

Cambium Networks™













USER GUIDE

Fiber OLT and ONT

Release 1.4.0

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About This Guide

This document provides detailed information about the 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 OLTand 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.

Note

It is not required to state compliance with EN 60825 when compliance with EN 50689 is stated. It is permitted additionally to refer EN 60825-1:2014 and EN 60825-1:2014/A11:2021.

Canada specific information

Caution

This device complies with Innovation, Science and Economic Development Canada (ISEDC) 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 specifiques 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 OLT and ONT products are compliant with applicable European Directives required for CE marking:

- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
- Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
- 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).
- Cambium Networks complies with the European Regulation 2023/988 of 10 May 2023 on General Product Safety. EU Authorized Representative: Cambium Networks Europe B.V., Muiderstraat 1, 1011PZ Amsterdam, Netherlands. Contact Information: GPSR@cambiumnetworks.com.

EU Declaration of conformity

Hereby, Cambium Networks declares that the Cambium Networks OLTand ONT Series of Wireless Ethernet Bridge complies with the essential requirements and other relevant provisions of Directive 2014/30/EU and 2014/35/EU. The declaration of conformity may be consulted at https://www.cambiumnetworks.com/eu_dofc.

United Kingdom (UK) specific information

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

- Electromagnetic Compatibility Regulations 2016 (SI 2016 No.1091)
- Electrical Equipment (Safety) Regulations 2016 (SI 2016 No.1101)
- 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 OLT and ONT Series of Wireless.

Ethernet Bridge complies with the essential requirements and other relevant provisions of Electromagnetic Compatibility Regulations 2016 (SI 2016 No.1091) and Electrical Equipment (Safety) Regulations 2016 (SI 2016 No.1101). 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 OLTand 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 *OLTand 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 OLT

Cambium 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. The high-performance design of OLT is optimized for SDN deployments, ensuring maximum interoperability with both Cambium and third-party hardware and software systems.

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 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 an 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 OLT provides service providers deployment flexibility for diverse environments. With this design, you can create a network, achieve market goals of OLT, and satisfy future network needs.

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: *OLT(16 port and 8 port)*



Cambium 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 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*

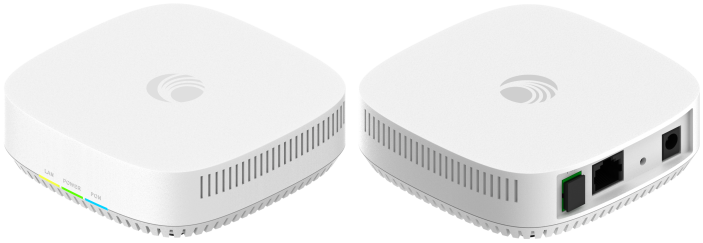


Figure 3: *Fiber GPON ONT and XGS-PON Outdoor ONT*



System Hardware

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

- Cambium OLT
- Cambium ONTs

Cambium OLT

Cambium OLT is used in 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 OLT.

Figure 4: *Front panel view of Cambium OLT*

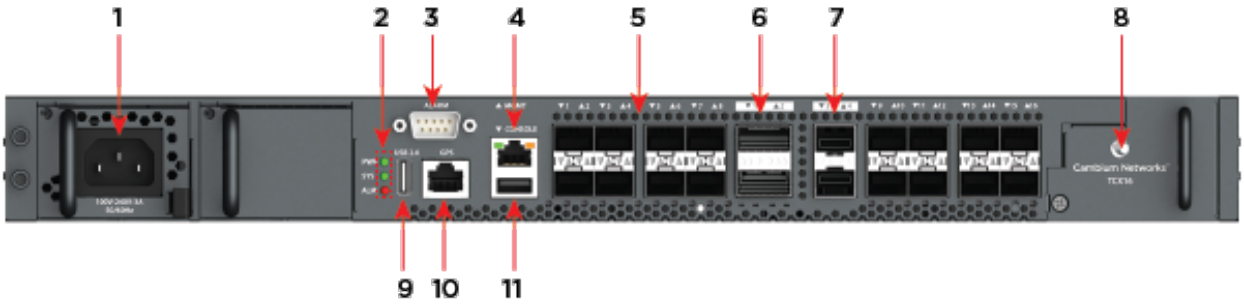


Table 1 lists and describes the components of Cambium OLT.

Table 1: Cambium OLTcomponents

Item	Component	Description
1	Dual Power Modules	Dual power module slots are used for redundancy. Connect AC/DC power sources to the modules. **For AC power module:** • Operating voltage: 100 to 240 VAC, 50/60 Hz 3.5 Amps maximum. • Fuse: T6.3A 250 VAC. **For DC power module:** • 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. • 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

Item	Component	Description
		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 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 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

OLTs are equipped with either 8 or 16 dedicated SFP+ PON ports, each electrically configured with four lanes (TX/RX for GPON and TX/RX for XGS-PON) connected to the integrated PON MAC.

These ports are specifically designed to support certified PON transceivers—available in GPON, XGS-PON, and Combo PON variants—and are managed by the OLT firmware to handle media conversion, bandwidth assignment, encryption, and service scheduling.

Characteristics of GPON

The following combo PON or GPON operation is supported through Cambium-certified GPON transceivers:

- 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 XGS-PON operation is supported through Cambium-certified combo PON or XGS-PON transceivers:

- 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

The OLT features two QSFP28 and two SFP28 NNI ports for uplink connectivity. The QSFP28 ports support Ethernet connections at 100G, 40G, 4×25G, 4×10G, and 4×1G, while the SFP28 ports support 25G, 10G, or 1G speeds.

Although the uplink ports are broadly compatible with various Ethernet transceivers, only Cambium-certified transceivers are officially supported and validated for full system certification.

NNI port characteristics

Note:

Breakout cable support is planned for a future release.

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

Note

software version for alarm interface will be supported in future updates, based on user requirements.

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*

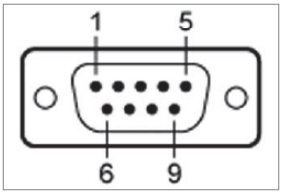


Table 2: Alarm input pin assignments

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

Table 3: Alarm output pin assignments

Alarm output	Pins	Description
Alarm out asserted	2, 6	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	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

Note

software version for GPS interface will be supported in future updates, based on user requirements.

GPS interface is reserved for future use. It enables OLT to connect to an external GPS device. It is also used to monitor the geographical location of 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*

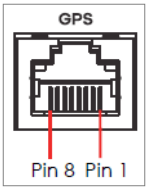


Table 4: GPS connector pin definitions

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

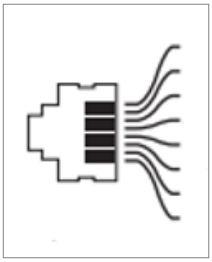
The USB 2.0 interface on the OLTs front panel is used for media connectivity, enabling file transfers such as firmware updates.

Management interface

The MGMT port is a dedicated out-of-band 100/1000Base-T Ethernet interface (RJ45) for local management access. It is part of the management bridge and is always assigned a static, non-routable link-local IP address of 169.254.1.1/16.

The system obtains an IP address through static assignment or via DHCP (default). If a DHCP lease is not acquired, the system automatically falls back to the default IP address of 192.168.0.1/24.

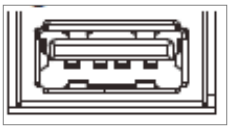
Figure 7: *Management interface*



Console port

The USB console port provides 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 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 OLT to indicate the Power status (PWR), System Status (SYS), and an Alarm (ALM). Figure 9 shows the LEDs in OLT. Table 5 describes the system LED indications and their status.

Figure 9: *LEDs in OLT*

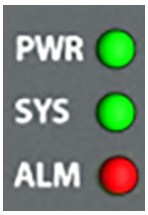


Table 5: Cambium OLT - LED indications

LED	Color	Status	Description
PWR	Green	ON	The power is ON.
		OFF	The power is OFF or there is a power failure.

LED	Color	Status	Description
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 have 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.
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.

LED	Color	Status	Description
		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*

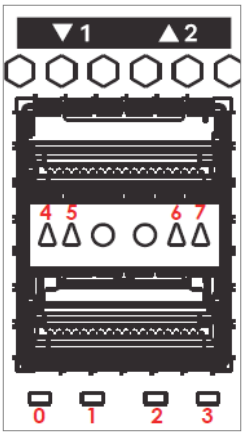
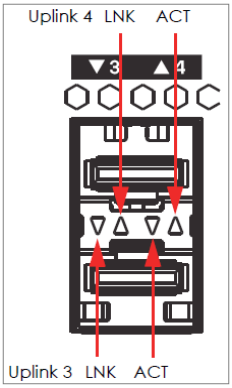


Figure 11: *Uplink 3 and 4 LNK and ACT LEDs*



Cambium ONTs

Cambium 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*

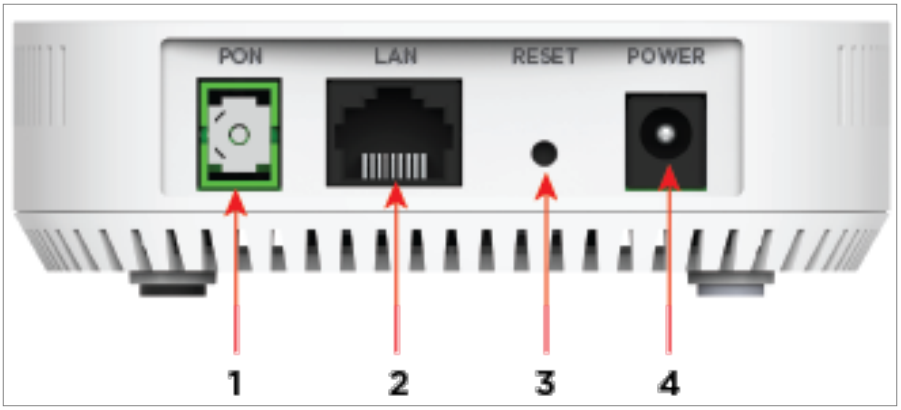


Table 6: Fiber indoor ONT components

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
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*

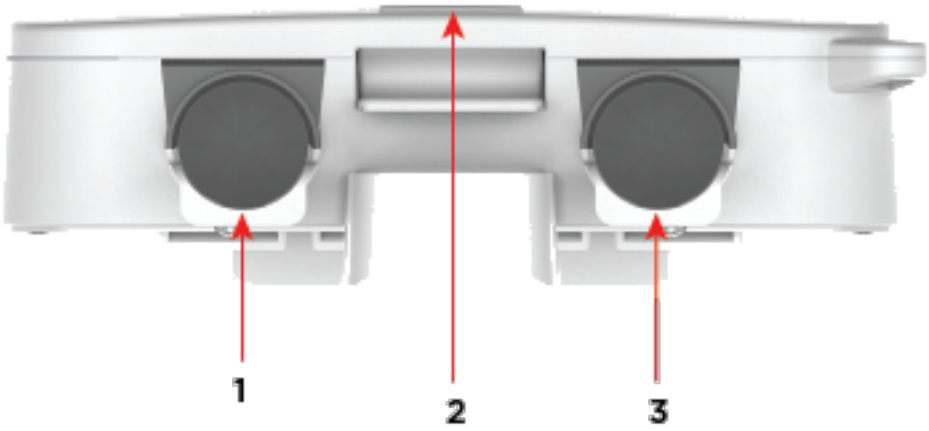


Table 7: Fiber outdoor ONT interfaces

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

This topic contains the following sections:

- Safety precautions
- Regulatory compliance
- Configuring the management PC
- Accessing the OLTUI

Safety precautions

Before installing 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 materials 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.

Electrical Safety Instructions

This topic lists the instructions specific to electrical safety.

Consider the following electrical safety instructions:

- Compliance is required with respect to voltage, frequency, and current requirements indicated on the manufacturer’s label. Connection to a different power source than those specified may result in improper operation, damage to the equipment, or pose a fire hazard if the limitations are not followed.

- There is no operator serviceable parts inside this equipment. Service should be provided only by a qualified service technician.
- This equipment is provided with a detachable power cord which has an integral safety ground wire intended for connection to a grounded safety outlet.
    - Do not substitute the power cord with the one that is not provided and approved. Never use an adapter plug to connect to a 2-wire outlet as this defeats the continuity of the grounding wire.
    - The equipment requires the use of the ground wire as a part of the safety certification, modification or misuse can provide a shock hazard that can result in serious injury or death.
    - Contact a qualified electrician or the manufacturer if there are questions about the installation prior to connecting the equipment.
    - Protective earthing is provided by a listed AC power module. Building installation provides appropriate short-circuit backup protection. That is protective bonding must be installed in accordance with the local national wiring rules and regulations.

Regulatory compliance

This topic describes the following:

- Compliance with safety standards lists the safety specifications against which the OLT and ONTs has been tested and certified.
- Compliance with relevant EMC regulations describes how the OLT and ONTs comply with the EMC 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 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

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.

OLTand ONT - Sample product labels

Figure 16: *Fiber 8 port OLT label*

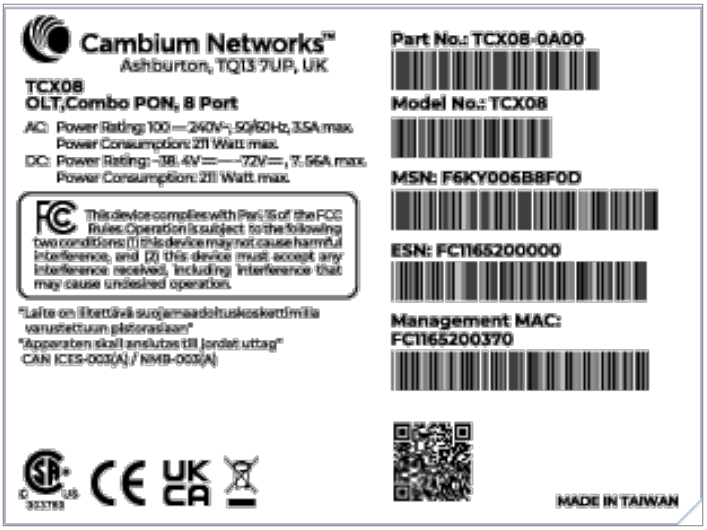


Figure 17: *Fiber 16 port OLT label*

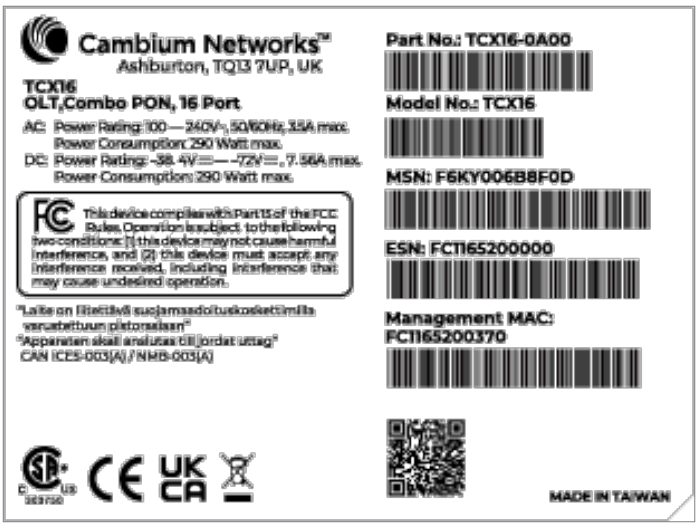


Figure 18: *Fiber indoor GPON ONT back label*

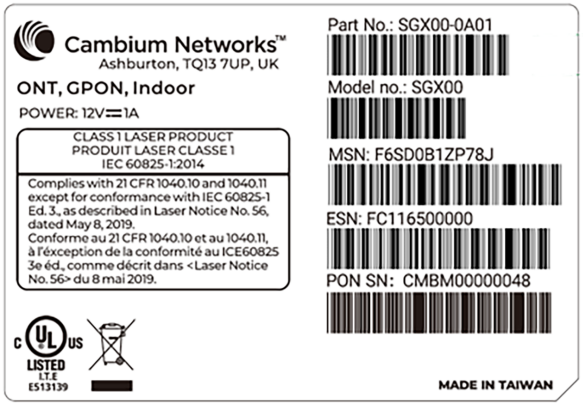


Figure 19: *Fiber indoor XGS-PON ONT back label*

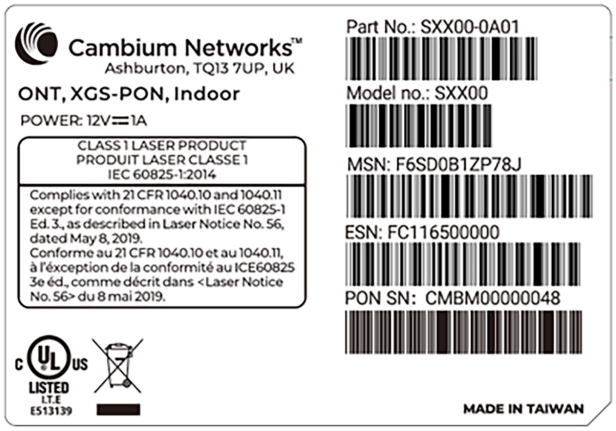


Figure 20: *Fiber outdoor GPON ONT back label*

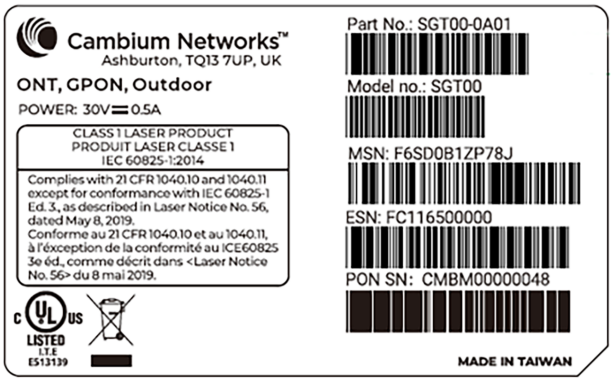
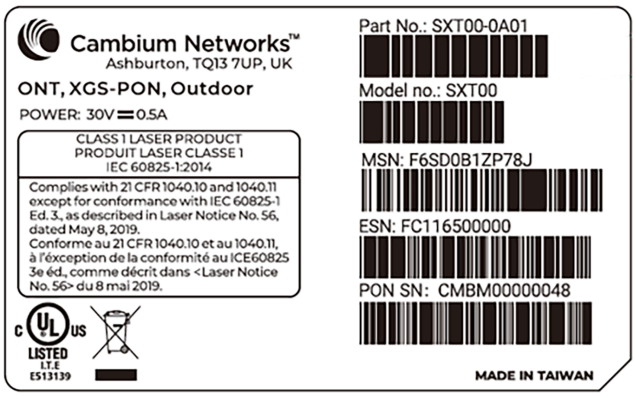


Figure 21: *Fiber outdoor GPON ONT back label*



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 OLTon 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.

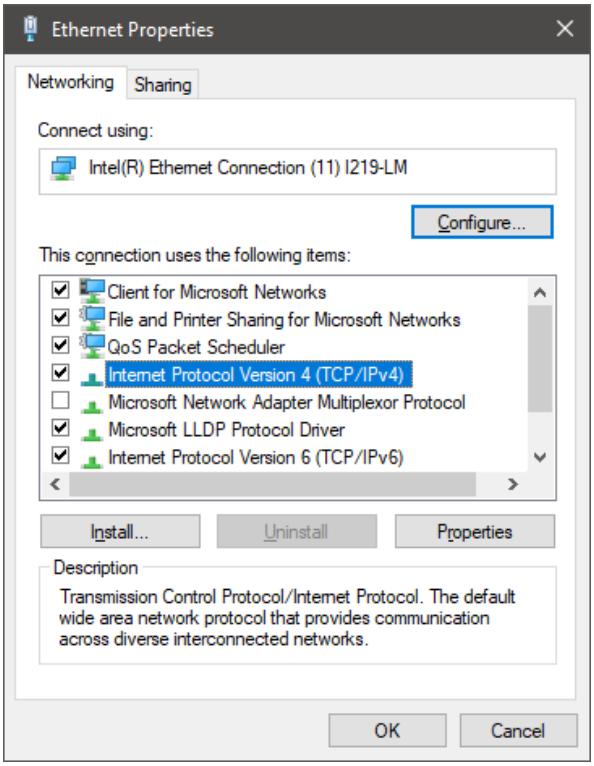
2. Select **Ethernet** > **Change adapter settings**.

   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.

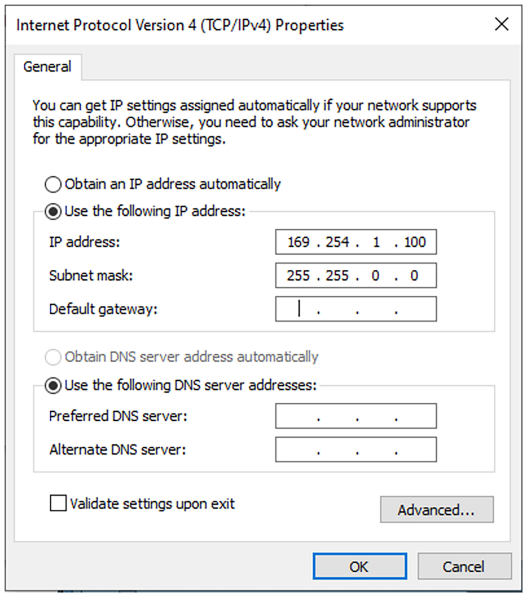
4. Select **Internet Protocol Version 4 (TCP/IPv4)** from the available list of connections (as shown in Figure 22).

5. Click **Properties**.

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

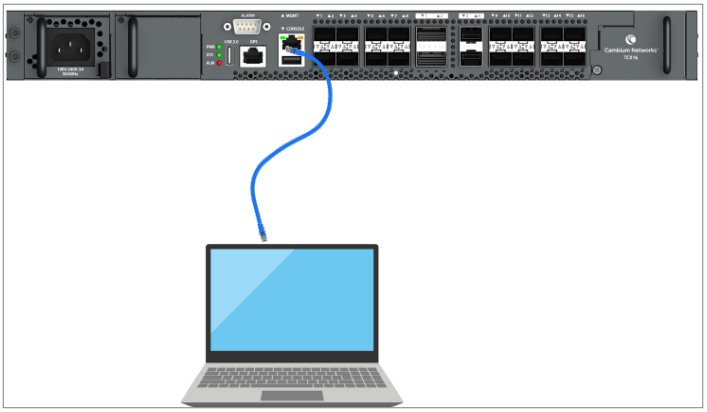
6. In the **Use the following IP address** section, type an appropriate IP address in the IP address text box as 169.254.1.X and a subnet mask as 255.255.0.0, avoiding 169.254.1.1. Example: 169.254.1.100.

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 OLT management interface with an Ethernet cable, as shown in Figure 24.

   Figure 24: *PC connection with OLT*



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

Accessing the OLT UI

To access the OLTUI, perform the following steps:

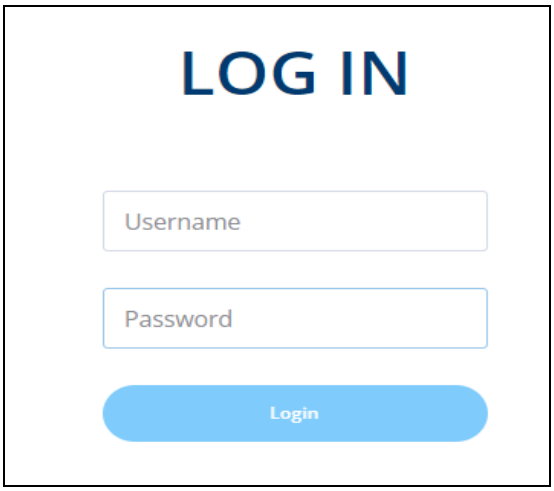
1. Open the browser, and paste http://169.254.1.1/.

   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. When you log in for the first time, the **Please change Default Administrator password** window appears.

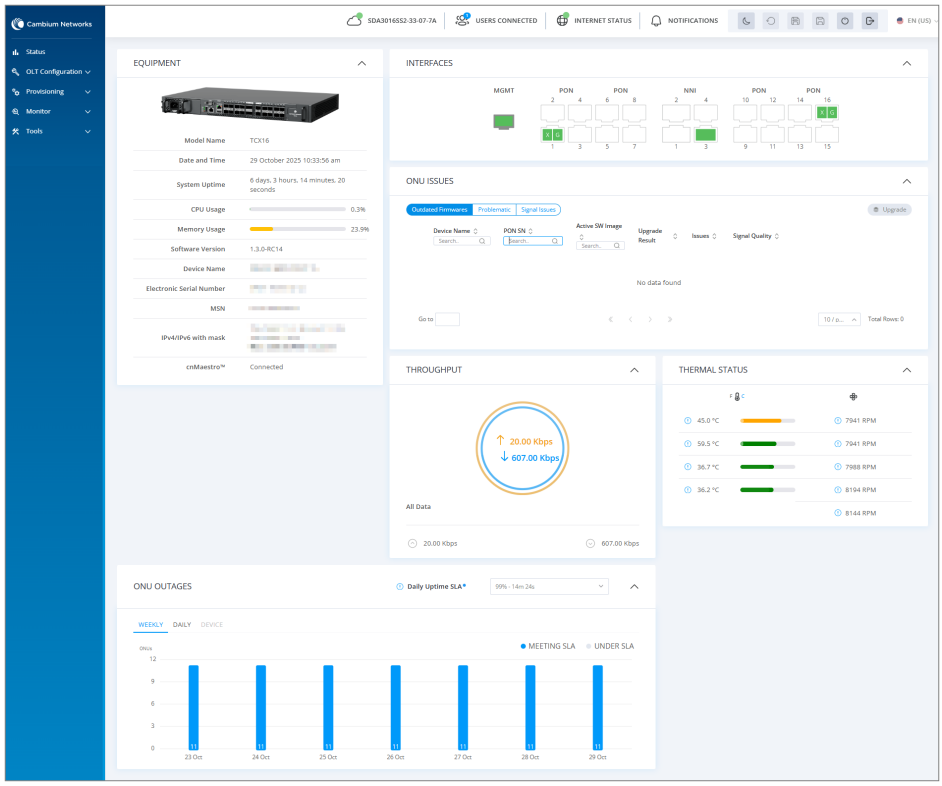
6. Enter a new password in the **Administrator Password**.

7. Confirm the password in the **Confirm Password**.

8. Click **Save**.

9. After logging into the UI, the Status page appears, as shown in Figure 26

Figure 26: *The Status page*





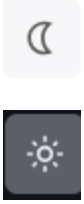
Note:

After accessing the OLT UI, upgrade the OLT to the latest supported software version. This ensures full UI compatibility, access to new features, and stable operation. To upgrade refer to Software Upgrade section.

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 OLT and ONT configurations.

Table 13: List of UI controls

UI Control	UI Control name	Description
	Change UI Theme	Toggle light and dark mode.

UI Control	UI Control name	Description
	Notifications	Displays the notifications.
	Undo Configuration	Reverts changes to the last saved state.
	Trial Configuration mode	Trial Configuration mode allows temporary changes that automatically revert after 10 minutes if not saved.
	Apply Configuration	To apply the configuration changes.
	Configuration Lock	Configuration lock ensures ONT updates apply sequentially, preventing system conflicts.
	Reboot Device	To restart or reboot the system from the UI.
	Sign Out	To sign out from the UI.
	Connected	Displays the cnMaestro connection status.
	User Connected	Displays the number of users connected.
	Internet Status	Displays the internet connection status.
	Notification	Displays the notification.
	Columns Filter	Enables users to customize table views by selecting which columns to show or hide for easy navigation.
	Detailed View	Allows users to expand a row and view more information about specific features.
	List View	Displays data in a simplified and linear format.
	Download as CSV	Allows users to export a detailed .csv file of all ONUs device lists and event logs.

Viewing the Status page

After logging into the GUI, the Status page appears, as shown in Figure 27. It describes the status information of OLT.

Figure 27: *The Status page*

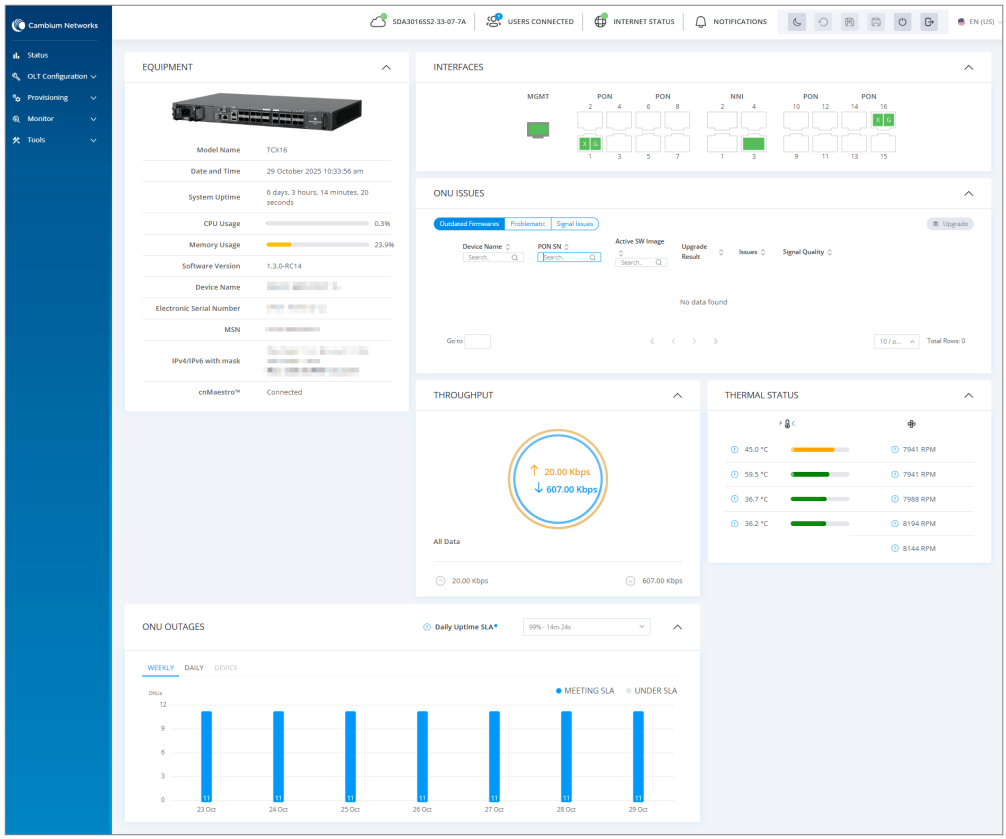


Table 14 lists and describes the components in the dashboard page.

Table 14: The dashboard page components

Elements	Descriptions
Equipment	
Model Name	Displays the model name of the device.
Date and Time	Current system date and time.
System Uptime	Uptime of the system.
CPU Usage	CPU utilization percentage.
Memory Usage	Memory utilization percentage.
Software Version	Current software version.

Elements	Descriptions
Device Name	OLT device name.
Electronic Serial Number	OLT MAC address.
MSN	OLT serial number.
IPv4/IPv6 with mask	Display theOLT IPv4/IPv6 with mask support, enabling configuration and management of devices using IPv6 addresses.
cnMaestro	cnMaestro connection status.
Throughput	Displays the total DL and UL PON throughput. The DL throughput is displayed by a downward arrow and the UL throughput is displayed by an upward arrow.
Interfaces	
Ports	ONTs connect using transceivers as follows: • MGMT Port - One dedicated 100/1000Base-T RJ45 Ethernet port for out-of-band management, labeled MGMT. • PON Ports - Eight SFP+ ports (1–8), each supporting GPON, XGS-PON, or Combo PON transceivers. • NNI Ports - Two QSFP28 ports (1, 3) and two SFP28 ports (2, 4) for uplinks; support 1G–100G Ethernet, breakout, and FEC. • PON Ports (TCX16 only) - Additional eight SFP+ ports (9–16) on TCX16 models, also supporting GPON, XGS-PON, or Combo PON transceivers.
Thermal Status	
Compute Module Temperature	Displays the Compute Module Temperature such as: • Switch Chip Temperature • Board Left Temperature • Board Right Temperature
Chassis Fan	Displays the fan speed in RPM for each of the five fans located in the replaceable fan module.
ONU Outages	
Online/Offline	Displays ONU availability using two views: • **Weekly View**: Displays the number of ONUs that fell below the selected SLA threshold on each day of the week.

Elements	Descriptions
	• **Daily View**: Provides per-ONU uptime and outage timelines for the selected day, detailing offline durations and status transitions. The Daily Uptime SLA selector defines the maximum allowable downtime per day (Example: 99.9% SLA = 1 minute 26 seconds). ONUs that exceed this downtime are classified as under SLA and counted in the daily outage metrics.
ONU Issues	The ONU Issues section displays with the following indicators: • Outdated Firmware – Displays ONUs running software versions older than the OLT firmware. • Problematic – Lists ONUs with onboarding issues such as frequent reconnection attempts. • Signal Issues – Lists ONUs operating outside of the recommended operating range.



Note

For information on how to access the Cambium ONT GUI, refer to The Cambium ONT UI section.

OLT Configuration

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

- Configuring system settings
- Configuring network settings

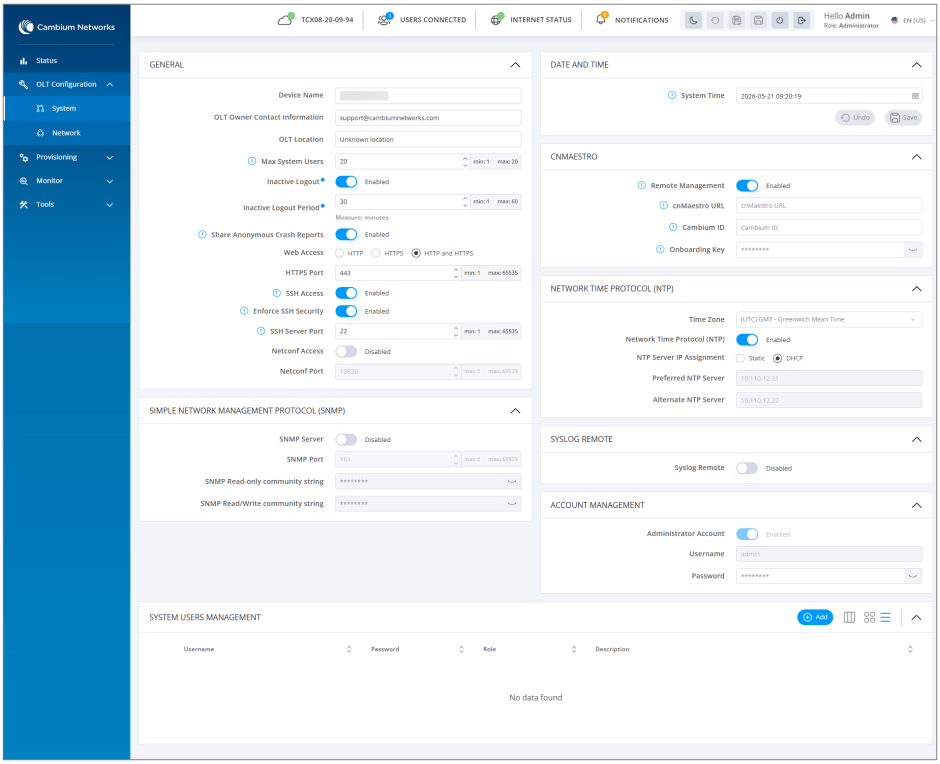
Configuring system settings

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 OLT Status page, navigate to **OLT Configuration** > **System**.

   The System page appears, as shown in Figure 28.

   Figure 28: *The System page*



2. Set the values for each parameter, as described in Table 15.

Table 15: The system page elements

Elements	Description
General	
Device Name	OLT device name.
OLT Owner Contact Information	Administrator email address.
OLT Location	Location where the OLT is installed.

Elements	Description
Max System Users	Sets the maximum number of concurrent web sessions (1 to 20).
Inactive Logout	Allows to enable or disable the inactive logout.
Inactive Logout Period	Duration of idol time before the login session is expired and the user is logged out. By default, it is 30 minutes.
Share Anonymous Crash Reports	Allows to enable or disable the sharing of anonymous crash reports.
Web Access	Choose the OLT Web UI access mode: • HTTP only • HTTPS only (no redirection) • HTTPS with HTTP redirection
HTTPS port	Specifies the HTTPS server port. Valid range: 1 to 65535 (default: 443).
SSH Access	Secure Shell (SSH) for remote console access (default: Enabled).
Enforce SSH Security	Enforces stricter SSH security settings for higher security, which may limit compatibility with older SSH clients.
SSH Server Port	Specifies the SSH server port. Valid range: 1 to 65535 (default: 22).
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 (default: 161).
SNMP Read-only community string	Defines the shared access secret required for external systems to retrieve SNMP monitoring data without allowing configuration changes.
SNMP Read/Write community string	Defines the shared access secret required for external systems to retrieve and modify device configuration through SNMP.
Date and Time	
System Time	Allows to select the system time range.

Elements	Description
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	Optional. Allows manual entry of the cnMaestro server address, typically used for on-premises deployments. By default, the device uses a discovery process that resolves to the cloud server cloud.cambiumnetworks.com unless manually overridden. For more information, refer to the cnMaestro connection diagram available in the Cambium Community via the tooltip link.
Cambium ID	Optional. Used only when onboarding from the OLT instead of using the recommended claiming process in cnMaestro. This value is the Cambium ID of the target account, found under **cnMaestro** > **Onboard** > **Settings**.
Onboarding Key	Optional. Used only when onboarding from the OLT instead of claiming in cnMaestro. This key is generated in **cnMaestro** > **Onboard** > **Settings** and ties the device to the account.
Network Time Protocol (NTP)	
Time Zone	Select the OLT's timezone from the drop-down or search for filter options.
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: • Static - Manually configure the Preferred or Preferred and Alternative NTP server by IP or DNS name such as *0.us.pool.ntp.org* and *1.us.pool.ntp.org*. • DHCP - Configure the NTP server from the DHCP response.
Preferred NTP Server	Configure the Preferred NTP server by IP or domain name such as *0.us.pool.ntp.org*.
Alternate NTP Server	Configure the Alternate NTP server by IP or domain name such as *1.us.pool.ntp.org*.
Syslog Remote	

Elements	Description
Syslog Remote	Allows to enable or disable the syslog remote.
Syslog Remote Settings	
Port	Allows to configure the port from 1 to 65535 when Syslog Remote is enabled.
Protocol	Select the protocol from the following options: • TCP • UDP
Target	Allows to configure the target.
Add	Allows to add the new syslog remote settings.
System Users Management	
Add	Allows to add the new System Users Management.
Username	Enter the username.
Password	Enter the password.
Role	Select the required role from the drop-down list: • Administrator • Installer • Read-Only
Description	Enter the description

Adding the System Users Management

To add the System Users Management, perform the following steps:

1. From the OLT Status page, navigate to **OLT Configuration** > **System**.
2. Click **ADD**.

   The new **System Users Management** will be added to the list.
3. Configure the parameters as shown in Table 15.
4. Click **Apply Configuration** to save the changes.

Configuring network settings

The Network page is used to configure the network of the OLT device and also allows to configure the SFP compatibility with the Switch port as shown in SFP compatibility with Switch port.

To access and configure the network settings, perform the following steps:

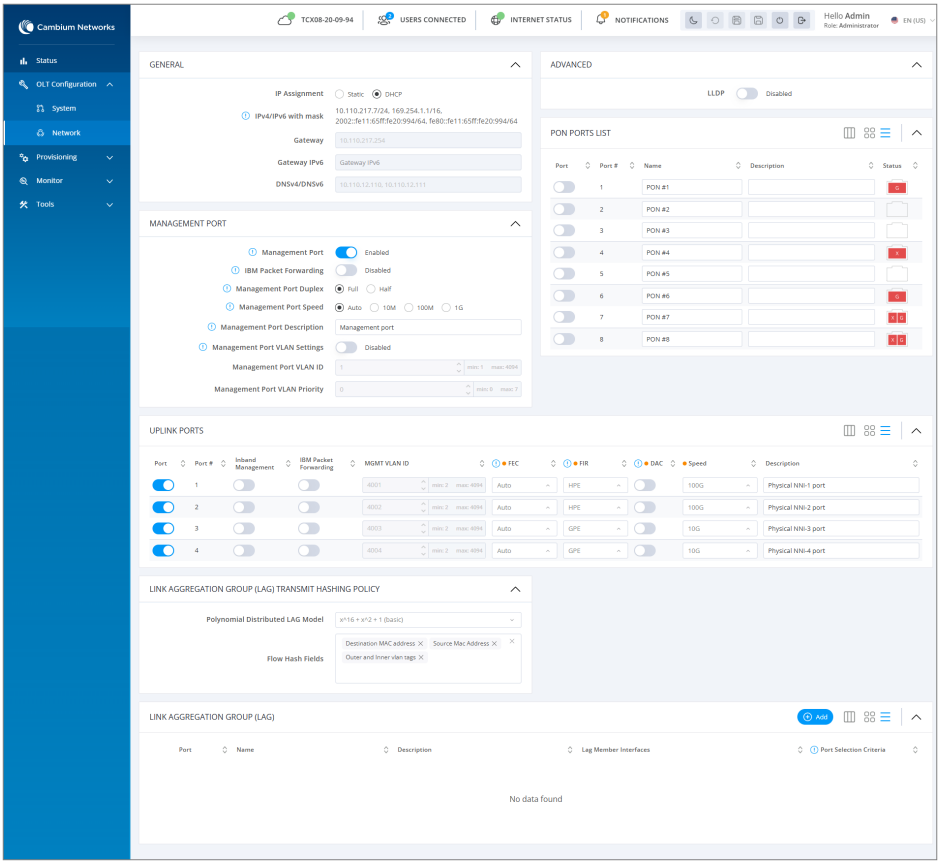
1. Log on to the OLT (as described in the Accessing the OLT UI section).

   The OLT Status page appears as shown in Figure 27.

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

   The Network page appears, as shown in Figure 29.

   Figure 29: *The Network page*



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

   Table 16: The network page elements

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: • Static - Allows the user to configure a static IPv4/IPv6 address. • DHCP - IP provided by the DHCP server from the DHCP pool.

Elements	Description
IPv4/IPv6 with mask	Lists the IPv4/IPv6 address of the OLT device.
Gateway	IP is defined by the ISP for routing.
Gateway IPv6	Gateway IPv6 address.
DNSv4/DNSv6	DNS server IP address for URL resolution.
Advanced	
LLDP	Allows to enable or disable the LLDP.
PON PORTS List	
Port	Allows to enable or disable the required port.
Port #	Displays the port numbering.
Name	Allows to edit the port name.
Description	Enter the description.
Status	Displays the status of the port.
Management Port	
Management Port	To enable/disable the management port. The OLT becomes inaccessible through the management interface once it is disabled, including via the backdoor IP address 169.254.1.1.
IBM Packet Forwarding	Allows to enable/disable the IBM Packet Forwarding control for the OLT's Management bridge, which consists of the NNI IBM (in-band management) VLAN interfaces and the out-of-band Management port, to support loop control..
Management Port Duplex	The following are the management port duplex options: • 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: • Auto • 10M • 100M • 1G

Elements	Description
Management Port Description	Management port description.
Management Port VLAN Settings	Allows to enable or disable the management port VLAN settings.
Management Port VLAN ID	Enables configuration of the management port VLAN ID, with a range from 1 to 4094.
Management Port VLAN Priority	Enables configuration of the Management Port VLAN Priority, with a range from 0 to 7.
Uplink Ports	
Enable Port	Enable or disable the uplink port.
Port #	Uplink port number.
Inband Managment	Enable or disable inband management capability on the uplink port.
IBM Packet Forwarding	Enable or disable IBM Packet Forwarding capability on the uplink port.
MGMT VLAN ID	Enables configuration of the inband management VLAN ID, if inband management is enabled.
FEC	**Note**: An orange icon indicates that modifying the FEC field values will require a reboot. The following are the FEC options: • Auto • FC-FEC • RS-FEC • OFF
FIR	**Note**: An orange icon indicates that modifying the FIR field values will require a reboot. Allows to select the FIR options such as: • HPE • GPE • HBE

Elements	Description
DAC	**Note**: An orange icon indicates that modifying the DAC field values will require a reboot. Allows to enable or disable the DAC.
Speed	**Note**: An orange icon indicates that modifying the speed field values will require a reboot. Select the speed of OLT device. The following are the speed options: • 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.
Link Aggregation (LAG) Transmit Hashing Policy	Link Aggregation Group (LAG) Transmit Hashing Policy displays the following options: • Destination MAC Address - Allows to distribute traffic based on the destination device. • Source Mac Address - Allows to distribute traffic based on the source device. • Outer and Inner vlan tags - Allows VLAN-tagged or Q-in-Q to improve load balancing across VLANs.
Link Aggregation Group (LAG)	LAG section allows to create and manage port groups. Click Add to create new LAG. Link aggregation configuration and hash policy settings, allowing multiple physical ports to function as a single logical link. • Improves uplink availability by automatically failing over to the remaining active member link(s) if a member link goes offline, maintaining service continuity. • Enables load balancing by distributing traffic across member ports based on the selected hashing policy. • Increases uplink bandwidth by aggregating multiple interfaces into a single logical uplink.

Adding the LAG

To add the LAG, perform the following steps:

1. From the OLT Status page, navigate to **OLT Configuration** > **Network**.
2. Click **Add**.

   The new LAG will be added to the list.
3. The port is enabled by default; disable it if required.
4. Enter the **Name** and **Description**.
5. Select the **Lag Member Interfaces** from the drop down.
6. Select the **Port Selection Criteria** from the drop down.
7. Click **Apply Configuration**.

SFP compatibility with Switch port

SFP (Small Form-Factor Pluggable) adapters provide Ethernet connectivity through Optical Fiber and copper, offering compatibility with a range of Ethernet and GPON equipment. They support both single-mode and multi-mode fiber, as well as Ethernet cables, providing benefits such as space efficiency, reduced power consumption, and extended transmission range. Various options are available based on transmission speed, cable type, and compatible equipment.

The compatibility between the SPFs and the different switch port is described below:

Table 17: SFP compatibility with switch

SFP details								Switch port details		
Manufacturer	**Model/Part No**	**Supported Speeds**	**Connector Type**	**OLT Speed**	**OLT FEC OFF/Auto**	**FIR**	**DAC**	**Model**	**Port Speed**	**FEC**
Mikrotik	XQ+85MP01D	100G	MPO	100G	OFF	HBE/GPE/HPE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR4-LR4	FEC-74, Auto, OFF
					Auto	GPE/HPE				FEC-91
Mikrotik	S+RJ10	10G	RJ45	10G	OFF/Auto	HBE/GPE	Disable	CRS518-16XS-2XQ	Auto/10BseT/10BaseCR/10GbaseSR-LT	FEC-91, FEC-74, Auto, OFF
Mikrotik	S+AO0005	10G	DAC	10G	OFF/Auto	HPE/GPE/HBE	Enable	CRS518-16XS-2XQ	Auto/10GbaseCR/SR-LR/10BaseT	FEC-91, FEC-74, Auto, OFF
Mikrotik	XS+DA0003	25G	DAC	25G	OFF/Auto	HPE/HBE	Enable	CRS518-16XS-2XQ	Auto/25GBaseCR/25GbaseSR-LR	Auto, OFF
Mikrotik	Q+DA0001	40G	DAC	40G	OFF	HBE/HPE	Enable	CRS518-16XS-2XQ	Auto/40G baseCR4/40G baseSR4-LR4	FEC-91, Auto, OFF
					Auto					FEC-74

SFP details								Switch port details		
Manufacturer	**Model/Part No**	**Supported Speeds**	**Connector Type**	**OLT Speed**	**OLT FEC OFF/Auto**	**FIR**	**DAC**	**Model**	**Port Speed**	**FEC**
Mikrotik	XQ+DA0001	100G	DAC	100G	OFF	HBE/HPE	Enable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91
FS	SFP-10GLR-31	10G	LC	10G	OFF/Auto	HPE	Disable	CRS518-16XS-2XQ	Auto/10-CR/10G-LR-SR/10baseT	FEC-91, FEC-74, Auto, OFF
FS	SFP-10GSR-85	10G	LC	10G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/10G-CR/10G-LR-SR/10baseT	FEC-91, FEC-74, Auto, OFF
FS	SFPP-PC01	10G	DAC	10G	OFF/Auto	HPE/GPE/HBE	Enable	CRS518-16XS-2XQ	Auto/10G-CR/10G-LR-SR/10baseT	FEC-91,FEC-74,Auto,OFF
FS	S28-PC01	10G	DAC	25G	OFF/Auto	HBE/HPE	Enable	CRS518-16XS-2XQ	Auto/25GBaseCR/25GbaseSR-LR	Auto, OFF
FS	QSFP-PC001	10G	DAC	40G	OFF	HPE/HBE	Enable	CRS518-16XS-2XQ	Auto/40G baseCR4/40G base SR4-LR4	FEC-91, Auto, OFF
					Auto					FEC-74
FS	Q28-PC01	10G	DAC	100G	OFF	HPE/HBE	Enable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91

SFP details								Switch port details		
Manufacturer	**Model/Part No**	**Supported Speeds**	**Connector Type**	**OLT Speed**	**OLT FEC OFF/Auto**	**FIR**	**DAC**	**Model**	**Port Speed**	**FEC**
Ubnt	UC-DAC-SFP+	10G	DAC	10G	OFF/Auto	HPE/GPE/HBE	Enable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR 4-LR4	FEC-91, FEC-74, Auto, OFF
Gigalight	GQS-SPO101-LR4T	100G	MPO	100G	OFF	HPE/GPE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR 4-LR4	FEC-74, Auto, OFF
					Auto	HPE/HBE				FEC-91
Gigalight	GQS-SPO101-4ER4T	100G	MPO	100G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR 4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91
Gigalight	GQS-MPO101-SR4T	100G	MPO	100G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR 4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91
Gigalight	GQS-SPO111-L24C	100G	MPO	100G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR 4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91
Gigalight	GQS-SPO400-ER4C	40G	MPO	40G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/40G baseCR4/40G baseSR4-LR4	FEC-91, Auto, OFF
					Auto					FEC-74
Gigalight	GQS-SPO400-LR4	40G	MPO	40G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/40G baseCR4/40G baseSR4-LR4	FEC-91, Auto, OFF

SFP details								Switch port details		
Manufacturer	**Model/Part No**	**Supported Speeds**	**Connector Type**	**OLT Speed**	**OLT FEC OFF/Auto**	**FIR**	**DAC**	**Model**	**Port Speed**	**FEC**
Gigalight	GQS-MPO101-eSR4T	100G	MPO	100G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/100GbaseCR4/100GbaseSR4-LR4	FEC-74, Auto, OFF
					Auto					FEC-91
Cambium	GSS-MPO250-SRT	25G	MM	25G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/25GBaseCR/25GbaseSR-LR	Auto, OFF
Cambium	N000082L203A	40G	MPO	40G	OFF	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/40G baseCR4/40G baseSR4-LR4	FEC-91, Auto, OFF
					Auto					FEC-91
Cambium	SFP-10G-Copper	10G	RJ45	10G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/10BaseCR/10GbaseLR-SR/10BaseT	FEC-91, FEC-74, Auto, OFF
Cambium	SFP-10G-SR	10G	LC	10G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	10BaseCR/10baseLR-SR/10BaseT	FEC-91, FEC-74, Auto, OFF
Cambium	SFP-10G-LR	10G	LC	10G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/10G -CR/10G-LR-SR/10baseT	FEC-91, FEC-74, Auto, OFF
Dell	SFP+SR	10G	LC	10G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/10G -CR/10G-LR-SR/10baseT	FEC-91, FEC-74, Auto, OFF
DELL	S28-10G-25-GSR-85C	10G	MMF	25G	OFF/Auto	HPE/GPE/HBE	Disable	CRS518-16XS-2XQ	Auto/25GBaseCR/25GbaseSR-LR	Auto, OFF

Provisioning the ONT devices

The Provisioning page is used to manage the OLT. This section covers the following topic:

- Settings
- Services
- Profiles
- Devices

Settings

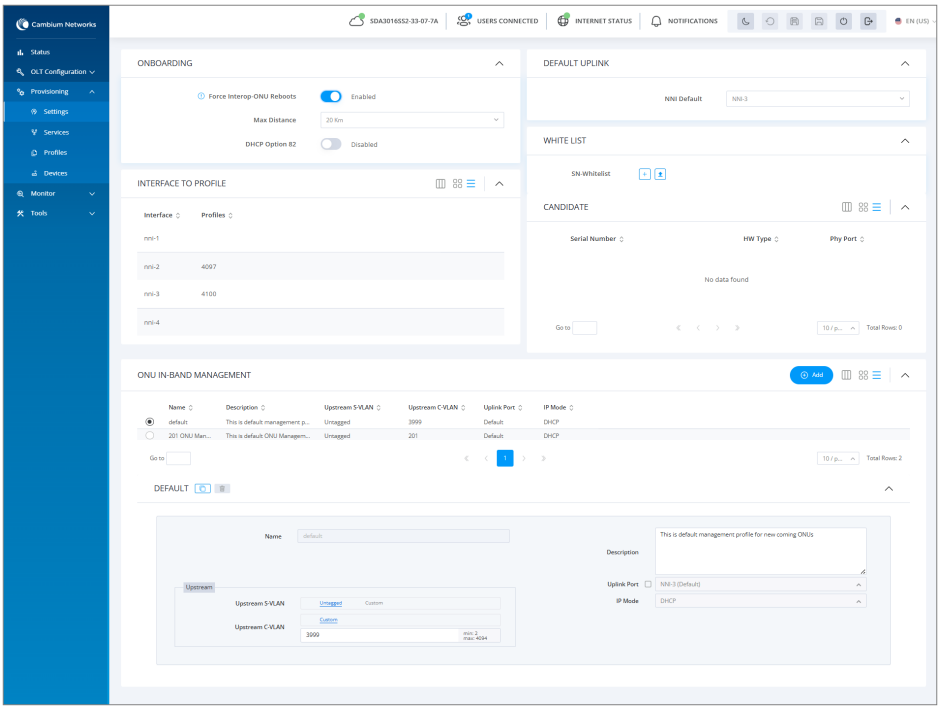
The settings page displays the onboarding, white list, and default uplink configuration of ONTs in the OLT.

To access and configure the ONTs settings, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Settings**.

   The **Settings** page appears as shown in Figure 30.

   Figure 30: *Settings page*



2. Set the values for each parameter, as described in Table 18

   Table 18: The Settings page elements

Elements	Description
Onboarding	
Force Interop-ONU Reboots	Reboot third-party ONUs automatically after configuration changes to improve reliability.
Max Distance	Select the maximum distance of the OLT from ONT. The options are: • 20 Km - Shorter uplink interval for better throughput. • 40 Km - Medium uplink interval for longer distance.

Elements	Description
	• 60 Km - Longer uplink interval for longer distance.
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 disabled 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 Value** is selected as **Custom**. Tags that can be used: OLT_SN, PORT_PORT, ONU_SLOT, ONU_ID, ONU_SN, UNI_PORT, PORT_SLOT, PORT_PORT, NVID. Default delimiter between tags is Examples of value: Olt serial is :OLT_SN, Uni port is :UNI_PORT:PORT_ SLOT:ONU_ID:PORT_PORT:ONU_SN";
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 Value** is selected as **Custom**. Tags that can be used: OLT_SN, PORT_PORT, ONU_SLOT, ONU_ID, ONU_SN, UNI_PORT, PORT_SLOT, PORT_PORT, NVID. Default delimiter between tags is Examples of value: Olt serial is :OLT_SN, Uni port is :UNI_PORT: PORT_ SLOT:ONU_ID:PORT_PORT:ONU_SN";
White List	
SN-Whitelist	Allows to add the whitelist with the Serial Number.
Candidate	Displays the Serial Number, Hardware Type, and Physical Port.

Elements	Description
Default Upink	
NNI Default	Allows to select the NNI default from the drop-down.
Interface to profile	
Interface	Displays the interface details.
Profiles	Displays the profile details of the selected interface.
ONU In-Band Management **Note**: To use ONU In-Band Management, make sure DHCP is configured on the selected VLAN upstream of the OLT.	
Name	Displays the name of the ONU In-Band Management.
Description	Displays the description provided.
Uplink Port	Displays the uplink port.
C-VLAN	Displays the VLAN tag ID range from 2 to 4094.
S-VLAN	Displays the outer Q-in-QVLAN tag ID range from 2 to 4094.
IP Mode	Displays the IP Mode.
Add	Allows to add the new ONU In-Band Management.

3. Click **Apply Configuration**.

Adding the ONU In-Band Management

To add the ONU In-Band Management, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Settings**.
2. Click **ADD**.

   The new **ONU In-Band Management** will be added to the list.
3. Configure the parameters as shown in Table 18.
4. Click **Apply Configuration** to save the changes.

Editing ONU In-Band Management

To edit the ONU In-Band Management, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Settings**.
2. Select the required ONU In-Band Management.

3. Edit the profile information as shown in Table 18.
4. Click **Apply Configuration** to save the changes.

Copying the ONU In-Band Management

To copy the ONU In-Band Management, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Settings**.
2. Click **Copy** icon.

   The new ONU In-Band Management will be added to the list.
3. Configure the parameters as shown in Table 18.
4. Click **Apply Configuration** to save the changes.

Deleting the ONU In-Band Management

To delete the ONU In-Band Management, perform the following steps:

Note

Action not allowed if the selected ONU In-Band Management is in use.

1. From the OLT Status page, navigate to **Provisioning** > **Settings**.
2. Click **Delete** icon.

   The ONU In-Band Management will be deleted from the list.
3. Click **Apply Configuration** to save the changes.

Services

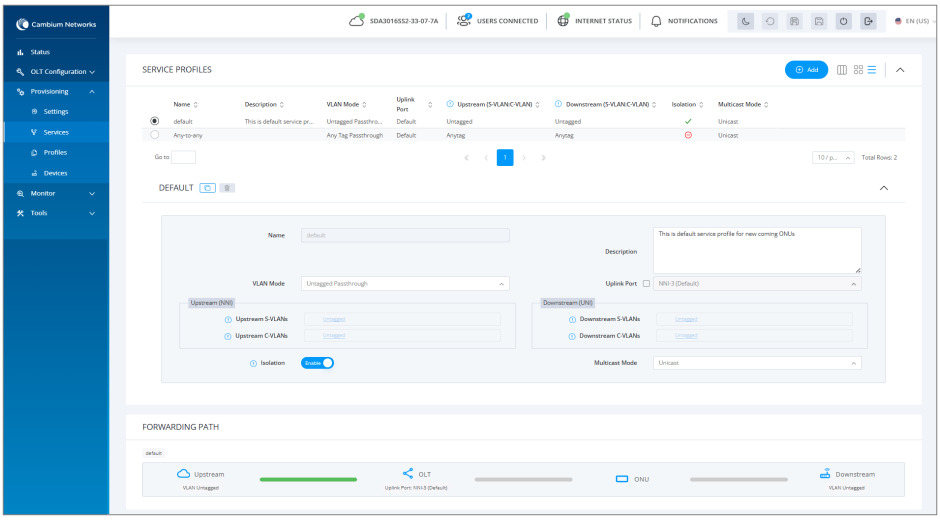
The Services page displays the service profiles and VLAN tag ID of ONTs in the OLT.

To access ONTs services, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Services**.

   The **Services** page appears as shown in Figure 31.

Figure 31: *Services page*



2. Displays the parameter, as described in Table 19.

Table 19: The Services page elements

Elements	Description
Service Profiles	
Name	Displays the name of the service profiles.
Description	Displays the description provided.
VLAN Mode	Displays the type of VLAN modes as shown in the Table 20.
Uplink Port	Displays the uplink port.
Upstream C-VLANs	Displays the upstream VLAN tag ID.
Downstream C-VLANs	Displays the downstream VLAN tag ID.
Upstream S-VLANs	Displays the upstream outer Q-in-QVLAN tag ID range from 2 to 4094.
Downstream S-VLANs	Displays the downstream outer Q-in-QVLAN tag ID range from 2 to 4094.
Isolation	Enable possibility to forward traffic between ONTs by OLT.
Add	Allows to add the new service profiles.
Forwarding Path	Forwarding Path diagrams that visually represent traffic flow between the ONU, OLT, and connected network devices, making VLAN behavior easier to verify.

VLAN Modes

The following table describes various VLAN mode options, with their corresponding VLAN configurations for upstream and downstream traffic across S-VLAN and C-VLAN settings.

Table 20: VLAN Modes

VLAN Modes	Description	Upstream S-VLANs	Downstream S-VLANs	Upstream C-VLANs	Downstream C-VLANs
Bridge Traffic (Unmodified)					
VLAN Passthrough	Forwards User Network Interface traffic to the upstream network without modification.	Untagged	Untagged	Defined	Defined Same
Any Tag Passthrough	Any Tag Passthrough accepts and forwards all 802.1Q-tagged traffic regardless of VLAN ID, enabling trunk-like behavior.	Untagged	Untagged	Anytag	Anytag
Untagged Passthrough	Untagged Passthrough supports accepting and forwarding untagged traffic on both the OLT's upstream (NNI) and downstream ONU's (UNI) interfaces.	Untagged	Untagged	Untagged	Untagged
Manipulate VLAN Tag					
Access VLAN	Assigns an upstream VLAN tag to untagged User Network Interface traffic.	Untagged	Untagged	Defined	Untagged
Mapped VLAN	Transforms a User Network Interface VLAN tag to a specified upstream tag. The Mapped VLAN feature enables you to configure the User Network Interface VLAN ID within a range of 2 to 4094.	Untagged	Untagged	Defined	Defined Different

VLAN Modes	Description	Upstream S-VLANs	Downstream S-VLANs	Upstream C-VLANs	Downstream C-VLANs
VLAN Mapping	Maps one or more User Network Interface VLAN IDs to specific upstream VLAN IDs.	Untagged	Untagged	Defined	Defined
802.1ad Encapsulate					
Q-in-Q Tunnel	Adds an ONT-specific Inner and Outer VLAN tag to User Network Interface traffic.	Defined	Untagged	Defined	Untagged
Q-in-Q Tunnel Range	Adds ONT-specific Inner and Outer VLAN tags using a configurable VLAN range for User Network Interface traffic.	Defined	Untagged	Defined	Untagged
Q-in-Q Trunk	Encapsulates User Network Interface traffic within an outer VLAN for tunneling across the PON system without modifying the original frames.	Defined	Untagged	Anytag	Anytag
Manual VLAN Control					
Custom	Expert configuration mode for any other VLAN mapping scenario, e.g., Q-in-Q Passthrough.	Untagged Custom	Untagged Custom	Anytag Custom	Untagged Anytag Custom

Adding the Service Profiles

To add the service profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Services**.
2. Click **ADD**.

   The new service profile will be added to the list.
3. Configure the parameters as shown in Table 19.
4. Click **Apply Configuration** to save the changes.

Editing Service Profiles

To edit the service profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Services**.
2. Select the required Service Profiles.
3. Edit the profile information as shown in Table 19.
4. Enable or Disable Isolation, if required.
5. Click **Apply Configuration** to save the changes.

Copying the Service Profiles

To copy the service profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Services**.
2. Click **Copy**  icon.

   The new service profile will be added to the list.



Note

After copying the profile, a warning icon displays to change the service profile's unique name.

3. Configure the parameters as shown in Table 19.
4. Click **Apply Configuration** to save the changes.

Deleting the Service Profiles

To delete the service profiles, perform the following steps:



Note

Action not allowed if the selected Service Profile is in use in the Devices - Profiles - ONT Profiles table.

1. From the OLT Status page, navigate to **Provisioning** > **Services**.
2. Click **Delete**  icon.

   The service profile will be deleted from the list.
3. Click **Apply Configuration** to save the changes.

Profiles

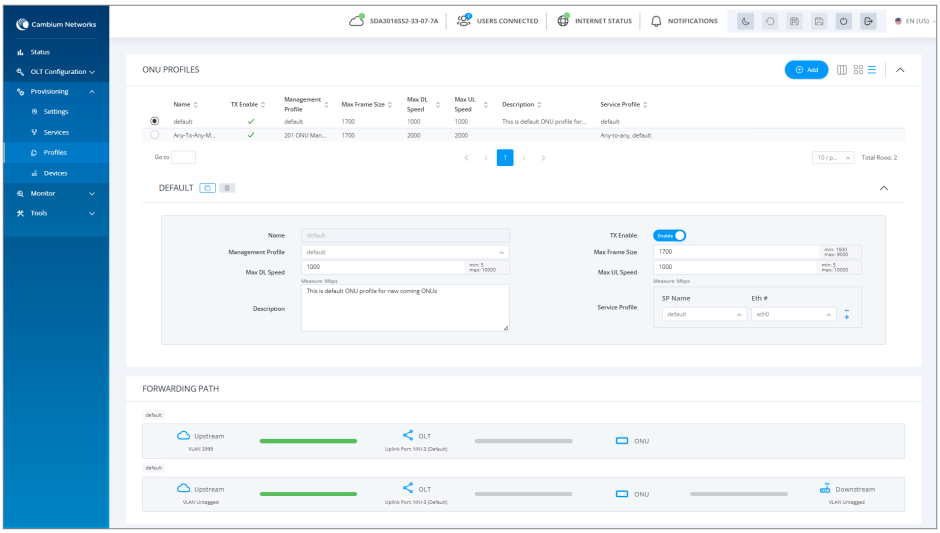
The profiles page displays the ONT profiles of ONTs in the OLT.

To access the profile settings, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Profiles**.

   The **Profiles** page appears as shown in Figure 32.

   Figure 32: *Profiles page*



2. Displays the parameter, as described in Table 21.

   Table 21: The Profiles page elements

Elements	Description
ONU Profiles	
Name	Displays the name of the ONT profiles.
TX Enable	When the TX Enable setting is disabled, the ONT stops passing traffic. By default, the TX Enable setting is enabled.
Management Profile	Displays the selected management profile.
Max Frame Size	Displays the maximum frame size range from 1500 to 9000. **Note:** • Ensure ONT support for the specified MTU. • Cambium Networks GPON ONTs support a maximum of 2000.

<table>
<tr><th>Elements</th><th>Description</th></tr>
<tr><td></td><td>Cambium Networks XGS ONTs support 9000.</td></tr>
<tr><td>Max DL Speed</td><td>Displays the selected maximum downlink such as:
Custom: allows to select the range from 5 to 2500.
Unlimited: Select the default value.</td></tr>
<tr><td>Max UL Speed</td><td>Displays the selected maximum uplink such as:
Custom: allows to select the range from 5 to 2500.
Unlimited: Select the default value.</td></tr>
<tr><td>Description</td><td>Displays the description of the profiles.</td></tr>
<tr><td>Service Profile</td><td>Displays the selected service profile name and Eth.</td></tr>
<tr><td>Forwarding Path</td><td>Displays individual forwarding paths for each active service and management VLAN flow, including ingress/egress VLAN tagging across interfaces. Link segments between devices are color-coded to reflect the real-time connection state.
<table>
<tr><th>Physical Link</th><th>Upstream-OLT</th><th>OLT-ONU</th><th>ONU--Downstream</th></tr>
<tr><td rowspan="4">Connected</td><td rowspan="4">Green</td><td>Blue (ONU provisioned)</td><td rowspan="4">Green</td></tr>
<tr><td>Green (ONU Activated)</td></tr>
<tr><td>Orange (ONU Discovered)</td></tr>
<tr><td>Gray (ONT in Quarantine)</td></tr>
<tr><td>Disconnected</td><td>Red</td><td>Red (ONT Disconnected)</td><td>Red</td></tr>
</table></td></tr>
</table>

Adding the ONT Profiles

To add the ONT profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Profiles**.
2. Click **ADD**.

   The new ONT profile will be added to the list.
3. Configure the parameters as shown in Table 21.
4. Click **Apply Configuration** to save the changes.

Editing the ONT profiles

To edit the ONT profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Profiles**.
2. Select the required ONT Profiles.
3. Edit the profile information as shown in Table 21.
4. Enable or Disable Isolation, if required.
5. Click **Apply Configuration** to save the changes.

Copying the ONT Profiles

To copy the ONT profiles, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Profiles**.
2. Click **Copy**  icon.

   The new ONT profile will be added to the list.

   Note

   After copying the profile, a warning icon displays to change the ONT profile's unique name.
3. Configure the parameters as shown in Table 21.
4. Click **Apply Configuration** to save the changes.

Deleting the ONT Profiles

To delete the ONT profiles, perform the following steps:



Note

Action not allowed if the selected ONT Profile is in use in the Devices > Action > Configure table.

1. From the OLT Status page, navigate to **Provisioning** > **Profiles**.
2. Click **Delete**  icon.

   The ONT profile will be deleted from the list.
3. Click **Apply Configuration** to save the changes.

Applying Service Profiles to ONT

To apply the service profiles to ONT, perform the following steps:

Once the Service Profiles are created, you can apply them to ONTs using two methods such as:

- Inherited Way:
    - Create an ONT Profile: After creating a Service Profile, map it to an ONT profile.
    - Apply to Multiple ONTs: Use the mapped Service Profiles within the ONT profile to apply to individual or multiple ONTs.
    - Simplified Management: This method allows for central management and easy bulk application of service profiles to several ONTs through the ONT profile structure.
- Non-Inherited Way:
    - Direct Application to ONT: Apply the Service Profile directly to specific ONTs without creating an ONT profile.
    - For Individual ONTs: This approach is ideal for ONTs that need custom profiles differing from bulk ONT profile settings.
    - Manual Application: Manually assign each ONT the required Service Profile without using an ONT profile.

Devices

On the Devices page of the OLT, you can configure the following settings:

- Configure
- Software Update
- Reboot
- Reset
- Reonboard
- Quarantine

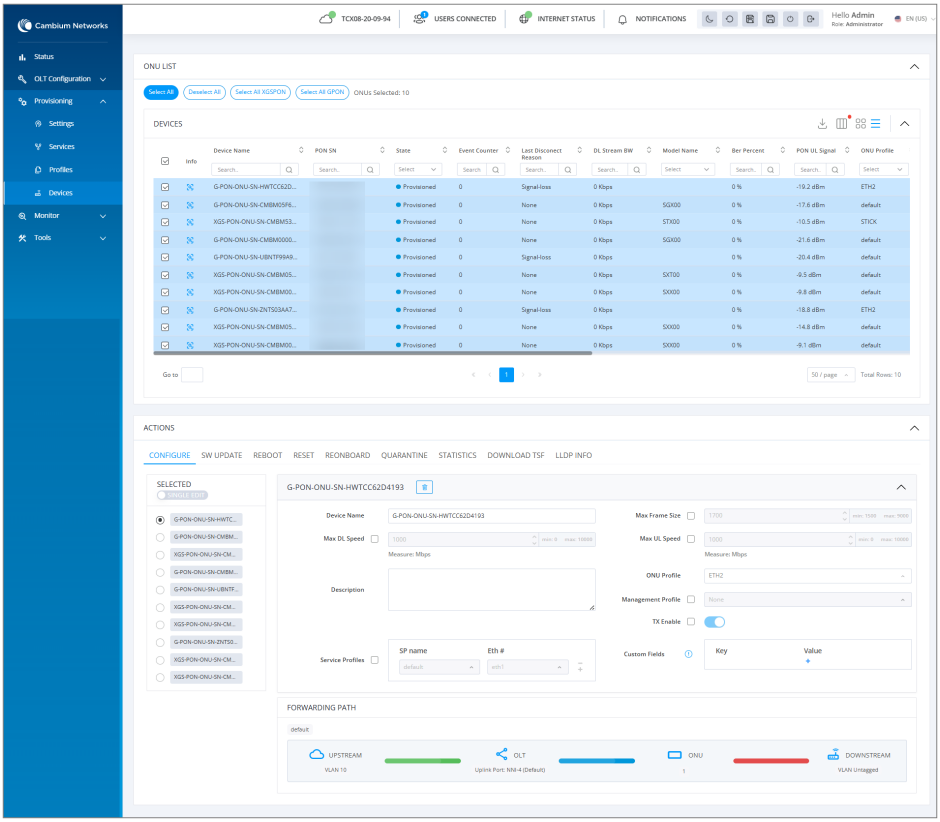
- Statistics
- Download TSF
- LLDP Info

To access and configure the ONTs Devices page, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices**.

   The **Devices** page appears as shown in Figure 33.

   Figure 33: *Devices page*



2. Displays the parameter, as described in Table 22.

   Table 22: The Devices page elements

Elements	Description
ONT List	
Select All	Allows to select all ONTs listed.
Deselect All	Allows to deselect all ONTs listed.

Elements	Description
Select All XGSPON	Allows to select all ONTs that are of the XGSPON type.
Select All GPON	Allows to select all ONTs that are of the GPON type.
ONTs Selected	Displays the number of ONTs currently selected.
Column Filter	Filters table data based on selected column values
Column Filter Customization	Column Filter option with Enable All, Disable All, System Default, and My Default settings for easy table view customization.
Devices	
Device Name	Displays the name assigned to the ONT device.
Serial Number	Displays the serial number associated with the ONT device for identification.
Active SW Image	Displays the software version currently active on the ONT device.
Inactive SW Image	Displays the software version that is inactive but stored on the ONT device.
ONT Type	Displays the type of ONT. Example: XGSPON or GPON
PON Number	Displays the specific PON port number to which the ONT is connected.
Last Disconnect Reason	Displays the last disconnect reason.
Event Counter	Displays the event counter.
Ethernet status	Ethernet status shows an ONT's LAN connection is up or down.
Ethernet Mode	Etherent Mode shows the negotiated speed of an ONTs' LAN w/ connected device (Router or Wi-Fi AP).
ONU Profile	ONU profile shows the active ONU profile name configured for that particular ONT.
State	Displays the current onboarded state of the ONT along with the corresponding color indication: • **Provisioned - Blue**: The ONT is onboarded to the OLT and able to pass data traffic. • **Activated - Green**: The ONT is onboarded to the OLT but cannot pass traffic. For example, this occurs when TX Enable is disabled. • **Discovered - Orange**: The ONT is detected by the OLT but is not yet provisioned.

Elements	Description

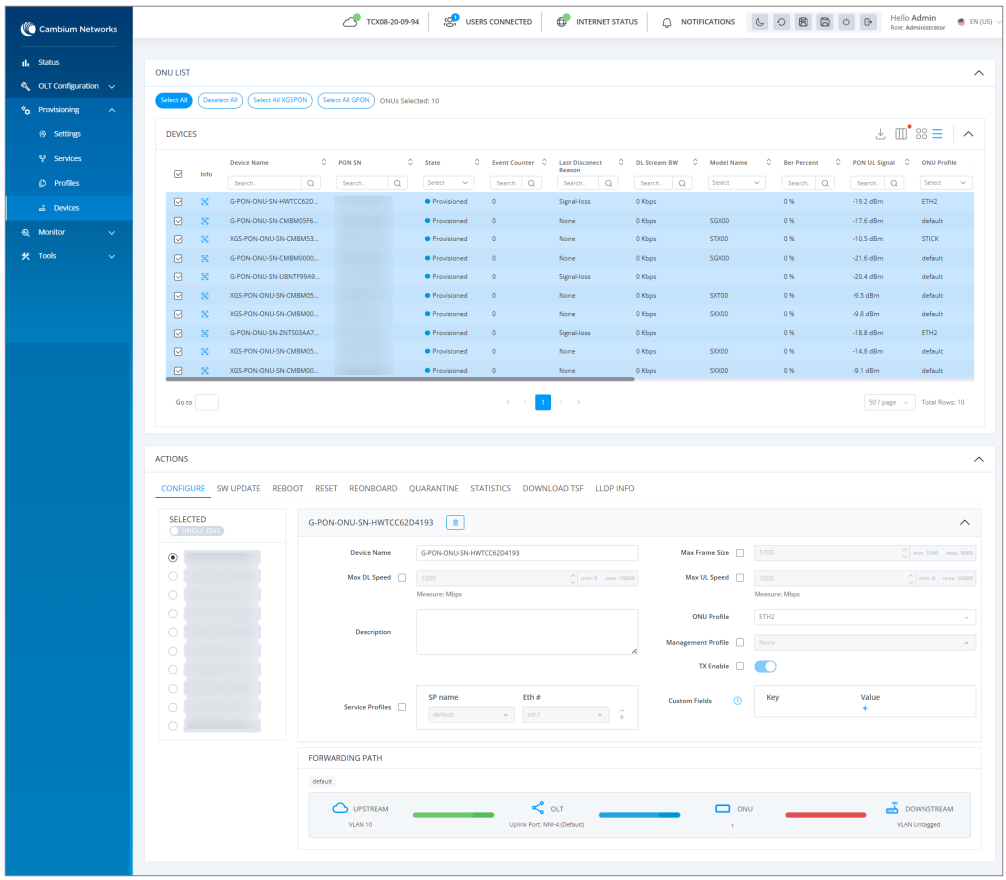
	• **Disconnected - Red**: The ONT is onboarded but currently unreachable or offline.
	• **N/A**: The ONT is not onboarded to the OLT. Possible reasons include:
	  • The ONT is powered off.
	  • The fiber connection to the ONT is disconnected.
	  • The ONT hardware has been replaced with another unit.

Reboot Status	Displays the reboot process has been Not Started, Started, or Completed.
Upgrade Status	Displays the status of any software upgrade performed on the ONT.
VLANS	Displays the VLAN IDs configured for the specific ONT device.
Actions	
Configure	Allows to configure specific settings for the selected ONT. For more information refer to Configure.
SW Update	Allows to perform a software update for the selected ONT. **Note**: It is recommended to divide a large number of ONT upgrades into smaller groups, such as 20 to 30 ONTs per batch.
Reboot	Allows to reboot the selected ONT device.
Reset	Allows to reset to default.
Reonboard	Allows to reonboard the device will result in a brief loss in connectivity.
Quarantine	Allows to isolate the selected ONT from the network for troubleshooting or forced ONT disconnections.
Statistics	Displays the performance or usage statistics for the selected ONT.
Download TSF	Allows to download technical support file ONU(s).
LLDP Info	Allows to get the LLDP Info.

Configure

The Configure tab allows users to manage settings for ONT ports and provides control over network parameters such as device name, speed limits, and frame sizes, with enabling or disabling specific features as shown in Figure 34.

Figure 34: *Configure tab*



Configuration of ONT port

To configure the ONT port, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices**.

   The **Devices** page appears as shown in Figure 33.

2. Select the required devices from the **ONT List**.

3. Click **Configure**.

4. Enable **Single Edit** or **Bulk Edit** mode.

5. Configure the parameters as shown in Table 23.

Table 23: The Configure tab elements

Elements	Description
Device Name	Allows to edit the name assigned to the ONTs.

Elements	Description
Max DL Speed	Select checkbox to use a custom value of maximum DL speed. Uncheck to inherit value from the ONT profile.
Description	Allows to add descriptions about ONT configuration.
Max Frame Size	Select checkbox to edit the maximum frame size.
Max UL Speed	Select checkbox to use a custom value of maximum UL speed. Uncheck to inherit value from the ONT profile.
ONU Profile	Allows to select the predefined ONU profiles (e.g., VPT203) for quick configuration from the drop-down list.
Management Profile	Allows to select the management profile from the drop-down list.
Custom Fields	Allows to add the custom fields.
TX Enable	Select checkbox to use a custom value of TX. Uncheck to inherit value from the ONT profile. This toggle enables or disables transmission for this port.
Service Profiles	Select checkbox to use a custom value of maximum UL speed. Uncheck to inherit value from the ONT profile. Allows to include the service profile to the Ethernet interface.

6. Click **Apply Configuration** to save the changes.

Deleting the ONT Device

To delete the service profiles, perform the following steps:

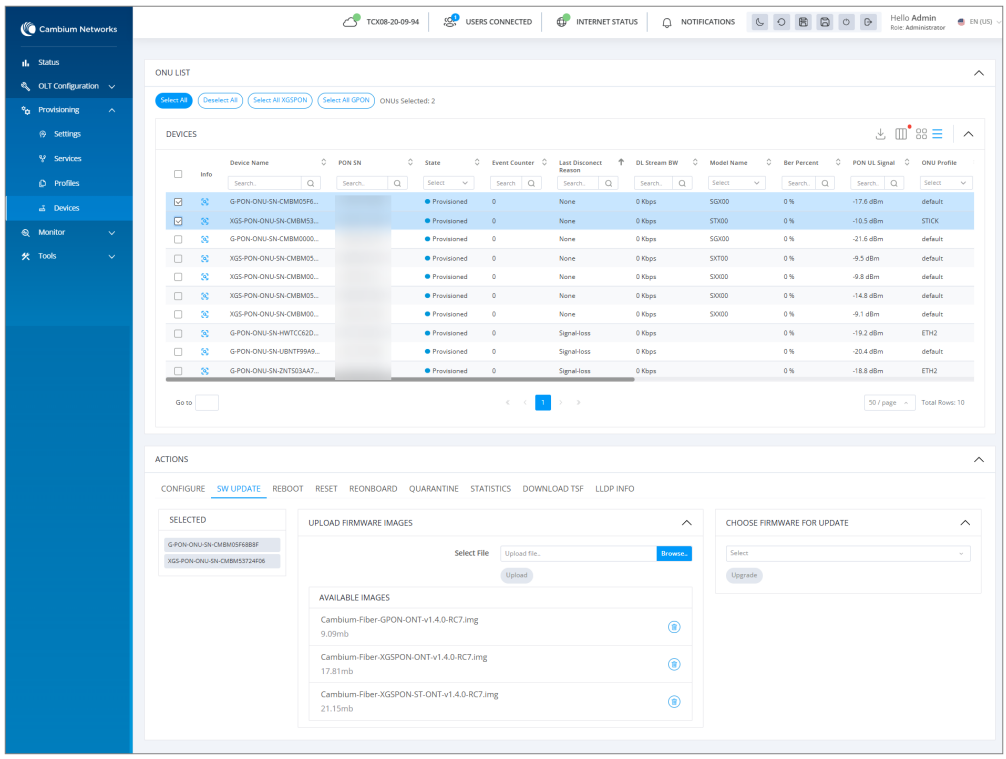
1. From the ONTs page, navigate to **Provisioning** > **Devices** > **Configure** tab.
2. Enable **Single Edit** or **Bulk Edit** mode.
3. Click **Delete**  icon.

   The ONT devices will be deleted from the list.
4. Click **Apply Configuration** to save the changes.

Software Update

The Software Update tab allows users to upload and apply firmware updates for GPON, XGS-PON ONTs, and Pluggable ONUs. Firmware updates enhance functionality and provide necessary bug fixes.

Figure 35: *SW Update tab*



Upload Firmware Images



Note

The remote ONT firmware update is applicable only when the OLT software is upgraded to version 1.2.0 or higher.

To upload the firmware images, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices** > **SW Update** tab.
2. Select the required or all devices from the **Devices** list.
3. Click **Browse** in select file to upload the firmware images.
4. Click **Upload**.

Upon successful upload, the ONT images will appear in the Available Images list with the following options:

- **Select All/Deselect All**: Allows the user to select or deselect all available firmware images.
- **Remove Selected**: Allows user to remove the selected firmware images from the list.

Update Firmware

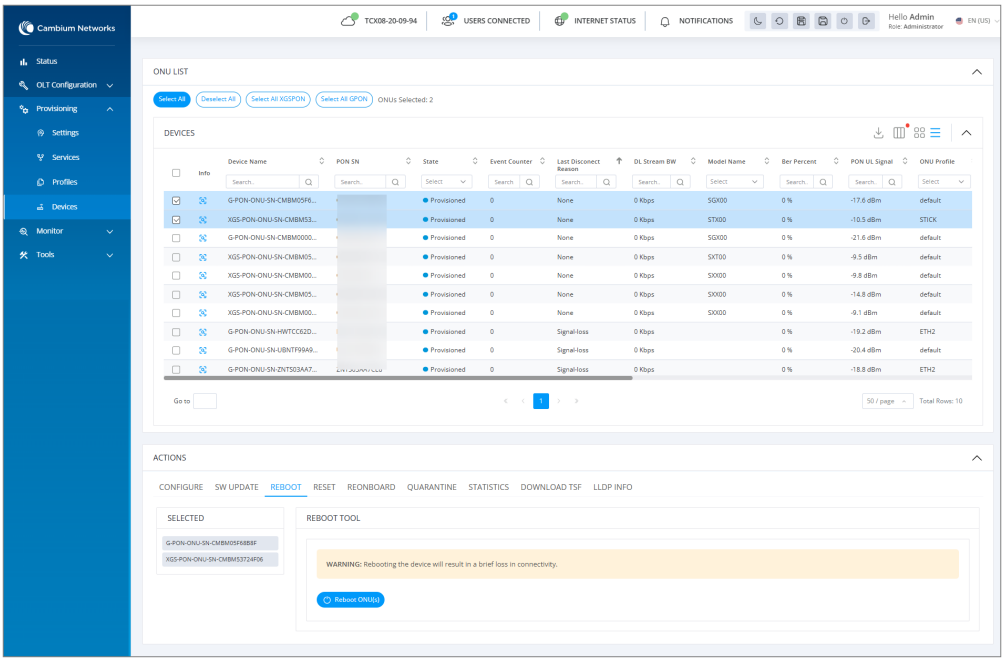
To update the firmware, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices** > **SW Update** tab.
2. Select the required or all devices from the **Devices** list.
3. Select the required firmware images from the drop-down list.
4. Click **Upgrade**.

Reboot

Rebooting the device allows the user to restart ONTs, which will temporary loss of connectivity. Click **Reboot ONT(s)** as shown in Figure 36.

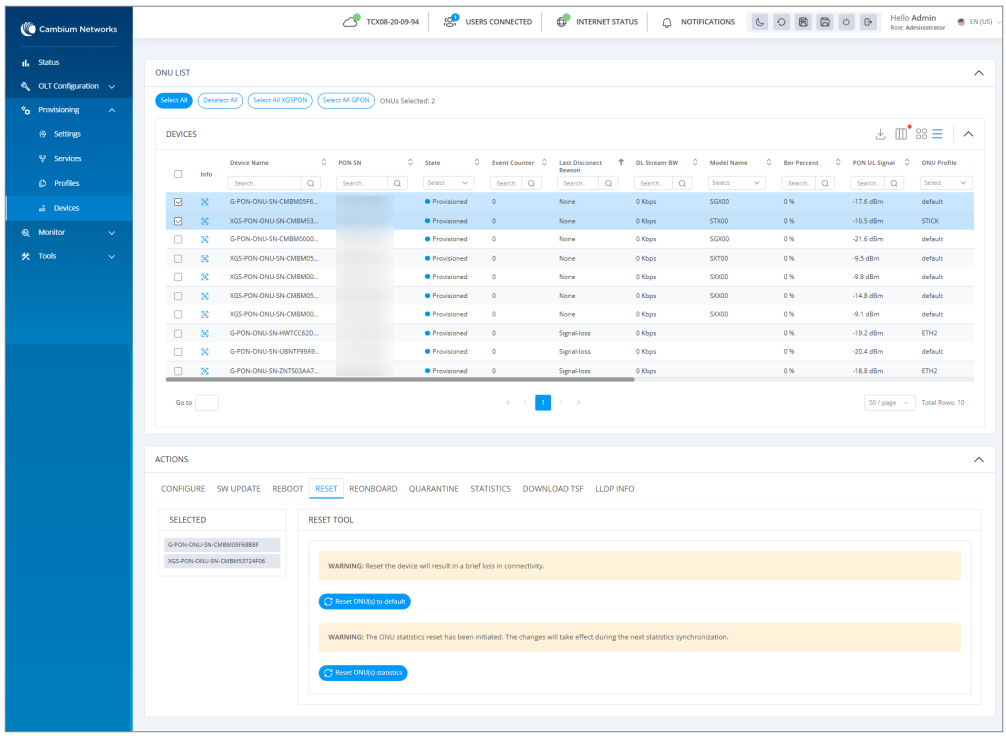
Figure 36: *Reboot tab*



Reset

Reset option that restores the ONT to factory settings. Click **Reset ONU(s) to default** as shown in Figure 37.

Figure 37: *Reset to Default*



Physical reset using a USB drive

The user can also perform a physical reset of the OLT using a USB drive by following the steps below:

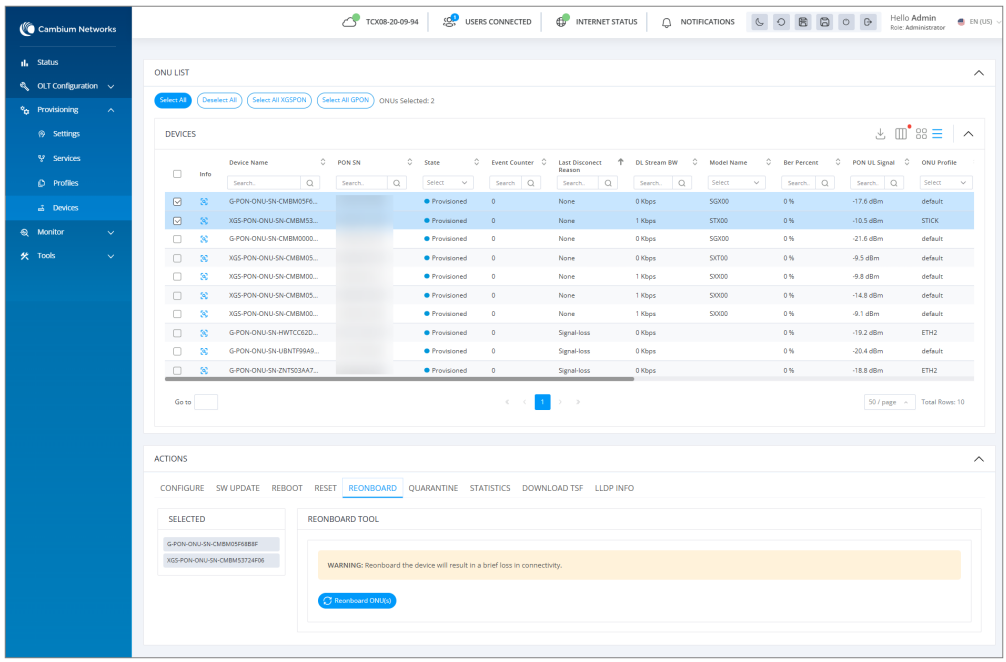
1. Format a USB 2.0 flash drive using a supported file system.
2. Create a blank file named reset or RESET in the USB drive, without any file extension

   For example, the file name must be reset and not reset.txt.
3. Insert the USB drive into the USB port of the OLT.
4. The OLT detects the reset file, saves a technical support file to the USB drive, and then restores the OLT to its factory default settings.

Reonboard

ReOnboard of ONUs which allows to disconnects and reconnects the ONT, refreshing its virtual connection with the OLT without rebooting. Click Reonboard ONU(s) as shown in Figure 38.

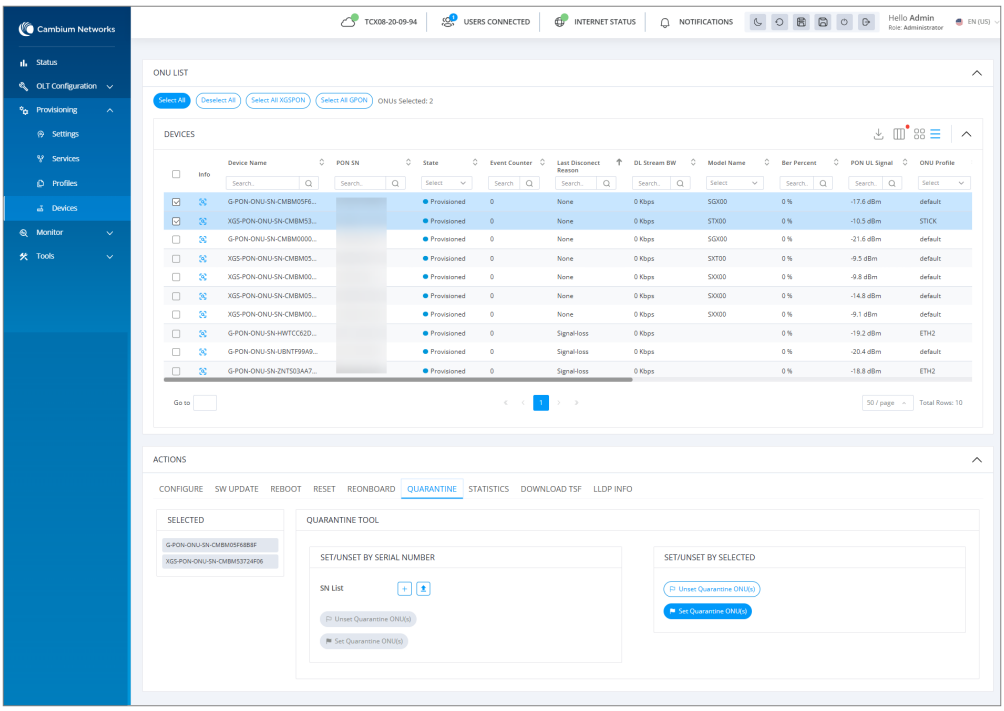
Figure 38: *Reonboard*



Quarantine

The Quarantine tab allows administrators to isolate ONT devices that perform abnormal behavior or need to be restricted access for troubleshooting. When an ONT is in quarantine, it is limited in its network communication to prevent disruptions while still being accessible for necessary maintenance tasks. The state is disabled when an ONT is in quarantine.

Figure 39: *Quarantine tab*



Set/Unset by Serial Number

To Quarantine the devices by serial number or selected, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices** > **Quarantine** tab.
2. If the user selects **Set/Unset by Serial Number**:
   - Click the **SN List** add icon.
   - Enter the **Serial Number**.

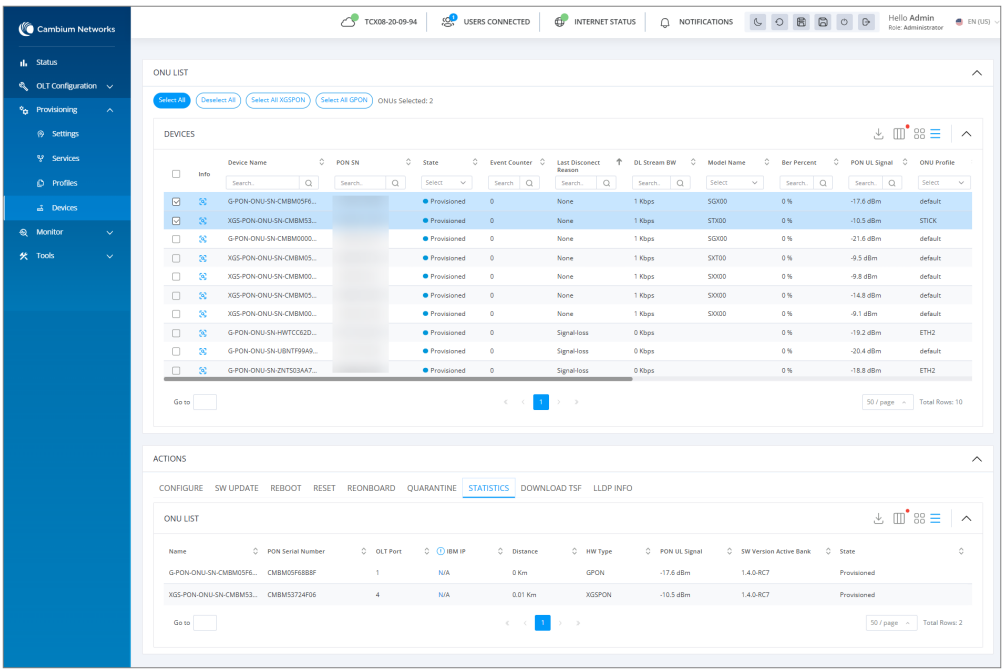
   If the user selects **Set/Unset by Selected**:
   - Select the required or all devices from the list.
3. Click **Set/Unset Quarantine ONT(s)**.

Upon successfully setting or unsetting Quarantine for the ONT(s), the device's state will be updated to either **Provisioned** or **Disabled** in the list.

Statistics

Statistics tab provides detailed insights into fiber performance and health monitoring as shown in .

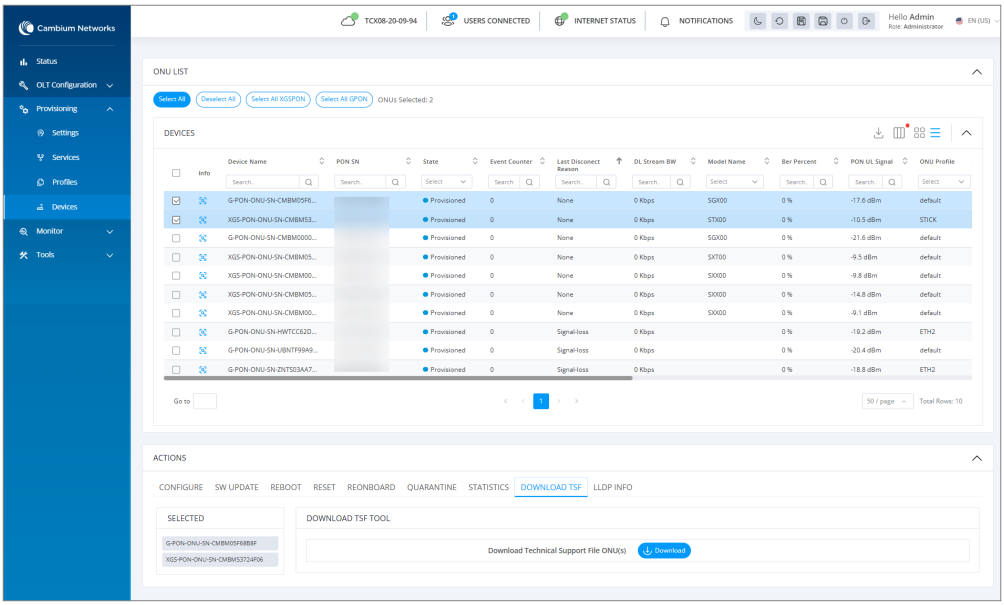
Figure 40: *Statistics tab*



Download ONT TSF from OLT

Operators can now download a comprehensive Technical Support File (TSF) for Cambium ONTs directly from the Devices page. The TSF, packaged as a .zip file, includes logs, configuration data, and other key diagnostic information—streamlining the troubleshooting of one or multiple ONT connections. When contacting Cambium Support, sharing this file along with the OLT TSF from Tools > Backup helps accelerate issue resolution and improves collaboration.

Figure 41: *Download TSF tab*



To download technical support file ONU(s), perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices** > **Download TSF** tab.
2. Select the required or all devices from the **Devices** list.
3. Click **Download**.

   Downloads the TSF **.zip** file successfully.

LLDP Info

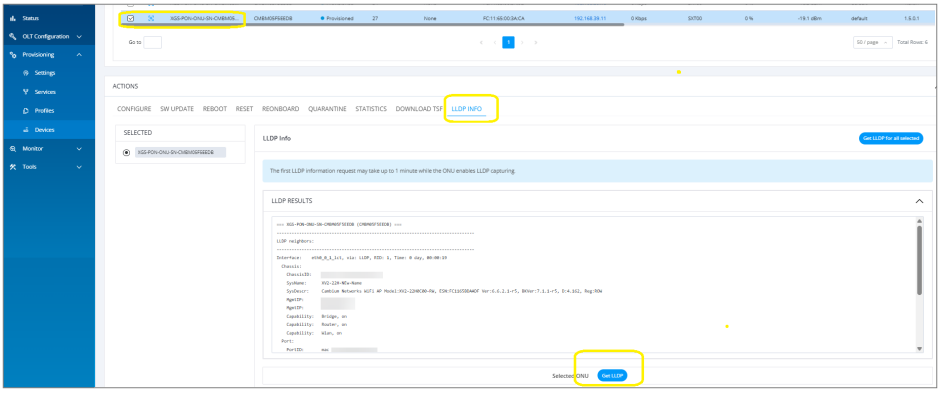
LLDP Info supports to collect Ethernet-connected client information from an ONT.

To get the LLDP info, perform the following steps:

1. From the OLT Status page, navigate to **Provisioning** > **Devices** > **LLDP INFO** tab.
2. Select the required or all devices from the **Devices** list.
3. Click **Get LLDP**.

   LLDP results are displayed as shown in the Figure 42.

   Figure 42: *LLDP Info*



Monitoring

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

- Uplink
- PON
- Event Log
- MAC Table

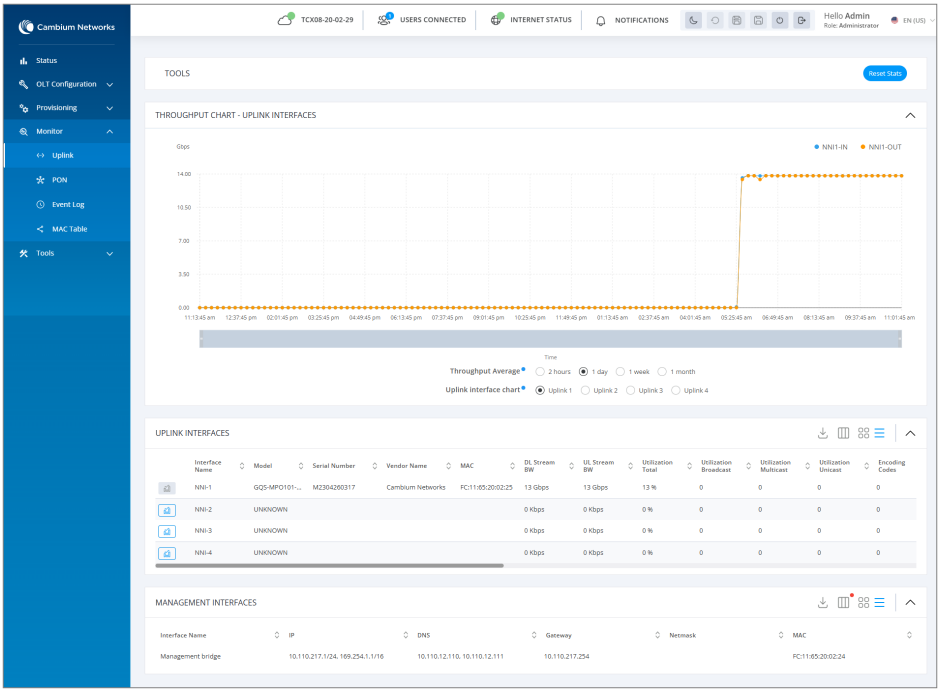
Uplink

The Uplink page displays the performances of the uplink throughput and interfaces. To access and monitor the uplink, perform the following steps:

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

   The Uplink page appears, as shown in Figure 43.

   Figure 43: *The uplink page*



The Uplink page has the following attributes:

- Tools
- Throughput Chart Uplink Interfaces
- Uplink Interfaces
- Management Interfaces

Tools

Reset Stats is used to reset the statistics of the OLT as shown in Figure 44.

Figure 44: *Tools*

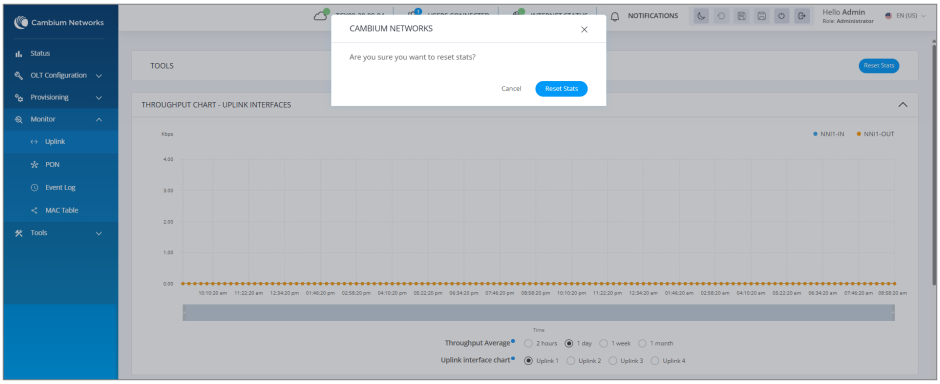


Perform the following steps to reset stats:

1. From the OLT Status page, navigate to **Monitor** > **Uplink** > **Tools**.
2. Click **Reset Stats**.

   Cambium Networks window appears as shown in Figure 45.

   Figure 45: *Cambium Networks window*

3. Click **Reset Stats**.

Throughput Chart Uplink Interfaces

The Throughput chart displays the Uplink interfaces throughput data over time intervals of 2 hours, 1 day, 1 week, or 1 month, based on the selected option.

Perform the following steps, to view the throughput chart:

1. From the OLT Status page, navigate to **Monitor** > **Uplink** > **Uplink Intefaces**.

   Throughput Chart Uplink Interfaces appears as shown in Figure 46.

Figure 46: *Throughput chart for Uplink Interfaces*



Uplink Interfaces

Uplink Interfaces displays the information on the NNI ports as shown in .

Figure 47: *Uplink Interfaces - Normal view*

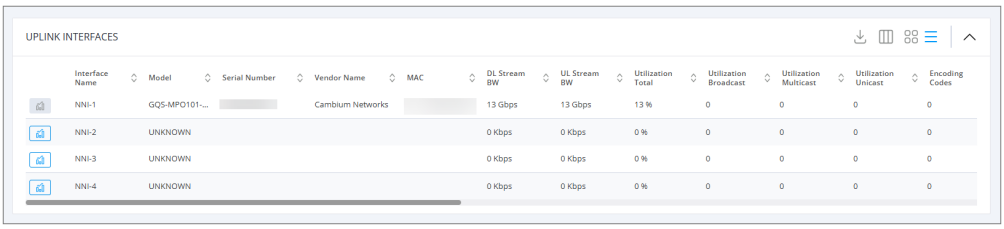


Table 24 describes the elements in the uplink interfaces.

Table 24: Elements in the Uplink interface

Element	Description
Interface Name	Interface name.
Model	SFP model name.
Serial Number	Displays the Serial Number of the device.
Vendor Name	Manufacturer name of the SFP.
Utilization Total	Total utilization.
Download as CSV	Click Download as CSV icon to download the uplink interface.
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.

Element	Description
Utilization Multicast	Multicast utilization of the NNI port.
Utilization Unicast	Unicast utilization of the NNI port.
Encoding Codes	Encoding codes.
Ethernet Type	Type of the Ethernet.

Management Interfaces

Management interfaces display the configuration information of the OLT as shown in Figure 48.

Figure 48: *Management Interfaces - Normal view*

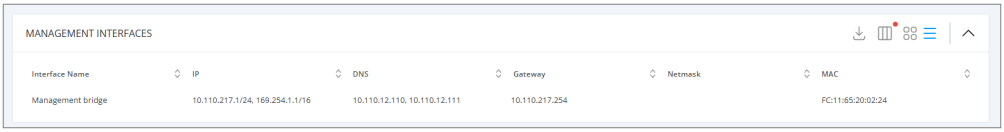


Table 25 describes the elements in the management interfaces.

Table 25: Elements in the management interfaces

Element	Description
Interface Name	Interface Name
IP	IP address of the interface.
DNS	Domain name of the interface.
Gateway	Gateway IP address of the interface.
Netmask	IP address of the Netmask.
MAC	MAC address of the interface.
Download as CSV	Click Download as CSV icon to download the management interface.

PON

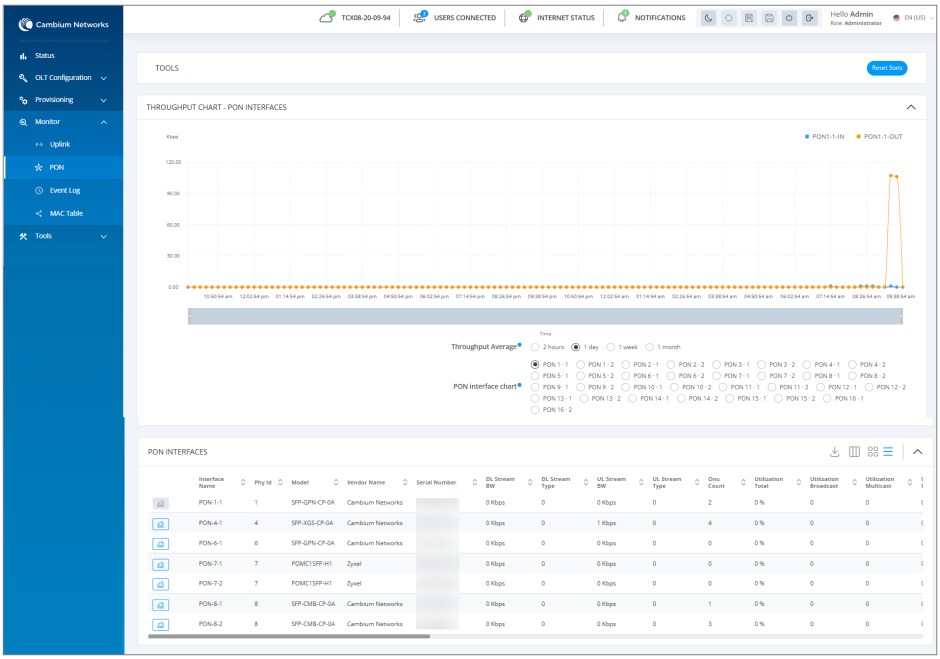
The PON page displays the throughput chart and information of the PON interfaces.

To access and monitor the PON, perform the following steps:

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

   The **PON** page appears, as shown in Figure 49.

Figure 49: *PON page*



The PON page has the following attributes:

- Tools
- Throughput Chart PON Interfaces
- PON Interfaces

Tools

Reset Stats is used to reset the statistics of the OLT as shown in Figure 50.

Figure 50: *Tools*

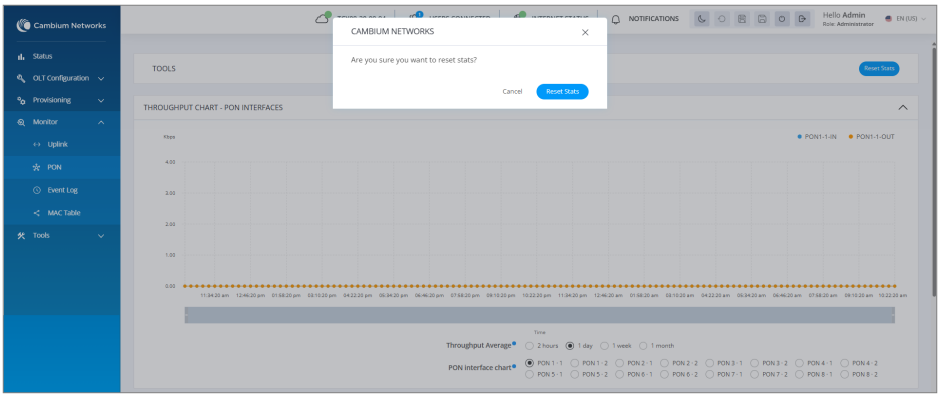


Perform the following steps to reset stats:

1. From the OLT Status page, navigate to **Monitor** > **Uplink** > **Tools**.
2. Click **Reset Stats**.

   Cambium Networks window appears as shown in Figure 51.

Figure 51: *Cambium Networks window*



3. Click **Reset Stats**.

Throughput Chart PON Interfaces

The Throughput chart displays the PON interfaces throughput data over time intervals of 2 hours, 1 day, 1 week, or 1 month, based on the selected option.

Perform the following steps, to view the throughput chart:

1. From the OLT Status page, navigate to **Monitor** > **PON** > **PON Intefaces**.

   Throughput Chart PON Interfaces appears as shown in Figure 52.

   Figure 52: *Throughput chart for PON Interfaces*



PON Interfaces

PON interfaces display the information about the ONTs connected to the OLT as shown in Figure 53.

Figure 53: *PON Interfaces - Normal view*

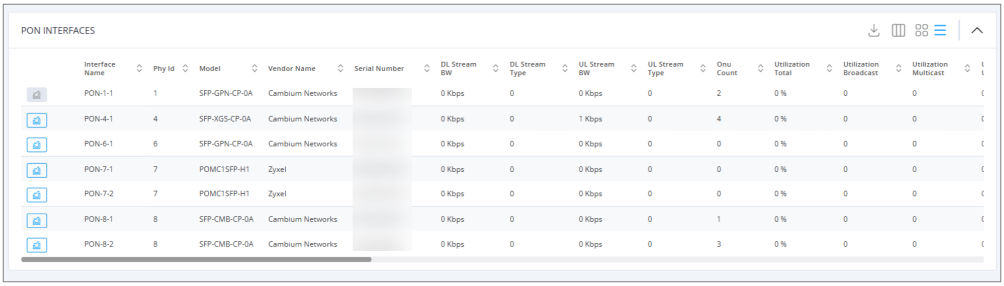


Table 26 describes the elements in the PON interfaces.

Table 26: 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.
Serial Number	Displays the Serial Number of the device.
ONU Count	Number of ONUs connected to the PON port.
Utilization Total	Total utilization.
HW Type	Type of the hardware connected to the OLT. The following are the hardware types: • GPON • XGSPON
Download as CSV	Click Download as CSV icon to download the PON interface.
DL Stream BW	Downlink stream bandwidth of the NNI port.
DL Stream Type	Downlink stream type.
UL Stream BW	Uplink stream bandwidth of the NNI port.
UL Stream Type	Uplink stream type.
Utilization Total	Utilization Total.
Utilization Broadcast	Utilization of the broadcast.
Utilization Multicast	Utilization of the multicast.
Utilization Unicast	Utilization of the unicast.
Ber	Ber

Element	Description
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.

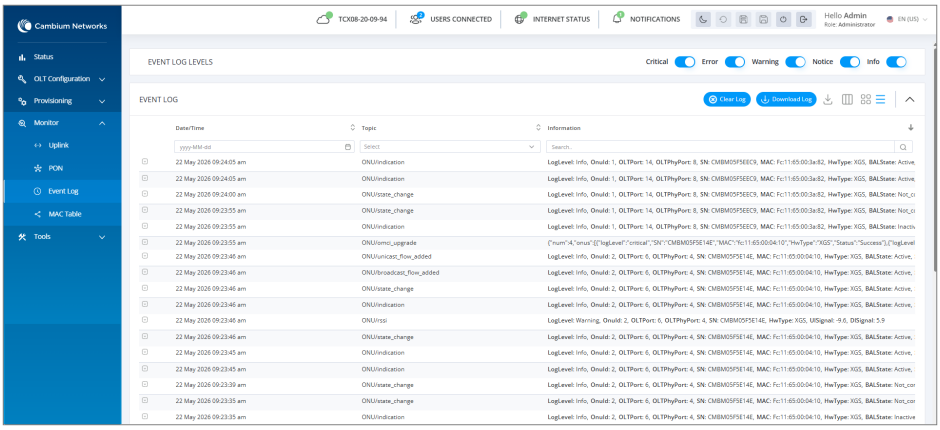
Event Log

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 OLT Status page, navigate to **Monitor** > **Event Log**.

   The Event Log page appears, as shown in Figure 54.

   Figure 54: *The Event Log page*



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

3. To download the event log, click **Download**.

Table 27 describes the events and their descriptions.

Table 27: ONT events and description

Events	Descriptions
Event Log Levels	Event Log Level filter allows users to filter event logs by categories such as: • Critical • Error • Warning • Notice • Info
Event Log	
Date/Time	Displays the timestamp of the logged event, indicating when the event occurred, displayed in the format YYYY-MM-DD and the exact time (hh:mm am/pm).
Topic	Displays the specific category of the event being logged. **Example**: The events are related to NNI/state_change, which refers to a change in the state of the Network-to-Network Interface (NNI).
Information	Displays the detailed information about the event. It typically includes parameters such as: • **Id**: The identifier of the interface or device affected by the event. • **PhyId**: The physical identifier of the interface. • **LinkState**: Indicates whether the link is up or down. • **BALState**: Shows the operational state of the Broadband Access Layer, in this case, Active_working.

MAC Table

The OLT MAC Table page provides visibility into devices connected on the NNI side of the OLT and the UNI side of the ONTs.

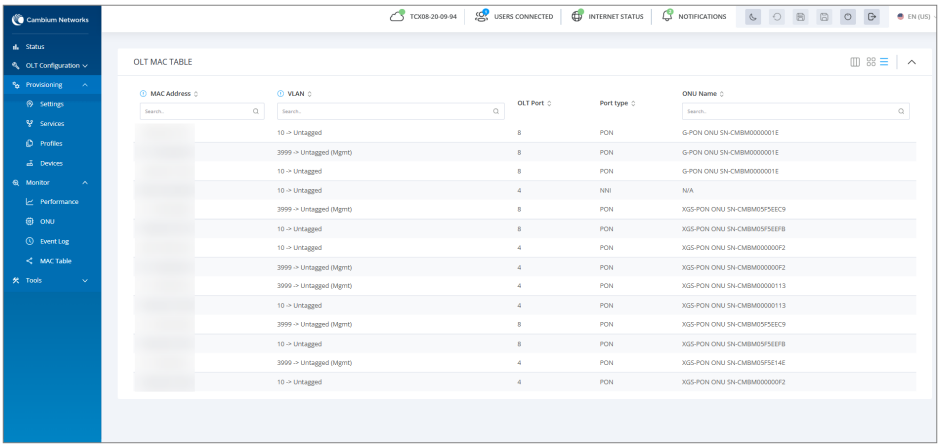
The OLT MAC Table displays MAC address entries on each OLT port along with corresponding VLAN, OLT Port, Port type, and ONU information.

To access and monitor the MAC Table list, perform the following steps:

1. From the OLT Status page, navigate to **Monitor** > **MAC Table**.

   The **OLT MAC Table** page appears, as shown in Figure 55.

Figure 55: *OLT MAC Table*



2. Table 28 lists and describes the elements in the OLT MAC Table List page.

Table 28: Elements in the OLT MAC Table list

Element	Description
MAC Address	Displays the Layer 3 MAC Address of the device.
VLAN	Displays the Upstream VLAN ID or Q-inQ VLAN IDs (Outer : Inner).
OLT Port	PON port number of OLT where ONTs are connected.
Port Type	Displays the type of port connected.
ONU Name	Displays the name of the ONU.

Configuring Tools

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

- Software Upgrade
- Backup / Restore
- Backup Manager
- Ping
- Traceroute
- Packet Capture

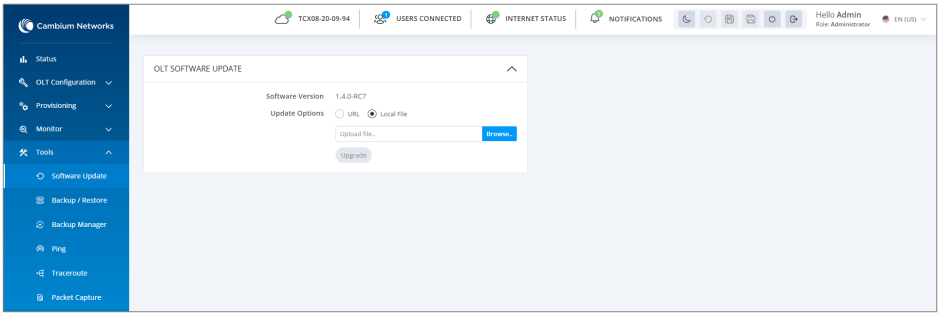
Software upgrade

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

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

   The **OLT Software Update** page appears, as shown in Figure 56.

   Figure 56: *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.

   To ensure the integrity of the OLT software image file, User can verify the MD5 and SHA256 checksums provided by cambium networks.

   After downloading the file from the support site, compare the generated checksum with the following values:

Algorithm	Hash
SHA256	1839C89DCC333D9F3B1E0B399AEA8AA8D054B3620518987443445BA2CBEB28D4
MD5	7E679544EAA646E48438EFD4FBD7EAE4

   If the checksums match, the file is confirmed to be corruption-free.

4. Click **Upgrade** to start the upgrade process.

5. After upgrading the OLT software, reboot OLT.

Backup and restore

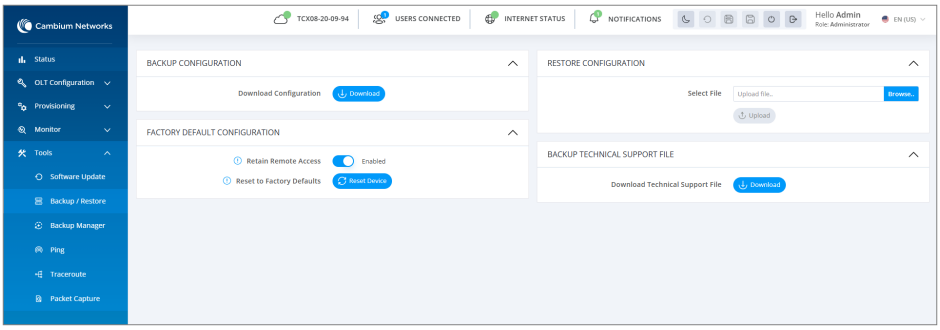
The Backup/Restore page is used to take the backup of the configuration file and restore it to the OLT.

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 57.

   Figure 57: *The Backup / Restore page*



2. Click **Download** under **Backup Configuration**.



Note:

Enabling Retain Remote Access preserves all network settings, including the OLT out-band and in-band configurations, after a factory reset.

Disabling Retain Remote Access resets all network settings to their factory default state.

It is recommended to enable Retain Remote Access during a factory reset when the OLT is deployed in a production network.

3. Enable **Retain Remote Access** and 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.

Backup Manager

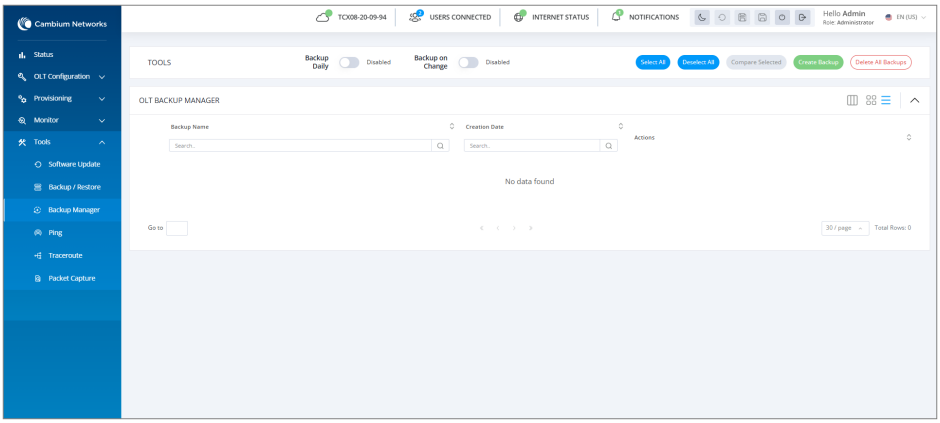
Backup Manager under **Tools** > **Backup Manager**, allows user to perform Daily Backup and Backup on Change operations.

To create the backup, perform the following steps:

1. From the OLT Status page, navigate to **Tools** > **Backup Manager**.

   The **Backup Manager** page appears as shown in .

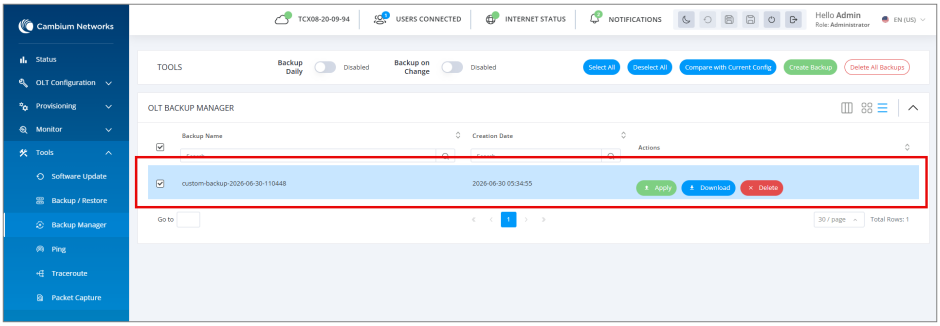
   Figure 58: *Backup Manager page*



2. Click **Create Backup**.

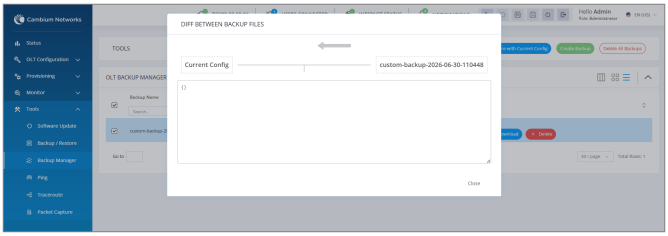
   The backup gets created as shown in the Figure 59.

   Figure 59: *Custom Backup*



3. Backup Manager page displays the following parameters:

Elements	Description
Tools	
Backup Daily	Allows to enable or disable the backup daily.

Elements	Description
Backup on Change	Allows to enable or disable the backup on change.
Select All	Allows to select all created backup.
Deselect All	Allows to deselect all created backup.
Compare with Current Config	Allows to compare the created backup configuration and current configuration. Figure 60: *Diff Between Backup Files* 
Create Backup	Allows to create the backup.
Delete All Backups	Allows to delete all created backups.
OLT Backup Manager	
Backup Name	Displays the backup name.
Creation Date	Displays the backup creation date.
Actions	Displays the following action options such as: • Apply: Allows you to apply the selected backup configuration to the current configuration. • Download: Allows you to download the backup file in JSON format. • Delete: Allows you to delete the selected backup file.

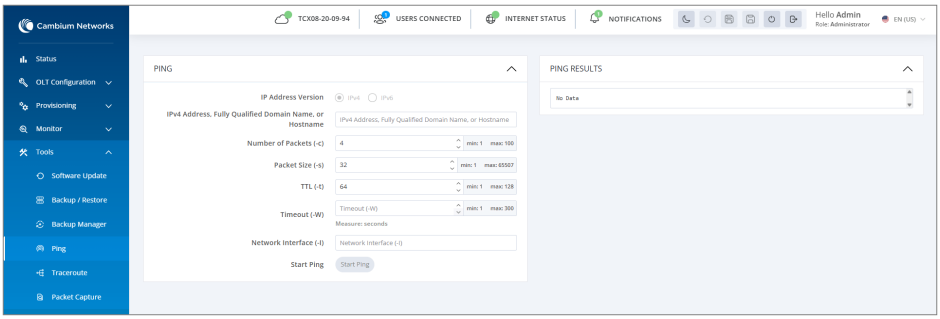
Ping

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 61.

Figure 61: *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**.

    The ping results are displayed under **Ping Results** section.

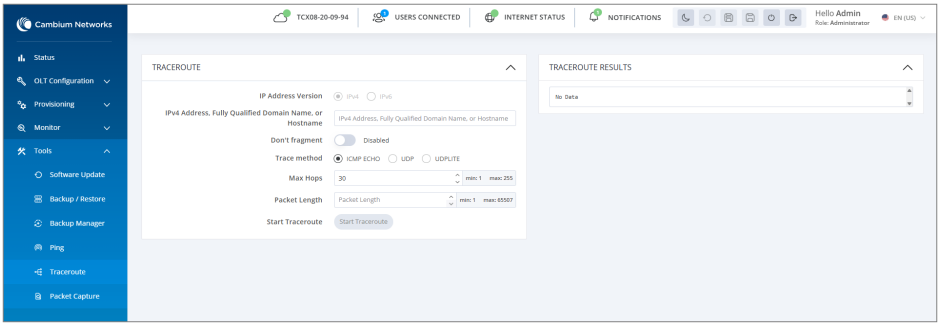
Traceroute

The Traceroute page is used to trace the data packets of 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 62.

   Figure 62: *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. Type **Network Interface**.
5. 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.
6. Select **Max Hops**. It ranges from 1 to 255.
7. Select **Packet Length**. It ranges from 1 to 65507.
8. Click **Start Traceroute**.

   The traceroute results are displayed under **Traceroute Results** section.

Packet Capture

The Packet Capture page is used to trace the data packets of OLT. Beta feature enables comprehensive switch traffic capture on OLT interfaces, making it ideal for initial setup and testing. Users can download the captured data as .pcap files for detailed analysis using tools like Wireshark. As the capture utilizes a 1 Gbps

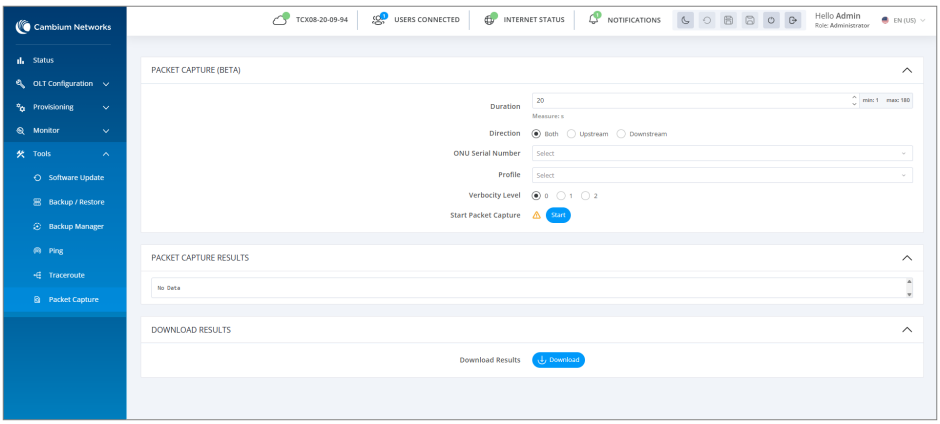
link between the OLT switch and the compute module, it is recommended to perform captures during periods of low system load to reduce performance impact.

To Packet Capture the ONT, perform the following steps:

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

   The Packet Capture page appears, as shown in Figure 63.

   Figure 63: *The Packet Capture page*



2. lists and describes the elements in the Packet Capture page.

Table 29: Packet Capture

Elements	Description
Packet Capture	
Duration	Displays the duration of packet capture range from 1 to 180.
Flow	Select anyone of the following flows: • Both • Upstream • Downstream
ONU Serial Number	Allows to select the ONU serial number from the drop-down list.
Profile	Allows to select the ONU profile from the drop-down list.
Verbocity Level	Select anyone of the following Verbocity Level: • 0 • 1 • 2

3. Click **Start**.

   Packet Capture results appears.

4. Click **Download**.

   Packet capture will be downloaded successfully in **.pcap** files.

The Cambium ONT UI

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

- Accessing the GPON ONT UI
- Configuring the GPON ONT UI
- Monitoring
- Configuring Tools

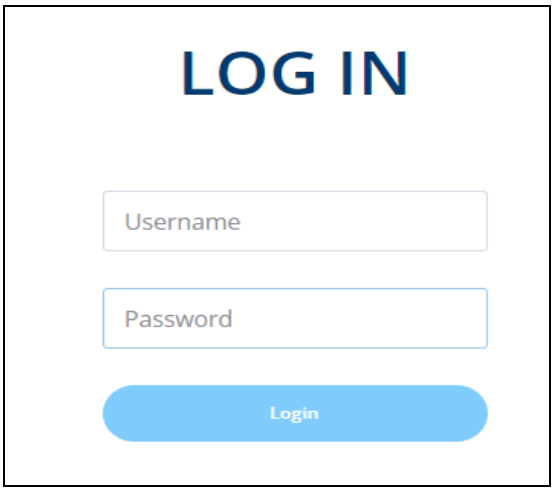
Accessing the GPON ONT UI

To log in to ONT UI, perform the following steps:

1. Open a browser, and type http://169.254.1.1/.

   The login page appears, as shown in Figure 64.

   Figure 64: *The ONT login page*

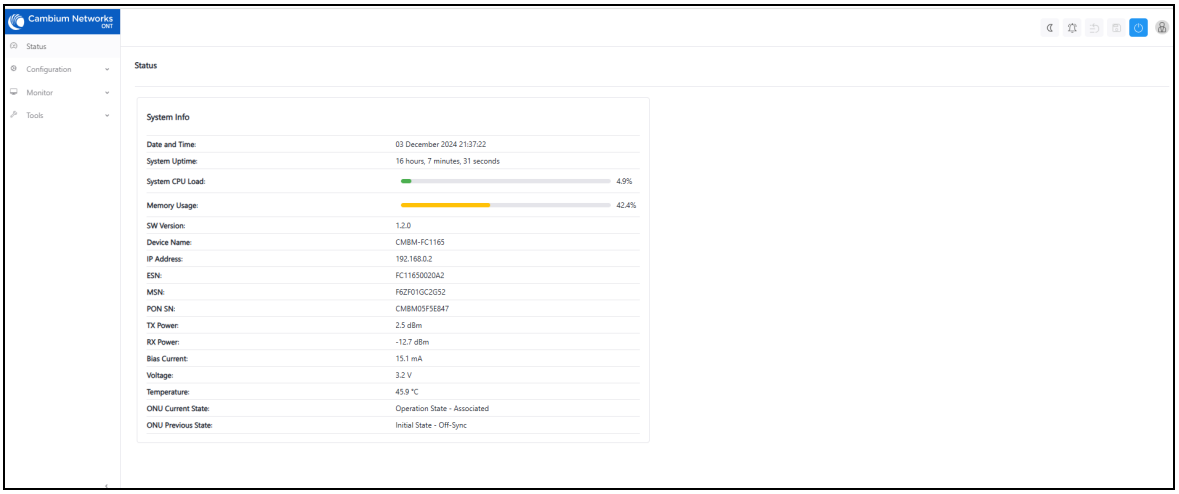
   

2. Log in to the ONT UI using the following credentials:

   Username: **admin**

   Password: **admin**

The dashboard page appears, as shown below.



Viewing the Status page

After logging into the UI, the Status page appears, as shown in Figure 65. The status page describes the status information of the GPON ONT.

Figure 65: *The Status page*

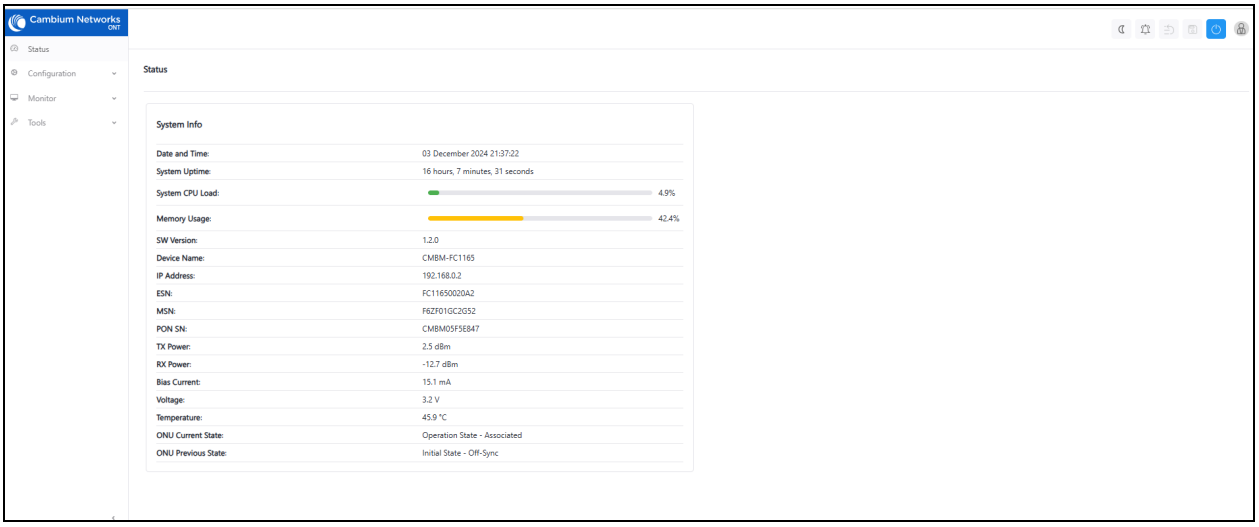


Table 30 lists and describes the elements on the status page.

Table 30: The status page elements

Elements	Descriptions
System Info	
Date and Time	Current system date and time.

Elements	Descriptions
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.
ESN	ESN number of the OLT device.
MSN	MSN number of the OLT device.
PON SN	PON serial number of the 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.

Configuring the 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 66 shows the system page of GPON ONT.

Figure 66: *The System page*

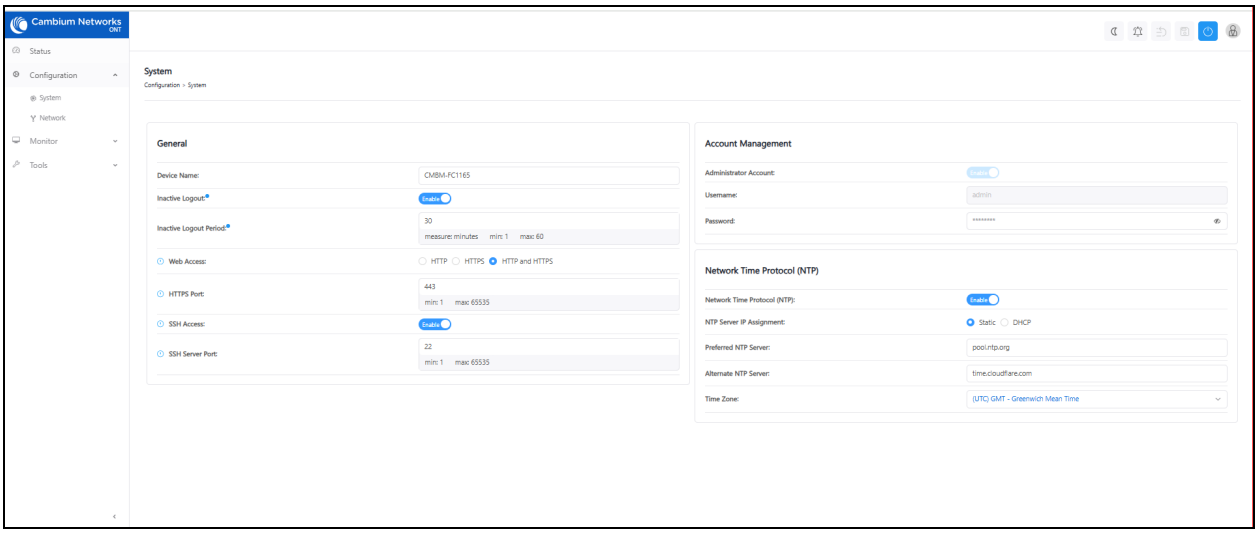


Table 31: The system page elements

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: • 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
SSH Server Port	The user can define SSH Server port number from 1 to 65535.
Account Management	

Elements	Description
Administrator Account	The user can Enable/Disable the administrator account.
Username	Username of the administrator account.
Password	Password of the administrator account.
Network Time Protocol (NTP)	
Network Time Protocol (NTP)	Allows to enable or disable the NTP.
NTP Server IP Assignment	Allows to select the following NTP Server IP Assignment: • Static • DHCP
Preferred NTP Server	Enter the preferred NTP server.
Alternate NTP Server	Enter the alternate NTP server.
Time Zone	Select the preferred time zone.

Configuring network settings

The Network page displays the network configuration information of the ONT. Figure 67 shows the Network page of the GPON ONT.

Figure 67: *The Network page*

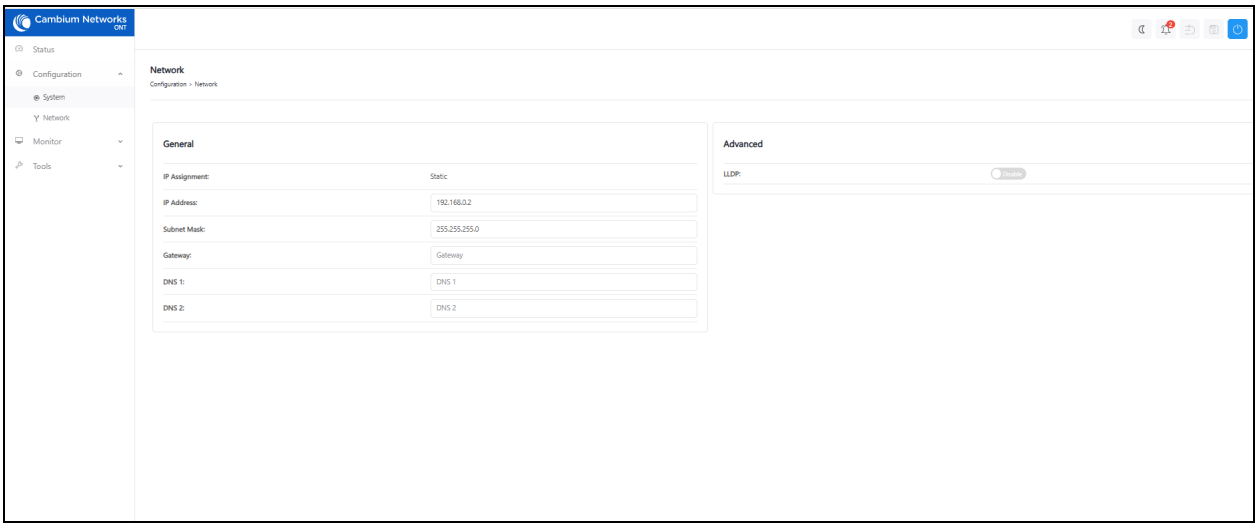


Table 32 describes the elements in the network configuration page.

Table 32: The network page elements

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: • 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 is 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.
Advanced	
LLDP	Allows to enable or disable the LLDP.

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 68 shows the performance page of the GPON ONT.

Figure 68: *The Performance page*



Table 33 describes the elements in the performance page of GPON ONT.

Table 33: 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	Displays bit error rate.
HW Type	Type of the hardware.
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.
RX Unicast Packets	Number of unicast packets received.
Status	Status of the ONT.

Element	Description
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 ONT Status page, navigate to **Monitor** > **Network**.

   The Network page appears, as shown in Figure 69.

Figure 69: *The Network page*



2. Table 34 describes the elements in the GPON ONT network page.

Table 34: 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.

Element	Description
RX Packets	Number of packets received.
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.

Configuring Tools

The Tools page has the following pages:

- Software Upgrade
- Backup and restore
- Ping
- Traceroute

Software Upgrade

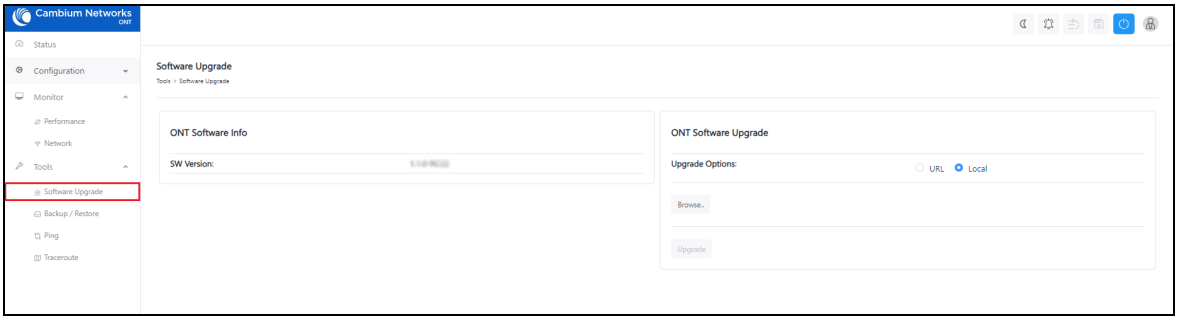
The Software Upgrade page is used to the upgrade the GPON ONT firmware.

To upgrade the ONT software, perform the following steps:

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

   The **Software Upgrade** page appears, as shown in Figure 70.

   Figure 70: *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 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 71 shows the Backup/Restore page of GPON ONT.

Figure 71: *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:

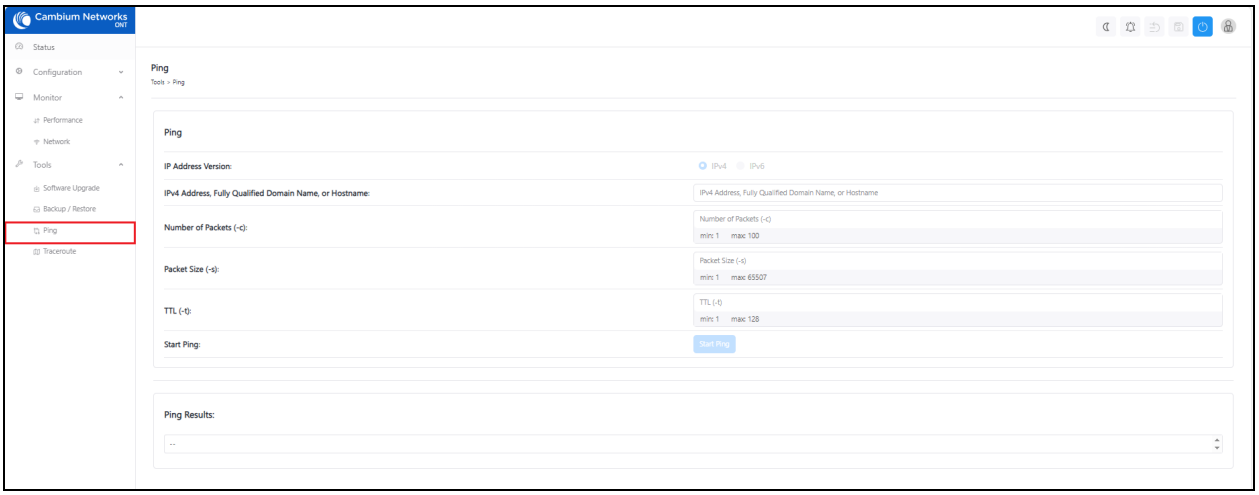
1. Click **Browse** under **Restore Configuration** and select the configuration file and then click **Upload**.

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 72 shows the ping page of GPON ONT.

Figure 72: *The Ping page of GPON ONT*



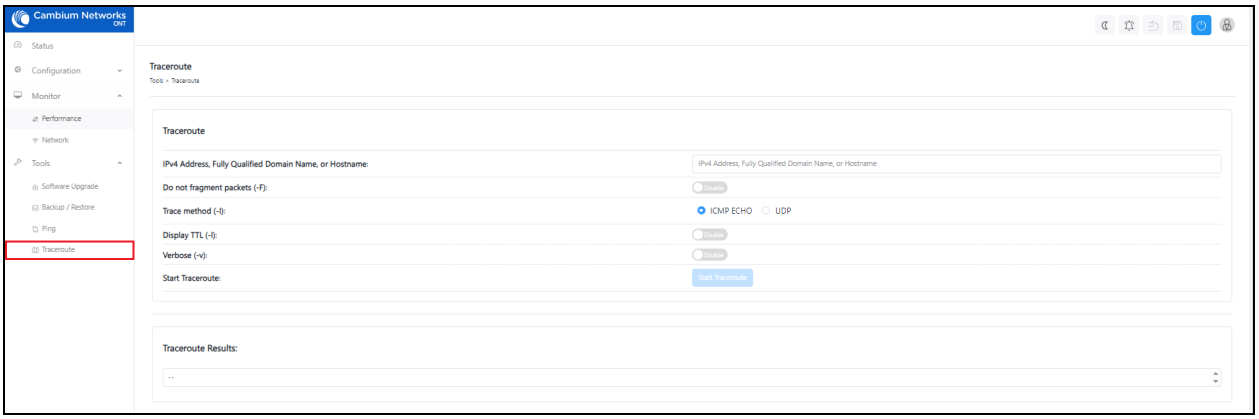
To ping ONT, perform the following steps:

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 73 shows the traceroute page.

Figure 73: *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 XGS-PON ONT UI
- Configuring the XGS-PON ONT UI
- Monitoring
- Configuring Tools

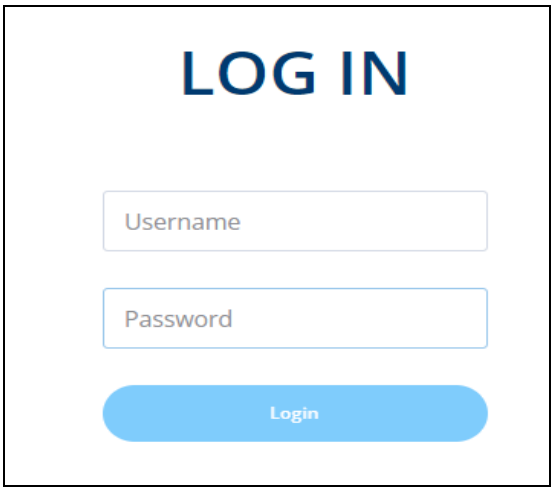
Accessing the XGS-PON ONT UI

To log in to XGS-PON ONT UI, perform the following steps:

1. Open a browser, and type http://169.254.1.1/.

   The login page appears, as shown in Figure 74.

   Figure 74: *The ONT login page*

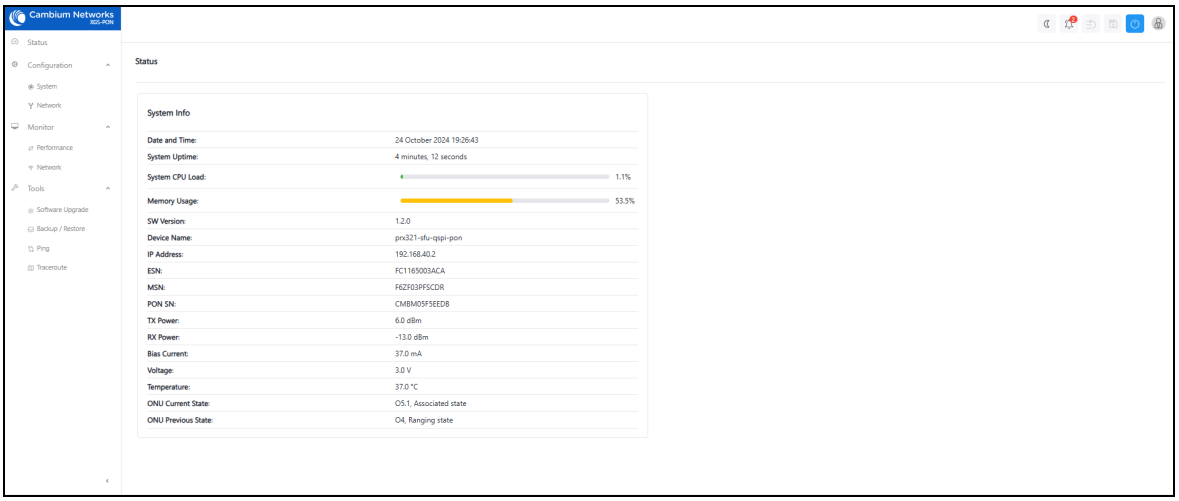
   

2. Log in to the ONT UI using the following credentials:

   Username: **admin**

   Password: **admin**

The dashboard page appears, as shown below.



Viewing the Status page

After logging into the UI, the Status page appears, as shown in Figure 75. The status page describes the status of the XGS-PON ONT.

Figure 75: *The Status page*

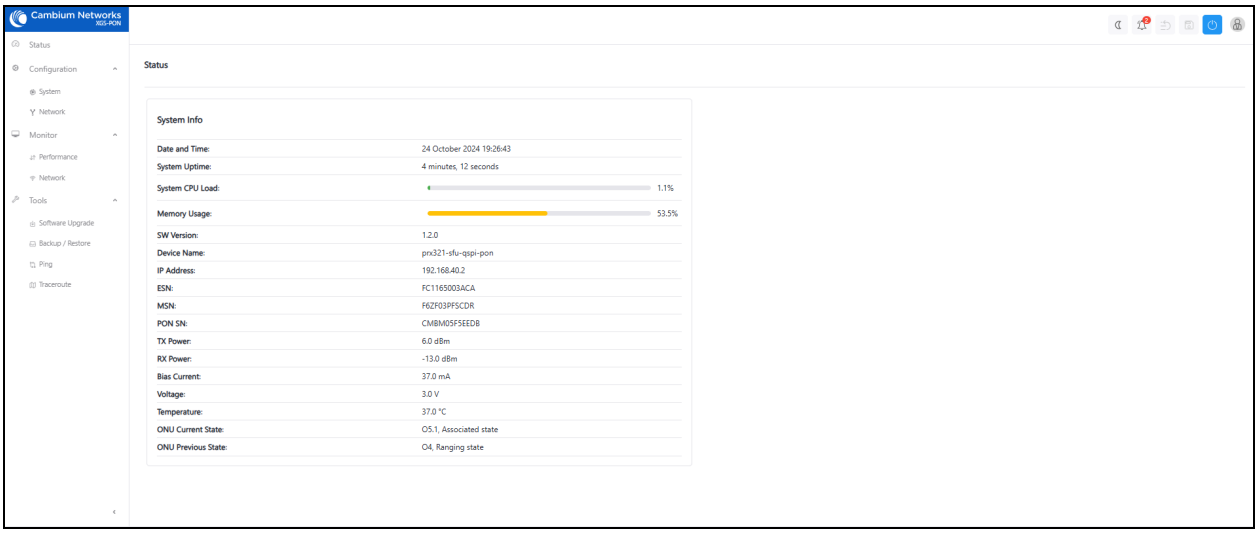


Table 35 describes the elements on the status page.

Table 35: The status page elements

Elements	Descriptions
System Info	
Date and Time	Current system date and time.
System Uptime	Uptime of the system.

Elements	Descriptions
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.
ESN	ESN number of the OLT device.
MSN	MSN number of the OLT device.
PON SN	PON serial number of the 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.
ONU Current State	Current state of the ONT.
ONU Previous State	Previous state of the ONT.

Configuring the XGS-PON ONT UI

The configuration page has the following pages:

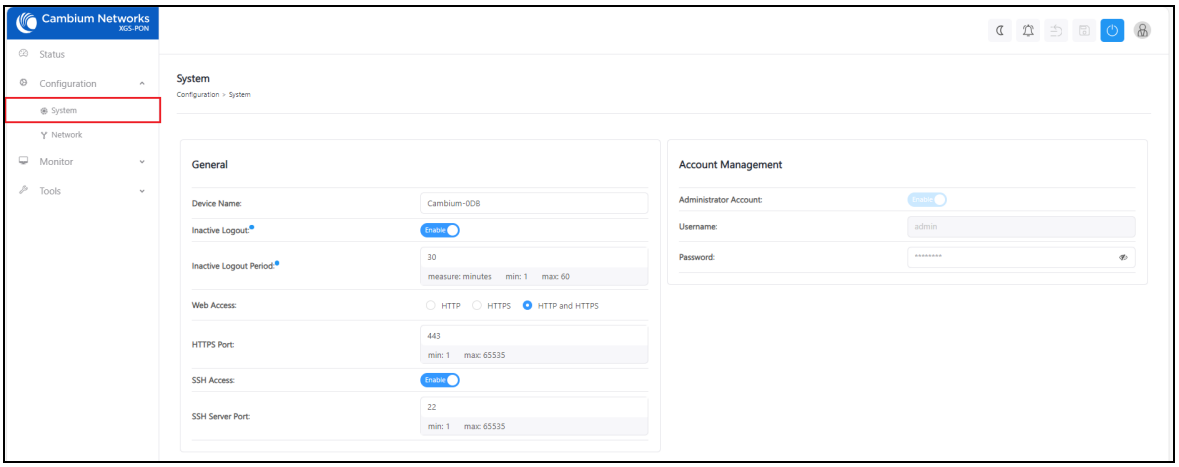
- Configuring system settings
- Configuring network settings

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 ONT Status page, navigate to **Configuration** > **System**.
2. The System page appears, as shown in Figure 76

Figure 76: *The System page of XGS-PON ONT*



3. Set the values for each parameter, as described in Table 36

Table 36: 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: • 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	Enable or disable the administrator account.

Elements	Description
Account	
Username	Type the username of the administrator account.
Password	Type the password of the administrator account.

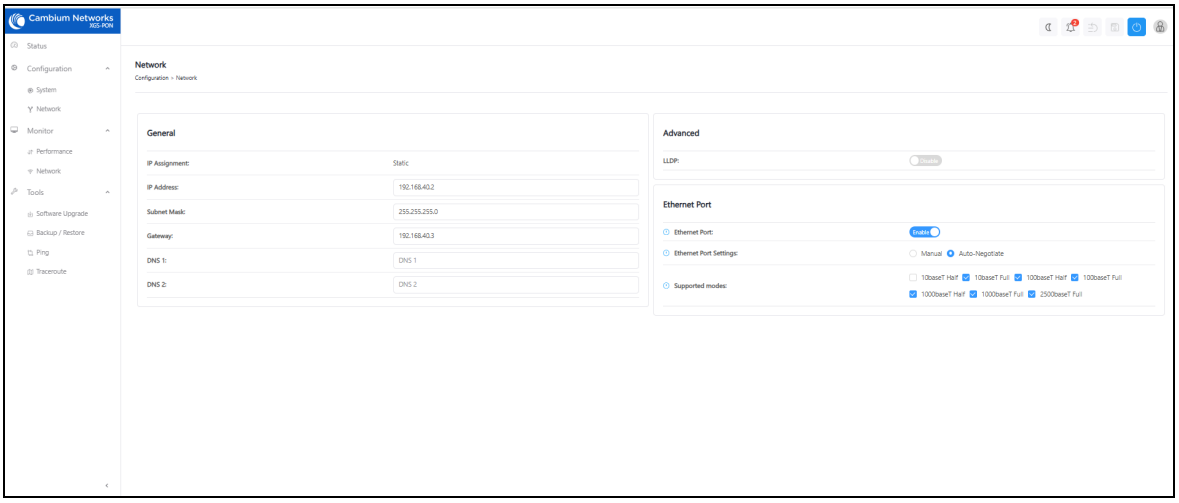
Configuring network settings

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 ONT Status page, navigate to **Configuration** > **Network**.

   The Network page appears, as shown in Figure 77

   Figure 77: *The Network page of XGS-PON ONT*



2. Set the values for each parameter, as described in Table 37

Table 37: The network page elements

Elements	Description
General	
IP Assignment	IP Assignment of the OLT device. The following are the IP assignment options: • **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.

Elements	Description
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.
Advanced	
LLDP	Allows to enable or disable the LLDP.
Ethernet Port	
Ethernet Port	Allows to enable or disable the Ethernet Port.
Ethernet Port Settings	Allows to select Ethernet Port Settings such as: • Manual • Auto-Negotiate
Supported modes	Allows to enable or disable supported modes such as: • 10baseT Half • 10baseT Full • 100baseT Half • 100baseT Full • 1000baseT Half • 1000baseT Full • 2500baseT Full

Monitoring

The Monitor page has the following pages:

- Performance
- Network

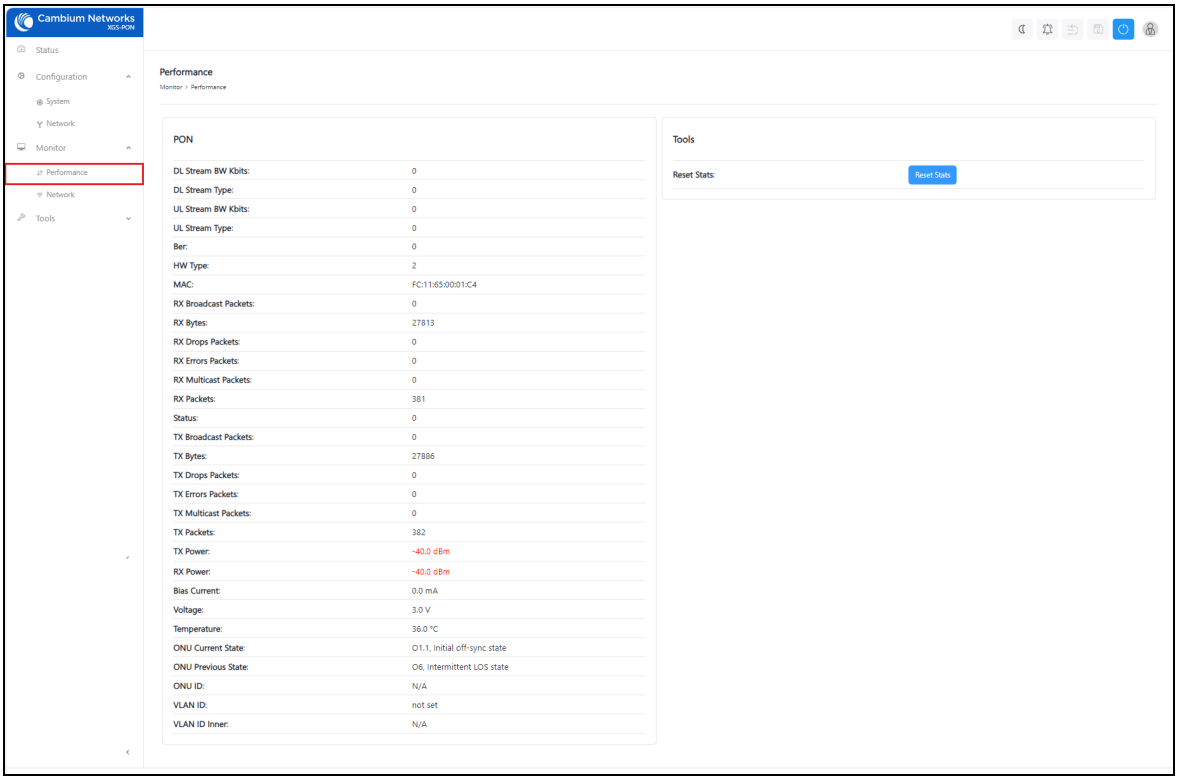
Performance

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 ONT Status page, navigate to **Monitor** > **Performance**.

   The Performance page appears, as shown in Figure 78

   Figure 78: *The Performance page of XGS-PON ONT*



2. Table 38 describes the elements in the performance page of XGS-PON ONT.

   Table 38: 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.

Element	Description
HW Type	Type of the hardware.
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.
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 ONT Status page, navigate to **Monitor** > **Network**.

   The Network page appears, as shown in Figure 79

   Figure 79: *The Network page of XGS-PON ONT*



2. Table 39 describes the elements in the XGS-PON ONT network page.

   Table 39: The network page elements

Element	Description
General	
IP Assignment	Displays the IP assignment types. The following are the types: • 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

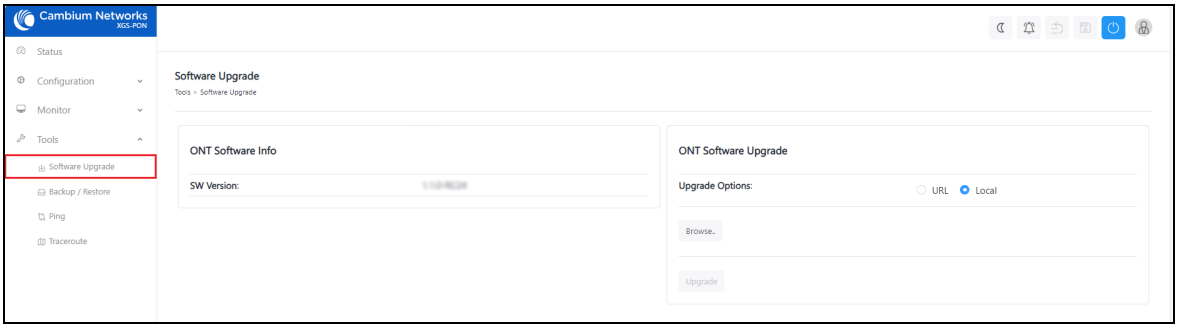
The Software Upgrade page is used to the upgrade the XGS-PON ONT firmware.

To upgrade the 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 80.

   Figure 80: *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 ONT.

Backup and restore

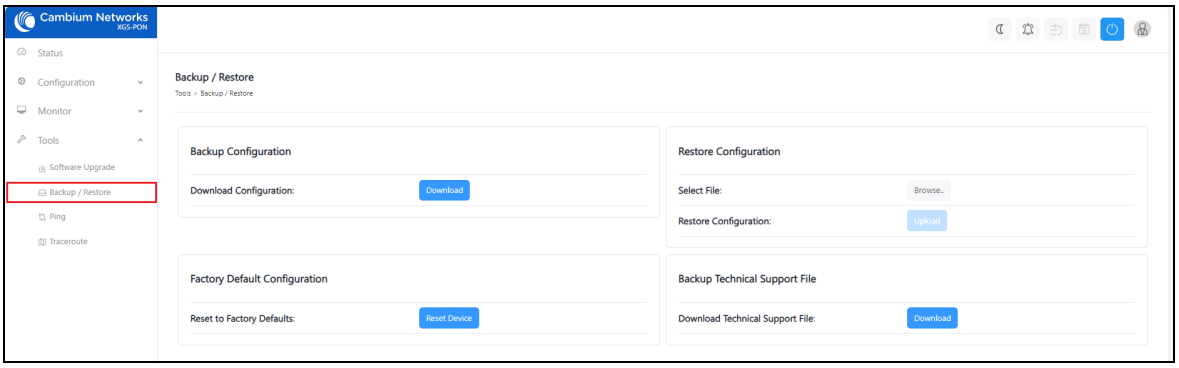
The backup and restore page is used to take the backup of the configuration file and restore it to the XGS-PON ONT.

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 81

Figure 81: *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.

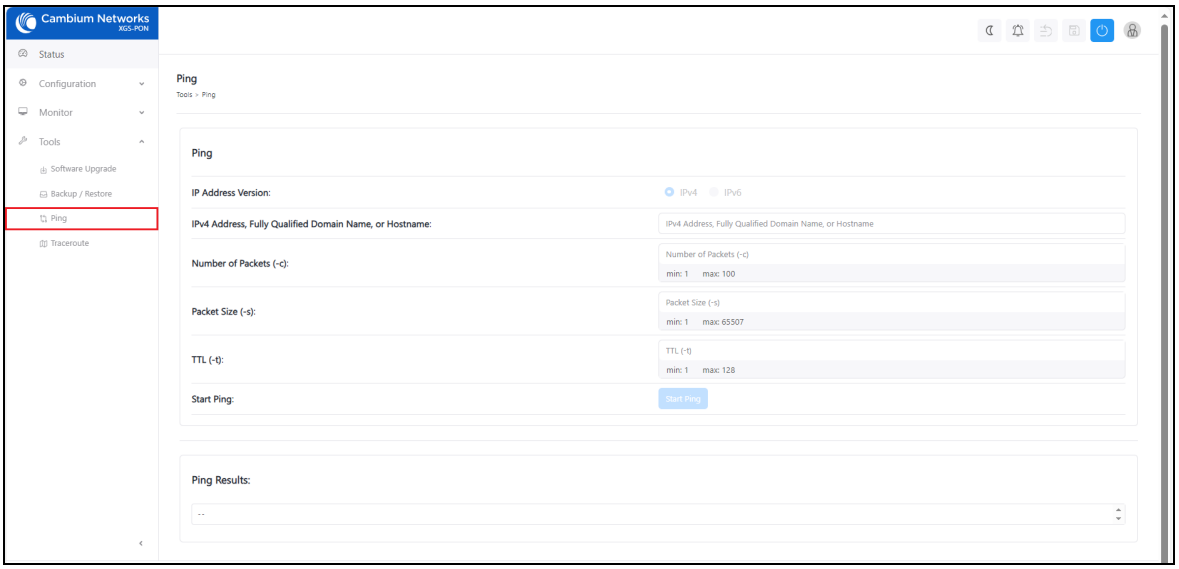
Ping

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 82

Figure 82: *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.

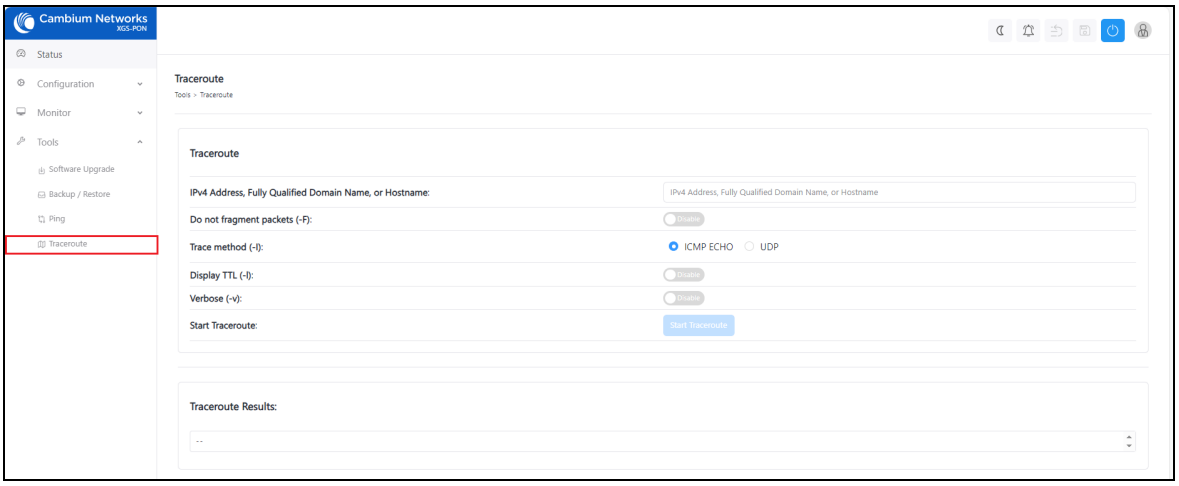
Traceroute

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 83

Figure 83: *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. Check 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.

Pluggable ONU

The Pluggable ONU (ONT Stick) is a compact ONU form factor that does not include an internal power source. It draws power directly from a host device such as a switch, access point (AP), ePMP AP, PMP AP, or cnWave device. Once inserted into a supported host device, the ONT stick powers on and becomes operational.



Note:

Ensure that the pluggable ONU is upgraded to software version 1.3.0 or later. If the device is not upgraded to version 1.3.0 or later, cnMaestro may display limited information or show only a single pluggable ONU even when multiple devices are connected.

For more information on software upgrade, refer to Devices Software Update.

Pluggable ONUs supports full VLAN functionality, including Any Tag, Q-in-Q Trunk, and other complex VLAN configurations, enabling broader compatibility and improved service.

Operation and Troubleshooting

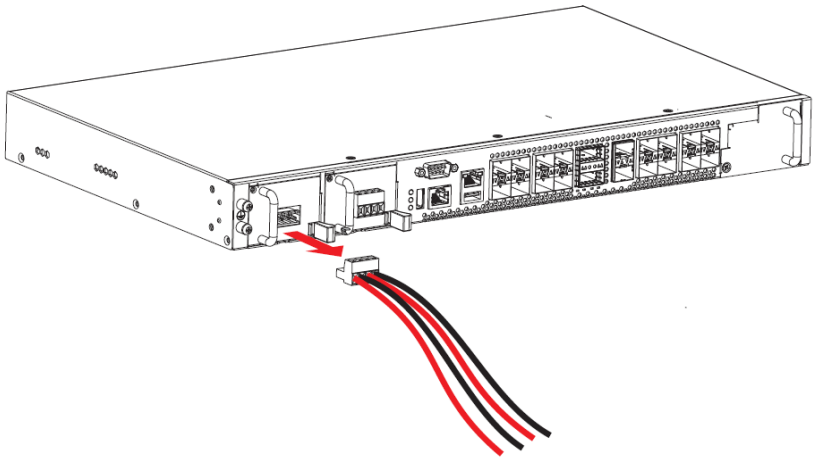
This topic contains the following section:

- Replacing the power module of OLT

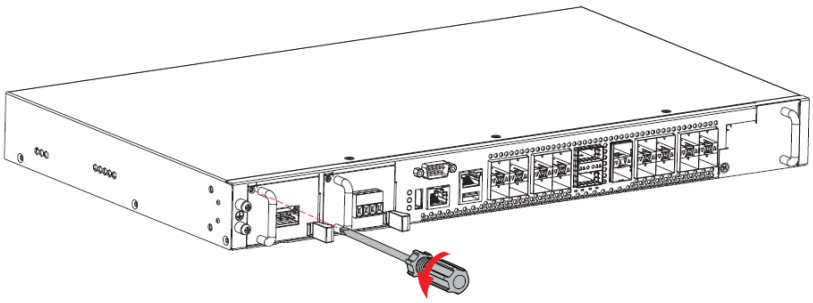
Replacing the power module of OLT

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

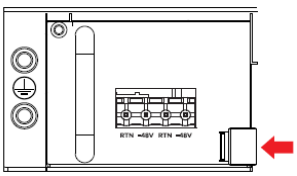
1. Turn off the power supplies connected to the power module.
2. Remove the green power connector block or the power cord.



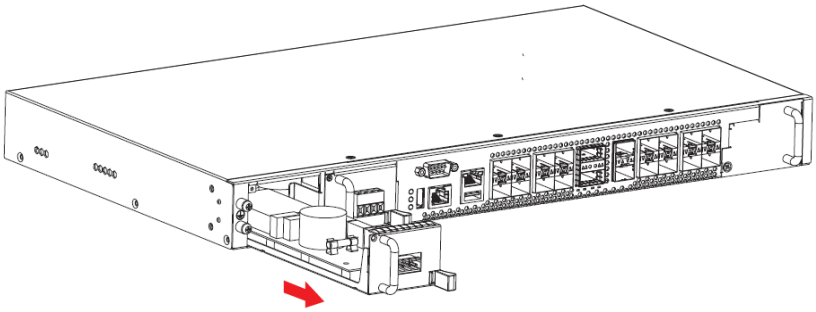
3. Remove screws of the power module using a screw driver.



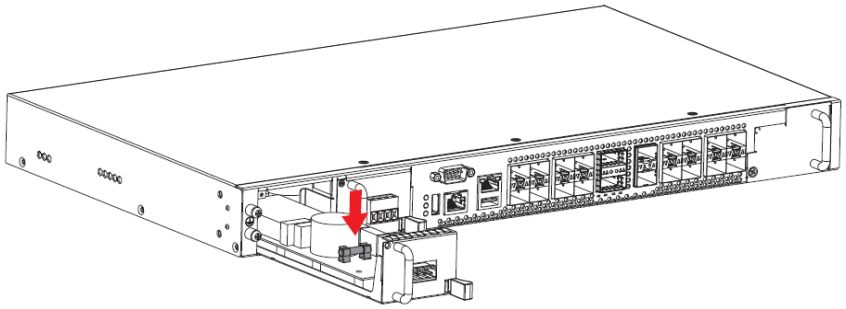
4. Press the power module latch to the left to release it.



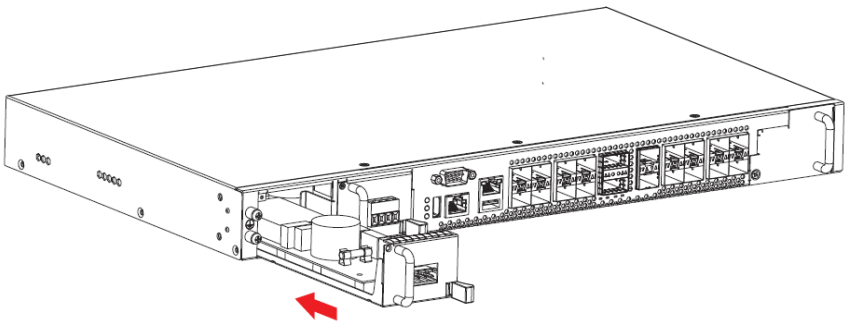
5. Slide the power module out.



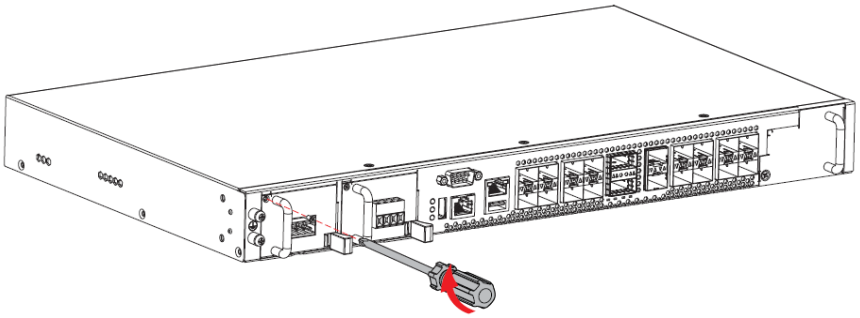
6. For a AC/DC power module, replace the fuse if it is burnt. If the fuse is working, then replace malfunctioning AC/DC power module.



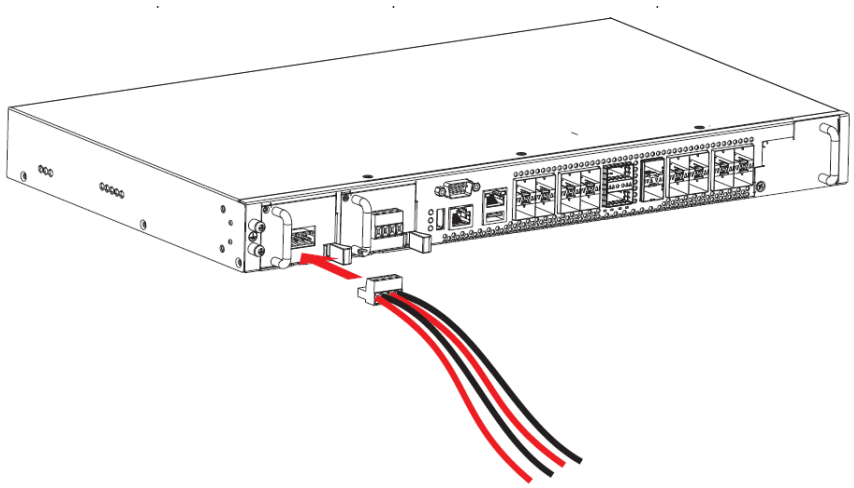
7. Slide the power module in to the block.



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

Cambium Networks delivers wireless communications that work for businesses, communities, and cities worldwide. Millions of our radios are deployed to connect people, places and things with a unified wireless fabric that spans multiple standards and frequencies of fixed wireless and Wi-Fi, all managed centrally via the cloud. Our multi-gigabit wireless fabric offers a compelling value proposition over traditional fiber and alternative wireless solutions. We work with our Cambium certified ConnectedPartners to deliver purpose-built networks for service provider, enterprise, industrial, and government connectivity solutions in urban, suburban, and rural environments, with wireless that just works.

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Warranty	https://www.cambiumnetworks.com/support/standard-warranty/
Telephone number list	http://www.cambiumnetworks.com/contact-us/
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