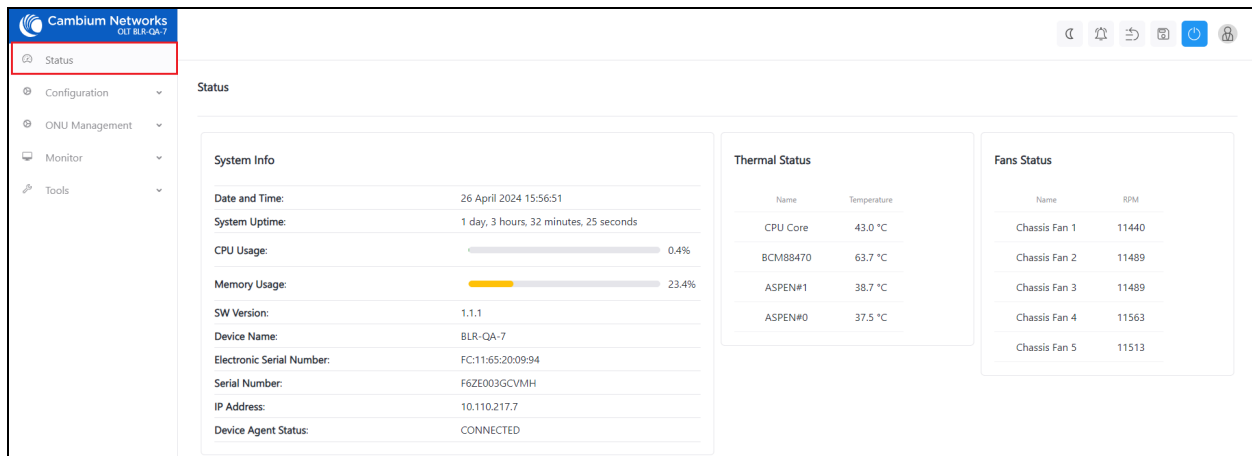


Table 14 lists and describes the components in the dashboard page.

Table 14: The dashboard page components

Elements	Descriptions
System Info	
Date and Time	Current system date and time.
System Uptime	Uptime of the system.
CPU Usage	CPU utilization percentage.
Memory Usage	Memory utilization percentage.
SW Version	Current software version.
Device Name	OLT device name.
Electronic Serial Number	OLT MAC address.
Serial Number	OLT serial number.
IP Address	OLT IP address.
Device Agent Status	cnMaestro connection status.
Thermal Status	
Name	Thermal measurement location.
Temperature	Measurement point temperature.
Fans Status	
Name	Fan location 1 to 5.
RPM	Fan speed in rotations per minute.



Note

For information on how to access the Cambium Fiber ONT GUI, refer to [The Cambium Fiber ONT UI](#) section.

Configuring the Fiber OLT UI

Using the Cambium Fiber OLT GUI, you can configure, view, and manage the OLT configurations. This section covers the following topic:

- [Configuration](#)

Configuration

The configuration page is used to configure the network, system, and onboard settings for Fiber OLT. This section covers the following topics:

- [Configuring network settings](#)
- [Configuring system settings](#)
- [Configuring onboard settings](#)

Configuring network settings

The Network page is used to configure the network of the OLT device. To access and configure the network settings, perform the following steps:

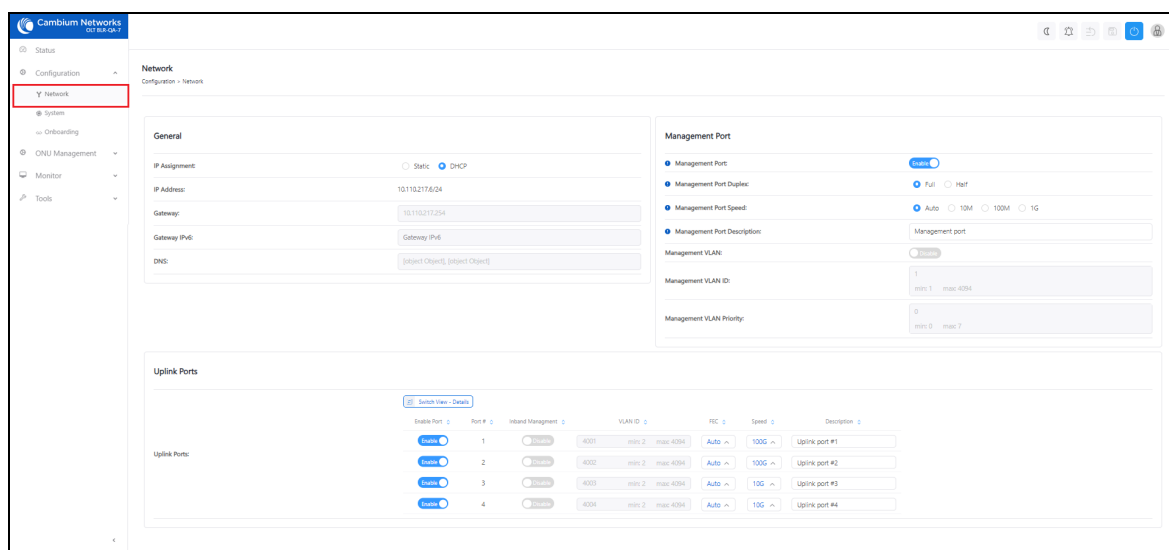
1. Log on to the Fiber OLT (as described in the [Accessing the Fiber OLT UI](#) section).

The Fiber OLT Status page appears as shown in [Figure 27](#).

2. From the Fiber OLT Status page, navigate to **Configuration > Network**.

The Network page appears, as shown in [Figure 28](#).

Figure 28: *The Network page*



3. Set the values for each parameter, as described in [Table 15](#).

Table 15: The network page elements

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: <ul style="list-style-type: none"> • Static - Allows the user to configure a static MAC address and assign it to a specific VLAN ID and a specific port. The MAC addresses configured in this manner are immune to automatic MAC address aging and migration. • DHCP - IP provided by the DHCP server from the DHCP pool.
IP Address	IP address of the OLT device.
Gateway	IP defined by the ISP for routing.
Gateway IPv6	Gateway IPv6 address.
DNS	DNS server IP address for URL resolution.
Management Port	
Management Port	To enable/disable the management port
Management Port Duplex	The following are the management port duplex options: <ul style="list-style-type: none"> • Full - Allows both ends of a connection to transmit and receive data simultaneously. • Half - Allows the connection to either transmit or receive data.
Management Port Speed	Speed of the management port. The following are the speed options: <ul style="list-style-type: none"> • Auto • 10M • 100M • 1G
Management Port Description	Management port description.
Management VLAN	Toggle the management port between the default untagged (disabled) or VLAN tagged (enabled).
Management VLAN ID	Assign the management ports VLAN ID when management VLAN is enabled.
Management VLAN Priority	Configure the 802.1Q VLAN priority for tagged management traffic from 0 (best effort) to 7 (network control).
Uplink Ports	

Elements	Description
Enable Port	Enable or disable management capability on uplink port.
Port #	Uplink port number.
Inband Management	Inband management VLAN toggle for the management bridge.
MGMT VLAN ID	Displays the inband management VLAN ID if inband management is enabled.
FEC	The following are the FEC options: <ul style="list-style-type: none"> • Auto • FC-FEC • RS-FEC • OFF
Speed	Select the speed of Fiber OLT device. The following are the speed options: <ul style="list-style-type: none"> • 1G (Breakout mode) • 10G (Breakout mode) • 25G (Breakout mode) • 40G • 100G
Description	Type the description for the uplink port. Name and description are distinct attributes of the interface.

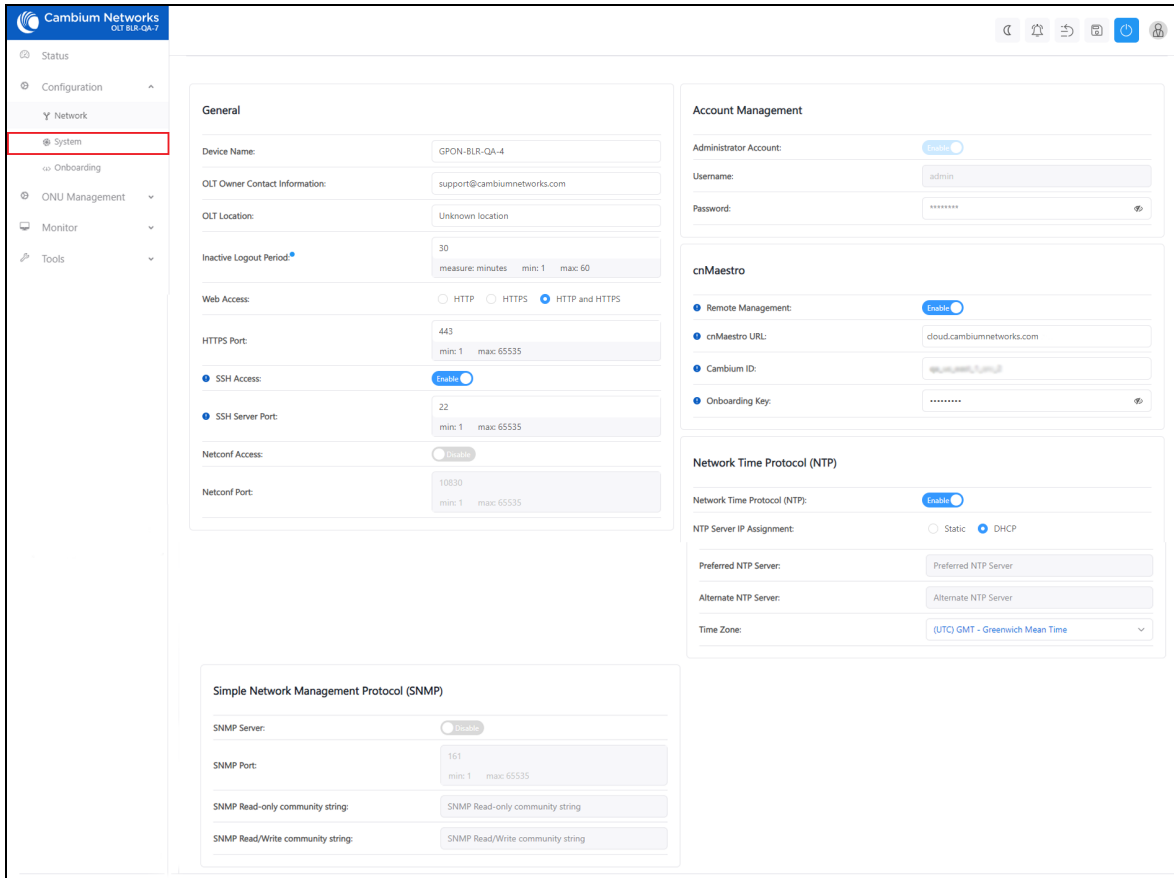
Configuring system settings

The System page is used to configure the OLT general device settings. To access and configure the system settings, perform the following steps:

1. From the Fiber OLT Status page, navigate to **Configuration > System**.

The System page appears, as shown in [Figure 29](#).

Figure 29: The System page



2. Set the values for each parameter, as described in Table 16.

Table 16: The system page elements

Elements	Description
General	
Device Name	OLT device name.
OLT Owner Contact Information	Administrators email address.
OLT Location	Location where the OLT is installed.
Inactive Logout Period	Duration of idle time before the login session is expired and the user is logged out. By default, it is 30 minutes.
Web Access	Select the protocols from the following options: <ul style="list-style-type: none"> • HTTP • HTTPS

Elements	Description
	<ul style="list-style-type: none"> HTTP and HTTPS (HTTP is redirected to HTTPS if both are enabled)
HTTPS port	An extension of HTTP for secure communication over an encrypted SSL/TLS connection. HTTPS port range is from 1 to 65535.
SSH Access	Secure Shell (SSH) is a protocol for secure remote console access. By default, it is enabled.
SSH Server Port	Define SSH Server port number from 1 to 65535.
Netconf Access	Enable Netconf Access to push the changes from the Netconf page.
Netconf Port	Configurable Netconf port from 1 to 65535 when Netconf Access is enabled.
Simple Network Management Protocol (SNMP)	
SNMP Server	Toggle SNMP server, disabled by default.
SNMP Port	Configurable SNMP port from 1 to 65535 when SNMP is enabled.
SNMP Read-only community string	SNMP Read-only community strings, trap receiver address data and SNMPv3 user and related security parameters.
SNMP Read/Write community string	SNMP Read/Write community strings, trap receiver address data and SNMPv3 user and related security parameters.
Account Management	
Administrator Account	Toggle the default administrator account (reserved for future use).
Username	Administrator's username (reserved for future use).
Password	Administrator's password.
cnMaestro	
Remote Management	Toggle the cnMaestro device agent to connect or disconnect from the configured cnMaestro service.
cnMaestro URL	Alternative cnMaestro fully qualified DNS name or IP address. For example: cloud.cambiumnetworks.com is the default when it is blank.
Cambium ID	Type the Cambium ID of the cnMaestro server. It is Cambium ID from the cnMaestro service. For more information, see cnMaestro > Onboard > Settings .
Onboarding Key	Type the key to onboard OLT. It is cnMaestro service's Onboarding Key. For more information, see cnMaestro > Onboard > Settings .
Network Time Protocol (NTP)	
Network Time Protocol (NTP)	Toggle Network Time Protocol (NTP). By default, it is enabled.
NTP Server IP Assignment	NTP Server configuration mode Static or DHCP assigned. Select the NTP Server IP Assignment from the following options:

Elements	Description
	<ul style="list-style-type: none"> • Static - Manually configure the Preferred or Preferred and Alternative NTP server by IP or DNS name such as <i>0.us.pool.ntp.org</i> and <i>1.us.pool.ntp.org</i>. • DHCP - Configure the NTP server from the DHCP response.
Preferred NTP Server	Configure the Preferred NTP server by IP or domain name such as <i>0.us.pool.ntp.org</i> .
Alternate NTP Server	Configure the Alternate NTP server by IP or domain name such as <i>1.us.pool.ntp.org</i> .
Time Zone	Select the OLT's timezone from the drop-down or search to filter options.

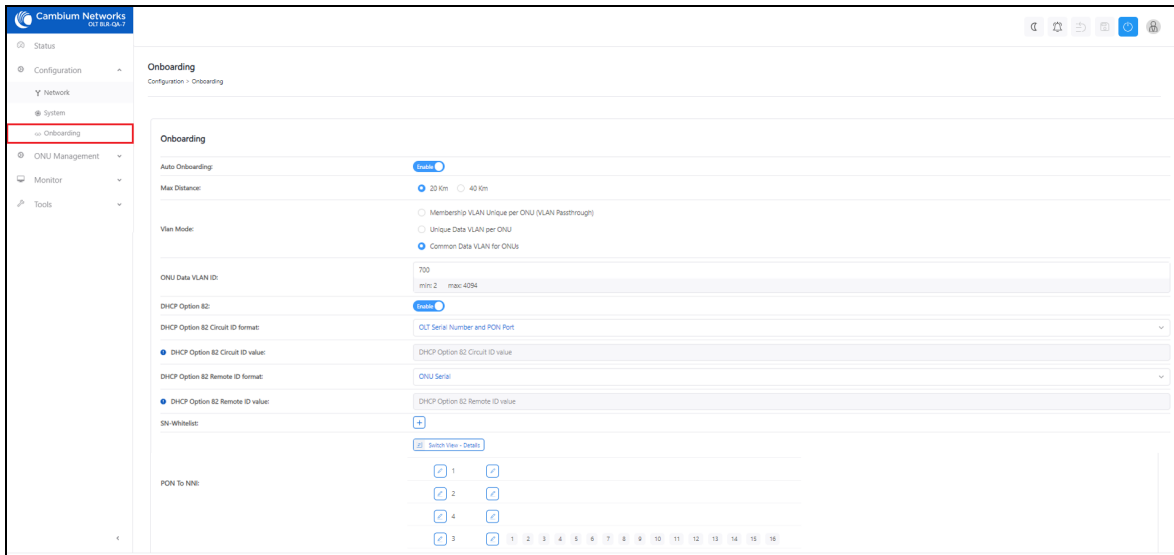
Configuring onboard settings

The Onboarding page allows customization for the ONT devices onboarding process. To access and configure the onboard settings, perform the following steps:

1. From the Fiber OLT Status page, navigate to **Configuration > Onboarding**.

The Onboarding page appears, as shown in [Figure 30](#).

Figure 30: *The Onboarding page*



2. Set the values for each parameter, as described in [Table 17](#).

Table 17: *The Onboarding page elements*

Elements	Description
Auto Onboarding	Toggle auto onboarding between zero-touch onboarding and requiring a manual acceptance of ONT.

Elements	Description
Max Distance	Select the maximum distance of the OLT from ONT. The options are: <ul style="list-style-type: none"> • 20 Km - Shorter uplink interval for better throughput. • 40 Km - Longer uplink interval for longer distance.
Vlan Mode	Select the Vlan mode from the following options: <ul style="list-style-type: none"> • Membership VLAN Unique per ONU (VLAN Passthrough) - Enables you to configure the unique data VLAN at OLT uplink direction for each ONT. ONT passes through this VLAN to the terminating device. • Unique Data VLAN per ONU - Enables you to configure unique data VLAN at OLT uplink direction for each ONU. • Common Data VLAN for ONUs - Enables you to type the ID for the Data VLAN ID.
ONU Data VLAN ID	VLAN tag customization for the ONT subscriber data connections. It ranges from 2 to 4094 and the default value is VLAN 100.
DHCP Option 82	Network segmentation DHCP option 82 allows you to identify the physical location or subnet where a DHCP request is raised. Toggle DHCP Options 82 to append DHCP requests from the end user gateways with information related to the location of the request, such as OLT PON port and ONT serial number. It is enabled by default.
DHCP Option 82 Circuit ID format	Set the circuit_id attribute appended to DHCP request as the the OLT Serial Number and PON Port (default) or Custom which supports the multiple variables. To customize DHCP Option 82, select Custom from drop-down.
DHCP Option 82 Circuit ID value	DHCP Option 82 Circuit ID value. By default, It is applicable when DHCP Option 82 Circuit ID format is selected as Custom .
DHCP Option 82 Remote ID format	Set the remote_id attribute appended to DHCP request as the the ONT Serial Number (default) or Custom which supports multiple variables. To change it, select Custom from the drop-down.
DHCP Option 82 Remote ID value	DHCP Option 82 Remote ID value. By default, It is applicable when DHCP Option 82 Circuit ID format is selected as Custom .
SN-Whitelist	If the whitelist is empty, all ONTs are allowed. If it is populated, only listed ONTs are permitted.
PON To NNI	A static map of PON port to uplink or NNI port.

Managing the ONT devices

The ONT Management page is used to manage the Fiber OLT. This section covers the following topic:

- [Configuration](#)

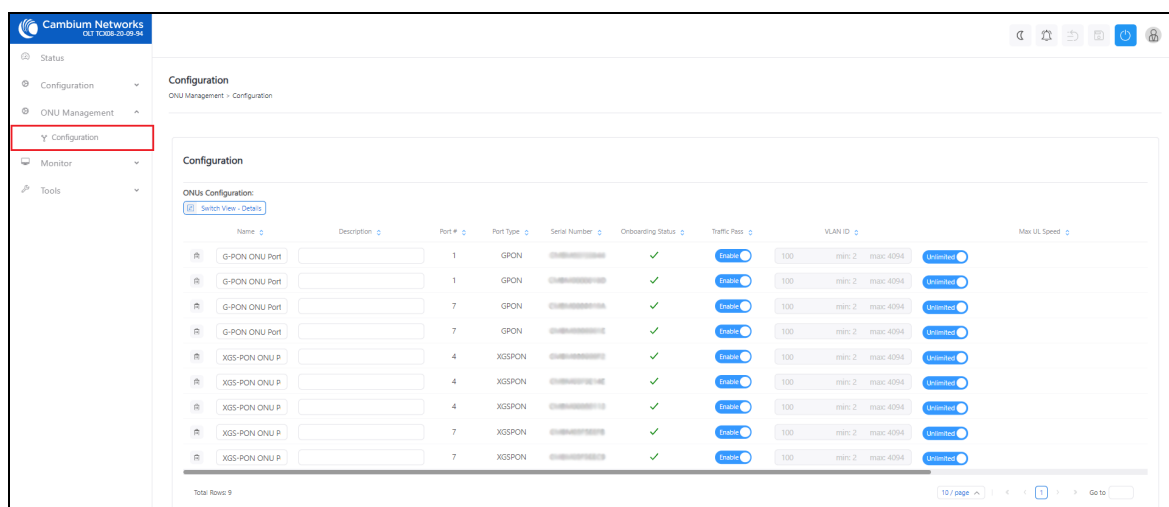
Configuration

The configuration page displays the configuration ONTs in the Fiber OLT. To access and configure the ONTs, perform the following steps:

1. From the Fiber OLT Status page, navigate to **ONT Management > Configuration**.

The Configuration page, as shown in [Figure 31](#).

Figure 31: The Configuration page



2. Set the values for each parameter, as described in [Table 18](#)

Table 18: The configuration page elements

Elements	Description
Name	Type the name for ONT.
Description	Type the description for ONT.
Port #	Displays the PON port number of the Fiber OLT where the ONT is connected.
Port Type	Displays the type of the ONT device. The following are the ONT device types: <ul style="list-style-type: none"> • GPON • XGS-PON
Serial Number	Displays the serial number of the ONT device.

Elements	Description
Onboarding Status	Displays the onboarding status of the ONT device.
Traffic Pass	You can enable/disable the traffic pass option. By default, it is enabled.
Data VLAN ID	You can configure the VLAN ID.
Max UL Speed	You can configure the maximum uplink speed of the ONT by disabling the Unlimited option. By default, it is unlimited. For the limited speed, the minimum speed must be 6 Mbps for uplink.
Max DL Speed	You can configure the maximum downlink speed of the ONT by disabling the Unlimited option. By default, it is unlimited. For the limited speed, the minimum speed must be 6 Mbps for downlink.

Monitoring

The Monitor page is used to monitor the performance of the Fiber OLT. It has the following pages:

- [Performance](#)
- [ONT](#)
- [Event Log](#)

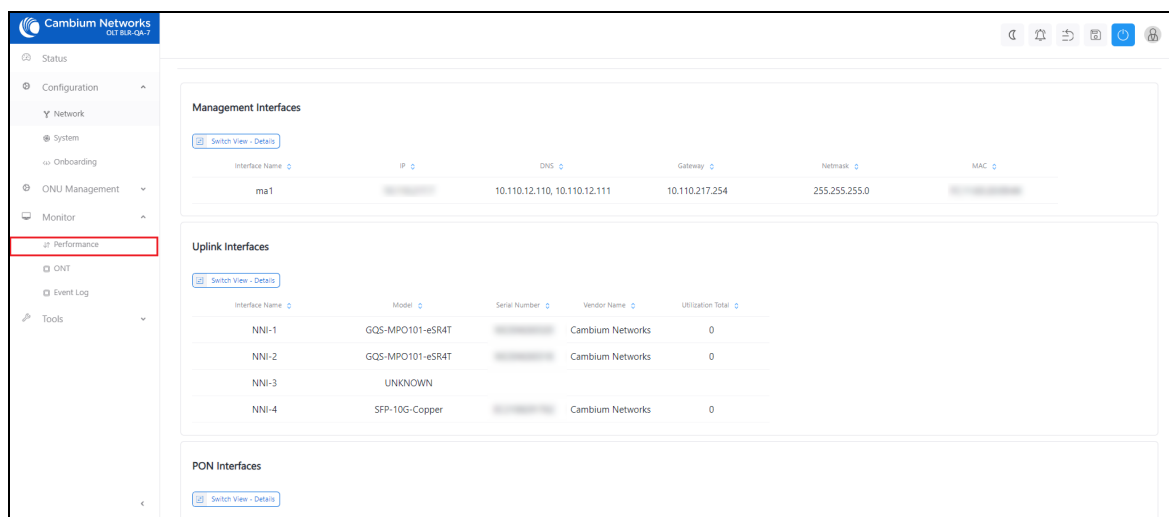
Performance

The performance page displays the performances of the NNI ports and PON ports. To access and monitor the performance of the OLT, perform the following steps:

1. From the Fiber OLT Status page, navigate to **Monitor > Performance**.

The Performance page appears, as shown in [Figure 32](#).

Figure 32: The performance page



The performance page has the following attributes:

- [Management Interfaces](#)
- [Uplink Interfaces](#)
- [PON Interfaces](#)
- [Tools](#)

Management Interfaces

Management interfaces displays the configuration information of the OLT. [Figure 33](#) shows the normal view of the management interface and [Figure 34](#) shows the detailed view of the management interfaces. Click **Switch View** to change the views.

Figure 33: Management Interfaces - Normal view

Interface Name	IP	DNS	Gateway	Netmask	MAC
ma1	10.110.217.4	10.110.12.110, 10.110.12.111	10.110.217.254	255.255.255.0	4C:C5:3E:AD:A6:90

Figure 34: Management Interfaces - Detailed view

Details	
Interface Name	ma1
IP	10.110.217.4
DNS	10.110.12.110, 10.110.12.111
Gateway	10.110.217.254
Netmask	255.255.255.0
MAC	4C:C5:3E:AD:A6:90
Speed	1000 Mb/s
Duplex	full
Auto-negotiation	enable
RX Broadcast Packets	24539
RX Bytes	18858105
RX Drops Packets	0
RX Errors Packets	0
RX Multicast Packets	44201
RX Packets	144106
TX Broadcast Packets	1
TX Bytes	249795727
TX Drops Packets	0
TX Errors Packets	0
TX Multicast Packets	27
TX Packets	184571

Table 19 describes the elements in the management interfaces.

Table 19: Elements in the management interfaces

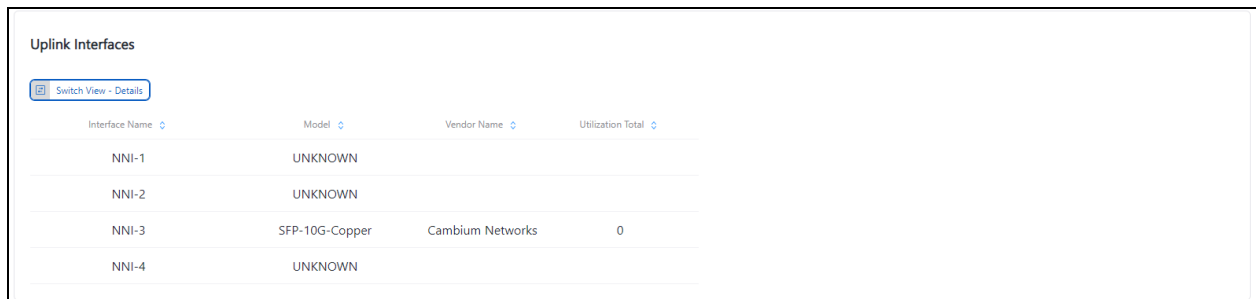
Element	Description
Interface Name	Interface Name
IP	IP address of the interface.
DNS	Domain name of the interface.

Element	Description
Gateway	Gateway IP address of the interface.
Netmask	IP address of the Netmask.
MAC	MAC address of the interface.
Speed	Management interfaces link speed.
Duplex	Management ports duplex mode.
Auto-negotiation	Toggle link auto-negotiation.
RX Broadcast Packets	Total broadcast packets received since last reboot or counter reset.
RX Bytes	Number of bytes received.
RX Drops Packets	Number of drop packets received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.

Uplink Interfaces

Uplink Interfaces displays the information of the NNI ports. [Figure 35](#) shows the normal view and [Figure 36](#) shows the detailed view of the uplink interfaces. Click **Switch View** to change the views.

[Figure 35: Uplink Interfaces - Normal view](#)



Interface Name	Model	Vendor Name	Utilization Total
NNI-1	UNKNOWN		
NNI-2	UNKNOWN		
NNI-3	SFP-10G-Copper	Cambium Networks	0
NNI-4	UNKNOWN		

Figure 36: Uplink Interfaces - Detailed view

Details	
Interface Name	NNI-1
Model	UNKNOWN
Vendor Name	
MAC	
DL Stream BW Kbits	
UL Stream BW Kbits	
Utilization Total	
Utilization Broadcast	
Utilization Multicast	
Utilization Unicast	
Encoding Codes	
Ethernet Type	
RX Broadcast Packets	
RX Bytes	
RX Errors Packets	
RX Multicast Packets	
RX Packets	
RX Unicast Packets	
Status	0
TX Broadcast Packets	
TX Bytes	
TX Drops Packets	
TX Errors Packets	
TX Multicast Packets	
TX Packets	
TX Unicast Packets	

Table 20 describes the elements in the uplink interfaces.

Table 20: Elements in the PON interface

Element	Description
Interface Name	Interface name.
Model	SFP model name.
Vendor Name	Manufacturer name of the SFP.
Utilization Total	Total utilization.
MAC	MAC address of the NNI port.
DL Stream BW Kbits	Downlink stream bandwidth of the NNI port.
UL Stream BW Kbits	Uplink stream bandwidth of the NNI port.
Utilization Broadcast	Broadcast utilization of the NNI port.
Utilization Multicast	Multicast utilization of the NNI port.

Element	Description
Utilization Unicast	Unicast utilization of the NNI port.
Encoding Codes	Encoding codes.
Ethernet Type	Type of the Ethernet.
RX Broadcast Packets	Number of broadcast packets received.
RX Bytes	Number of bytes received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.
RX Unicast Packets	Number of unicast packets received.
Status	Status of the NNI port.
TX Broadcast Packets	Number of broadcast packets transmitted.
TX Bytes	Number of bytes transmitted.
TX Drops Packets	Number of drops packets transmitted.
TX Errors Packets	Number of error packets transmitted.
TX Multicast Packets	Number of multicast packets transmitted.
TX Packets	Number of packets transmitted.
TX Unicast Packets	Number of unicast packets transmitted.

PON Interfaces

PON interfaces displays the information about the ONTs connected to the OLT. [Figure 37](#) shows the normal view of the PON interfaces and [Figure 38](#) shows the detailed view of the PON interfaces. Click **Switch View** to change the views.

[Figure 37: PON Interfaces - Normal view](#)

Interface Name	Model	Vendor Name	Onu Count	Utilization Total	HW Type
PON-1-1	POMC15FP-H1	Zyxel	1		XGSPON
PON-1-2	POMC15FP-H1	Zyxel	0		GPON
PON-16-1	SFP-CMB-CP-0A	Cambium Networks	0		XGSPON
PON-16-2	SFP-CMB-CP-0A	Cambium Networks	2		GPON

Figure 38: PON Interfaces - Detailed view

Details	
Interface Name	PON-1-1
Phy Id	1
Model	POMC1SFP-H1
Vendor Name	Zyxel
DL Stream BW Kbits	0
DL Stream Type	0
UL Stream BW Kbits	0
UL Stream Type	0
Onu Count	1
Utilization Total	
Utilization Broadcast	0
Utilization Multicast	0
Utilization Unicast	0
Ber	19
HW Type	XGSPON
Laser Bias Current	391
MAC	
RX Broadcast Packets	0
RX Bytes	2926052644622
RX Drops Packets	4
RX Errors Packets	22
RX Multicast Packets	0
RX Packets	0
Status	1
Temperature	432
TX Broadcast Packets	0
TX Bytes	1772119457892
TX Drops	0
TX Errors Packets	0
TX Multicast Packets	0
TX Packets	0
TX Power Percentage	31
RX Power Percentage	0
RX Unicast Packets	2037405418
TX Unicast Packets	1437886988
TX Drops Packets	0

Table 21 describes the elements in the PON interfaces.

Table 21: Elements in the uplink interface

Element	Description
Interface Name	Name of the PON interface.
Model	Model name of the SFP.
Vendor Name	Manufacturer name of the SFP.
ONT Count	Number of ONTs connected to the PON port.

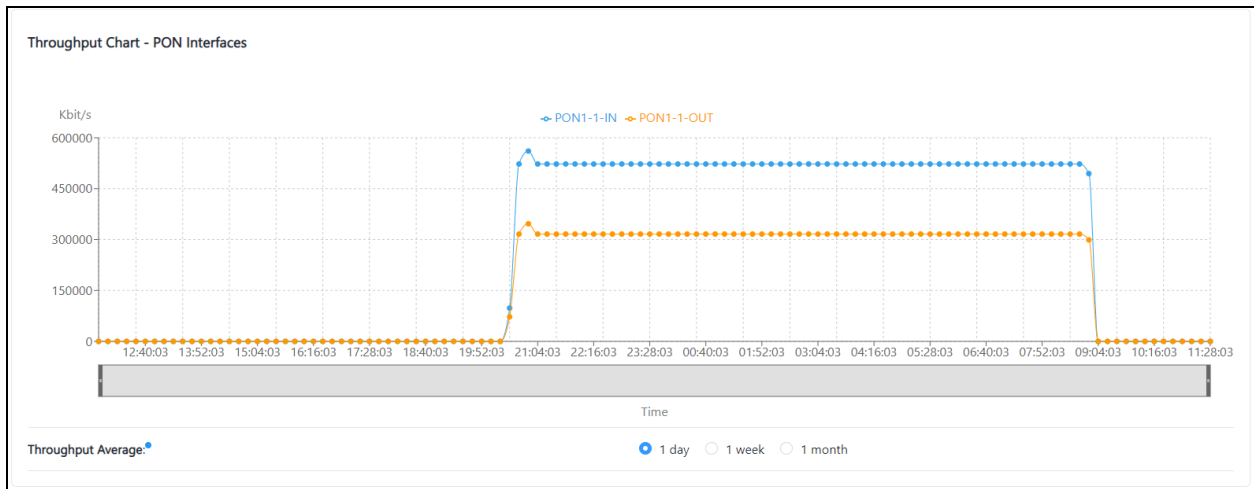
Element	Description
Utilization Total	Total utilization.
HW Type	Type of the hardware connected to the OLT. The following are the hardware types: <ul style="list-style-type: none"> • GPON • XGSPON
DL Stream BW Kbits	Downlink stream bandwidth of the NNI port.
DL Stream Type	Downlink stream type.
UL Stream BW Kbits	Uplink stream bandwidth of the NNI port.
UL Stream Type	Uplink stream type.
ONT Count	Number of ONTs connected to the OLT.
Utilization Total	Utilization Total.
Utilization Broadcast	Utilization of the broadcast.
Utilization Multicast	Utilization of the multicast.
Utilization Unicast	Utilization of the unicast.
Ber	Ber
HW Type	Type of the hardware.
Laser Bias Current	Current for thr Laser Bias.
MAC	MAC address of the port.
RX Broadcast Packets	Number of broadcast packets received.
RX Bytes	Number of bytes received.
RX Drops Packets	Number of drop packets received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.
Status	Status of the PON port.
Temperature	Temperature of the PON port.
TX Broadcast Packets	Number of broadcast packets transmitted.
TX Bytes	Number of bytes transmitted.
TX Drops	Number of drops transmitted.
TX Errors Packets	Number of error packets transmitted.

Element	Description
TX Multicast Packets	Number of multicast packets transmitted.
TX Packets	Number of packets transmitted.
TX Power Percentage	Transmission power percentage.
RX Power Percentage	Receiving power percentage.
RX Unicast Packets	Number of unicast packets received.
TX Unicast Packets	Number of unicast packets transmitted.
TX Drops Packets	Number of drop packets transmitted.

Throughput Chart - PON Interfaces

Throughput chart displays the throughput information of the PON interfaces. To view the throughput chart, click on the corresponding PON interface in the PON interface table. [Figure 39](#) shows the throughput chart for PON Interfaces. You can view the throughput information for 1 day, 1 week, and 1 month by selecting the appropriate option.

[Figure 39: Throughput chart for PON Interfaces](#)



Tools

Reset Stats is used to reset the statistics of the OLT. To reset the statistics, click **Reset Stats**. [Figure 40](#) shows the tools information.

[Figure 40: Tools](#)

Tools

Reset Stats: Reset Stats

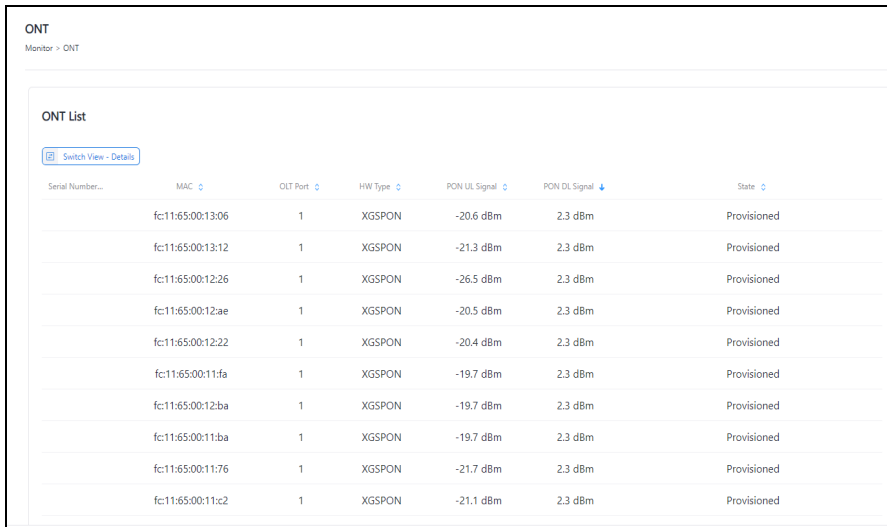
ONT

The ONT page displays the list of ONTs connected to the OLT and their information. To access and monitor the ONT list, perform the following steps:

1. From the Fiber OLT Status page, navigate to **Monitor > ONT**.

The ONT List page appears, as shown in .

Figure 41: ONT List - Normal view



Serial Number...	MAC	OLT Port	HW Type	PON UL Signal	PON DL Signal	State
	fc11:65:00:13:06	1	XGSPON	-20.6 dBm	2.3 dBm	Provisioned
	fc11:65:00:13:12	1	XGSPON	-21.3 dBm	2.3 dBm	Provisioned
	fc11:65:00:12:26	1	XGSPON	-26.5 dBm	2.3 dBm	Provisioned
	fc11:65:00:12:ae	1	XGSPON	-20.5 dBm	2.3 dBm	Provisioned
	fc11:65:00:12:22	1	XGSPON	-20.4 dBm	2.3 dBm	Provisioned
	fc11:65:00:11:fa	1	XGSPON	-19.7 dBm	2.3 dBm	Provisioned
	fc11:65:00:12:ba	1	XGSPON	-19.7 dBm	2.3 dBm	Provisioned
	fc11:65:00:11:ba	1	XGSPON	-19.7 dBm	2.3 dBm	Provisioned
	fc11:65:00:11:76	1	XGSPON	-21.7 dBm	2.3 dBm	Provisioned
	fc11:65:00:11:c2	1	XGSPON	-21.1 dBm	2.3 dBm	Provisioned

2. Click on the corresponding ONT or toggle views with the **Switch View** to toggle between the list and detail view.

The Details page appears, as shown in Figure 42.

Figure 42: ONT List - Detailed view

Details	
Serial Number	CMBM00000194
Name	
MAC	fc:11:65:00:02:fa
OLT Port	16
Connection Time	60871
Uptime	0
Onu ID	3
Distance	3
Sys Temperature	0
DL Broadcast Bytes	0
DL Dropped Packets	0
DL Total Bytes	1179631744071
DL Multicast Bytes	0
DL Packet Count	1333644019
DL Stream BW	
DL Stream Type	0
Ethernet Mode	0
Ethernet Status	0
HW Type	GPON
IP	
IPv6	
LAN RX Broadcast Packets	0
LAN RX Bytes	0
LAN RX Drops Packets	0
LAN RX Errors Packets	0
LAN RX Multicast Packets	0
LAN RX Packets	0
LAN TX Broadcast Packets	0
LAN TX Bytes	0
LAN TX Drops Packets	0
LAN TX Errors Packets	0
LAN TX Multicast Packets	0
LAN TX Packets	0
PON Ber	0
PON Delay	0
PON Laser Bias Current	0
PON RX Broadcast Packets	0
PON RX Bytes	0
PON RX Drops Packets	0
PON RX Errors Packets	0
PON RX Multicast Packets	0
PON RX Packets	0
PON RX Power	0
PON UL Signal	0.0 dBm
PON DL Signal	0.0 dBm
PON Temperature	0
PON TX Broadcast Packets	0
PON TX Bytes	0
PON TX Drops	0
PON TX Errors Packets	0
PON TX Multicast Packets	0
PON TX Packets	0
PON TX Power	0
SW Version	
UL Broadcast Bytes	0
UL Dropped Packets	0
UL Total Bytes	2286006438917
UL Multicast Bytes	0
UL Packet Count	1606803245
UL Stream BW	
UL Stream Type	0
State	Provisioned

Table 22 lists and describes the elements in the ONT List page.

Table 22: Elements in the ONT list

Element	Description
Serial Number	Serial number of the ONT.
Name	Name of the ONT.

Element	Description
MAC	MAC address of the ONT.
OLT Port	Port number of the OLT.
HW Type	Displays the type of hardware. The following are the hardware types: <ul style="list-style-type: none"> • GPON • XGS-PON
PON UL Signal	The optical power level received by the OLT from the ONT.
PON DL Signal	The optical power level transmitted from the OLT towards the ONT.
State	State of the PON port. The following are the states: <ul style="list-style-type: none"> • Initial State (O1): The ONT is powered on but has not yet started communication with the OLT. • Standby State (O2): The ONT has started to communicate with the OLT but is not yet synchronized. • Serial Number State (O3): The ONT is sending its serial number to the OLT to initiate registration. • Ranging State (O4): The ONT is undergoing range finding processes to determine the distance from the OLT for timing synchronization. • Provisioned/Operation State (O5): The ONT is fully operational and synchronized with the OLT, ready to carry service traffic.
Connection Time	Uptime of the current connection.
Uptime	Time when the OLT is ON.
ONT ID	ID number of the ONT.
Distance	Distance between the OLT and ONT in meters.
Sys Temperature	System temperature.
DL Broadcast Bytes	Downlink broadcast bytes.
DL Dropped Packets	Downlink dropped packets.
DL Total Bytes	Downlink total bytes.
DL Multicast Bytes	Downlink multicast bytes.
DL Packet Count	Downlink packet count.

Element	Description
DL Stream BW	Downlink stream bandwidth.
DL Stream Type	Downlink stream type.
Ethernet Mode	Mode of the Ethernet.
Ethernet Status	Status of the Ethernet.
IP	IP address of the ONT.
IPv6	IPv6 address of the ONT.
LAN RX Broadcast Packets	Number of LAN broadcast packets received.
LAN RX Bytes	Number of LAN bytes received.
LAN RX Drops Packets	Number of LAN drop packets received.
LAN RX Errors Packets	Number of LAN broadcast packets received.
LAN RX Multicast Packets	Number of LAN multicast packets received.
LAN RX Packets	Number of LAN packets received.
LAN TX Broadcast Packets	Number of LAN broadcast packets transmitted.
LAN TX Bytes	Number of LAN bytes transmitted.
LAN TX Drops Packets	Number of LAN drop packets transmitted.
LAN TX Errors Packets	Number of LAN error packets transmitted.
LAN TX Multicast Packets	Number of LAN multicast packets transmitted.
LAN TX Packets	Number of LAN packets transmitted.
PON Ber	PON Ber.
PON Delay	PON delay.
PON Laser Bias	PON Laser Bias Current.

Element	Description
Current	
PON RX Broadcast Packets	Number of PON broadcast packets received.
PON RX Bytes	Number of PON bytes received.
PON RX Drops Packets	Number of PON drop packets received.
PON RX Errors Packets	Number of PON error packets received.
PON RX Multicast Packets	Number of PON multicast packets received.
PON RX Packets	Number of PON packets received.
PON RX Power	PON receiving power.
PON UL Signal	Uplink signal of the PON port.
PON DL Signal	Downlink signal of the PON port.
PON Temperature	Temperature of the PON port.
PON TX Broadcast Packets	Number of PON broadcast packets transmitted.
PON TX Bytes	Number of PON bytes transmitted.
PON TX Drops	Number of PON drops transmitted.
PON TX Errors Packets	Number of PON error packets transmitted.
PON TX Multicast Packets	Number of PON multicast packets transmitted.
PON TX Packets	Number of PON packets transmitted.
PON TX Power	PON transmitting power.
SW Version	Software version installed in ONT.
UL Broadcast Bytes	Number of uplink broadcast bytes.
UL Dropped Packets	Number of uplink dropped packets bytes.

Element	Description
UL Total Bytes	Total uplink bytes.
UL Multicast Bytes	Number of uplink multicast bytes.
UL Packet Count	Number of uplink packet count.
UL Stream BW	Uplink stream bandwidth.
UL Stream Type	Uplink stream type.
State	Displays the state of PON ports. The following are the states: <ul style="list-style-type: none"> • Discovering • Activation • Provisioning • Deactivation

Event Log

The Event Log page displays the operations performed in the OLT. To access and monitor the event logs, perform the following steps:

1. From the Fiber OLT Status page, navigate to **Monitor > Event Log**.

The Event Log page appears, as shown in [Figure 43](#).

Figure 43: *The Event Log page*

Date/Time	Topic	Information	Details
26 April 2024 10:41:18	NETCONF/config-changed	Config: System	
25 April 2024 22:18:25	ONU/indication	Onuld: 2, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEFB, MAC: Fc11:65:00:3b:4c, HwType: XGS, BALState: Active, State: Unknown, Indication: Rssi_measurement_completed, HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/unicast_flow_added	Onuld: 2, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEFB, MAC: Fc11:65:00:3b:4c, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/unicast_flow_added	Onuld: 1, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEC9, MAC: Fc11:65:00:3a:84, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/broadcast_flow_added	Onuld: 2, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEFB, MAC: Fc11:65:00:3b:4c, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/state_change	Onuld: 2, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEFB, MAC: Fc11:65:00:3b:4c, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/broadcast_flow_added	Onuld: 1, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEC9, MAC: Fc11:65:00:3a:84, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:25	ONU/state_change	Onuld: 1, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEC9, MAC: Fc11:65:00:3a:84, HwType: XGS, BALState: Active, State: Provisioned, Indication: , HwVersion: 1001, Status: 1	
25 April 2024 22:18:24	ONU/state_change	Onuld: 2, OLTPort: 12, OLTPhyPort: 7, SN: CMBM05F5EEFB, MAC: Fc11:65:00:3b:4c, HwType: XGS, BALState: Active, State: Activated, Indication: , HwVersion: 1001, Status: 1	

2. To clear the event log list, click **Clear**.
3. To download the event log, click **Download**.

Table 23 describes the events and their descriptions.

Table 23: ONT events and description

Events	Category	Descriptions
State_Change	ONT	Indicates a change in the state of an ONT. The following are the ONT states: <ul style="list-style-type: none"> • Discovering • Activation • Provisioning • Deactivation
Indication	ONT	Indicates an indication event for an ONT. The following are the ONT indications: <ul style="list-style-type: none"> • LOS (Loss of Signal) • DGI (Dying Gasp)
Unicast_flow_added	ONT	Indicates the addition of a unicast flow for communication between the OLT and an ONT.
Unicast_flow_delete	ONT	Indicates the removal of a previously established unicast flow between the OLT and an ONT.
Broadcast_flow_added	ONT	Indicates the addition of a broadcast flow, enabling broadcast communication between the OLT and an ONT.
Broadcast_flow_delete	ONT	Indicates the removal of a broadcast flow, terminating broadcast communication between the OLT and an ONT.
Multicast_flow_added	ONT	Indicates the establishment of a multicast flow for multicast communication between the OLT and an ONT.
Multicast_flow_delete	ONT	Indicates the removal of a previously configured multicast flow, ceasing multicast communication between the OLT and an ONT.
State_Change	PON	Indicates a change in the state of a PON port. The following are the PON port states: <ul style="list-style-type: none"> • Active • Inactive
Loss-of-Signal	PON	Indicates a loss of signal on a PON port. It typically reflects the LOS condition on the PON port.
State_Change	NNI	Indicates a change in the state of an NNI port. The following are the NNI states: <ul style="list-style-type: none"> • Up • Down

Events	Category	Descriptions
Config-Changed	NETCONF	Indicates a modifications made to the NETCONF configuration.

Configuring Tools

The Tools page is used to upgrade, backup and restore the Fiber OLT. It has the following pages:

- [Software Upgrade](#)
- [Backup / Restore](#)
- [Netconf](#)
- [Ping](#)
- [Traceroute](#)

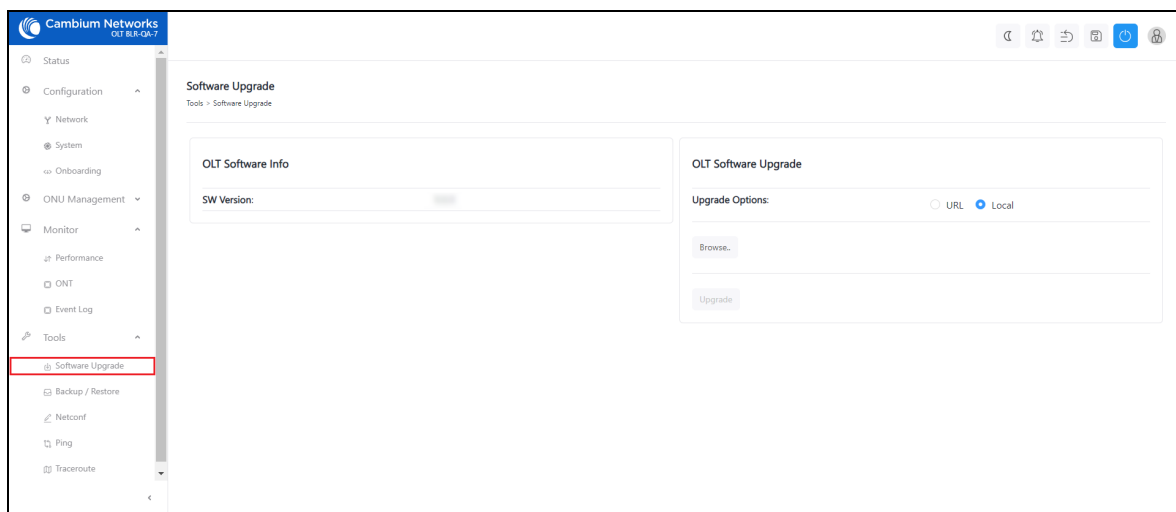
Software upgrade

The Software Upgrade page is used to upgrade the OLT firmware. To upgrade the Fiber OLT software, perform the following steps:

1. From the dashboard page, navigate to **Tools > Software Upgrade**.

The **Software Upgrade** page appears, as shown in [Figure 44](#).

Figure 44: *The Software Upgrade page*



2. If you are upgrading the software using the URL, then select the **URL** option as the value of the **Update Options** parameter in the OLT Software Upgrade section. Then, type the URL of the location where you want to download the software.
3. If you are upgrading the software using the downloaded software image file, then select the **Local** option. Browse the folder and select the upgrade software image file.
4. Click **Upgrade** to start the upgrade process.
5. After upgrading the OLT software, reboot Fiber OLT.

Backup and restore

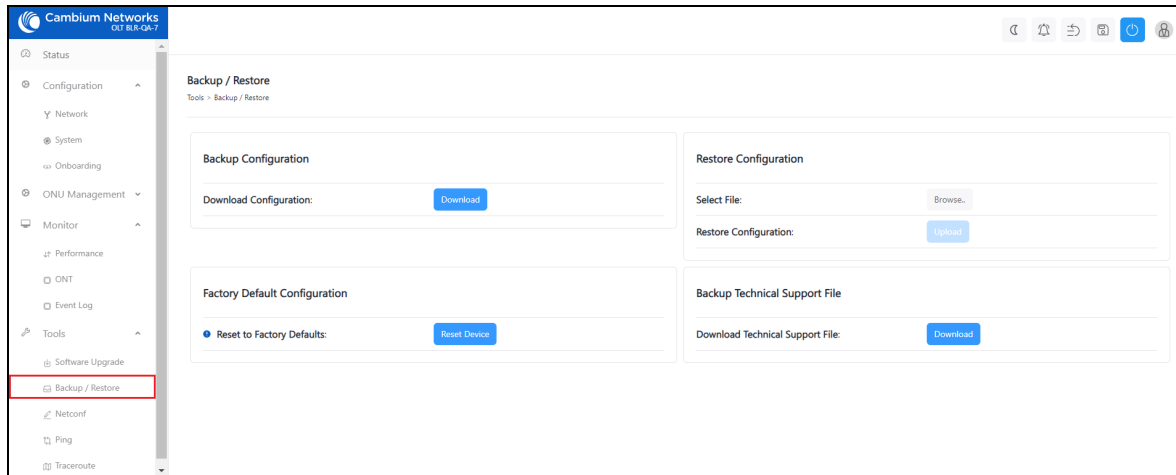
The Backup/Restore page is used to take the backup of the configuration file and restore it to the Fiber OLT.

To download and restore the configuration file, perform the following steps:

1. From the Status page, navigate to **Tools > Backup / Restore**.

The Backup/Restore page appears as shown in [Figure 45](#).

Figure 45: The Backup / Restore page



2. Click **Download** under **Backup Configuration**.
3. Click **Reset Device** to reset the device to the factory default configuration.
4. To restore the configuration, click **Browse** under **Restore Configuration**.
5. Browse and select the configuration file and then click **Upload**.
6. Under **Backup Technical Support File**, click **Download Technical Support File** to download the support file.

This support file is used to diagnose the errors in the configuration file.

Netconf

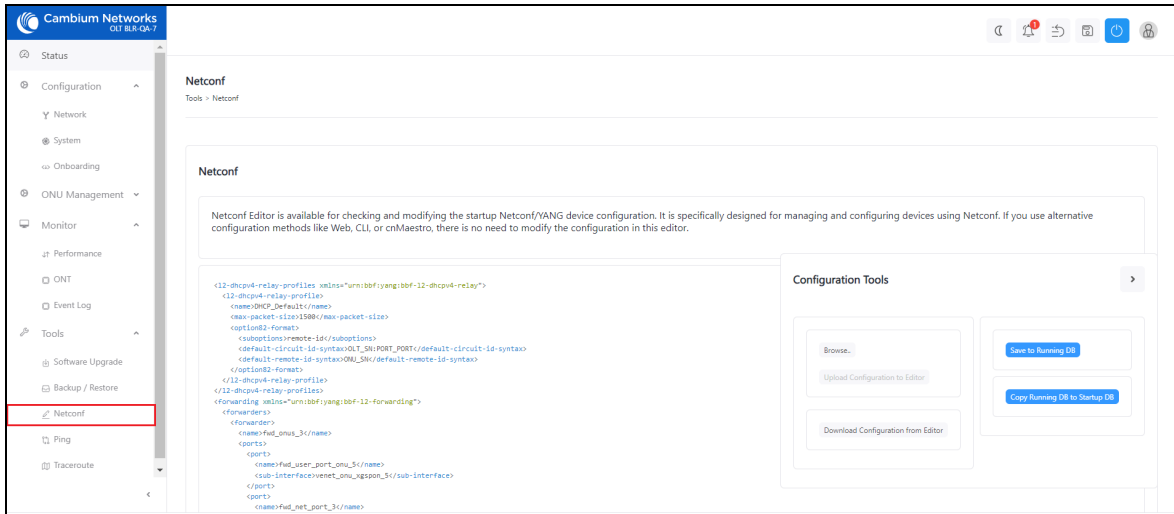
The Netconf page is used to check and modify the startup Netconf/YANG device configuration. It is specifically designed to manage and configure the devices using Netconf. If alternative configuration methods like Web, CLI, or cnMaestro is used, then modifying the configuration in this editor is not required.

To push the configuration from Netconf page, perform the following steps:

1. From the Status page, navigate to **Tools > Netconf**.

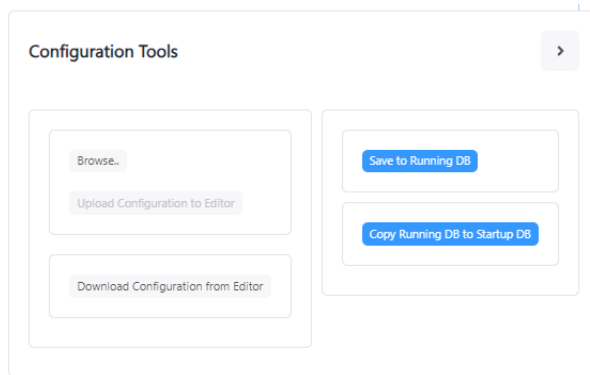
The Netconf page appears, as shown in [Figure 46](#).

Figure 46: The Netconf page



2. To upload or download the configuration file, click **Configuration Tools**. Figure 47 shows the **Configuration Tools**.

Figure 47: Configuration Tools



3. After updating the configuration, save the changes to the running DB or copy the running database to the new database.

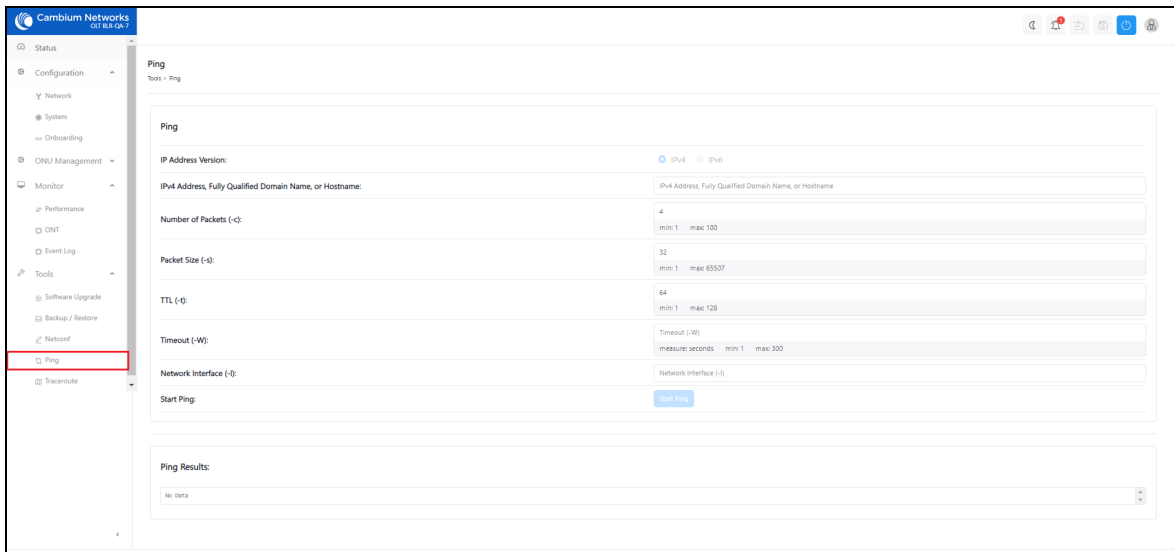
Ping

The Ping page is used to ping ONTs and receive the information from Fiber ONTs. To ping ONT, perform the following steps:

1. From the Status page, navigate to **Tools > Ping**.

The Ping page appears, as shown in Figure 48.

Figure 48: The Ping page



2. Select the IP address type from the below options:
 - IPv4
 - IPv6
3. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
4. Select **Number of Packets**. It ranges from 1 to 100.
5. Select **Packet Size**. It ranges from 1 to 65507.
6. Select **TTL**. It ranges from 1 to 128.
7. Select **Timeout**. It ranges from 1 sec to 300 sec.
8. Type the **Network Interface** name.
9. Click **Start Ping**.
10. The ping results are displayed under **Ping Results** section.

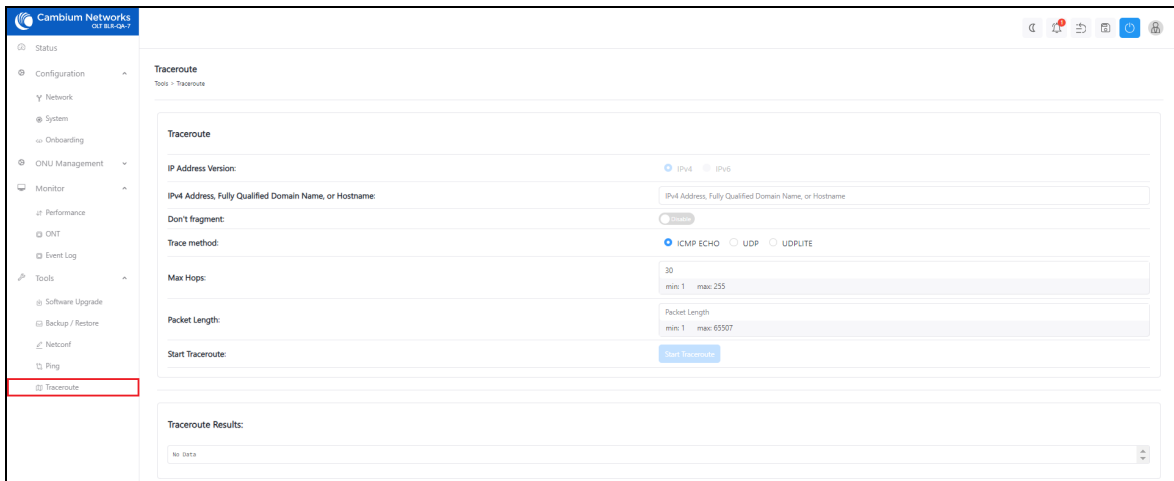
Traceroute

The Traceroute page is used to trace the data packets of Fiber OLT. To traceroute the ONT, perform the following steps:

1. From the Status page, navigate to **Tools > Traceroute**.

The Traceroute page appears, as shown in [Figure 49](#).

Figure 49: The Traceroute page



2. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
3. Enable/disable **Don't fragment** option. By default it is disabled.
4. Select the **Trace method** from the following options:
 - **ICMP ECHO** - Internet Control Message Protocol (ICMP) ECHO. Checks if a host is reachable and measures response time.
 - **UDP** - User Datagram Protocol. Sends data without establishing a connection, good for fast but less reliable communication.
 - **UDPLITE** - User Datagram Protocol Lite. Detects errors in data transmission, useful for real-time multimedia over unstable networks.
5. Select **Max Hops**. It ranges from 1 to 255.
6. Select **Packet Length**. It ranges from 1 to 65507.
7. Click **Start Traceroute**.
8. The traceroute results are displayed under **Traceroute Results** section.

The Cambium Fiber ONT UI

Using the Fiber ONT UI, you can configure, view, and manage the ONT configurations. This topic contains the following sections:

- [GPON ONT User Interface](#)
- [XGS-PON ONT User Interface](#)

GPON ONT UI

Using the Fiber GPON ONT UI, you can configure, view, and manage the GPON ONT configurations. This topic contains the following sections:

- [Accessing the Fiber GPON ONT UI](#)
- [Configuring the Fiber GPON ONT UI](#)
- [Monitoring](#)
- [Configuring Tools](#)

Accessing the Fiber GPON ONT UI

For accessing the Fiber ONT UI, refer to [Accessing the Fiber OLT UI](#) section. After logging into the UI, the ONT Status page appears.

UI controls

Before configuring the UI of Fiber ONT, familiarize yourself with the UI controls (as described in [List of UI controls](#) table).

Viewing the Status page

After logging into the UI, the Status page appears, as shown in [Figure 50](#). The status page describes the status information of the GPON ONT.

Figure 50: The Status page

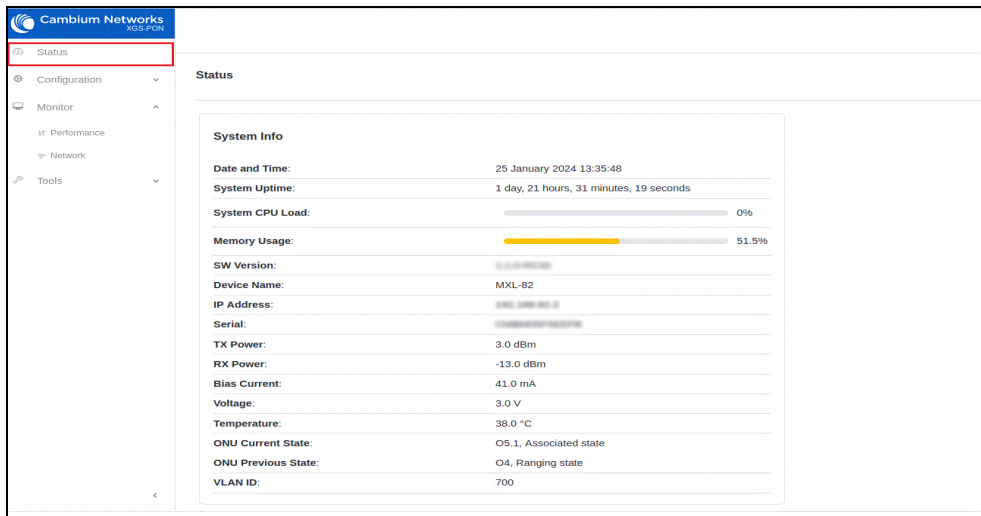


Table 24 lists and describes the elements in the status page.

Table 24: The status page elements

Elements	Descriptions
System Info	
Date and Time	Current system date and time.
System Uptime	Uptime of the system.
System CPU Load	Percentage of the CPU usage.
Memory Usage	Percentage of the memory usage.
SW Version	Software version used.
Device Name	Name of the OLT device.
IP Address	IP address of the OLT device.
Serial	MAC ID of the OLT device.
Tx Power	Transmitting power of the ONT.
Rx Power	Receiving power of the ONT.
Bias Current	Bias current to the ONT.
Voltage	Voltage to the ONT.
Temperature	Temperature of the device.
ONT Current State	Current state of the ONT.
ONT Previous State	Previous state of the ONT.
VLAN ID	VLAN ID.

Configuring the Fiber GPON ONT UI

The configuration page has the following pages:

- [Configuring network settings](#)
- [Configuring system settings](#)

Configuring system settings

The System page is used to configure the ONT system. [Figure 51](#) shows the system page of GPON ONT.

Figure 51: The System page

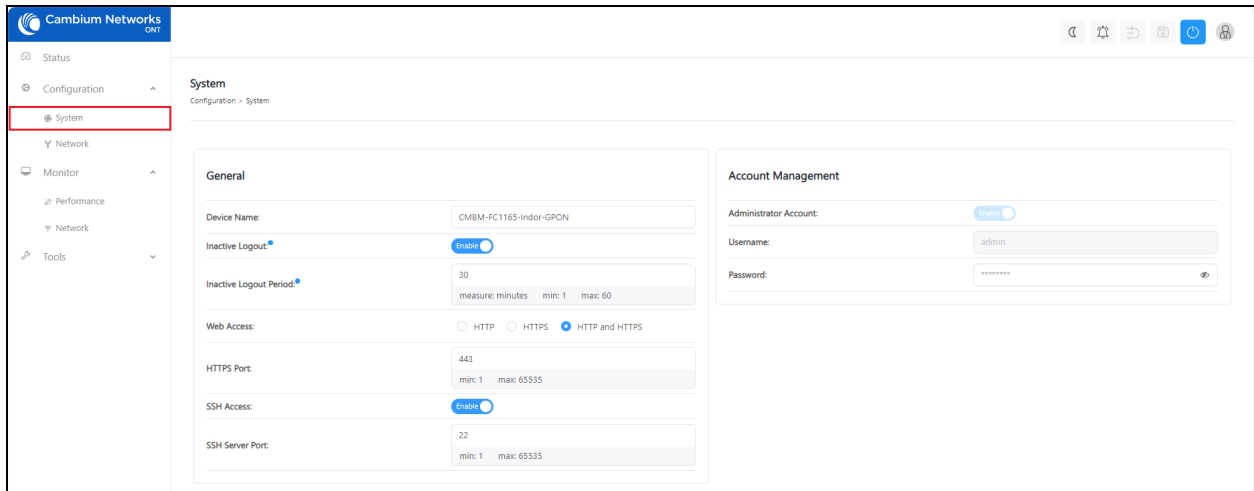


Table 25: The system page elements

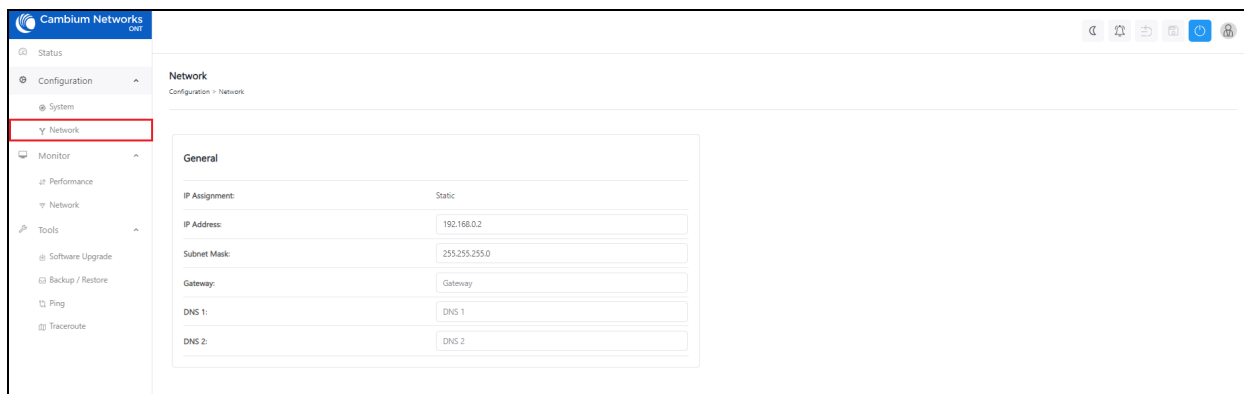
Elements	Description
General	
Device Name	Name of the ONT device.
Inactive Logout	The user can enable or disable the inactive logout.
Inactive Logout Period	Logout time of ONT if ONT is inactive. By default, it is 30 minutes.
Web Access	Select the the following protocols: <ul style="list-style-type: none"> • HTTP • HTTPS • HTTP and HTTPS
HTTPS port	An extension of HTTP for secure communication over an encrypted SSL/TLS connection.
SSH Access	Secure Shell (SSH) is a protocol for secure remote login and other secure network services over an insecure network. The user can Enable

Elements	Description
SSH Server Port	The user can define SSH Server port number from 1 to 65535.
Account Management	
Administrator Account	The user can Enable/Disable the administrator account.
Username	Username of the administrator account.
Password	Password of the administrator account.

Configuring network settings

The Network page displays the network configuration information of the ONT. [Figure 52](#) shows the Network page of the GPON ONT.

Figure 52: *The Network page*



[Table 26](#) describes the elements in the network configuration page.

Table 26: *The network page elements*

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: <ul style="list-style-type: none"> Static - Allows the user to configure a static MAC address and assign it to a specific VLAN ID and a specific port. The MAC addresses configured in this manner are immune to automatic MAC address aging and migration. DHCP - IP provided by the DHCP server from the DHCP pool.
IP Address	IP address of the OLT device.
Subnet Mask	IP address of the subnet.
Gateway	IP defined by the ISP for routing.
DNS 1	DNS 1 server IP address for URL resolution.
DNS 2	DNS 2 server IP address for URL resolution.

Monitoring

The Monitor page has the following pages:

- [Performance](#)
- [Network](#)

Performance

The performance page displays the performances of the NNI ports and PON ports. [Figure 53](#) shows the performance page of the GPON ONT.

Figure 53: The Performance page

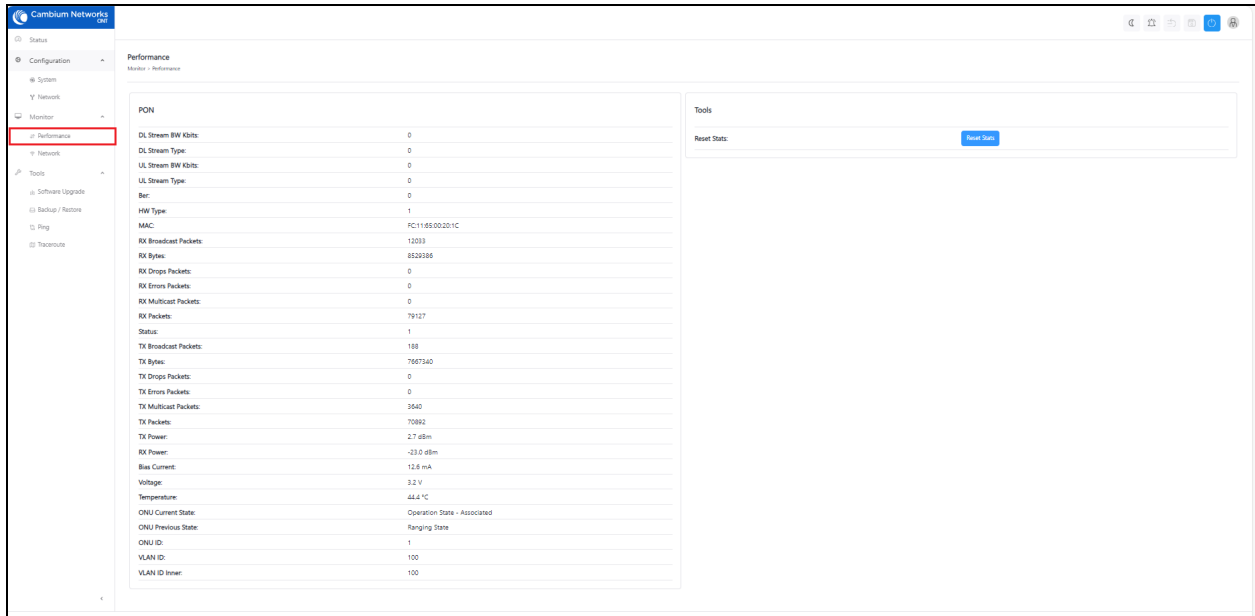


Table 27 describes the elements in the performance page of GPON ONT.

Table 27: Elements in the performance page

Element	Description
DL Stream BW Kbits	Stream bandwidth of downlink.
DL Stream Type	Stream type of downlink.
UL Stream BW Kbits	Stream bandwidth of uplink.
UL Stream Type	Stream type of uplink.
Ber	
HW Type	Type of the hardware.
MAC	MAC address of the ONT
RX Broadcast Packets	Receiving broadcast packets.

Element	Description
RX Bytes	Number of bytes received.
RX Drops Packets	Number of drops packets received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.
RX Unicast Packets	Number of unicast packets received.
Status	Status of the ONT.
TX Broadcast Packets	Transmitting broadcast packets.
TX Bytes	Number of bytes transmitted.
TX Drops Packets	Number of drops packets transmitted.
TX Errors Packets	Number of error packets transmitted.
TX Multicast Packets	Number of multicast packets transmitted.
TX Packets	Number of packets transmitted.
TX Power	Transmitting power.
RX Power	Receiving power.
Bias Current	Current for the Bias.
Voltage	Voltage of the ONT.
Temperature	Temperature of the ONT.
ONT Current State	Current state of the ONT.
ONT Previous State	Previous state of the ONT.
ONT ID	ID of the ONT.
VLAN ID	ID of the VLAN.
VLAN ID Inner	ID of the inner VLAN.

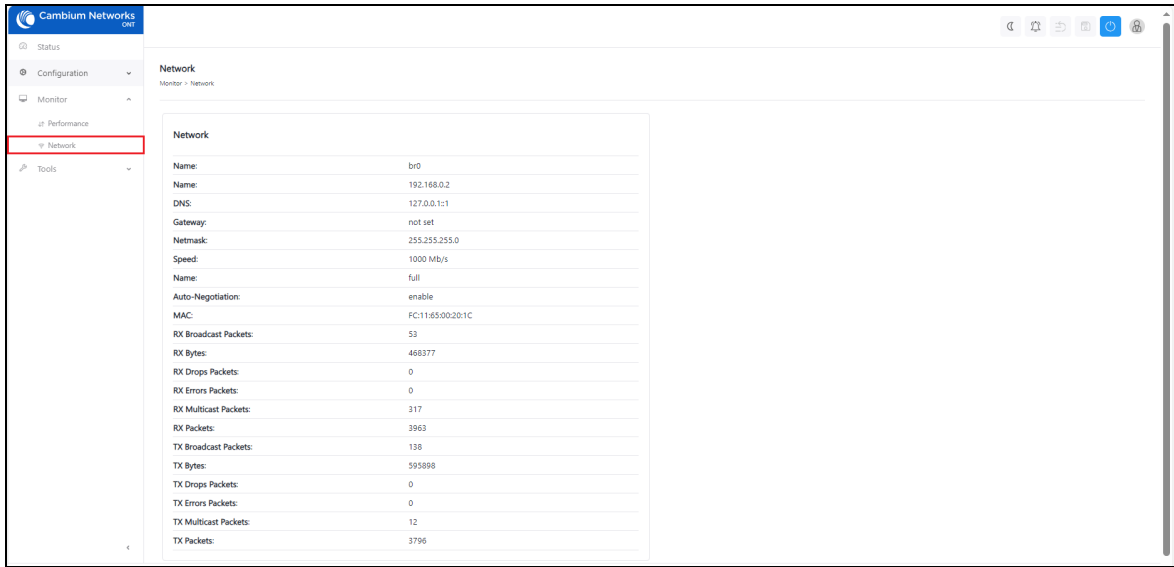
Network

The Network page displays the network information of the GPON-PON ONT. To access and monitor the network settings, perform the following steps:

1. From the Fiber ONT Status page, navigate to **Monitor > Network**.

The Network page appears, as shown in [Figure 54](#).

Figure 54: The Network page



2. Table 28 describes the elements in the GPON ONT network page.

Table 28: The network page elements

Element	Description
Name	Name of the ONT.
Name	IP address of the ONT.
DNS	IP address of the DNS.
Gateway	Gateway of the ONT.
Netmask	IP address of the netmask.
Speed	Type of the hardware.
Name	Name of the ONT.
Auto-Negotiation	You can enable or disable the auto-negotiation.
MAC	MAC address of the ONT
RX Broadcast Packets	Receiving broadcast packets.
RX Bytes	Number of bytes received.
RX Drops Packets	Number of drops packets received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.
TX Broadcast Packets	Transmitting broadcast packets.

Element	Description
TX Bytes	Number of bytes transmitted.
TX Drops Packets	Number of drops packets transmitted.
TX Errors Packets	Number of error packets transmitted.
TX Multicast Packets	Number of multicast packets transmitted.
TX Packets	Number of packets transmitted.

Configuring Tools

The Tools page has the following pages:

- [Software Upgrade](#)
- [Backup and restore](#)
- [Ping](#)
- [Traceroute](#)

Software Upgrade

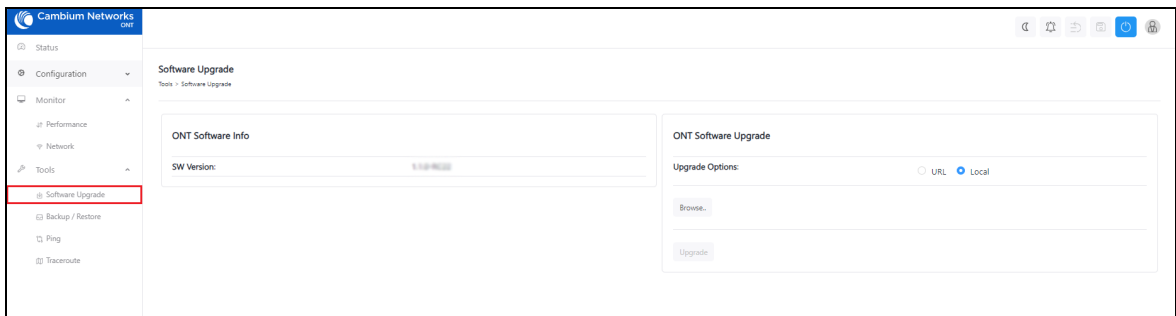
The Software Upgrade page is used to the upgrade the GPON ONT firmware.

To upgrade the Fiber ONT software, perform the following steps:

1. From the dashboard page, navigate to **Tools > Software Upgrade**.

The **Software Upgrade** page appears, as shows in [Figure 55](#).

Figure 55: *The Software Upgrade page*

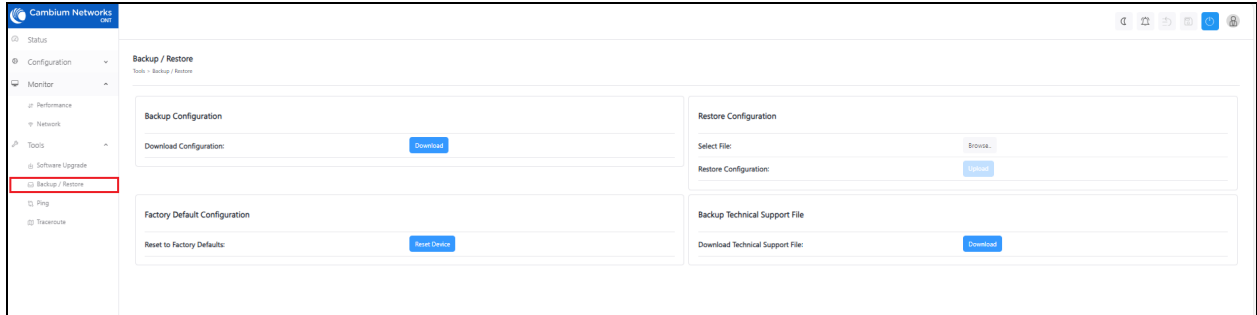


2. If you are upgrading the software using the URL, then select the **URL** option as the value of the **Update Options** parameter in the **ONT Software Upgrade** section. Then, type the URL of the location where you want to download the software.
3. If you are upgrading the software using the downloaded software image file, then select the **Local** option. Browse the folder and select the upgrade software image file.
4. Click **Upgrade** to start the upgrade process.
5. After upgrading the ONT software, reboot Fiber ONT.

Backup and restore

The Backup/Restore page is used to take the backup of the configuration file and restore it to the GPON ONT. [Figure 56](#) shows the Backup/Restore page of GPON ONT.

[Figure 56](#): The ONT GPON Backup/Restore page



To download the configuration file, perform the following steps:

1. Click **Download** under **Backup Configuration**.
2. Click **Reset Device** under **Factory Default Configuration** to reset the device to the factory default configuration.

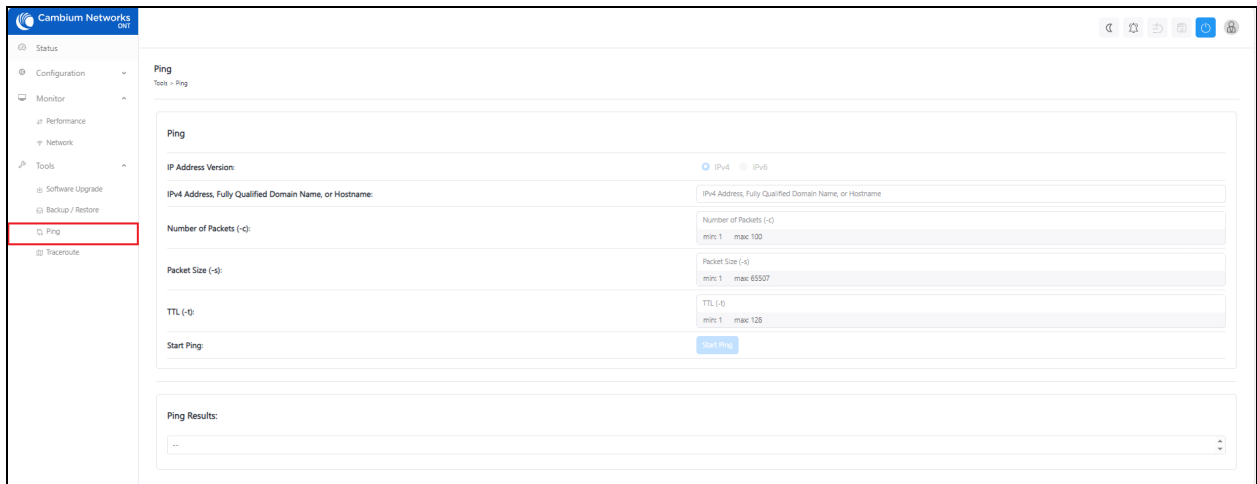
To restore the configuration, perform the following steps:

1. Click **Browse** under **Restore Configuration** and select the configuration file and then click **Upload**.
2. Click **Download Technical Support File** under **Backup Technical Support File** to download the support file. This support file is used to diagnose the errors in the configuration file.

Ping

The Ping page is used to ping ONTs and receive the information from ONTs. [Figure 57](#) shows the ping page of GPON ONT.

[Figure 57](#): The Ping page of GPON ONT



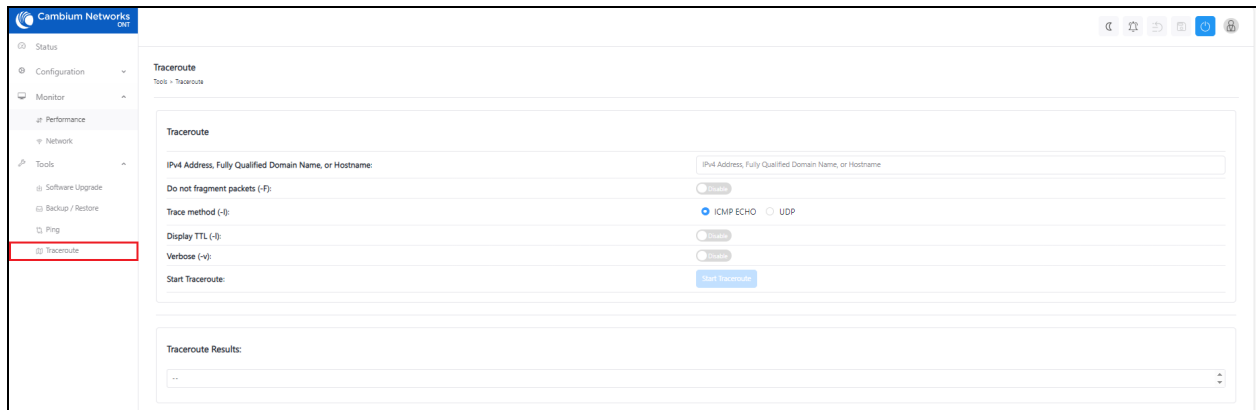
To ping ONT, perform the following steps:

1. Select the IP address type from the below options:
 - IPv4
 - IPv6
2. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
3. Select **Number of Packets**. It ranges from 1 to 100.
4. Select **Packet Size**. It ranges from 1 to 65507.
5. Select **TTL**. It ranges from 1 to 128.
6. Click **Start Ping**.
7. The ping results are displayed under **Ping Results** section.

Traceroute

The Traceroute page is used to trace the data packets of the GPON ONT. [Figure 58](#) shows the traceroute page.

Figure 58: *The Traceroute page*



To traceroute, perform the following steps:

1. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
2. Enable/disable **Don't fragment**. By default, it is disabled.
3. Select **Trace method** from the following options:
 - **ICMP ECHO** - Internet Control Message Protocol (ICMP) ECHO. Checks if a host is reachable and measures response time.
 - **UDP** - User Datagram Protocol. Sends data without establishing a connection. It is good in speed but the reliable communication is less.
4. Enable/disable **Display TTL**. By default, it is disabled.
5. Enable/disable **Verbose**. By default, it is disabled.

6. Click **Start Traceroute**.
7. The traceroute results are displayed under **Traceroute Results** section.

XGS-PON ONT UI

Using the Fiber XGS-PON ONT UI, you can configure, view, and manage the XGS-PON ONT configurations. This topic contains the following sections:

- [Accessing the Fiber XGS-PON ONT UI](#)
- [Configuring the Fiber XGS-PON ONT UI](#)
- [Monitoring](#)
- [Configuring Tools](#)

Accessing the Fiber XGS-PON ONT UI

For accessing the Fiber ONT UI, refer to [Accessing the Fiber OLT UI](#) section. After logging into the UI, the ONT Status page appears.

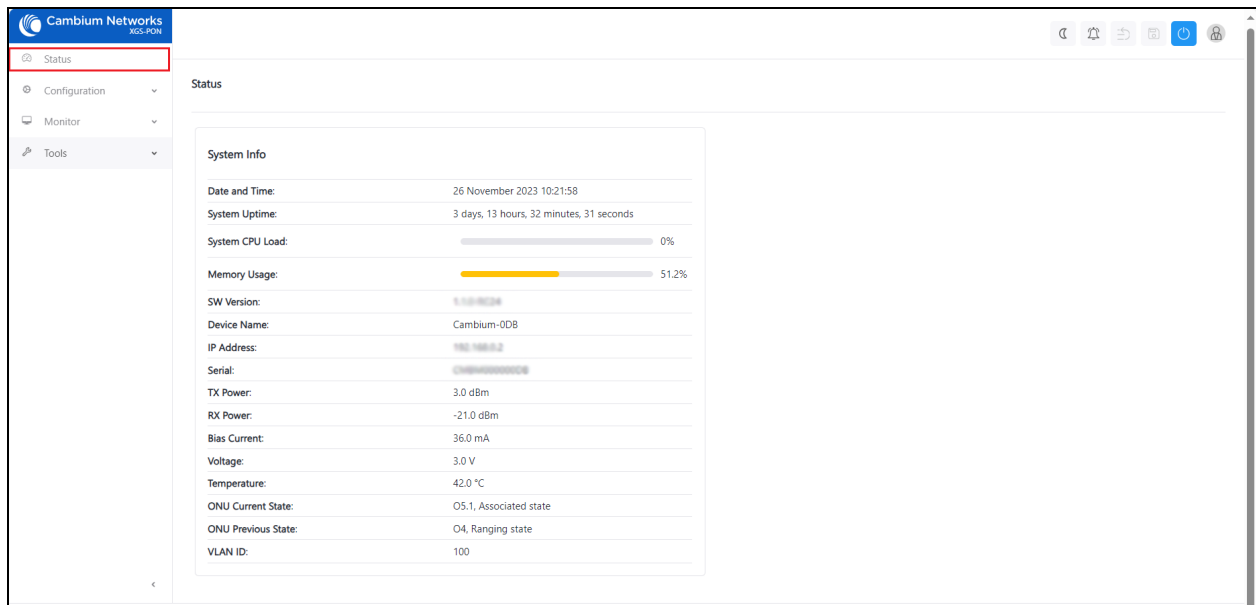
UI controls

Before configuring the UI of Fiber ONT, familiarize yourself with the UI controls (as described in [List of UI controls](#) table).

Viewing the Status page

After logging into the UI, the Status page appears, as shown in [Figure 59](#). The status page describes the status of the XGS-PON ONT.

Figure 59: *The Status page*



[Table 29](#) describes the elements in the status page.

Table 29: The status page elements

Elements	Descriptions
System Info	
Date and Time	Current system date and time.
System Uptime	Uptime of the system.
System CPU Load	Percentage of the CPU usage.
Memory Usage	Percentage of the memory usage.
SW Version	Software version used.
Device Name	Name of the OLT device.
IP Address	IP address of the OLT device.
Serial	MAC ID of the OLT device.
Tx Power	Transmitting power of the ONT.
Rx Power	Receiving power of the ONT.
Bias Current	Bias current to the ONT.
Voltage	Voltage to the ONT.
Temperature	Temperature of the device.
ONT Current State	Current state of the ONT.
ONT Previous State	Previous state of the ONT.
VLAN ID	VLAN ID.

Configuring the Fiber XGS-PON ONT UI

The configuration page has the following pages:

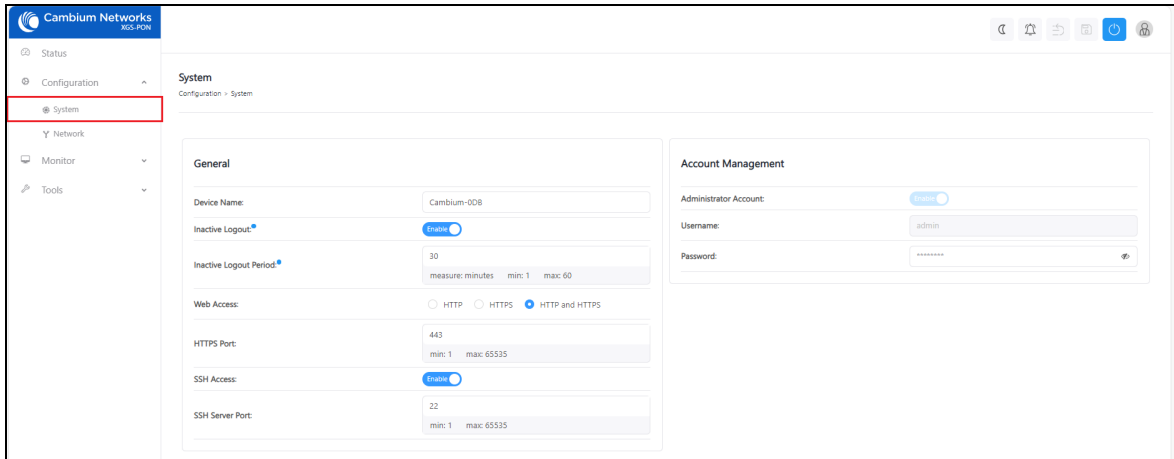
- [Configuring system settings](#)
- [Configuring network settings](#)

Configuring system settings

The system page is used to configure the XGS-PON ONT system. To access and configure the system settings, perform the following steps:

1. From the Fiber ONT Status page, navigate to **Configuration > System**.
2. The System page appears, as shown in [Figure 60](#)

Figure 60: The System page of XGS-PON ONT



3. Set the values for each parameter, as described in Table 30

Table 30: The system page elements

Elements	Description
General	
Device Name	Name of the ONT device.
Inactive Logout	The user can enable or disable the inactive logout.
Inactive Logout Period	Logout time of ONT if ONT is inactive. By default, it is 30 minutes.
Web Access	Select the following protocols. The following are the options: <ul style="list-style-type: none"> • HTTP • HTTPS • HTTP and HTTPS
HTTPS port	An extension of HTTP for secure communication over an encrypted SSL/TLS connection.
SSH Access	Secure Shell (SSH) is a protocol for secure remote login and other secure network services over an insecure network. The user can enable/disable the SSH access.
SSH Server Port	Type the SSH Server port number from 1 to 65535.
Account Management	
Administrator Account	Enable or disable the administrator account.
Username	Type the username of the administrator account.
Password	Type the password of the administrator account.

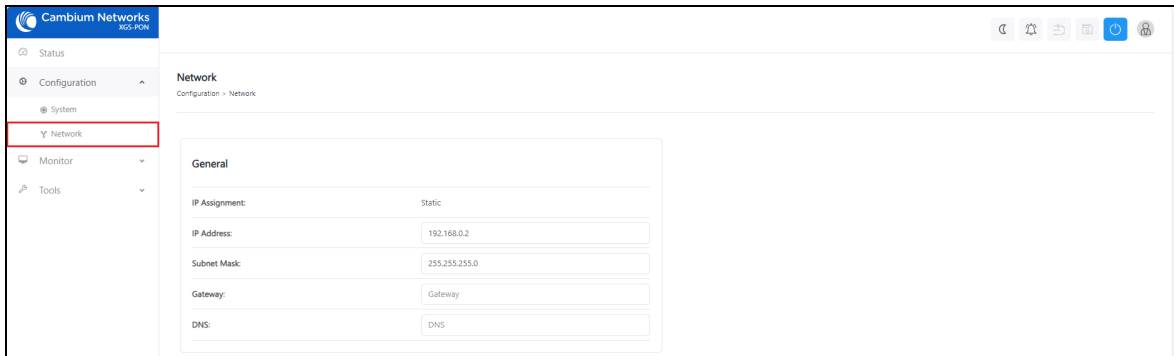
Configuring network settings

The network page displays the network configuration information of the ONT. To access and configure the network settings, perform the following steps:

1. From the Fiber ONT Status page, navigate to **Configuration > Network**.

The Network page appears, as shown in [Figure 61](#)

Figure 61: The Network page of XGS-PON ONT



2. Set the values for each parameter, as described in [Table 31](#)

Table 31: The network page elements

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: <ul style="list-style-type: none">• Static - Allows the user to configure a static MAC address and assign it to a specific VLAN ID and a specific port. The MAC addresses configured in this manner are immune to automatic MAC address aging and migration.• DHCP - IP provided by the DHCP server from the DHCP pool.
IP Address	Type the IP address of the OLT device.
Subnet Mask	Type the IP address of subnet.
Gateway	IP defined by the ISP for routing.
DNS	DNS 1 server IP address for URL resolution.

Monitoring

The Monitor page has the following pages:

- [Performance](#)
- [Network](#)

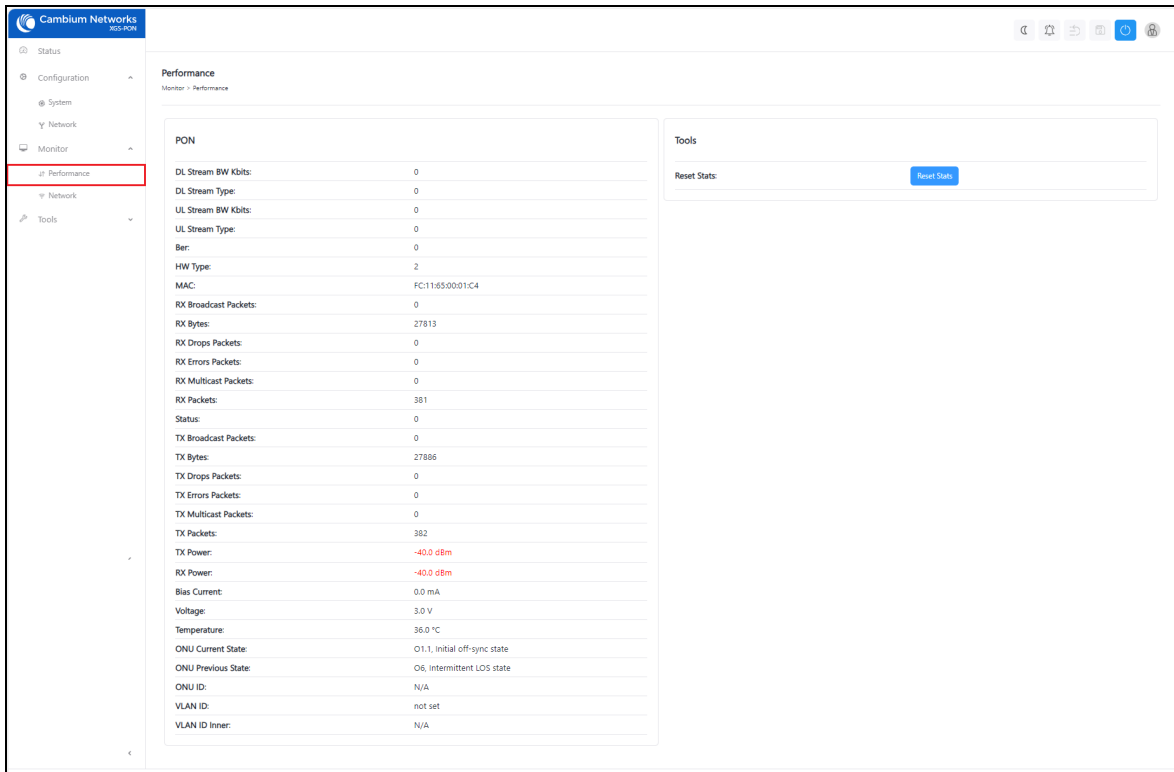
Performance

The performance page displays the performances of the NNI ports and PON ports. To access and monitor the performance of the ONT, perform the following steps:

1. From the Fiber ONT Status page, navigate to **Monitor > Performance**.

The Performance page appears, as shown in [Figure 62](#)

Figure 62: The Performance page of XGS-PON ONT



2. [Table 32](#) describes the elements in the performance page of XGS-PON ONT.

Table 32: Elements in the performance page

Element	Description
DL Stream BW Kbits	Stream bandwidth of downlink.
DL Stream Type	Stream type of downlink.
UL Stream BW Kbits	Stream bandwidth of uplink.
UL Stream Type	Stream type of uplink.
Ber	Ber.
HW Type	Type of the hardware.
MAC	MAC address of the ONT

Element	Description
RX Broadcast Packets	Receiving broadcast packets.
RX Bytes	Number of bytes received.
RX Drops Packets	Number of drops packets received.
RX Errors Packets	Number of error packets received.
RX Multicast Packets	Number of multicast packets received.
RX Packets	Number of packets received.
RX Unicast Packets	Number of unicast packets received.
Status	Status of the ONT.
TX Broadcast Packets	Transmitting broadcast packets.
TX Bytes	Number of bytes transmitted.
TX Drops Packets	Number of drops packets transmitted.
TX Errors Packets	Number of error packets transmitted.
TX Multicast Packets	Number of multicast packets transmitted.
TX Packets	Number of packets transmitted.
TX Power	Transmitting power.
RX Power	Receiving power.
Bias Current	Current for Bias.
Voltage	Voltage of ONT.
Temperature	Temperature of ONT.
ONT Current State	Current state of ONT.
ONT Previous State	Previous state of ONT.
ONT ID	ID of ONT.
VLAN ID	ID of VLAN.
VLAN ID Inner	ID of the inner VLAN.

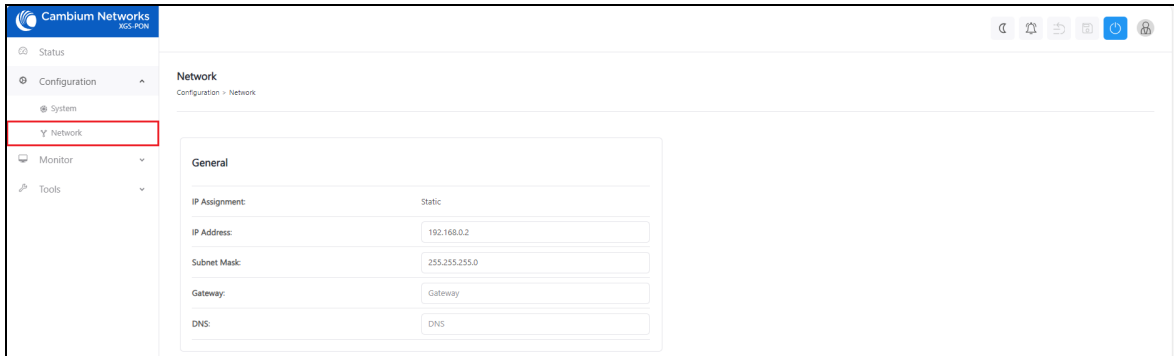
Network

The Network page displays the network information of the XGS-PON ONT. To access and monitor the network settings, perform the following steps:

1. From the Fiber ONT Status page, navigate to **Monitor > Network**.

The Network page appears, as shown in [Figure 63](#)

Figure 63: The Network page of XGS-PON ONT



2. Table 33 describes the elements in the XGS-PON ONT network page.

Table 33: The network page elements

Element	Description
General	
IP Assignment	Displays the IP assignment types. The following are the types: <ul style="list-style-type: none"> • Static • DHCP
IP Address	IP address of the ONT device.
Subnet Mask	Subnet Mask of the ONT device.
Gateway	Gateway of the ONT.
DNS	Name of the DNS.

Configuring Tools

The Tools page has the following pages:

- [Software upgrade](#)
- [Backup and restore](#)
- [Ping](#)
- [Traceroute](#)

Software upgrade

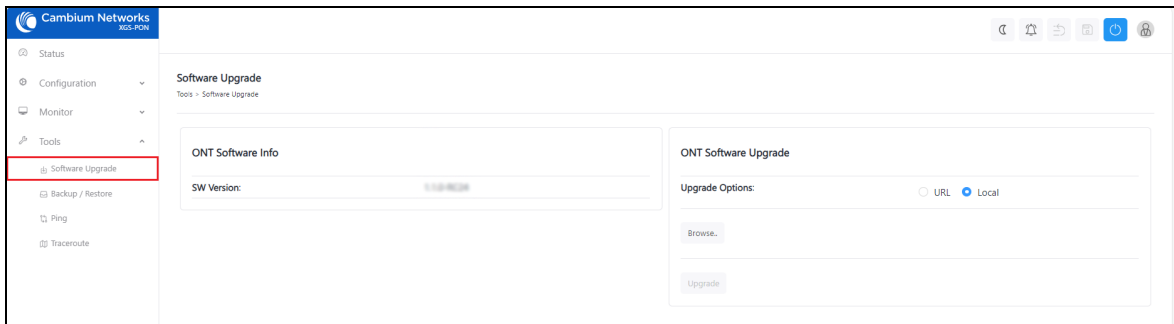
The Software Upgrade page is used to upgrade the XGS-PON ONT firmware.

To upgrade the Fiber ONT software, perform the following steps:

1. From the Status page, navigate to **Tools > Software Upgrade**.

The **Software Upgrade** page appears, as shown in Figure 64.

Figure 64: The Software Upgrade page



2. If you are upgrading the software using the URL, then select the **URL** option as the value of the **Update Options** parameter in the **ONT Software Upgrade** section. Then, type the URL of the location where you want to download the software.
3. If you are upgrading the software using the downloaded software image file, then select the **Local** option. Browse the folder and select the upgrade software image file.
4. Click **Upgrade** to start the upgrade process.
5. After upgrading the ONT software, reboot Fiber ONT.

Backup and restore

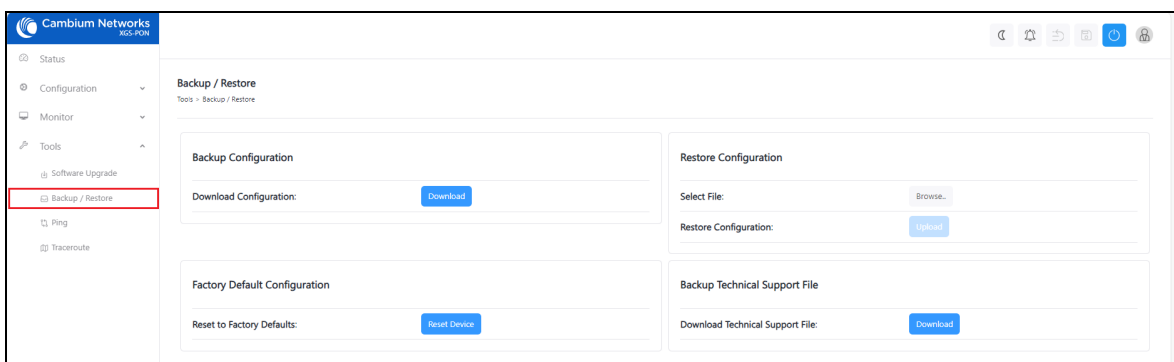
The backup and restore page is used to take the backup of the configuration file and restore it to the XGS-PON ONT.

To download and restore the configuration file, perform the following steps:

1. From the Status page, navigate to **Tools > Backup / Restore**.

The Backup/Restore page appears as shown in Figure 65

Figure 65: The Backup/Restore page of XGS-PON ONT



2. Click **Download** under **Backup Configuration**.
3. Click **Reset Device** under **Factory Default Configuration** to reset the device to the factory default configuration.
4. To restore the configuration file, click **Browse** under **Restore Configuration**.

5. Browse and select the configuration file and then click **Upload**.
6. Click **Download Technical Support File** under **Backup Technical Support File** to download the support file.

This support file is used to diagnose the errors in the configuration file.

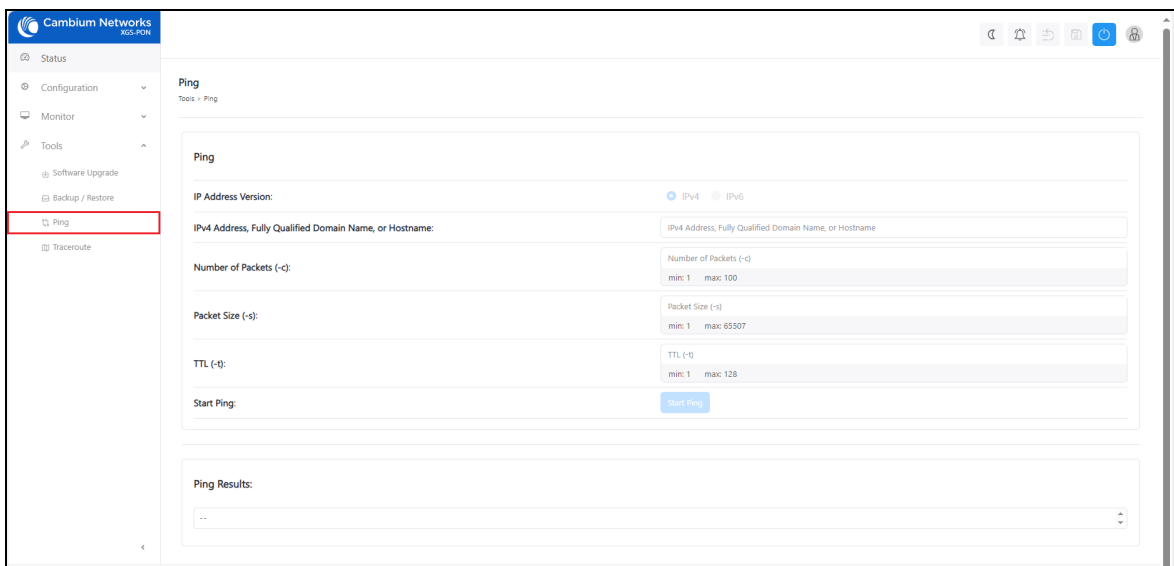
Ping

The Ping page is used to ping ONTs and receive the information from ONTs. To ping ONT, perform the following steps:

1. From the Status page, navigate to **Tools > Ping**.

The Ping page appears, as shown in [Figure 66](#)

Figure 66: The Ping page of XGS-PON ONT



2. Select the IP address type from the below options:
 - IPv4
 - IPv6
3. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
4. Select **Number of Packets**. It ranges from 1 to 100.
5. Select **Packet Size**. It ranges from 1 to 65507.
6. Select **TTL**. It ranges from 1 to 128.
7. Click **Start Ping**.
8. The ping results are displayed under **Ping Results** section.

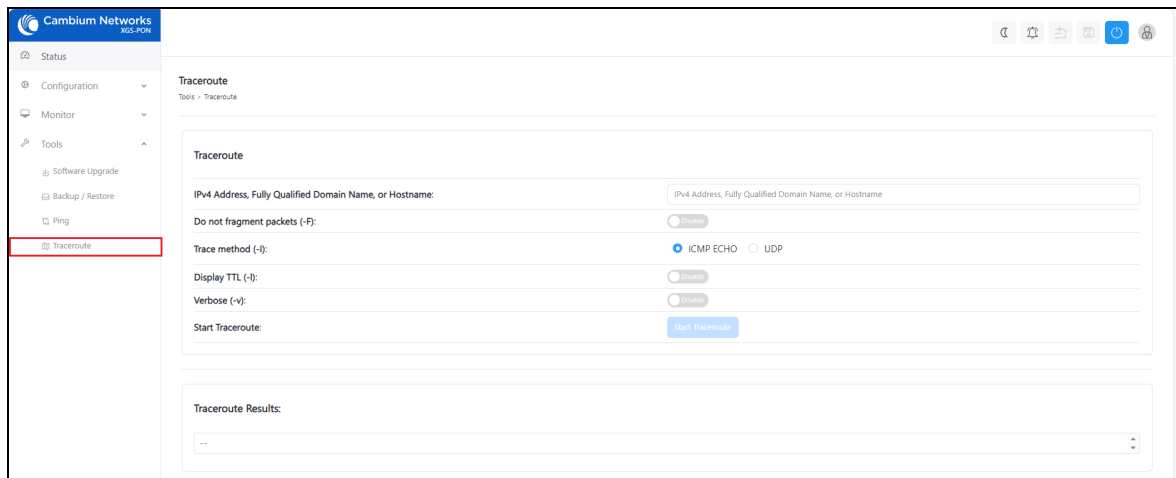
Traceroute

The Traceroute page is used to trace the data packets of the XGS-PON ONT. To traceroute the ONT, perform the following steps:

1. From the Status page, navigate to **Tools > Traceroute**.

The Traceroute page appears, as shown in [Figure 67](#)

[Figure 67](#): The Traceroute page of XGS-PON ONT



2. Type **IPv4 Address, Fully Qualified Domain Name, or Hostname**.
3. Enable/disable **Don't fragment**. By default, it is disabled.
4. Select **Trace method** from the following options:
 - **ICMP ECHO** - Internet Control Message Protocol (ICMP) ECHO. Checks if a host is reachable and measures response time.
 - **UDP** - User Datagram Protocol. Sends data without establishing a connection, good for fast but less reliable communication.
5. Enable/disable **Display TTL**. By default, it is disabled.
6. Enable/disable **Verbose**. By default, it is disabled.
7. Click **Start Traceroute**.
8. The traceroute results are displayed under **Traceroute Results** section.

Operation and Troubleshooting

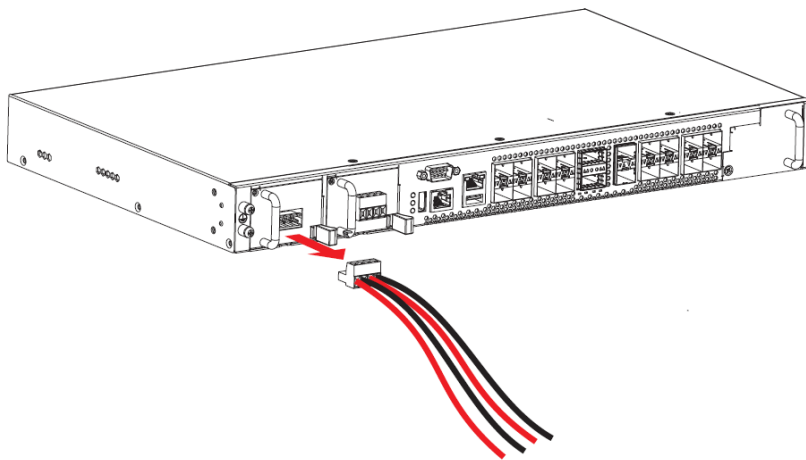
This topic contains the following section:

- [Power module maintenance of OLT](#)

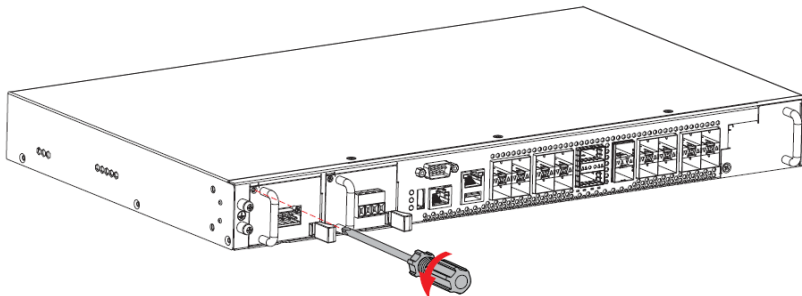
Replacing the power module of OLT

The Fiber OLT has dual swappable and redundant power modules on the left on the front panel. To replace the power module, perform the following steps:

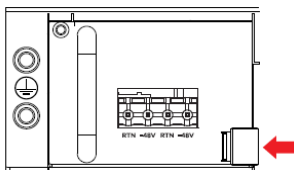
1. Turn off the power supplies connected to the power module.
2. Remove the green power connector block or the power cord.



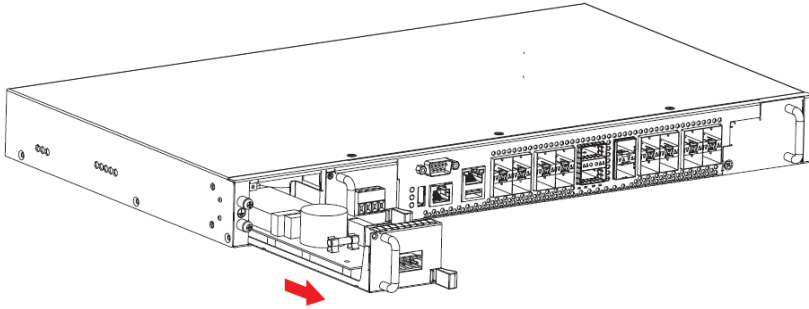
3. Remove screws of the power module using a screw driver.



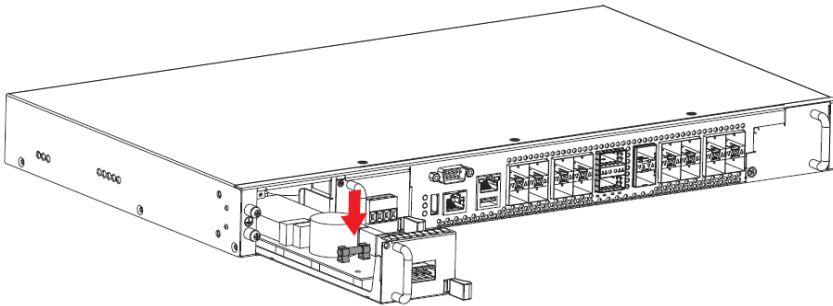
4. Press the power module latch to the left to release it.



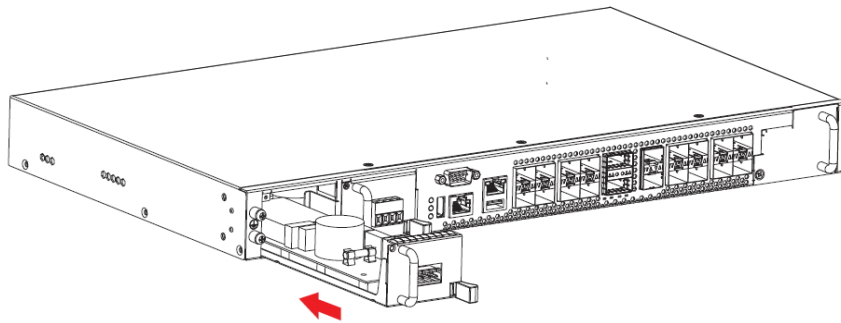
5. Slide the power module out.



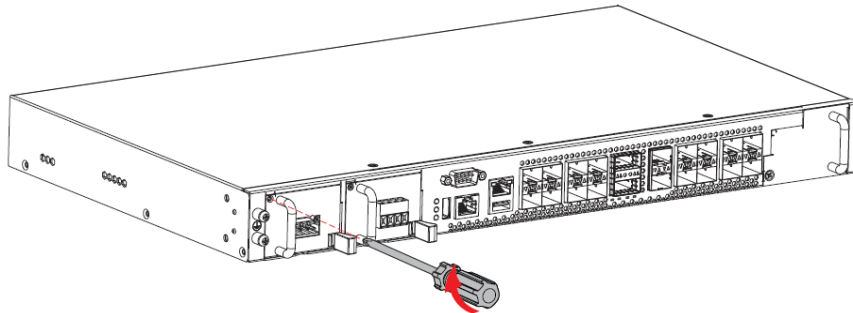
6. For a AC/DC power module, replace the fuse if it is burnt. If the fuse is working, then replace malfunctioning AC/DC power module.



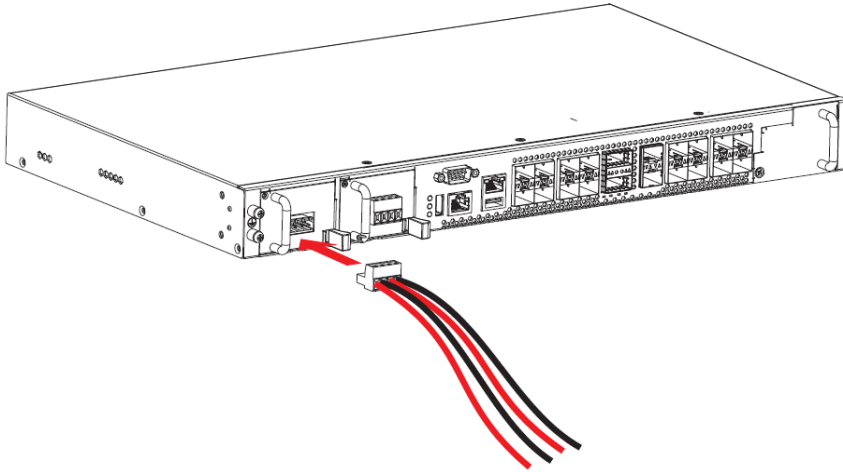
7. Slide the power module in to the block.



8. Install the power module screws.



9. Re-insert the power connector block or power cord in the front of the power module.



10. Turn on the power supplies.

Cambium Networks

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