Televes®

Ref. 769401

EN GPON OLT: 8xPON + 8xGbE + 2x10GbE

User Manual

Televes

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1. Summary

Initially based on the rec. ITU-T G.984.x (GPON), our active network equipment solution is nowadays evolving for next generation PON architectures as defined by the recs. ITU-T G.987.x, ITU-T G.988.x and ITU-T G.698.x whether central office and/or customer premises.

Reference Point-to-Multipoint (P2MP) FTTx topology scenarios cover Fiber-to-the-Home (FTTH), Fiber-to-the-Building (FTTB), Fiber-to-the-Curb (FTTC), Fiber-to-the-cell (FTTc) and Fiber-to-the-business (FTTb). Ethernet service customers are also addressed by P2P links and Ethernet interfaces with dedicated bitrate allocation as also depicted.

The OLT is a high availability and high reliability high density scenario Optical Line Termination (OLT) equipment specially designed for fiber network infrastructures in Point-to-Multipoint (P2MP) FTTx Gigabit Passive Optical Network (GPON) architectures in urban deployment scenarios.

This equipment is intended to solve all your fiber access needs in terms of retail as well as wholesale clients. It complies with ITU-T G.984x and is able to serve multiplay services, namely Voice (VoIP), Data (High Speed Internet - HSI), TV (IPTV and RF Overlay) of up to 512 client premises (assuming a 1:64 Splitting ratio) from a single chassis.

Wholesale and enterprise services are addressed through Business Ethernet VBES/TLS Services (Vlan Business Ethernet Services/Transparent VLAN Services).

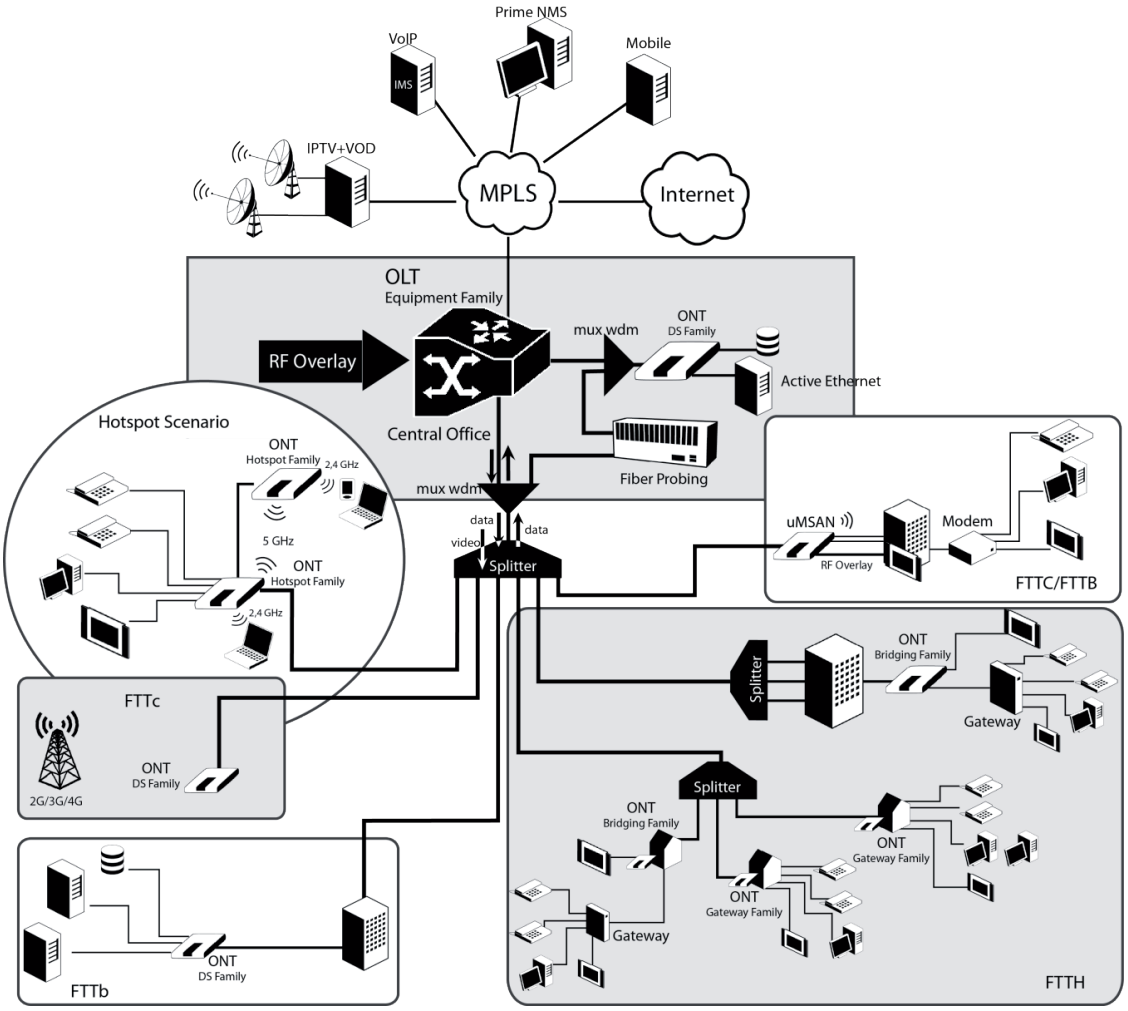


Figure 1-1: PON Network Architecture

2. Technical Description

The OLT system is reliable modular Optical Line Termination (OLT) equipment specially devoted for fiber network infrastructures either Point-to-Point (P2P) Ethernet or Point-to-Multipoint (P2MP) FTTx Gigabit Passive Optical Network (GPON) architectures

The OLT supports Voice, Data and Video services. In parallel the transport of analog video services (RF Overlay) can be supported. Carrier class TDM services bridging is also available by means of using dedicated network termination equipments (NTA).

The OLT is a reliable high availability system that uses common element 1+1 protection (Power, Switch Fabric & Processing) and load balancing LACP at the Uplink interfaces. To guarantee security the Advanced Encryption Standard (AES) is used in the system. Multicast and IGMPv2/v3 snooping with proxy reporting are both enablers for a flexible IPTV service delivery.

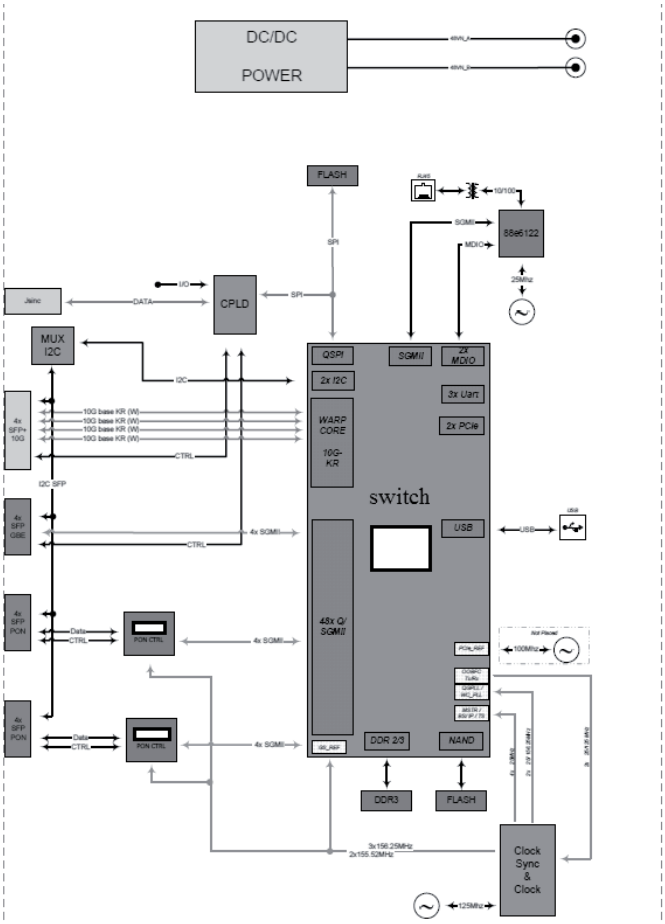


Figure 2-1: OLT architecture

Figure 2-1 shows the architecture of the of OLT Ref.769401 equipment. This consists of a closet for the placement of the one boards of switching. In this equipment the interface to the core network, and acces line, is implemented in switching bord.

Features	OLT system
Chassis	1U
GPON ports [max]	8
GbE ports (max)	8
10GbE interfaces	4

Table 2-1. OLT Equipment features

2.1 Services

2.1.1 Usage Scenarios

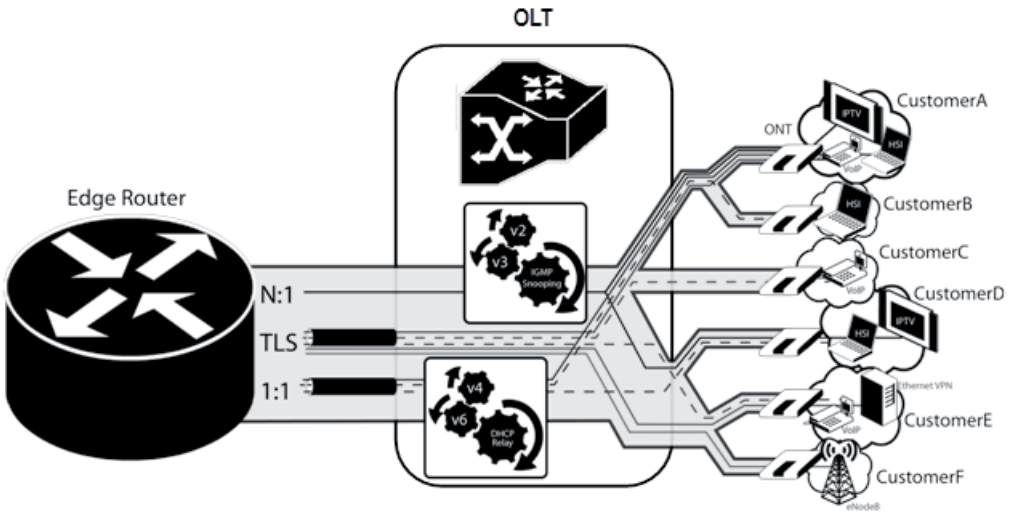


Figure 2-2. OLT services Usage Scenario

The OLT system Usage services scenario include the support the provision of:

- NGN voice services: VoIP and ToIP softswitched controlled, including IP Centrex services and SIP Trunk services
- Internet services: High speed internet in the order of Mbit/s to Gbit/s, with traffic prioritization and differentiation
- Enhanced Multimedia Communications such as voice, presence, unified messaging, localization, Caller ID with IPTV, controlled by an IMS CSCF(Call Session Control Function) platform,
- Mobile Backhaul services:
- Applicable to WiMAX, 2G, 3G and 4G (LTE) networks
- Support transparent synchronization signals (frequency, phase and time) transport according to NTP and PTP Protocols (IEEE 1588 v2 and telecom profile)
- Provide BITs interface for the connection of an external MHz or Mbps clock reference
- Video services:
- IPTV
- RF Video
- Residential multiplay services:
- Voice: Voice over IP (VoIP);
- Internet: High Speed Internet Services;
- RF Overlay: Analog Video using a different wavelength (1550nm);
- IPTV: transport of Digital Video Services;
- Business services:
- TDM emulation services for E1 transport according to MEF-8 (CESoETH)
- Carrier Ethernet services based on MEF 10.1 (E-LINE, E-LAN)
- Business Ethernet Services TLS (Transparent VLAN Services)
- BitStream (enterprise).

2.1.2 GPON Service Scenarios

The OLT system supports the following Ethernet services over GPON:

- N:1
  - Multiple Clients using the same Service Tag
  - Traffic Forwarding based on the S-TAG+DMAC
- 1:1
  - Unique S-TAG or S-TAG+C-TAG per Client Service
  - Traffic switching based on S-TAG+C-TAG or S-TAG
- Transparent LAN Services (TLS)
  - The traffic is not processed
  - The CPU is not part of the EVC
  - Can be use 1:1 and N:1 topology

2.1.2.1 N:1 Services

2.1.2.1.1.1 Unicast Unstacked Services

- Forwarding is based on S-VID+DMAC (e.g. Residential Gateway MAC Address).
- Default GEM Port Transports Unicast Unknown, Multicast and Broadcast MAC Addresses
- Multicast Services only have the Default GEM

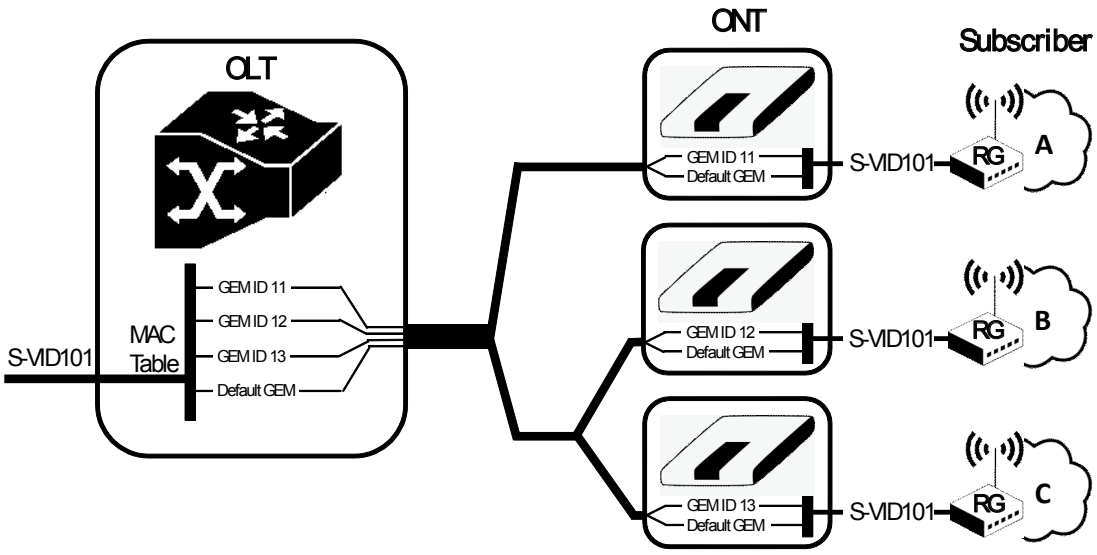


Figure 2-3: N:1.-Unicast Unstacked Services

2.1.2.1.1.2 MAC Bridge Services

- Forwarding Based on S-VID+DMAC or S-VID+C-VID+DMAC
- Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID

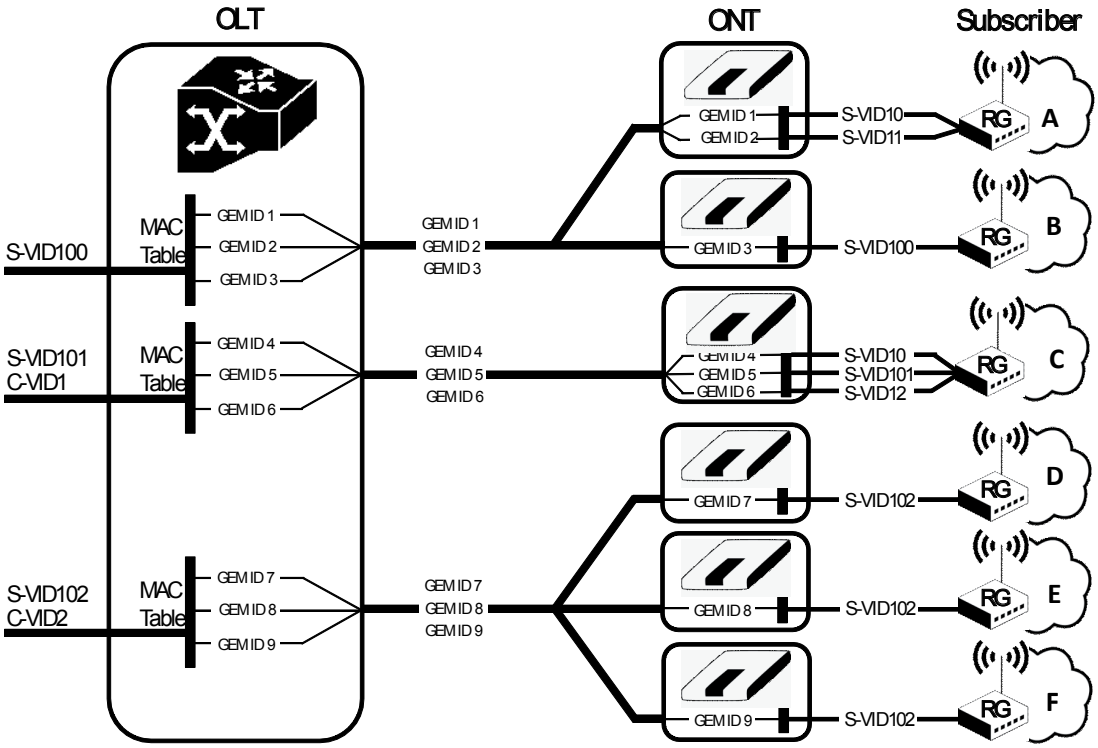


Figure 2-4: N:1- MAC Bridge Services

2.1.2.2 1:1 Services

2.1.2.2.1.1 Unicast Stacked Services

For these services:

- Traffic is encapsulated in different GEM ports according to S-VID and C-VID;
- Traffic is forward using S-Tags + C-Tags or S-Tags.

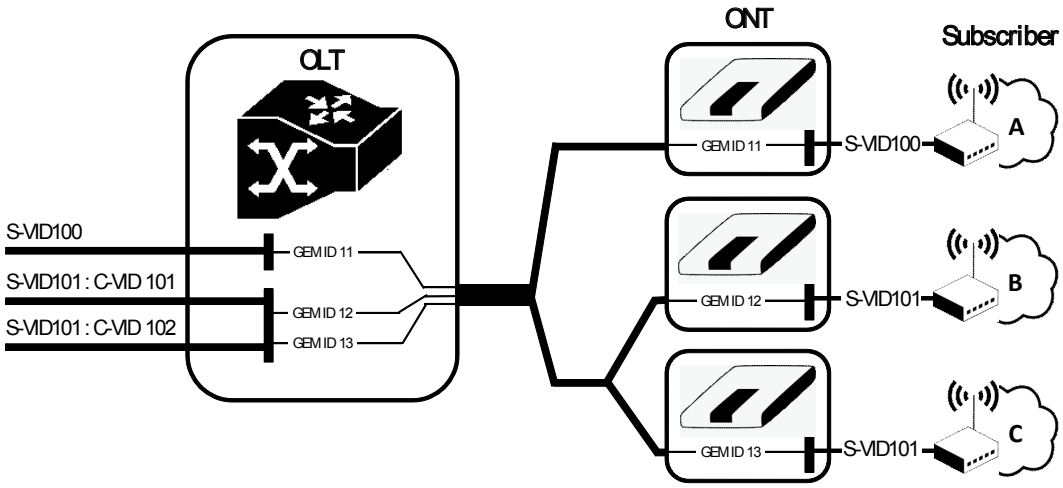


Figure 2-5: 1:1 Unicast Stacked Services

2.1.2.3 Transparent LAN Services (TLS)

2.1.2.3.1.1 Bitstream Services

- The traffic is not processed
- The CPU is not part of the EVC
- Can be use 1:1 and N:1 topology

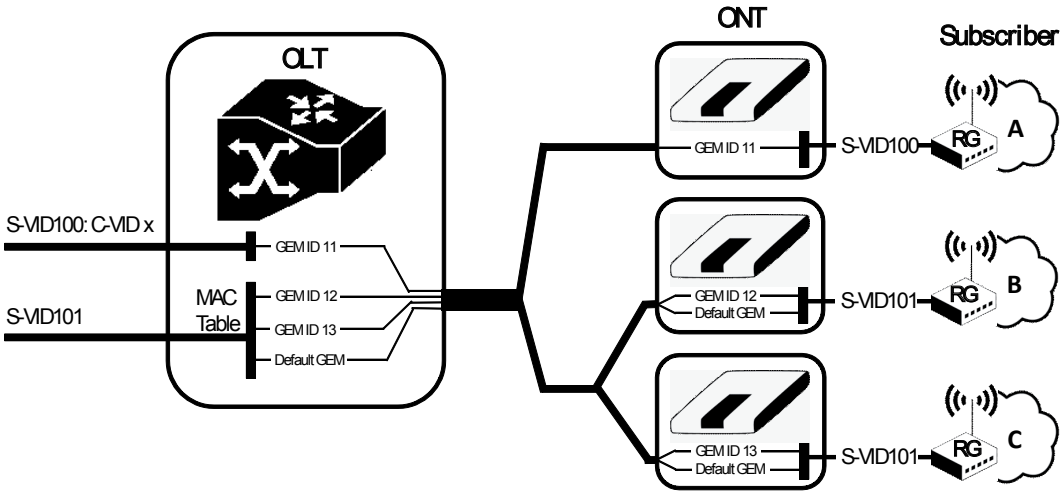


Figure 2-6: TLS- Bitstream Services

2.2 OLT System Features

- Ethernet features:
  - VLAN Switching;
  - Multicast – IGMP Snooping/Proxy;
  - Load Balancing and LACP;
  - DHCP Relay Agent;
  - QoS.
- Interworking between the Ethernet and GPON packets ONT management via OMCI, the main features being:
  - Downstream/Upstream bit rate: 2.488/1.244 Gbps;
  - Advanced Encryption Standard (AES);
  - Forward Error Correction (FEC);
  - Up to 64 ONT per PON; (1:128 splitting ratio is hardware ready)
  - L2 Manipulation: Transparent, Add/change S-Tag e C-Tag;
  - Dynamic Bandwidth Allocation (DBA).

In parallel with the data services, the OLT System allows the transport of analog video services (RF Overlay).

2.3 Services

The following services' related features are supported by the OLT:

- Up to 255 network services
- Up to 10 Client services per ONT.
- Up to 447 Client services per PON in VLAN+P-bit mode (8GEM per service)
- Up to 3582 Client services per PON in VLAN mode (1 GEM per service)
- Up to 1K policers for:
  - Unicast an dor Bitstream Stacked
  - MAC Brigde Mac addresses
- User isolation

2.4 Interoperability

The OLT system assures layer 2 and layer 3 interoperability with the transport segment of the network, according to Rec BBF TR-156, Figure 2-7.

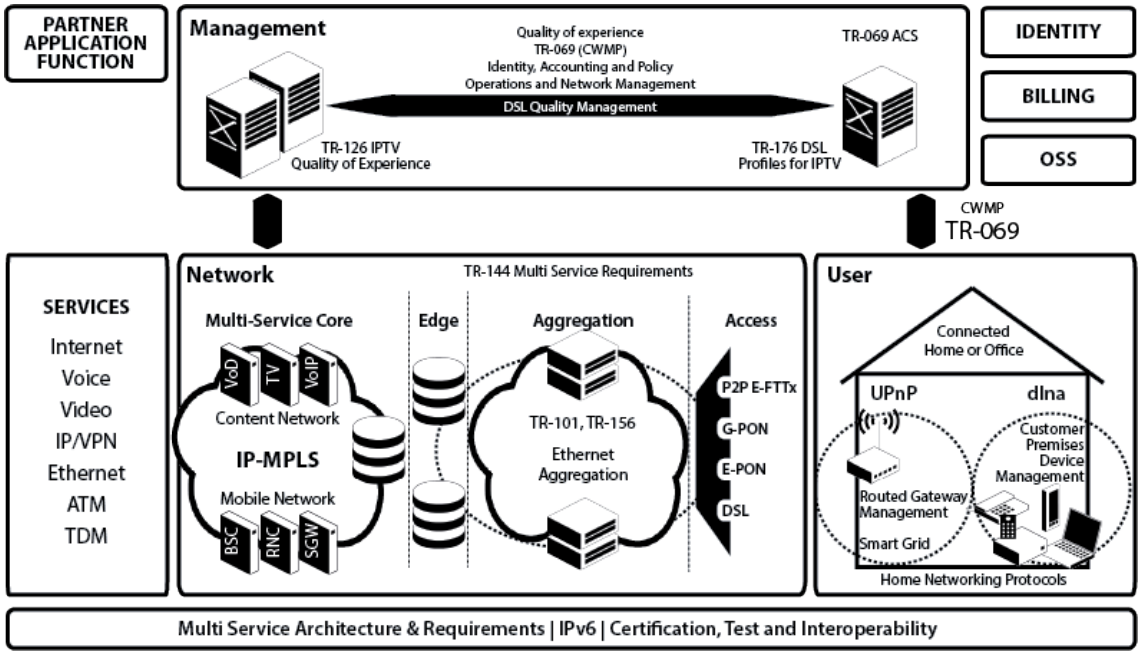


Figure 2-7: Multiservice architecture &requirement, interoperability (BBF TR-156)

2.5 PLOAM

The PLOAM channel is message based and is carried in a dedicated space of the downstream XGTC frame and upstream XGTC burst. This channel is used for all PMD and XGTC management information that is not sent via the embedded OAM channel.

The OLT systems comply with ITU-T G.987.3 (10/2010) – 10-Gigabit-capable Passive Optical Networks physical media dependent layer specification.

This Recommendation describes the transmission convergence layer for 10-Gigabit-capable passive optical network systems.

2.6 OMCI

The OLT systems comply with ITU-T G.988 (10/2012) - ONU management and control interface (OMCI) specification.

G.988 recommendation specifies the managed entities of a protocol-independent management information base (MIB) that models the exchange of information between an optical line termination (OLT) and an optical network unit (ONU).

Configuration of OMCI channel encryption is supported.

2.6.1 ONU Related OLT OS Supported Features

The following ONU related software features are supported by the OLT OS:

- Changing the upstream profile of a given ONU without disconnecting the respective service
- A command “Disable Serial Number” per ONU
- ONU Authentication by Password
- A command to reset all ONUs
- A command to disable the ONU Auto-Discovery mechanism

- Allow disabling a PON interface with registered ONUs
- ONU UPS alarms
- ONU VEIP interfaces
- Changing the ONU profile of a registered ONU
- A notification when an ONU is detected as a "New equipment
- Interoperability with Zhone and Huawei ONUs
- ONU MIB synchronization
- Provide the ONU ID related to the learned MAC Address in Switch MAC table
- Display the ONU Equipment Model (in 'new' state)
- Display the T-CONT IDs for each ONU service
- Command to do ONU MIB (re)synchronization
- Improvement of the ONU SW automatic upgrade policies
- Refactoring of ONU Ethernet statistics - split TX and RX
- Get the ONT Operational Status by SNMP

2.6.2 OMCI and ONU Software Upgrade

The OLT supports ONUs' automatic software upgrade via OMCI according to standard G.984.4/G.988.

Following the control plane start software download order the downloading process is managed autonomously by the GPON MAC.

In order to inquire on the state of the operation queries are GPON MAC control plane enabled.

2.7 FEC (Upstream/Downstream) Configuration and Monitoring

FEC function applied to traffic GPON upstream/downstream can be set for a specified ONU at the time the ONU registration. When set this function is configured on a given ONU FEC statistics are available for the ONU upstream/downstream traffic indicating:

- Number of bytes corrected with FEC
- Number of words corrected with FEC
- Number of words with unrecoverable errors
- Total number of words processed

2.8 Ethernet Features

2.8.1 VLAN Provisioning

The following VLAN related software features are supported:

- Full support of extended VLAN tagging operations (filter+treatment)
- Support Default VLAN ID and Priority on Ethernet interfaces

The Range of VLAN ID per port – VLANs are configured individually; the limits are the following:

- Switch Fabric where uplink ports are directly connected:
  - Just membership: up to 4k VLAN ID per port,
  - VLAN translation: up to 8k VLAN ID.
- GPON ports:
  - Just membership: up to 4k VLAN ID per port,
  - VLAN translation: up to 8k VLAN ID.

2.8.2 Multicast

2.8.2.1 Supported Features

- Support of IGMP v2
- Support of IGMP v3 according to RFC3376
- Multicast group features
  - Support configuring the end-point of the multicast static groups
  - Support bandwidth configuration of each multicast group
  - Display Client Service information in Multicast Active Groups list
- IGMP features:
  - Improvement of IGMP control per interface, VLAN and client
  - Support IGMP control based on multicast bandwidth and number of groups
  - Allow disabling IGMP packet processing on client services
  - Support IGMPv3 on the scenario of merged UNI multicast VLANs
- IGMP limits:

- Up to 4096 configured Groups (Group List)
- Up to1024 pairs of simultaneous Active Groups and Sources.
- Up to 40 different Multicast Services
- Up to 128 ONUs.
- Up to 512 IGMP Clients per GPON port.
- Up to 8 devices (eg. Setop boxes) per port GPON port
- Up to 8 devices (eg. Setop boxes) per port Gbe port

2.8.2.2 IGMP Snooping/Proxy

The OLT system provides IP Multicast features by implementing an IGMP Proxy mechanism. For each Multicast Service it is defined the VLAN of the client side and the VLAN that transports the IP Multicast Groups, so that all the IGMP packets with these VLANs are intercepted and delivered to the processor to perform the following actions:

- The first Join for a certain Group received from the client side will be translated to a Join on the Network side, using the OLT Source MAC and Source IP;
- The last Leave for a certain group received from the client side will be translated to a Leave on the Network side, using OLT Source MAC and Source IP;
- The OLT transmits periodical IGMP General Queries to the client side using the Multicast VLAN;
- The OLT answers to IGMP General Queries received from the Network with all Multicast Groups active in the system (requested by the clients and statically configured).

The OLT supports Static Multicast Groups, so that these groups are always present in the GPON interfaces even if no client demanded that Multicast group. The OLT answers to the upstream Queries as these Groups are always in the OLT.

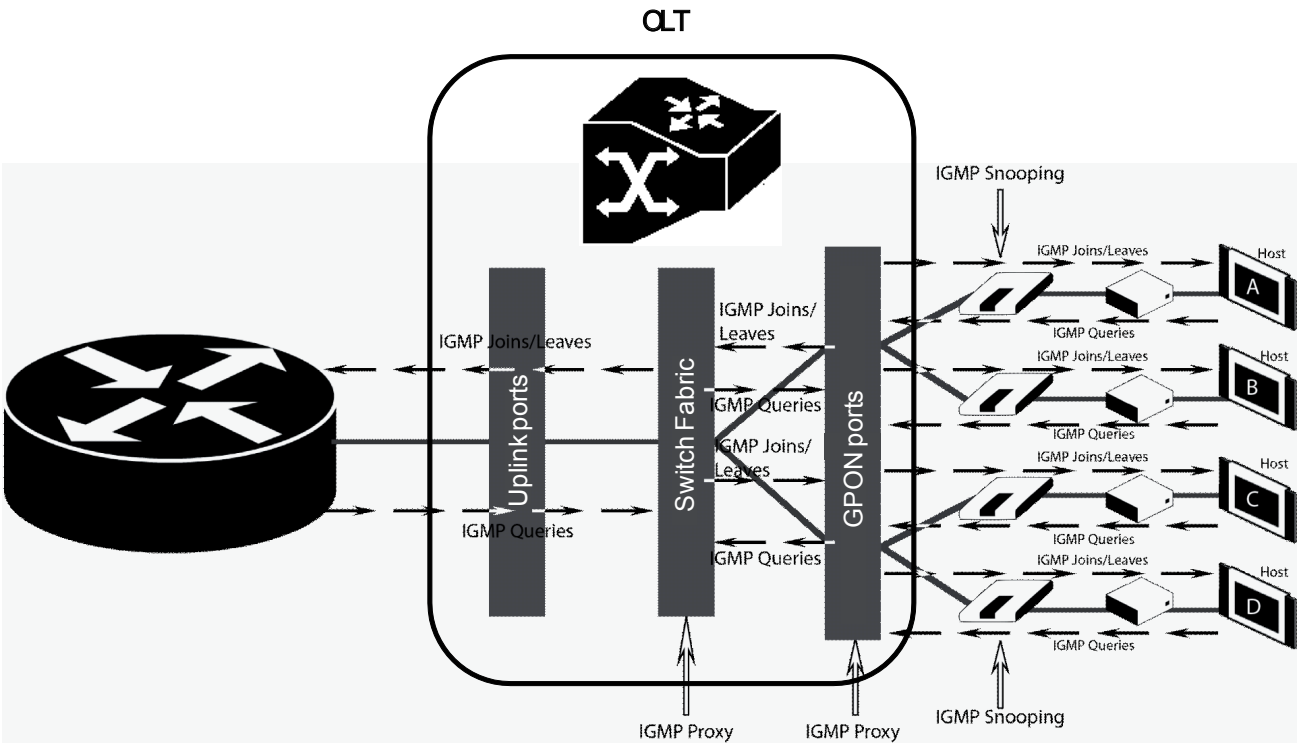


Figure 2-8: IGMP Packets Processing/Forwarding Diagram

The Multicast IPTV traffic is controlled via the IGMP Protocol. In the several parts that make the GPON Access Network there are several modules performing their tasks in order to reduce traffic replication and bandwidth waste through the network. So each of the components perform the following tasks:

- The Host generates the Joins/Leaves according to the streams it wants to receive and plays the IP Multicast Streams;
- The ONT makes IGMP Snooping in order to transport from the Multicast GEM Port to the host, only the streams it wants to receive;
- The GPON Line card acts like an IGMP Proxy, receiving the requests from the hosts, and checking if it is already receiving or not the IP Multicast Streams from the network, sending to the Switch Fabric card the first Join message to ask for the stream and the last Leave message to stop receiving the stream from the upstream. It also answers to the IGMP Queries generated by the Switch Fabric card. It inserts the Multicast Streams in the Multicast GEM Port of the GPON interface where there are clients pretending to receive those Streams; In order to check if the hosts are still watching the channels and they didn't disconnect without advising (send a leave) General Queries are periodical generated towards the hosts;
- The Switch Fabric card acts like an IGMP Proxy, receiving the requests from the line cards, and checking if it is already receiving or not the IP Multicast Streams from the network, sending to the Uplink Ports the first Join message to request that stream and the last Leave message to stop receiving the stream. It also answers to the IGMP Queries received on the Uplink Ports. In order to check if the line cards are still watching the channels and they didn't disconnect without advising (send a leave) General Queries are periodical generated towards the line cards.

2.8.3 Authentication: DHCP Relay

The OLT can act like a DHCP Relay Agent for DHCPv4 (RFC 3046) & v6 (RFC 6221) inserting client information (circuit id and remote id) in the DHCP packets. This information is required by authentication platform to assign IP addresses to the clients.

Circuit-id is an automatic string generated by the OLT; the user can choose the syntax he pretends to use.

Remote-id is a string which is user configured at the time the service is provisioned to the customer.

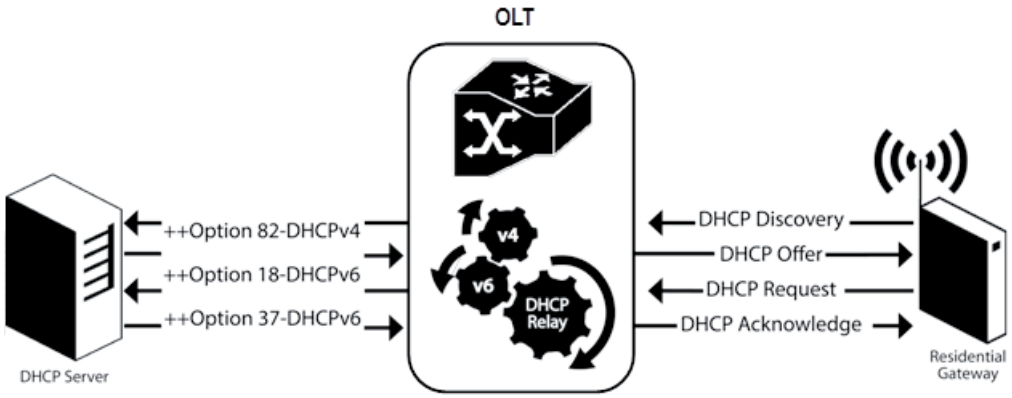


Figure 2-9: OLT as a DHCP relay agent

OLT supported DHCP related software features:

- Support the configuration of UNI interfaces as DHCP Trusted or Untrusted
- Support changing the DHCP Broadcast flag of DHCP Discover and Request messages

2.8.3.1 DHCP Relay Agent Option 82

The OLT system provides DHCP Relay Agent feature by inserting/removing (inserting in the client ⇒network direction and removing in the network ⇒client direction) of Option 82 in the DHCP packets. The Option 82 has the role to introduce client specific information in the requests made to the DHCP servers. This information is added in two fields, Circuit ID and Remote ID.

The Circuit ID sub-option transports specific information of the circuit in question. In the case of the OLT system it identifies which is the ONT in question by adding a string with the following format:

System_name eth board/pon/ont/ont_board/ont_port

The Remote ID sub-option transports client specific information, as for example, the service plan hired by the customer. This field is composed by a string with 64 characters.

2.8.3.2 Lightweith DHCPv6 Relay Agent

Lightweight DHCPv6 Relay Agent is used to insert relay agent options in DHCPv6 message exchanges identifying client interfaces. The messages received from the client interfaces of the following types will be discarded:

- Advertise
- Reply
- Reconfigure
- Relay-Reply

The other message types will be encapsulated in a Relay-Forward message towards the DHCP server. The Relay Forward Message will be composed by the Relay-Message Option (9) which will encapsulate the client request, and optionally by the Interface-ID (18) Option and/or the Remote-ID Option (37) which will add client information.

The DHCPv6 Relay Agent only accepts the following type of message from the server:

- Relay-Reply

After receiving the Relay-Reply message from the server, the DHCPv6 Relay Agent extracts the information in the Relay-Message Option (9) and forwards it to the corresponding client. At this point the Relay Agent Binding table is updated with the corresponding IPv6/MAC Address/Client/Lease information.

2.8.4 Security

The OLT equipment enables a group of features that avoid anti-DOS (Denial of Service) attacks and fake customer Trojan mechanisms, namely:

- ACL's
- White list support
- IP Source Guard
- MAC duplication
- MAC/IP spoofing
- Broadcast rate control
- User isolation

2.8.4.1 ACL - Access Control Lists Support

ACL's (Access Control Lists) avoid the customers to use certain MAC or IP addresses in order to avoid them to reach certain networks MAC/IP groups. This feature is made by applying filters to source and/or destination MAC/IP addresses. These filters can be used to allow or drop the packets from a user attendance.

- ACLs limits
  - Up to 99 supported ACLs
  - Up to 128 supported rules
  - Up to 128 supported ACL Service Apply
  - Up to 128 supported ACL Port Apply

2.8.4.2 White List for Multicast Group Addresses

The OLT supports white list for multicast group addresses.

This list is used to select the upstream multicast service (VLAN) when a particular client requests a group address.

The maximum number of groups is currently limited to 1024, but can go up to 4096 in the future;

2.8.4.3 IP Source Guard

IP Source Guard provides source IP address filtering on a Layer 2 port to prevent a malicious host from impersonating a legitimate host by assuming the legitimate host's IP address. The feature uses dynamic DHCP snooping and static IP source binding to match IP addresses to hosts on untrusted Layer 2 access ports.

- IP Source Guard Limits
  - Up to 1024 supported entries

2.8.4.4 MAC Duplication

MAC duplication is used to check and control if a specific customer is trying to use other MAC addresses different from its addressed one. This is a mechanism that detects duplicate MAC addresses. In order to avoid a copy of the BRAS, IPTV platform or other server MAC address, the system gives priority to the MAC address learnt in the uplink ports (network side). If the duplicate MAC addresses are both in the client side, the system forwards the traffic to the first customer that is using that MAC address.

2.8.4.5 MAC/IP Spoofing

MAC/IP spoofing is used to allow only the authorized customers to access the network. This mechanism uses the DHCP Binding Table. The table with the client MAC address/IP address is built during the DHCP client IP attribution. The packet attributes from the client will only pass through the network in the case they have the same SMAC/SIP like those at the Binding Table.

2.8.4.6 Storm Attack Rate Limiters

The OLT allows the configuration of "Storm Attack" rate limiters in order to prevent malicious users that try to stress the network and the CPU of the network elements causing DoS on the system.

There are three types of configurable rate limiters:

- Broadcast
- Multicast
- Unicast Unknown

Rate limiters parameter Maximum rate in bps (bits per second) is configurable between 0 and 1Mbps. Default configured value is of 1M bps

These limiters are applied to all services except:*

- In-band traffic
- Bitstream services
- Multicast services (CPU trap active but MC flood is off)

2.8.4.7 User Isolation

User isolation is achieved by the topology of the EVC's created in the system. The services are created in an EVP-TREE topology, the Root port is the uplink port and the Leaf ports are the client ports. Within this implementation, users can't communicate between themselves and just flow transparently through the Access Node.

2.8.5 QoS

The OLT system provides several QoS mechanisms, that can be targeted to the flow characterized by one or two VLAN according with the type of service, or can be targeted to the packets priority, where each p-bit is mapped in one of eight queues of each port.

The following QoS features are supported on each one of the Ethernet OLT ports:

- Classification : DSCP to P-bit mapping
- Queuing,
- Scheduling
- Rate Limiting (Ethernet Profiles' configurable parameters: CIR, CBS, EIR, EBS)
- Forward PON traffic based on P-bits

For each of the OLT ports there are associated eight queues; for each of these queues is possible to configure the p-bit mapping in one of the queues, the scheduler type (Strict Priority or Weighted Fair Queuing) and the minimum and maximum bandwidth of each queue.

In the downstream direction the ingress traffic first passes by a policer configured to each ONT service, which is defined by one or two tags. After this the traffic is put in a queue according with the p-bit ->queue mapping. Each of these queues is associated with a scheduler and a policer. Then the traffic flows to the GPON interface and when it arrives to the ONT it will pass by a mapping block which will map the traffic in one of the eight queues according with the p-bits, these queues have a Strict Priority scheduler in order to guarantee that the most prioritized traffic passes first.

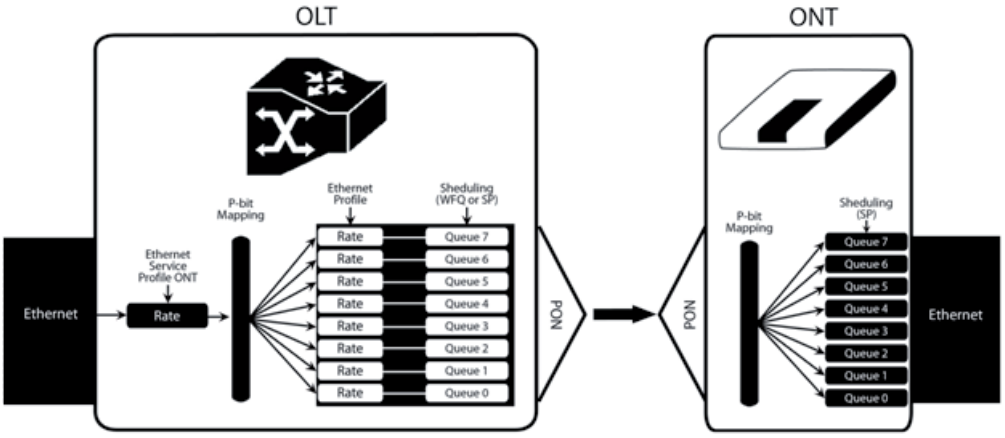


Figure 2-10: Downstream QoS Diagram

In the upstream direction, for each T-CONT the ingress traffic in the ONT passes by a mapping block that maps the traffic in one of the eight queues according with the p-bit, (in case the ingress traffic is untagged a DSCP->p-bit mapping is performed), these queues have a Strict Priority Scheduler. The ONT "waits" until the OLT assigns a transmission timeslot for that T-CONT, so that the most prioritized queues are the ones that transmit first. In the OLT ingress, the traffic is put into a queue according with what is defined in the p-bit ->queue mapping. Each of these queues has an associated scheduler and policer that control the traffic sent to the uplink.

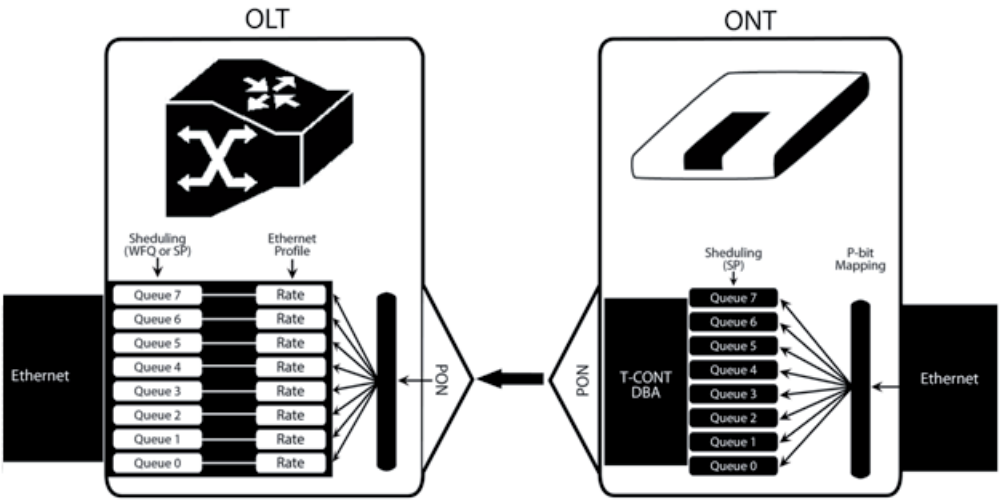


Figure 2-11: Upstream QoS Diagram

2.8.6 MTU

The OLT supports MTU configuration:

- GPON interfaces: up to 2036 bytes
- GE or 10GE interfaces: up to 9600 bytes

2.8.7 OAM

The OLT supports Y.1731 ETH-CC / ETH-RDI Function (CCM).

2.8.8 Ethernet Counters (RFC2819)

The OLT supports Ethernet statistics (RFC2819) on all point-to-point interfaces.

2.9 MAC

The OLT supports the following MAC related features:

- Switch MAC table
- Allow limiting the number of MAC addresses per service
- Display the total number of entries in MAC address tables
- MAC Addresses,
  - Number of learnt MAC Addresses: Up to 32K MAC addresses.
  - Learning rate per second: HW based poses no rate limitation

2.9.1 Dynamic Bandwidth Allocation (DBA)

The DBA (Dynamic Bandwidth Allocation) is available in order to optimize the upstream bandwidth. This mechanism consists in defining an adequate T-CONT to the service traffic in question. There are five types of T-CONT, defined by the Fixed, Assured and Maximum Parameters:

- Type 1: Only fixed Bandwidth;
- Type 2: Only Assured Bandwidth;
- Type 3: Assured+Maximum Bandwidth;
- Type 4: Only Maximum Bandwidth (Best Effort);
- Type 5: Fixed+Assured+Maximum Bandwidth.

T-CONT	Type 1	Type 2	Type 3	Type 4	Type 5	Units
Fixed BW- RF	RF1	0	0	0	RF5	[b/s]
Assured BW- RA	0	RA2	RA3	0	RA5	[b/s]
Max Bw - RM	RM1 = RF1	RM2 = RA2	RM3 > RA3	RM4	RM5 > RF5 + RA5	[b/s]
Bandwidth Eligibility	0	0	Non-Assured BW - RNA	Best-Effort - RBE	RNA / RBE	

Table 2-2: T-CONT type definition

In each GPON interface there is 1024 Alloc-ID (T-CONT identifiers) available, provided to manage ONT services. They are distributed in the following way:

Alloc-ID	Allocation Type
0-127	Default Alloc-ID (Dynamic or Static)
128-255	Reserved

256-639	Dynamic or Static
640-1023	Static

Table 2-3: Alloc-ID's distribution by T-CONT type

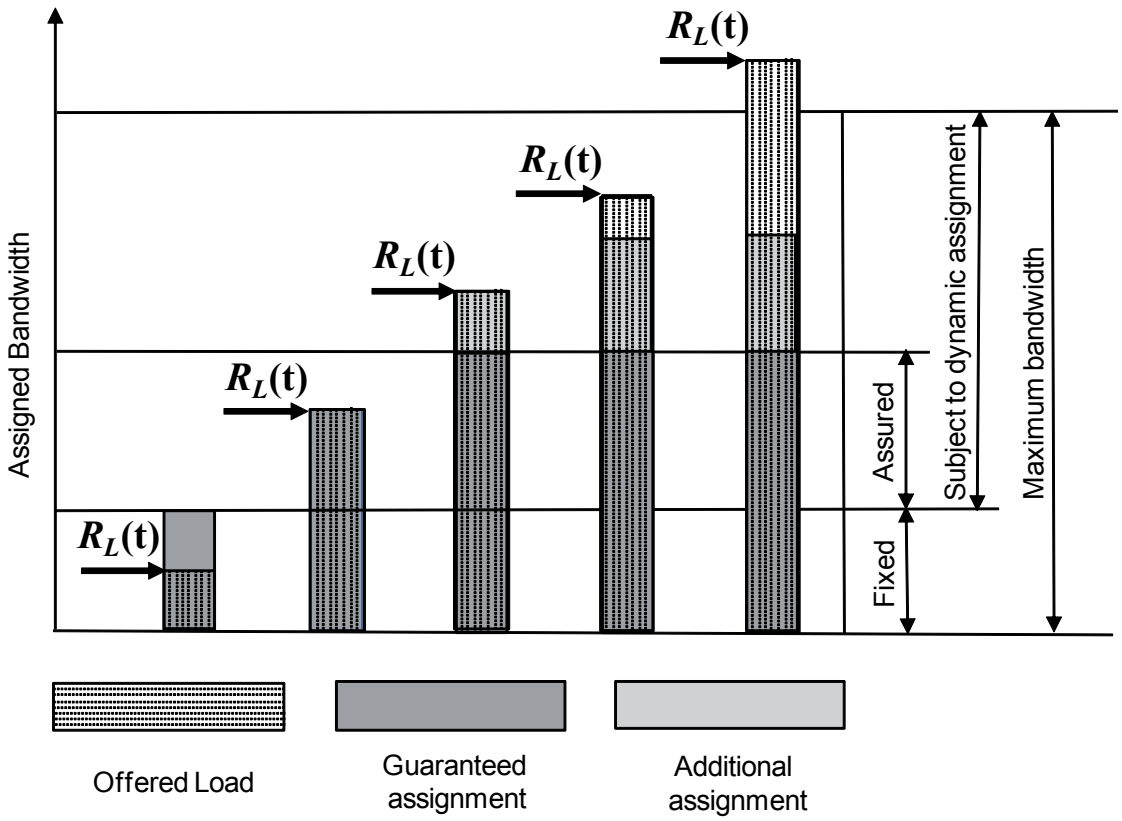


Figure 2-12: Traffic distribution by service/client

2.9.2 MAC GPON DBA Algorithm

The MAC GPON DBA algorithm can use two different algorithms:

- Status Reporting:

  Based on the information that each ONU sends to the GPON MAC frames upstream. This information allows the GPON MAC to know the use of queues of each of the ONUs and adjusting the bandwidth allocated to each application in terms of this

- Traffic Monitoring:

  Based on occupancy of bandwidth of each UN in recent broadcasts.

It is possible to configure the type of algorithm to use in allocating bandwidth for CBR non-profiles as Status Reporting or Traffic Monitoring at the time of the creation of service corresponding traffic. The change of the type of DBA services already provisioned is in principle possible, except for the hardware limitation.

2.9.3 Overbooking

The OLT system allows the overbooking of the GPON ports allowing the allocation of more than the overall aggregated port bandwidth in the downstream (2,5Gb/s) and upstream (1,25Gb/s). The Downstream (DS) allocation is done by configuring the Bandwidth Profiles – BWP that are responsible for assuring that the high priority packets (p.bit) are send to the OLT port in case of congestion. In the Upstream (US) the subscription is assured via Dynamic Bandwidth Allocation (DBA) applied to the ONTs centrally controlled by the OLT.

2.10 PON

2.10.1 Splitting Ratio Options

OLT system GPON ports currently support a splitting ratio of 1:64 in accordance with ITU-T rec. G.984.

2.10.2 Supported PON Classes

The OLT system currently supports B+ and C+ PON interfaces.

2.11 Protection

2.11.1 OLT Supported Protection Mechanisms

The following protection mechanisms are supported by the OLT system:

- GPON type-B protection
- Uplink 1:1 protection
- LACP
- ERPS

2.11.1.1 Type B Redundancy for GPON Ports

Configuration of type B redundancy for GPON ports (according to G.984), is a functionality that enables the protection of a GPON port with another GPON port.

This feature is hardware enabled on the OLT system. It allows1+1 GPON port protection for at least 4k ONTs (margin for splitter N:2 & 20km).

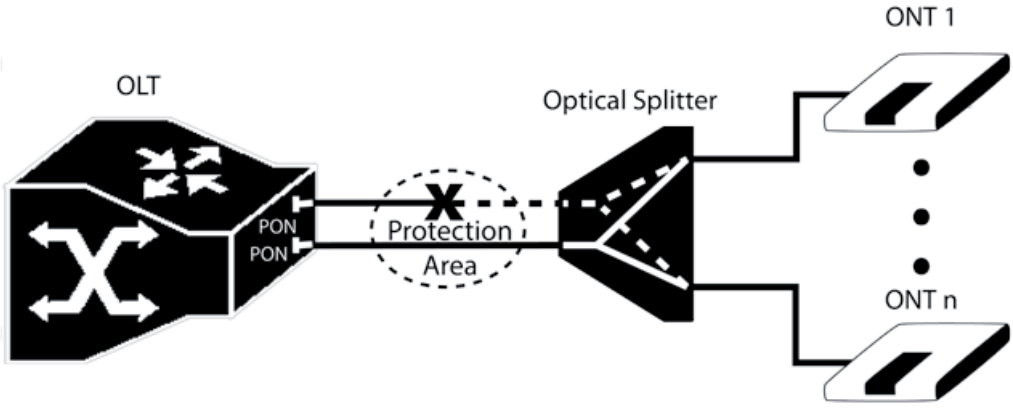


Figure 2-13: Type B redundancy for GPON ports

2.11.1.2 Ethernet Uplink Ports Protection

Configuration of Ethernet Uplink ports protection is a functionality that enables the 1+1 protection of an uplink port with another uplink port.

2.11.1.3 Link Aggregation Control Protocol (LACP)

The Link Aggregation Control Protocol (LACP) provides the system with Aggregation, Protection and Load Balancing features.

The Aggregation consists in a Logical Group of Physical uplink ports that form a Link Aggregation Group (LAG).

Up to 8 uplink ports can be aggregated in the same LAG with the protection mechanisms flexibly configured by the management system.

The Protection is done when one of the LAG ports becomes inactive (Link Down) or there are losses or errors in LACPDU Messages (only in Dynamic LAG). In this case all the traffic that was going through this port is sent to the other ports that belong to the same LAG.

The Load Balancing can be made according with:

- Source MAC;
- Destination MAC;
- Source and Destination MAC.

2.11.1.4 Ethernet Ring Protection Switching

The OLT allows the implementation of ring protection according to ITU-T G.8032/Y.1344 Ethernet Ring Protection Switching.

- Support of "open ring" mode, i.e., access ring is configured as G.8032 sub-ring without R-APS Virtual Channel;
- Support of ETH-CC / ETH-RDI Function (CCM), Connectivity Fault Management (CFM) monitoring per VLAN, according to ITU-T Y.1731 / IEEE 802.1ag;
- Support of R-APS Channel.
- Up to 256 CFM probes supported.

2.11.1.4.1 PRINCIPLE OF OPERATION

The basic idea is to dedicate a link as Ring protection Link (RPL) that is normally blocked, but will be unblocked when a failure occurs in the ring.

This ensures that there is connectivity among all nodes on the ring without having a loop.

Connectivity Fault Management Messages (CCM) are used to detect link and node failure and

Ring Automatic Protection Switching Messages are used to coordinate the activity on the RPL.

MAC learning is enabled on all nodes and ports except on ports facing the RPL.

In normal operation RPL is blocked.

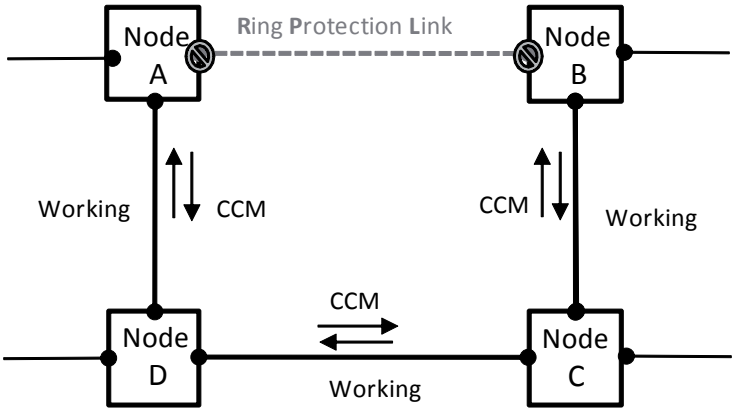


Figure 2-14: Normal ring operation

Any failure along the ring causes a CCM fault at the failure link adjacent nodes (nodes D and C in the example). These nodes after having blocked the ports facing the failure link, generate multicast an RAPS message via CPU on the dedicated VLAN, which is received by all other nodes on the ring, including nodes adjacent to RPL, in this case nodes A and B.

Nodes receiving the RAPS message send a copy to the Ethernet Ring Protection (ERP) entity and also forward the received RAPS to the next node

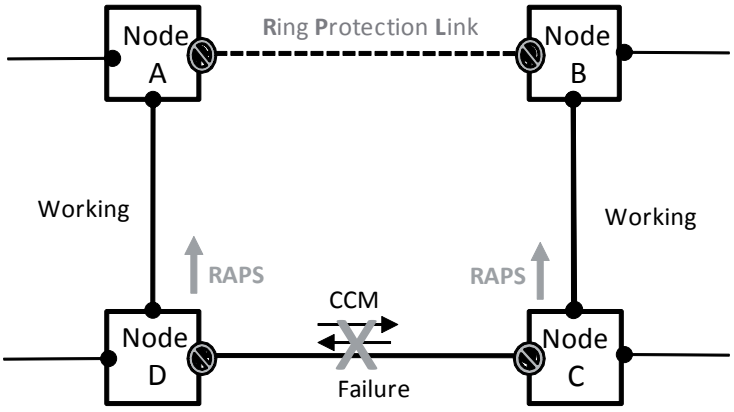


Figure 2-15: Link failure

Upon receiving the RPAS signal failure message Node A and B adjacent to RPL unblocks the RPL ports and traffic flows through the RPL.

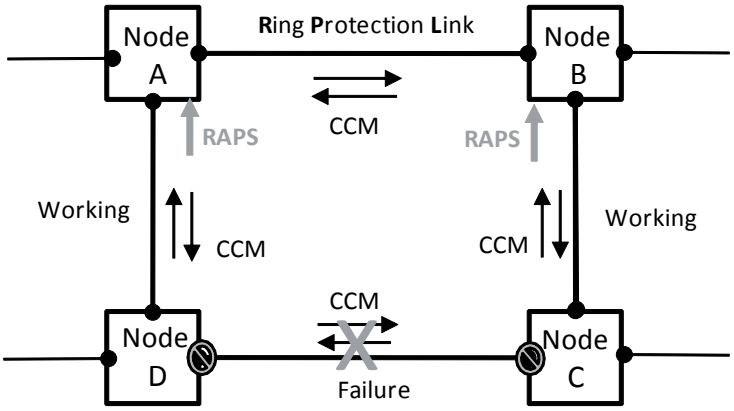


Figure 2-:16 Ring Protection Link operation

2.11.1.4.2 ERP TIMERS

WTR timer

- May be configured by the operator in 1 minute steps between 1 and 12 minutes, the default value being 5 minutes.

WTB timer

- Is defined to be 5 seconds longer than the guard timer.

Guard Timer

- The period of the guard timer may be configured by the operator in 10 ms steps between 10 ms and 2 seconds, with a default value of 500 ms.

Hold off timer

- The suggested range of the hold off timer is 0 to 10 seconds in steps of 100 ms with an accuracy of ±5 ms. the default value for hold off timer is 0 seconds.

2.12 Synchronization

The OLT equipment implements SyncE and IEEE 1588v2/PTP synchronization schemes. Timing over Packet (ToP) enables transfer of timing over an asynchronous network. The SyncE feature requires that each network element along the synchronization path need to support SyncE.

2.12.1 Hybrid Synchronization with the OLT Equipment Family

Within the OLT equipment, SyncE may co-exist with 1588 (PTP) in a hybrid configuration mode. The hybrid mode uses the clock derived from 1588 (PTP) to drive the system clock.

2.12.2 Ethernet Synchronization Messaging Channel (ESMC)

In order to maintain a logical communication channel in synchronous network connections, Ethernet relies on a channel called Ethernet Synchronization Messaging Channel (ESMC) based on IEEE 802.3 Organization Specific Slow Protocol standards. ESMC relays the SSM code that represents the quality level of the Ethernet Equipment Clock (EEC) in a physical layer.

To enable communications between various nodes, the OLT equipment (SyncE mode) provides an Ethernet Synchronization Status Messaging (ESMC, G.8264) channel, similar to SDH Synchronization Status Messaging (SSM) bytes that allow nodes to deliver their Synchronization Status to downstream nodes. The downstream nodes use this information to select between various references or possibly switch to their internal clock in case of failure on reference clocks.

2.12.3 Synchronous Ethernet (SyncE)

SyncE is defined by the ITU-T standards G.8261, G.8262, G.8264, and G.781. Frequency distribution protocol based Ethernet physical layer of Ethernet. The purpose of SyncE is to distribute frequency information through an Ethernet device. In this context “frequency” and “bit-rate” effectively have the same meaning, since SyncE attempts to determine frequency information from incoming bit streams. The basic operation of SyncE interfaces is deriving the frequency from the received bit stream and passing that information up to the system clock,

2.12.3.1 Ethernet without SyncE (e.g. 1000Base-T)

Systems without SyncE have the following characteristics:

- Rx clock extracted from line (line timed)
- Tx clock generated from free-running XO
  - Clock within 100 ppm (125 MHz+/- 0.01 percent)
- No relationship between Rx and Tx
- Each Ethernet interface (uni-dir or bi-dir) has own independent timing

2.12.3.2 Ethernet with SyncE (e.g. 1000Base-T)

Systems with SyncE have the following characteristics:

- Rx clock extracted from line & transferred to timing engine
- Tx clock generated from the timing card
  - Clock within 4.6 ppm when free-running
- Tx clock uses traceable to PRC/PRS
- Note SyncE clock input may replace XO or may be in addition to normal XO input

2.12.4 IEEE 1588v2

IEEE1588v2 (also known as Precision Time Protocol, PTP) is a two-way precision protocol independent of the physical layer with time and frequency distribution protocol based on time-stamp information exchange to synchronize clocks over packet-based Ethernet networks. It synchronizes the local slave clock on each network device with a system Grandmaster clock and uses traffic time-stamping, with sub-nanoseconds granularity, to deliver the very high accuracies of synchronization needed to ensure the stability of base station frequency and handovers. Timestamps between master and slave devices are sent within specific PTP packets and in its basic form the protocol is administration-free.

The ITU-T defined profile of the IEEE 1588-2008 specification has been specifically optimized to support telecommunications applications such as wireless Mobile Backhaul, GPON and LTE.

The OLT Equipment supports IEEE 1588v2 as the following standard type devices:

- Ordinary Clock (Can be a Master or Slave clock)
- Boundary Clock (Acts as a Master and a Slave clock)
- Transparent clock

Following elements are defined:

Grandmaster

- A network device physically attached to the primary time source. All clocks are synchronized to the grandmaster clock.

Ordinary Clock

- An ordinary clock is a 1588 clock with a single PTP port that can operate in one of the following modes:
  - PTP Master: Distributes timing information over the network to one or more slave clocks, thus allowing the slave to synchronize its clock to the master.
  - PTP Slave: Recovers the frequency and phase clock, from the timestamps sent by the Master.

Boundary Clock

The Boundary clock functions as both PTP master and slave. It acts as the slave to a Grand Master and derives the reference from the Grand Master. Boundary clock starts its own PTP session with a number of downstream slaves. The boundary clock mitigates the number of network hops and results in packet delay variations in the packet network between the Grand Master and Slave.

Transparent clock

- A transparent clock is a device or a switch that calculates the time it requires to forward traffic and updates the PTP time correction field to account for the delay, making the device transparent in terms of time calculations.

2.12.4.1 Client/Server model

- Master clock, slave clock (ordinary clock)
- Intermediary nodes may or may not support IEEE1588 PTP (unlike SyncE)
- On-path support mechanisms:
  - Boundary clock
    - t acts as a slave clock at port that connects to the grandmaster, and as a master to all other ports
    - t isolates the "downstream" clocks from any delays and jitter within the switch/routers
  - Transparent clock
    - It measures residence time of PTP events

2.12.5 SYNC-E and IEEE 1588v2/PTP at the OLT equipment

Network clocking is supported on the following ports:

- 1GbE,
- 10GbE.

2.12.5.1 Clock configurations supported by the OLT:

Different configurations are supported:

- **Clock Recovery**: System clock is recovered from the clocking source (GbE, 10Gbe and 100Gbe).
- **Clock Recovery from External Interface**: System clock is recovered from clocking source or a GPS interface.
- **Line to External**: The clock received from an interface is forwarded to an external Synchronization Supply Unit (SSU).

The following sync. parameters are configurable in the OLT

- Quality level Mode – Active or inactive
- Reversibility level Mode– Active or inactive
- Reversibility time – 0 to 3600 s
- Holdover Message delay switching Message delay – 500 to 2000 ms
- Switching Message delay – 180 to 500 s
- Minimum Quality Before Squelch – Inactive, PRC G.811, SSU-A, SSU-B,SEC or DNU
- Send value after Quality Unknown - PRC G.811, SSU-A, SSU-B,SEC or DNU
- Number of external sync.- 2 IN and 2 OUT

2.12.5.2 Basic Operation of 1588V2

Software time-stamp vs. Hardware time-stamp

There are two techniques to time-stamp packets:

1. *Software time-stamp* occurs when the messages are handled by the software. Usually occurring in the message's receive/transmit *interrupt service routine* (ISR), the time-stamp is the current value of the system time.
2. *Hardware time-stamp* occurs when the messages physically arrive at or leave the device. The time-stamp operation is executed by hardware, which maintains its own continuous time information.

Either time-stamp method is acceptable in IEEE 1588, but a hardware time-stamp can provide significantly better precision.

The OLT equipment provides HW time stamp.

Delay from Master-Clock Device to Slave-Clock Device, (Figure 2-)

- At time Tm1, the master-clock device software reads the current local system time (Tm1, the software timestamp), inserts it into a Sync message, and sends the message out. The message leaves the master-clock device at a later time, Tm1′, which is the hardware time-stamp. It arrives at slave-clock hardware at Ts1′ (slave-clock device local time), and is received by the slave-clock device software at a later time, Ts1. The software will read the hardware time-stamp to get Ts1′. If there is no communication delay, Ts1′ should be equal to (Tm1′ + Tms), where Tms is the time difference between master clock and slave clock. The protocol's ultimate goal is to compensate for this difference.

- After the Sync message has been sent, the master-clock device software reads the Sync message's departure time, Tm1′, through the time-stamping unit, inserts it into a Follow-up message, and sends that message out at Tm2. This message is received by slave clock device software at Ts2. At this point, the slave-clock device software has the two times, Ts1′ (Sync arrival time) and Tm1′ (Sync departure time). The master-to-slave path delay, Tmsd, is determined by Equation *Tmsd=(Ts1´+Tms)-Tm1´*

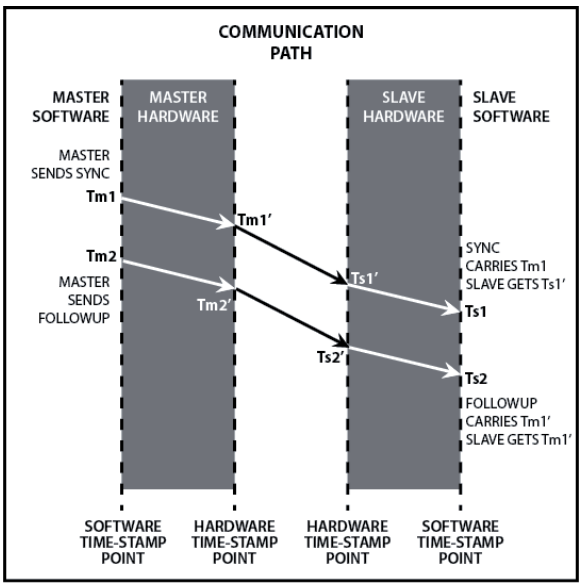


Figure 2-17: Delay from Master-Clock Device to Slave-Clock Device

Delay from Slave-Clock Device to Master-Clock Device (Figure 2-)

- The DelayReq message is sent by the slave-clock devices, and the DelayResp message is sent by the master-clock device in response. With these messages, the slave-clock devices can calculate the communication path delay from the slave-clock device to the master-clock device.

- At time Ts3 (Figure 3), the slave-clock device software reads the current local system time (Ts3), inserts it into a DelayReq message, and sends the message out. After the message is sent, the slave-clock device software reads the time-stamp to get the departure time of the message, Ts3′, and waits for the response from the master-clock device.

- The DelayReq message arrives at the master-clock device at a later time, Tm3′, and is processed by the master software at Tm3. The software then reads the time-stamp to get the arrival time, Tm3′, puts it into the DelayResp message, and sends to a slave-clock device at Tm4. When the slave-clock device software receives the DelayResp message at Ts4, it can extract the time, Tm3′, and calculate the slave-to-master delay, Tsmd, by Equation *Tsmd=Tm3´-(Ts3´+Tms)*.

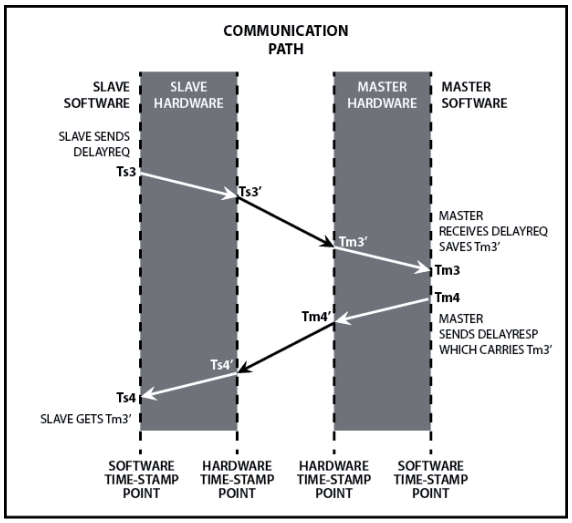


Figure 2-18: Delay from Slave-Clock Device to Master-Clock Device

OLT equipment configured as Boundary Clock (BC)

The OLT configured as BC recover the clock and regenerate the PTP packets receives timing through the TU40G unit.

The OLT is effectively a node that recovers timing from the incoming 1588v2 (as a Slave) and then uses this recovered timing to re-time the outgoing signal. It then acts as the 1588v2 Master for the next node. By using this mechanism, the impact of PDV is minimized as the packets will not travel through many routers or switches between Master and Slave (which would have caused PDV).

The OLT configured as Boundary clock can be considered as performing both the slave and master function. The 1588v2 message flow is terminated and the frequency and/or time recovered from the ingress messages. This is used to guide its internal reference. The boundary clock then acts as the master to the downstream clock by generating a new 1588v2 message flow using timestamps generated from its internal reference. The downstream flow to the ONT through the GPON LC (TG16G) unit, Figure 2-.

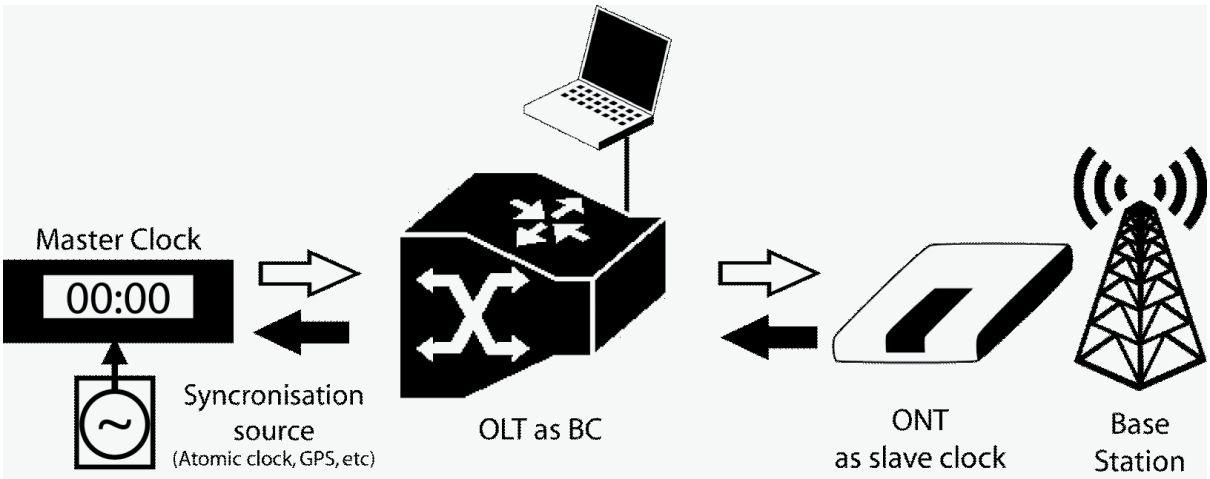


Figure 2-19: Boundary Clock Synchronization mechanism (Mobile Backhaul Example)

Measurements & Limits

The measurement limits for Frequency Accuracy (MTIE/TDEV) are specified by the relevant ITU-T standards that specify clock accuracy, for example G.813, G.823, G.824. G.8261, or "Timing and Synchronization Aspects in Packet Networks", specifies the upper limits of allowable network jitter and wander, the minimum requirements that network equipment at the TDM interfaces at the boundary of these packet networks can tolerate, and the minimum requirements for the synchronization function of network equipment. G.8263 "Timing characteristics of packet-based equipment clocks" specifies the outlines requirements for timing devices used in synchronizing network equipment that operates in the interworking function (IWF) and other network elements as defined in Recommendation ITU-T G.8261/Y.1361.

Frequency Accuracy (Wander), based on:

- TIE - time interval error
- MTIE - maximum time interval error
- MRTIE - maximum relative time interval error
- TDEV – time deviation
- Packet Delay Variation (PDV)

2.13 Support Multiple Trap Destination Servers

The OLT supports the forwarding of traps to multiple simultaneous servers (up to 3), including:

- Trap v2
- INFORM
- Trap/ACK - SNMPV1 traps with ACK. The acknowledge is made by writing at the alarm table's alarmAkn (.1.3.6.1.4.1.4746.1 0.6.1.1.1.10)

The Trap/ACK type is specific for use with PTIN's Management System. Only one IP may have set the type 'TRAP-ACK' (limited implementation).

Trap v2 and Inform are standard.

The UDP port can be configured to send traps, default 162 (standard).

2.14 External Alarm Conditions

Two external input alarm conditions are supported.

2.15 Managers' Configuration

It is possible to configure the IPs of managers, and set the reading and configuration permissions for each of them.

It is also possible to configure static IP routes for the management interfaces

2.16 Connectivity Fault Management (CFM)

Connectivity Fault Management (CFM) complies with Y.1731/IEEE 801.2ag standards.

This functionality is used in the 10GE Ethernet interfaces CFM probing configuration.

2.17 Reboot Features

The following reboot options are supported by the OLT system:

- Support the option to perform a system reboot

2.18 IP Features

- IP Routing supported (Demo features)
- IPv6 ready on all OLT product line
- Ping/telnet command supported on CLI

2.19 Standards and Protocols

Type	Standards
PON layer	• ITU-T Recommendation G.984.x (GPON) • ITU-T Recommendation G.988 (OMCI) • BBF.247 – GPON certification program OLT interoperability • BBF TR.156i3 – Using GPON in the context of TR.101 • Advanced Encryption Standard (AES) • Forward Error Correction (FEC) • Up to 128 ONT or ONUs per PON • T-CONTs: 896 per PON • GEM port-IDs: 4096 per PON • Logical range: 60 km • Maximum differential distance: 20 km

L2 layer	• Services: 1:1, N:1, VBES/TLS • VLAN-ID conversion to GEM port-ID • VLAN promotion • VLAN translation • Ethernet Ring Protection Switching (ERPS G.8032) • IEEE 802.1Q VLAN tagging • IEEE 802.1P (VLAN QoS 4096 VLAN) • Per-port QoS and CoS mapping according to IEEE 802.1q and IEEE 802.1p • IEEE 802.1ad Provider Bridges • IEEE 802.1 ad Q-in-Q VLAN stacking • IEEE 802.3x Flow Control • IEEE 802.3ad Link Aggregation – LAG or LACP • IGMP v2 (RFC2236), IGMP V3 (RFC 3376) • RFC1350 TFTP protocol • RFC0959 FTP protocol • RFC1305 NTP protocol • SFF-8472 Specification for Diagnostic Monitoring Interface for XCVRs • RFC2131 DHCP • RFC3046 DHCP Relay Agent Info (Option 82) • RFC3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6) (Option 18 Interface Id) • RFC6221 Lightweight DHCPv6 Relay Agent • RFC4649 Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Relay Agent Remote-ID Option 37 • ITU-T Y.1731 / IEEE 802.1ag
Timing and synchronism	• ITU-T Rec G.8261- Timing and synchronization aspects in packet Networks • Synchronous Ethernet (Sync-E) • ITU-T Rec. G.8262 - Timing characteristics of a synchronous Ethernet equipment slave clock • IEEE1588v2/PTP • ITU-T Rec. G.8263 Timing Characteristics of Packet based Equipment Clocks (PEC) • ITU-T Recommendation G.8265.1 Precision time protocol telecom profile for frequency synchronization
Management	• Local management by CLI and HTTP or HTTPS web browser • Remote management using Telnet or SSH and SNMPv1/v2/v3 • CPE remote management over OMCI and TR-69 • In-band and out-of-band management • Receive power monitoring per ONT • Per-user accounting and logging • Local alarm storage and Syslog • Automated backup, restore, and rollback
Redundancy	• GPON Type B redundancy • Active/standby GPON card and GPON port redundancy • Active-active, active/standby network Interfaces • Active-standby switching fabric redundancy • Hot-swappable modules

Electromagnetic	• FCC Part 15 Class
Emissions compliance	• EN 55022 Class A (CISPR22 Class A) • EN 55024 • EN 50082 • EN61000-3-2/3 • EN61000-4-2/3/4/5/6/8/11
Safety	• UL 60950-1 • CAN/CSA 22.2 No.60950-1 • EN 60950-1 • IEC 60950-1 • NOM-019-SCFI
NEBS	• GR-63-CORE, GR-1089-CORE - Level 3, Type 2
ETSI	• EN 300 019 1-1- Storage: Class 1.2 – Not temperature controlled storage locations • EN 300 019 1-2 - Transportation: Class 2.3 – Public transportation • EN 300 019 1-3 - In-Use: Class 3.12 - Partly temp. controlled locations

Table 2-4: Standards and Protocols

3. System Specifications

This Chapter describes the OLT system specifications

3.1 OLT Equipment Chassis Features

Chassis Feature	OLT-SYSTEM
ETSI 19" rack size	1U

Table 3-1: OLT Equipment Chassis Features

3.2 OLT Equipment Boards Features

	Board features			
Board Type	Type of ports	Nº of ports	Type of pluggable module	Switching Fabric capacity (Gbit/s)
OLT single board	1GE	8 (Max)	SFP	64
OLT single board	10GE	4	SFP+	64
OLT single board	GPON	8	SFP B+/C+	64

Table 3-2: OLT Equipment Board Features

3.3 Optical Interfaces

3.3.1 10GE Interfaces

These interfaces are deployed in the form of optical SFP+ transceivers which use LC/PC connectors and have the following characteristics:

	Type	10GBASE-LR/LW (10 km)	10GBASE-ER/EW (40 km)	10GBASE-ZR/ZW (80 km)
Optical 10Gbase	Laser type emitter	SLM (DFB)	SLM (EA-DFB)	SLM(EA-DFB)
	Operation Range (nm)	1260 to 1355	1530 to 1565	1530 to 1565
	Wave length typ. (nm)	1310	1550	1550
	Spectral width Max. (nm)	NA	NA	NA
	Min SMSR (dB)	30	30	30
	Tolerated dispersion max. (ps/nm)	NA	NA	1600
	Emission Power Max/min (dBm)	0.5 / -8.2	4.0 / -4.7*	4.0 / -1.0
	Min Extinction Ratio (dB)	3.5	3.0	6.0
	Receiver Type	PIN	PIN	APD
	Attenuation Range (dB)	NA	NA	NA
	Sensibility (dBm) BER < 10-10	-12.6	-14.1	-24
	Receiver Saturation (dBm)	-1	-1	-7
	Max. Penalization per optical course (dB)	1	3	3
	Protection against Cuts	Automatic Laser Shut Down		
	According to Recommendations	(IEEE 802.3, Clause 49, 50 and 52)	(IEEE 802.3, Clause 49, 50 and 52)	-

Table 3-3: Optical 10Gbase interfaces characteristics

- Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.

3.3.2 1GbE Ethernet Interfaces

These interfaces are deployed in the form of optical CSFP transceivers which use LC/PC connectors and have the following characteristics:

Optical 1000Base	**Type**	1000BASE-BX10-D
	Laser type emitter	Longwave Laser
	Operation Range (nm) TX	1480 to 1500
	Operation Range (nm) RX	1260 to 1360
	Spectral width Max (nm)	0.88 to 2.09
	Minimum Side Mode Suppression Ratio (dB)	-
	Emission Power Max/min (dBm) to SMF	-3/-9
	Min Extinction Ratio (dB)	6
	Receiver Type	
	Attenuation Range (dB)	10.5
	Sensibility (dBm) BER < 10-10	-19.5
	Receiver Saturation (dBm)	-3
	Maximum Penalization per optical course (dB)	5.5
	According to Recommendations	IEEE 802.3, clause 59.

Table 3-4: Optical 1000Base interfaces characteristics

3.3.3 GPON Interfaces

ITU-T Recommendations G.984.2 + G.984.2 Amd 1 + G.984.2 Amd 2.

	Items	**Unit**	**B+**	**C+**
			OLT Tx	**OLT Tx**
GPON OLT Transceiver	**Nominal bit rate**	Mbit/s	2488.32	2488.32
	Operating wavelength	nm	1480-1500	1480-1500
	Line code	--	Scrambled NRZ	Scrambled NRZ
	Minimum ORL	dB	>32	>32
	Mean launched power MIN	dBm	+1.5	+3
	Mean launched power MAX	dBm	+5	+7
	Extinction ratio	dB	>8.2	>8.2
	Tolerance to the transmitter incident light power	dB	>-15	>-15
	SLM Laser – MAX –20 dB width	nm	1	1
	SLM Laser – MIN SMSR	dB	30	30
			OLT Rx	**OLT Rx**
	Nominal bit rate	Mbit/s	1244	1244
	Upstream operating Wavelength	nm	1260-1360	1260-1360
	Maximum reflectance of equipment, measured at Rx wavelength	dB	<-20	<-20
	Bit error ratio	--	$<-10^{-10}$	-10^{-4**}
	Minimum sensitivity	dBm	-28	-32**
	Minimum overload	dBm	-8	-12**
	Downstream optical penalty	dB	0.5	1
	Consecutive identical digit immunity	bit	>72	>72
	Tolerance to reflected optical power	dB	<10	<10

Table 3-5: GPON Interfaces Specification

**OLT RX= -12 ~-32 dBm (The OLT sensitivity assumes the use of the optional RS (255,239) FEC capability of the G-PON TC layer, as well as intrinsic detector technology improvements)

3.3.4 B+ Link Budget

This budget covers all optical components between the extended OLT and ONU, including non-integrated WDM filters for the multiplex of video overlays and other enhancement band services, and must include any Raman impairment from the overlay signal.

	unit	Single Fiber
Minimum optical loss at 1490 nm	dB	13
Minimum optical loss at 1310 nm	dB	13
Maximum optical loss at 1490 nm	dB	28
Maximum optical loss at 1310 nm	dB	28

Table 3-6: B+ Link Budget

3.3.5 C+ Link Budget

This budget covers all optical components between the extended OLT and ONU, including non-integrated WDM filters for the multiplex of video overlays and other enhancement band services, and must include any Raman impairment from the overlay signal.

	unit	Single Fiber
Minimum optical loss at 1490 nm	dB	17
Minimum optical loss at 1310 nm	dB	17
Maximum optical loss at 1490 nm	dB	32
Maximum optical loss at 1310 nm	dB	32
Maximum fiber length	km	60

Table 3-7: C+ Link Budget

3.4 Power Supply Options

As mentioned above, the OLT system uses a -48VDC input voltage for its power supply. It works properly within -40.50VDC to -57VDC voltage range in compliance with the ETSI EN 300 132-2 V2.1.1 (2003-01) recommendation. The earth connections comply with the ETSI ETS 300 253: January 1995 recommendation.

Note: An optional version with a single 210-250 VAC power feed is also available upon request.

3.5 Power Consumption

Please see below the unit parts Power consumption.

Type of Unit	Unit name	Power Consumption (W@-48VDC)
Chassis	OLT Ref.769401	< 20 (Fan Module)
OLT Ref.769401 single board	OLT Ref.769401	< 90

Table 3-8: Power Consumption

3.6 System Heat Release

OLT system maximum heat release for a fully equipped chassis is of 110W.

3.7 Weight & Physical Dimensions

The physical dimensions of the OLT system are the following:

Figure 3-1: OLT Ref.769401 3 D chassis schematic and dimensions (mm)

Dimension	Height (mm / RU)	Width (mm / ")	Depth (mm / ")	Weight (max Kg/lb)
OLT Ref.769401	44,45/1	483 / 19	248 / 9,8	3,3 / 7

Table 3-9: Weight & Physical Dimensions

The OLT Ref.769401 chassis can be mounted on an ETSI ETS 300 119-2 type rack, with a depth of 300mm (11,8").

Figure 3-2: OLT Ref.769401 chassis front

3.8 MTBF

Please see below the unit parts MTBF (Mean Time Between Failure).

Type of Unit	Unit name	MTBF (hours)
OLT Ref.769401	OLT Ref.769401	132909

Table 3-10: : Mean Time Between Failures

3.9 Environmental ConditionsLicense Requirements

This system is carrier class designed and complies with Considered equivalent to ATIS-0600010.01.2008 Class 2, Harsh – Protected Environment.

This system will properly work within Class 2 environments for equipment placed inside a space protected from direct outside weather and environmental stresses by a closure and where the operating climate is between:

- -40°C (-40°F) and 65°C (149°F)
- 5 and 85 RH% Relative Humidity

"These locations usually have either (a) active means of cooling using fans and/or heat exchangers, or (b) design features (cooling fins or airflow pattern) within the closure or the equipment to effectively dissipate heat from active equipment.

Although these facilities do not have a preset specific temperature range as a target, their physical design features (e.g., cooling fins) and devices (e.g., fans, heat exchangers) greatly aid heat dissipation and help moderate the thermal environment surrounding the electronic equipment.

The temperature conditions above are the expected extremes provided for equipment design purposes. Normal operating temperature and humidity range experienced by the equipment in the closure is expected to be narrower. The operating temperature minimum of -40°C represents a scenario where a cold start is required after an emergency, such as a power outage caused by an ice storm or downed electrical power lines." (GR-3108-CORE).

3.10 Electromagnetic Compatibility

This system is carrier class designed and suitable to work over extreme EM conditions. As such, it complies with the relevant recommendations for this type of installation, as listed in the ETSI EN 300 386 recommendation.

3.11 System Parts

The organization of the OLT system can be seen in the figure below, Figure 3-3 and Table 3-11.

Figure 3-3: OLT system Front View (1U chassis)

Module	Name	Status
OLT Ref.769401 single board	OLT Ref.769401	Ready
Fan Module	OLT Ref.769401	Ready
Air Filter	OLT Ref.769401	Ready

Table 3-11: OLT Equipment Module Features

3.11.1 OLT Ref.769401 single board

This board integrates the OLT Ref.769401 switch fabric, uplink ports and GPON ports. It provides the Operation and Maintenance function of the system, and it also switches the client traffic between the client and the uplink interfaces.

OLT Ref.769401 single board has a 64 Gbps switching capacity and in addition has four 10GbE internal connections and one O&M for each of the uplink and client interfaces.

3.11.1.1 Interfaces

- 2x ETH management interfaces G1 and G2 (RJ45);
- 1xUSB debug port, exclusively for factory configuration
- 1x MISC (Alarms/conditions and ACK indicators) contacts
- 4 x 10GE uplink interfaces
  - SFP+ modules
- 4 x 1GbE uplink interfaces
  - SFP modules
- 8x GPON interfaces
  - SFP modules

3.11.1.2 LED Indicators

The board provides 2 LEDs, named PRC, ON, that must indicate

- PRC: stands for the word «Processing» and defines the overall state of the board:
  - If Led is either OFF or steady GREEN the board has an internal hardware malfuction that does not allow the board to boot
  - If Led blinks GREEN 1 time per second the board is active;
  - If Led blinks GREEN 3 times per second the board is inactive;
- ON: reflects the state of the -48VDC power supplies (A and B):
  - Steady green if rail A and B are OK;
  - Blinking GREEN/RED if rail A is NOT OK and rail B is OK;
  - Double GREEN/RED blinking if rail A is OK and rail B is NOT OK;

3.11.1.3 Interface Interconnection Cables

The equipment has two Ethernet (G1 and G2) management interfaces. For the G1 and G2 interfaces, UTP network cable category 5e or higher with RJ45 connectors should be used as interconnection cable. The expected range with this interconnection cable is 100m maximum.

For the MISC interface a coaxial Metral 2mm (FCI TM) plug is used.

The USB debug port is exclusively for factory configuration.

4. Setup

This chapter describes the OLT system installation procedures.

4.1 Mechanical Packaging

Important!

When installing or servicing these GPON systems it is necessary to take into account the following aspects:

- In a servicing system it is imperative that the access to any board or fan module, can be done without affecting the service supported by other units;
- The grids that exist in the steel structures which are used for entry and exit of air, should not be clogged up with the penalty of affecting the correct functioning of the cooling system;
- Once the connections and access to equipment interfaces are made, a distance of approximately 12cm in front of the structure must be reserved, to accommodate the wiring.
- It is imperative to follow all ESD precautions described in ESD , when accessing to the OLT system or handling any system board or module.
- It is imperative to disconnect all power source on the Disconnect Device before servicing the unit.

4.2 ESD Precautions

Important!

When performing OLT system service actions, observe the following electrostatic discharge (ESD) precautions:

- Wear an antistatic wrist strip at all times when handling any system part, board or module.
- Before handling any system part, board or module, discharge any static electricity by touching a grounded surface.
- Remove all plastic, vinyl, and foam material from the work area.
- Do not remove a system board or module from its antistatic protective bag until you are ready to install it.
- After removing a board or module from the system chassis, immediately place it in an antistatic bag or antistatic packaging.
- Handle any system board only by its edges and avoid touching the components or circuitry.
- Do not slide a system board or module over any surface.
- Limit body movement (which builds up static electricity) during the removal and replacement of a system board or module.

4.3 OLT Ref.769401 System

The OLT Ref.769401 system uses 1U / 19" ETSI infrastructure. Please see Figure 4-1.

Figure 4-1: OLT Ref.769401 setup – Front view

4.3.1 Restricted Access Location

The OLT Ref.769401 unit is to be installed in a restricted access location.

4.4 Electrical Power Supply

The electrical connection for the OLT equipment is of redundant -48VDC.

4.4.1 Disconnect Device

A Disconnect Device must be installed close to unit chassis in order to allow disconnection of all power supply before servicing the unit.

In the case of installation in an ETSI rack, rack installed Power Box, provides disconnect device funcionality

Disconnect device circuit breaker should be rated 3A max.

4.4.2 Multiple Power Source

Power supply to the unit is provided by two 48 VN(egative) power supply source connection, source A and source B.

Important!

All unit power supply must be disconnected at the disconnect device before servicing the unit.

4.4.3 Power Supply Connection Procedures

Important!

When performing OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD
All unit power supply must be disconnected at the disconnect device before servicing the unit.

4.4.4 Power Supply Cables Connection

In right side of the OLT front panel there are two tree input connectors for power supply connections P1 and P2, (see Figure 4-2):

Figure 4-2: OLT chassis redundant power supply input connectors

Step 1 Use the H03VV-F conducting electrical cables with eyelet terminals provided in the OLT mounting kit to connect the two redundant power supplies.

4.5 SFP/SFP+ Insertion and Removal

The SFP/SFP+ module are equipped with a module handle in the front of the module to facilitate the insertion and removal of the module in the card module interfaces.

Important!

When performing OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD

All SFP/SFP+ modules are hot swappable.

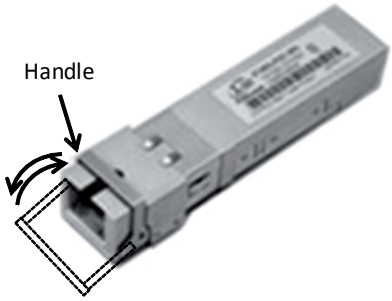


Figure 4-3: SFP/SFP+ module handle

4.5.1 SFP/SFP+ Module Insertion Handling Procedures

Step 1 Identify the card and the module interface where the module must be inserted;

Step 2 Remove the SFP/SFP+ module interface cover;

Step 3 Remove the module dust cap, to be able to access and turn the module handle to the horizontal position , (please see Figure 4-);

Step 4 Hold the module by the module handle;

Step 5 Position the module into the card module interface and push it into place;

Step 6 Release the module handle;

Step 7 Cover the module with the module dust cap or plug in the adequate parch cord optical connector.

4.5.2 SFP/SFP+ Module Removal Handling Procedures

Step 1 Identify the card and the module to remove;

Step 2 Remove the module dust cap, or disconnect the optical patch cord, to be able to access and turn the module handle to the horizontal position;

Step 3 Hold the module by the module handle;

Step 4 Pull the module out of the card module interface;

Step 5 Release the module handle;

Step 6 Cover the module optical interface with the module dust cap;

Step 7 Cover the card module interface with the SFP/SFP+ module interface cover, or insert a new SFP/SFP+ module (please see module insertion procedures above).

4.6 Maintenance

4.6.1 Cooling System

The OLT cooling system functioning is illustrated bellow.

The air enters the system being filtered by the air filter in the left side of the chassis. The cooling module pulls the hot air up and out to the right side of the chassis.

Important!

For the correct cooling system function the air must only enter the system at the bottom of the chassis

passing through the air filter. All undesired air entries must be sealed, both to ensure proper system

ventilation and prevent dust entry.

It is mandatory to cover the empty SFP/SFP+ card interfaces with the corresponding SFP/SFP+ interface

covers, Figure;

It is mandatory to cover the unused optical card interfaces with the corresponding optical covers.

Figure 4-4: SFP/SFP+ interface covers

4.6.1.1 FAN Module

The OLT system has a single cooling module with three redundant FANs. In case of failure of one of the FANs, the air supplied by the adjacent units is enough for the proper functioning of the equipment.

Figure 4-5: OLT cooling module with redundant FANS

The cooling system is subject to preventive maintenance to ensure proper operation. Depending on surrounding conditions (locations subject to higher room temperature or exposed to high concentrations of dust, such as outdoors) that period may be decreased.

The procedure for the cooling system maintenance must be complied with the verification; inspection; and cleaning of the cooling module. It is recommended that this intervention is made by replacing the cooling module by another, to minimize the time that the system is working without air circulation. The removed cooling module can be reused in another system after properly cleaned and inspected.

The FAN module can be replaced and is hot swappable. In order to replace the module, please refer to section FAN

4.6.1.1.1 LED Indicator

Each fan module has an LED, STATUS that must indicate the following states of the system:

- Without OLT Ref.769401 (switch fabric) on the chassis, the fan module blinks RED.
- The led remain to blink RED until the OLT Ref.769401 (start (takes appx. 3 minutes).
- If no problem occur, the LED must blinks GREEN (normal state), unless the environmental temperature exceeds +45C.

4.6.1.2 Air Filter

The OLT system has a single air filter located at the left side of the chassis.

Filter maintenance is dependent on the environmental air quality in which the system is installed.

The filter should be checked, at a minimum, annually (8760 hours) and cleaned or replaced if there is evidence of airflow blockage.

In environments with high particulate matter, the filter should be checked, cleaned or replaced more often. Should the filter require cleaning, remove the filter from the server. See Removing the Air Filter. Take the filter to an open area and blow the particles from the filter using a can of compressed air. Do not use a coarse brush or anything abrasive since they may damage the filter.

4.6.1.3 FAN Module Replacement Procedures

Important!

When performing OLT system service actions, observe electrostatic discharge (ESD) precautions; please refer to section 4.2 ESD Precautions

4.6.1.4 Air Filter Replacement Procedures

Important!

When performing OLT system service actions, observe electrostatic discharge (ESD) precaution; please refer to section 4.2 ESD Precautions

Be sure to have a spare cleaned Air Filter in order to minimize the time that the system is working without air filtering.

A trained technician should execute the task in a few seconds.

4.6.1.4.1 Air Filter Removal

Step 1 Locate the Air filter at the chassis

Step 2 Hold the Air filter with both hands, pull it towards you and slide it out of the chassis

4.7 Cables

4.7.1 Electrical Power Supply

This GPON system operates from a supply voltage with -48VDC nominal value. It can work up from -40.5VDC to -57VDC in accordance with the recommendation ETSI EN 300 132-2 V2.1.1 (2003-01). The ground terminals links comply with the provisions of the recommendation ETSI ETS 300 253: January 1995.

Figure 4-6: Electrical power supply H03VV-F cables connection kit

The OLT electrical power supply inputs connection use H03VV-F cables which are provided with terminals as indicated in Figure 4-6. These cables consist of 6mm2 section and a length of 3m (GND – Green with Yellow stripes, -48V DC Blue and 0V-RTN DC Red), Figure 4-6.

4.7.2 ETH 10/100/1000 BASE-T

For the ETH 10/100/1000 BASE-T interfaces are used RJ45 connectors as indicated in the figure below. The expected range is 100m using UTP network cable category 5e or higher.

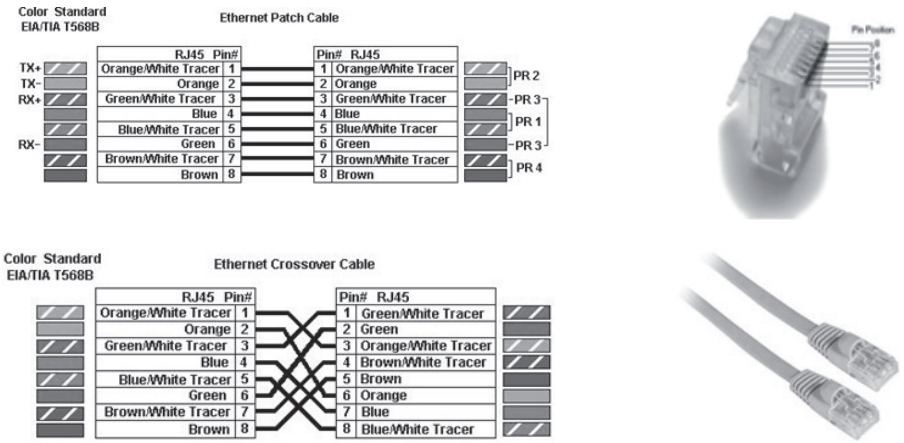


Figure 4-7: Ethernet Cable

The ETH interface with an RJ45 connector is used for the management port (10/100 BASE-T) of the Switch Fabric card.

4.7.3 Alarms & Synchronism

Through a Metral 2mm (FCI TM) plug, available on the front panel of the Switch Fabric card, are provided one junction for synchronism (Rx and Tx) at 120 or 75 Ohm, alarms, conditions and system ACK.

- Synchronism junction:

- 75 Ohm/120Ohm
  - RX_JSINC/RX_GND;
  - TX_JSINC/TX_GND.

- 2x alarm port pairs:
  - URGENT pair:
    - URG_A/URG_B;
- SERVICE pair:
  - SRV_A/SRV_B;
- 2x input conditions:
  - COND_A
  - COND_B

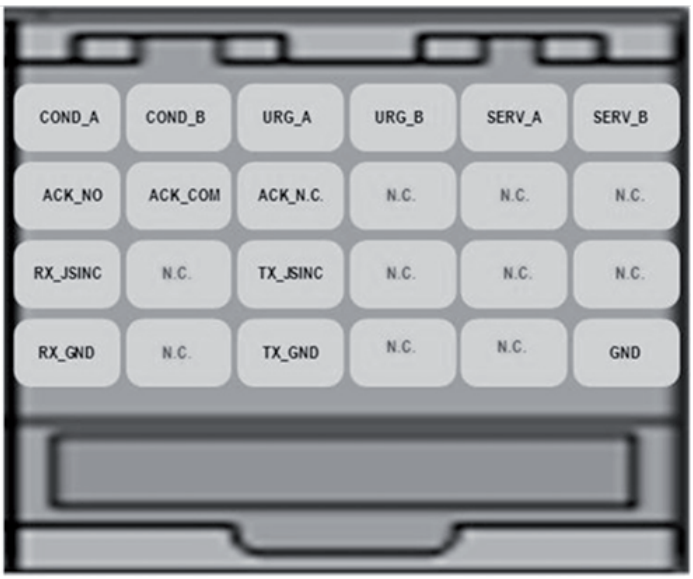


Figure 4-8: Switch Fabric card alarm/conditions and ACK Plug and PIN out

4.7.4 Optical

The optical interfaces used in OLT system are Multi Source Agreement (MSA) type in GPON variants (with SC-PC connectors), and in 10GbE SFP+ variants (with LC-PC connectors). The optical cables are patch cords terminated with the optical connectors to match the optical interfaces.

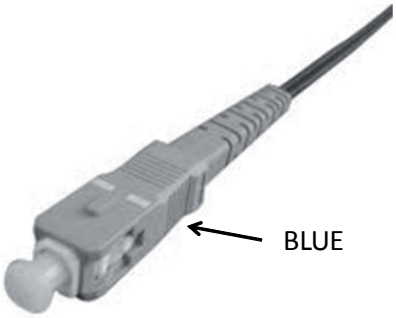


Figure 4-9: SC-PC connector

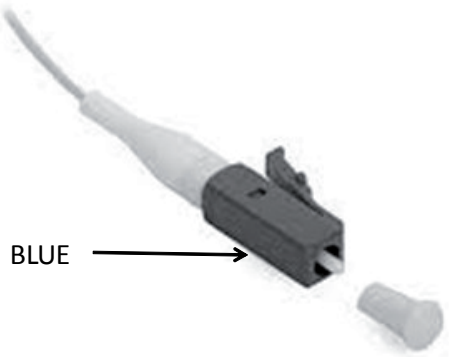


Figure 4-10: Connector LC-PC

4.8 Optical Interfaces

4.8.1 Transceivers

The optical interfaces are supported on MSA standard modules with SFF, SFP and SFP+ type (10G Small Form-Factor Pluggable).

4.8.1.1 SFP AND SFP+ Optical Transceivers

The SFP+ optical transceivers are the next generation SFP for 10Gbps transceivers singlemode and multimode fiber, supporting multiple network protocols such as SONET/SDH, 10 Gigabit Ethernet (10GbE), CWDM communications, up to 80km.

Figure 4-11: Ethernet uplink SFP+ optical transceivers

GPON network interfaces are in the form of SFP (small form factor pluggable) optical transceivers with SC/PC optical connector.

Figure 4-12: GPON optical pluggable transceiver

4.9 Electrical Interfaces

4.9.1 Electrical Fast Ethernet

RJ-45 connectors are used for Ethernet 10/100 BASE-T interfaces. The expected range is 100 meters using category 6 cable as described in the IEEE 802.3 recommendations.

Figure 4-13: RJ45 connector

5. Configuration

This chapter addresses the configuration of the equipment via local management.

5.1 System Management

The OLT equipment can be managed locally simply using a web browser; via Web Ti application or using a Linux based Command Line Interface, CLI. The operation with the WebTi is described in the next sections of this manual. Option with CLI is described in section 7 CLI. Both WebTi and CLI provide the system with Local Craft Terminal (LCT) functionalities.

There are two different ways to manage the equipment:

- Connect to the management port (ETH), Figure 5-1
- Inband Management (using a management VLAN), Figure 5-2

To manage the OLT equipments, the OLT Ethernet management port must be connected to the Service Provider DCN, or connected directly to the PC Ethernet port.

There are two management ports, G1 and G2 in front panel of the Switch Fabric card.

G1 is the interface that should be used for the DCN connection, since it has a configurable IP address.

G2 is the interface that should be used for local access to the Equipment since it has a fixed IP address.

The PC to be connected to G2 must be configured with Fixed IP **192.168.200.200/24**. The OLT equipment IP is defined as **192.168.200.101**.

Notes

- Failure to configure PC IP(192.168.200.200/24) may lead to equipment malfunction.
- The OLT configuration done through WebTi will be flushed once the OLT is added to NMS server;
- The OLT configuration done in Webti will not be reflected in NMS and vice versa.

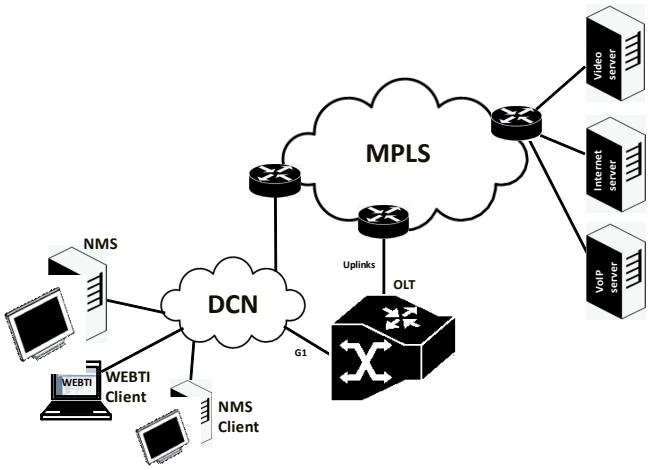


Figure 5-1: Managing OLT locally

Figure 5-2: Managing OLT by the Management Network

To manage the OLT equipments by the Inband interface, there must be a management VLAN configured which interconnects MPLS network to the DCN.

5.1.1 System Requirements

To configure and check the state of the system with Web TI is necessary to use a Web browser, WebTi is compatible with Internet Explorer 6/7/8/9. To configure the system with CLI is necessary to use a CMD window.

5.1.2 Configuring the Web Browser

This set of procedures described in this section must be followed in order to use WebTI application.

In the remaining subsections of sections 5 C and 6 O use of WEB TI application will be assumed and described.

References to the use of CLI for configuration and operation will be provided along the text to the appropriate subsection of 7 CLI., where a detailed description of OLT equipment CLI usage is provided.

Despite the compatibility with IE8 and IE9, compatibility view mode must be made with this browsers, this option can be made near the place where the equipment's IP address is configured.

Generally in new browsers it may appear a button next to the URL called Compatibility View  . This button should be activated because it allows browser compatibility with Web Sites designed for older browsers since menus, images, or misaligned text will be corrected.

Updating configuration dialogs or status will only occur in the opening or, if required, pressing the IE  refresh button or 

buttons in the various windows. If in doubt delete temporary files as described below.

5.1.3 Cleaning the Cookies and Temporary Files

For the correct operation with WebTi it is necessary to clean up the cookies and the temporary files. In the Internet Explorer options, in the General tab the user must click in Delete.

In the Delete Browsing History Window the user must click in the option "Delete all…".

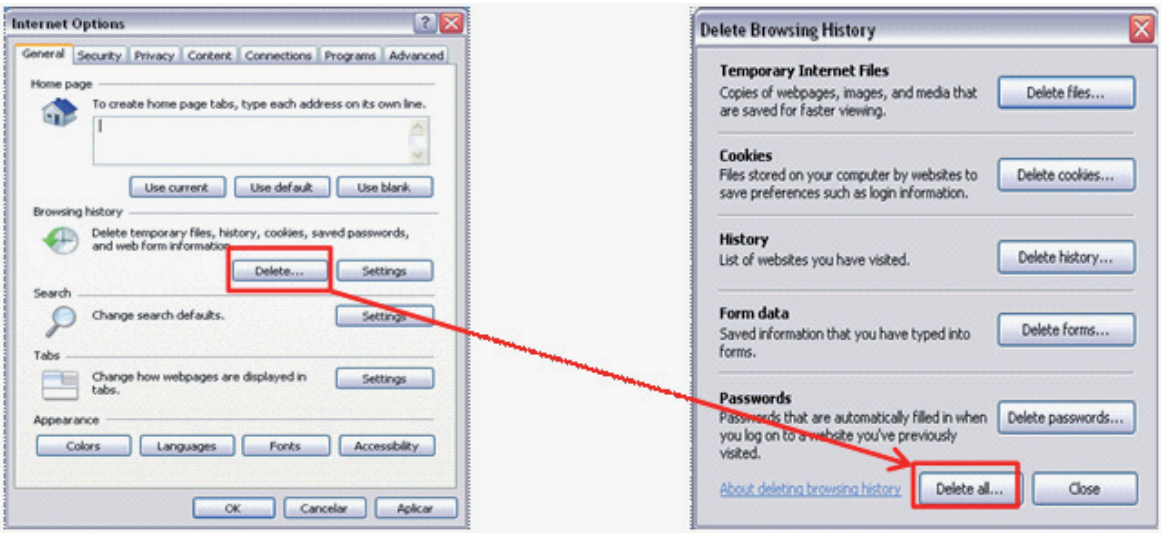


Figure 5-3: Internet Explorer Configuration

5.1.4 Trusted Sites

For the correct operation with WebTi is necessary to configure the Trusted Sites of the Web Browser. In the Internet Explorer options select the Security tab, then select the Trusted Sites option and click in the button Sites.

In the Trusted Sites Window introduce the equipment IP address and select Add, the "Require server verification (https) for all sites" must be unchecked.

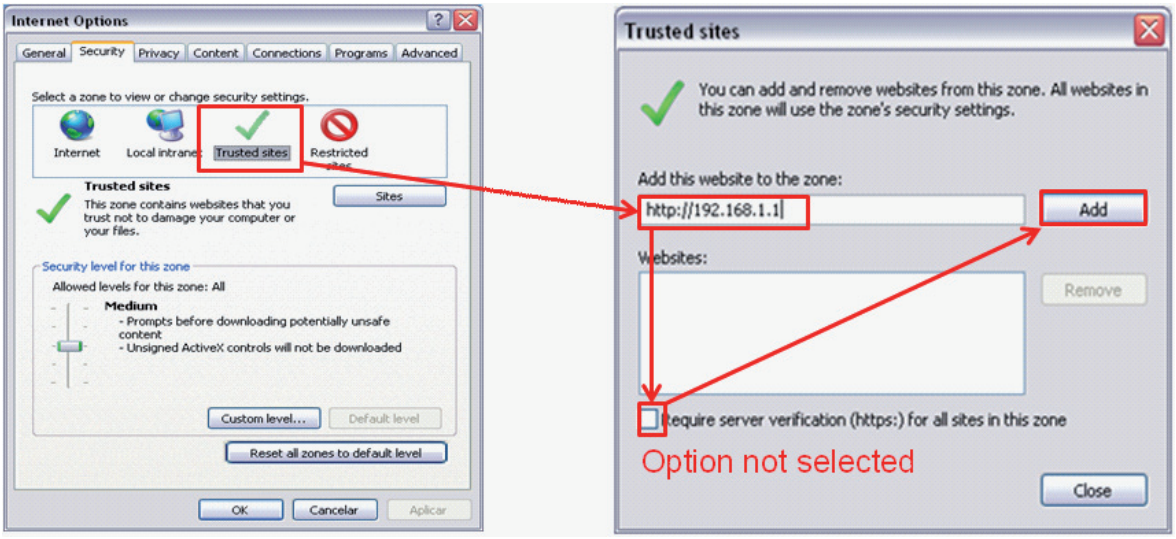


Figure 5-4: Trusted Sites Configuration

5.2 WebTi

5.2.1 Access to the Equipment

At the web browser window insert the equipment IP address to access. The equipment WebTi interface main window will be displayed.

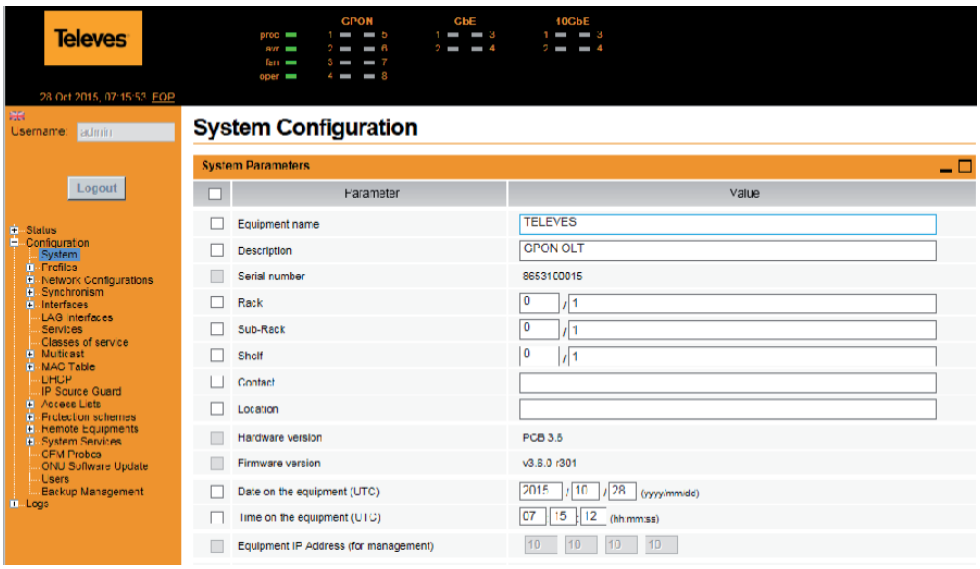


Figure 5-5: WEB TI equipment main window for access

5.2.2 Access Control

To Access the menu it is necessary the user to be logged in, for that the user must type the login and password.

The system provides three default users, with different privileges for the operations that can be performed in the system. Can also to change each system users' password.

- Admin
  - Full access, configuration of the equipment and of the accesses to the system: users" list and permissions
- Power
  - OLT configuration permission; cannot view or manage the system users' list
- Guest
  - Viewer permissions only: status and logs information access

Figure 5-6: Access Control

5.2.3 WebTi General Description

The WebTi is divided in three different areas: Menu, Heading and Main Page.

These three areas are marked in Figure 5-7.

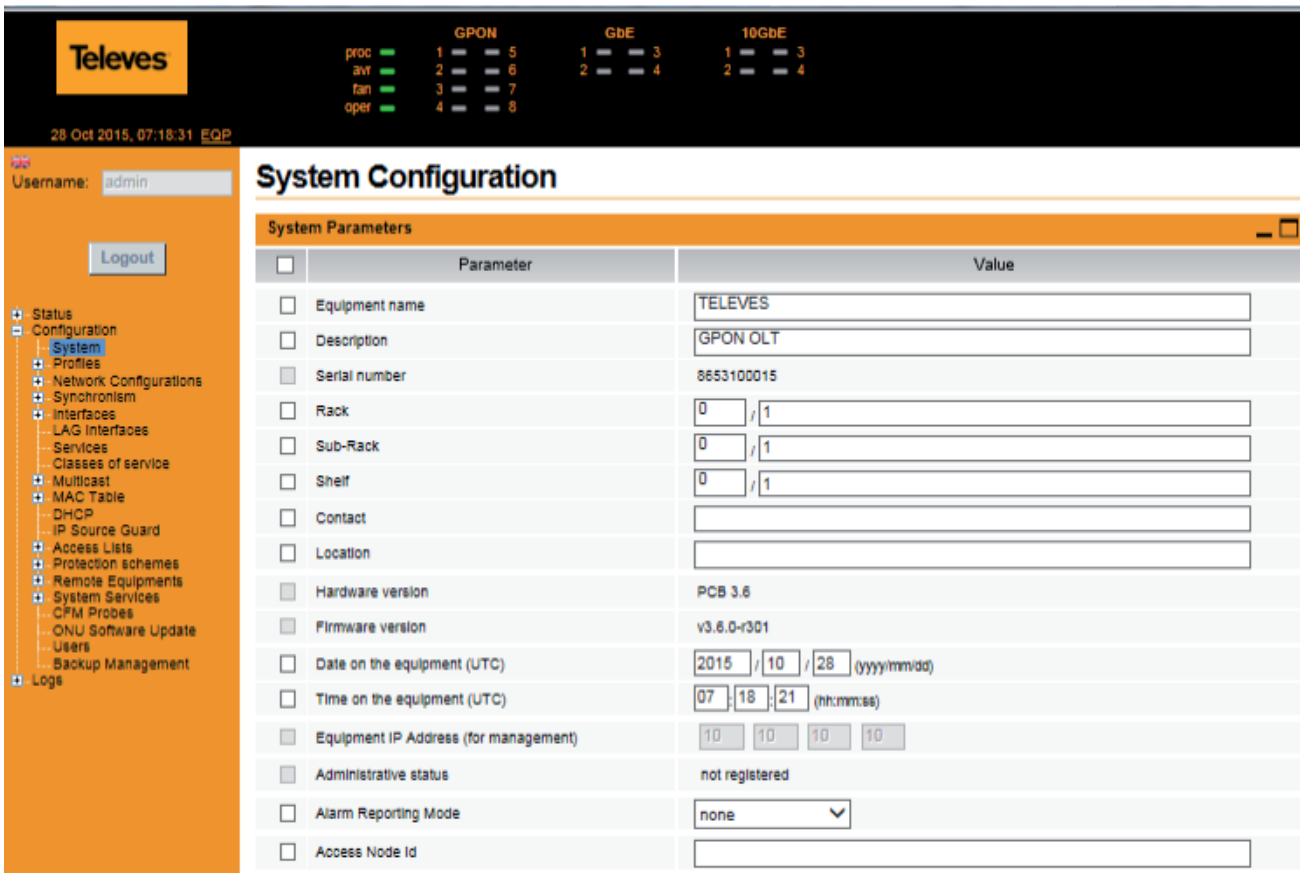


Figure 5-7: WebTi Areas

If using CLI, a CMD window should be used and CLI command run in this window. CLI has an hierarchical structure with nodes and subnodes. The prompt indicates where in the navigation tree the user is currently positioned. In each node/subnode a set of command is available depending on the particular node/subnode. CLI general usage indications are provided in 7.3 CLI and subsections.

In the menu all the options to configure and check the equipment status are available. By clicking on "+" the menu expands or "-" the menu collapses to the original position.

The main window displayed content corresponds to the selected item in the menu, Figure 5-8.

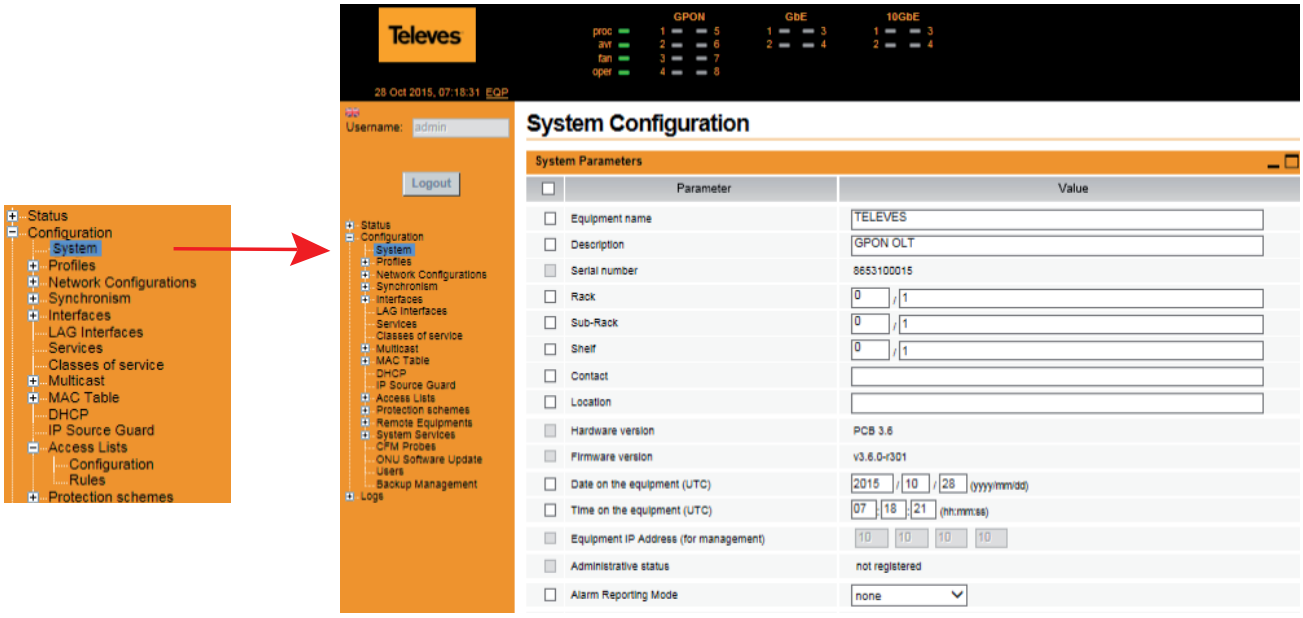


Figure 5-8: OLT Web Ti Menu navigation

In CLI application the tree command shows all the sub nodes with origin in the current node and commands available per node/sub node, see section 7.5. The tree command executed in the root node, will display the complete CLI tree, Figure 7-21.

5.2.3.1 Heading

The Heading has information related with the boards available in each slot of the OLT equipment.

That information is typically represented by graphic LEDs with different colors. It is possible to check the WebTi version by passing the mouse over the equipment's name, Figure 5-9.

The meaning of the LED's is the following:

- Off – There is no board registered in the slot;
- Green – The board is operational;
- Yellow – The board is registered but absent from the system;
- Red – There is a conflict between the registered and the inserted board;
- Blinking Green – There is a new module/interface in the slot/system;
- Blinking Red – The board is in processing state.

Figure 5-9: Web TI heading

5.2.3.2 Main Page

In the Main Page it will appear the page selected in the Menu section in order to configure the system, to check the system status or to view the Alarm/Events log registers.

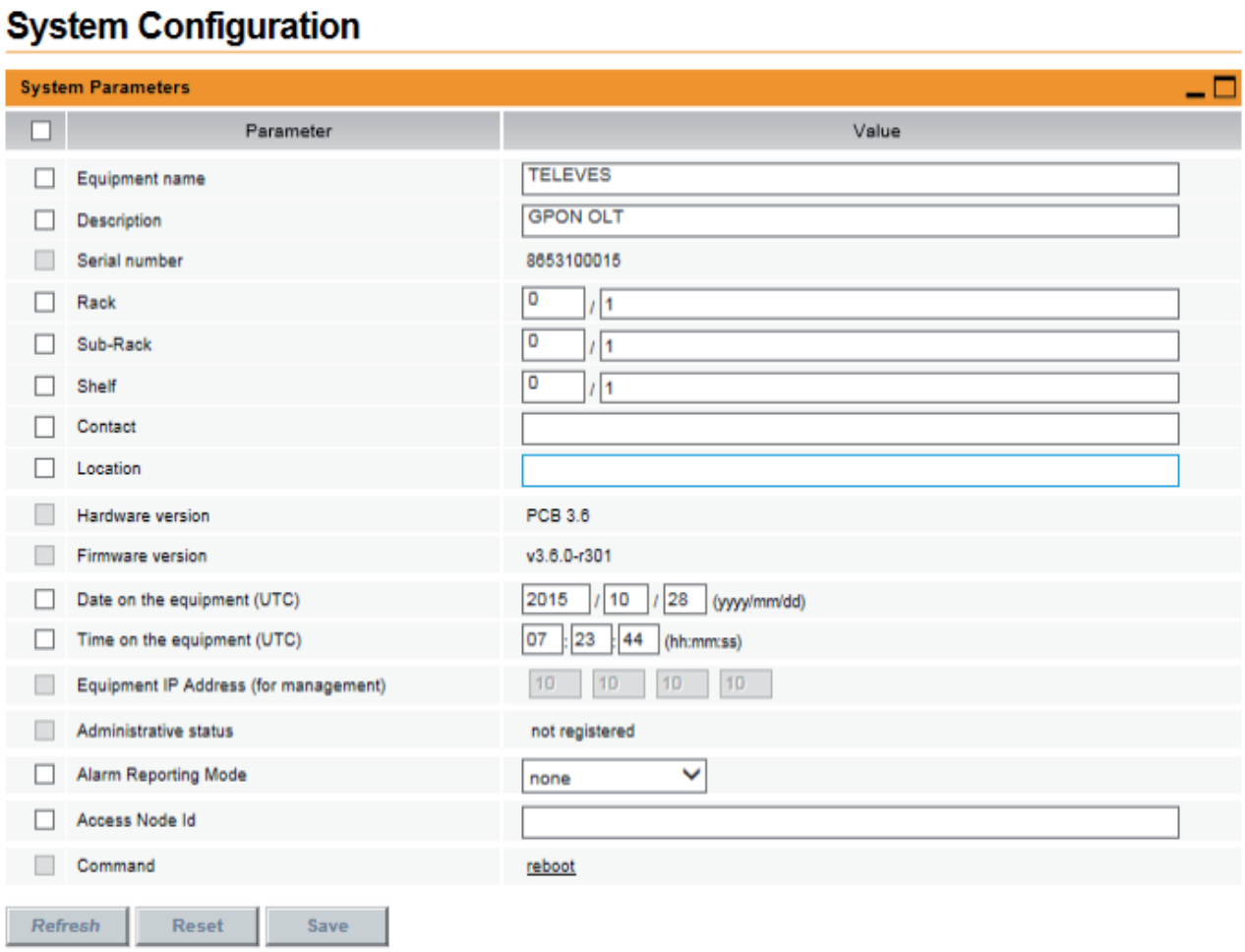


Figure 5-10: OLT Main Page

The fields changed in the table are marked with an exclamation mark (!) in the corresponding line where the changes are made.

Figure 5-11: Tables Behavior

There are three or more options in each configuration page:

- Refresh: Refreshes the current page;
- Reset: Puts the values to the original value of the page;
- Save: Saves the configuration of the selected parameters.

The command reboot, at the bottom of the OLT system configuration window allows rebooting the complete OLT system.

5.2.4 Invalid Operation error message

When an invalid operation execution order is issued by the user, an error code and error description is displayed on the window bottom error message display bar, Figure 5-12. For more information on the Invalid operation equipment error messages please refer to section 8.2 Equipment Error Codes.

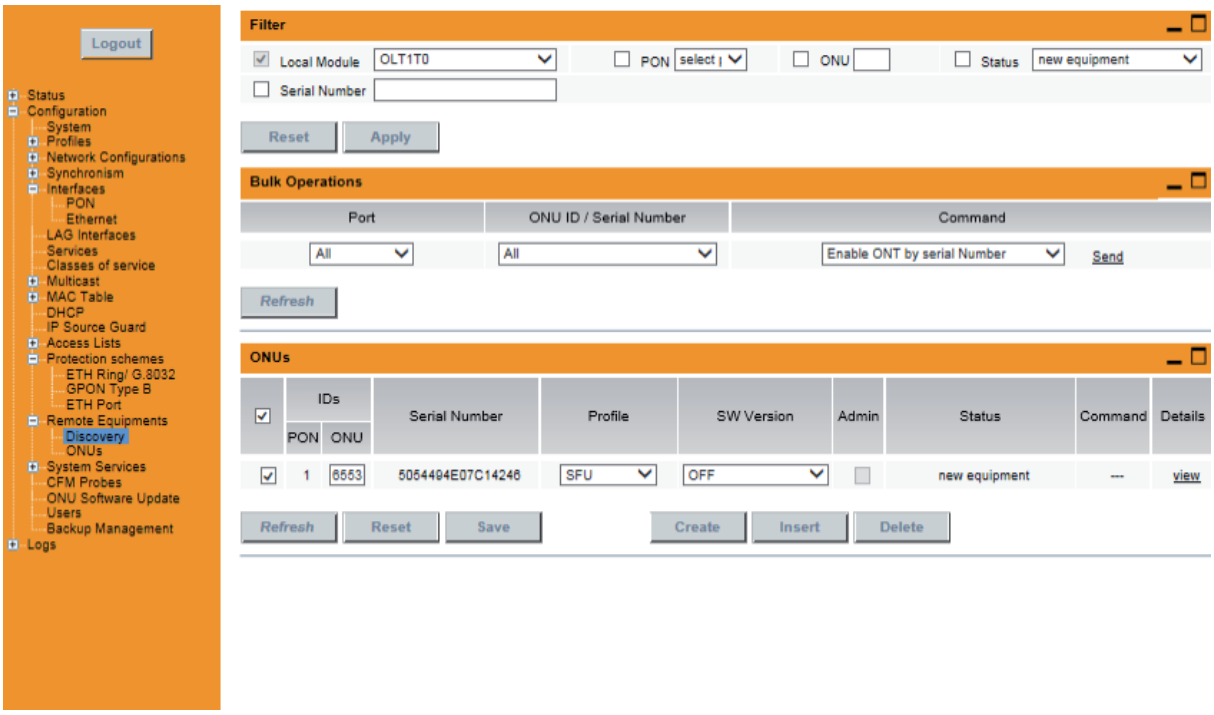


Figure 5-12: Invalid Operation error message

5.2.4.1 System Configuration

This menu provides general information about this system, and allows setting several parameters such as date, time and other custom fields.

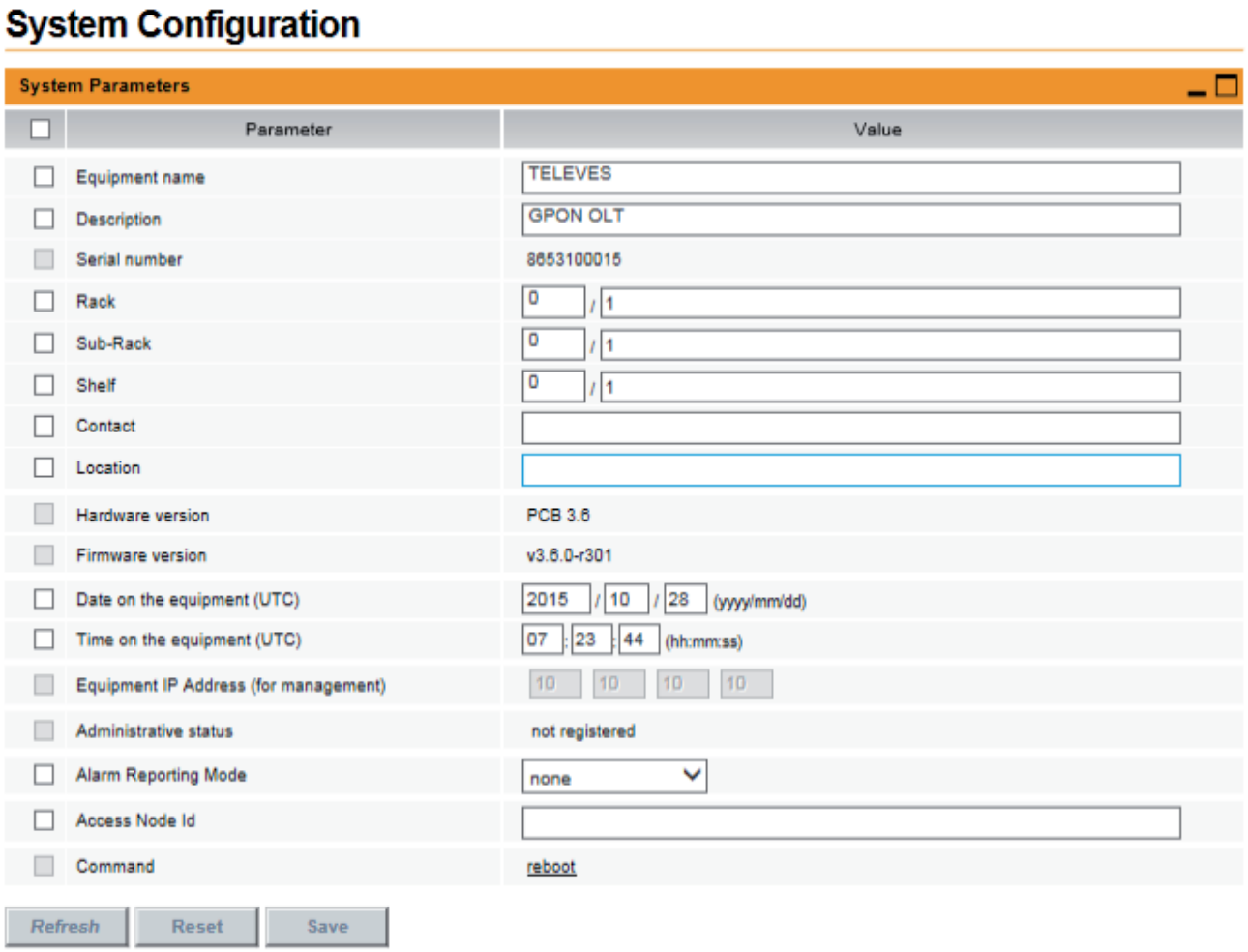


Figure 5-13: OLT System parameters window

Parameter	Description
Equipment name	Custom field used to tag the equipment (should be unique among all equipments). Example: OLT@Aveiro
Description	Brief description of the equipment
Rack, Sub-Rack and Shelf	Numeric coordinates of the equipment cabinet position
Contact	Entity responsible for this equipment (department, person, etc)
Location	Custom field with the equipment location
Firmware version	Displays currently used firmware version
Date on the equip.	Displays/sets date on the equipment (UTC)
Time on the equip.	Displays/sets time on the equipment (UTC)
Equipment IP address(for management)	Displays currently configured IP address for local management
Administrative status	Equipment administrative status
Alarm Reporting Mode	HTTP manager sets WebTi as the configuration interface SNMP manager sets a SNMP agent such as Agora-NG or SEQUIRA as the configuration interface
Auto Update Protection Switch Fabric Software	Enabled if selected
Access node Id	Displays access node identification

Table 5-1: System Configuration Parameters

For CLI usage, system configuration is described in section 7.6.6.4 "system" sub-node"

5.2.4.2 Profiles Configuration

The Profiles configuration sub-menu has three items, Figure 5-14.

- DSCP to P-bits
  - Up to 200 configured Profiles supported
- Ethernet
  - Up to 256 configured Profiles supported
- Upstream DBA
  - Up to 256 configured Profiles supported
- ONUs
  - Up to 40 configured Profiles supported
- VoIP
  - Up to 256 configured Profiles supported supported (30 Generic Profiles +30 Specific Profiles).
- P-bits to PQ
  - Up to 720 configured Profiles supported

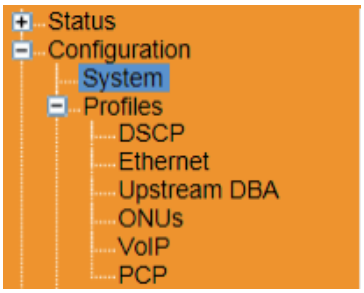


Figure 5-14: OLT Profiles configuration sub-menu

CLI profiles node, sub-nodes and available commands, including configuration are described in section 7.6.16 "profiles" node and subsections.

5.2.4.2.1 DSCP

DSCP (Differentiated Services Code Point) to P-bits Profiles are used to map DSCP priorities to P-bits priorities.

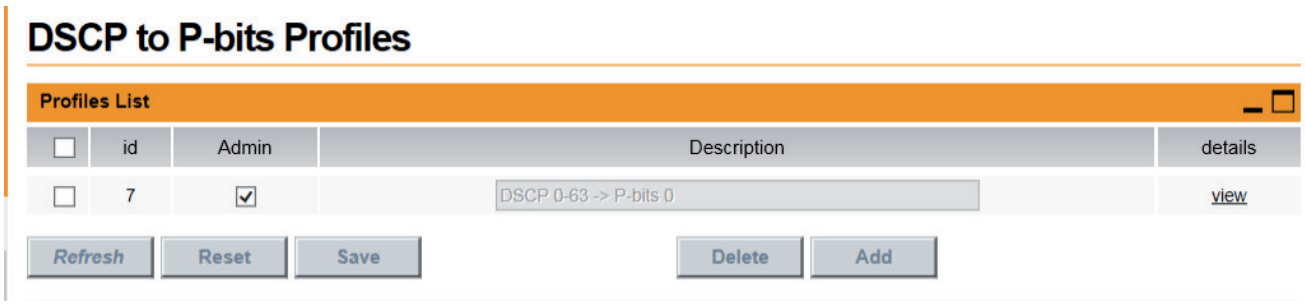


Figure 5-15: DSCP profiles

Notes

No spaces are allowed on the profiles names;

Profiles in use cannot be neither changed nor removed;

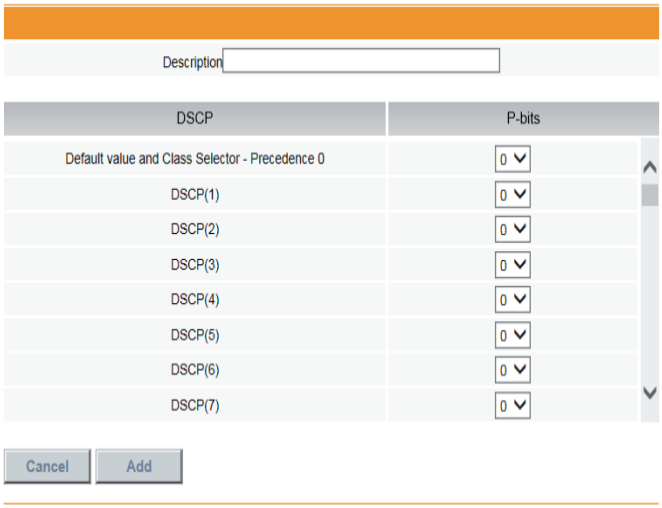


Figure 5-16: DSCP details

5.2.4.2.2 Ethernet

Ethernet profiles can be created according to MEF naming convention. There are two default profiles created and they cannot be neither changed nor removed.

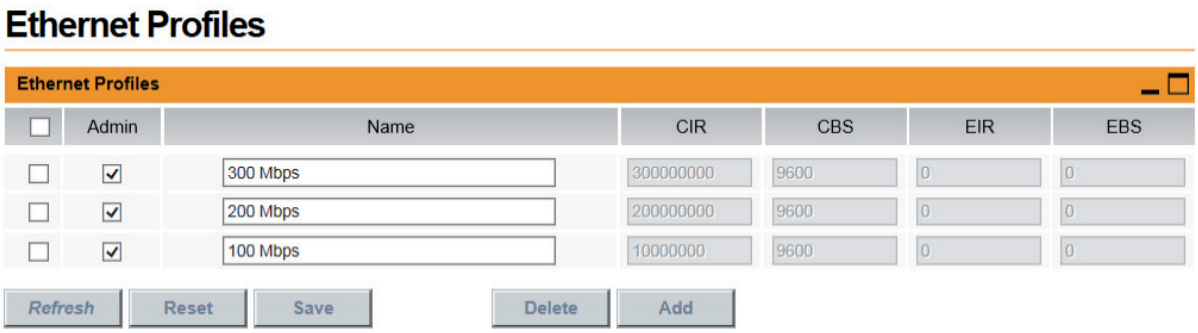


Figure 5-17: Ethernet profiles

Parameter	Description
CIR (bit/s)	Committed Information Rate: bandwidth that "should" be guaranteed on average
CBS (bytes)	Committed Burst Size: maximum number of bytes in a burst of packets that "should" be guaranteed
EIR (bit/s)	Excess Information Rate: bandwidth in excess that can be supplied in case there is no traffic congestion
EBS (bytes)	Excess Burst Size: maximum number of bytes in a burst of packets that can be supplied in case there is no traffic congestion

Table 5-2: Ethernet Profiles Parameters table

Notes

- No spaces are allowed on the profiles names;
- Profiles in use cannot be neither changed nor removed;

5.2.4.2.3 GPON Upstream DBA

The upstream profiles follow the Dynamic Bandwidth Allocation (DBA) feature described previously.

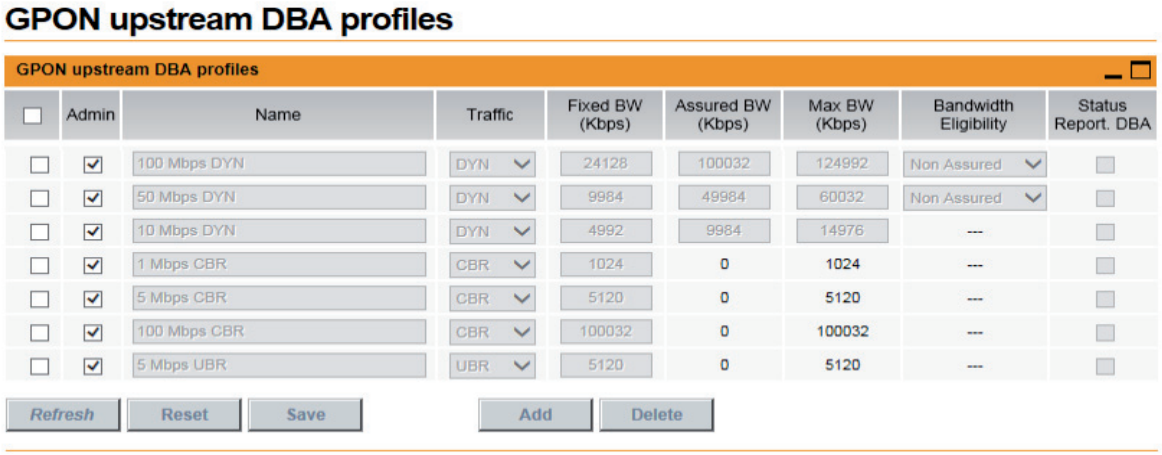


Figure 5-18: GPON upstream DBA traffic profiles

Parameter	Description
Admin	Administrative state
Name	Profile name
Traffic	*CBR*: Constant Bit Rate *UBR*: Unspecified Bit Rate *DYN*: Dynamic
Fixed BW (Kbps)	Fixed bandwidth used in CBR and UBR types with a granularity of 8kbps and a maximum value of 400000kbps and 1200000kbps for CBR and UBR respectively
Assured BW (Kbps)	Maximum bandwidth for DYN type with a granularity of 8kbps and a maximum value of 1200000kbps
Max BW (Kbps)	Maximum bandwidth that results from the sum: *Fixed BW* + *Assured BW* + *bandwidth not assured*, with a granularity of 8kbps and a maximum value of 1200000kbps
Bandwidth Eligibility	Defines how the non assured bandwidth is handled. NOTE: *Best-Effort* T-CONTs are only attended if all *Fixed* and *Non-Assured* T-CONTs have their requirements satisfied
Status Report DBA	Flag. If selected a Status reporting MAC GPON DBA algorithm is used

Table 5-3: GPON Upstream traffic profiles parameters table

There are five profiles created by default that represent the five types of T-CONTs. New profiles can be added through the Add button.

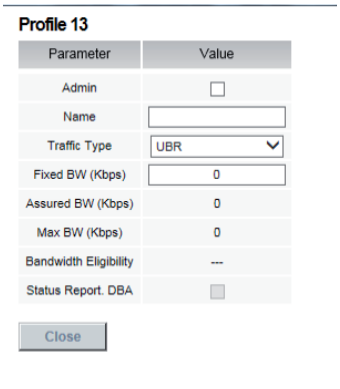


Figure 5-19: Add new upstream profile

5.2.4.2.4 ONUs

ONU profiles are used to characterize different ONUs according to their interfaces. By default, two profiles are created for SFU and 4GE-2FXS models.

By pressing the Add button there will be added a line to the ONT Profiles table

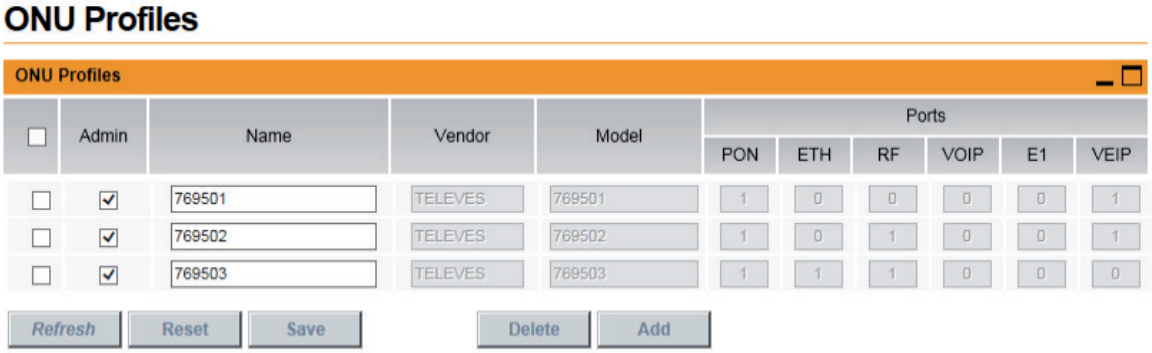


Figure 5-20: ONU profiles

Parameter	Description
Admin	Administrative state
Name	Profile name
Vendor	Vendor name
Model	Model name
Ports	**Pon:** Number of GPON Ports **Eth**: Number of Ethernet Ports **RF**: Number of RF Ports **VoIP**: Number of FXS ports

Table 5-4: ONU profiles parameters table

5.2.4.2.5 VoIP

VoIP profiles window is composed with two tables that are used to characterize different VoIP servers and FTP servers that store the XML files with the client information.

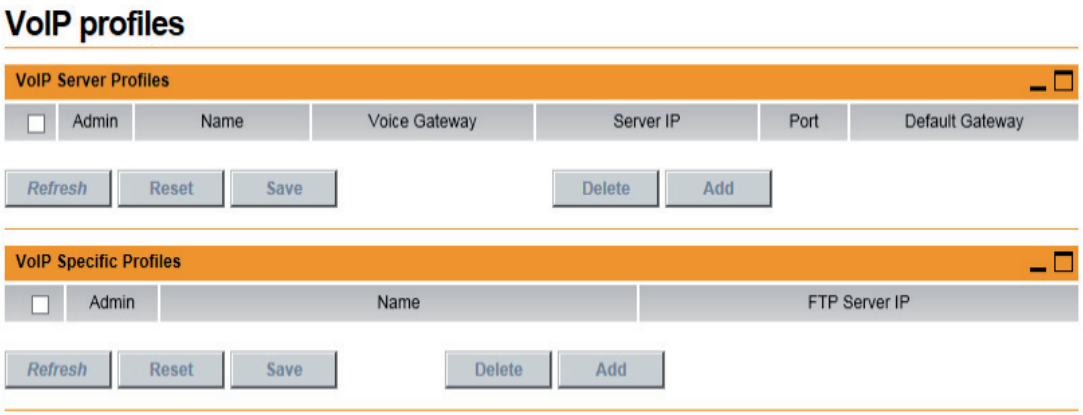


Figure 5-21 - VoIP Profile configuration

Parameter	Description
Admin	Administrative state
Name	VoIP server profile name
Voice Gateway	Type of Voice Gateway used, it can be one of the following: • SIP-Nortel/Softswitch • SIP-Broadsoft • Megaco-v5.x • Megaco-Softswitch • Megaco-GR-303/TR-08
Server IP	VoIP server IP address
Port	Port used by the SIP protocol
Default Gateway	Default Gateway used for the clients to reach the SIP server

Table 5-5: VoIP Server profile configuration parameters table

Parameter	Description
Admin	Administrative state
Name	FTP server profile name
FTP Server IP	FTP server IP address

Table - 5-6: VoIP specific profile configuration parameters table

5.2.4.2.6 P-bits to PQP

PCP profiles window is used to P-bit priority queues for the Upstream. Sevices defined on the ONUs can have a PCP profile associated defining the use of pbits for marking the upstream traffic.

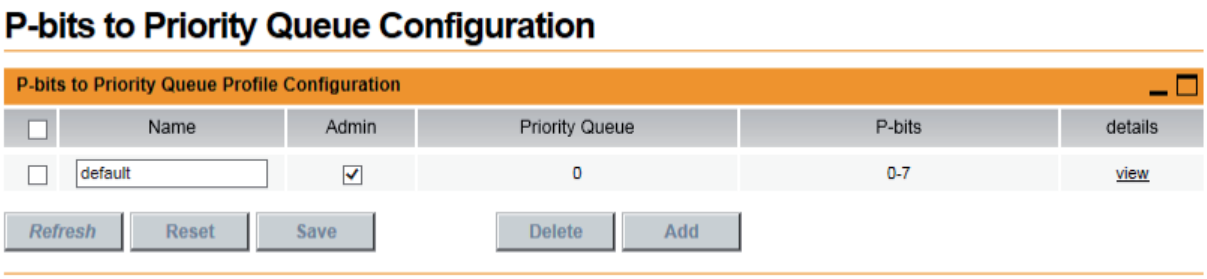


Figure 5-22: P-bits to PQP configuration

To add a new PCP profile use the Add button and a new line will be added to the PCP profile table. To configure the PCP profile priority queues select the respective view link at the details column. A priority queue configuration dialog box will open allowing the configuration of queues' priority bits. Save will update the PCP configuration table. In order to finalise the configuration and made the profile available for use, the profile must be named, the Admin flag must be selected.and the button Save used.

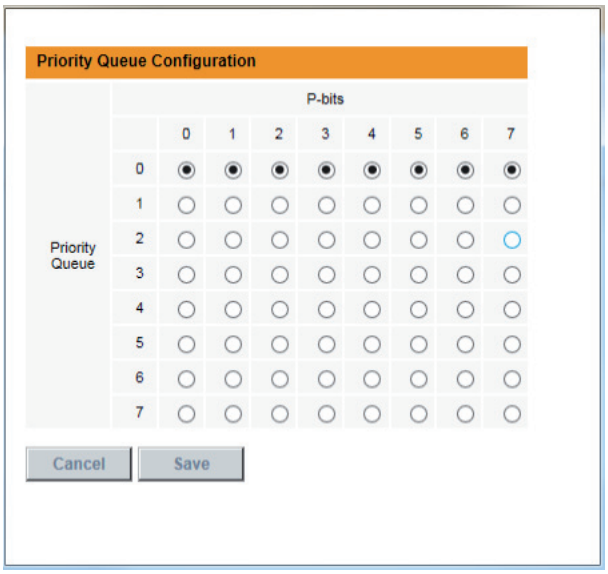


Figure 5-23: Priority queue configuration dialog box

Parameter	Description
Name	PCP profile name
Admin	Administrative state
Priority Queue	Identification of profile priority queues by number
Priority bit	Identification of configured priority bits per queue
Details	The view link at this column. will open a priority queue configuration dialog box showing the currently configured priority bits per queue for this PCP profile and allowing to change the configuration.

Table 5-7: PCP profile configuration parameters table

5.2.4.3 Network Configurations

5.2.4.3.1 IP Layer

This menu aggregates all configurations related with local and remote management interfaces.

For CLI usage, IP related commands including Configuration are described in section 7.6.11 "ip" node, and following subsections.

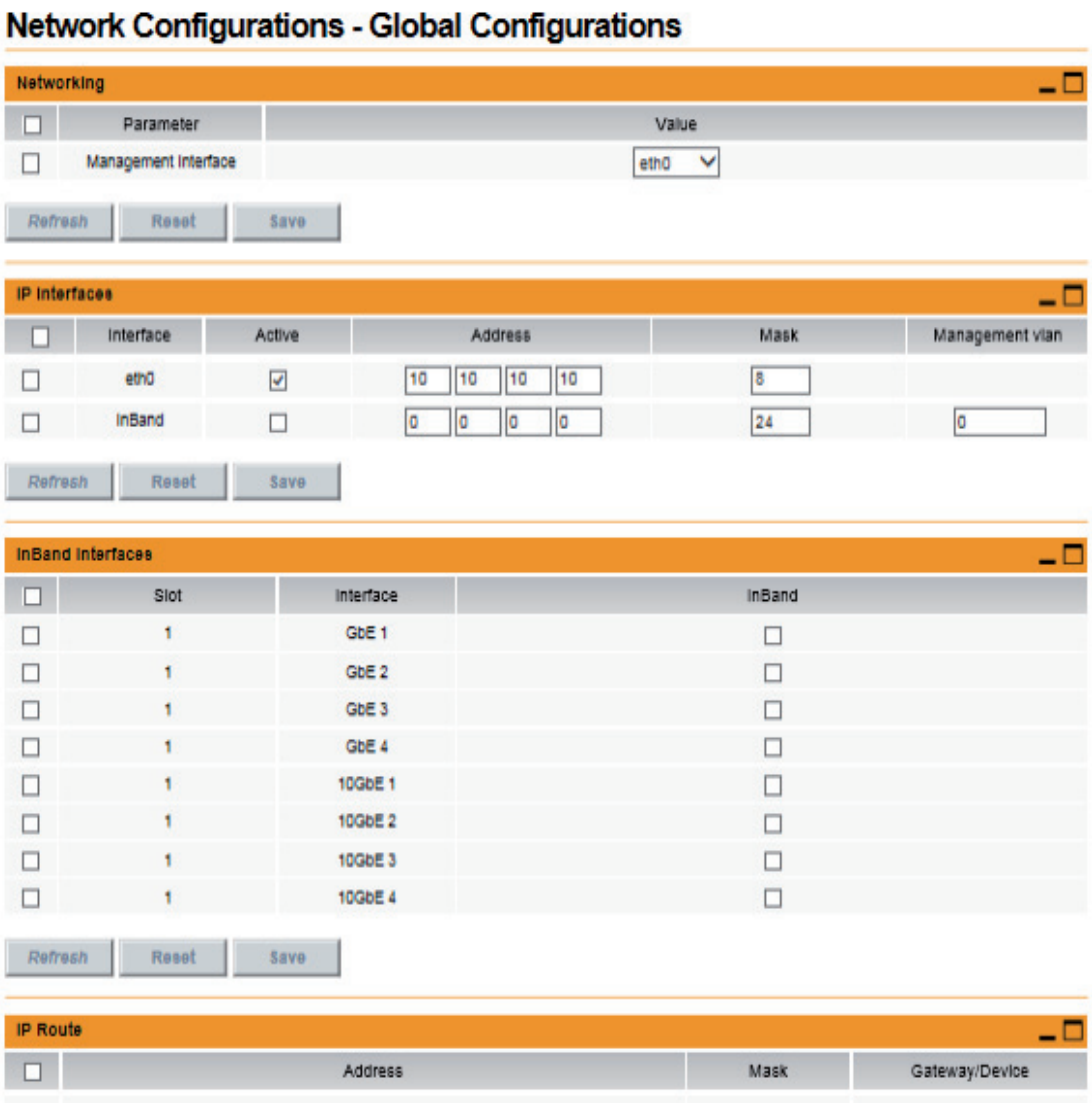


Figure 5-24: OLT Network configurations – Global configurations

Parameter	Description
Management Interface	**eth:** management through local interface (RJ45 connector) **inBand:** management through the uplink interfaces

Table 5-8: Management interface configuration parameters table

For each interface, an IP address can be configured and the respective network mask. For InBand, a VLAN must be used since the management traffic is mixed with other flows.

Parameter	Description
Interface	Interface name
Active	Administrative state of the interface
Address	IP address of the interface
Mask	Network mask of the Interface
Management VLAN	VLAN identifier used in the inBand interface

Table 5-9: Interface Configuration parameters table

It is also possible to select among all uplink interfaces which ones are used for the in band management. By selecting multiple interfaces, it means they will be connected in an E-LAN topology for that management VLAN.

Parameter	Description
Slot	Slot number of the uplink interface
Interface	Interface
Inband	If the interface is used or not to manage the system

Table 5-10: Uplink interface for InBand management configuration parameters table

Finally, a gateway may be configured on the system and it must belong to one of the networks configured previously through the IP + Netmask.

Parameter	Description
Address	Destination IP Network
Mask	Destination IP Mask
Gateway/Device	Gateway to the configured network

Table 5-11: IP Route - Gateway Configuration parameters table

5.2.4.4 Synchronism

The synchronization block is physically located in the array units. It complies with G.781 and G.810 recommendations and is a category G.813 type I device.

- Internal oscillator ±1.5 ppm;
- Holdover deviation ±0.37 ppm per day;
- Possible simultaneous sources: 1 Slot; 2 external junctions;
- External sources: STM-N Ports, GbE and 10GbE NNI Ports, OTU Ports, 2Mbps Ports, 34Mbps Ports, 2MHz / 2Mbps input/output junctions;
- Priority and Quality (SSM).

The Synchronism configuration sub-menu has two items, Figure 5-25:

- Global
- PTP

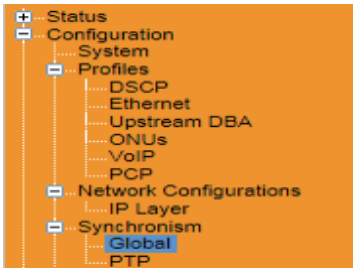


Figure 5-25: Synchronism configuration sub-menu

In CLI, Synchronism node and sub-nodes as well as related commands including Configuration are described in section 7.6.20 "synchronism" node and sub-sections.

5.2.4.4.1 Global

The system can synchronize the output frequency with one of two distinct references.

The tables of the following figures allow setting global synchronization parameters, as well as the system synchronization source (e.g. Eth interface), or in free run mode.

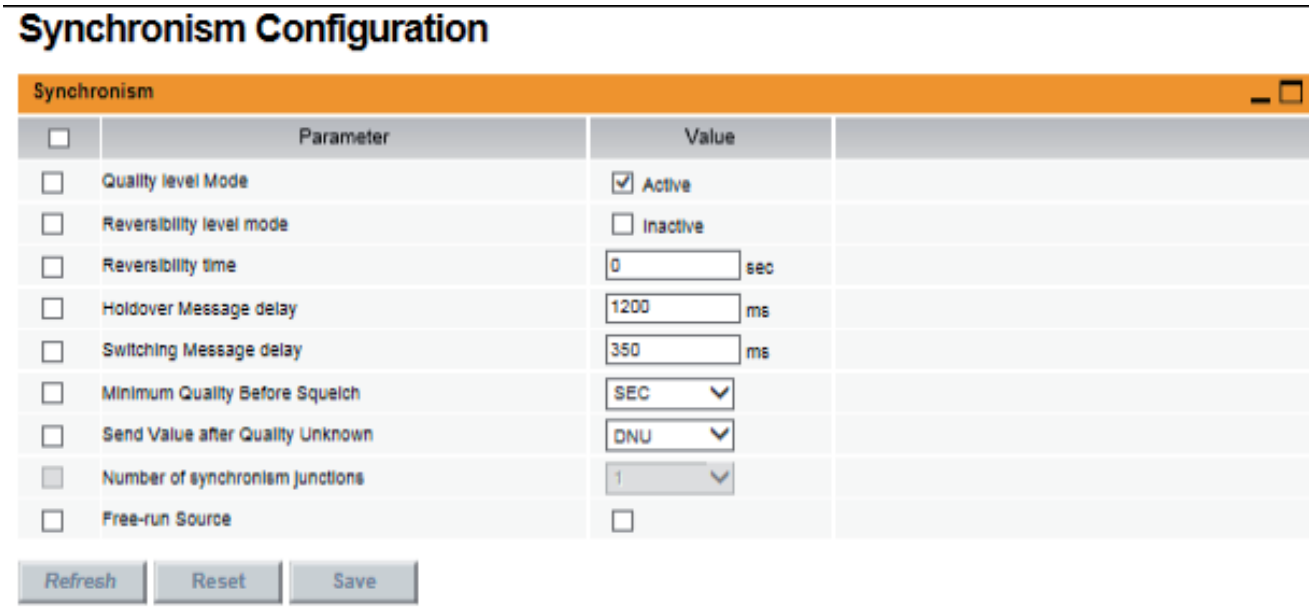


Figure 5-26: Synchronism Configuration Window- Synchronism table

Parameter	Description
Quality Level Mode	**Enabled**: the user can set the equipment synchronization to take into account the SSM synchronization sources (Synchronization Status Message) **Disabled**: the device ignores the SSM synchronization source.
Reversibility level mode	**Enabled:** the status machine of the equipment only considers for synchronization source, a source that does not show timing flaws and where the Reversibility Time has expired. If the quality/priority of this source (depending on the current configuration of the Quality Level Mode) is higher than the current source, the equipment will use this quality/priority source. Otherwise the source is not changed. **Disabled:** a source that has been previously considered invalid will only be used for synchronization, if the current source fails and if there is no other source with a higher quality/priority

Reversibility Time	Time, measured in seconds, after which, the fault condition disappears. After this time, the invalid source will be reconsidered for synchronization. This time is considered after the Wait-To-Restore time has elapsed
Holdover Message Delay	Time, in milliseconds, considered in the case where the equipment is in Holdover mode. This state is due to a fault condition in the selected synchronization source and when there is no other available source. QL (Quality Level) will be in QL_SEC when the delay is between 300ms and 2000ms (corresponding to the range of values for this parameter);
Switching Message Delay	Delay, in milliseconds, applicable in the case where changing to another synchronization source is carried out with a different Quality Level value. This delay sets the elapsed time between the trigger of the new synchronization source and a change in the output Quality Level. The range of values for the Switching Message Delay is between 180ms and 500ms
Minimum Quality Before Squelch	Minimum quality value; The equipment will squelch the synchronization source if there is no other source with a quality level equal to or better than the selected source;
Send Value after Quality Unknown	Value to be sent if Quality Unknown; The equipment will make the SSM output with the respective Quality Level configured if there is no synchronization source with a Quality Level other than Quality Unknown. The quality level SSM is selected from a combo box, Error: No se encuentra la fuente de referencia. The meaning of each selectable message is described in table Table 5-.
Free-run Source	Free-run Source; With this option selected, the system always synchronizes with its internal clock (array unit PLL).

Table 5-12: Synchronism Configuration parameters table

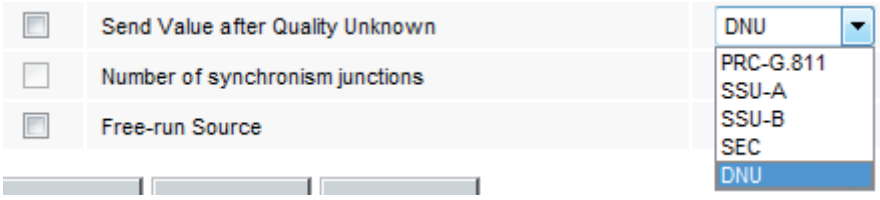


Figure 5-27: Synchronism Status Message Combo Box

SSM	Description
PRC-G.811	The synchronization source is a PRC clock, according to G.811 recommendation
SSU-A	The synchronization source is an SSU clock (Synchronization Supply Unit), type I or IV, according to G.812 recommendation.
SSU-B	The synchronization source is an SSU clock (Synchronization Supply Unit), type VI, according to G.812 recommendation
SEC	The synchronization source is a SEC clock, according to G.813, Option I recommendation.
DNU	The source should not be used for synchronization.

Table 5-13: Synchronization Status Message from the synchronization sources

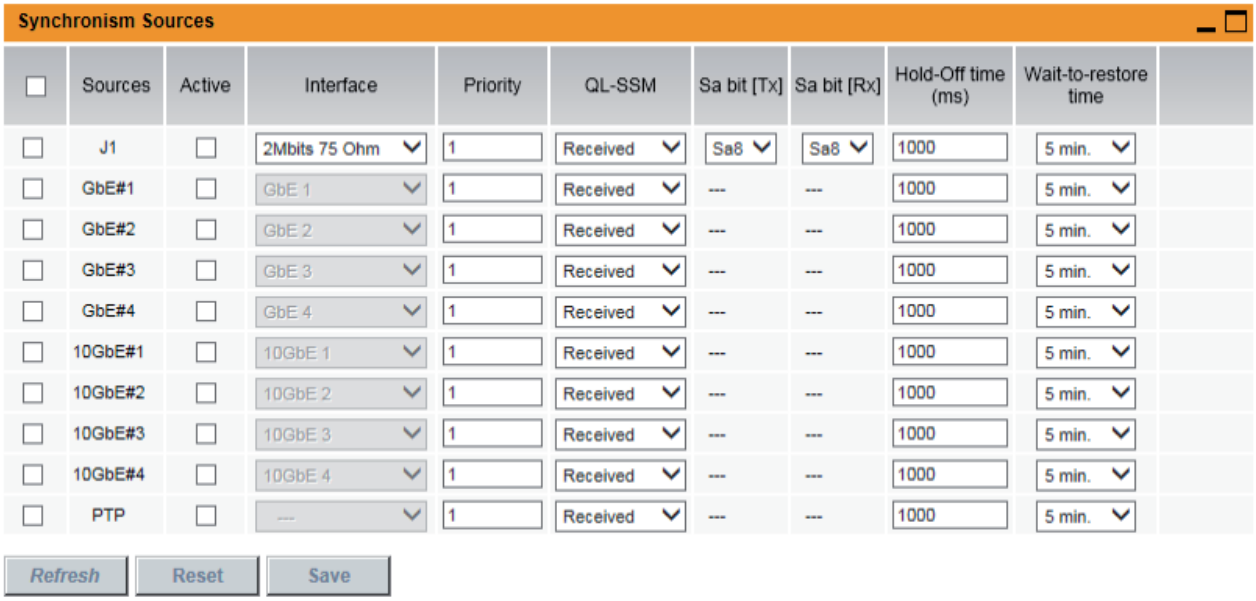


Figure 5-28: Synchronism Configuration Window- Synchronism Sources table

The following parameters can be configured in the source of synchronism table.

Parameter	Description
Sources	Lists all possible for synchronization
Active	Allows a given synchronization source to be enabled or disabled.
Interface	This column allows selection of an n Ethernet interface, within a certain module, which can be used as a possible synchronization source. In the case of the junctions, it is possible to configure if this operates at 2MHz or 2Mbits
Priority	Allows setting the source priority. The lower the priority value, the greater the preference of this source over the others. Note that, for sources having equal priority, the concept of reversibility has no meaning.
QL-SSM	Quality Level; The user can select the intended SSM value for the source. This value overrides the value received by the equipment. When the SSM value is overridden, the following precautions should be taken: In case of interface LOS, this source is not used. If the received value is DNU, the equipment will continue to use this synchronization source.
Sa bit [Tx]	Allows setting the value of the transmission Sa bit in the case of 2Mbps (only for the synchronization junctions);
Sa bit [Rx]	Allows setting the value of the reception Sa bit in the case of 2Mbps (only for the synchronization junctions)
Hold-Off time (ms)	The Hold-Off time ensures that the activation, even if short, of the signal failure has no influence on the synchronization source selection process. This value can vary between 300ms and 1800ms
Wait-To-Restore time	The Wait-To-Restore time ensures that a prior fault in the synchronization source will only be considered valid for this selection process if it is maintained without failure for a specified period of time. This parameter can have values ranging from 0 to 12 minutes with 1 minute resolution. The default value is 5 minutes.

Table 5-14: Synchronism Sources parameters table

5.2.4.4.2 PTP

The PTP Settings window is composed of two tables, Figure 5-:

- PTP Configuration;
- PTP Ports

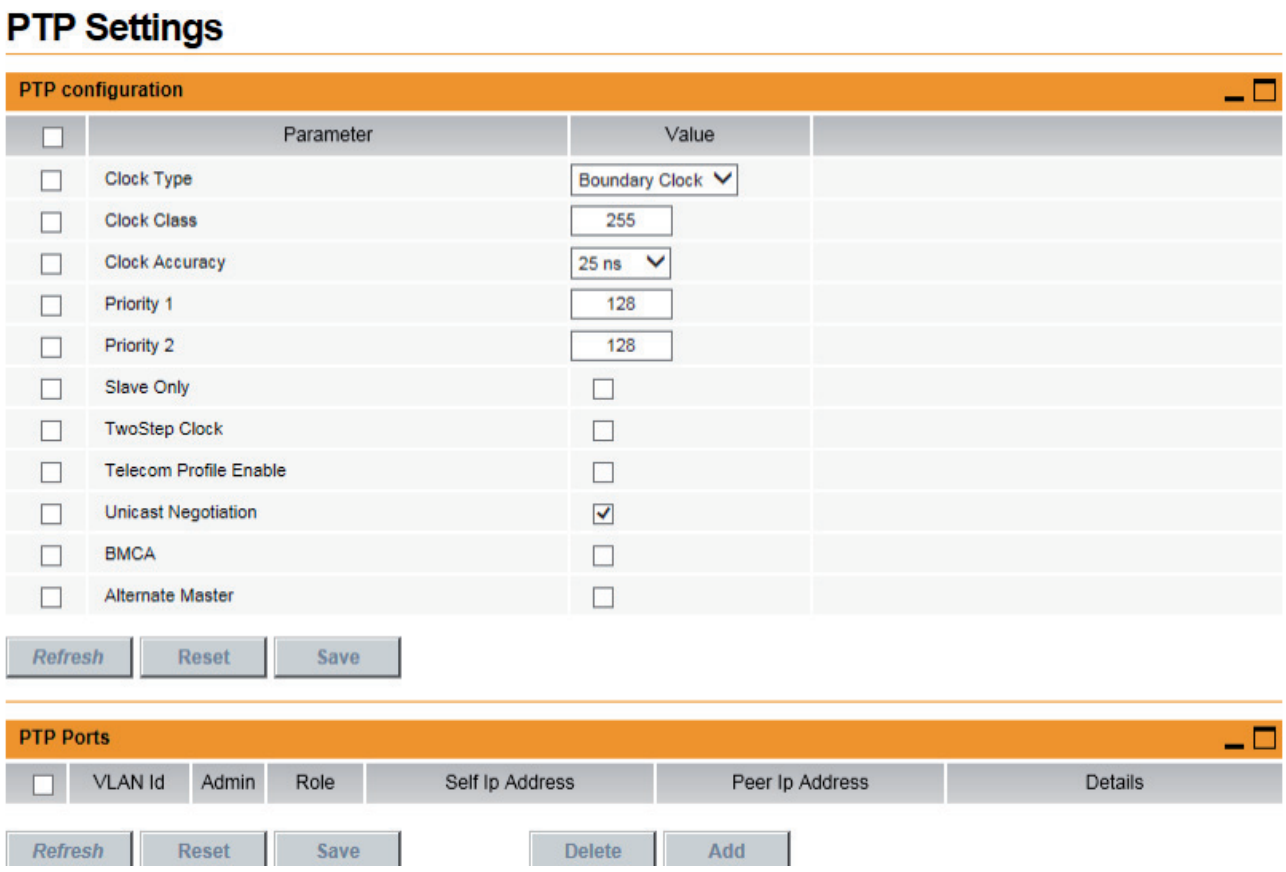


Figure 5-29 : PTP Settings Window

The following parameters can be configured in the PTP configuration table:

Parameter	Description
Clock Type	**Ordinary Clock or Boundary Clock.** Ordinary Clock is used when the synchronism is configured as master or as slave. Boundary clock is used when it is necessary for the system to behave as a slave and as a master simultaneously.
Clock Class	Specify the default clock Quality class(0..255)
Clock Accuracy	Specify the clock Quality accuracy type
Priority 1	Override criteria for best master clock selection (1..253)
Priority 2	Specify a particular switch priority when criteria matches (1..253)
Slave Only	Enables slave only configuration of the PTP machine (enable|disable)
Two-Step Clock	Enables Two-step clock configuration of the PTP machine (enable|disable)
Telecom Profile Enable	If Enabled TeLecOm profile acocording to G.8265.1 is used to select the clock source
Unicast Negotiation	Unicast transmission at negotiated intervals
BMCA	Best Master Clock Algorithm Flag: if enabled BMCA algorithm is used to select the clock source
Alternate Master	Indicates that the message is transmitted by a port which is not in master mode

Table 5-15: PTP configuration table parameters

Parameter	Description
Vlan Id	Identifier of the VLAN used in the transport of PTP packets
Admin	PTP port administrative status
Role	If the PTP port must act as Master (only propagating synchronism) or Slave (only receiving synchronism)
Self IP Address	Origin PTP port IP, i.e. the actual PTP port that is being configured
Peer IP Address	Destination PTP port IP, i.e., the PTP port with which the port that is being configured will communicate.
Details	Selecting edit for a PTP Port a dialog box pops up, Error: No se encuentra la fuente de referencia, identical to the create PTP port dialog box, but showing the details for the specified PTP port configuration and allowing to change it.

Table 5-16: PTP Ports table parameters

The 1588 synchronization is propagated using an exclusive synchronization LSP. For this, it is necessary to associate the LSP to a PTP port in the "PTP Port" table. To do this the user must select the "Add" option. This will pop up a Create PTP Port Dialog box to configure the PTP port to create, Figure 5-30.

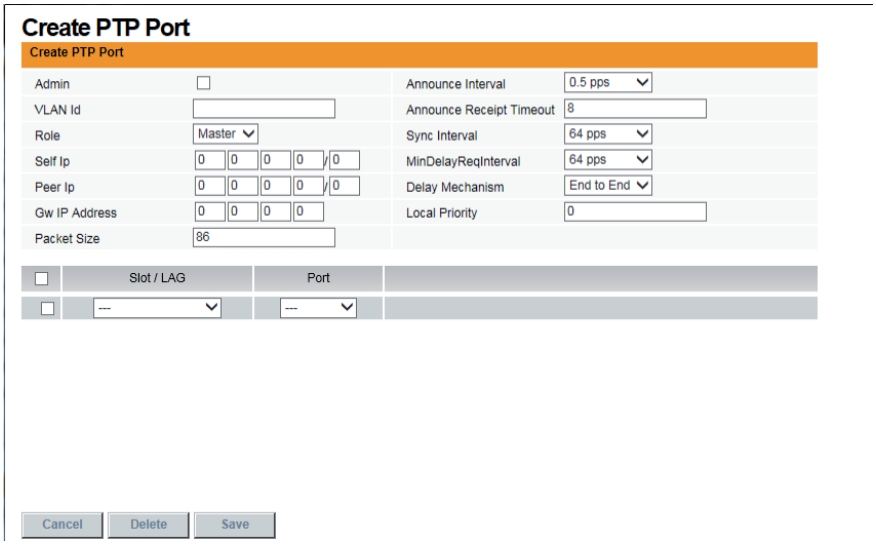


Figure 5-30: Create PTP Port dialog box

Parameter	Description
Admin	PTP port administrative status
Service	Corresponding to an LSP previously created in the **Services** menu of the card where the 1588 synchronization will take place
Role	If the PTP port must act as Master (only propagating synchronism) or Slave (only receiving synchronism)
Self IP	Origin PTP port IP, i.e. the actual PTP port that is being configured
Peer IP	Destination PTP port IP, i.e., the PTP port with which the port that is being configured will communicate.
Gw IP Address	IP address of the Gateway to the destination network
Packet Size	Synchronism packets size
Announce Interval	Time interval between Announce messages
Announce Receipt Timeout	Number of Announce Interval periods that have to occur without receiving an Announce message before the occurrence of the Announce Receipt Timeout expiration event
Sync Interval	Average time interval between successive synchronization messages, i.e. when transmitted as multicast messages
MinDelayReqInterval	Minimum average time interval allowed between messages sent by a slave to a specific master port

Delay Mechanism	Option type for measuring the propagation delay used by the port
Local Priority	
Slot/Lag/Port	Corresponding to an LSP previously created in the **Services** menu of the card where the 1588 synchronization will take place

Table 5-17 : Create PTP Port configuration parameters

5.2.4.5 Interfaces

In CLI, Interfaces related commands including configuration are described in section 7.6.10 "interfaces" node and subsections.

5.2.4.5.1 PON Interfaces

In this window it is possible to configure the GPON Interfaces

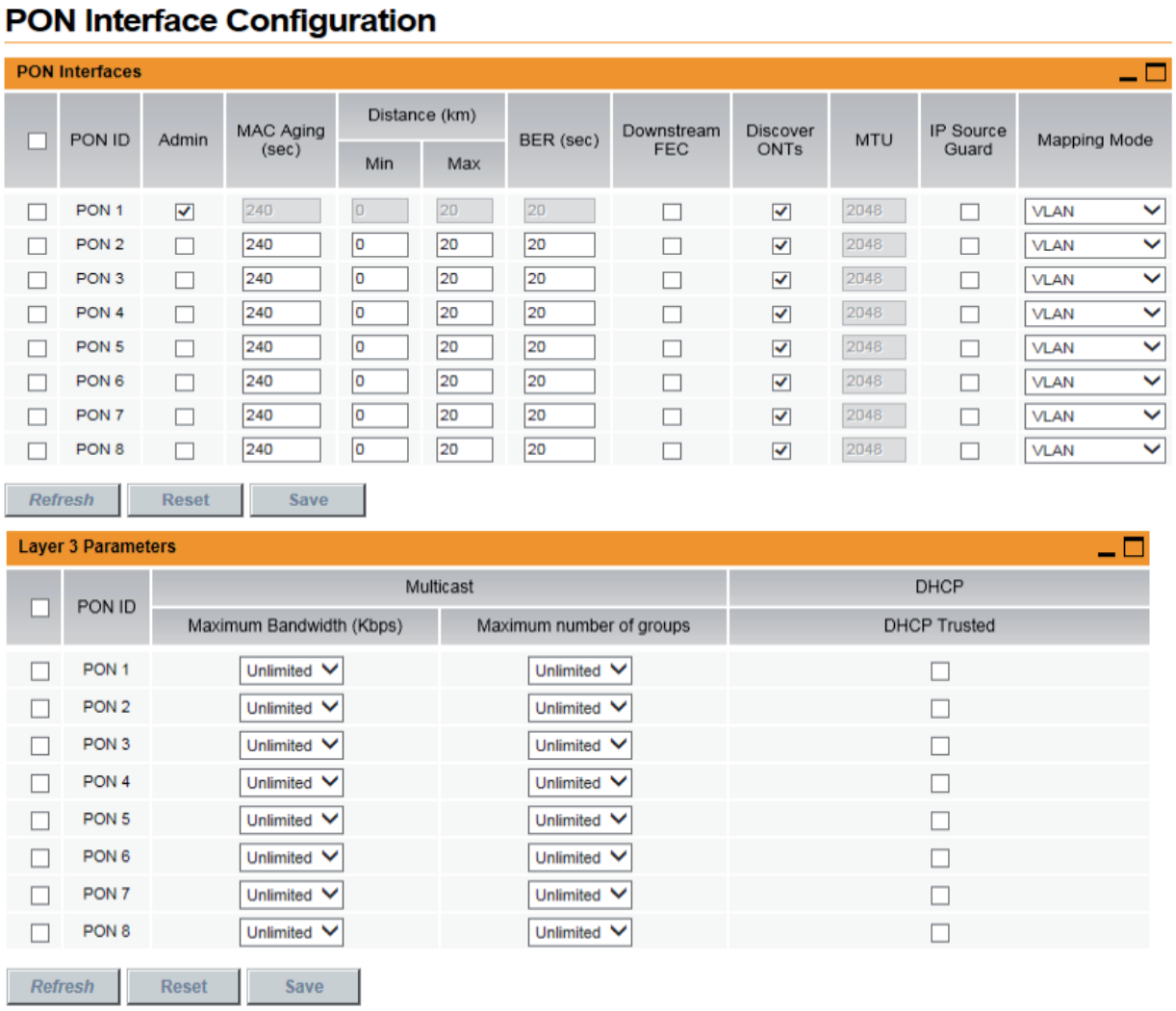


Figure 5-31: PON interfaces configuration

Parameter	Description
Port id	Port identifier
Admin	Port Administrative State
MAC Aging (sec)	Time it takes for a MAC address to be removed from the GPON MAC table, in the case it hasn't been received any packet with that source address in that GPON port. This value must be in the range between 120 and 3600 seconds. (Note: The MAC addresses in the GPON interface are only learnt in Unicast Unstacked Services)
Distance Minimum/ Maximum	Sets the distance for which the interface can detect ONTs. The difference between the minimum and the maximum can't exceed 20km, and the maximum distance can't be higher than 60km.
BER(sec)	PON port Bit Error Rate in the downstream in sec
Downstream FEC	Flag; Downstream FEC enabled at this PON port if selected
Discover ONTs	Flag; Discover ONTs at this PON port enabled if selected

Table 5-18: GPON interfaces configuration parameters table

5.2.4.5.2 Ethernet Interfaces

In the Ethernet interfaces table it is possible to configure the module Ethernet interfaces.

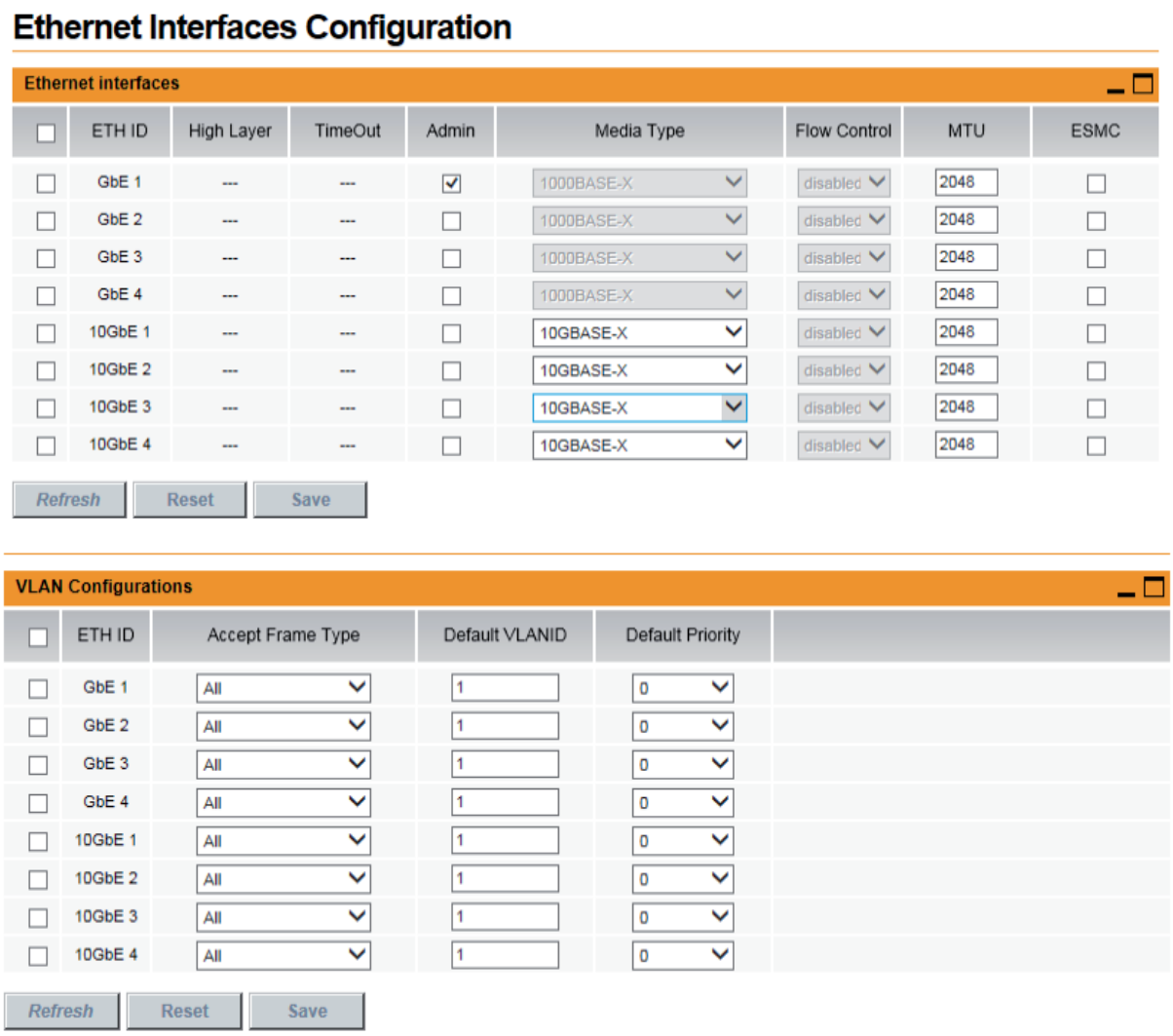


Figure 5-32: Ethernet interfaces configuration

Parameter	Description
ETH id	Port identifier
High Layer	In case the port belongs to a LAG, identifies to each LAG the port belongs to
Timeout	Indicates the timeout used by the LACPDU's packets (long=30s and short=1s)
Admin	Port Administrative State
Media Type	Link Speed and Duplex
Flow Control	Activates the transmission and processing of Pause Frames (always disabled)
MTU	Defines de maximum size of a packet that can be transferred in on frame over a network
ESMC	Ethernet Synchronization Messaging Channel: Enable/Disable

Table 5-19: Ethernet interface configuration parameters

5.2.4.6 LAG Interfaces

The LAG interfaces provide the system with Aggregation, Protection and Load Balancing of the uplink interfaces. It's possible to add/remove/configure.

In CLI, LAG Interfaces related commands including configuration are described in section 7.6.10.3 "lag" sub-node and subsections

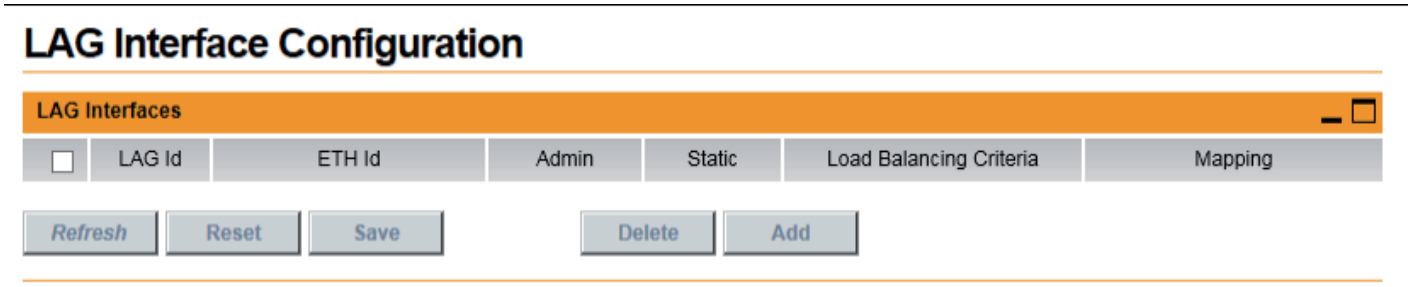


Figure 5-33: LAG interfaces configuration

Parameter	Description
LAG Id	Lag interface identifier
Eth Id	Ethernet Interfaces associated with the LAG
Admin	Port Administrative State
Static	Indicates if the LAG is Static (doesn't transmit nor process LACPDU packets) or dynamic (transmits and processes LACPDU packets)
Load Balancing Criteria	Traffic Load Balancing of the LAG interface, there are three options: **SMAC:** Source MAC **DMAC:** Destination MAC **SMAC&DMAC:** Source and Destination MAC
Mapping	Allows changing the LAG interface ports association by selecting Modify link. This link opens a Mapping dialog box in order to do LAG configuration, Figure 5-34.

Table 5-20: LAG interfaces configuration parameters table

By pressing the "Add" button, it will be added a new line with the first LAG id available.

In order to associate the ports to the LAG the Modify link under Mapping Column must be selected, and then it will appear the Mapping dialog box in order to do LAG configuration, Figure 5-34

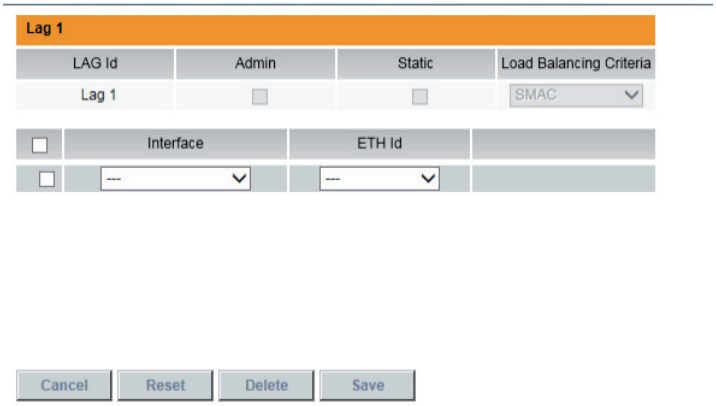


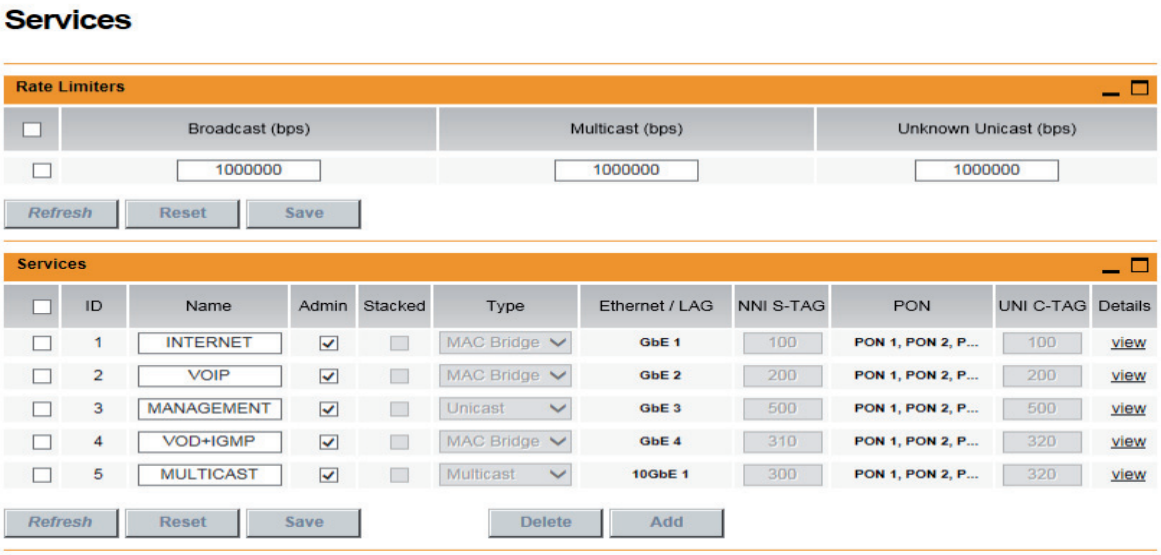
Figure 5-34 : LAG Mapping Dialog Box

Parameter	Description
Lag Id	Lag interface identifier
Eth Id	Ethernet Interfaces associated with the LAG
Admin	Port Administrative State
Static	Indicates if the LAG is Static (doesn't transmit nor process LACPDU packets) or dynamic (transmits and processes LACPDU packets)
Balance	Traffic Load Balancing of the LAG interface, there are three options: **SMAC:** Source MAC **DMAC:** Destination MAC **SMAC&DMAC:** Source and Destination MAC
Slot	Indicates the Slot/LC to which the ETH interface used in the LAG belongs to
ETH Id	Indicates th etherent interface used in the LAG

Table 5-21: Mapping LAG interfaces configuration parameters

5.2.4.7 Services

The services window is used to configure general OLT services giving an end-to-end perspective by configuring the service VLAN in the uplink interface and the VLAN delivered in the ONU port. This window has two tables: Rate limiters configuration table and Services table, Figure 5-35



In CLI, OLT services related commands including configuration are described in section 7.6.19 "services" node and subsections.

Figure 5-35: OLT services configuration window

Parameter	Description
Broadcast (bps)	Rate Limiter configured value for Broadcast services
Multicast (bps)	Rate Limiter configured value for Multicast services
Unknown Unicast (bps)	Rate Limiter configured value for Unknown Unicast services

Table 5-22: Rate Limiters table Configuration parameters

Parameter	Description
Name	Name that identifies the Service
Admin	Service Administrative State
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.
Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is preformed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONT. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled. **MAC Bridge:** In this type of service forwarding is based on S-VID+DMAC or S-VID+C-VID+DMAC. Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID
Ethernet/LAG	Identifies the uplink physical (ETH) or logical (LAG) port
NNI S-TAG	Identifies the outer tag of the service used in the uplink port
PON/Slot	Identifies the GPON port(s) associated to the Service

UNI C-TAG	Identifies the VLAN delivered/received to/from the ONU. After this VLAN can be translated in the ONU.
DHCP	Identifies if the service must work has a DHCP Relay Agent.
Details	By pressing view it will appear a window with the service configuration details where depending on the service it's possible to change some of the parameters, and the ports associated with the service.

Table 5-23: Services Configuration parameters

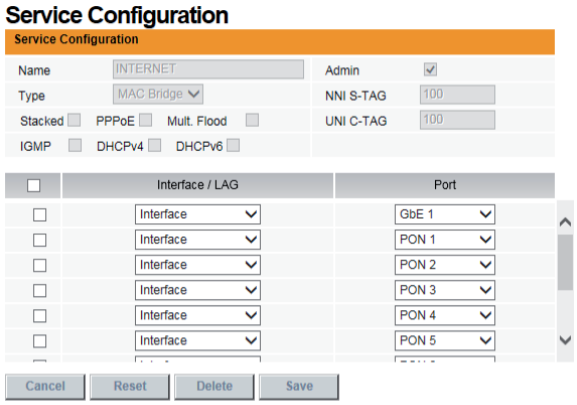


Figure 5-36 : Service Configuration details

Parameter	Description
Name	Name that identifies the Service
Admin	Service Administrative State
PPPoE	Enable or disable PPPoE for a given service. (enable|disable)
Mult. Flood	Multicast flooding. (enable|disable)
Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is preformed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONT. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled. **Mac Bridge:** In this type of service forwarding is based on S-VID+DMAC or S-VID+C-VID+DMAC. Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID.
IGMP	Enable or disable IGMP for a given service. (enable|disable)
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.
DHCP	Identifies if the service must work has a DHCP Relay Agent.
Slot/LAG	Uplink used Slot (card)/LAG (NNI)
Port	Uplink used port NNI)
NNI S-TAG	Identifies the outer tag of the service on the network-facing (Ethernet) interface in the uplink port (1..4094)
Slot/Port	Slot/Port (PON) pair (UNI).Identifies the GPON port(s) associated to the Service
UNI C-TAG	Identifies the VLAN delivered/received to/from the (Ethernet) subscriber-facing interface at the ONU. (1..4094) After this VLAN can be translated in the ONU.

Table 5-24: Services Configuration details: parameters

New services can be added through the "Add" button, Figure 5-37. For service configuration parameters description refer to Table

5-24.

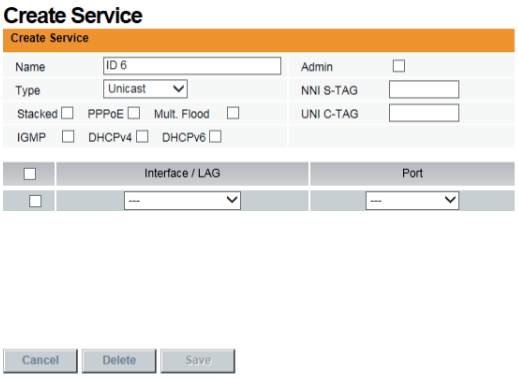


Figure 5-37 : Create Service Configuration Dialog Box

5.2.4.8 Classes of Service

For each OLT physical or logical ports are associated eight queues, for each of these queues it is possible to configure the p-bits, the scheduler type (SP or WFQ) and the bandwidth profile associated to each.

In CLI, classes of services related commands including configuration are described in sections:

- section 7.6.10.1 "ethernet" sub-node, subsection "cos" sub-node,
- section 7.6.10.2 "gpon" sub-node subsection "cos" sub-node,
- and section 7.6.10.3 "lag" sub-node subsection "cos" sub-node

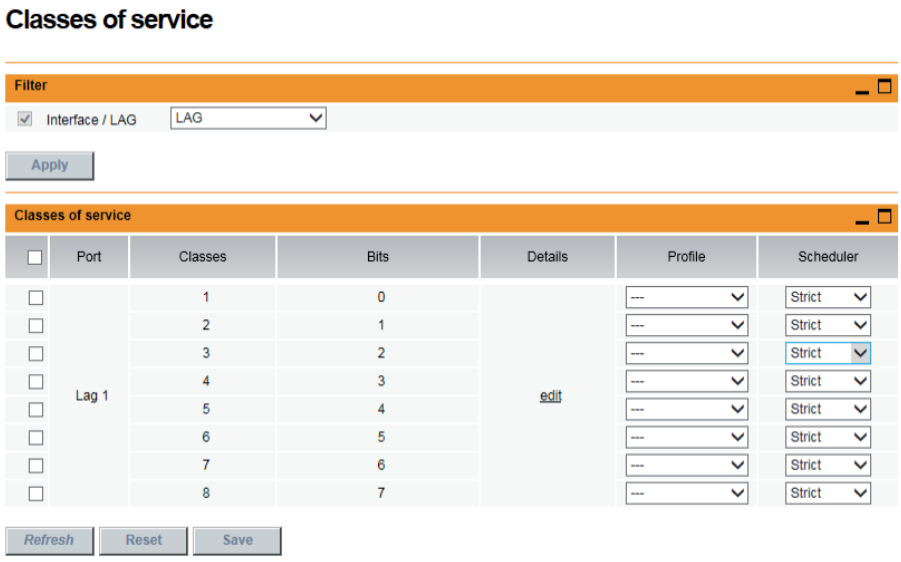


Figure 5-38: Classes of service

Due to the large number of ports that can be available in OLT platform, there is a filter where the user can select the port/card to configure.

Parameter	Description
Port	Identifies the port
Classes	Identifies each of the 8 classes of the port
Bits	Identifies the p-bits associated to the Class of Service
Details	By pressing edit, the dialog box in Figure 5- will open, and it's possible to configure the p-bit to class mapping
Profile	Identifies the Bandwidth profile used by the Class. It's possible to have "No Profile".
Scheduler	Identifies the type of Scheduler used by the Class. It can be Strict Priority or Weighted Fair Queuing

Table 5-25: Classes of Service configuration parameters table

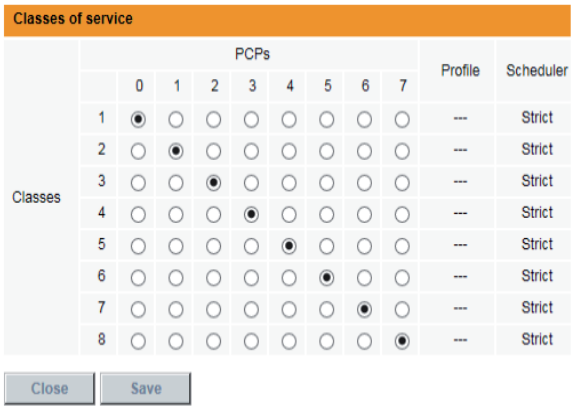


Figure 5-39: PCP/Class Mapping

5.2.4.9 Multicast

Multicast configuration sub-menu is composed of three configuration items, proxy, probe and group list items, Figure 5-40.

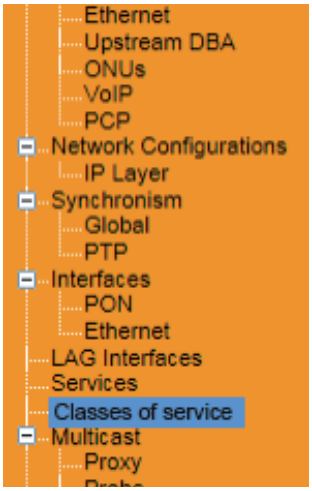


Figure 5-40: Multicast Configuration sub- menu

5.2.4.9.1 Multicast::Proxy

The multicast configuration sub-menu, Proxy item selection opens a configuration window composed of two tables, Figure 5-41:

- IGMP Proxy configuration table
- Querier configuration table

In CLI, multicast related commands including conmfiguration are described in section7.6.15 "multicast" node and subsections.

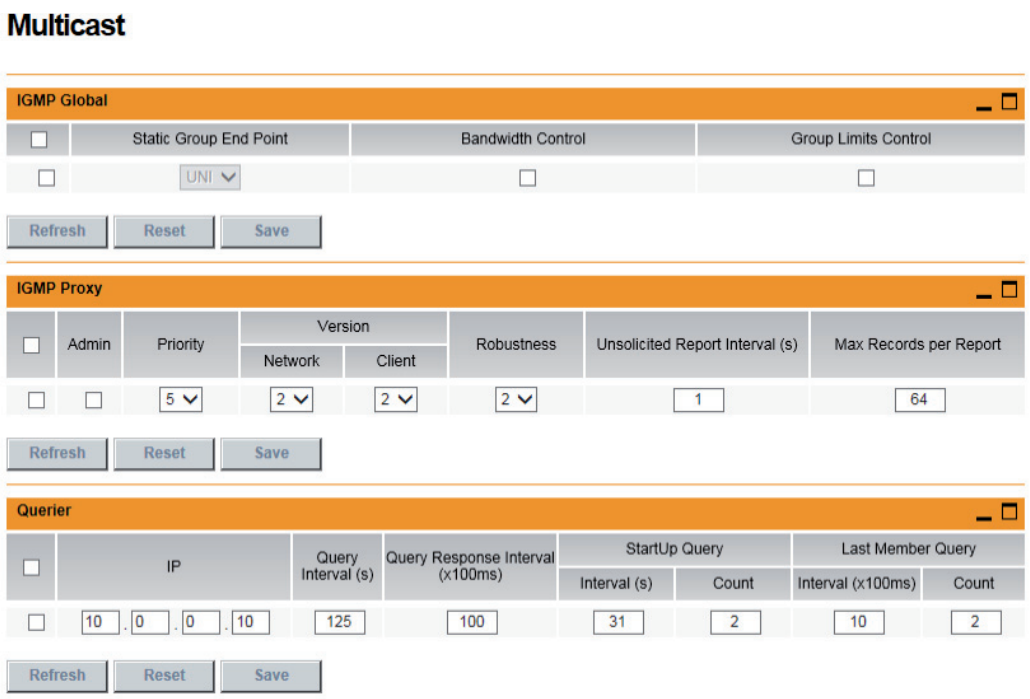


Figure 5-41: Multicast Window IGMP Proxy and Querier configuration tables

Parameter	Description
Admin	IGMP Proxy Administrative State
Priority	pbit value in the IGMP packets (0<=n<=7)
Proxy	Proxy IP address used by the IGMP packets generated by the OLT
Version	**Network**: IGMP version used in the Network interfaces **Client:** IGMP version used in the client interfaces
Robustness	Specifies the number of retransmissions sent. Should be adjusted for the expected packet loss on the network.
Unsolicited Report Interval	Time interval between repetitions of a host's initial group membership report.
Max Records per Report	Maximum number of group-records that can be included in the same membership report.

Table 5-26: IGMP proxy configuration parameters

Parameter	Description
IP	IP Address
Query Interval	Time Interval (in seconds) between the transmissions of each General Querier to the clients. The value must be in the range 30 to 1800.
Query Response Interval	Interval between retransmissions of general queries sent to the clients.
Startup Query	**Interval:** Interval between retransmissions of general queries sent by the proxy on startup. **Count:** Number of general queries sent by the proxy on startup.sent. Should be adjusted for the expected packet loss on the network.

Last Member Query	**interval**: Max Response Time used to calculate the Max Resp Code inserted into Group-Specific queries sent in response to Leave Group messages **Count**: Number of Group-Specific Queries sent before the router assumes there are no local members.

Table 5-27: Querier configuration parameters

5.2.4.9.2 Multicast::Probe

The multicast configuration sub-menu, Probe item selection opens an Active Channels configuration window, Figure 5-42:

The Active Channels Probes Window provides a way to check which Multicast Channels have been asked by the IGMP protocol (Control Plane). To check if the Data packets (Data Plane) are arriving to the OLT, the user can activate the Active Channels Probes.

In CLI, Multicast Probes related commands including configuration are described in 7.6.15.4 "probes" sub-node and subsections.

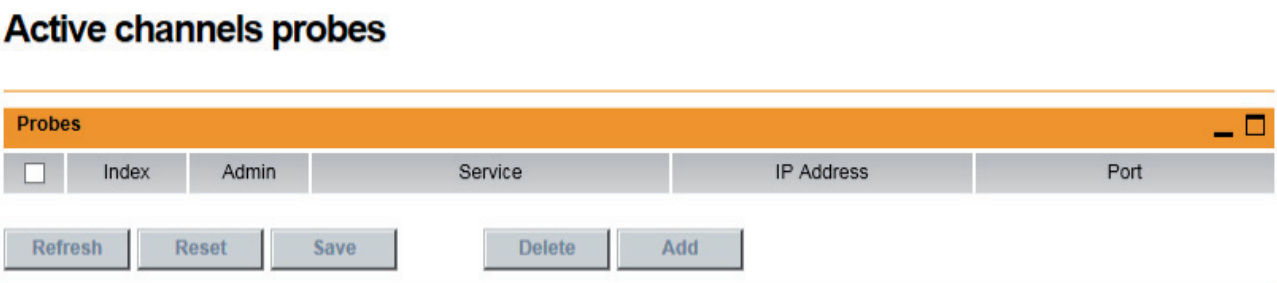


Figure 5-42: Active channels Probes Configuration window

Parameter	Description
Index	Index of the Probe
Admin	Probe Administrative State
Service	Service to which the probe applies to
IP Address	Muticast IP address of the Service the probe applies to
Port	Port where is the service to which the probe applies to

Table 5-28: Active Channels Probes Configuration parameters

The "Add" button opens a configuration window to set the parameters for a new Active channels probe, Figure 5-43.

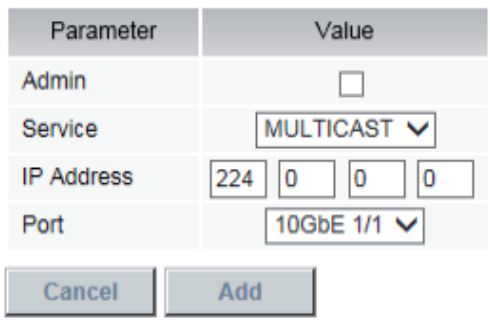


Figure 5-43: Add Active Channels Probe Dialog Box

5.2.4.9.3 Multicast::Group List

The multicast configuration sub-menu Groups item selection opens a Group List configuration window, Figure 5-44:

Active Channels window allows to configure/add/remove Multicast Groups.

In CLI, Multicast Group List related commands including configuration are described in 7.6.15.2 “group-list” sub-node and subsections.

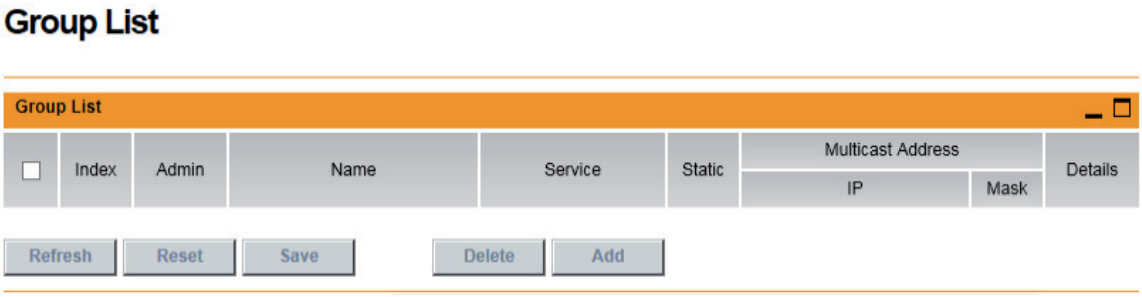


Figure 5-44: Group List Configuration window

Parameter	Description
Index	Index of the Active Group
Admin	Active Group Administrative State
Name	Active Group Name
Service	Service to which the Active Group belongs to
Static	Static Active Group Flag (enable/disable)
IP Address	Active Group IP address
Mask	Active Group Mask

Table 5-29: Group List Configuration parameters

5.2.4.10 MAC Tatble ::Switch

In configuration sub-menu MAC, the Switch menu item opens Aging Time Configuration window, Figure 5-45. In this window it is possible to configure the Aging Time which defines the maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system.

In CLI MAC table switch related commands are described in section 7.6.14 “mac-table” node and subsections.

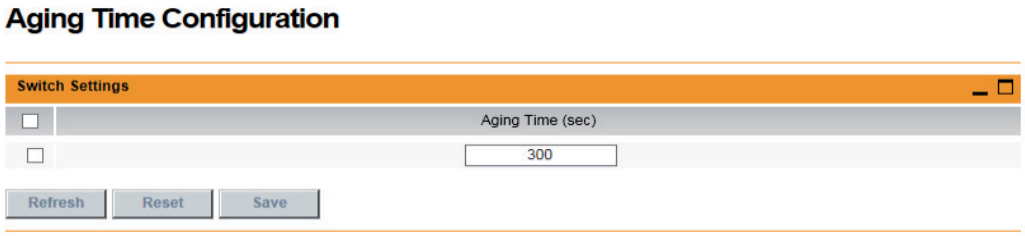


Figure 5-45:Aging Time Configuration window

Parameter	Description
Aging Time (sec)	Maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system (10…1000000)

Table 5-30: Switch Settings configuration parameters table

5.2.4.11 DHCP

DHCP configuration has two configuration tables, one for the Global DHCP Configuration and another for DHCP configuration by service, allowing the setting of DHCP options by service, Figure 5-46.

In CLI DHCP related commands including configuration are described in 7.6.5 "dhcp" node and subsections.

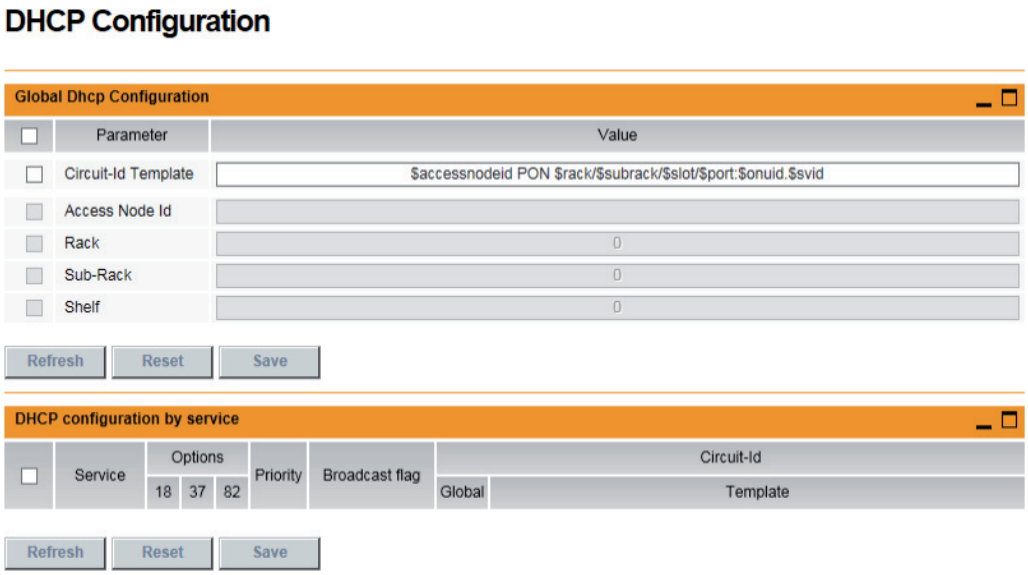


Figure 5-46: DHCP Configuration Window

Parameter	Description
Circuit-Id Template	The Syntax for the circuit ID template string is the following: $accessnodeid PON $rack/$subrack/$slot/$port:$onuid.$svid Template circuit ID parameters, variables and usable values are listed in Table 5-33
Access Node Id	Display the access node identification
Rack/sub-Rack/Shelf	Numeric coordinates of the equipment cabinet position

Table 5-31: Global DHCP configuration parameters

Parameter	Description
Service	Choose an OLT service by ID.
Options	18/37/82 – Enables the DHCP options in the service
Priority	pbit value in the DHCP packets (0<=n<=7)
Circuit Id	**Global:** if Enabled the Circuit-Id configure in the Global DHCP configuration window is used. **Template:** Circuit-Id template to use for the service if Global Disabled.

Table 5-32:DHCP configuration by service parameters

Access Node	$accessnodeid	String(63)
Rack	$rack	0..99
Sub-Rack	$subrack	0..99
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
ONU ID	$onuid	0..999
Slot	$slot	0..99
Port	$port	0..99
Q-VLAN ID	$qvid	0..4095
S-VLAN ID	$svid	0..4095
C-VLAN ID	$cvid	0..4095

Table 5-33: Template circuit ID syntax

5.2.4.12 IP Source Guard

The configuration menu item IP Source Guard opens an IP source Guard Configuration window, Figure 5-47. In this window it is possible to configure the IP source Guard Filters on Layer 2 Ports.

In CLI 5.2.3.14 IP Source Guard related commands including configuration are described in 7.6.12 "ip-source-guard" node and subsections.

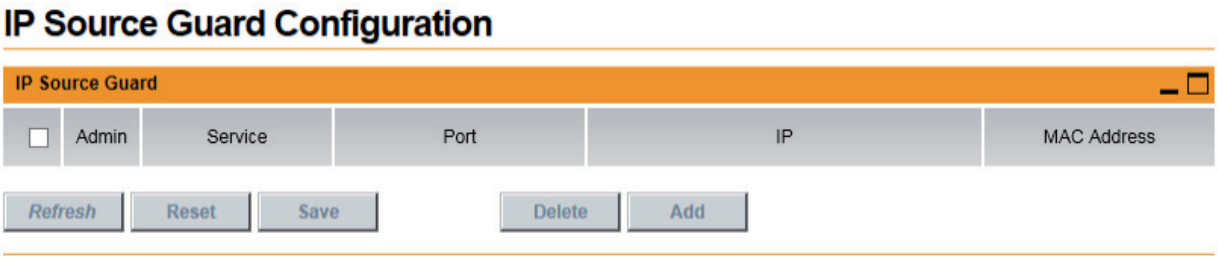


Figure 5-47: IP source Guard Configuration window

Parameter	Description
Admin	IPsource Guard Filter administrative state
Service	Service to which the iP Source guard Filter applies, selectable froma comobo box with all previously configured available services.
Slot/Port	Port to which the filter applies identified by the pair slot (where the LC is inserted)/physical port
IP	IPv4/IPv6 address
MAC Address	MAC address

Table 5-34: IP Source Guard configuration parameters table

The Add button opens a IP Source Guard configuration dialog box allowing the configuration of a new IP source guard Filter, Figure 5-48.

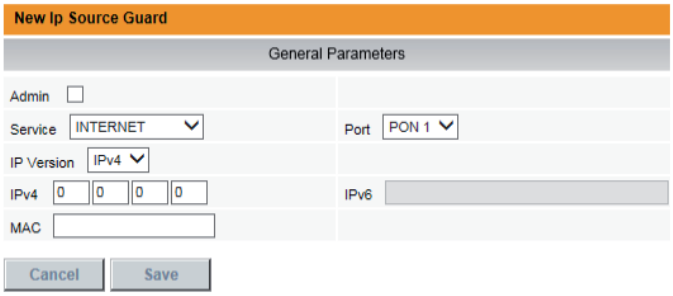


Figure 5-48: Add IP source Guard Configuration ~Dialog box

5.2.4.13 Access Lists

The Access Lists configuration sub-menu has two items, Figure 5-49:

- Configuration
- Rules

In CLI ACL related commands including configuration are described in section 7.6.1 "acl" node and subsections.

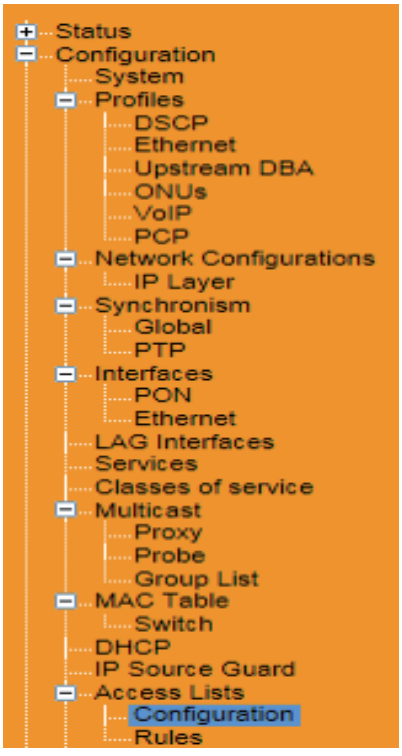


Figure 5-49: Access Lists configuration sub-menu

The selection of Access Lists Sub-menu item Configuration opens an Access Control List window, Figure 5-50. In this window it is possible to create access control lists, configure port associations and services associations per access list.

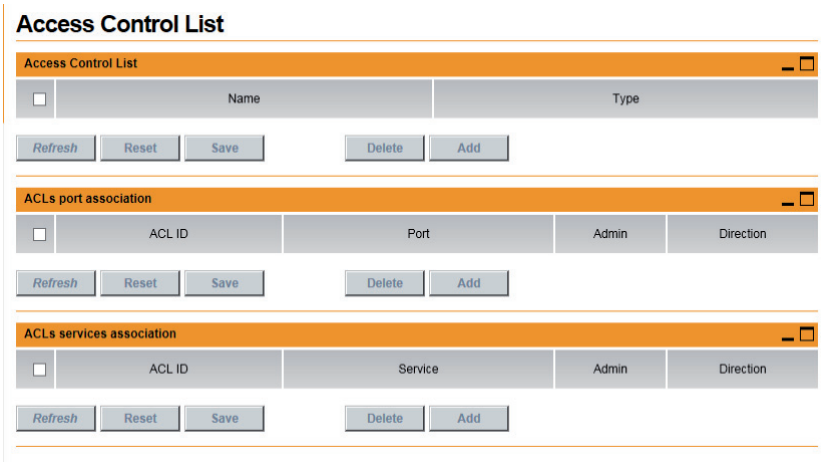


Figure 5-50: Access Control List configuration window

Parameter	Description
Name	Access list name
Type	Access list type: • **MAC,** • **IPv4 Standard** • **IPv4 Extended** • **IPv6 Extended**

Table 5-35: Access Control List Table parameters

To create a new access list the Add button should be used. A new line will be added to the access control list table. The name of the list (text string) should be typed in in the Name field and the access list type selected from the Type combo box. The button Save will save the configuration done.

Parameter	Description
ACL ID	Access List name
Port	Port associated to the access control list, identified by the pair (Port type and #/slot #)
Admin	Administrative status of the ACL sport association table entry
Direction	Traffic direction on the ACLs list associated port (current value –in)

Table 5-36: ACLs port association table parameters

To configure ACLs port association the button Add should be used. An ACIs port association dialog box will open allowing the configuration of ports to the selected ACL list, Figure 5-. The use of Dialog Box Add button will add the configured ACLs port association to the ACLs port association table. The Save button will save the change to the ACLs port association table.

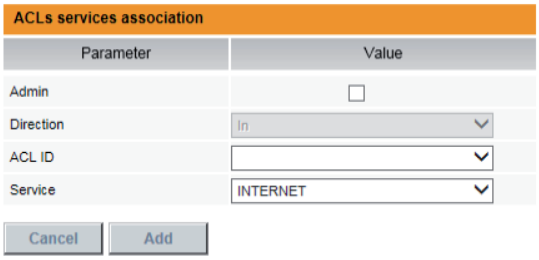


Figure 5-51 : ACLs port association configuration dialog box

Parameter	Description
ACL ID	Access List name
Service	Service associated to the access control list, identified by Service Name
Admin	Administrative status of the ACL service association table entry
Direction	Traffic direction for the ACLs list associated service (current value –in)

Table 5-37: ACLs service association table parameters

To configure ACLs service association the button Add should be used. An ACIs port association dialog box will open allowing the configuration of service to the selected ACL list, Figure 5-. The use of Dialog Box Add button will add the configured ACLs services association to the ACLs services association table. The Save button will save the change to the ACLs services association table.

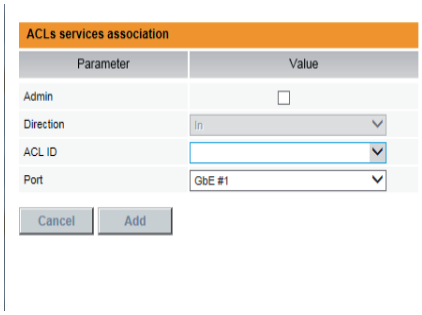


Figure 5-52: ACLs service association configuration dialog box

The selection of Access Lists Sub-menu item Rules opens an Access Control List rule Configuration window, Figure 5-53. In this window it is possible to create rules for the existing access control lists. There is a rules' table for each type of access control list: MAC, IPv4 Standard, IPv4 Extended and IPv6 Extended.

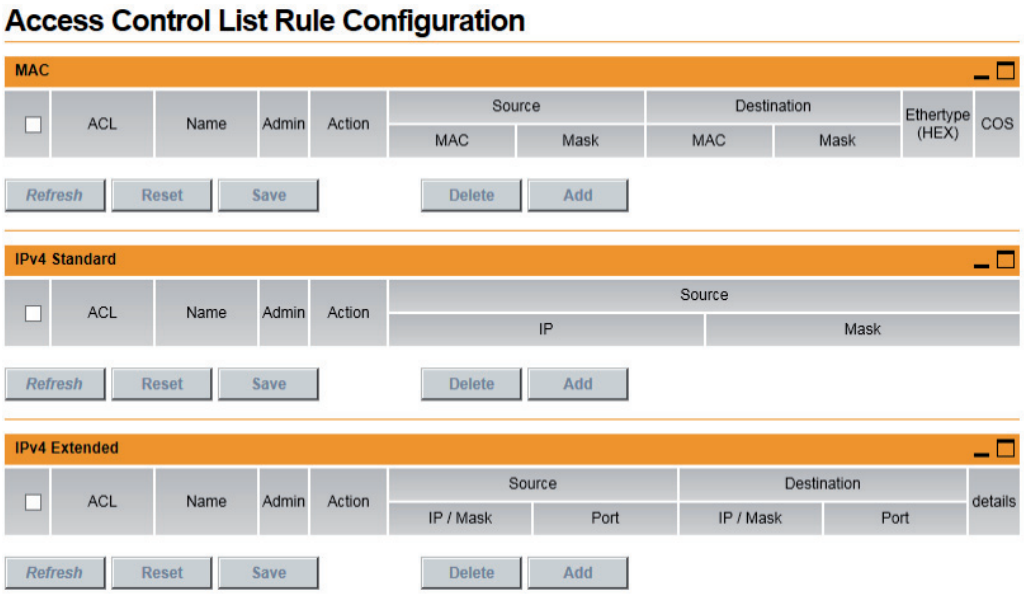


Figure 5-53: Access Control List Rule Configuration window

Parameter	Description
ACL	Access control list name
Name	ACL Rule name
Admin	Administrative status of the ACL Rule table entry
Action	Action that the rule will implementon the specified traffic • Deny, • Permit.
Source	Source Address of the traffic subject to the configured ACL Rule: • MAC • Mask.
Destination	Destination Address for the traffic subject to the configured ACL Rule: • MAC, • Mask.
EtherType (Hex)	Ethertype specifying the type of traffic subject to the configured ACL Rule
COS	CoS of traffic subject to the configured ACL Rule

Table 5-38: Access Control List Rules – MAC Table parameters

Parameter	Description
ACL	Access control list name
Name	ACL Rule name
Admin	Administrative status of the ACL Rule table entry
Action	Action that the rule will implementon the specified traffic • Deny, • Permit.
Source	Source Address of the traffic subject to the configured ACL Rule: • IP – IPv4 Source address • Mask- IPv4 Source Mask
Destination	Destination Address for the traffic subject to the configured ACL Rule: • IP – IPv4 Destination address • Mask - IPv4 Destination mask

Table 5-39: Access Control List Rules – IPv4 Standard Table parameters

Parameter	Description
ACL	Access control list name
Name	ACL Rule name
Admin	Administrative status of the ACL Rule table entry
Action	Action that the rule will implementon the specified traffic • Deny, • Permit.
Source	Source Address of the traffic subject to the configured ACL Rule: • IP/Mask– IPv4 Source address and mask • Port – Traffic source port
Destination	Destination Address for the traffic subject to the configured ACL Rule: • IP/Mask – IPv4 Destination address and mask • Port- Traffic destination port
Details	Selecting the link view a dialog box with the details for the respective ACL rule will open. This box allows the definition of the ethernet frame fields of the traffic subject to the rule.

Table 5-40: Access Control List Rules – IPv4 Extended Table parameters

Parameter	Description
ACL	Access control list name
Name	ACL Rule name
Admin	Administrative status of the ACL Rule table entry
Action	Action that the rule will implementon the specified traffic • Deny, • Permit.
Source	Source Address of the traffic subject to the configured ACL Rule: • IP/Mask– IPv6 Source address and mask • Port – Traffic source port
Destination	Destination Address for the traffic subject to the configured ACL Rule: • IP/Mask – IPv6 Destination address and mask • Port- Traffic destination port
Details	Selecting the link view a dialog box with the details for the respective ACL rule will open. This box allows the definition of the ethernet frame fields of the traffic subject to the rule.

Table 5-41: Access Control List Rules – IPv6 Extended Table parameters

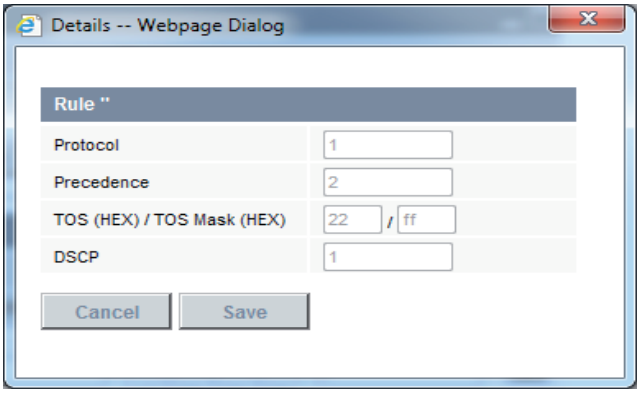


Figure 5-54: ACL rule Details dialog box

Parameter	Description
Rule "	ACL Rule Name
Protocol	Protocol of the traffic subject to the Rule
Precedence	Precedence of the traffic subject to the Rule
TOS(HEX)/TOS Mask (HEX)	TOS(HEX)/TOS Mask (HEX) of the traffic subject to the Rule
DSCP	DSCP of the traffic subject to the Rule

Table 5- 42: ACL IPv4 Extended Details Table parameters

To create a new access list the Add button should be used. A new line will be added to the access control list table. The name of the list (text string) should be typed in in the Name field and the access list type selected from the Type combo box. The button Save will save the configuration done.

5.2.4.14 Protection Schemes

The Protection Schemes configuration sub-menu has three items, Figure 5-55 :

- ETH Ring/G.8032,
- GPON Type B,
- ETH Port.

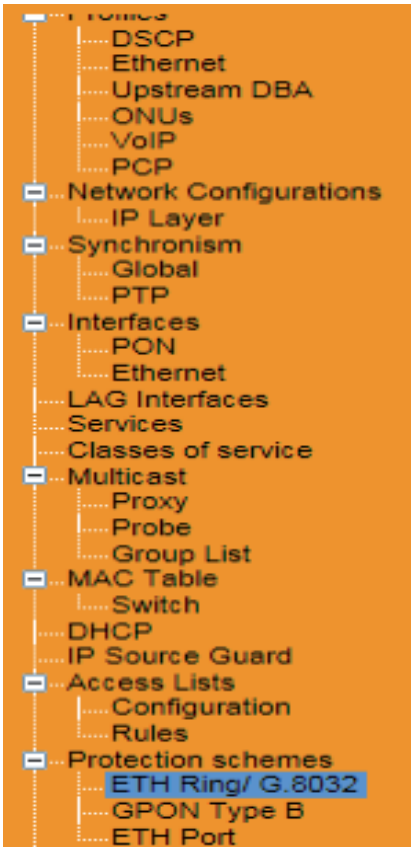


Figure 5-55: Protection Schemes configuration sub-menu

5.2.4.14.1 Protection Schemes :: ETH Ring/G.8032

The selection of Protection Schemes Sub-menu item ETH Ring/G.8032 opens an Ethernet Ring Protection – G.8032 window, Figure 5-56.

In CLI ETH Ring/G.8032 related commands including configuration are described in section 7.6.7 “erp-ring” node and subsections.

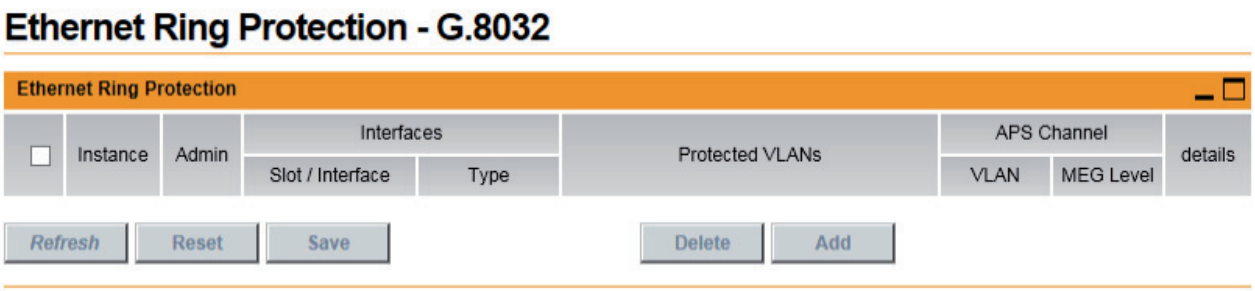


Figure 5-56: Ethernet Ring Protection configuration window

Parameter	Description
Instance	ERP Instance Number
Admin	ERP administrative state
Interfaces	**Slot/Interface:** Interfaces of the ERP, identified by pair Slot/interface in the slot **Type:** ERP interface classification (RPL/Non RPL/RPL Neighbor)
Protected VLANs	Protected VLAN Identifier
APS Channel	**VLAN**:VLAN used by the Automatic Protection Switch Channel **MEG Level**: Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
Details	By pressing view it will appear a window with the ERP Instance configuration details, Figure 5-57.

Table 5-43 : Ethernet Ring Protection window parameters

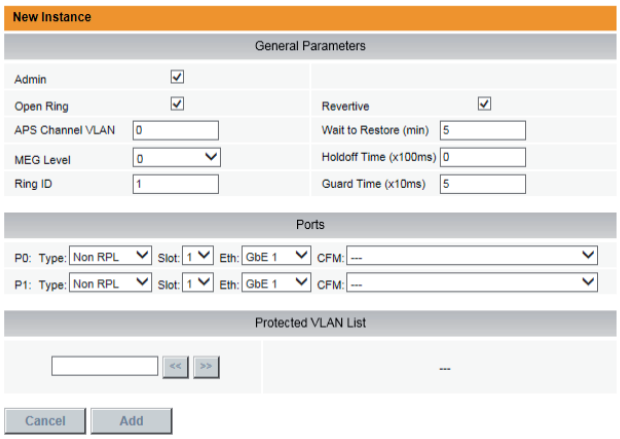


Figure 5-57: ERP Instance Configutarion details Dialog Box

Parameter Type	Parameter	Description
General parameters	**Admin**	ERP administrative state
	Open Ring	Open Ring Flag (enable/disable)
	APS Channel VLAN	VLAN used by the Automatic Protection Switch Channel
	MEG Level	Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
	Ring Id	ERP instance Id
	Revertive	Revertive flag (enable/disable)
	Wait to Restore (min)	1 to 12 min, default value -5min
	Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
	Guard Time (x10ms)	10ms to 2secs, default value 500ms
Ports	**P0/P1**	**Type:** ERP interface classification (RPL/Non RPL/RPL Neighbor) **Slot:** Slot to which the interfaces of the ERP belongs **Eth:** Interface identifier in the slot **CFM:** Connectivity Fault Management
Protected VLAN List	**Protected VLANs**	Protected VLAN Identifier

Table 5-44: ERP Instance Configutarion details Dialog Box parameters

The “Add” button allows the configuration of a new ERP Instance, by opening a configuration Dialog Box, Figure 5-44. Refer to Table 5- for the description of the configuration parameters

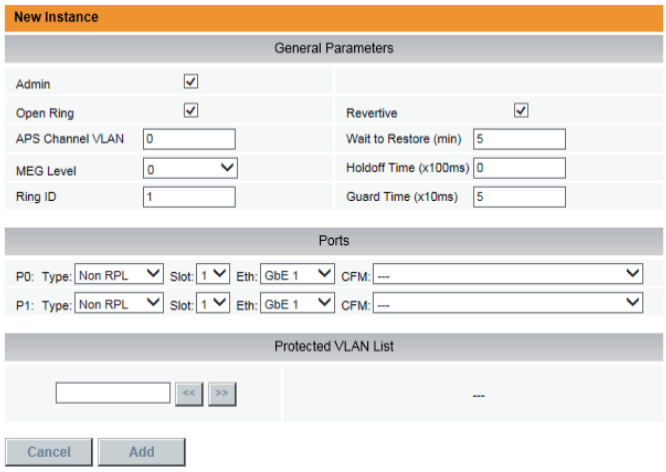


Figure 5-58: Add ERP Instance Dialog box configuration parameters

5.2.4.14.2 Protection Schemes :: GPON Type B

The selection of Protection Schemes Sub-menu item GPON Type B opens a GPON Type B window, Figure 5-59.

In CLI GPON Type B related commands including configuration are described in section 7.6.9“gpon-protection” node and subsections.

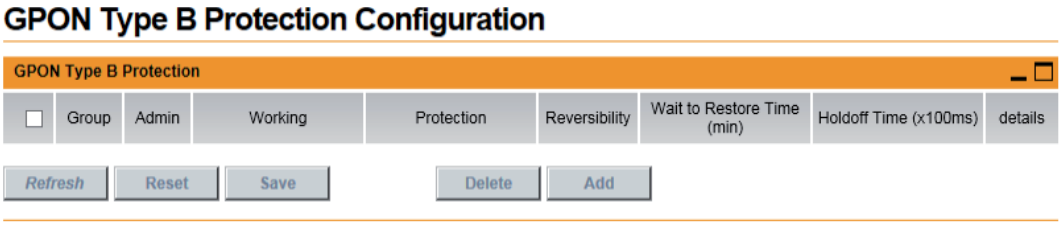


Figure 5-59: GPON Type B Protection configuration window

Parameter	Description
Group	GPON Type B Protection group identifier
Admin	GPON Type B Protection group administrative state
Working	GPON Type B working interface
Protection	GPON Type B protection interface
Reversibility	Flag. If selected indicates that the system will switch back to the working interface after a predefined period of time on the protection state following a switch over
Wait to restore time (Min)	Time, in minutes, on the protection state after a switch over, before switching back to the working state, in the case Reversibility is configured.
Holdoff time (x100ms)	Time, in multiples of 100ms, after an alarm occurs, on the working state before switching over to the protection state.
Details	By pressing view it will appear a window with the GPON Type B Instance configuration details, Figure 5-60

Table 5-45: GPON Type B Protection window parameters

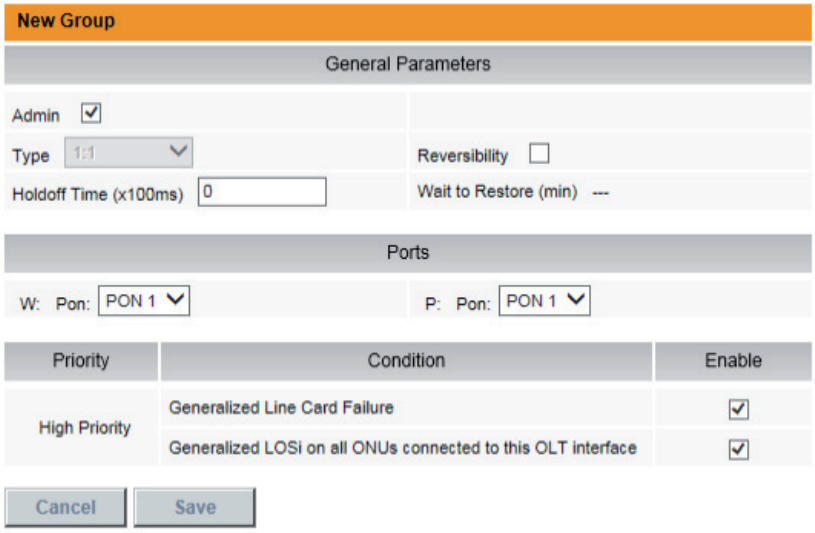


Figure 5-60: GPON Type B protection Configuration details Dialog Box

Parameter Type	Parameter	Description
General parameters	**Admin**	GPON Type B protection Group # administrative state
	Type	Type GPON Type B protection configured (current type- 1:1 protection)
	Reversibility	Flag. If selected indicates that the system will switch back to the working interface after a predefined period of time on the protection state following a switch over
	Holdoff time (x100ms)	Time, in multiples of 100ms, after an alarm occurs, on the working state before switching over to the protection state.
	Wait to restore time (Min)	Time, in minutes, on the protection state after a switch over, before switching back to the working state, in the case Reversibility is configured.
Ports	**W: Slot/Pon**	Group Working PON port identified by the pair Slot#/PON#
	P: Slot/Pon	Group Protection PON port identified by the pair Slot#/PON#

Priority: **Switch over conditions' priority level classification**	**Condition**	Type of conditions selectable for switch over cause; currently two high priority conditions can be configured to cause switch over to a protection state • **Generalized Line Card Failure** • **Generalized LOSi on all ONUs connected to this ONU interface**
	Enable	Flag; if selected enables the condition it refers to be used as switch over cause.

Table 5-46: GPON type B protection Group # details Dialog Box parameters

The "Add" button allows the configuration of a new GPON type B protection group, by opening a configuration Dialog Box, Figure 5-. Refer to Table 5- for the description of the configuration parameters.

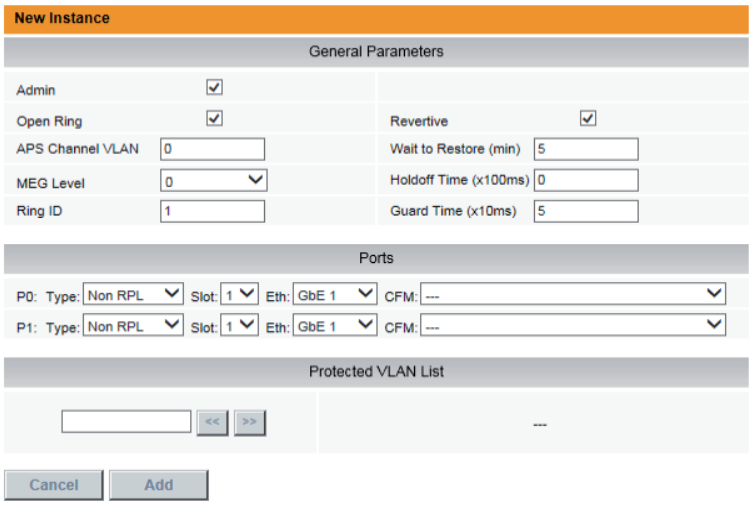


Figure 5-61: Add GPON type B protection Group# Dialog box configuration parameters

Parameter	Description
Group	GPON Type B Protection group identifier
Admin	GPON Type B Protection group administrative state
Working	GPON Type B working interface, identified by pair Slot/interface in the slot
Protection	GPON Type B protection interface, identified by pair Slot/interface in the slot
Reversibility	Flag. If selected indicates that the system will switch back to the working interface after a predefined period of time on the protection state following a switch over
Wait to restore time (Min)	Time, in minutes, on the protection state after a switch over, before switching back to the working state, in the case Reversibility is configured.
Holdoff time (x100ms)	Time, in multiples of 100ms, after an alarm occurs, on the working state before switching over to the protection state.
Details	By pressing view it will appear a window with the GPON Type B Instance configuration details, Figure 5-60

Table 5-47: GPON Type B Protection window parameters

5.2.4.14.3 Protection Schemes :: ETH Port

The selection of Protection Schemes Sub-menu item ETH Port opens an Ethernet Protection Configuration window, Figure 5-62.

In CLI Ethernet Protection related commands including configuration are described in section 7.6.8 "eth-protection" nodeand subsections.

Figure 5-62: Ethernet Protection configuration window

Parameter	Description
Group	Ethernet Protection group identifier
Admin	Ethernet Protection group administrative state
Working	Ethernet working interface
Protection	Ethernet protection interface
Reversibility	Flag. If selected indicates that the system will switch back to the working interface after a predefined period of time on the protection state following a switch over
Wait to restore time (Min)	Time, in minutes, on the protection state after a switch over, before switching back to the working state, in the case Reversibility is configured.
Holdoff time (x100ms)	Time, in multiples of 100ms, after an alarm occurs, on the working state before switching over to the protection state.
Details	By pressing view it will appear a window with the Ethernet Protection Group configuration details, Figure 5-63

Table 5-48: Ethernet Protection window parameters

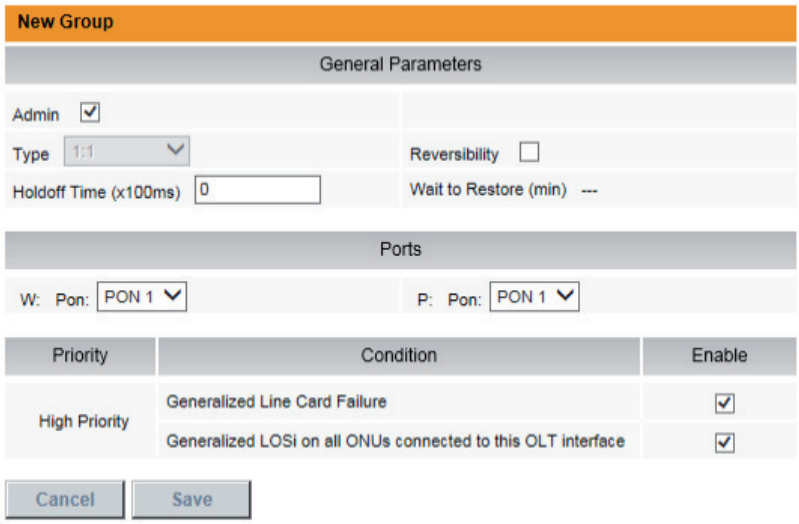


Figure 5-63: Ethernet protection Group Configuration details Dialog Box

Parameter Type	Parameter	Description
General parameters	**Admin**	Ethernet protection Group # administrative state
	Type	Type Ethernet protection configured (current type- 1:1 protection)
	Reversibility	Flag. If selected indicates that the system will switch back to the working interface after a predefined period of time on the protection state following a switch over
	Holdoff time (x100ms)	Time, in multiples of 100ms, after an alarm occurs, on the working state before switching over to the protection state.
	Wait to restore time (Min)	Time, in minutes, on the protection state after a switch over, before switching back to the working state, in the case Reversibility is configured.
Ports	**W: ETH**	Group Working Ethernet Uplink port
	P: ETH	Group Protection Ethernet port
Priority: **Switch over conditions' priority level classification**	**Condition**	Type of conditions selectable for switch over cause; currently two high priority conditions can be configured to cause switch over to a protection state • **Generalized Line Card Failure** • **LOS**
	Enable	Flag; if selected enables the condition it refers to be used as switch over cause.

Table 5-49: Ethernet protection Group # details Dialog Box parameters

The "Add" button allows the configuration of a new Ethernet protection group, by opening a configuration Dialog Box, Figure 5-. Refer to Table 5- for the description of the configuration parameters

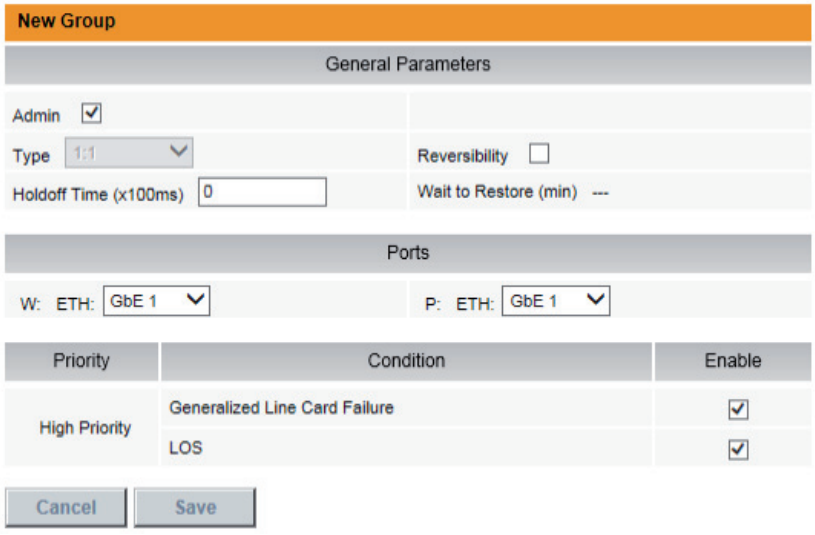


Figure 5-64: Add Ethernet protection Group# Dialog box configuration parameters

5.2.4.15 Remote Equipment

The Remote Equipment configuration sub-menu has two items, Figure 5-:

- Discovery
- ONUs

In CLI Remote Equipment related commands including configuration are described in section 7.6.17 "remote-eq" node and subsections.

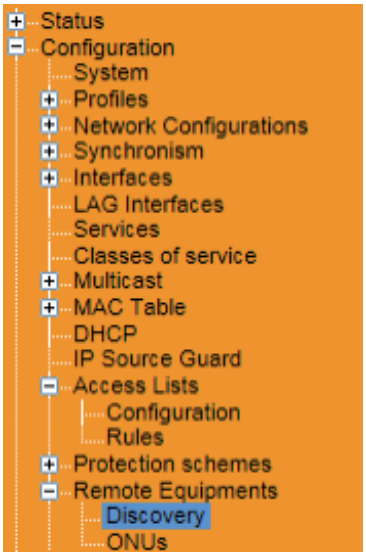


Figure 5-65: Remote equipment configuraton sub-menu

5.2.4.15.1 Remote Equipment :: Discovery

The OLT has an automatic detection process of new ONU/T's, where they appear/disappear automatically from the window if they aren't registered. In case they are registered, but there is no communication between the OLT and the ONU, the ONU goes to Absent state.

In CLI ONU discovery related commands 7.6.17.5 "discovery" sub-node and subsections.

In the OLT is possible to insert ONUs offline by a manual insertion specifying the line card, GPON interface, ONU ID and the serial number.

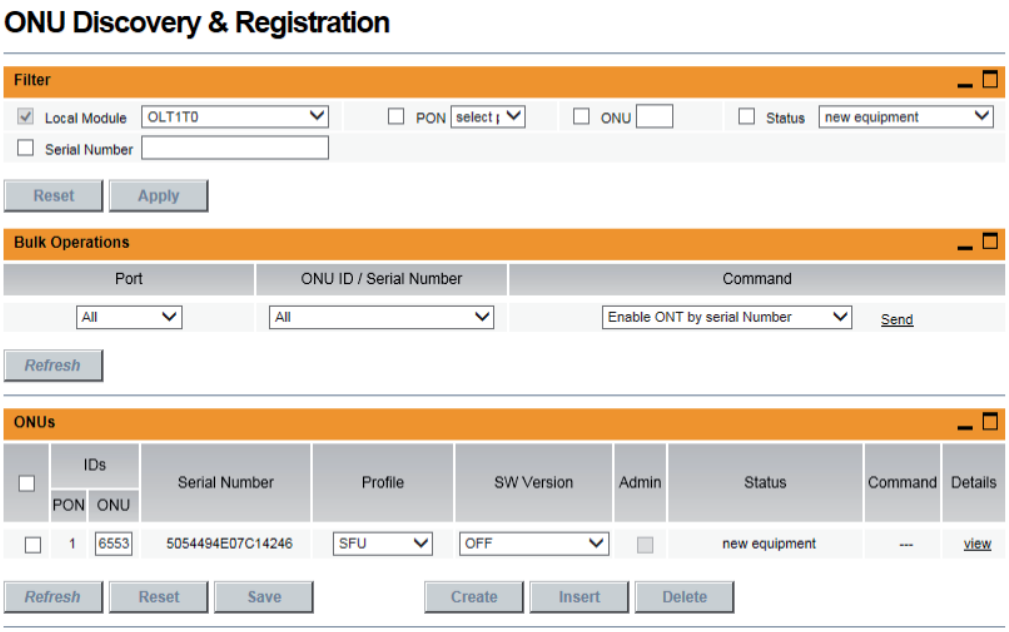


Figure 5-66: Remote equipment discovery

In order to easily find remote equipment, it is possible to apply one or a combination of filters:

Filter	Description
Local Module	Line Card (2…19)
PON	GPON Interface (1…8)
ONU	ONU/T Identifier (1…64)
Status	ONU/T Status (New Equipment, Operational, Absent, Out of Service, Conflict, Processing, Registry Error, Configuration Error)
Serial Number	ONU serial number

Table 5-50: Filter parameter values to apply in remote equipment discovery

The Remote Equipments List (ONUs) table is composed by the following parameter:

Parameter	Description
IDs	This parameter is composed by two columns PON and ONU; **PON**: identifies the GPON interface of the ONU/T **ONU:** identifies the ONU/T by ID
Serial Number	Identifies the Serial Number of the ONU/T (16 hexadecimal characters)
Profile	Identifies the ONU/T profile
SW Version	Selects the ONU/T software version mode. In case it's "Auto", the version that must be installed in the ONU/T, is the version defined as Auto in the Firmware Management table for the ONU/T Profile and HW version. In case it's a planned version, the version to install to the ONT will be the one defined. If it's Off, it won't be preformed any automatic update.
Admin	ONU/T Administrative State
Status	Indicates the ONU/T operational state. It can be in one of the following states: **New Equipment**: The ONU/T was discovered but isn't registered **Registry Error**: An error occurred while registering the ONU/T **Operational**: The ONU/T is in normal operating state **Processing**: ONU/T MIB SYNC is being performed, in this state the ONU/T doesn't accept any configuration **Configuration Error**: An error occurred while configuring the ONU/T **Absent**: The ONU/T is registered but inaccessible. It's possible to make configurations. **Conflict:** There is a conflict with another ONU/T **Out of Service**: The ONU/T is registered, but administratively out of service. It's possible to make configurations.
Command	Allows making a remote reboot to the ONU/T. It's only possible to make this command when the ONU/T is in "Operational" or "Configuration Error" state
Details	By pressing view, a window will open showing the ONU/T configuration details and it's possible to change the ONU/T Serial Number (Figure 5-67)

Table 5-51: : ONUs list parameters

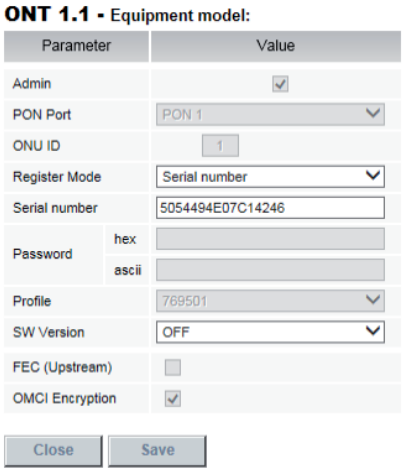


Figure 5-67: Changing ONU/T Serial Number

Parameter	Description
Admin	ONU/T Administrative State
Local Module	Indicates the local module, Slot/Card pair the ONU/T is connected to
PON Port	Indicates the PON Port the ONU/T is connected to
ONU Id	Indicates the ONU/T Identifier
Serial Number	Identifies the Serial Number of the ONU/T (16 hexadecimal characters)
Password	Identifies the ONU/T password hex/ascii
Profile	Identifies the ONU/T profile
SW Version	Selects the ONU/T software version mode. In case it's "Auto", the version that must be installed in the ONU/T, is the version defined as Auto in the Firmware Management table for the ONU/T Profile and HW version. In case it's a planned version, the version to install to the ONT will be the one defined. If it's Off, it won't be preformed any automatic update.
FEC (Upstream)	Flag; if selected indicates FEC is used in the upstream direction

Table 5-52: Inserting Equipment window parameters

There are two different ways to insert a new ONU/T:

- **Online**, Figure 5-68: In this case the ONU/T is connected to the GPON Interface and is in "New Equipment" state. To insert the ONU/T the user must select the ONU/T checkbox and press the "Insert" button. In case the ONU id is "0", the system will assign the first ONU ID available in the GPON Interface, in the example, the value in the IDs Column ONU box will change from 0 to 1, assuming this is the first ONU to be inserted in this PON interface.

- **Offline**, Figure 5-69.By pressing the button Create, a window will open. In this window it's possible to configure the necessary parameters to insert a new ONU/T (Board, PON Port, ONU id, Serial number and profile), after configuration the button "Add "must be pressed to insert the ONU/T.

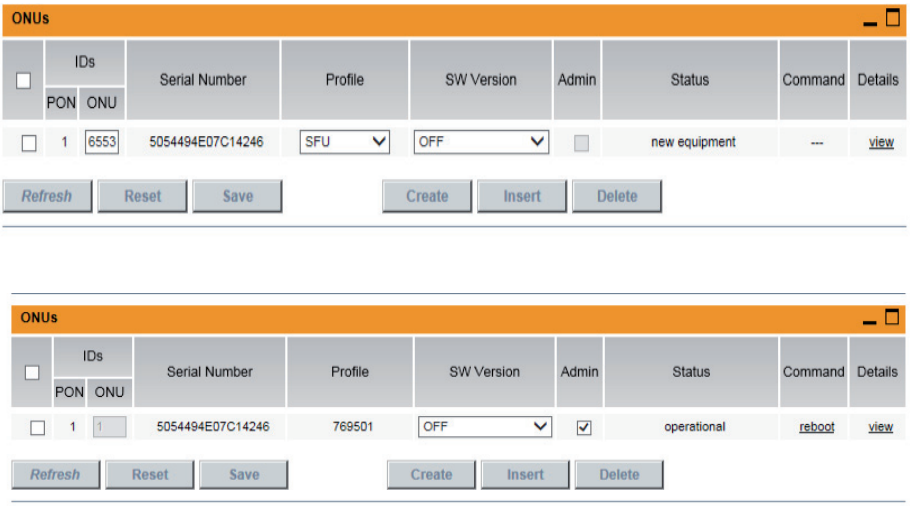


Figure 5-68: ONU/T online insertion

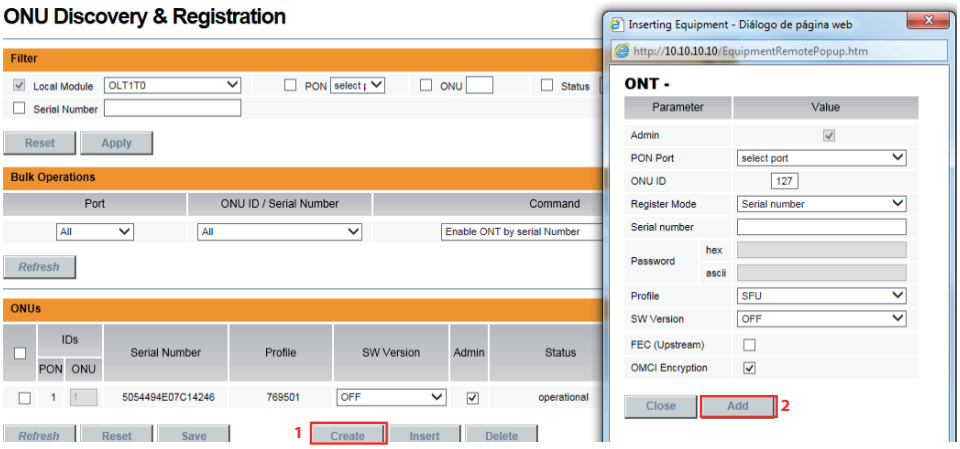


Figure 5-69: ONU/T Offline insertion

5.2.4.15.2 Remote Equipments:: ONUs

In CLI ONUs related commands are described in section 7.6.17.6 "ONUs" sub-node and subsections.

ONT configuration window is composed by the following tables:

- ONU Selection
- System Parameters
- PON Interfaces
- Analog RF Interfaces
- VoIP Interfaces
- Services

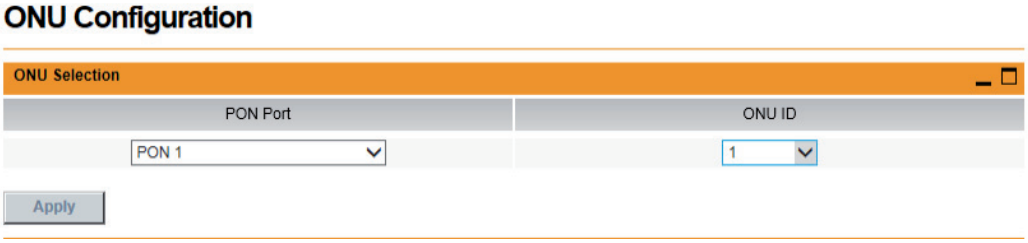


Figure 5-70: ONU Selection filter

In the ONU selection table it's possible to define the criteria to filter the pretended ONUs in the search. This table is composed by the following Combo Box:

Parameter	Description
PON Port	GPON Interface (1…8)
ONU Id	ONU/T Identifier (1…64)

Table 5-53 ONU possible values to apply in remote equipment search

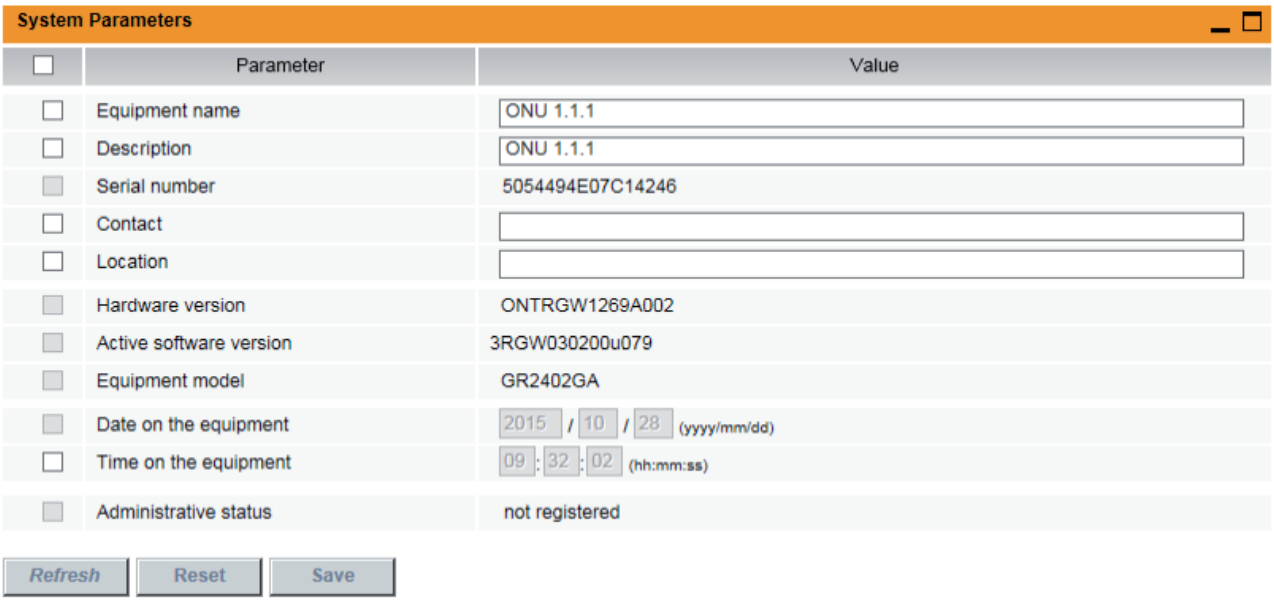


Figure 5-71: System parameters configuration

The System Parameters configuration table is composed by the following parameters:

Parameter	Description
Equipment name	Custom field used to tag the equipment (should be unique among all equipments). Example: ONT1.1
Description	Brief description of the equipment
Serial Number	ONU/T Serial Number (16 Hexadecimal characters)
Contact	Entity responsible for this equipment (department, person, etc)
Location	Custom field with the equipment location
Hardware Version	ONU/T Hardware Version (14 characters)
Equipment model	Equipment model
Date on the equip.	Displays date on the equipment (UTC)
Time/Hour on the equipment	Displays time on the equipment (UTC)
Administrative status	Displays administrative state

Table 5-54: System Parameters configuration table

In PON Interfaces table is possible to verify the PON interface configuration.

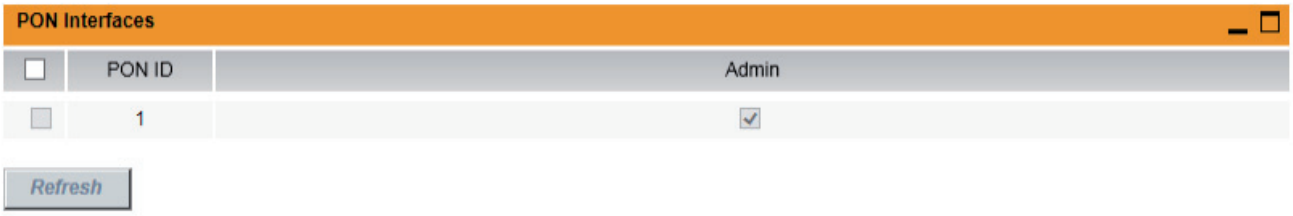


Figure 5-:72 PON interfaces configuration

In CLI remote equipment Ethernet interface related commands are described in section 7.6.17.6.5 "ethernet" sub-node and subsections.

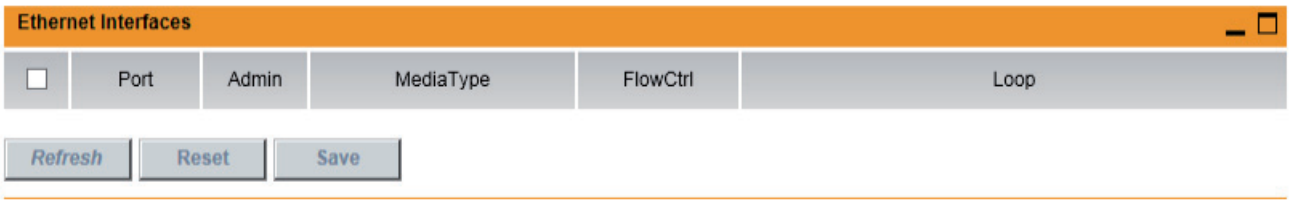


Figure 5-73: Ethernet interfaces configuration

The Ethernet Interfaces configuration table is composed by the following parameters

Parameter	Description
Port	Port identifier
Admin	Port Administrative State
Media Type	Link Speed and Duplex (Autoneg,10BASE-T Full Duplex,100BASE-T Full Duplex,1000BASE-T Full Duplex)
Flow Control	Activates the transmission and processing of Pause Frames (always disabled)
Loop	Activates the Port loop (always no loop)

Table 5-55 : Ethernet Interfaces configuration table

In CLI remote equipment Analog RF interface related commands are described in section 7.6.17.6.3 "analog-rf" sub-node and subsections.

Figure 5-74: Analog RF interfaces configuration

The Analog RF Interfaces configuration table is composed by the following parameters:

Parameter	Description
Port	Port identifier
Admin	Port Administrative State
Filter	Selects the filter (All, 15, 25, 35 Channels) to be applied to the RF Interface. In case the user tries to configure a filter that isn't supported in the Hardware, the ONT won't do anything.

Table 5-56 : Analog RF Interfaces configuration table

In CLI remote equipment VoIP interfaces related commands are described section 7.6.17.6.11 "voip" sub- node and subsections.

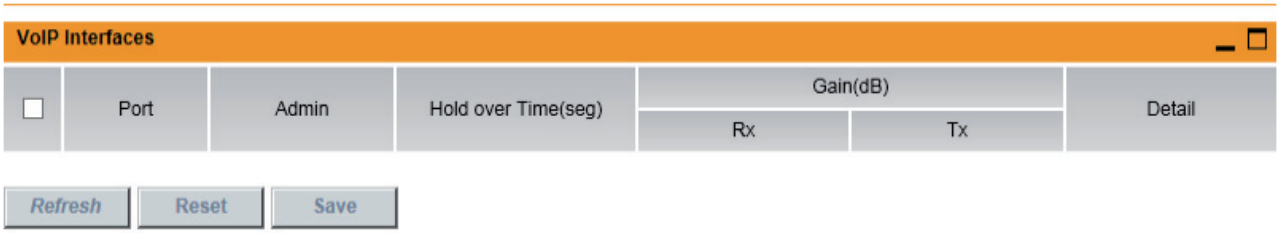


Figure 5-75: VoIP interfaces configuration

The VoIP Interfaces configuration table is composed by the following parameters:

Parameter	Description
Port	Port identifier
Admin	Port Administrative State
Hold Over Time (sec)	This parameter determines the time during which POTS loop voltage is held up when the ONT is not ranged on the PON. When the ONT ranges successfully on the PON, it restores POTS loop voltage immediately and reset the timer.
Gain dB	**Rx**: Specifies the receiver gain (-12.0…+6 dBm) **Tx**: Specifies the transmitter gain (-12.0…+6 dBm)
Detail	By pressing view, a window will open and it's possible to configure additional information related with the FXS interface

Table 5-57: VoIP Interfaces configuration table

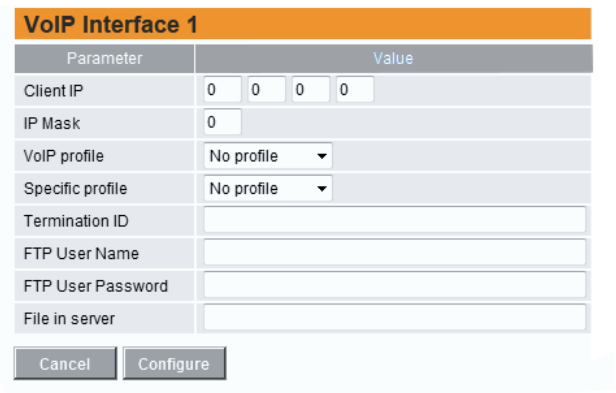


Figure 5-76: VoIP interface configuration

The detail VoIP Interfaces configuration window is composed by the following parameters:

Parameter	Description
Client IP	Client IP address used by the VoIP client. If the value is 0.0.0.0, the client IP address will be obtained by DHCP
IP Mask	IP Network Mask
VoIP profile	VoIP server profile (Voice Gateway, Server IP, Port, Default Gateway)
Specific Profile	VoIP Specific profile specifies the ftp server used to get the .xml file that contains the client configuration
Termination Id	Used for MEGACO(H.248) to identify the line termination
FTP User name	FTP user name to be used to login to the ftp server used to get the .xml file that contains the client configuration
FTP User Password	FTP user password to be used to login to the ftp server used to get the .xml file that contains the client configuration
File in server	File to be downloaded from the ftp server. This is a .xml file that contains the client configuration (ex. supported codec's, number, etc)

Table 5-58: VoIP Interfaces configuration window parameters

In CLI remote equipment Services related commands are described in section 7.6.17.6.8 "services" sub-node and subsections.

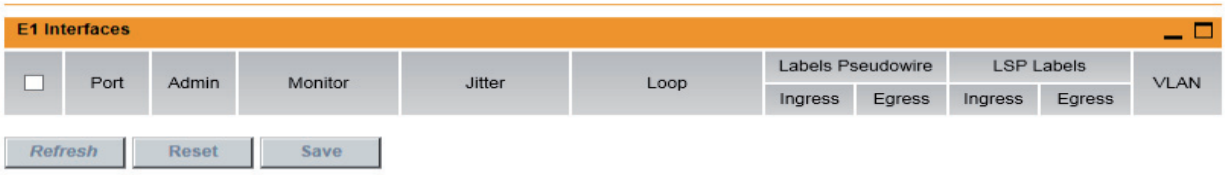


Figure 5-77: E1 Interfaces

The E1 Interfaces configuration table is composed by the following parameters:

Parameter	Description
Port	Port number
Admin	ONU/T Service Administrative State
Monitor	Monitor Service identifier
Jitter	Jitter
Loop	Loop service identifer
Labels Pseudowire	Labels pseudowire Ingress and Egress
LSP Labels	LSP Labels Ingress and Egress
VLAN	Inner VLAN ID (client) on the network-facing (Ethernet) interface. (1..4094).

Table 5-59: E1 Interfaces table

In CLI remote equipment E1 Interfaces related commands are described in section 7.6.17.6.4 "e1" sub-node and subsections.

Figure 5-78: T-CONT configuration

The T-CONT configuration table is composed by the following parameters:

Parameter	Description
ID	ID Service name identifer
Admin	ONU/T Service Administrative State
Upstream	Identifies the Upstream profile associated to the service

Table 5-60: T-CONT configuration table

In CLI remote T-CONT related commands are described in section 7.6.17.6.10 "t-cont" sub-node and subsections.

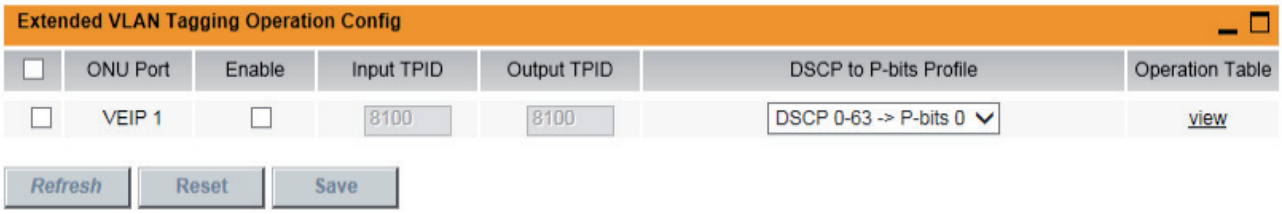


Figure 5-79: Extended VLAN Tagging Operation configuration

The Extended VLAN Tagging Operation configuration table is composed by the following parameters:

Parameter	Description
ONU Port	ONU Port Service name
Enable	ON/OFF
Service	OLT Service identifier
INPUT TPID	Identifies the Upstream profile associated to the service
OUTPUT TPID	Identifies the Downstream profile associated to the service
DSCP to PCP Profile	Inner VLAN ID (client) on the network-facing (Ethernet) interface. (1..4094)
Operation Table	In case this service is untagged in the client port, this option must be active. It's only possible to have a Native service by ONT port.

Table 5-61: Extended VLAN Tagging Operation configuration table

In CLI remote equipment E1 Interfaces related commands are described in section 7.6.17.6.6 "ext-vlan-tag-op" sub-node and subsections.

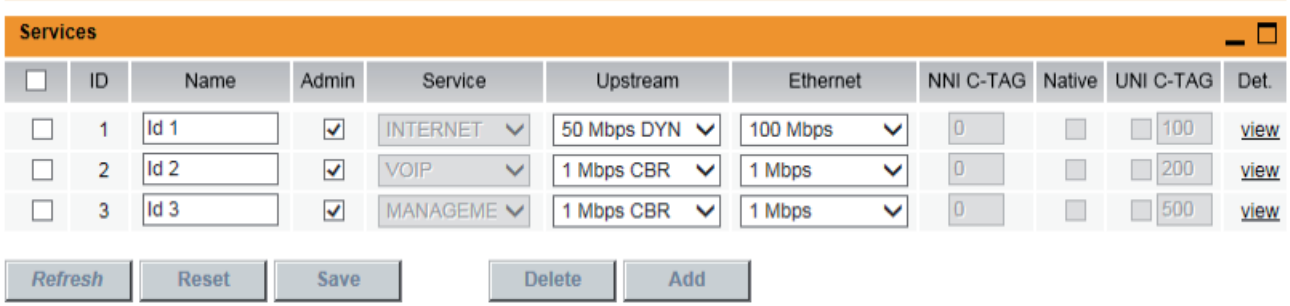


Figure 5-80: Service Configuration

Parameter	Description
ID	ID Service Identifier
Name	Service Name
Admin	Service Administrative State
Service	Service identifier
Upstream	Identifies the Upstream profile associated to the service
Ethernet	Identifies the Downstream profile associated to the service
NNI C-TAG	Inner VLAN ID (client) on the network-facing (Ethernet) interface. (1..4094)
Native	In case this service is untagged in the client port, this option must be active. It's only possible to have a Native service by ONT port.
UNI C.-TAG	VLAN ID delivered/received from the (Ethernet) subscriber-facing interface at the ONU. (1..4094) . In case the vlan in the client port is different from the one provisioned in OLT services, the checkbox must be selected, and the vlan value must be configured (1…4094)
Det.	Det.

Table 5-62: Services configuration details

To add a service to the ONT, the user must press "Add" button and the window in Figure 5- will open. Refer to Table 5- for the service configuration parameter description.

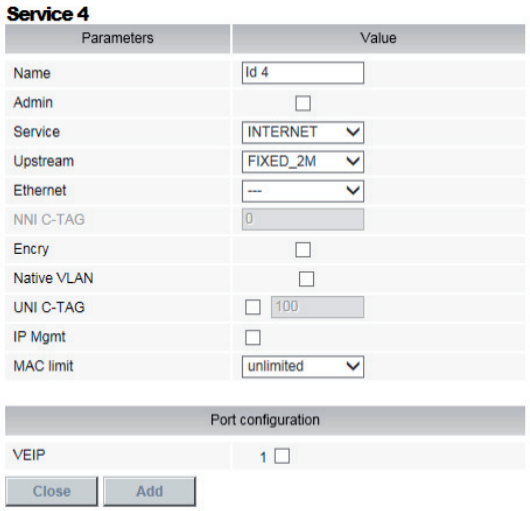


Figure 5-81: Add service configuration Dialog box

5.2.4.16 System Services

The System Services configuration sub-menu has three items, Figure 5-82:

- Time settings
- NTP
- System Settings

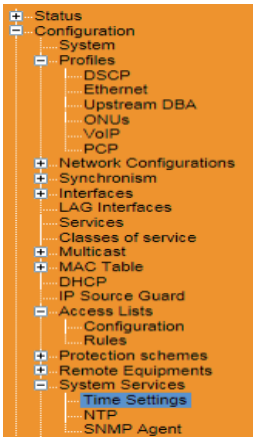


Figure 5-82: System Services Configuration sub-menu

System Services node, sub nodes and related commands including configuration era described in CLI section 7.6.2 “applications” node and subsections.

5.2.4.16.1 System Services::Time SettingsS

Time Settings menu item opens a Clock and Timezone configuration window that is composed by two tables:

- Clock Configuration: where it’s possible to configure the system clock. If NTP is enabled it cannot be configured.
- Timezones: where it’s possible to define the timezones used by the equipment and used by the Central Management.

Clock and Time zone related commands are described in CLI chapter, section 7.6.2.4.2 “time-zone” sub-node and subsections.

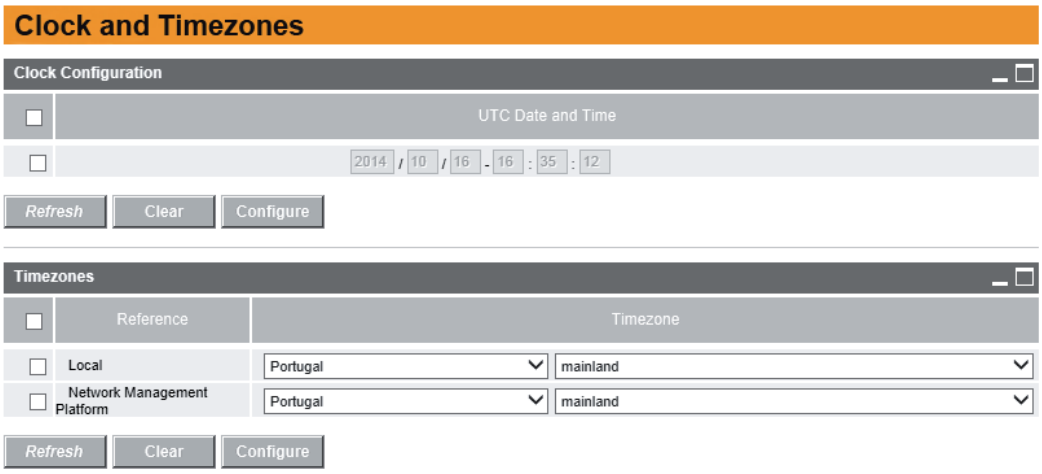


Figure 5-83: Clock and Timezones configuration window

Parameter	Description
UTC Date and Time	The clock using the following syntax: YYYY/MM/DD-hh:mm:ss **YYYY**: Year **MM**: Month **DD**: day **hh**: hours **mm**: minutes **ss**: seconds

Table 5-63: Clock configuration parameter

Parameter	Description
Reference	Selects the reference used either by the equipment (Local) and the Network Management Platform
Timezone	It's composed combo boxes, allowing the selection of the country, and the region within the country.

Table 5-64: Timezones configuration parameters

5.2.4.16.2 System Services::NTP

In the NTP configuration window, it is possible to activate the NTP in OLT, and to configure the NTP servers.

NTP menu item opens a Network Time Protocol configuration window that is composed by two tables, Figure 5-84:

- Global NTP: that allows the activation of NTP in the OLT.
- NTP Servers: NTP servers' configuration table.

In CLI chapter, NTP related commands are described in section 7.6.2.4.1 "ntp" sub-node and subsections.

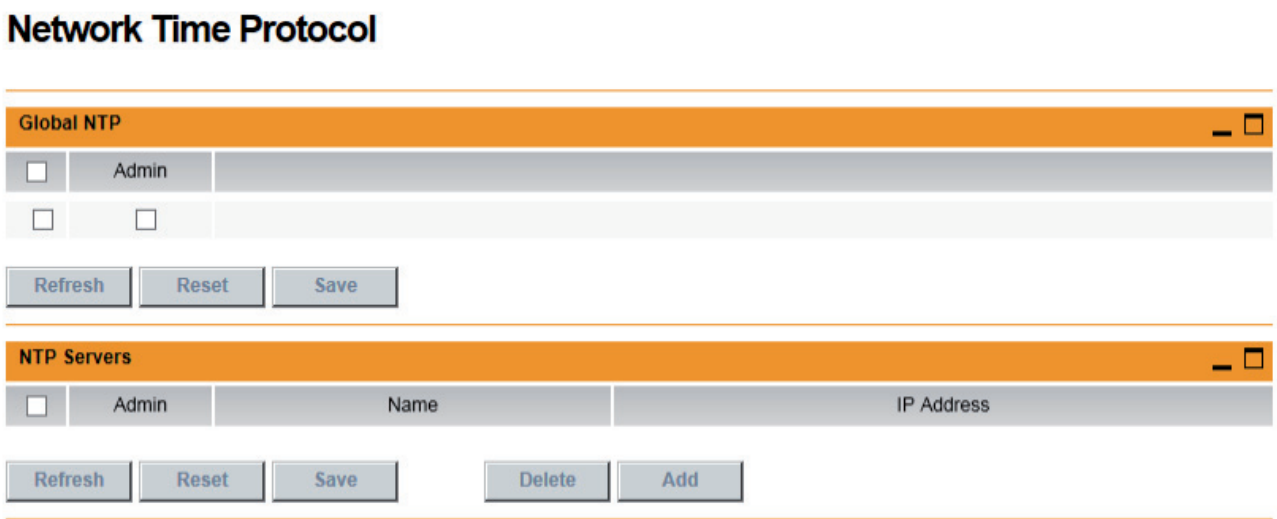


Figure 5-84: Network Time Protocol Configuration Window

Parameter	Description
Admin	NTP Administrative State

Table 5-65: Global NTP configuration parameter

Parameter	Description
Admin	NTP server Administrative State
Name	NTP server name
IP Address	NTP server IP address

Table 5-66: NTP servers' configuration parameters

5.2.4.16.3 System Services::SNMP Agent

In the System Services/SNMP Agent configuration window, it is possible to define the connection to the Network Management System.

System Services configuration window is composed by one table, the SNMP Service Table.

In CLI, Manager Configuration related commands are described in section 7.6.2.2 "manager" sub-node and subsections.

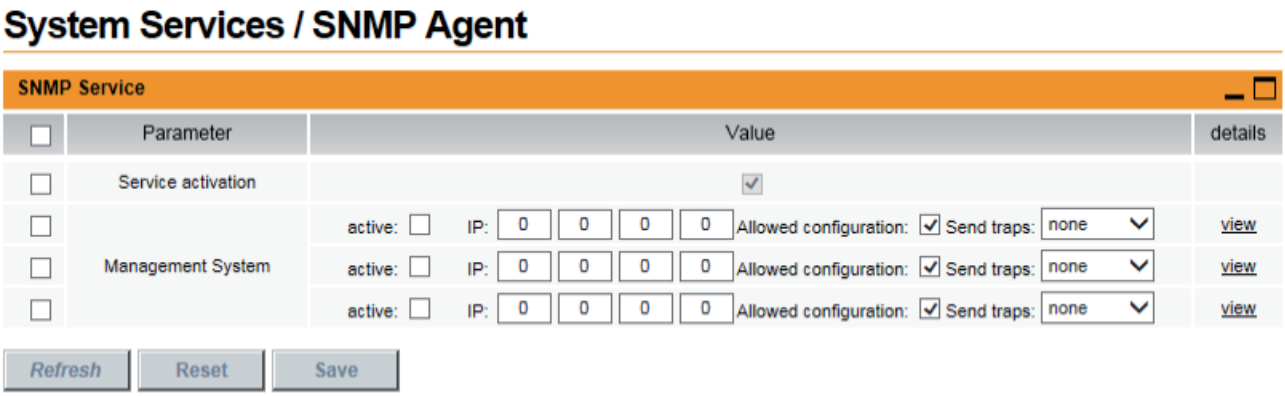


Figure 5-85: System Settings/SNMP Agent window, SNMP Service Table

The Manager Configuration table is composed by the following parameters:

Parameter		Description
Service Activation		Service Activation Flag (Enable/disable). Must ne enable to activate the SNMP Service
Management System	Active	Active Flag. (Enable/disable). Must be Enable to activate the management system defined in this table line.
	IP	Network Management System IP Address
	Allowed Configuration	Allowed Configuration Flag (enable/disable). Must be enable to allow the definition of the Send Traps mode
	Send Traps	Send Traps defines the mode used for the OLT to communicate with Network Management System. (none|Trap/Ack|Trap V2| Inform)
	Details	By pressing view, a dialog box will open showing management system configuration details, Figure 5-86.

Table 5-67: System Settings/SNMP Service parameters

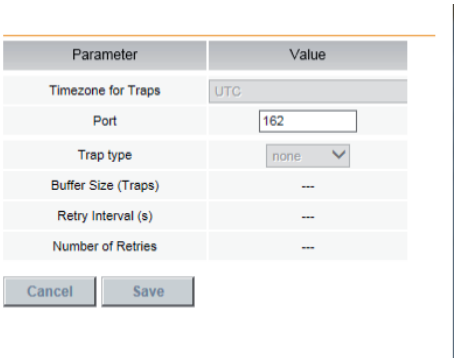


Figure 5-86: Management System configuration details dialox box

Parameter	Description
Timezone for Traps	Specified Timezone used for Traps
Port	Identifies the IP port number to use. (1..65535)
Trap Type	Mode used for the OLT to communicate with Network Management System. (none|Trap/ Ack|Trap V2| Inform)
Buffer Size (Traps)	Specified trap buffer size in bytes
Retry Interval (s)	Specified wait period in seconds before re-sending the trap when no ACK is received
Number of Retries	Specified number of retries before skipping the current trap

Table 5-68: Management System Current Configuration parameters

Code	Entity	Description
3	Board	Board has been removed
4	Board	Board is in conflict (a different type of card is expected)
5	Board	Signal the NMS that a configuration has been made in the equipment (e.g. via CLI or webTI for example).
7	Interface	SFP Fail
11	Equipment	Loss of connectivity with the ONU
12	Equipment	48V present
13	Equipment	Temperature alarm
16	Equipment	System boot
18	Interface	Loss of signal (LOS)
26	Interface	Signal Degrade
50	Equipment	Synchronism reconfiguration
79	Interface	Ethernet Link Down
235	Equipment	Mismatch of FW version between the two switch fabrics
296	Board	FAN fail
372	Equipment	Switch fabrics handover due to protection scheme
403	ONU	ONU Loss of signal (LOSi)
404	ONU	ONU Loss of frame (LOF)
405	ONU	ONU Loss of PLOAM
406	ONU	ONU Drift of Window
407	ONU	ONU Signal Fail
408	ONU	ONU Signal Degraded
409	ONU	ONU Loss of GEM channel delineation
410	ONU	ONU Remote Defect Indication (RDI)

411	ONU	ONT Start-up Failure
412	ONU	ONU Loss of Acknowledge
413	ONU	ONU Deactivate Fail
414	ONU	ONU Physical Equipment Error
415	ONU	ONU Receive Dying-Gasp
416	ONU	ONU Transmission Interference Alarm
417	ONU	ONU Video Output Below Threshold
418	ONU	ONU Video Output Above Threshold
419	ONU	ONU Received 1490nm optical power below threshold
420	ONU	ONU Received 1490nm optical power above threshold
421	ONU	ONU Transmit optical power below lower threshold
422	ONU	ONU Transmit optical power above upper threshold
423	Interface	LAG Active Member Down
425	Interface	Signal Fail
426	Interface	Laser End of Life pending
435	ONU	ONU upgrade FW error (no file found)
447	Board	Board entered the "busy" state.
451	Equipment	LOMF detected on synchronism junction number one
452	Equipment	LOMF detected on synchronism junction number two
542	Equipment	LOS detected on synchronism junction number one
543	Equipment	LOS detected on synchronism junction number two
556	Interface	The input power of the EDFA is' below the minimum threshold
557	Interface	The input power of the EDFA is above the maximum threshold
558	Interface	No signal was detected in the input EDFA
559	Interface	The output power of the EDFA is below the minimum threshold
560	Interface	The output power of the EDFA is above the maximum threshold
561	Interface	EDFA transmission fail
562	Interface	The EDFA temperature is below the minimum threshold
563	Interface	The EDFA temperature is above the maximum threshold
604	Equipment	Reset factory settings
605	Equipment	Restore DB backup file
1002	Board	New board was detected
1006	ONU	ONU FW upgrade (indicates success or fail)

Table 5-69: List of traps sent by the OLT

5.2.4.17 CFM probes

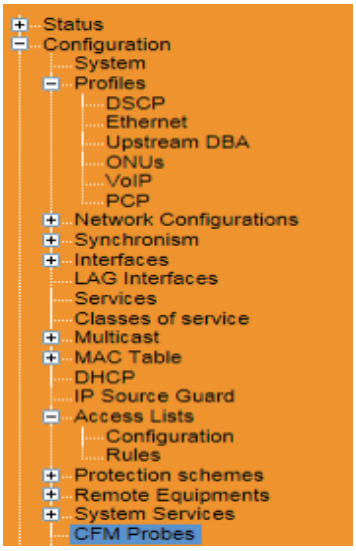


Figure 5-87: CFM Probes Configuration menu item

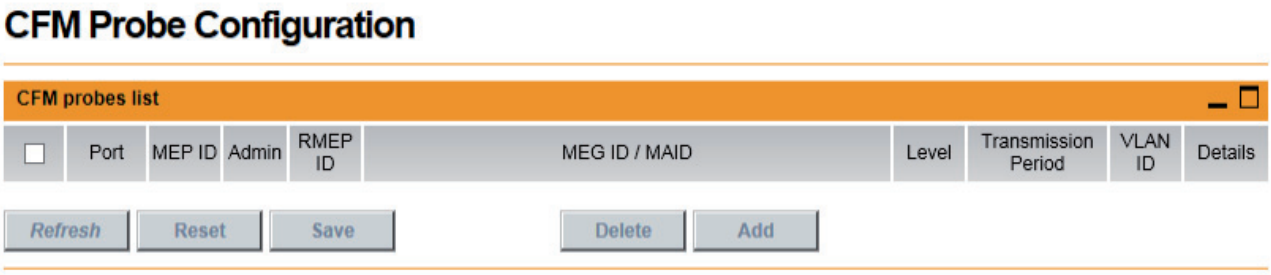


Figure 5-88: CFM Probe Configuration

The CFM Probe table is composed by the following parameters:

Parameter	Description
Port	Selects the Port to make the upgrades
MEP ID / MAID	Selects the MEP ID / MAID to make the upgrades
Admin	Server Administrative State
Level	Selects the Level to make the upgrades
Transmission period	Selects the Transmission period to make the upgrades
VLAN ID	VLAN ID
Details	Details probe

Table 5-70: CFM Probe configuration parameters

In CLI, CFM Probes related commands are described in section "manager" sub-node "probes" sub-node and subsections.

5.2.4.18 ONU Software Update

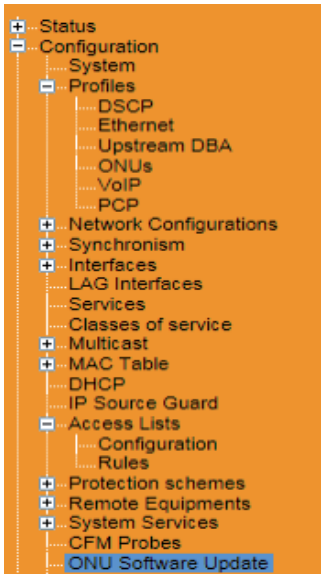


Figure 5-89: ONU Software Update Configuration menu item

The selection of ONU Software Update Configuration menu item opens an ONU Software Update configuration window.composed by two tables:

- ONUs Bulk Upgrade: where it's possible to send automatic/planned upgrades to the ONU's
- Software Image Files:: where it is possible to manage the ONU Firmware files

In order to use ONT SW upgrade Auto mode, an active SW version must be previously set as default for the respective ONT profile. In the case there is no default SW version set for the ONT profile the following alarm message will be returned by the system : "SW and HW version mismatch"when executing Auto ONT SW upgrade

In CLI Firmware related commands are described in section 7.6.17.8.3 "firmware" sub-node and subsections.

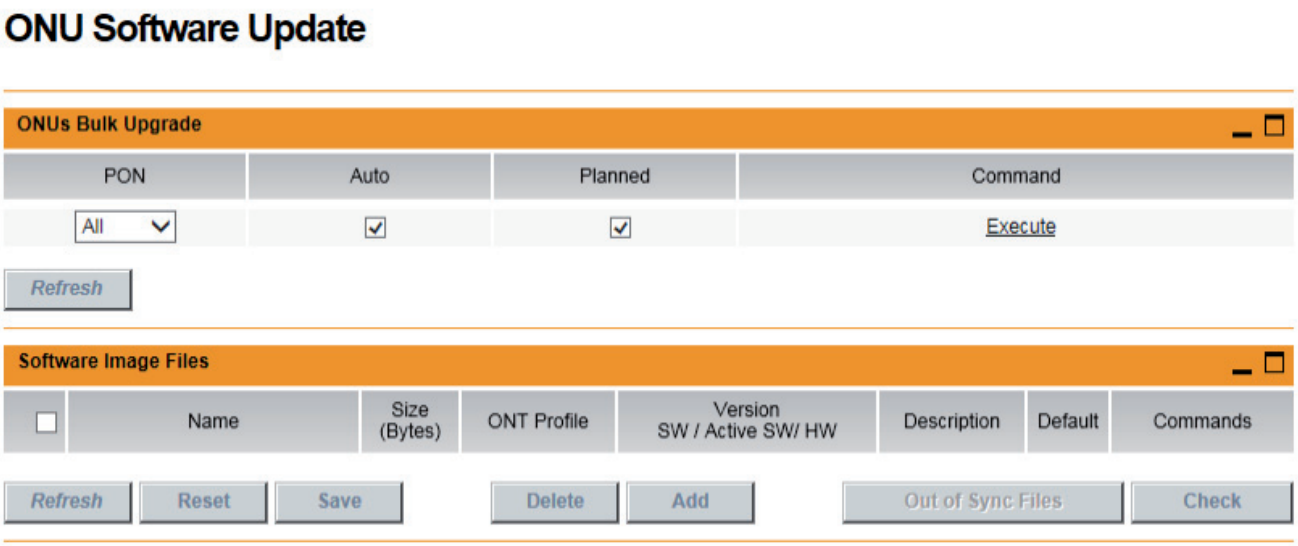


Figure 5-90: ONT firmware update

The ONUs Bulk Upgrade table is composed by the following parameters:

Parameter	Description
Slot	Selects the Slot to make the upgrades
Pon	Selects the PON to make the upgrades
Auto	Selects the ONUs with Software Mode "Auto"
Planned	Selects the ONUs with Software Mode "Planned Version"
Command	By pressing Execute command the selected ONT's will make upgrade

Table 5-71: ONUs Bulk Upgrade configuration parameters

The Software Image Files table is composed by the following parameters:

Parameter	Description
Name	Name of the SW version file
Size	Size of the SW version file
ONT Profile	ONT profile to which the version applies to
Version SW/HW	SW: Name of the Software version HW: Hardware to which the Software Version applies to. If it's blank it applies to all ONT's with the selected ONT profile
Description	Description of the Software version
Default	Signals that the version is the default version to some ONT profile/HW version
Commands	**Apply file**: Allows to select one or a group of ONT's to make upgrade **Set default**: Set's the default version to some ONT profile/HW version

Table 5-72: Software Image Files configuration parameter

The "Out of Sync Files" Button, Figure 5- , lists all files not synchronized with the local management. These files are not presented in the Software Image Files Table. The out of Sync files list is shown in a pop up window. The user can remove the files from the system using the "Remove" button in the pop up window, Figure 5-.

The "Check" Button, resynchronizes the local management with the equipment filesystem.

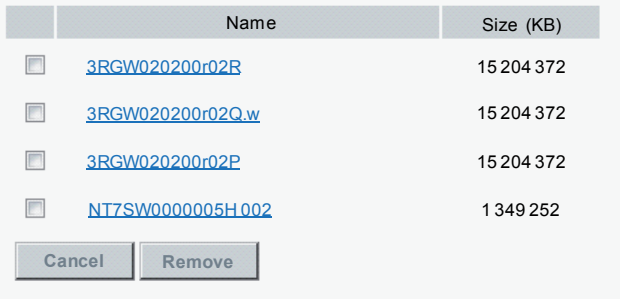


Figure 5-91: Out of Sync files list

To add a new ONU Software/Firmware version, Figure 5-92:

- Press the Add button,1, and the ONU Software Update dialog Box will appear:
- Pressing the "File" field, 2, the Choose file to Upload Dialog box will appear allowing the selection of a file, from a repository, for example the PC hard disk, to upload to the OLT
- Select the file to upload, 3
- Finish the upload, 4. The file will then be available at the Software Image Files Table.

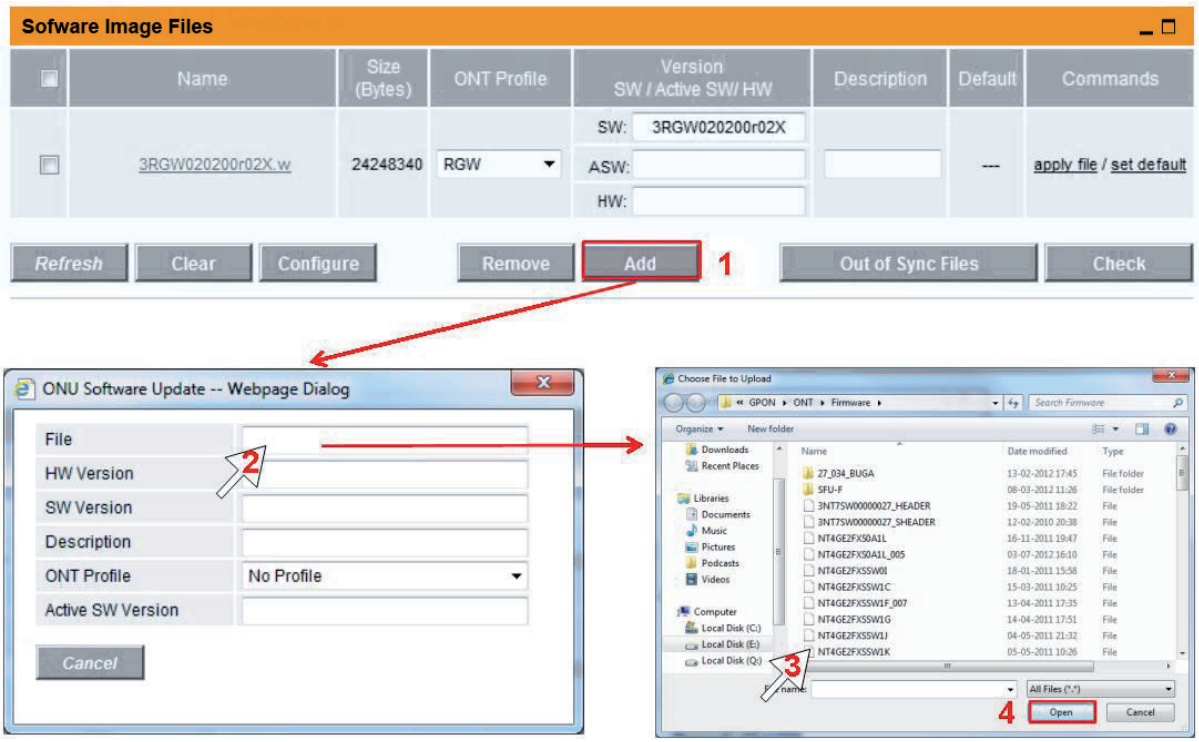


Figure 5-92: ONU Firmware version upload

To make the ONU Software Upgrade the user must:

- Press the apply file, 1, in the commands column in the Software Image Files table, Figure 5-93. There the user can choose which ONU we wants to make the upgrade, only ONU's with SW Mode "OFF" will appear to select
- Pressing Update Button, 2, will start Update for the configured selection

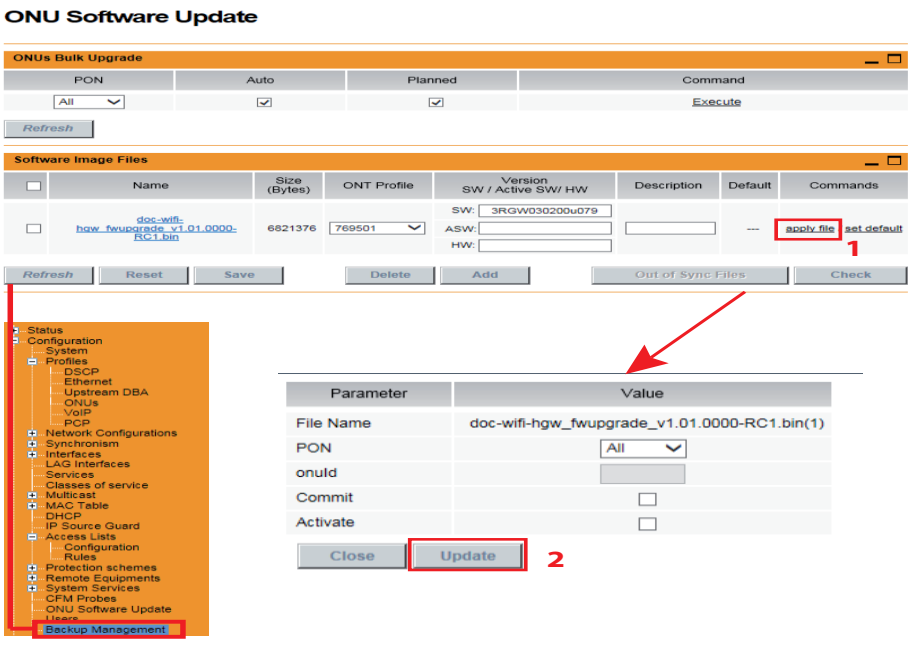


Figure 5-93: Selecting the ONU(s) to upgrade

In the Status menu, Remote Equipments, ONUs, it is possible to check the upgrade status in "Software Images and Maintenance" table on the column Maintenance, 1, Figure 5-94. The number between ( ) indicates the number of bytes transmitted. In the end of the upload you can have "Upload finished with error" in case an error occurred or "Upload finished successfully" in case the file was well transferred.

To finish the ONU firmware upgrade the user must execute Commit and Activate by pressing the button "No", 2

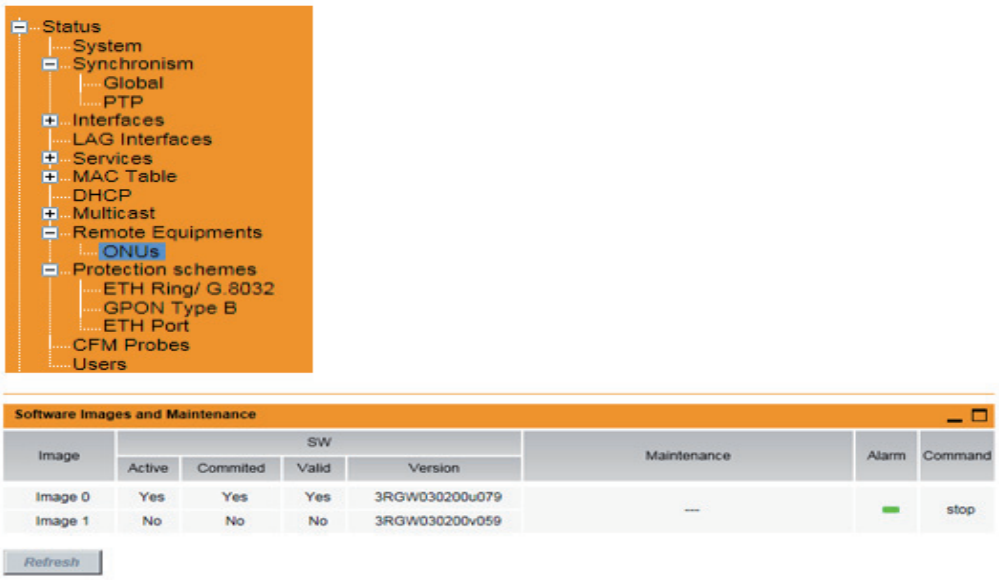


Figure 5-94: Check ONU Upgrade Status

5.2.4.19 Backup Management

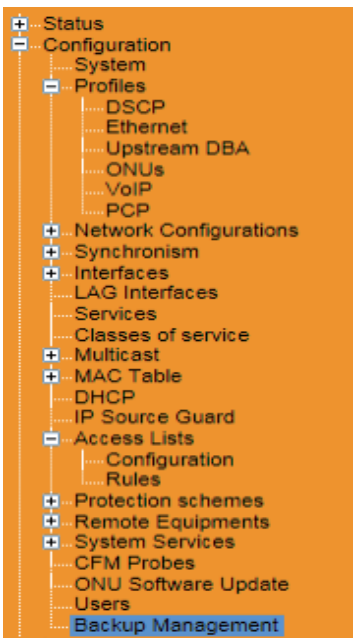


Figure 5-95: Backup Management Configuration menu item

The Backup Management window consists of a Local Backups table where the equipment's database backup files are listed.
In the CLI section, Backup related commands are described in section 7.6.3 "backup-manager" node and subsections.

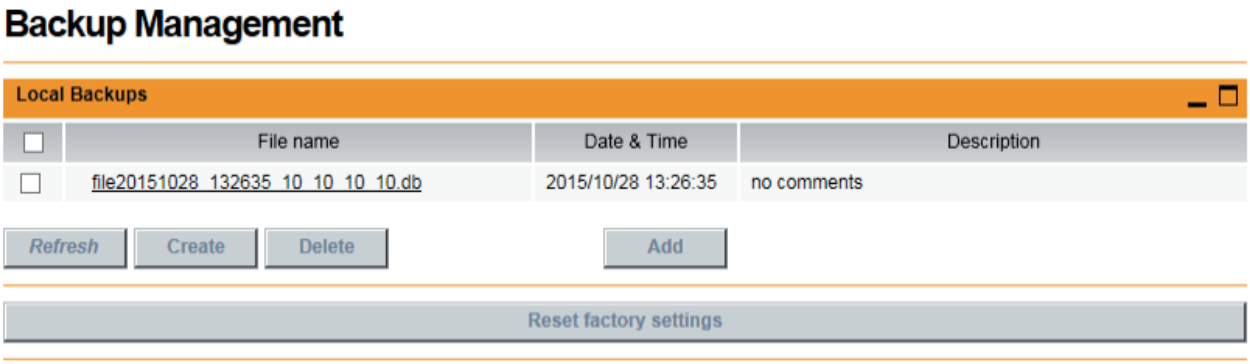


Figure 5-96: Backup Manager

Parameter	Description
File name	Backup File name
Date & Time	Backup date and time
Description	Backup description

Table 5-73: Backup Manager Window parameters

To create a System Database Backup, Figure 5-96:

The user must press the Create button, 1, and the Backup dialog box will appear.

- After filling the fields filename and description in the dialog box, pressing the Apply button, 2, will save the Database in the OLT file system.

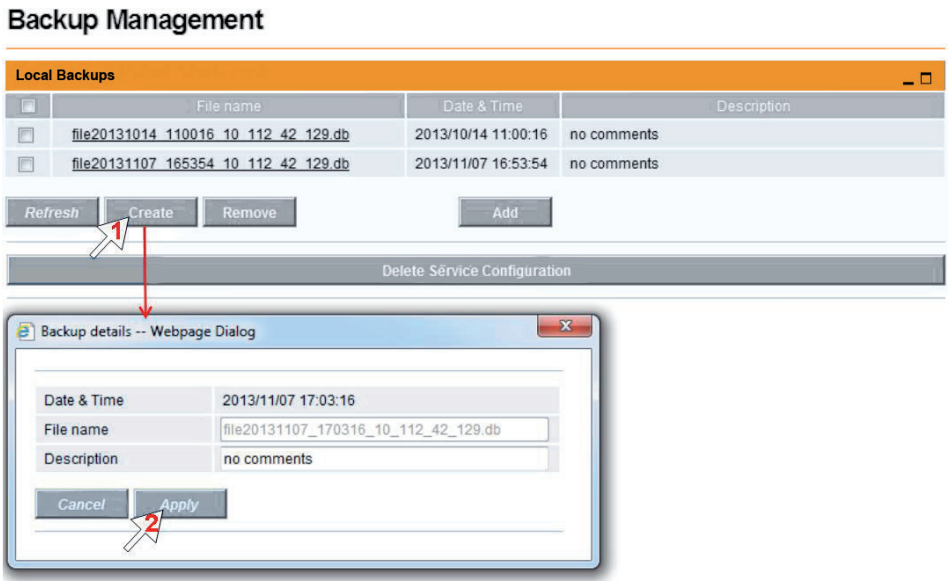


Figure 5-97: Create a Database Backup file

To save a System Database Backup file to a PC, Figure 5-98:

- The user must press the System Database Backup file link in the Local Backup table list, 1, and a Save As dialog box will pop up will appear.
- The filed File name is automatically filled with the System Database Backup file name, 2; this name can be changed by typing in the desired name
- Finalize by Pressing the "Save" button, 2, will save the Database in the OLT file system.

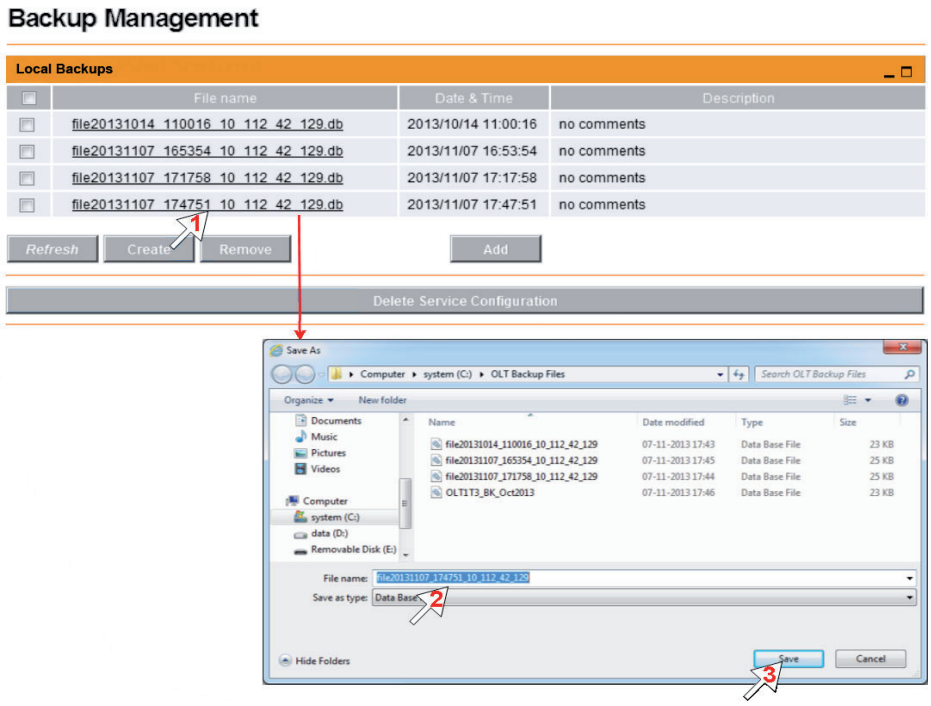


Figure 5-98: Save a Database Backup file to a PC

To add a database stored in the PC, Figure 5-99:

- Press the Add button,1, and the "Send the Local Backup" dialog Box will appear:
- Pressing the empty field, 2, the "Choose file to Upload" dialog box will appear allowing the selection of a file, from a repository, to upload to the OLT
- Select the file to upload, 3 and 4
- Finish the upload, by pressing the ADD button, 5.
- The file will then be available at the Local Backups Table, Figure 5-100.

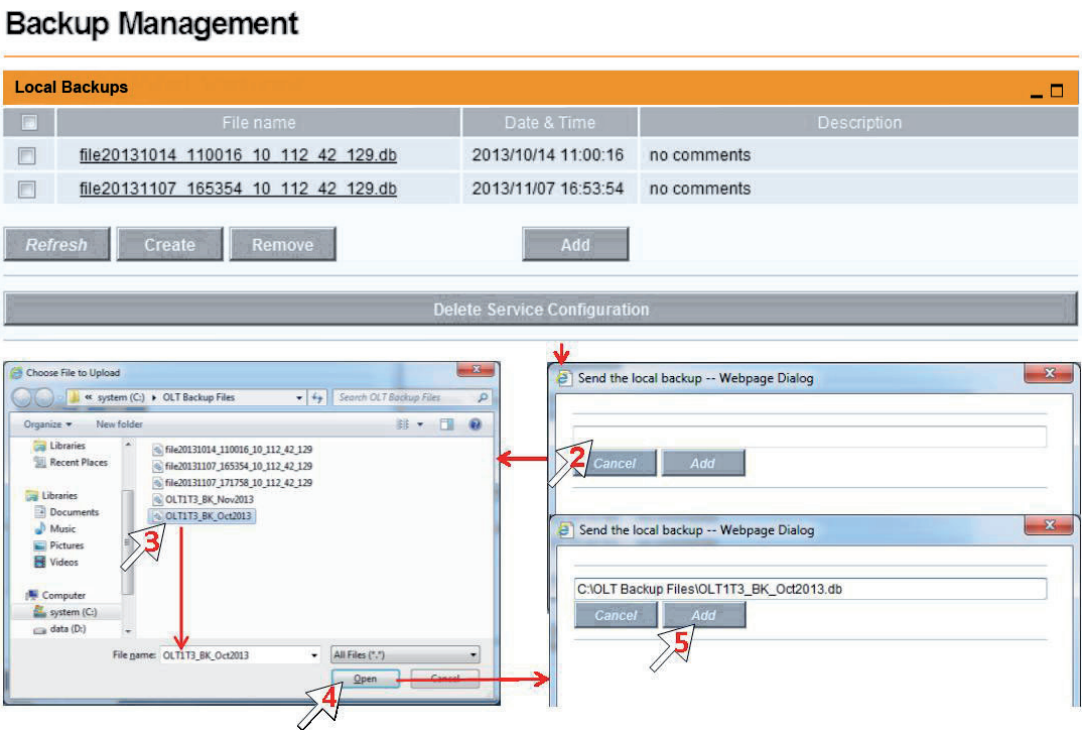


Figure 5-99: Database Upload

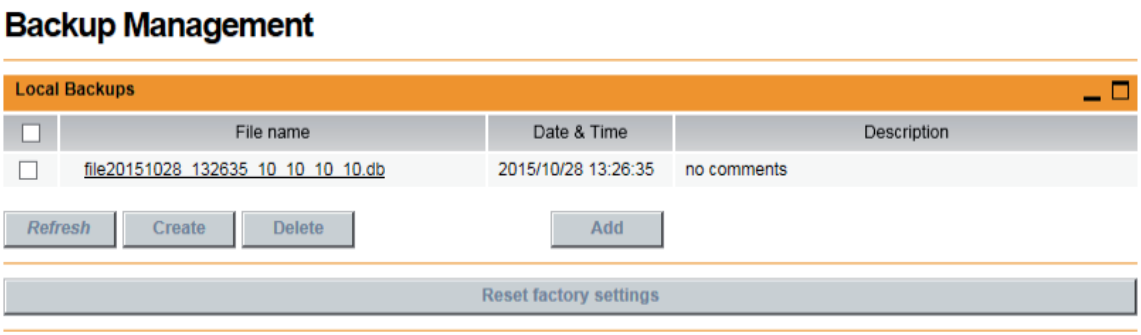


Figure 5-100: Uploaded file available in the local backup table

To restore a Database, Figure 5-101:

- First the user must select the pretended Database to load, 1
- Then press the button Restore, 3.
- After this the system will reboot and startup with the new Database.

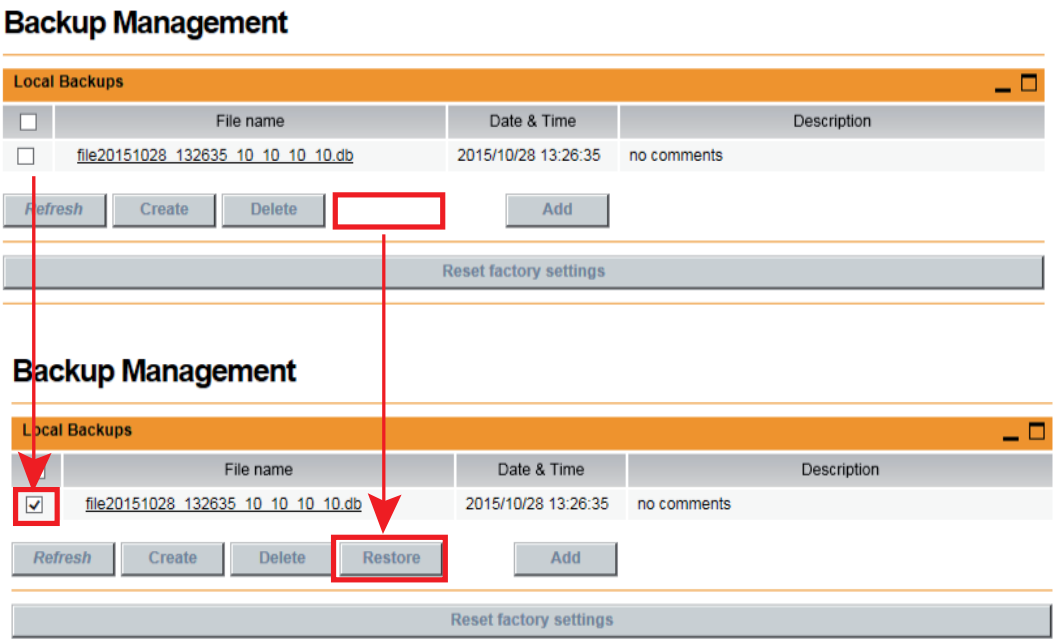


Figure 5-101: Database Restore

In the Backup Manager window it's also possible for the user to reset to factory settings, Figure 5-102. By pressing "Delete Service Configuration" button, the system will delete service configuration and reset to factory defaults except for the inband (activated ports included) and outband management interfaces.

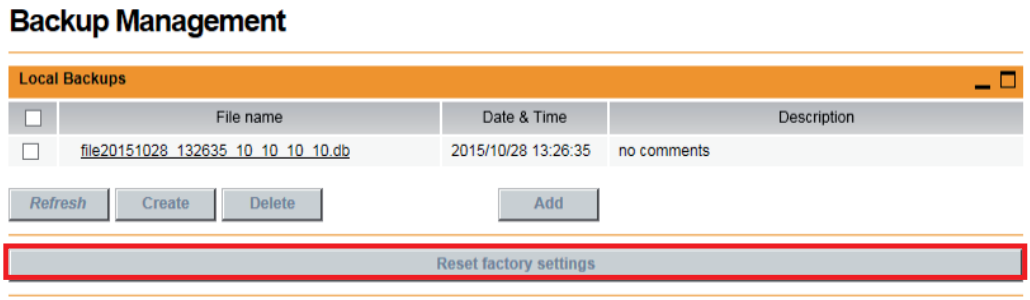


Figure 5-102: Delete Service Configuration

Note:

Resetting to factory defaults **DOES NOT REMOVE**:

- Created users,
- Equipment configured IP address.

5.2.4.20 USERS

This item of configuration menu availability depends on the privileges of the user

Only Users with administrator permission can see and manage the list of the users in the system.

In the CLI section of this manual, the users' management related functionality is described section 7.6.21 "users" node and subsections.

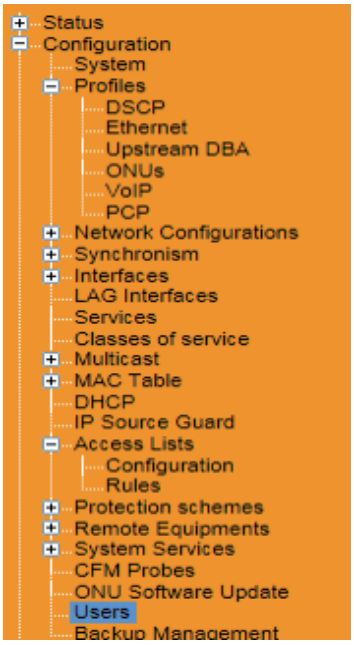


Figure 5-103: Menu Configuration Item Users

In the Change Password window it's possible for a user with administrator privileges to change the user password to access the system, for any user in the user's list which is used, Figure 5-104.

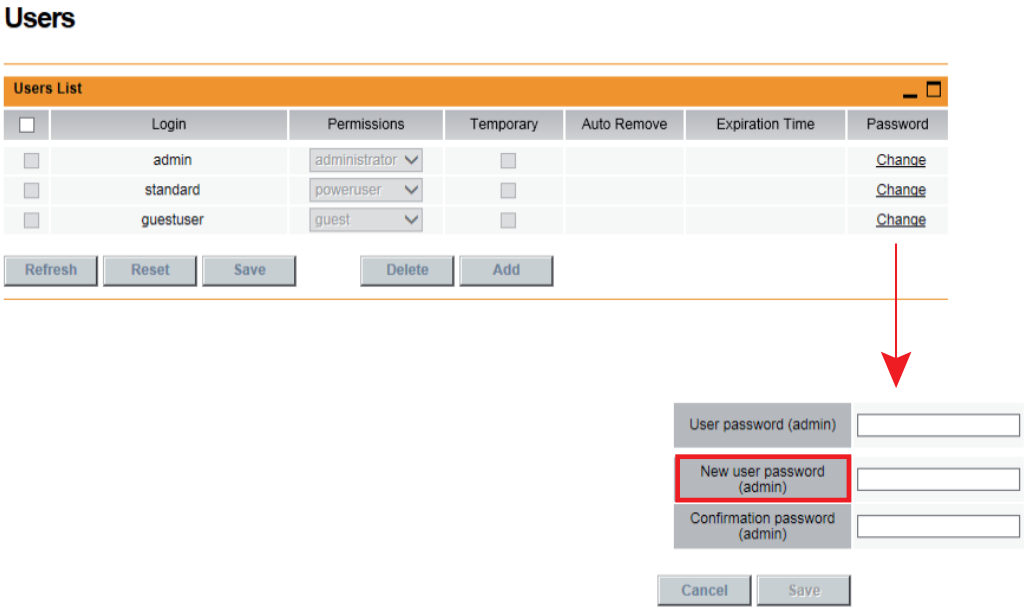


Figure 5-104: Change of user password by admin

6. Operation

This chapter addresses the Operation of the equipment via local management.

OLT current configuration information is available via WEB TI configuration windows which show for each configurable item, the current OLT configuration

OLT current configuration information for a specific configurable OLT item can also be obtained via CLI application with the show, showconfig and availableValues commands at the configurable Item context, ie tree node, sub-node or branch.

Information on the status of OLT configured logical and physical elements and statistics can be obtained via WEBTI status menu items.

OLT status and statistics information for a specific configurable OLT item can also be obtained via CLI application with the "status" an "statistics" sub-nodes at the configurable Item context, ie tree node, sub-node or branch.

OLT alarms information can be obtained via WEBTI logs submenu alarms' items.

Alarms information can also be obtained via CLI application node "logs" sub-node "alarms" commands.

6.1 Upgradingto a New OLT OS Software Release

6.1.1 Determining the Software Version

You can verify your OLT Ref.769401 OLT OS software version by checking the "Firmware version";:

- at the equipment WEBTI interface main window;
- with CLI and the command /equipment/system/show;

6.1.2 Upgrading to a New Software Release

You can upgrade to a new software release for the OLT Ref.769401 Series OLT OS either using AGORA-NG NMS system or using a LCT and CLI.

6.1.3 OLT OS Installation Procedure

Note:

In order to install OLT-OS, it is necessary to have 300MB free space available at the OLT switch fabric flash memory storage.

Step 1 Determine the Software Version you have installed on your OLT

You can verify your OLT Ref.769401 OLT OS software version by checking the "Firmware version";:

- At the equipment WEBTI interface main window;
- With CLI and the command /equipment/system/show;

Step 2 Download the desired OLT Ref.769401 Series OLT OS version to perform upgrade of your OLT OS software from Open ideia.com to an TFTP server.

Step 3 Login in the OLT Ref.769401 OLT using CLI admin account credentials.

Step 4 Import the new OLT Ref.769401 OLT-OS setup file using a TFTP client to the Local Craft Terminal, using the following command :

/applications/olt-upgrade/import

The IP address of the TFTP server and the the setup filename to import must be provided as mandatory parameters of the command. The path of the olt setupfile to import from the TFTP server can also be specified at the command line.

Step 5 Update the OLT OS with the imported setup file with the following command:

/applications/olt-upgrade/apply-file

Last imported setup file will be the one to be used by the engine to run the OS. After command execution system will reboot and restart using the new OS version.

6.2 Status

Status menu submenus and items provide information on the state of configured OLT elements and statistics.

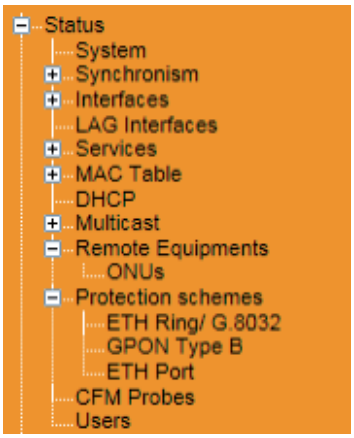


Figure 6-1: Status menu

In CLI, status information is available at these sections

- 7.6.2“applications” node, subsection
  - “status” command (at firmware/files subnode)
- 7.6.4“cfm-probe” node, subsection
  - “status” command
- 7.6.6 “equipment” node, subsection
  - “status” command
- 7.6.6.4“system” sub-node, Subsection
  - “status” command
- 7.6.7 “erp-ring” node, subsection:
- “status” sub-node
  - 7.6.8 “eth-protection” node, subsection:
- “status” command
  - 7.6.9 “gpon-protection” node, subsection:
- “status” command
  - 7.6.10 “interfaces” node, subsections:

- "status" sub-node "statistics" sub-node(at Ethernet subnode)
  - "status" sub-node (at GPON subnode)
  - "status" sub-node (at LAG subnode)
- 7.6.14 "mac-table" node, section:
  - "status" sub-node
- 7.6.15 "multicast" node, subsection:
  - "active-groups" sub-node, "status" command
- 7.6.17"remote-eq" node, subsections:
  - "e1" sub-node, "status" command,
  - "status" sub-node
- 7.6.20 "synchronism" node, subsections:~
  - "status" sub-node
- 7.6.21 "users" node, subsections:
  - "status" command

A "statistic" sub node, with counters information available by using command "show, is also present in sections:

- 7.6.10 "interfaces" node, subsections:
  - "statistics" sub-node (at Ethernet subnode)
  - "statistics" sub-node (at Ethernet/services subnode)
  - "statistics" sub-node (at gpon subnode)
  - "statistics" sub-node (at lag subnode)
- 7.6.15 "multicast" node, subsection:
  - "statistics" sub-node (at probes subnode)
- 7.6.17 "remote-eq" node, subsections:
  - "statistics" sub-node
  - "statistics" sub-node(at status/ethernet subnode)
  - "statistics" sub-node(at status/gemport subnode)
  - "statistics" sub-node(at status/services subnode)
- 7.6.19 "services" node, subsection:
  - "statistics" sub-node

6.2.1 System

Selection of status menu item "System" will open the System Status window, Figure 6-2, providing information related to the system boards.

This window is composed by two tables:

- System State;
- Fan Module.

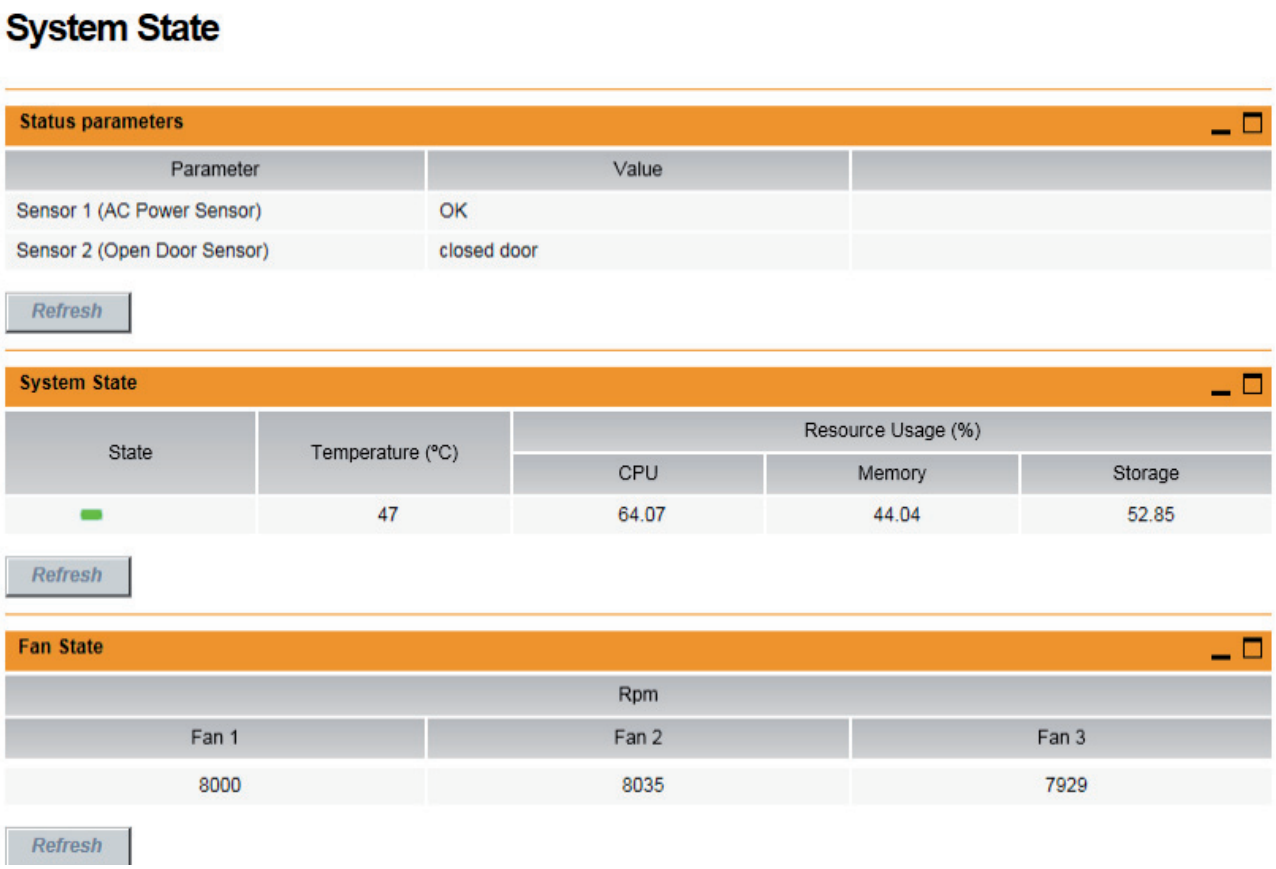


Figure 6-2: System State

The System State table is composed by the following parameters:

Parameter	Description
Id	The Id column is composed by: **Slot**: Identifies the number of the slot **Name**: Identifies the kind of board inserted in the slot
State	Indicates the board state
Temperature	Indicates the board temperature (ºC)
Resource Usage	Indicates the resources in use (%): • CPU • Memory • Storage

Table 6-1: System State parameters

The Fan State table is composed by the following parameters:

Parameter	Description
Slot Id	Indicates the Fan slot
RPM	Indicates the FAN number of rotations per minute for each fan in the module

Table 6-2: Fan Module Status parameter table

6.2.2 Synchronism

The Synchronism status sub-menu has two items, Figure 6-4:

- Global
- PTP

Figure 6-3: Status submenu Synchronism

6.2.2.1 Global

Global menu item opens a Synchronism Status window that is composed by two tables, Figure 6-4:

- Global Parameter.
- Synchronism Sources

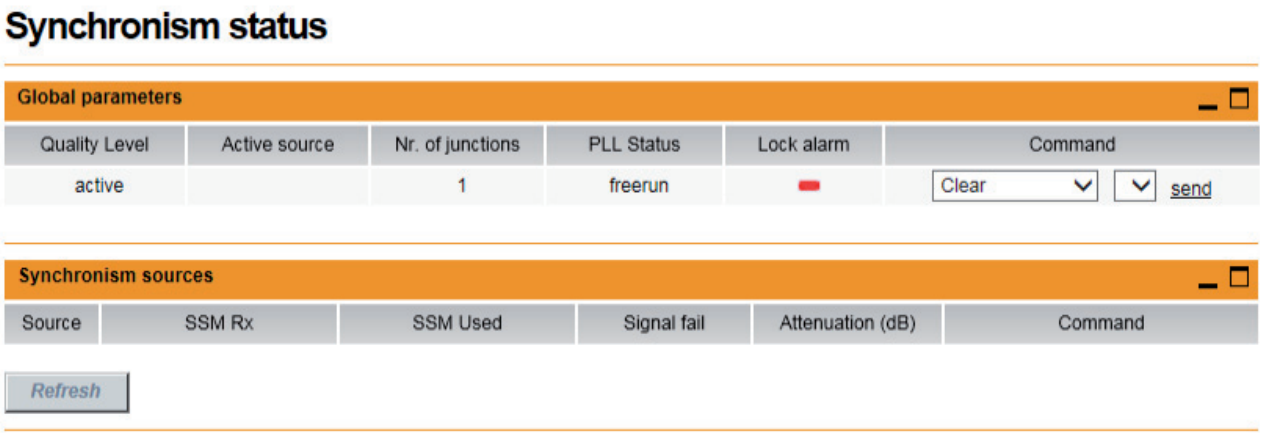


Figure 6-4: Synchronism Status window

The Global parameters table is composed by the following parameters:

Parameter	Description
Quality level	May be enabled or disabled
Active Source	Synchronization source (slot or junction number) of the respective PLL;
PLL Status	Equipment system PLL is controlled by a state machine according to G.781 recommendation and can have one of the following status: **Hold Over**: The PLL will switch to this status if it ceases to be a valid synchronization source. This status provides a stable synchronization clock based on the original clock memorization; **Free Run**: The PLL is synchronized by the local clock; **Normal**: The PLL is synchronized by the programmed synchronization source
Lock alarm	This alarm is triggered when the PLL is not locked
Command	There are several external commands that are available to the user, for example for maintenance purposes commands. These commands are independent and have different impacts on the selection processes. Enabling and disabling external commands associated with the synchronization selection process is defined below. Only one of these external commands is enabled by the selection process at a time. It is possible to carry out the following commands in the active synchronism sources, by selecting the command in the combo box and clicking on send • **Clear** • **Manual Switch** • **Force Switch**

Table 6-3: Global Parameters

In the Synchronism Sources table, it possible to view the Physical interfaces that provide synchronism to the system which junctions are indicated in the Source column (in case of interfaces, the number of the slot to which the interfaces belongs is indicated)

Parameter	Description
Source	Indicates synchronization source (slot or junction number)
SSM Rx	This column identifies the received SSM (Synchronization Status Message);
SSM Used	This column identifies the used SSM
Signal Fail	Signal failure of the respective synchronism source
Attenuation	Attenuation (measured in dB) associated with each of the existing synchronism junctions
Command	It is possible to temporarily remove a synchronism source attached to a selection procedure. This is controlled via the Lockout command. This command is accepted for synchronism sources enabled in each selection process. The lockout state of a disabled synchronism source is "off". However a synchronism source that is locked out, remains named for the selection process and maintains its priority. It is then possible to perform the following commands at the synchronism source level by selecting the command in the combo box and clicking on send • **Clear** • **Lockout**

Table 6-4: Synchronism Sources parameters

Use of external Commands in Global parameters table and Synchronism sources table:

- **Clear** (at Synchronism Source table):

  The Clear command removes the Force Switch and Manual Switch commands (Global Parameters table), by turning "off" the Lockout state of a synchronism source. This allows synchronism source availability for selection process;

- **Lockout** (at Synchronism Source table):

  If the source is in "Lockout", the user will never be able to execute "Force Switch" or "Manual Switch" (Global Parameters table) for this source. This command turns "on" the Lockout status of a synchronism source. This allows synchronism source unavailability for selection process;

- **Manual Switch** (at Global Parameters table):

  Enables switching to the selected synchronism source if it has no failure.

  - This command selects one synchronism source by assuming it is enabled, is not Locked Out, is not in signal failure condition and has a QL (Quality Level) higher than the other synchronism sources and then the synchronism source

with a DNU (Do Not Use) status in QL mode enabled. Otherwise, this command is automatically rejected.

- Moreover, in the QL mode, manual switching may be performed only for the source that has the highest available QL. Thus, these conditions have the effect that a manual switch can only be used to override the priorities of the assigned synchronism sources. A request for manual switching overrides any other earlier request for manual switching.
- This command is disabled using Clear command.

- **Force Switch** (at Global Parameters table):

  Causes switching to the selected synchronism source even if it has a failure.

  - This command can be used to implement the currently selected synchronism source, by assuming that the synchronism source is enabled and not in a Locked Up state. Otherwise, this command is automatically rejected.
  - This command overrides manual switching and another later Force Switch command overrides this.
  - This command is disabled by the Clear command.

Important!

A Force Switch command sent to a synchronism source that has a Signal Fail status, or has a DNU QL mode enabled, will result in that network element entering an Holdover state.

6.2.2.2 PTP

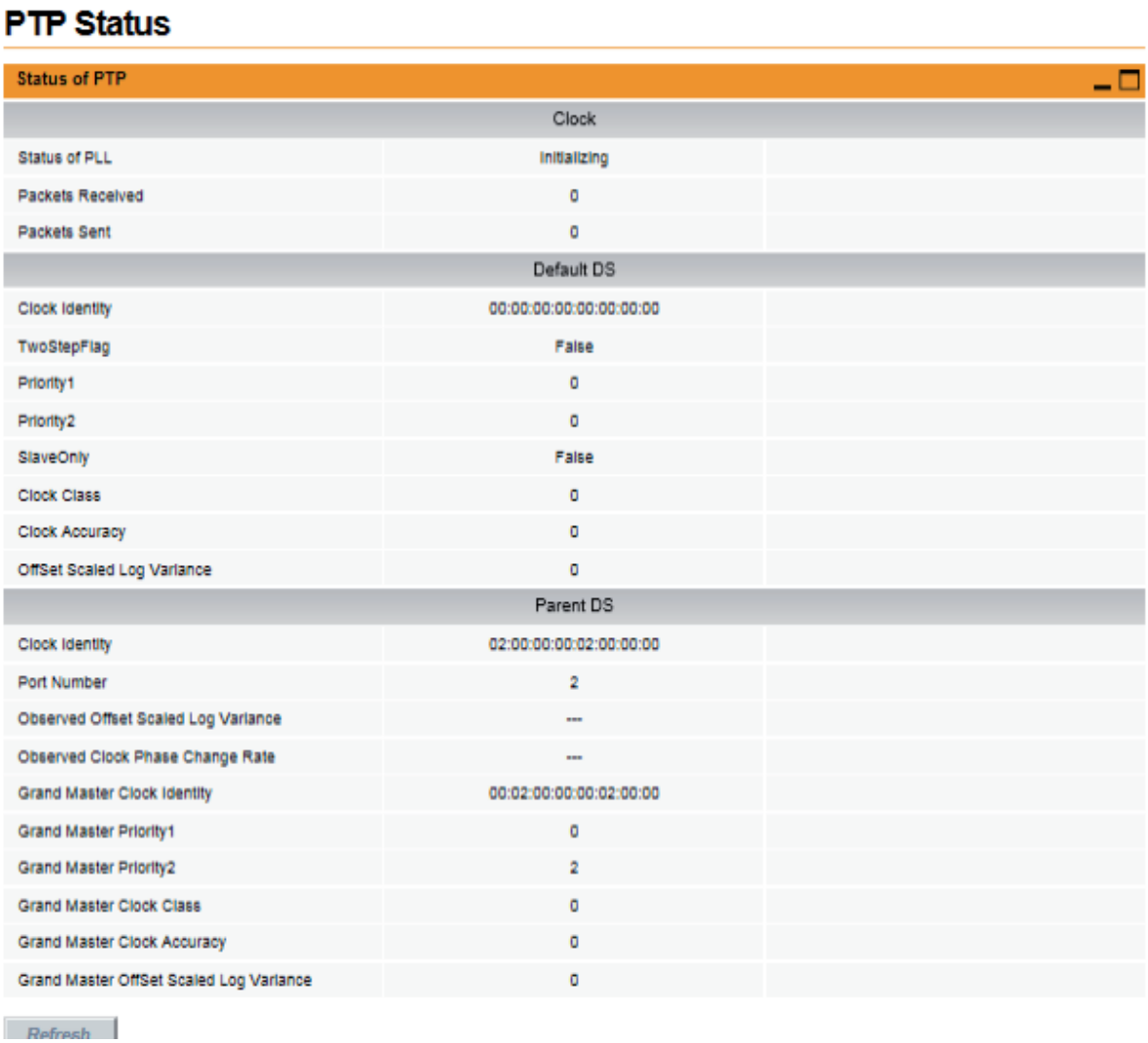


Figure 6-5: PTP Status window

The PTP Status table is composed by the following parameters

Parameter Group	Parameter	Description
Clock	**PLL Status**	
	Packets Received	
	Packets Sent	
Default DS	**Clock Identity**	
	TwoStepFlag	Two-step clock configuration of the PTP machine (enable|disable)
	Priority 1	Override criteria for best master clock selection (1..253)
	Priority 2	Particular switch priority when criteria matches (1..253)
	SlaveOnly	Slave only configuration of the PTP machine (enable|disable)
	Clock Class	Default clock Quality class(0..255)
	Clock Accuracy	Clock Quality accuracy type
	OffSet Scaled Log Variance	
Parent DS	**Clock Identity**	
	Port Number	
	Observed OffSet Scaled Log Variance	
	Observed Clock Phase Change Rate	
	Grand Master Clock Identity	
	Grand Master Priority 1	Override criteria for best master clock selection (1..253)
	Grand Master Priority 2	Particular switch priority when criteria matches (1..253)
	Grand Master Clock Class	Default clock Quality class(0..255)
	Grand Master Clock Accuracy	Clock Quality accuracy type
	Grand Master Observed OffSet Scaled Log Variance	

Table 6-5: PTP parameters

6.2.3 Interfaces

6.2.3.1 PON Interfaces

The PON Interface Status / GPON window is composed by the following tables:

- Physical Interfaces
- PON Interfaces

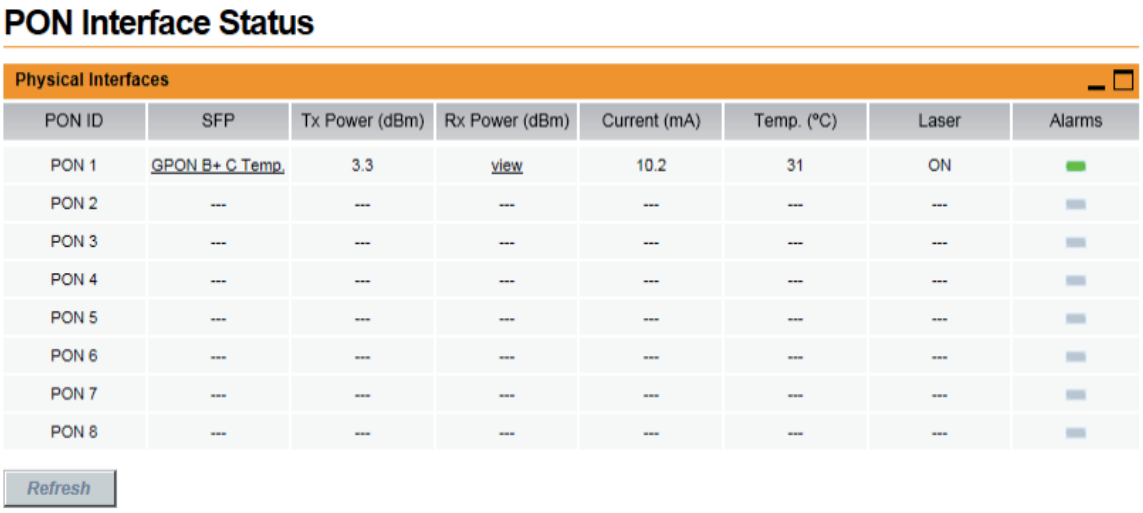


Figure 6-6: PON Interfaces Status

Passing the mouse over the inserted SFP/SFP+ module identification displays module standard information (bitrate, range and wavelength).

The Physical Interfaces Status table is composed by the following parameters:

Parameter	Description
PON Id	PON Interface identifier
SFP/SFP+	SFP/SFP+ module. By pressing the SFP/SFP+ module it's possible to view the SFP/SFP+ detailed information (Figure 6-)
Tx Power (dBm)	Indicates the transmitted optical power in dBm
Rx Power (dBm)	By pressing view the window will open, Figure 6- and it's possible to visualize the received optical power from each ONT
Current (mA)	Indicates the laser BIAS current in mA
Temp. (ºC)	Indicates the SFP+ module temperature in ºC
Laser	Indicates the Laser operational States

Table 6-6: Physical Interfaces Status parameters table

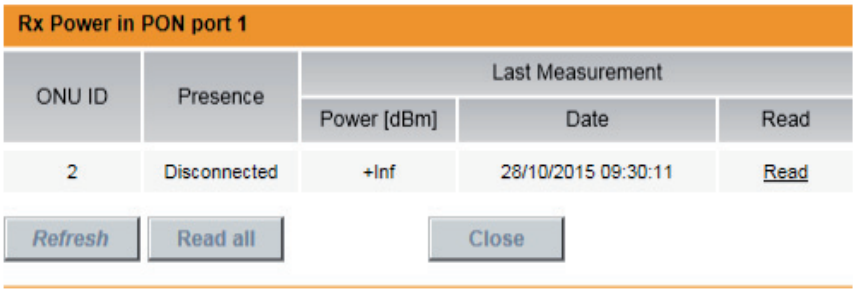


Figure 6-7: GPON Interface received power

The GPON interface received optical power table, Figure 6-7, is composed by the following parameters:

Parameter	Description
OnuId	ONU identifier
Power (dBm)	Optical power received from an ONT in a certain instant in dBm, in case the value is (0.0)* means that the ONU is in absent state
Date	Time when the measurement was made
Refresh	By pressing the "Refresh" button, a new measurement for that ONU will be made

Table 6-7: GPON interface received optical power parameters

Important!

Since the Received Optical Power measurement is slow, the user has the possibility to start a measurement for all ONU's by pressing the "Read All" button.

Passing the mouse over the inserted SFP module identification displays module standard information, Figure 6-8, in the example information for the standard GPON class B+ is displayed (bitrate, range and wavelength).

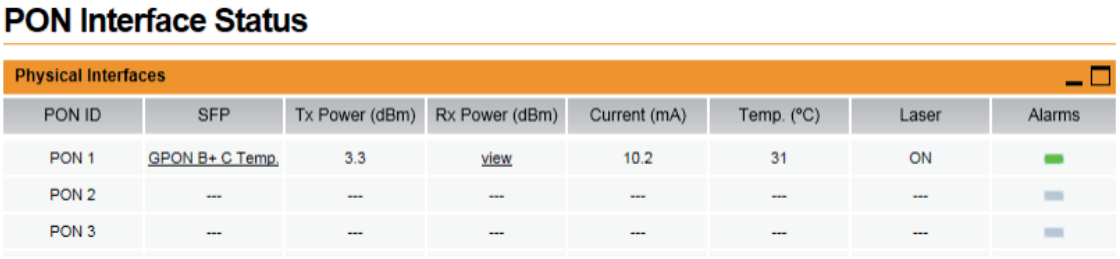


Figure 6-8: SFP Standard information

Selecting the SFP module identification opens a window, Base ID fields, with detailed module information, Figure 6-. By selecting the links in the bottom of the window, Extended ID Fields, /AD Status Bits / Base ID fields toggles the information displayed on the window corresponding to the selected link.

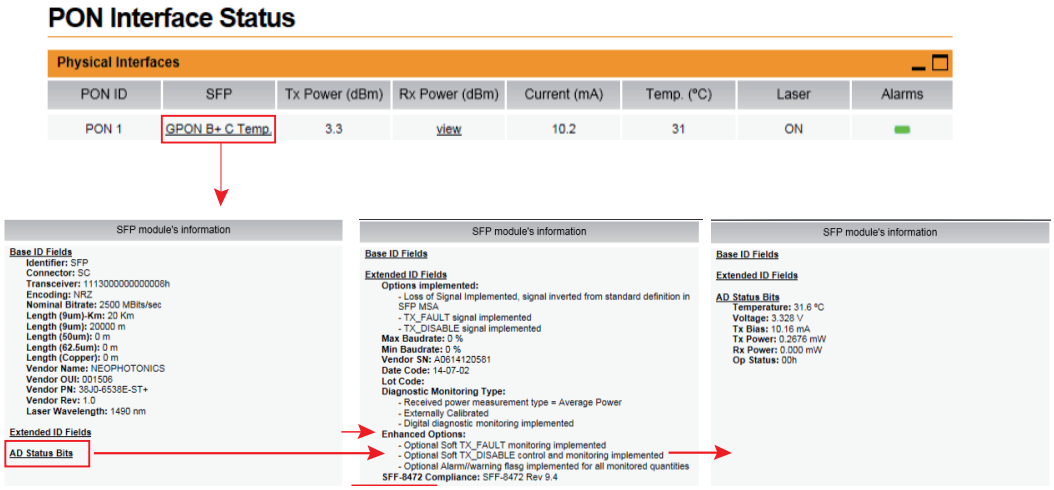


Figure 6-9: SFP Module detailed information

PON Interfaces

PON ID	Admin	Total Bandwidth (Kbps)				Details
		Fixed	Assured	Maximum	CBR	
PON 1	enabled	12 032	49 984	62 080	2 048	pon / ethernet / errors
PON 2	disabled	0	0	0	0	---
PON 3	disabled	0	0	0	0	---
PON 4	disabled	0	0	0	0	---
PON 5	disabled	0	0	0	0	---
PON 6	disabled	0	0	0	0	---
PON 7	disabled	0	0	0	0	---
PON 8	disabled	0	0	0	0	---

Refresh

Figure 6-10: GPON Interfaces Status

The GPON interface status table is composed by the following parameters:

Parameter	Description
PON Id	GPON interface identifier
Admin	GPON interface administrative state
Total Bandwidth (Kbps)	Indicates the GPON Interface allocated bandwidth: **Fixed:** Fixed Bandwidth (must be less than 1,2Gb/s) **Assured**: Assured Bandwidth (must be less than 1,2Gb/s) **Maximum**: Maximum Bandwidth **CBR**: CBR Fixed Bandwidth (must be less than 480Mb/s) (**Note**: Fixed plus Assured bandwidth must be less than 1,2Gb/s)
Details	By pressing in the pon, Ethernet and errors, a window with the respective counters will open
Parameter	**Description**
PON Id	GPON interface identifier
Admin	GPON interface administrative state

Table 6-8: PON Interfaces Status parameters table

By pressing the pon link the following window will open.

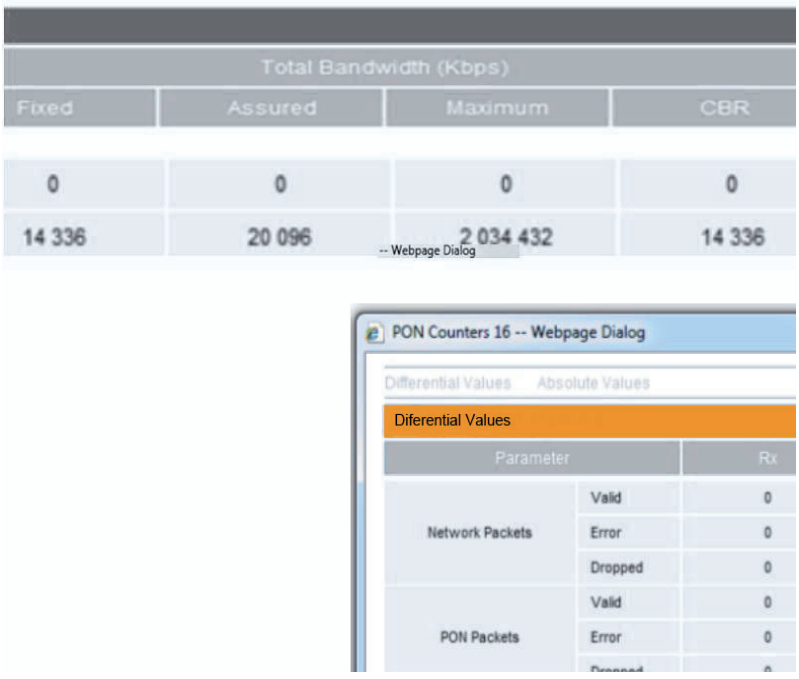


Figure 6-11: GPON counters

The GPON counters table is composed by the following parameters:

Parameter	Description
Network Packets	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted packets from/to the network
PON Packets	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted packets from/to the GPON
PLOAM	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted PLOAM packets from/to the network

Table 6-9: GPON counters parameters

By pressing the Ethernet link the following window will open:

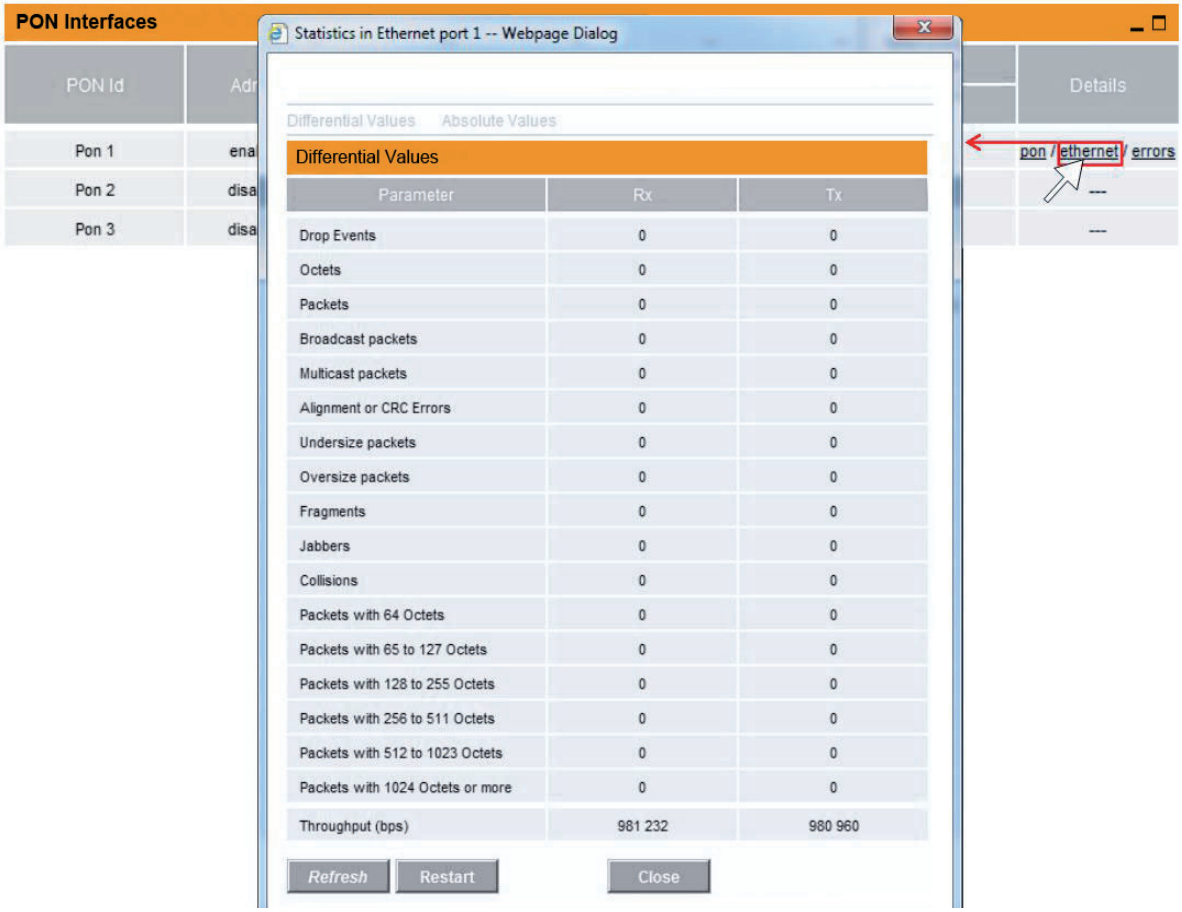


Figure 6-12: Ethernet Counters

The Ethernet Statistics table is composed by the following parameters:

Parameter	Description
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
Alignment or CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets with 64 Octets	Number of 64 bytes packets
Packets with 65 to 127 Octets	Number of packets with size between 65 to 127 bytes
Packets with 128 to 255 Octets	Number of packets with size between 128 to 255 bytes
Packets with 256 to 511 Octets	Number of packets with size between 256 to 511 bytes
Packets with 512 to 1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets with 1024 to 1518 Octets	Number of packets with size between 1024 to 1518 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate (1Mbit/s Granularity)

Table 6-10: Ethernet Statistics parameters

By pressing the errors link the following window will open:

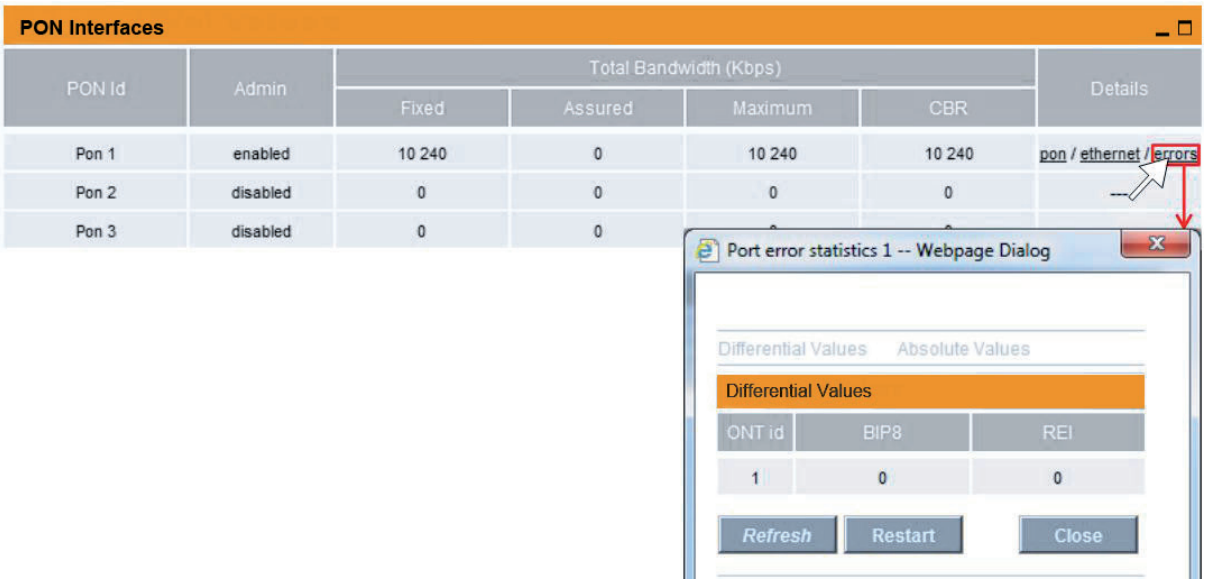


Figure 6-13: Port error statistics

The Port error statistics table is composed by the following parameters:

Parameter	Description
ONT id	ONT identifier
BIP8	Errors received by the OLT for each of the ONT's(upstream direction)
REI	Errors received by each of the ONT's(downstream direction)

Table 6-11: Port error statistics parameters

6.2.3.2 Ethernet Interfaces Status

The selection of Interfaces item opens an Ethernet Interface Status window composed by the following tables:

- Physical Interfaces
- Ethernet Interfaces

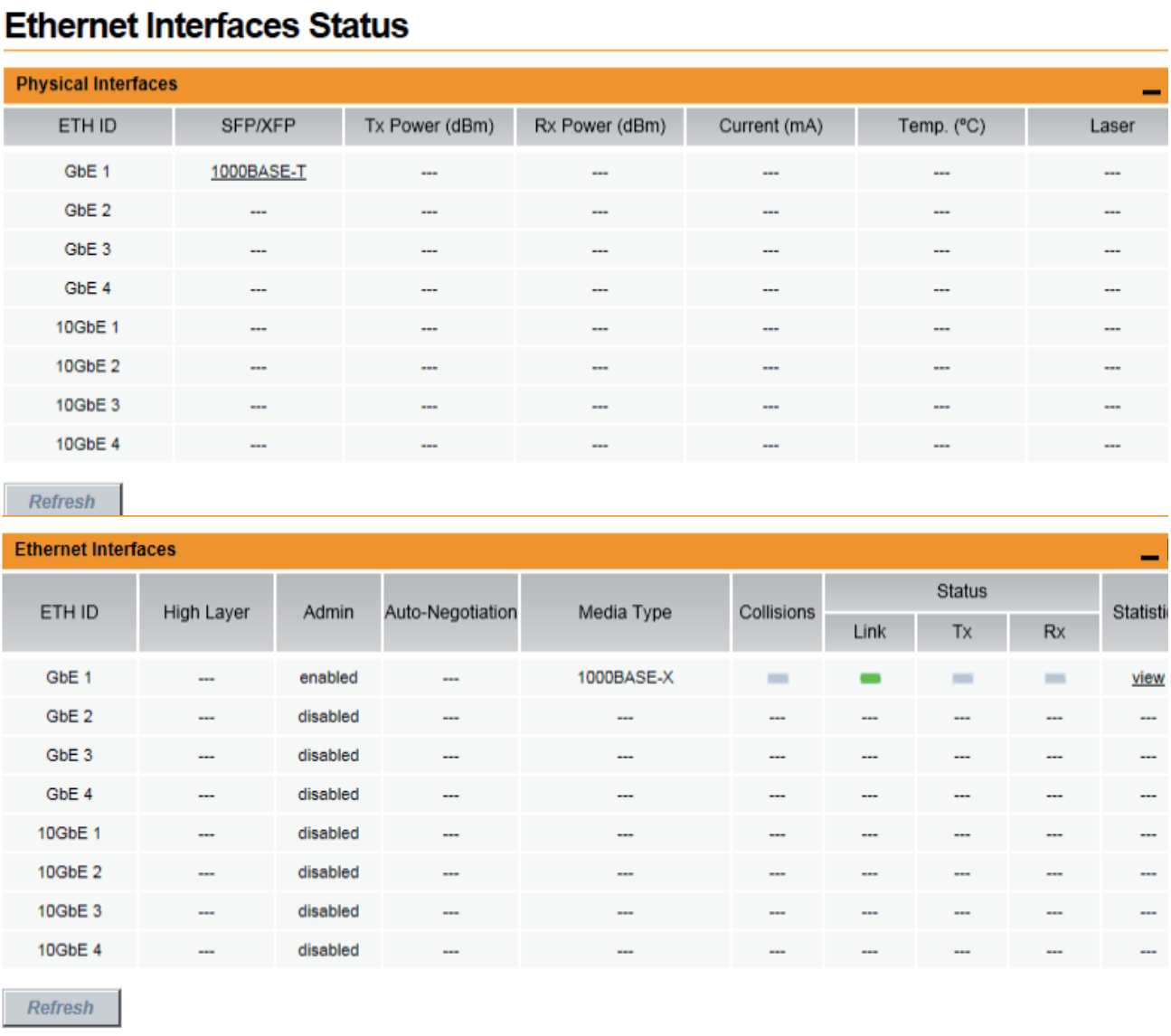


Figure 6-14: Ethernet Interfaces Status

The Physical Interfaces Status table is composed by the following parameters

Parameter	Description
Eth Id	Ethernet Interface identifier
SFP/XFP	SFP/XFP module. By pressing the SFP/XFP module it's possible to view the SFP/XFP detailed information
Tx Power (dBm)	Indicates the transmitted optical power in dBm
Rx Power (dBm)	Indicates the received optical power in dBm
Current (mA)	Indicates the laser BIAS current in mA
Temp. (ºC)	Indicates the XFP module temperature in ºC
Laser	Indicates the Laser operational States

Table 6-12: Physical Interfaces Status parameters table

Passing the mouse over the inserted SFP/SFP+ module identification displays module standard information (bitrate, range and wavelength).

The Physical Interfaces Status table is composed by the following parameters:

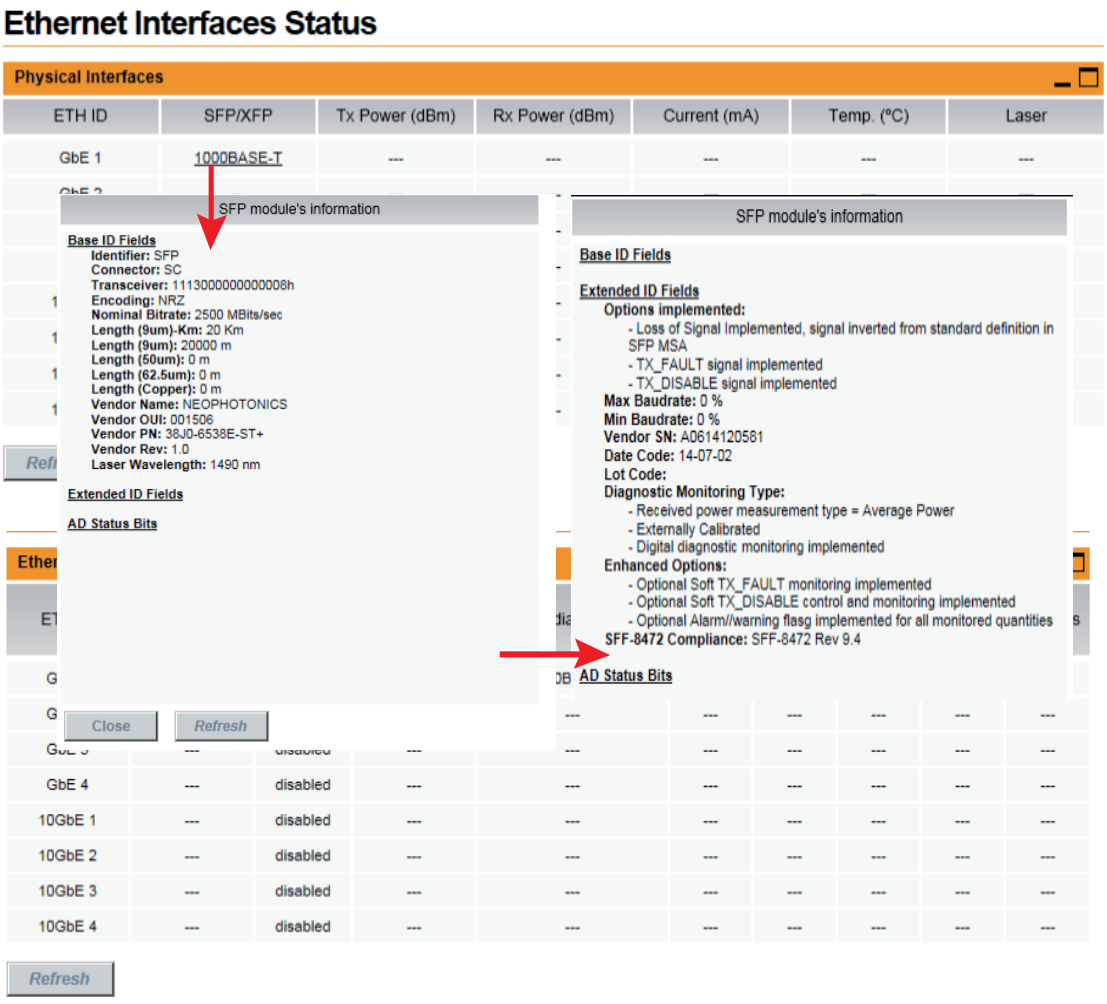


Figure 6-15: SFP/SFP+ module Detailed Information

The Ethernet Interfaces Status table, Figure 6-14, is composed by the following parameters:

Parameter	Description
Eth Id	Ethernet Interface identifier
High Layer	Indicates to each LAG (in case the port is a LAG member) the port belongs to
Admin	Ethernet port Administrative State
Auto-Negotiation	If the port is configured to Auto negotiation, indicates the Auto Negotiation State
Media Type	Indicates the Link Speed
Collisions	Not applicable in Full Duplex interfaces
Status	It's composed by the following columns: **Link:** Indicates the Link State **Tx:** Indicates if the interface is transmitting packets **Rx**: Indicates if the interface is receiving packets
Statistics	By pressing view, a window with the port statistics according with RFC2819 will open, Figure 6-. Differential and absolute values' statistics are available.

Table 6-13: Ethernet Interfaces Status parameters table

Differential Values

Parameter	Rx	Tx
Drop Events	0	0
Octets	0	0
Packets	0	0
Broadcast packets	0	0
Multicast packets	0	0
Alignment or CRC Errors	0	---
Undersize packets	0	---
Oversize packets	0	0
Fragments	0	---
Jabbers	0	---
Collisions	---	0
Packets with 64 Octets	0	0
Packets with 65 to 127 Octets	0	0

Figure 6-16: Ethernet Port Statistics

The Ethernet Port Statistics table is composed by the following parameters:

Parameter	Description
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
Alignment of CRC Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets with 64 Octets	Number of 64 bytes packets
Packets with 65 to127 Octets	Number of packets with size between 65 to 127 bytes
Packets with 128 to 255 Octets	Number of packets with size between 128 to 255 bytes
Packets with 256 to 511 Octets	Number of packets with size between 256 to 511 bytes
Packets with 512 to 1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets with 1024 to 1518 Octets	Number of packets with size between 1024 to 1518 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate (1Mbit/s Granularity)

Table 6-14: Ethernet Port Statistics parameters table

6.2.4 LAG Interfaces

The selection of Status menu item LAG Interfaces opens a LAG interfaces Status window, Figure 6-17, where it is possible to check the LAG and each LAG member status.

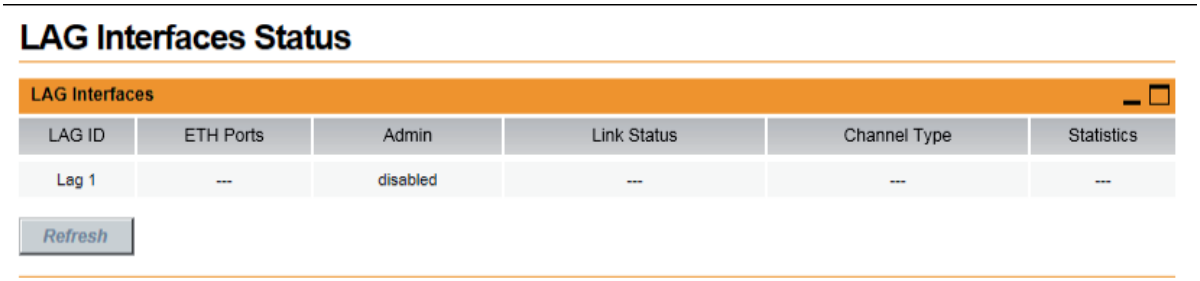


Figure 6-17: LAG interfaces status

The LAG interfaces Status table is composed by the following parameters:

Parameter	Description
Lag id	Indicates the LAG identifier
Eth Ports	Indicates the Ports that belong to the LAG. In case the port is red, it is in the collecting state. In case the port is green, it is in the distributing state.
Admin	Indicates the LAG Administrative State
Link Status	If at least one of the LAG members is up, the Link status is green, otherwise it's red.
Channel Type	Indicates if the LAG is Static, in this case it doesn't process or send LACPDU's, or it's Dynamic, in this case it processes and send's LACPDU's
Statistics	By pressing view a window with the transmitted and received packets by each interface will open (Figure 6-18)

Table 6-15: LAG interfaces Status parameters

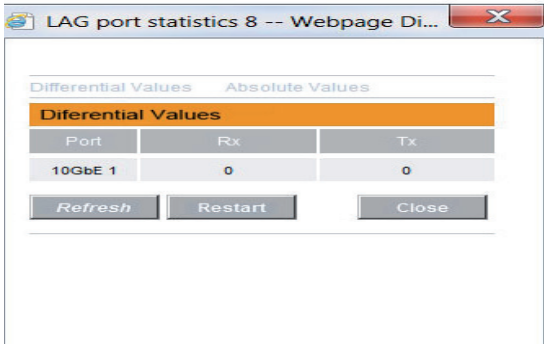


Figure 6-18: LAG port statistics

The LAG Port Statistics table is composed by the following parameters:

Parameter	Description
Slot	Identifies the slot to where the card to which the Port belongs is inserted
Port	Indicates the LAG member
Rx	Indicates the number of LACPDU's received
Tx	Indicates the number of LACPDU's transmitted

Table 6-16: LAG Port Statistics parameters

6.2.5 Services

The Services Status sub-menu has one item, Statistics. The selection of Statistics item opens a window, Figure 6-19, with service counters table:

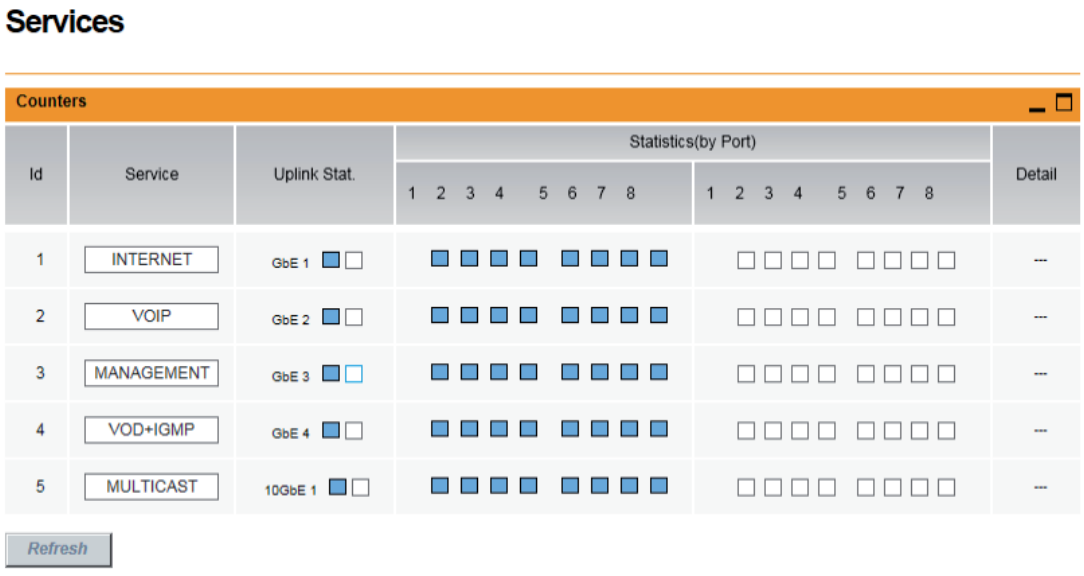


Figure 6-19: Services Counters window

The Services Counters table is composed by the following parameters:

Parameter	Description
ID	Indicates the service Identification number
Service	Indicates the service name
Ethernet/LAG	Indicates Ethernet (ETH number/Slot pair) or LAG interface. By pressing the counter for that specific interface is activated, by pressing the it's possible to view service specific counters; If the counter is activated, , both differential and absolute counter values are available, and can be displayed by pressing the Differential values or Absolute values in the counters dialog box, otherwise only differential values are available. The type of show counter information depends on the type of service. If the Service is of Type Multicast IGMP Counters are available.
PON	By pressing the counter for that specific PON port is activated, by pressing the it's possible to view service specific counters. If the Service is of Type Multicast IGMP Counters are also available, Figure 6-21.
Slot	Indicates the Slot. By pressing the it's possible to view service specific counters (Only to Unicast services with DHCP Relay Agent) Both differential values and Absolute values area available to display by pressing the Differential values or Absolute values in the DHCP Slot Statistics dialog box, Figure 6-20.
Detail	Links present in the details column allow obtaining more detailed information on service

Table 6-17: Services Counters parameters table

In the Services Counters table, there are the counters associated to each client taking into account the Service VLANs.

By pressing the counter for that specific port is activated, by pressing the it's possible to view service specific counters. Depending on the type of service, it's possible to view the following counters:

- Unicast Services with DHCP op.82, op.37 and op.18 Relay Agent: dhcp counters, Figure 6-20.
- Multicast Services: IGMP v2 and v3 counters,Figure 6-21
- Total Packets: for all types of services, Figure 6-22

Differential Values

Parameter	Rx	Tx
Drop Events	0	0
Octets	0	0
Packets	0	0
Broadcast packets	0	0
Multicast packets	0	0
Alignment or CRC Errors	0	---
Undersize packets	0	---
Oversize packets	0	0
Fragments	0	---
Jabbers	0	
Collisions	---	0
Packets with 64 Octets	0	0
Packets with 65 to 127 Octets	0	0
Packets with 128 to 255 Octets	0	0
Packets with 256 to 511 Octets	0	0
Packets with 512 to 1023 Octets	0	0
Packets with 1024 Octets or more	0	0
Throughput (bps)	0	0

Refresh Restart Close

Figure 6-20: DHCP counters

The DHCP statistics table is composed by the following parameters:

Parameter	Description
Valid Packets	Indicates the number of transmitted and received valid DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets • **Without Options** • **Option 82** • **Option 37** • **Option 17**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets • **Without Options:** • **Option 82** • **Option 37** • **Option 17**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Pack with Opts Untrusted	Number of dropped packets because they are client requests with options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)
Server Pack without Options Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

Table 6-18. DHCP statistics parameters

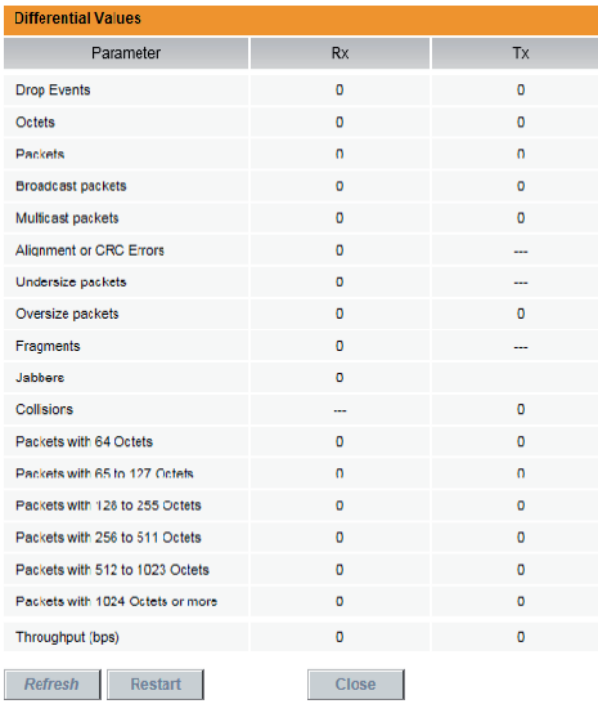


Figure 6-21: IGMP Counters

T

he IGMP statistics table is composed by the following parameters:

Parameter	Description
Packets	Indicates the number of transmitted and received packets (Total and Partial counters displayed): • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3	Number of Transmitted and Received IGMPv3 packets (Total and Partial counters displayed) of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**
Queries	Number of transmitted and Received Queries (Total and Partial counters displayed) • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

Table 6-19: IGMP Statistics parameters

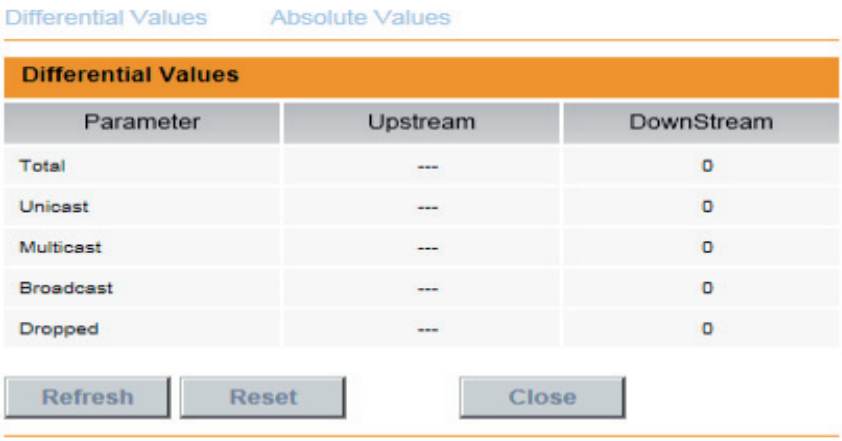


Figure 6-22: Packets Port Counters

The Packets port statistics table is composed by the following parameters:

Parameter	Description
Total	Total number of packets
Unicast	Total number of Unicast packets
Multicast	Total number of Multicast packets
Broadcast	Total number of Broadcast packets
Dropped	Total number of Dropped packets

Table 6-20: Packets port statistics parameters

6.2.6 MAC Table

The MAC Table Status sub-menu has two items,

- GPON
- Switch

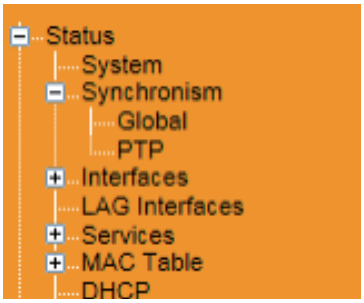


Figure 6-23: MAC Table Status sub-menu

6.2.6.1 GPON

GPON menu item opens a PON MAC Table window, Figure 6-24, composed by two tables:

- Filters: selects criteria to visualize MAC addresses;
- MAC table: Learned client MAC addresses displayed according to filter options

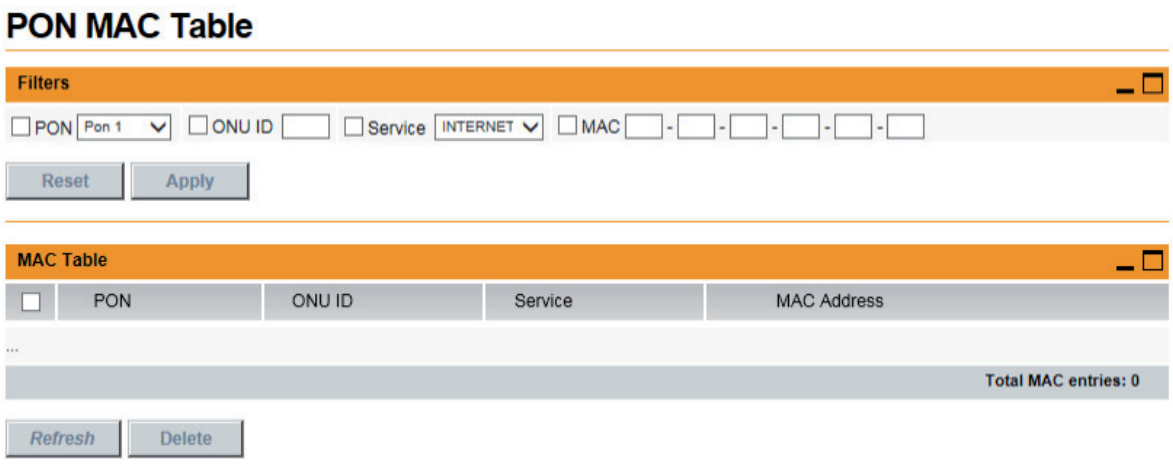


Figure 6-:24 GPON MAC table

For the Unicast Unstacked Services, MAC learning is performed, learning the MAC addresses of the several clients. The MAC address table can be very large, in which case in order to facilitate analysis of the table, MAC address filtering must be used, to select and display only the desired MAC addresses.

The filter definition criteria parameters are the following:

Parameter	Description
PON	Selection of PON interface to filter from a list of available PON interfaces
ONU ID	Selection of ONU# to filter from a list of available ONUs
Service	Selection of service to filter from a combo box with the available services
MAC Address	Selection of MAC address to filter by introducing the desired MAC address

Table 6-21: Filter selection parameters

The MAC address table is composed by the following parameters:

Parameter	Description
PON	Indicates the PON interface
ONU ID	Indicates the ONU
MAC Address	Indicates the learned MAC address
Total MAC entries	Indicates the total number of MAC entries in the table

Table 6-22: MAC address parameters

For each GPON interface it's possible to learn up to 4096 MAC addresses. The MAC addresses are removed from the MAC table in the following situations:

- Aging time has expired
- ONT Eth port to which the service is connected is turned off
- The service is removed from the ONT
- By selecting the MAC address and press Delete.

6.2.6.2 Switch

Switch menu item opens a Switch MAC Table window,Figure 6-25, composed by two tables:

- Filters: selects criteria to visualize MAC addresses;
- MAC table: Learned client MAC addresses displayed according to filter options

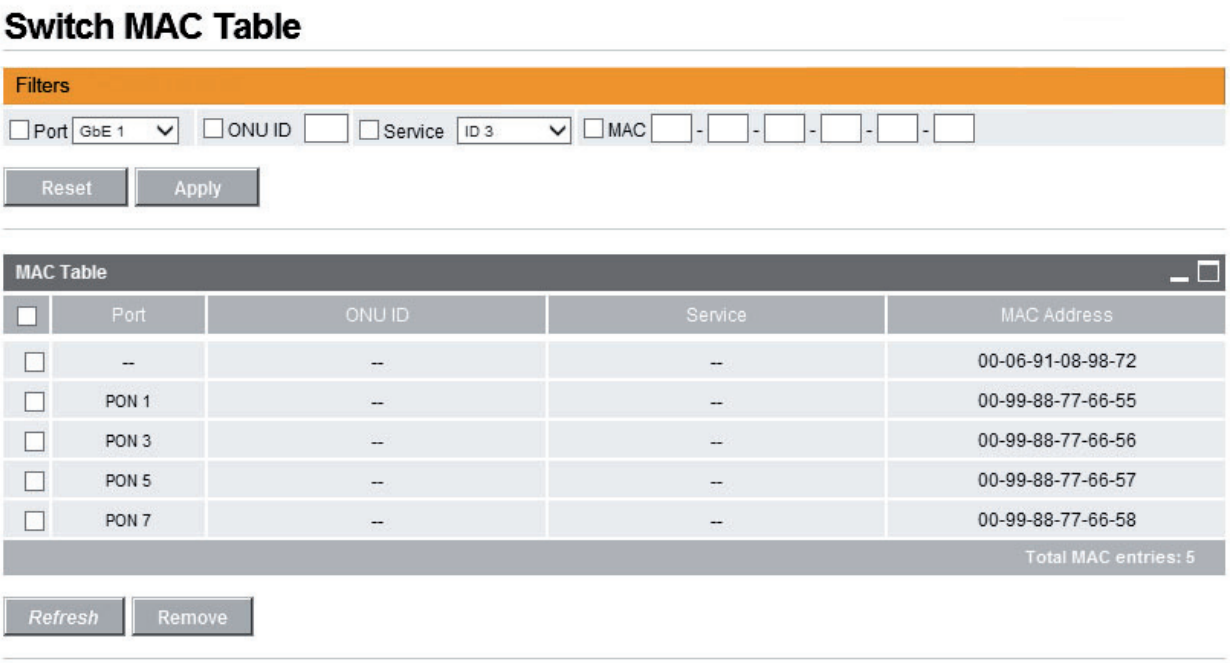


Figure 6-25: Switch MAC table window

For the Unicast Unstacked Services and for the Management VLAN, MAC learning is performed, learning the MAC addresses of the several clients. The MAC address table can be very large, in which case in order to facilitate analysis of the table, MAC address filtering must be used, to select and display only the desired MAC addresses.

The filter definition criteria parameters are the following:

Parameter	Description
Port	Selection of PON interface to filter from a list of available Port interfaces
ONU ID	Filtering by ONU ID: the desired ONU ID must be typed in
Service	Selection of Service Id to filter from a list of available Services
MAC Address	Selection of MAC address to filter by introducing the desired MAC address

Table 6-23: Filters selection parameters

The MAC address table is composed by the following parameters:

Parameter	Description
Port	Indicates the Port
ONU ID	Indicates the ONU
Service	Indicates the Service. In case "--"the MAC learned isn't associated to any service.
MAC Address	Indicates the learned MAC address
Total MAC entries	Indicates the total number of MAC entries in the table

Table 6-24: MAC address parameters

The MAC addresses are removed from the MAC table in the following situations:

- Aging time has expired
- By selecting the MAC address and press Delete

6.2.7 DHCP

DHCP Status menu item opens a DHCP Relay window, Figure 6-26, composed by two tables:

- Filters: selects criteria to visualize DHCP Relay List,
- DHCP Relay List

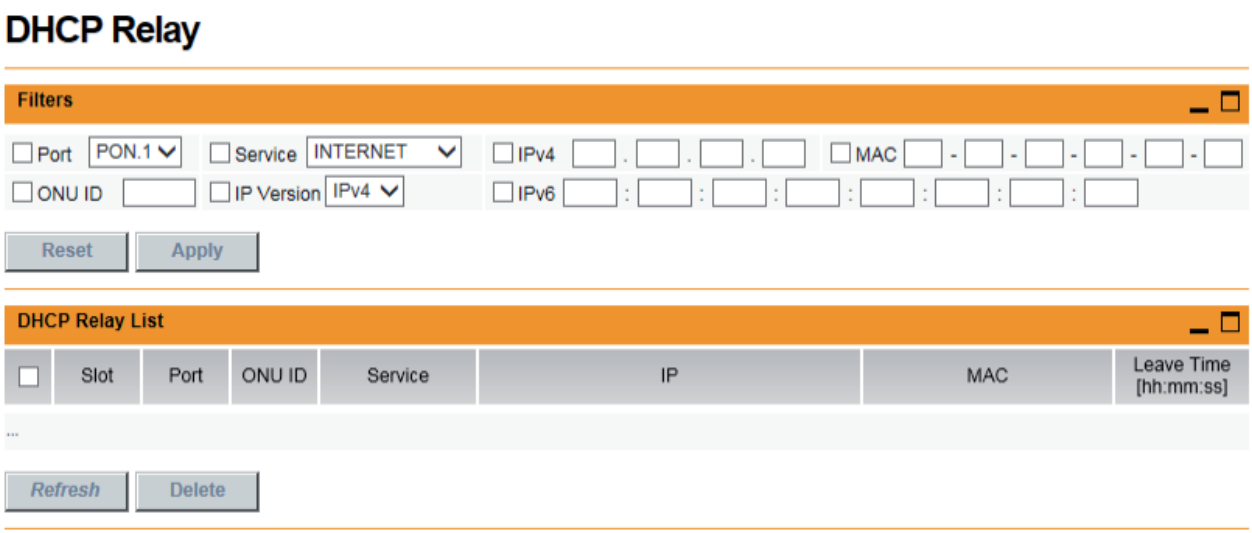


Figure 6-26: DHCP Relay status Window

DHCP Relay List shows information related with the messages changed between the DHCP clients and servers, indicating the client/MAC/IP association and the respective lease time. DHCP snooping is only made in DHCP op.82 services.

Filtering can be used, to select and display only the desired entries on the list.

The filter definition criteria parameters are the following:

Parameter	Description
PON	Selection of PON interface to filter from a list of available PON interfaces
Service	Selection of Service Id to filter from a list of available Services
ONU ID	Selection ONU ID to filter by introducing the desired ONU ID
IP Version	Selection of IP version (IPv4 or IPv6)
IPv4/IPv6	Selection of IPv4/IPv6 address to filter by introducing the desired IPv4/IPv6 address
MAC Address	Selection of MAC address to filter by introducing the desired MAC address

Table 6-25: DHCP Relay filter selection parameters

The DHCP Relay List is composed by the following parameters:

Parameter	Description
Port	Indicates the Port for the learned entry
ONU ID	Indicates the ONU for the learned entry
Service	Indicates the service for which the entry was learned
IP	Indicates the client IP Address
MAC	Indicates the client MAC Address
Leave Time [hh:mm:ss]	Indicates the time it take for the entry to be removed. In case this value is 00:00:00 indicates that there was an IP request from the client (DHCP Request) and there wasn't any response from the server (DHCP ACK).

Table 6-26: DHCP Relay List parameters

6.2.8 Multicast

The Multicast Status sub-menu has two items,Figure 6-27:

- Active Groups
- Probe

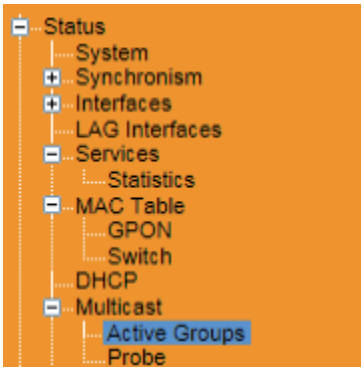


Figure 6-27: Multicast Status sub-menu

6.2.8.1 Active Groups

The Status submenu Multicast Active Groups item selection opens an Active Groups window composed of two tables:

- Filters
- Active Groups

In the Active Groups window, Figure 6-28, is possible to visualize the Multicast IP Groups present at OLT, as well as the customers that are watching them. The List of active groups can be very large, in which case filters can be used to display a list Active Groups according to the selection criteria defined in the filter.

Figure 6-28: Active Groups window

In order to visualize status information for an active group, the multicast service associated to the group must be selected on the Service combo box, Figure 6-29. Refresh button will apply the current filter definitions to display the channels that satisfy the specified selection criteria.

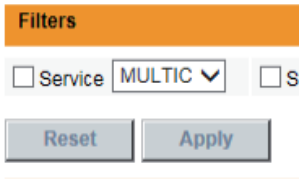


Figure 6-29: Active Groups Filter Service Combo box

Parameter	Description
Service	Selection of Multicast Service Id to filter from a list of available Multicast Services
Static	Yes for a static Group selection
Source	Selection of the Multicast IP address to filter by introducing the desired Multicast IP address
IP	Selection of the Multicast IP address to filter by introducing the desired Multicast IP address

Table 6-27: Active Groups selection filter configuration parameters

The Active Groups table is composed by the following parameters:

Parameter	Description
Service	Indicates the name of the Multicast Service
Static	Yes for a static Group selection
IP Address	Indicates the Multicast Group IP address
Details	By pressing Details a dialog box with the active users watching the Multicast Group will open; A selection filter is available to define the active users display selection criteria. The user is identified by PON, ONU ID and Client Service ID. (Figure 6-)

Table 6-28: Active Groups parameters table

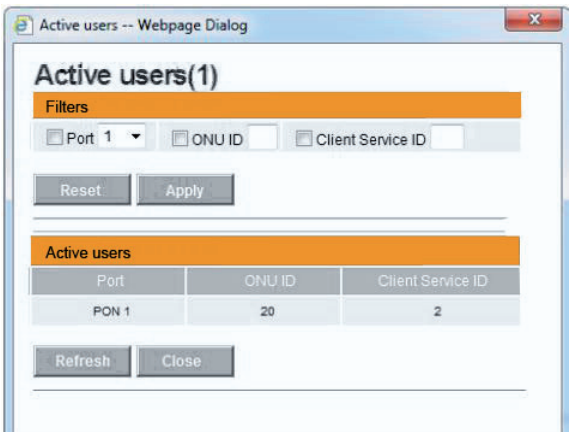


Figure 6-30: Active users dialog box

6.2.8.2 Probes

The selection of Status submenu Multicast, Probe Item will open a Probes window, Figure 6-. To check if the Multicast traffic is actually being received in the OLT, Multicast Probes can be activated to view the Multicast Packets received for a specific group. It's possible to apply Index, Admin, Service and IP filters to be easier to sort the desired probe(s).

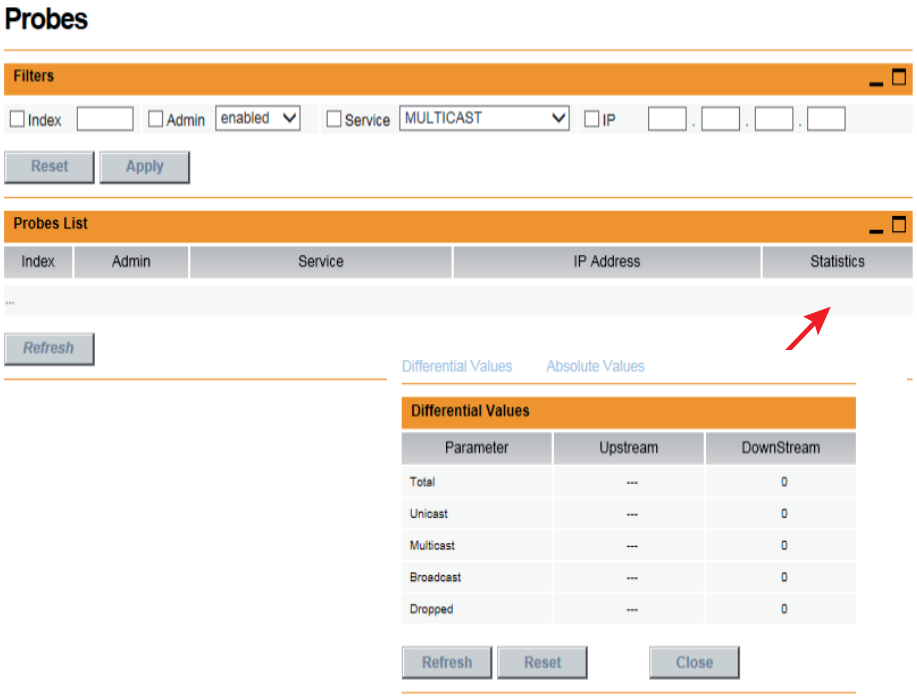


Figure 6-31: Status Multicast Probes window and Statistics

The Probes List table is composed by the following parameters:

Parameter	Description
Index	Indicates the Probe Index
Admin	Indicates the Probe Administrative State (Enable | Disable)
Service	Indicates the name of the Multicast Service
IP Address	Indicates the Multicast Group IP address
Statistics	By pressing view a window with the Multicast Group Statistics will open, Figure 6-

Table 6-29: Probes List parameters table

6.2.9 Remote Equipment

The Status submenu Remote Equipments has one item ONUs.

The Status submenu Remote Equipments, ONUs item selection opens an ONU Status window composed of eight tables:

- ONU Selection, Figure 6-32;
- Ethernet Interfaces, Figure 6-33;
- Analog RF Interfaces, Figure 6-35;
- GPON Interfaces, Figure 6-36;
- Service Counters, Figure 6-39;
- GEM Port Counters, Figure 6-38;
- Service Counters, Figure 6-39;
- Software Images and Maintenance, Figure 6-43.
- T-CONT,Figure 6-44 .

The ONU Selection table, Figure 6-32, allows the setting of criteria to filter the ONUs for which status information will be displayed in the remaining tables.

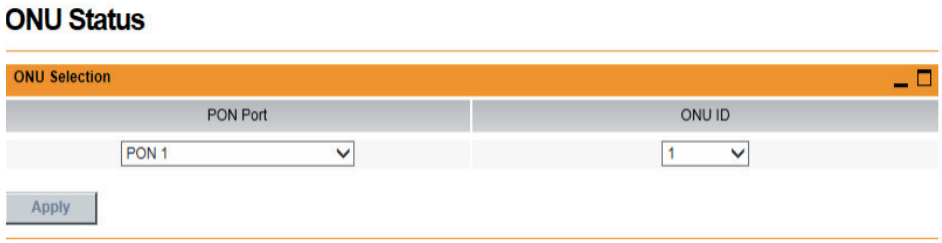


Figure 6-32: ONUs Status window: selection table

Parameter	Description
PON Port	Indicates the PON Port
ONU Id	Indicates the ONU Id

Table 6-30: ONU Selection parameters

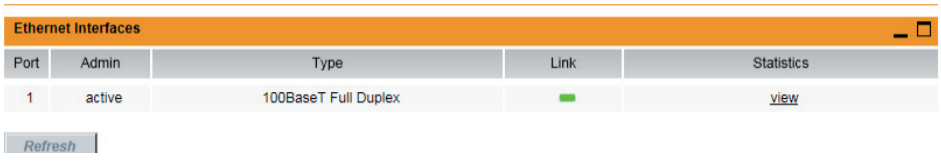


Figure 6-33: ONU Status window: Ethernet Interfaces Table

The Ethernet Interfaces status table is composed by the following parameters:

Parameter	Description
Port	Indicates the Ethernet Port
Admin	Indicates the Administrative State
Type	Indicates the link speed and duplex
Link	Indicates the physical port state
Statistics	By pressing view a dialog box with the Ethernet counters will open, Figure 6-34

Table 6-31: Ethernet Interfaces Status parameters

Differential Values

Parameter	Rx	Tx
Drop Events	0	---
Octets	0	0
Packets	0	0
Unicast Packets	0	0
Broadcast Packets	0	0
Multicast Packets	0	0
CRC Align Errors	0	---
Undersize packets	0	---
Oversize packets	0	---
Fragments	0	---
Jabbers	0	---
Collisions	---	0
Packets with 64 Octets	0	---
Packets with 65 to 127 Octets	0	---
Packets with 128 to 255 Octets	0	---
Packets with 256 to 511 Octets	0	---
Packets with 512 to 1023 Octets	0	---
Packets with 1024 Octets or more	0	---
Buffer Overflows	0	0

Figure 6-34: Ethernet Port Statistics

The Ethernet Statistics table is composed by the following parameters:

Parameter	Description
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Unicast Packets	Number of Unicast Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)

Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets with 64 Octets	Number of 64 bytes packets
Packets with 65 to 127 Octets	Number of packets with size between 65 to 127 bytes
Packets with 128 to 255 Octets	Number of packets with size between 128 to 255 bytes
Packets with 256 to 511 Octets	Number of packets with size between 256 to 511 bytes
Packets with 512 to 1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets with 1024 to 1518 Octets	Number of packets with size between 1024 to 1518 bytes
Buffer Overflows	

Table 6-32: Ethernet Statistics parameters table:

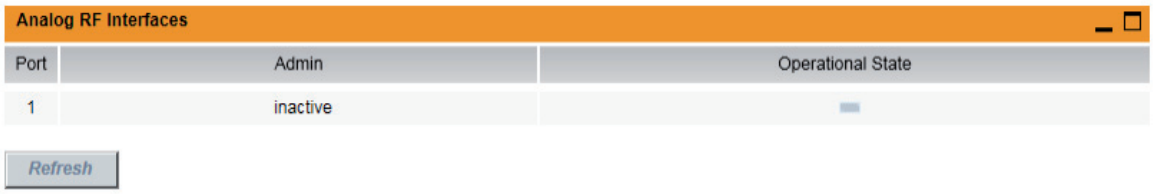


Figure 6-35: Analog RF Interfaces table

The Analog RF Interfaces Status table is composed by the following parameters:

Parameter	Description
Port	Indicates the Analog RF Port
Admin	Indicates the Administrative State
Operational State	Indicates the Port Operational State

Table 6-33: Analog RF Interfaces parameters

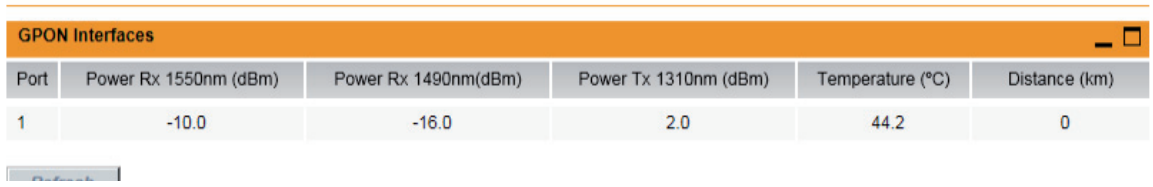


Figure 6-36: GPON Interface table

The GPON Interfaces table is composed by the following parameters:

Parameter	Description
Port	Indicates the GPON Port
Power Rx 1550nm (dBm)	Indicates the 1550 nm Received Optical Power in dBm
Power Rx 1490nm (dBm)	Indicates the 1490 nm Received Optical Power in dBm
Power Tx 1310nm (dBm)	Indicates the 1310 nm Transmitted Optical Power in dBm
Temperature (ºC)	Indicates the ONT Temperature in ºC
Distance (Km)	Indicates the ONT distance in Km

Table 6-34: GPON interfaces parameters

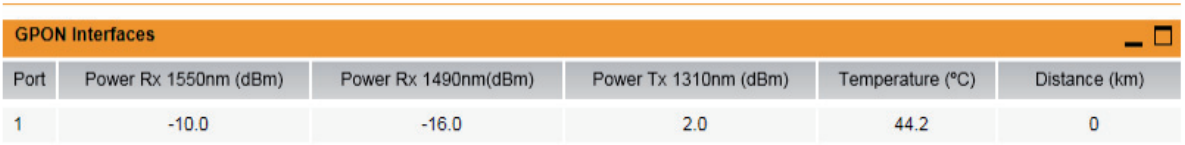


Figure 6-37: E1 Interface table

The E1 Interfaces table is composed by the following parameters:

Parameter	Description
Port	Indicates the E1 Port
Admin	Indicates E1 interface administrative state
PDH	

Table 6-35: E1 interfaces parameters

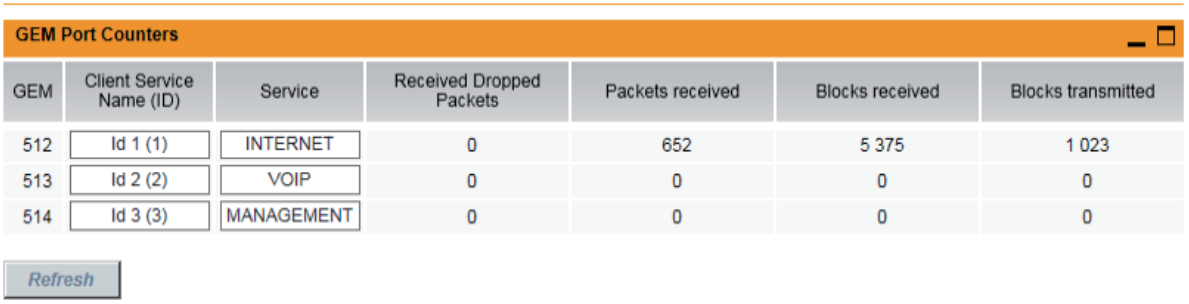


Figure 6-38: GEM Port counters table

The GEM Port Counters table is composed by the following parameters:

Parameter	Description
GEM	GEM ID
Client Service Name (ID)	Identification of Client Service (number)
Service	OLT Service identification (Name)
Received Dropped Packets	Indicates the number of received dropped packets
Packets received	Indicates the number of received packets
Blocks received	Indicates the number of received GEM blocks
Blocks transmitted	Indicates the number of transmitted GEM blocks

Table 6-36: GEM Port Counters parameters

In the Service Counters table, there are the counters associated to each client taking into account the Service and Client Vlans. By pressing the links on the columns "Statistics (control packets)" and "Statistics (Total packets)" it's possible to view service specific counters:

- Unicast Services with DHCP op.82 Relay Agent: DHCP counters
- Multicast Services: IGMP counters and Active Channels
- Total Packets: for the Unicast, UniVoIP or Bitstream stacked services is possible to activate Total Packets counters

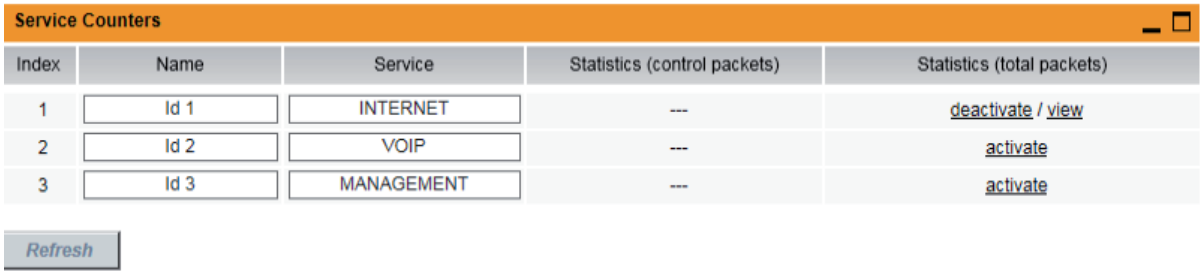


Figure 6-39: Services counters

The Service Counters table is composed by the following parameters:

Parameter	Description
Index	Indicates the Service Index
Name	Client Service Identification (Name)
Service	Indicates the Service Name
Statistics (Control Packets)	By pressing the links it's possible to view Control Plane Packets associated with the service
Statistics (Total Packets)	By pressing the links it's possible to activate/deactivate/view Data Plane Packets associated with the service

Figure 6-40: Service Counters parameters table

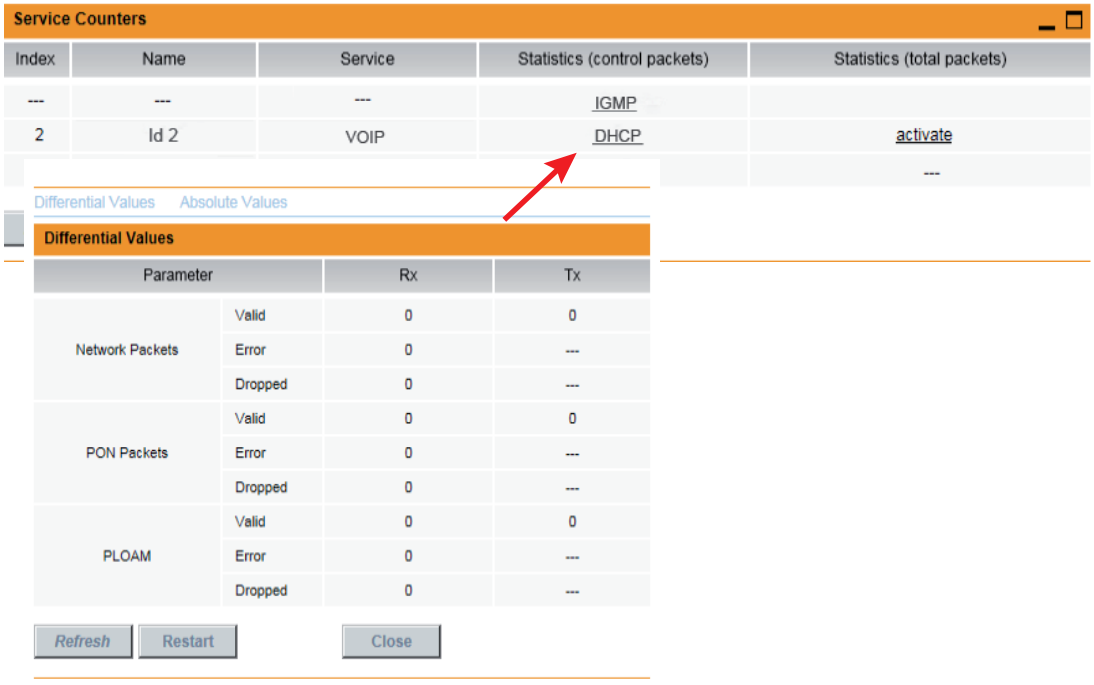


Figure 6-41: DHCP Statistics per client/service

The DHCP statistics table is composed by the following parameters:

Parameter	Description
Valid Packets	Indicates the number of transmitted and received DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets: **Without options** **Option 82** **Option 37** **Option 18**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets: **Without options** **Option 82** **Option 37** **Option 18**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Packets with Opts Untrusted	Number of dropped packets because they are client requests with Options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)
Server Packets without Opts Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

Table 6-37: DHCP statistics parameters table

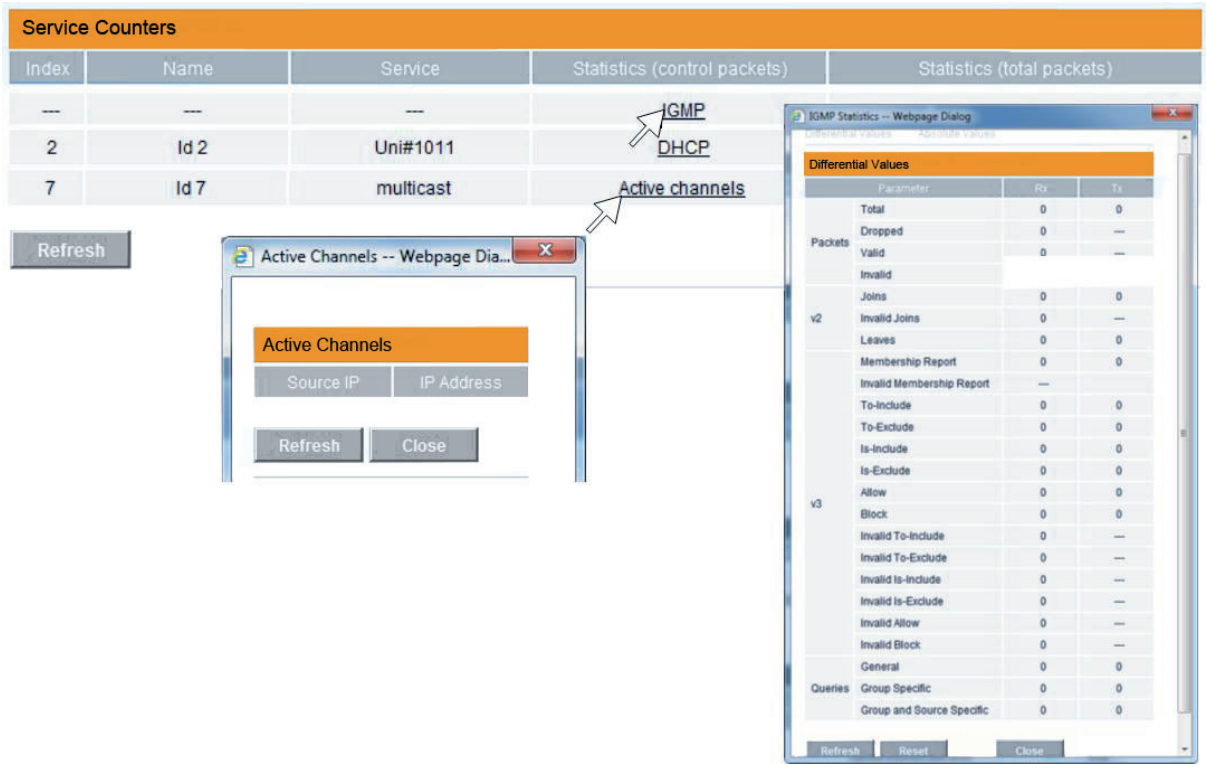


Figure 6-42: IGMP counters per client/service

The IGMP statistics table is composed by the following parameters:

Parameter	Description
Packets	Indicates the number of transmitted and received packets (Total and Partial counters displayed): • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3	Number of Transmitted and Received IGMPv3 packets (Total and Partial counters displayed) of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**
Queries	Number of transmitted and Received Queries (Total and Partial counters displayed) • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

Table 6-38: IGMP statistics parameters

In the Multicast Services it's possible to view the Multicast Groups the client is watching, Figure 6-31.

In Software Images and Maintenance table it's possible to check the ONU/T's firmware version, as well as the Maintenance state and a command to stop the SW/FW upgrade.

Figure 6-43: Software and Maintenance table

The Software Images and Maintenance table is composed by the following parameters:

Parameter	Description
Image	Indicates the Image name
SW	**Active**: Indicates which of the images is active, after the message "Upload finished correctly", pressing No the active version will change, the ONT will reboot and startup with the new version. **Committed:** Indicates which of the images is active after a reboot, after the message "Upload finished correctly", pressing No the committed version will change **Valid:** Indicates if the SW/FW version is Valid **Version:** Indicates the SW/FW version name
Maintenance	Indicates the Firmware Download state
Alarm	Indicates the state of the last upgrade
Command	Command to stop upgrading the ONT's FW

Table 6-39: Software Images and Maintenance parameters

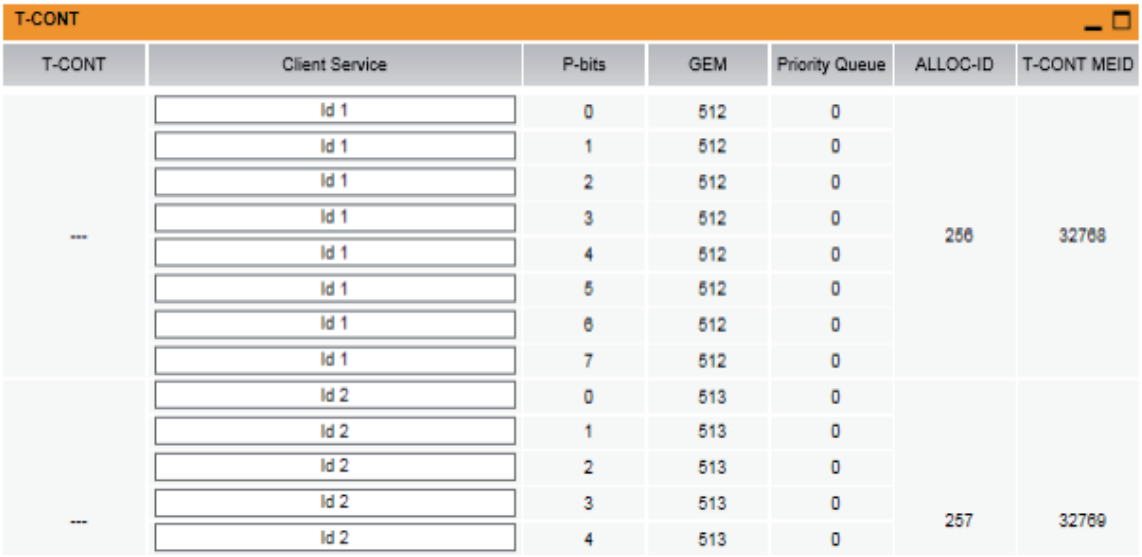


Figure 6-44: T-CONT table

The T-CONT table is composed by the following parameters:

Parameter	Description
T-CONT	Identifies the T-CONT
Client Service	Indicates Client Service
Priority Bit	Indicates used priority bits
GEM	Indicates used GEM
Priority Queue	Indicates Used priority queue
ALLOC-ID	Indicates ALLOC-ID
T-CONT MEID	Indicates T-CONT MEID

Table 6-40: T-CONT table parameters

6.2.10 Protection Schemes

The Protection Schemes Status sub-menu has two items, Figure 6-45:

- ETH Ring/G.8032
- GPON Type B
- ETH Uplink

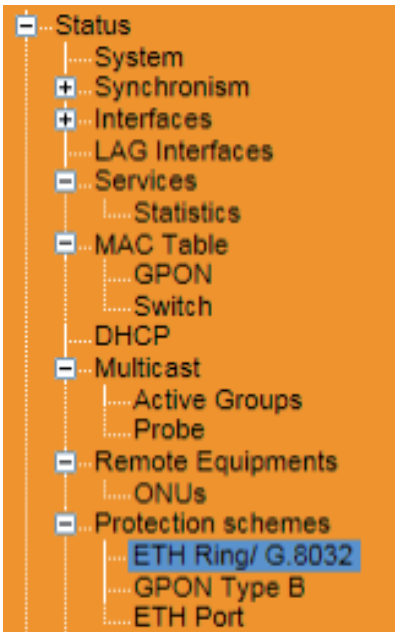


Figure 6-:45 Protection Schemes sub-menu

6.2.10.1 ETH Ring/G.8032

The Protection Schemes sub menu item ETH Ring/G.8032 item selection opens a window, composed of an Ethernet Ring Protection status table with information on the working and protection instances part of the Ethernet protection ring scheme. It is possible in this window to:

- Check which of instances and interfaces are in the protection state
- View details on the APS channel status
- View the configured values for the timers
- Send commands to force/ maintain or clear Ring protection switching.

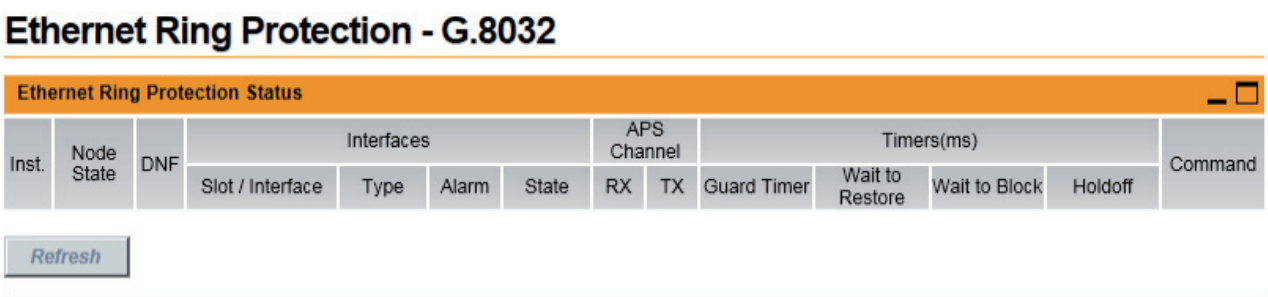


Figure 6-46: Ethernet Ring Protection status window

Parameter Group	Parameter	Description
Inst		ERP instance Id (number)
Node State		Identifies node state Protection/--
Interfaces	**Slot/Interface**	Identifies interface in the system by Slot/ interface pair
	Type	Identifies interface protection classification (RPL/Non RPL/RPL Neighbor)
	Alarm	This alarm signals activity in the interface
	State	Interface state (Blocking/Flushing)
APS Channel	**RX/TX**	Automatic Protection Switch Channel receiver and transmitter state per interface. Selecting view opens a dialog box with more detailed information, on APS channel, RX per port, Figure 6- and APS Channel, TX, Figure 6-48
Timers (ms)	**Guard Time**	Shows configured guard timer value
	Wait to Restore	Shows configured Wait to Restore timer value
	Wait to Block	Shows configured Wait to Block timer value
	Holdoff Time	Shows configured Holdoff timer value
Commands		Send link selection sends the command chosen from a combo box. Available commands are: • **Clear:** clear switching • **FS:** Force switching • **MS:** Maintain switching

Table 6-41: ERP Instance Configuration details Dialog Box parameters

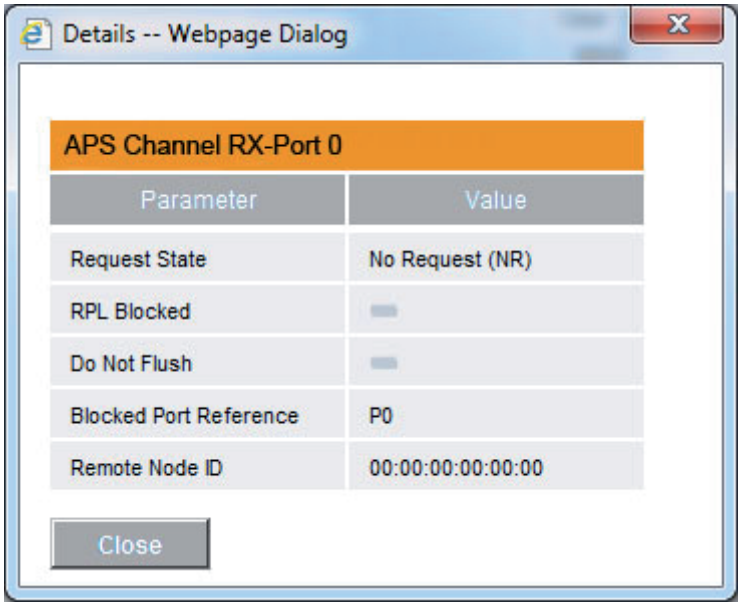


Figure 6-47: APS Channel RX per port detailed status information

Parameter	Description
Request State	Received APS channel request state message
RPL Blocked	Visual indicator on RPL Blocked State
Do not Flush	Visual indicator on Do not Flush message
Blocked Port Reference	Blocked port reference ID
Remote Node ID	Identification of Remote Node by ID

Table 6-42: APS Channel, RX per port, detailed status parameters

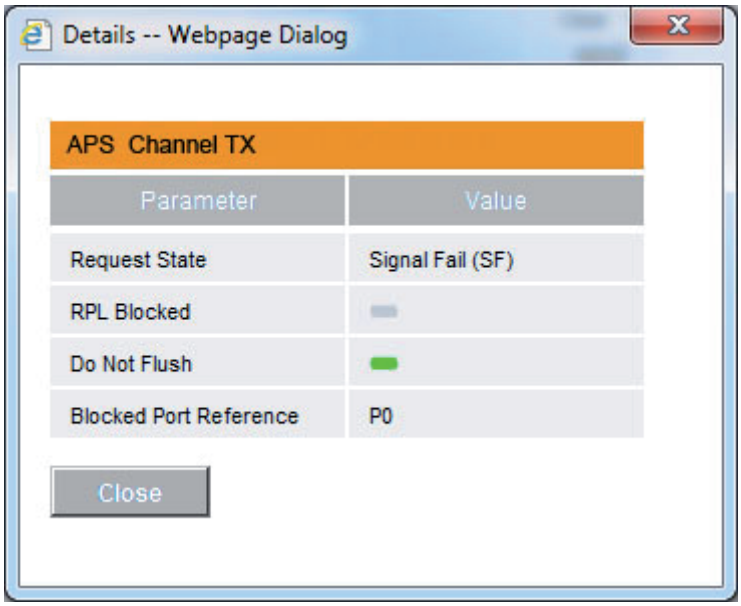


Figure 6-48: APS Channel TX detailed status information

Parameter	Description
Request State	Transmitted APS channel request state message
RPL Blocked	Visual indicator on RPL Blocked State
Do not Flush	Visual indicator on Do not Flush message
Blocked Port Reference	Blocked port reference ID

Table 6-43: APS Channel, TX per port, detailed status parameters

6.2.10.2 GPON Type B Protection

The selection of Protection Schemes Sub-menu item GPON Type B opens a GPON Type B Protection window, Figure 6-49

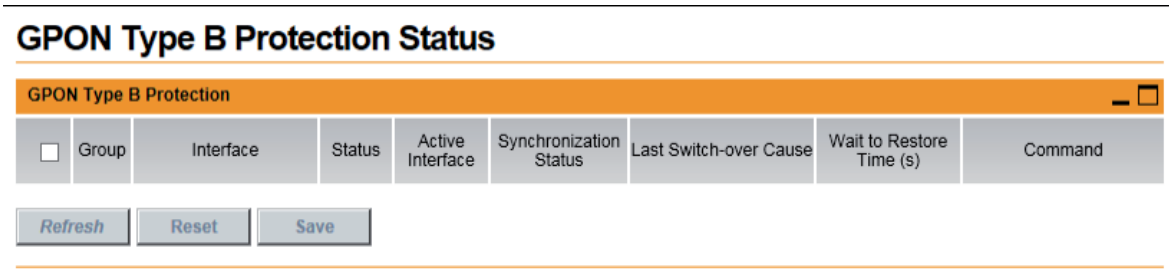


Figure 6-49: GPON Type B Protection Status window

Parameter	Description
Group	GPON type B protection group
Interface	Interfaces part of the protection group
Status	Interface Operational status
Active Interface	Indicates the active interface
Synchronization Status	Indicates the Synchronization status
Last Switch-over Cause	Indicates the cause of the last GPON protection type B switch over
Wait to Restore Time (s)	Indicates the wait to restore time in case of switch over.
Command	Indicates commands that can be executed on the protection group: • **clear** • **lockout** • **force to protection** • **force to working** • **manual to protection** • **manual to working**

Table 6-44: GPON Type B Protection window parameters

6.2.10.4 Ethernet Protection

The selection of Protection Schemes Sub-menu item ETH Port opens an Ethernet Protection Status window.

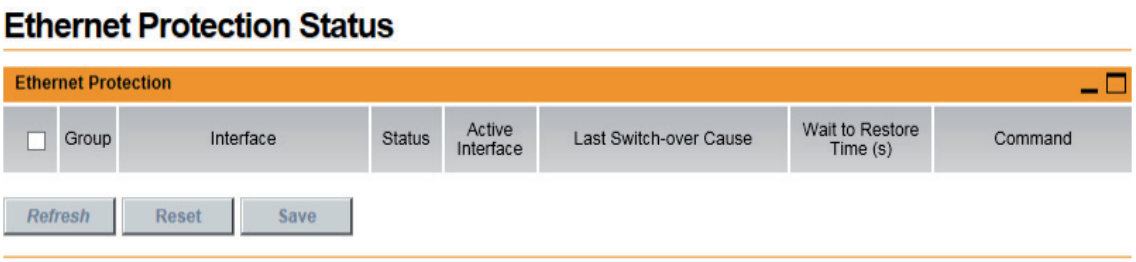


Figure 6-50: Ethernet Protection Status window

Parameter	Description
Group	Ethernet port protection group
Interface	Interfaces part of the protection group
Status	Interface Operational status
Active Interface	Indicates the active interface
Synchronization Status	Indicates the Synchronization status
Last Switch-over Cause	Indicates the cause of the last Ethernet port protection switch over
Wait to Restore Time (s)	Indicates the wait to restore time in case of switch over.
Command	Indicates commands that can be executed on the protection group: • **clear** • **lockout** • **force to protection** • **force to working** • **manual to protection** • **manual to working**

Table 6-45: Ethernet Protection window parameters

6.2.11 OLT Ref.769401:: CFM Probes

The selection of CFM Probes item opens an Ethernet Interface Status window composed by the following tables:

- CFM probes list
- Latest Logs of Unexpected CCM Packets

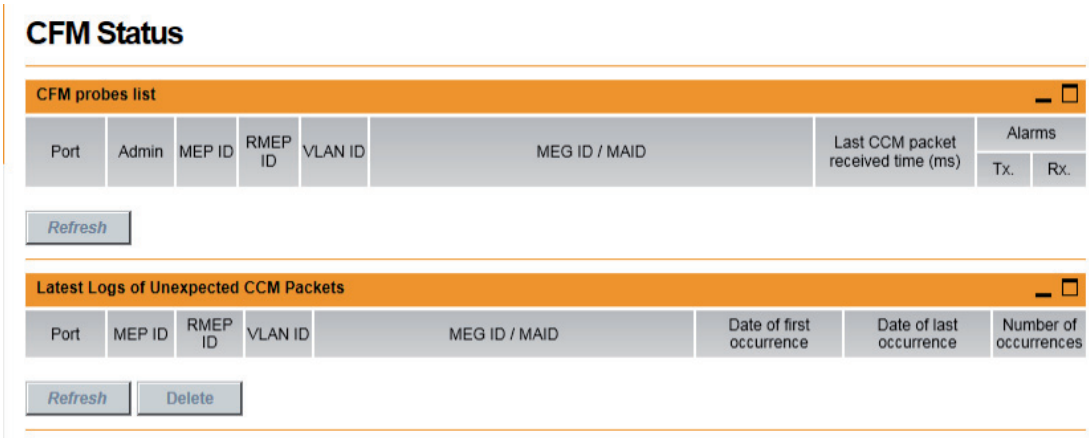


Figure 6-51: CFM Status/OLT Ref.769401

Parameter	Description
Port	Physical interface that the probe is monitoring
Admin	Probe Administrative State: Enable/disable
MEP ID	MEP Identification forwarded by the probe in the CCM message
RMEP ID	MEP ID of the remote MEP with which this probe makes P2P
VLAN ID	VLAN that encapsulates the CCM frame sent by the probe
MEG ID /MAID	Identification of the CFM maintenance group: **MD:** Maintenance Domain Id **SMA:** Short Maintenance Association Name
Last CCM packet receive time (ms)	Instant of time of arrival of last received CCM packet
Alarms	**Tx:** This alarms triggers when no packets are transmitted **Rx**: This alarms triggers when no packets are received

Table 6-46: CFM probes list parameters

Parameter	Description
Port	Physical interface that the probe is monitoring
MEP ID	MEP Identification forwarded by the probe in the CCM message
RMEP ID	MEP ID of the remote MEP with which this probe makes P2P
VLAN ID	VLAN that encapsulates the CCM frame sent by the probe
MEG ID /MAID	Identification of the CFM maintenance group: **MD:** Maintenance Domain Id **SMA:** Short Maintenance Association Name
Date of first occurrence	Date of first Unexpected CCM Packet type occurrence
Date of last occurrence	Date of last Unexpected CCM Packet type occurrence
Number of occurrences	Number of Unexpected CCM Packet type occurrences

Table 6-47: Latest Logs of Unexpected CCM Packets table parameters

6.2.12 Users

This item of the status menu is only visible for users with administration profile.

The selection of status menu users item opens a Users Status window showing a users list with OLT access permissions and its status, Figure 6-52 .

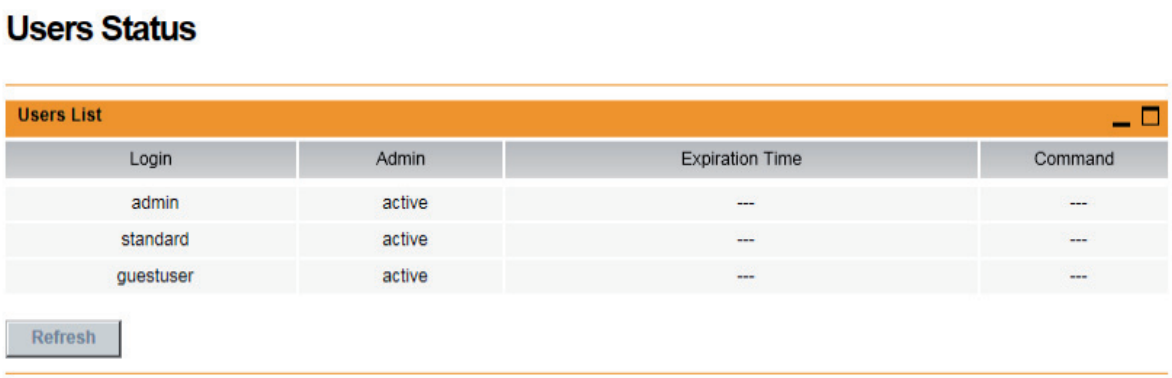


Figure 6-52: Users Status window

The Users List table is composed by the following parameters:

Parameter	Description
Login	User Login name
Admin	User access permission status
Expiration Time	Time after which the user access permission is no longer valid
Commands	Commands.

Table 6-48: Users List parameters

6.3 Logs

The Logs menu consists on a sub-menu "Alarms" composed by a Global Item and an item for each of the line cards inserted in the OLT, Figure 6-53.

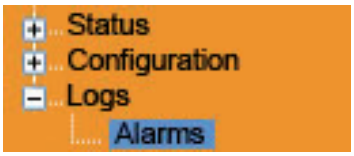


Figure 6-53: Logs menu, Alarms sub-menu

In the CLI section of this manual, the Logs related features are described in section7.6.13 "logs" node.

6.3.1 Alarms

In the Alarms Logs sub-menu it's possible to view the alarms and events' history for each board and also for the Global system. In order to turn easier to analyze problems that have occurred, filters may be applied.

6.3.1.1 Global

Global item selection opens a System Log consisting of two tables:

- Filter, Figure 6-54;
- Event List, Figure 6-55.

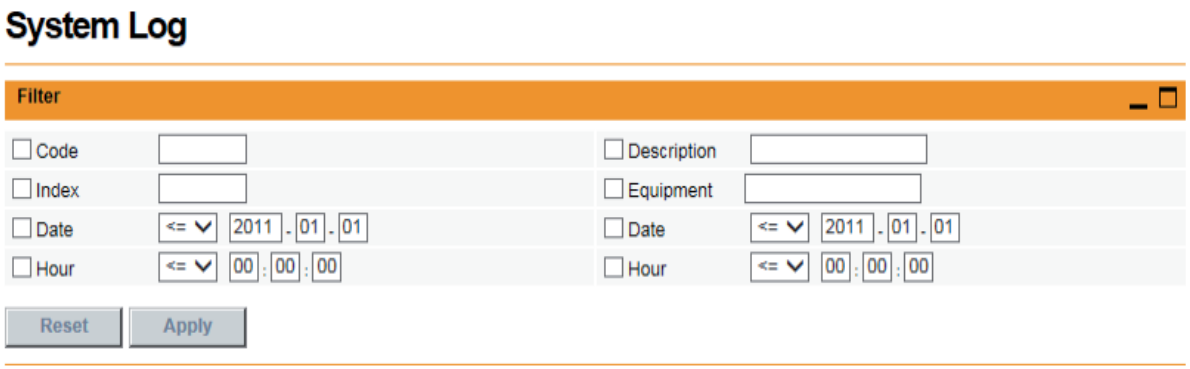


Figure 6-54: System log window, filter table

There are filters to analyze the date of the anomaly, port, etc. If the port isn't administratively up, the alarms related to it won't be registered.

The following filtering parameters can be applied:

Parameter	Description
Code	Alarm Code
Index	Port or interface where the alarm or event occurred
Date and Hour	It's possible to select a beginning, ending or interval to visualize the alarms and events
Description	Alarm or event description
Equipment	Alarm or event source

Table 6-49: Filters parameters

Equipment	Index	Date	Hour	Code	Description
ONT.1.2	ETH.1	2015-10-28	14:57:31	36866	End ETH link down
ONT.1.2	ETH.1	2015-10-28	14:56:24	36866	Begin ETH link down
ONT.1.2	---	2015-10-28	14:56:23	110001	ONT connection established
ONT.1.2	---	2015-10-28	14:56:21	126	End Start-up Failure
ONT.1.2	---	2015-10-28	14:56:21	126	Begin Start-up Failure
ONT.1.2	---	2015-10-28	14:56:21	120	End Loss of PLOAM
ONT.1.2	---	2015-10-28	14:56:21	119	End Loss of frame
ONT.1.2	---	2015-10-28	14:56:21	118	End Loss of signal
ONT.1.2	---	2015-10-28	14:55:34	120	Begin Loss of PLOAM

Figure 6-55: Event List example (global)

Parameter	Description
Equipment	Alarm or event source
Index	Port or interface where the alarm or event occurred
Date and Hour	Date and hour when the alarm or event occurred
Code	Alarm Code
Description	Alarm or event description

Table 6-50: Event List parameters

In the end of the table there are two buttons:

- **Refresh:** updates the table
- **Delete:** Deletes all the alarms

7. CLI

7.1 System Management

The OLT equipment can be managed locally either using a web browser; via Web Ti application, described in section 5.1 System Management of this Users' Guide, or using a Linux based Command Line Interface, CLI, described in this Chapter. Both WebTi and CLI provide the system with Local Craft Terminal (LCT) functionalities.

There are two different ways to manage the equipment, (for more details on how to connect the OLT system for management please refer to section 5.1 System Management, in this User's Guide):

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- Connect to the management port ETH, (G1 or G2), either locally by connecting directly to the PC Ethernet port, or remotely, via service provider DCN;
- Inband Management using a configured management VLAN which interconnects MPLS network to DCN.

7.2 Access to the Equipment

Any OLT equipment comes with an integrated Command Line Interface (CLI) for system management and configuration.

In order use the CLI OLT interface, the OLT equipment must accessed via Telnet or SSH protocols, using the console port (RS232).

An SSH/telnet client application, as for example PuTTY, which is an open source software SSH and telnet client, developed originally for the Windows platform, can be used for accessing the OLT system.

At the client application configuration window, Figure 7-, open a session at the OLT equipment you want to access:

- Typing the OLT IP address to access, 1;
- Selecting connection type (Telnet or SSH), 2;
- Pressing Open, 3

A session will be opened and a login prompt at the OLT equipment presented to the user, Figure 7-1.

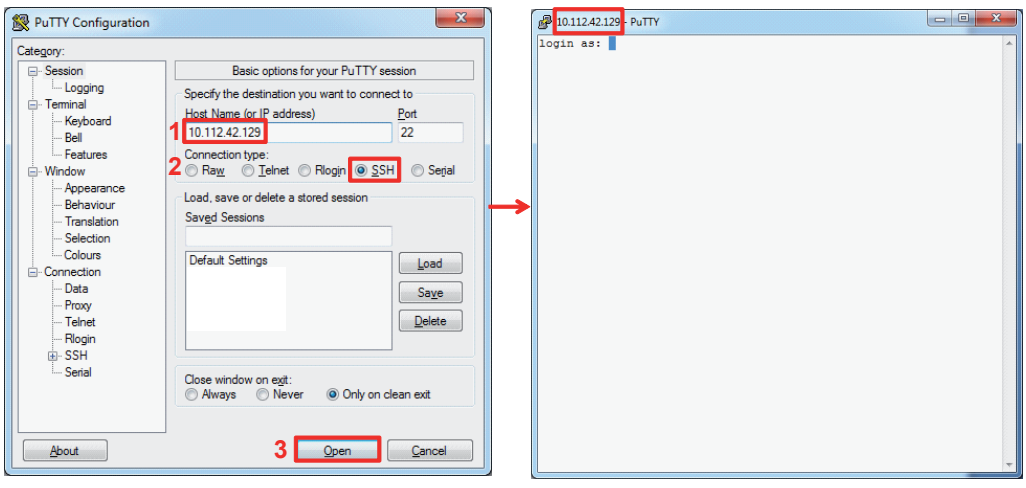

Figure 7-1: Accessing to the OLT equipment via SSH

7.2.1 System Access Control

To Access the CLI application the user must be logged in the system.

The system provides three default users, with different privileges for the operations that can be performed in the system.

- Admin

  Full access: configuration of the equipment and of the accesses to the system: users' list and permissions.

- Standard

  OLT configuration permission; cannot view or manage the system users' list

- Guestuser

  Permission to view

The default password is the same as the user login. Only the user with admin privileges can change users' passwords.

Typing the login and password at the session opened in the OLT System the user is presented with the CLI application initial window,.Figure 7-2

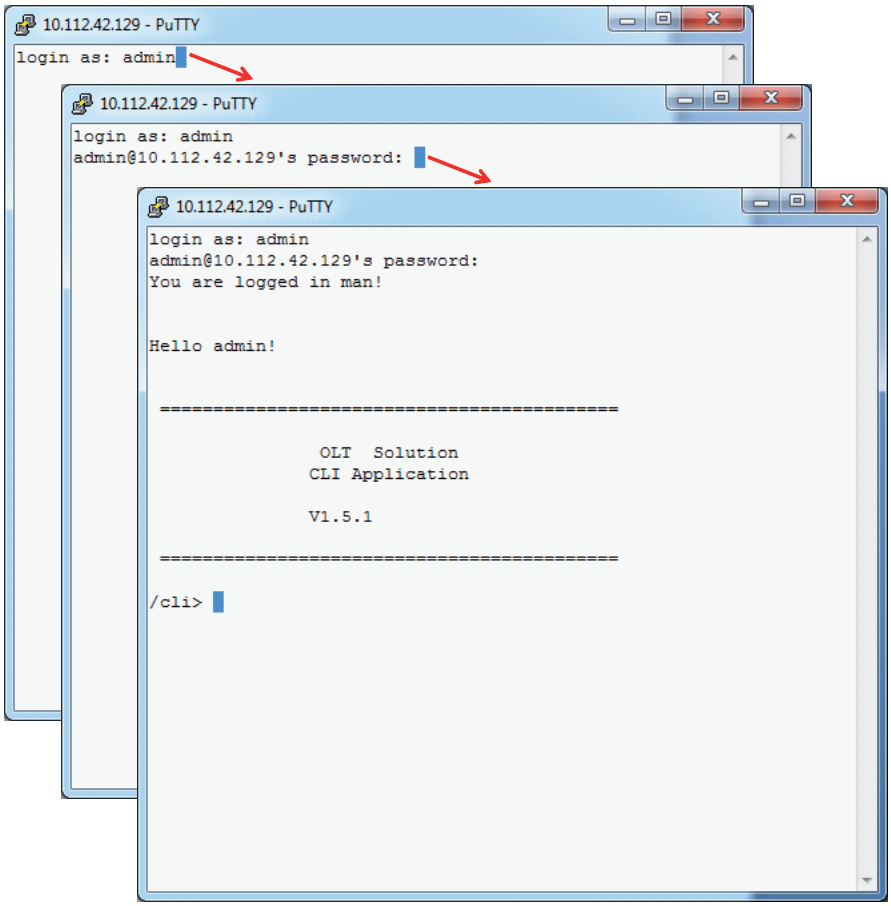

Figure 7-2: OLT access and CLI Initial window

7.3 CLI Overview

7.3.1 Features:

- Hierarchical tree structure:
  - The CLI has a structured interface.
  - Navigation through the hierarchy structure (tree) is ensured through the "cd" and "cd .." commands.
- Consistency:
  - commands providing the same functionality have the same name,
  - consistency of the semantics used is also ensured
- Auto Complete:
  - CLI automatically completes the commands or options using the tab key.

7.3.2 Commands

All CLI commands must belong to a node. The main node is called the root node. A node can have

A command can be executed either directly in the node it belongs to using the command name, or from another node in which case the command full path must be used.

History of last used commands is available by pressing the arrows keys (up, down).

The **cd** command operates as in UNIX: **'cd /'** returns to the root node, '**cd ..**' navigates up, and so on.

7.3.2.1 General Usage Commands

Set of commands to improve CLI usability by providing generic navigation and help information:

- **Help, Figure 7-3:**
  Provides basic and generic command usage description
- **?** typed following a command, Figure 7-4:
  Provides a brief description of the command, the command syntax and of all the usable arguments.
- **dir, Figure 7-5:**
  Lists the commands and sub-nodes dependent on the current location node;
  Listed sub-nodes are followed by /, (example interfaces/).
- **Tree, Figure 7-6:**
  Graphical display of the entire tree of sub-nodes and commands considering the current position as a starting point;
- **clear**:
  Cleans the screen.
- **quit**:
  Exit the CLI interface.

```
/cli> help

        CLI - Command Line Interface
                  Basic Usage

Type 'dir' to show a list of available commands.
Navigate through nodes using 'cd', 'cd ..', 'cd /'...
Execute a command by typing its name.
Press 'TAB' for auto-complete features.
Press 'Ctr+u' to clear all inserted characters in the current line.

You can run commands by writing the full path.
Type '?' after a command to see specific help:
         import-export/show ?

Some commands can be run recursively, automatic calling themselves in each
child node:
         showconfig +recursive

Type 'help' to see this text again.
```

Figure 7-3: Use of help

```
/cli/equipment/system> config ?

Usage:
  CONFIG          Global system configuration.

   [OPTIONAL]
   --access-node  Access Node ID
   --alarm-rep-mode     Define the alarm reporting mode. (none|snmp|xml)cd ip
   --auto-update  Automatically upgrades the second matrix. (enable|disable)
   --contact      Set contact information as appropriate
   --date         Set the system date as YYYY/MM/DD (UTC)
   --description  Set a description, in this context.
   --location     Set the system location as appropriate
   --name         Insert a name STRING.
   --numerical-rack     system rack (numerical value)
   --numerical-shelf    system shelf (numerical value)
   --numerical-sub-rack system subrack (numerical value)
   --rack         system rack
   --shelf        system shelf
   --sub-rack     system subrack
   --time         Set the system time as hh:mm:ss (UTC)
```

Figure 7-4: use of ?

```
/cli/ip> dir
   apply
   slave
   interfaces/
   networking/
   route/
```

Figure 7-5: dir command

```
/cli/ip> tree
+ ip[@apply, @save]
   + interfaces[]
      + inband[@config, @show, @showconfig]
      + ip[@config, @show, @showconfig]
   + networking[@config, @show, @showconfig]
   + route[@create, @remove, @show, @showconfig]
```

Figure 7-6: IP tree, sub-nodes and commands

7.3.2.2 Common Usage Commands

Set of commands usable in different node and sub-node, conserving the name and syntax for consistency, but whose arguments vary depending on the context, in number, type (optional/mandatory) and range of values.

Name	Purpose
show	Displays relevant information in a table format.
config	Modifies the configuration of various parameters
showconfig	Generates a list of commands that replicates the current configuration of the node where the command is executed. When executed with the option +recursive generates the same list to all descendent nodes.
create	Creates a new entity on the node where the command was executed
remove	Removes an entity on the node where the command was executed

Table 7-1: Common Usage Commands

7.3.2.3 Command Structure

A command has a name and may have arguments (parameters) of type mandatory or optional.

For the execution of the command, command name must be used and if existing, mandatory arguments, with the correct command syntax.

Use		Description
Command		Command name
	Parameters(s)	Parameters can be mandatory or optional
	--param=value	Syntax for the argument and the respective value
	<value>	Value for each argument
	<value1 | value2 >	Possible values are separated with |
	<value1 : value2 >	Range of possible values: all values from value1 to value2
	<[value1] | value2 >	Default values are given with brackets ([ ])

Table 7-2: CLI command structure

Examples	Description
/services/show	Will run the command **show** in the node **services**. The command does not need any arguments
/equipment/boards/config --slot=3 --admin=true	Will run the command **config** in the node boards. The command takes two arguments, slot with value 3 and admin with value true. This command will activate the board on slot 3

Table 7-3: CLI command examples

7.4 CLI Navigation

After login in an OLT system, CLI initial window is presented with the prompt /CLI>, Figure 7-7. After login the user is at the root node.

```
You are logged in man!

Hello admin!

 ==========================================

                OLT  Solution
               CLI Application

               V1.5.1

 ==========================================

/cli>
```

Figure 7-7: CLI initial window and prompt

The **help** command will display generic navigation help information, Figure 7-3

dir command list the node available commands and sub nodes, Figure 7-8

```
/cli> dir
   cd
   clear
   dir
   help
   mem
   quit
   show
   showconfig
   tree
   acl/
   applications/
   backup-manager/
   cfm-probe/
   dhcp/
   equipment/
   erp-ring/
   eth-protection/
   gpon-protection/
   interfaces/
   ip/
   ip-source-guard/
   logs/
   mac-table/
   multicast/
   profiles/
   remote-eq/
   routing/
   services/
   synchronism/
   users/
   utils/
```

Figure 7-8: dir command output at root node

Pressing Tab key will display another view of node available commands and sub nodes, Figure 7-9

```
/cli>
../                 clear               help                multicast/
showconfig
./                  dhcp/               interfaces/         profiles/
synchronism/
acl/                dir                 ip-source-guard/    quit                tree
applications/       equipment/          ip/                 remote-eq/          users/
backup-manager/     erp-ring/           logs/               routing/            utils/
cd                  eth-protection/     mac-table/          services/
cfm-probe/          gpon-protection/    mem                 show
/cli>
```

Figure 7-9: Tab key displays commands and sub-nodes in that node

Typing **cd** followed by **tab** will start to auto-complete with node names, Figure 7-10

Pressing the **Enter** key will execute the command navigates to the specified node.

The CLI prompt displays the current location node

```
/cli> cd app
```

```
/cli>cd applications
```

Figure 7-10: Auto-complete with tab key

```
/cli>cd applications
/cli/applications>
```

Figure 7-11: CLI prompt displays current location node

tree command executed at a given node displays the full list of sub-nodes and available commands per node/sub-node, Figure 7-10

```
/cli/applications> tree
+ applications[]
   + firmware-upgrade[]
      + files[@check, @config, @export, @import, @remove, @show, @status]
      + onu-upgrade[@apply-file, @availableValues, @execute]
   + manager[@config, @show, @showconfig]
   + olt-upgrade[@apply-file, @import]
   + time[]
      + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
      + time-zone[@availableValues, @config, @show, @showconfig]
```

Figure 7-12: tree command output: current node, applications, sub-nodes list

In the picture above we have an example of the command tree. This command will display all the child nodes and commands for the node where it is executed on. If it's executed on the CLI root, it shows the complete CLI tree.

In the example above, Figure 7-12, all the applications sub-nodes and respective commands are shown.

- Child nodes are preceded with a '+' and indented;
- Each node has a list of commands within [ ]'s;
- Nodes that do not have commands have an empty list;
- Commands are preceded with a "@" character.

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7.4.1 Help on Commands and Arguments Usage: ?

Typing **?** in front of a command name (note that there is no help for nodes. only for commands) will display usage information for that command:

- Brief description of the command purpose
- Usable arguments and type: optional/mandatory.
- Syntax for arguments

Possible values for the arguments may also be displayed in some cases, for non-dynamic arguments: for example, the **slot** argument does not have possible values shown because it depends on the context and on which slots are available in the equipment at the current time.

```
/cli/interfaces/gpon> show  ?

Usage:
  SHOW       Shows PON information for a specific HW slot.

   [OPTIONAL]
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 7-13: >show ?: information on the usage of the show command in the interfaces

To know the available options for the argument slot, in this case, the "**show**" can be executed without arguments.

According to the provided, when this command is executed in this node context, information is then displayed showing which slots have information available, in a table format in this case, Figure 7-14. Slots with YES in the Details column has information available.

```
/cli/interfaces/gpon> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|OLT1T0 - GPON Configuration                                                                                                                                |
+---+----------+----------+-------------+-------------+-------------+----------+-------------+------------------+-----+------------+------------+
|ID |Name      |Admin     |Mac Aging (s)|Max Dist. (Km)|Min Dist. (Km)|BER (s)   |Downstream FEC|ONU Auto Discovery|MTU  |IP Src Guard|Mapping Mode|
+---+----------+----------+-------------+-------------+-------------+----------+-------------+------------------+-----+------------+------------+
|1  |PON 1     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|2  |PON 2     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|3  |PON 3     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|4  |PON 4     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|5  |PON 5     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|6  |PON 6     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|7  |PON 7     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |disable     |VLAN        |
|8  |PON 8     |enable    |240          |20           |0            |20        |disable      |enable            |2048 |enable      |VLAN        |
+---+----------+----------+-------------+-------------+-------------+----------+-------------+------------------+-----+------------+------------+
/cli/interfaces/gpon>
```

Figure 7-14: Output of show command without arguments

In some situations there is a specific command only to show the possible values for each argument. For example on the node **"services"**, the command "**availableValues"** displays to which slot-ports services can be added.

7.4.2 Common Node Names

Common node names, as for example Status and Statistics, correspond to nodes that appear as sub-nodes in diverse contexts (nodes) and aggregate a class of commands,

There are three main classes to aggregate commands:

- Configuration
- Statistics information
- Status information

"Config" command that within a certain node configures some aspect of the equipment is present in the node tree single, i.e., without being aggregated under any special tree node name within the tree. This is valid for the **show** command in most of the cases as well.

All commands that are used to see statistics are aggregated in a sub-node "**statistics"** within the node tree.

All commands that report the status of the equipment (temperature, alarms, etc) are aggregated in a sub-node"**status"**.

For example in the GPON node tree, Figure, there is a "**config"** command within node "**gpon"** and a **"config"** command within sub node "**cos"**. Gpon sub-node "**statistics"** groups "**errors", "Ethernet"** and **"gpon"** statistics, as for SFPs "**rx-power"** status information, they are grouped in gpon sub-node **"status"**.

```
/cli/interfaces/gpon> tree
+ gpon[@config, @show, @showconfig]
   + cos[@config, @show, @showconfig]
   + dhcp[@config, @show, @showconfig]
   + multicast[@config, @show, @showconfig]
   + statistics[]
      + errors[@show]
      + ethernet[@show]
      + gpon[@show]
   + status[@show]
      + SFPs[@show]
      + rx-power[@read-all, @show]
```

Figure 7-15: interfaces/gpon tree

Therefore according to the above picture to manage **gpon** interfaces we have the following commands:

- gpon/config
- gpon/show
- gpon/showconfig

To see **gpon** status we have:

- gpon/status/show
- gpon/status/SFPs/show
- gpon/status/SFPs/rx-power/read-all
- gpon/status/SFPs/rx-power/show

To see **gpon** packet statistics and link status we have:

- gpon/statistics/gpon/show
- gpon/statistics/ethernet/show
- gpon/statistics/errors/show

Note that in this last case, the interfaces /gpon sub-node statistics itself does not allow any command

There are also interfaces/gpon sub-nodes cos, dhcp and multicast, that allow to manage respectively CoS , DHCP and Multicast configurations for the GPON interfaces

We can see the logic behind this structure. It's almost like building sentences: **gpon/status/SFPs/show** is telling you that it will show the status of SFPs entities in GPON interfaces.

Furthermore, we know that we should run **gpon/status/SFPs/rx-power/read-all** to "read all information" and only after execute **gpon/status/SFPs/rx-power/show**. We may not know what "read-all" stands for but we know the probable way of executing these commands (also seeing the command help, may help). The point here is that the organization of the commands and nodes and their names is intended to have a meaning that the user can take advantage of.

7.4.3 About the "showconfig" Command

The showconfig command exists on every node that makes configurations (nodes that have create, remove, config commands).

Since the showconfig command always performs the same action, it will be referred only once to avoid replicating the same information for every node. The showconfig command help text can be seen in Figure 7-16.

```
/cli> services/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-16: CLI on line help on "showconfig" usage in this node context

Syntax	/path to node/showconfig
Description	Print the commands needed to reach the current configuration.
Screen Output	Full command(s) path and used arguments and values to reach the current configuration, e.g., Figure 7-; showconfig command used in the context of time-zone sub node for a particular system shows the command line that should be used to configure in the system the current configuration.

Table 7-4: Common Usage Commands

```
/cli/applications/time/time-zone/showconfig>
/applications/time/time-zone/config      --central-manager-time-zone="Europe/Lisbon"
--local-time-zone="Atlantic/Azores"
```

Figure 7-17: showconfig command screen output example

7.4.4 Invalid Characters

The following special characters are not supported by CLI: '#£"§»«|

7.4.5 Error Codes

When executing a command, if no information is shown then the command runs successfully. An invalid operation will result in an error code information message displayed in the screen.

In an error case, any configurations made are cancelled and the user can be sure that nothing has been configured.

There are two types of errors:

- **Syntax errors**, Figure 7-18,
- **Operational errors, Figure 7-19.**

7.4.5.1 Syntax Errors

Syntax errors are shown to the user in red color and are easy to fix, Figure 7-18

These errors occur when the command is not correctly written:

- Names are wrong;
- Arguments have values out of bounds;
- There are missing arguments.

```
/cli/interfaces/gpon/status/SFPs> show
       Error: Missing mandatory argument 'port'!

Usage SHOW:
  SHOW                          Show details for an SFP entry from table gpon/status/show

   <MANDATORY>
   --port                          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

/cli/interfaces/gpon/status/SFPs>
```

Figure 7-18: Syntax error

7.4.5.2 Operational Errors

Operational error codes are the result of an invalid operation; the hexadecimal error code as well as the error description are displayed in the screen, **Figure 7-19**.

An invalid operation is ordered, for example, the user tries to disable a GPON interface that has remote equipments connected: These errors are more difficult to overcome since they often require the user to be aware of what he is doing and to have knowledge of the underlying protocols and mechanisms of operation.

For the complete list of the equipment operation error codes please refer to section 8.2 Equipment Error Codes.

```
/cli/interfaces/gpon> config --port=pon.1 --ber=1
Could not configure the PON Parameters:
        Error: Family PON | Wrong Administrative State | (0x0D03000C) |
/cli/interfaces/gpon>
```

Figure 7-19: Operational error

7.4.6 Writing CLI Scripts

CLI allows the usage of configuration scripts.

Configuration scripts are ordered sequences of commands with a certain operational objective. Configuration scripts can be written and be 'pasted' in the CLI prompt as Plain text

Copy and paste at the CLI prompt is possible either for a single command or for a sequence of commands (Script) thus allowing the usage of scripts. Pressing enter after copying a command or script the CLI prompt will execute the given commands one by one.

Scripts can have comments; comment lines start with the character '#'. Lines beginning with that character are ignored by CLI.

Configuration Script usage is exemplified below, Figure 7-20:

- In theScript Text box is what the CLI Script the user pasted to the CLI prompt;
- In the Script execution box is the Script Execution by CLI
- In the Script execution Output box the output result of the script execution
- In the Return to CLI Prompt Box the user returns to the prompt.

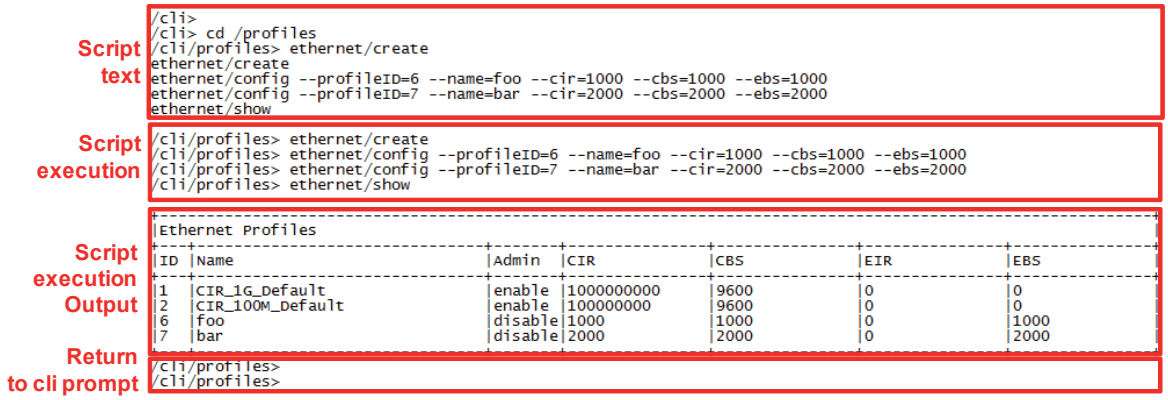

Figure 7-20: CLI script usage example

7.4.7 Particular Argument Cases

7.4.7.1 Arguments slot and port

The arguments slot and port appear in almost every command, being in the majority of cases mandatory.

- **slot** is an integer that identifies a card slot in the OLT.

  To see the available slots and respective information the user can execute **/equipment/boards/show.**
- **port** argument identifies an interface inside a specific slot.

  Port argument syntax is port type name. port number, for example: eth.2 or pon.5 or voip.1
  - Port type name: eth/pon/voip/lag
  - Port number: integer

7.4.7.2 Arguments ID and admin

- **ID**:

  The argument ID is a very common argument. Whenever this argument is present, there is also a show command available whose table will have an ID column.

This argument is used to specify a single table entry for further configuration or information.

- **admin**:

  The admin argument is used to configure the administrative state of entities: interfaces, services, or others.

  The argument can take the value 'up' or 'down'.

7.4.7.3 Remote equipment – connect

The node **remote-eq** allows configuring and managing all the remote equipments.

In order to perform an operation on remote equipment, the following input parameters are used to identify the equipment:

- **slot** – an OLT card
- **port** – an interface in the given slot
- **ontID** – an unique ID for a remote equipment in the interface specified

Multiple configuration and management operations using the same set of values for this group may be required in the same remote equipment.

The **connect** command defines the three arguments (slot/port/ontID) and values in a single operation. A command in this node-sub-tree (remote equipment) uses this information as needed.

Configuration on a connected ONT with other different argument (Slot, Port, ontID) values than those defined in the initial connect command arguments, takes precedence over the information stored in the connect command.

7.5 CLI Tree

This section of the manual describes all the existing commands and respective arguments. It briefly explains the purpose of each command and, when appropriate, explains how to use the command.

This section numbering matches the CLI nodes tree for an easy navigation in the document.

The complete CLI structure is depicted in the text box below. The nodes are in bold and the commands within the nodes are preceded by the "@" symbol. The gray nodes and commands represent features that are not applicable to this equipment configuration. On the right side of the box there are links to the CLI description sub-section where the node or sub-node and commands detailed description can be found

.

```
/cli> tree
+ cli[@cd, @clear, @dir, @help, @mem, @quit, @show, @showconfig, @tree]
   + acl[@config, @create, @remove, @show, @showconfig]
      + interface[@add, @config, @remove]
      + network-service[@add, @config, @remove]
      + rule[@config, @remove]
      + rule-ipv4-ext[@config, @create, @show]
      + rule-ipv4-std[@config, @create, @show]
      + rule-ipv6-ext[@config, @create, @show]
      + rule-mac[@config, @create, @show]
   + applications[]
      + firmware-upgrade[]
         + files[@check, @config, @export, @import, @remove, @show, @status]
         + onu-upgrade[@apply-file, @availableValues, @execute]
      + manager[@config, @show]
      + olt-upgrade[@apply-file, @import]
      + time[]
         + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
         + time-zone[@availableValues, @config, @show, @showconfig]
   + backup-manager[@create, @del-serv-conf, @export, @import, @remove, @restore, @show]
   + cfm-probe[@config, @create, @remove, @show, @showconfig, @status]
      + unx-ccm[@remove, @show]
   + dhcp[]
      + dhcp-services[@config, @show, @showconfig]
      + global[@config, @show, @showconfig]
      + leases[@show]
   + equipment[@status]
      + boards[@config, @show, @showconfig]
      + slot[@apply, @config, @show, @showconfig]
      + switch-fabric[@show, @switch, @update, @upgrade-sw]
      + system[@config, @show, @showconfig]
   + erp-ring[@config, @create, @remove, @show, @showconfig]
      + status[@command, @show]
         + aps-channel[@show]
   + eth-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
   + gpon-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
   + interfaces[]
      + analog-rf[@config, @show, @showconfig]
         + status[@show]
      + ethernet[@config, @show, @showconfig]
         + cos[@config, @show, @showconfig]
         + services[@add, @availableValues, @config, @remove, @show]
            + statistics[]
               + counters[@availableValues, @show, @show-active, @start, @stop]
               + dhcp[@show]
               + igmp[@show]
         + statistics[@show]
         + status[@show]
            + SFPs[@show]
      + gpon[@config, @show, @showconfig]
         + cos[@config, @show, @showconfig]
         + statistics[]
            + errors[@show]
            + ethernet[@show]
            + gpon[@show]
         + status[@show]
            + SFPs[@show]
            + rx-power[@read-all, @show]
```

```
      + lag[@config, @create, @remove, @show, @showconfig]
         + cos[@config, @show, @showconfig]
         + mapping[@attach, @availableValues, @detach]
         + statistics[@show]
         + status[@show]
      + rf-overlay[@config, @show, @showconfig]
         + status[@show]
   + ip[@apply, @save]
      + interfaces[]
         + inband[@config, @show, @showconfig]
         + ip[@config, @show, @showconfig]
      + networking[@config, @show, @showconfig]
      + route[@create, @remove, @show, @showconfig]
   + logs[]
      + alarms[@clear, @show]
   + mac-table[@config, @show, @showconfig]
      + status[]
         + gpon[@remove, @show]
         + switch[@remove, @show]
   + multicast[]
      + active-groups[@status]
      + group-list[@config, @create, @remove, @show, @showconfig]
      + probes[@config, @create, @remove, @show, @showconfig]
         + statistics[@show]
      + proxy[]
         + igmp-proxy[@config, @show, @showconfig]
         + querier[@config, @show, @showconfig]
   + profiles[]
      + ethernet[@config, @create, @remove, @show, @showconfig]
      + onu[@config, @create, @remove, @show, @showconfig]
      + upstream[@config, @create, @remove, @show, @showconfig]
      + voip[]
         + server[@availableValues, @config, @create, @remove, @show, @showconfig]
         + specific[@config, @create, @remove, @show, @showconfig]
   + remote-eq[@config-onu-id, @connect, @disconnect, @showconnected]
      + discovery[@change-reg-type, @command, @config, @create, @insert, @insert-all, @reboot,
@reboot-all, @remove, @remove-all, @show]
      + onu[@show]
         + analog-rf[@config, @show]
         + e1[@config-e1, @config-lsp, @config-pw, @show, @showconfig, @status]
         + ethernet[@config, @show]
         + ptp-source[@availableValues, @config, @create, @remove, @show]
         + services[@add, @availableValues, @config, @remove, @show]
         + system[@config, @show]
         + voip[@config, @show]
      + statistics[]
         + fec[@show]
      + status[@show]
         + ethernet[]
            + statistics[@show]
         + firmware[@activate, @commit, @stop-transfer]
         + gem-port[]
            + statistics[@show]
         + services[@show]
            + active-channels[@show]
            + statistics[]
               + counters[@availableValues, @show, @show-active, @start, @stop]
               + dhcp[@show]
```

```
            + igmp[@show]
   + services[@availableValues, @config, @create, @remove, @show, @showconfig]
      + rate-limiters[@config, @show, @showconfig]
      + statistics[]
         + counters[@availableValues, @show, @show-active, @start, @stop]
         + dhcp[@availableValues, @show]
         + igmp[@availableValues, @show]
   + synchronism[]
      + global[@config, @show, @showconfig]
         + sources[@availableValues, @config, @show]
      + ptp[@config, @show, @showconfig]
        + port[@availableValues, @config, @create, @remove, @show, @showconfig]
            + ip-access-list[@config, @create, @remove, @show]
      + status[]
         + global[@command, @show]
            + sources[@command, @show]
         + ptp[@show]
   + users[@config, @create, @remove, @show, @status]
```

7.6 Nodes, Sub-Nodes and Commands

7.6.1 "acl" node

```
/cli/acl> tree
+ acl[@config, @create, @remove, @show, @showconfig]
   + interface[@add, @config, @remove]
   + network-service[@add, @config, @remove]
   + rule[@config, @remove]
   + rule-ipv4-ext[@config, @create, @show]
   + rule-ipv4-std[@config, @create, @show]
   + rule-ipv6-ext[@config, @create, @show]
   + rule-mac[@config, @create, @show]
```

Figure 7-22: "acl" node tree

7.6.1.1 "config" command

Name	config
Description	Configure parameters for an existing ACL.
Full path	/acl/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-5: "config" command information

```
cli/acl> config ?

Usage:
  CONFIG     Configure parameters for an existing ACL.

   <MANDATORY>
   --ID      Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin   Administrative State. Enable/disable, in this context. (enable|disable)
   --name    Identifies the name of an ACL. (STRING 31)
   --type    Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)
```

Figure 7-23: CLI on line help on "config" command usage in this node context

7.6.1.2 "create" command

Name	create
Description	Create a new ACL.
Full path	/acl/create
Mandatory Parameters	--type
Screen Output	No

Table 7-6: "create" command information

```
/cli/acl> create ?

Usage:
  CREATE          Create a new ACL.

   <MANDATORY>
   --type         Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)

   [OPTIONAL]
   --ID           Identifies a table entry by ID, in this context.
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
   --name         Identifies the name of an ACL. (STRING 31)
```

Figure 7-24: CLI on line help on "create" command usage in this node context

7.6.1.3 "remove" command

Name	remove
Description	Remove an existing ACL.
Full path	/acl/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-7: "remove" command information

```
/cli/acl> remove ?

Usage:
  REMOVE              Remove an existing ACL.

   <MANDATORY>
   --ID               Identifies a table entry by ID, in this context.
```

Figure 7-25: CLI on line help on "remove" command usage in this node context

7.6.1.4 "show" command

Name	show
Description	Show the current ACLs configured.
Full path	/acl/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 7-; Table parameters are described in Table 7-.

Table 7-8: "show" command information

```
/cli/acl> show ?

Usage:
  SHOW          Show the current ACLs configured.

   [OPTIONAL]
   --type        Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)
```

Figure 7-26: CLI on line help on "show" command usage in this node context

```
/cli/acl> show
+-----------------------------------------------------------------------------------------------------------------+
|Access Control List                                                                                              |
+-------------------------------------------------------------+----------------+-----------+-----------------+
|                                                             |Association     |Interfaces |Network Services|
+------+----------+---------+-------------------------------+---------+-------+----+------+-----------------+
|ACL ID|Type      |Rules    |Name                           |Direction|Admin  |Slot|Port  |IDs              |
+------+----------+---------+-------------------------------+---------+-------+----+------+-----------------+
|1     |MAC       |0        |Teste                          |In       |disable|1   |GbE 2 |                 |
+------+----------+---------+-------------------------------+---------+-------+----+------+-----------------+
/cli/acl>
```

Figure 7-27: Output of "show" command without arguments in this node context

Parameter Group	Parameter	Description
	ACL ID	ACL identification (number)
	Type	ACL type (text)
	Rules	Number of existing rules for the ACL ID table entry (number)
	Name	ACL name (text)
Association	Direction	Traffic direction subject to ACL
	Admin	ACL Administrative status
Interfaces	Slot	Line card slot number of the port associated to ACL
	Port	ACL associated Port
Network Services	IDs	ACL Associated Services'

Table 7-9: "show" command output table parameters

7.6.1.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/acl/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration

Table 7-10: "show" command information

```
/cli/acl> showconfig ?

Usage:
  SHOWCONFIG    Print the command list that enforces the current configuration
```

Figure 7-28: CLI on line help on "show" command usage in this node context

7.6.1.6 "interface" sub-node

7.6.1.6.1 "add" command

Name	add
Description	Associate a given Interface to an ACL.
Full path	/acl/interface/add
Mandatory Parameters	--acl-id --port
Screen Output	No

Table 7-11: "add" command information

```
/cli/acl/interface> add ?

Usage:
  ADD           Associate a given Interface to an ACL

   <MANDATORY>
   --acl-id     Identifies an ACL by ID, in this context.
   --port       Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --admin      Administrative State. Enable/disable, in this context. (enable|disable)
   --direction  Identifies an ACL Rule by ID, in this context.
```

Figure 7-29: CLI on line help on "add" command usage in this node context

7.6.1.6.2 "config" command

Name	config
Description	Configure an existing Interface association..
Full path	/acl/interface/config

Mandatory Parameters	--acl-id --port
Screen Output	No

Table 7-12: "config" command information

```
/cli/acl/interface> config ?

Usage:
  CONFIG           Configure an existing Interface association.

   <MANDATORY>
   --acl-id       Identifies an ACL by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
   --direction    Identifies an ACL Rule by ID, in this context.
```

Figure 7-30: CLI on line help on "config" command usage in this node context

7.6.1.6.3 "remove" command

Name	remove
Description	Remove an existing Interface association..
Full path	/acl/interface/remove
Mandatory Parameters	--acl-id --port
Screen Output	No

Table 7-13: "remove" command information

```
/cli/acl/interface> remove ?

Usage:
  REMOVE         Remove an existing Interface association

   <MANDATORY>
   --acl-id      Identifies an ACL by ID, in this context.
   --port        Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-31: CLI on line help on "remove" command usage in this node context

7.6.1.7 "network-service" sub-node

7.6.1.7.1 "add" command

Name	add
Description	Associate a given Network Service to an ACL.
Full path	/acl/network-service/add
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Table 7-14: "add" command information

```
/cli/acl/network-service> add ?

Usage:
  ADD           Associate a given Network Service to an ACL

   <MANDATORY>
   --acl-id     Identifies an ACL by ID, in this context.
   --serviceID  Select an OLT service by ID.

   [OPTIONAL]
   --admin      Administrative State. Enable/disable, in this context. (enable|disable)
   --direction  Identifies an ACL Rule by ID, in this context.
```

Figure 7-32: CLI on line help on "add" command usage in this node context

7.6.1.7.2 "config" command

Name	config
Description	Configure an existing Network Service association.
Full path	/acl/network-service/config
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Table 7-15: "config" command information

```
/cli/acl/network-service> config ?

Usage:
  CONFIG          Configure an existing Network Service association

   <MANDATORY>
   --acl-id      Identifies an ACL by ID, in this context.
   --serviceID   Select an OLT service by ID.

   [OPTIONAL]
   --admin       Administrative State. Enable/disable, in this context. (enable|disable)
   --direction   Identifies an ACL Rule by ID, in this context.
```

Figure 7-33: CLI on line help on "config" command usage in this node context

7.6.1.7.3 "remove" command

Name	remove
Description	Remove an existing Network Service association.
Full path	/acl/network-service/remove
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Table 7-16: "remove" command information

```
/cli/acl> network-service/remove ?

Usage REMOVE:
  REMOVE            Remove an existing Network Service association

   <MANDATORY>
   --acl-id         Identifies an ACL by ID, in this context.
   --serviceID      Select an OLT service by ID.
```

Figure 7-34: CLI on line help on "remove" command usage in this node context

7.6.1.8 "rule" sub-node

7.6.1.8.1 "config" command

Name	config
Description	Configure any shared rule parameters
Full path	/acl/rule/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-17: "config" command information

```
/cli/acl/rule> config ?

Usage:
  CONFIG       Configure any shared rule parameters

   <MANDATORY>
   --acl-id    Identifies an ACL by ID, in this context.
   --rule-id   Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action    permit or deny
   --admin     Administrative State. Enable/disable, in this context. (enable|disable)
   --name      Set a name for a specific Rule (STRING 31)
```

Figure 7-35: CLI on line help on "config" command usage in this node context

7.6.1.8.2 "remove" command

Name	remove
Description	Remove an existing rule.
Full path	/acl/rule/remove
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-18: "remove" command information

```
/cli/acl/rule> remove ?

Usage:
  REMOVE            Remove an existing rule

   <MANDATORY>
   --acl-id         Identifies an ACL by ID, in this context.
   --rule-id        Identifies an ACL Rule by ID, in this context.
```

Figure 7-36: CLI on line help on "remove" command usage in this node context

7.6.1.9 "rule-ipv4-ext" sub-node

7.6.1.9.1 "config" command

Name	config
Description	Configure an existing IPv4 Extended Rule
Full path	/acl/rule-ipv4-ext/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-19: "config" command information

```
/cli/acl/rule-ipv4-ext> config ?

Usage:
  CONFIG             Configure an existing IPv4 Extended Rule.

   <MANDATORY>
   --acl-id          Identifies an ACL by ID, in this context.
   --rule-id         Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action          permit or deny
   --admin           Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp            Match the DSCP value. (not-used|0..63)
   --dst-ipv4-addr   Destination IPv4 Address
   --dst-ipv4-mask   Destination IPv4 Mask
   --dst-port-end    Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start  Specify Destination L4 port number (not-used|0..65535)
   --name            Set a name for a specific Rule (STRING 31)
   --precedence      Match IP precedence value (not-used|0..7)
   --protocol        Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --src-ipv4-addr   Source IPv4 Address
   --src-ipv4-mask   Source IPv4 Mask
   --src-port-end    Specify Source L4 port number (not-used|0..65535)
   --src-port-start  Specify Source L4 port number (not-used|0..65535)
   --tos             Specify match condition based on IP TOS Mask value. Two-digit
hexadecimal number (0000..0XFF)
   --tos-mask        Specify match condition based on IP TOS value. Two-digit hexadecimal
number (0000..0XFF)
```

Figure 7-37: CLI on line help on "config" command usage in this node context

7.6.1.9.2 "create" command

Name	Create
Description	Create a new IPv4 Extended Rule for a given ACL ID.
Full path	/acl/rule-ipv4-ext/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Table 7-20: "create" command information

```
/cli/acl/rule-ipv4-ext> create ?

Usage:
  CREATE              Create a new IPv4 Extended Rule for a given ACL ID.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --action           permit or deny

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
(enable|disable)
   --dscp             Match the DSCP value. (not-used|0..63)
   --dst-ipv4-addr    Destination IPv4 Address
   --dst-ipv4-mask    Destination IPv4 Mask
   --dst-port-end     Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start   Specify Destination L4 port number (not-used|0..65535)
   --name             Set a name for a specific Rule (STRING 31)
   --precedence       Match IP precedence value (not-used|0..7)
   --protocol         Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --rule-id          Identifies an ACL Rule by ID, in this context.
   --src-ipv4-addr    Source IPv4 Address
   --src-ipv4-mask    Source IPv4 Mask
   --src-port-end     Specify Source L4 port number (not-used|0..65535)
   --src-port-start   Specify Source L4 port number (not-used|0..65535)
   --tos              Specify match condition based on IP TOS Mask value. Two-digit
hexadecimal number (0000..0XFF)
   --tos-mask         Specify match condition based on IP TOS value. Two-digit hexadecimal
number (0000..0XFF)
```

Figure 7-38: CLI on line help on "create" command usage in this node context

7.6.1.9.3 "show" command

Name	show
Description	Show the current IPv4 Extended Rules configured.
Full path	/acl/rule-ipv4-ext/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 7-40; Table parameters are described in Table 7-22.

Table 7-21: "show" command information

```
/cli/acl/rule-ipv4-ext> show ?

Usage:
  SHOW              Show the current IPv4 Extended Rules configured.

   [OPTIONAL]
   --acl-id         Identifies an ACL by ID, in this context.
```

Figure 7-39: CLI on line help on "show" command usage in this node context

```
/cli/acl> rule-ipv4-ext/show
+-------------------------------------------------------------------------------------------------+
|IPv4 Extended Rules                                                                              |
+--------+--------+----------+-------+--------------------+--------------------------------------+
|ACL ID  |Rule ID|Admin     |Action |Parameter           |Value                                 |
+--------+--------+----------+-------+--------------------+--------------------------------------+
|1       |1       |disable   |permit |Name                |rule_1                                |
|        |        |          |       |Protocol            |not-used                              |
|        |        |          |       |DSCP                |not-used                              |
|        |        |          |       |Src Start Port      |not-used                              |
|        |        |          |       |Src End   Port      |not-used                              |
|        |        |          |       |Dst Start Port      |not-used                              |
|        |        |          |       |Dst End   Port      |not-used                              |
|        |        |          |       |Source IP           |11.12.13.14                           |
|        |        |          |       |Source IP Mask      |15.16.17.18                           |
|        |        |          |       |Destination IP      |19.20.21.22                           |
|        |        |          |       |Destination IP Mask |23.24.25.26                           |
|        |        |          |       |TOS                 |0                                     |
|        |        |          |       |TOS Mask            |0                                     |
|        |        |          |       |Precedence          |not-used                              |
|1       |2       |disable   |permit |Name                |rule_2                                |
|        |        |          |       |Protocol            |not-used                              |
|        |        |          |       |DSCP                |not-used                              |
|        |        |          |       |Src Start Port      |not-used                              |
|        |        |          |       |Src End   Port      |not-used                              |
|        |        |          |       |Dst Start Port      |not-used                              |
|        |        |          |       |Dst End   Port      |not-used                              |
|        |        |          |       |Source IP           |0.0.0.0                               |
|        |        |          |       |Source IP Mask      |0.0.0.0                               |
|        |        |          |       |Destination IP      |0.0.0.0                               |
|        |        |          |       |Destination IP Mask |0.0.0.0                               |
|        |        |          |       |TOS                 |0                                     |
|        |        |          |       |TOS Mask            |0                                     |
|        |        |          |       |Precedence          |not-used                              |
```

Figure 7-40: Output of "show" command without arguments in this node context –partial view

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Parameter	
Value	

Table 7-22: "show" command output table parameters

7.6.1.10 "rule-ipv4-std" sub-node

7.6.1.10.1 "config" command

Name	config
Description	Configure an existing IPv4 Standard Rule
Full path	/acl/rule-ipv4-std/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-23: "config" command information

```
/cli/acl/rule-ipv4-std> config ?

Usage:
  CONFIG              Configure an existing IPv4 Standard Rule.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --rule-id          Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action           permit or deny
   --admin            Administrative State. Enable/disable, in this context.
(enable|disable)
   --name             Set a name for a specific Rule (STRING 31)
   --src-ipv4-addr    Source IPv4 Address
   --src-ipv4-mask    ource Wildcard Mask
```

Figure 7-41: CLI on line help on "config" command usage in this node context

7.6.1.10.2 "create" command

Name	Create
Description	Create a new IPv4 Standard Rule for a given ACL ID.
Full path	/acl/rule-ipv4-std/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Table 7-24: "create" command information

```
cli/acl/rule-ipv4-std> create ?

Usage:
  CREATE              Create a new IPv4 Standard Rule for a given ACL ID.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --action           permit or deny

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
(enable|disable)
   --name             Set a name for a specific Rule (STRING 31)
   --rule-id          Identifies an ACL Rule by ID, in this context.
   --src-ipv4-addr    Source IPv4 Address
   --src-ipv4-mask    Source Wildcard
```

Figure 7-42: CLI on line help on "create" command usage in this node context

7.6.1.10.3 "show" command

Name	show
Description	Show the current IPv4 Standard Rules configured.
Full path	/acl/rule-ipv4-std/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 7-44; Table parameters are described in Table 7-26.

Table 7-25: "show" command information

```
/cli/acl/rule-ipv4-std> show ?

Usage:
  SHOW                Show the current IPv4 Standard Rules configured.

   [OPTIONAL]
   --acl-id           Identifies an ACL by ID, in this context.
```

Figure 7-43: CLI on line help on "show" command usage in this node context

```
/cli/acl> rule-ipv4-std/show
+-------------------------------------------------------------------------------------+
|IPv4 Standard Rules                                                                  |
+-------+-------+----------------+---------+-------+-----------------+-----------------+
|ACL ID |Rule ID|Rule Name       |Admin    |Action |Source IP        |Source Mask      |
+-------+-------+----------------+---------+-------+-----------------+-----------------+
+-------+-------+----------------+---------+-------+-----------------+-----------------+
```

Figure 7-44: Output of "show" command without arguments in this node context

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Rule Name	Rule name
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Source IP	Source IPv4 address
Source Mask	Source IPv4 mask

Table 7-26: "show" command output table parameters

7.6.1.11 "rule-ipv6-ext" sub-node

7.6.1.11.1 "config" command

Name	config
Description	Configure an existing IPv6 Extended Rule
Full path	/acl/rule-ipv6-ext/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-: "config" command information

```
/cli/acl/rule-ipv6-ext> config ?

Usage:
  CONFIG              Configure an existing IPv6 Extended Rule.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --rule-id          Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action           permit or deny
   --admin            Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp             Match the DSCP value. (not-used|0..63)
   --dst-ipv6-addr    Destination IPv6 Address
   --dst-ipv6-prefix  Destination IPv6 prefix length (0..128)
   --dst-port-end     Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start   Specify Destination L4 port number (not-used|0..65535)
   --flow-label       Match IPv6 flow label field (not-used|0..1048575)
   --name             Set a name for a specific Rule (STRING 31)
   --protocol         Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --src-ipv6-addr    Source IPv6 Address
   --src-ipv6-prefix  Source IPv6 prefix length (0..128)
   --src-port-end     Specify Source L4 port number (not-used|0..65535)
   --src-port-start   Specify Source L4 port number (not-used|0..65535)
```

Figure 7-45: CLI on line help on "config" command usage in this node context

7.6.1.11.2 "create" command

Name	Create
Description	Create a new IPv6 Extended Rule for a given ACL ID.
Full path	/acl/rule-ipv6-ext/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Table 7-28: "create" command information

```
/cli/acl/rule-ipv6-ext> create ?

Usage:
  CREATE              Create a new IPv6 Extended Rule for a given ACL ID.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --action           permit or deny

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp             Match the DSCP value. (not-used|0..63)
   --dst-ipv6-addr    Destination IPv6 Address
   --dst-ipv6-prefix  Destination IPv6 prefix length (0..128)
   --dst-port-end     Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start   Specify Destination L4 port number (not-used|0..65535)
   --flow-label       Match IPv6 flow label field (not-used|0..1048575)
   --name             Set a name for a specific Rule (STRING 31)
   --protocol         Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --rule-id          Identifies an ACL Rule by ID, in this context.
   --src-ipv6-addr    Source IPv6 Address
   --src-ipv6-prefix  Source IPv6 prefix length (0..128)
   --src-port-end     Specify Source L4 port number (not-used|0..65535)
   --src-port-start   Specify Source L4 port number (not-used|0..65535)
```

Figure 7-46: CLI on line help on "create" command usage in this node context

7.6.1.11.3 "show" command

Name	show
Description	Show the current IPv6 Extended Rules configured.
Full path	/acl/rule-ipv6-ext/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 7-48; Table parameters are described in Table 7-30.

Table 7-29: "show" command information

```
/cli/acl/rule-ipv6-ext> show ?

Usage:
  SHOW              Show the current IPv6 Extended Rules configured.

   [OPTIONAL]
   --acl-id         Identifies an ACL by ID, in this context.
```

Figure 7-47: CLI on line help on "show" command usage in this node context

```
/cli/acl> rule-ipv6-ext/show
+-------------------------------------------------------------------------
|IPv6 Extended Rules
+-------+-------+---------+-------+---------------------+-----------------
|ACL ID |Rule ID|Admin    |Action |Parameter            |Value
+-------+-------+---------+-------+---------------------+-----------------
+-------+-------+---------+-------+---------------------+-----------------
```

Figure 7-48: Output of "show" command without arguments in this node context

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Parameter	
Value	

Table 7-30: "show" command output table parameters

7.6.1.12 "rule-mac" sub-node

7.6.1.12.1 "config" command

Name	config
Description	Configure an existing MAC Rule
Full path	/acl/rule-mac/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Table 7-31: "config" command information

```
/cli/acl/rule-mac> config ?

Usage:
  CONFIG              Configure an existing MAC Rule.

   <MANDATORY>
   --acl-id           Identifies an ACL by ID, in this context.
   --rule-id          Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action           permit or deny
   --admin            Administrative State. Enable/disable, in this context. (enable|disable)
   --cos              Match condition based on the CoS value (not-used|0..7)
   --dst-mac-addr     Destination MAC address in the format [AA:BB:CC:DD:EE:FF]
   --dst-mac-mask     Destination MAC mask in the format [AA:BB:CC:DD:EE:FF]
   --ethernet-type    Four-digit hexadecimal number to specify an 'Ethertype' value (not-
used|0X600..0XFFFF)
   --name             Set a name for a specific Rule (STRING 31)
   --src-mac-addr     Source MAC address in the format [AA:BB:CC:DD:EE:FF]
   --src-mac-mask     Source MAC mask in the format [AA:BB:CC:DD:EE:FF]
```

Figure 7-49: CLI on line help on "config" command usage in this node context

7.6.1.12.2 "create" command

Name	Create
Description	Create a new MAC Rule for a given ACL ID.
Full path	/acl/rule-mac/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Table 7-32: "create" command information

```
/cli/acl/rule-mac> create ?

Usage:
  CREATE               Create a new MAC Rule for a given ACL ID.

   <MANDATORY>
   --acl-id            Identifies an ACL by ID, in this context.
   --action            permit or deny

   [OPTIONAL]
   --admin             Administrative State. Enable/disable, in this context.
(enable|disable)
   --cos               Match condition based on the CoS value (not-used|0..7)
   --dst-mac-addr      Destination MAC address in the format [AA:BB:CC:DD:EE:FF]
   --dst-mac-mask      Destination MAC mask in the format [AA:BB:CC:DD:EE:FF]
   --ethernet-type     Four-digit hexadecimal number to specify an 'Ethertype' value (not-
used|0X600..0XFFFF)
   --name              Set a name for a specific Rule (STRING 31)
   --rule-id           Identifies an ACL Rule by ID, in this context.
   --src-mac-addr      Source MAC address in the format [AA:BB:CC:DD:EE:FF]
   --src-mac-mask      Source MAC mask in the format [AA:BB:CC:DD:EE:FF]
```

Figure 7-50: CLI on line help on "create" command usage in this node context

7.6.1.12.3 "show" command

Name	show
Description	Show the current MAC Rules configured.
Full path	/acl/rule-mac/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 7-60; Table parameters are described in Table 7-34.

Table 7-33: "show" command information

```
/cli/acl/rule-mac> show ?

Usage:
  SHOW                Show the current MAC rules configured.

   [OPTIONAL]
   --acl-id            Identifies an ACL by ID, in this context.
```

Figure 7-51: CLI on line help on "show" command usage in this node context

```
/cli/acl> rule-mac/show
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|MAC Rules                                                                                                                                              |
+-------+-------+---------------+-------+------+--------+-------+-----------------+-----------------+-----------------+-----------------+
|ACL ID |Rule ID|Rule Name      |Admin  |Action|Eth-Type|CoS    |Source MAC Addr  |Source MAC Mask  |Destination MAC Addr|Destination MAC Mask|
+-------+-------+---------------+-------+------+--------+-------+-----------------+-----------------+-----------------+-----------------+
+-------+-------+---------------+-------+------+--------+-------+-----------------+-----------------+-----------------+-----------------+
```

Figure 7-52: Output of "show" command without arguments in this node context

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Name	Rule Name (text)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Eth-Type	Four-digit hexadecimal number to specify an 'Ethertype' value (not-used|0X600..0XFFFF)
CoS	Match condition based on the CoS value (not-used|0..7)
Source MAC Addr	Source MAC address
Source MAC Mask	Source MAC mask
Destination MAC Addr	Destination MAC address
Destination MAC Mask	Destination MAC mask

Table 7-34: "show" command output table parameters

EN

7.6.2 "applications" node

```
/cli/applications> tree
+ applications[]
   + firmware-upgrade[]
      + files[@check, @config, @export, @import, @remove, @show, @status]
      + onu-upgrade[@apply-file, @availableValues, @execute]
   + manager[@config, @show, @showconfig]
   + olt-upgrade[@apply-file, @import]
   + time[]
      + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
      + time-zone[@availableValues, @config, @show, @showconfig]
```

Figure 7-53: Applications node tree

7.6.2.1 "firmware-upgrade" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in **/applications/firmware-upgrade/onu-upgrade** node).

The **/applications/firmware-upgrade/files** node is used to manage the local firmware repository.

7.6.2.1.1 "files" sub-node

7.6.2.1.1.1 "check" command

Name	check
Description	Calculates MD5SUM for all files to check for inconsistencies.
Full path	/applications/firmware-upgrade/files/check
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-35: "check" command information

```
/cli/applications> firmware-upgrade/files/check ?

Usage:
  CHECK           Calculate MD5SUM for all files to check for inconsistencies.
```

Figure 7-54: CLI on line help on "check" command usage in this node context

7.6.2.1.1.2 "config" command

Name	config
Description	Configures usage by the system of existing configuration files in the repository
Full path	/applications/firmware-upgrade/files/config
Mandatory Parameters	--fileID
Screen Output	No

Table 7-36: "config" command information

```
/cli/applications/firmware-upgrade> files/config ?

Usage CONFIG:
  CONFIG               Configure information for a given file ID.

   <MANDATORY>
   --fileID            Identifies a file by ID, in this context.

   [OPTIONAL]
   --asw-version       Set the active software version for a given file. (STRING 31)
   --description       Set a description for the specified file. (STRING 47)
   --hw-version        Set the hardware version for a given file. (STRING 31)
   --profileID         Identifies a profile by ID.
   --set-default       Set the default file for the 'auto' upgrade option. (true|false)
   --sw-version        Set the software version for a given file. (STRING 31)
```

Figure 7-55: CLI on line help on "config" command usage in this node context

7.6.2.1.1.3 "export" command

Name	export
Description	Sends an existing file to a TFTP server.
Full path	/applications/firmware-upgrade/files/export
Mandatory Parameters	--fileID --ip-address
Screen Output	No

Table 7-37: "export" command information

```
/cli/applications/firmware-upgrade> files/export ?

Usage EXPORT:
  EXPORT                  Send an existing file to a TFTP server.

   <MANDATORY>
   --fileID               Identifies a file by ID, in this context.
   --ip-address           IPv4 address

   [OPTIONAL]
   --ip-port              Identifies the IP port number to use. (1..65535)
   --remote-file          The Path/to/file on the TFTP server. (STRING 255)
```

Figure 7-56: CLI on line help on "export" command usage in this node context

7.6.2.1.1.4 "import" command

Name	import
Description	Sends an existing file to a TFTP server.
Full path	/applications/firmware-upgrade/files/import
Mandatory Parameters	--file-name --ip-address --profileID --remote-file --sw-version
Screen Output	No

Table 7-38: "import" command information

```
/Usage IMPORT:
  IMPORT                  Import a new file from a TFTP server

   <MANDATORY>
   --file-name            Specify the file name (STRING 47)
   --ip-address           IPv4 address
   --profileID            Identifies a profile by ID.
   --remote-file          The Path/to/file on the TFTP server. (STRING 255)
   --sw-version           Set the software version for a given file. (STRING 31)

   [OPTIONAL]
   --asw-version          Set the active software version for a given file. (STRING 31)
   --description          Set a description for the specified file. (STRING 47)
   --hw-version           Set the hardware version for a given file. (STRING 31)
   --ip-port              Identifies the IP port number to use. (1..65535)
```

Figure 7-57: CLI on line help on "import" command usage in this node context

7.6.2.1.1.5 "remove" command

Name	remove
Description	Removes an existing file from the repository.
Full path	/applications/firmware-upgrade/files/remove
Mandatory Parameters	No mandatory parameters
Screen Output	No

Table 7-39: "remove" command information

```
/cli/applications/firmware-upgrade/files> remove ?

Usage:
  REMOVE       Remove an existing file from the repository.

   [OPTIONAL]
   --fileID    Identifies a file by ID, in this context.
```

Figure 7-58: CLI on line help on "remove" command usage in this node context

7.6.2.1.1.6 "show" command

Name	show
Description	Shows the current ONU firmware files.
Full path	/applications/firmware-upgrade/files/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 7-60 and Figure 7-61. Table parameters are described in Table 7-41.

Table 7-40: "show" command information

```
/cli/applications/firmware-upgrade/files> show ?

Usage:
  SHOW         Show the current ONU firmware files.

   [OPTIONAL]
   --fileID    Identifies a file by ID, in this context.
```

Figure 7-59: CLI on line help on "show" command usage in this node context

```
/cli/applications/firmware-upgrade> files/show
+------------------------------------------------------------------------------------------------------------------------------------------------
|Files List
+---+------------------------------+------------+-------+------------------------------+---------------+---------------+---------------+------------
|ID |Name                          |Size (Bytes)|Default|ONU Profile (ID) Name         |SW version     |ASW version    |HW version     |Description
+---+------------------------------+------------+-------+------------------------------+---------------+---------------+---------------+------------
|1  |NT7SW03040001                 |1426897     |No     |(1) SFU                       |NT7SW03040001  |               |               |
+---+------------------------------+------------+-------+------------------------------+---------------+---------------+---------------+------------
```

Figure 7-60: Output of "show" command without arguments in this node context

Parameter	Description
ID	File identification (number)
Name	File name (text)
Size (Bytes)	File size (Bytes)
Default	Identifies if the file is the default file (Yes|No)
(ID) ONT Profile Name	(ONT Profile ID (number)) ONT Profile Name (text)
SW version	Software version (text)
ASW version	Active software version (text)
HW version	Hardware version (text)
Description	File description (text)
MD5 Sum	File MD5 Sum calculated value (only displayed when the command is executed with a specific file as argument)

Table 7-41. "show" command output table parameters

```
/cli/applications/firmware-upgrade> files/show --fileID=1
+-----------------------------------------------------------
|File 1 - 'NT7SW03040001'
+-----------------------+-----------------------------------
|Parameter              |Value
+-----------------------+-----------------------------------
|ID                     |1
|Name                   |NT7SW03040001
|Size (Bytes)           |1426897
|Default                |NO
|ONU Profile (ID) Name  |(1) SFU
|SW version             |NT7SW03040001
|HW version             |
|Description            |
|MD5 Sum                |e9871334cc891926f9f14155e3b3d5aa
+-----------------------+-----------------------------------
```

Figure 7-61: Output of "show" command with argument fileID in this node context

7.6.2.1.1.7 "status" command

Name	status
Description	Display existing problems with the file repository.
Full path	/applications/firmware-upgrade/files/status
Mandatory Parameters	No parameters
Screen Output	Table, Figure 7-63. Table parameters are described in Table 7-43

Table 7-42: "status" command information

```
/cli/applications/firmware-upgrade/files> status ?

Usage:
  STATUS          Display existing problems with the file repository.
```

Figure 7-62: CLI on line help on "status" command usage in this node context

```
/cli/applications/firmware-upgrade> files/status
+-----------------------------------------------------------------------------
|Files List
+---+-----------------------------------------+--------------------+----------
|ID |Name                                     |Status              |Solution
+---+-----------------------------------------+--------------------+----------
|1  |NT7SW03040001                            |OK                  |--
+---+-----------------------------------------+--------------------+----------
```

Figure 7-63: Output of "status" command in this node context

Parameter	Description
ID	File identification (number)
Name	File name (text)
Status	File status. If Ok no problem exists with the file
Solution	Proposed solution for the identified problem

Table 7-43:"status" command output table parameters

7.6.2.1.2 "ONU-upgrade" sub-node

7.6.2.1.2.1 "apply-file" Command

The command apply-file must ask for user confirmation before running.

If neither 'commit' nor 'activate' parameters are used in the command line or if both parameters are used but set to the <disable> value, the image is only downloaded into the ONU

Name	apply-file
Description	Sends a specified firmware version to a specific ONU, or all ONUs in a specific <slot-port>.
Full path	/applications/firmware-upgrade/onu-upgrade/apply-file
Mandatory Parameters	--fileID
Screen Ouput	No

Table 7-44: " apply-file" command information

```
/cli/applications/firmware-upgrade/onu-upgrade> apply-file ?

Usage:
  APPLY-FILE      Send a specified firmware version to a specific ONU, or all ONUs in a specific
<slot-port>.

   <MANDATORY>
   --fileID       Identifies a file by ID, in this context.

   [OPTIONAL]
   --activate     The ONU reboots and starts up with this image. The default boot image is not
modified. (enable|disable)
   --commit       This image will be set to be the default boot image. (enable|disable)
   --onuID        Identifies an ONU by ID. (Not used means all ONUs)
   --port         Identifies an interface on the given slot. (only PON interfaces are
available.    Not used means all PONs)
```

Figure 7-64: CLI on line help on "apply-file" command usage in this node context

7.6.2.1.2.2 "availableValues" Command

Name	availableValues
Description	Shows available options for each argument.
Full path	/applications/firmware-upgrade/onu-upgrade/ apply-file
Mandatory Parameters	No
Screen Output	Table, Figure 7-66, Tables parameters are described in Table 7-46

Table 7-45: "availableValues" command information

```
/cli/applications/firmware-upgrade/onu-upgrade> availableValues ?

Usage:
  AVAILABLEVALUES   Show available options for each argument.

   [OPTIONAL]
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-65: CLI on line help on "availableValues" command usage in this node context

```
/cli/applications/firmware-upgrade/onu-upgrade> availableValues


+-------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                  |
+------+------+--------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                             |
+------+------+--------------------------------------------------------------------------+
|1     |PON 1 | 01                                                                       |
|1     |PON 2 |                                                                          |
|1     |PON 3 | 01                                                                       |
|1     |PON 4 | 01                                                                       |
|1     |PON 5 |                                                                          |
|1     |PON 6 | 02 03 01                                                                 |
|1     |PON 7 | 01                                                                       |
|1     |PON 8 | 01 02                                                                    |
+------+------+--------------------------------------------------------------------------+
/cli/applications/firmware-upgrade/onu-upgrade>
```

Figure 7-66: Output of "availableValues" command in this node context without arguments

This command returns information on the availableValues usable in this sub-node context, in the format of a table.

Parameter	Description
Slot	Used slots in the system
Port	Used PON interfaces
ONTs IDs list	List of ONTs per PON interface

Table 7-46: "availableValues" command output table parameters

7.6.2.1.2.3 "execute" command

Name	execute
Description	Updates firmware on all the ONUs in the given <slot,port>.
Full path	/applications/firmware-upgrade/onu-upgrade/ execute
Mandatory Parameters	No
Screen Output	No

Table 7-:47 "execute" command information

```
/cli/applications> firmware-upgrade/onu-upgrade/execute ?

Usage:
  EXECUTE      Will update firmware on all the ONUs in the given <slot,port>.

   [OPTIONAL]
   --auto     Send firmware to all ONUs that have software version set to 'auto'.
(enable|disable)
   --planned  Send firmware to all ONUs that have software version set to 'planned'.
(enable|disable)
   --port     Identifies an interface on the given slot. (only PON interfaces are available.
Not used means all PONs)
```

Figure 7-67: CLI on line help on execute command usage in this node context

The command executed must ask for user confirmation before running.

In this command the user does not select a firmware file. The file is chosen automatically for each ONT based on the software version and hardware versions defined.

About the sw-version parameter:

- **OFF** – this ONT does not have a software version specified. See the **/applications/firmware-upgrade** node for more information.
- **AUTO** – this ONT has the software version set to automatically. This ONT will receive software updates from the default file for the configured profile. See the **/applications/firmware- upgrade** node for more information.
- **text** – Insert a valid sw-version or create a new one. This ONT will only receive updates executed as **"planned"** from the files that have a matching sw-version.

7.6.2.2 "manager" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in /applications/firmware-upgrade/onu-upgrade node).

The /applications/firmware-upgrade/files node is used to manage the local firmware repository.

7.6.2.2.1 "config" command

Name	config
Description	Configures management information
Full path	/applications/manager/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-48: "config" command information

```
/cli/applications> manager/config ?

Usage:
  CONFIG           Configure management information

   <MANDATORY>
   --ID            Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin         Administrative State. Enable/disable, in this context. (enable|disable)
   --buffer-size   Specify the trap buffer size in bytes (informs only).
   --interval      Wait the specified period of seconds before re-sending the trap when no
                   ACK is received (informs only).
   --ip-address    IPv4 address
   --ip-port       Identifies the IP port number to use. (1..65535)
   --permissions   Allow this manager to READ or READ/CONFIGURE on this equipment  (ro|rw)
   --retries       Number of retries before skipping the current trap (informs only).
   --trap-mode     Specify the trap mode (none|trap-ack|trap-v2|inform)
```

Figure 7-68: CLI on line help on "config" command usage in this node context

7.6.2.2.2 "show" command

Name	show
Description	Shows the current management configuration
Full path	/applications/manager/show
Mandatory Parameters	This command has no parameters
Screen Output	Table,Figure 7-70; table parameters description in Table 7-50

Table 7-49: "show" command information

```
/cli/applications> manager/show ?

Usage:
  SHOW        Show the current management configuration
```

Figure 7-69: CLI on line help on "show" command usage in this node context


```
/cli/applications> manager/show
+-----------------------------------------------------------------------------------------------------------------------+
|Manager Configuration                                                                                                  |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+----------+
|ID |Manager IP     |Admin    |Trap Mode |Permissions  |Send Port  |Buffer size (bytes)|Interval (s)  |Retries   |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+----------+
|1  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --       |
|2  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --       |
|3  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --       |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+----------+
```

Figure 7-70: Output of "show" command in this node context

Parameter	Description
ID	Manager ID
Manager IP	Manager IPv4 address
Admin	Administrative State.
Trap Mode	Used Trap mode for the OLT to communicate with Network Management System. (none|Trap/Ack|Trap V2| Inform)
Permissions	Manager permissions in the equipment (READ|READ/CONFIGURE)
Send Port	Used IP port number to send traps
Buffer size(bytes)	trap buffer size
Interval (s)	Waiting period of time before re-sending the trap when no ACK is received
Retries	Number of retries before skipping the current trap

Table 7-50: show command output table parameters

7.6.2.3 "olt-upgrade" sub-node

7.6.2.3.1 "apply-file" command

Name	apply-file
Description	Updates OLT-OS with the last imported setup file. The system will reboot to use the new image.
Full path	/applications/olt-upgrade/apply-file
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-51: "apply-file" command information

```
/cli/applications> olt-upgrade/apply-file ?

Usage:
  APPLY-FILE      Update OLT-OS with the last imported setup file. The system will reboot
                  to use the new image.
```

Figure 7-71: CLI on line help on "apply-file" command usage in this node context

7.6.2.3.2 "import" command

Name	import
Description	Imports a new OLT-OS setup file from a TFTP server.
Full path	/applications/olt-upgrade/import
Mandatory Parameters	--file-name
Screen Output	--ip-address

Table 7-52: "import" command information

```
/cli/applications> olt-upgrade/import ?

Usage:
  IMPORT           Import a new OLT-OS setup file from a TFTP server.

   <MANDATORY>
   --file-name      The path/to/olt/setup/filename to import from the TFTP server (STRING
                    255)
   --ip-address     IPv4 address

   [OPTIONAL]
   --ip-port        Identifies the IP port number to use. (1..65535)
```

Figure 7-72: CLI on line help on "import" command usage in this node context

7.6.2.4 "time" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in **/applications/firmware-upgrade/onu-upgrade** node).

The **/applications/firmware-upgrade/files** node is used to manage the local firmware repository

7.6.2.4.1 "ntp" sub-node

This sub-node allows the configuration of the NTP servers.

7.6.2.4.1.1 "config" Command

Name	config
Description	Configures an existing NTP server.
Full path	/applications/time/ntp/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-53: "config" command information

```
/cli/applications> time/ntp/config ?

Usage:
  CONFIG          Configure

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-address   IPv4 address
   --name         Define a name for this NTP server (STRING 15)
```

Figure 7-73: CLI on line help on "config" command usage in this node context

7.6.2.4.1.2 "create" command

Name	create
Description	Creates a new NTP server entry
Full path	/applications/time/ntp/create
Mandatory Parameters	--ip-address --name
Screen Output	No

Table 7-54: "create" command information

```
/cli/applications> time/ntp/create ?

Usage:
  CREATE          Create

   <MANDATORY>
   --ip-address   IPv4 address
   --name         Define a name for this NTP server (STRING 15)

   [OPTIONAL]
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
```

Figure 7-74: CLI on line help on "create" command usage in this node context

7.6.2.4.1.3 "disable" command

Name	disable
Description	Disable global NTP time configuration.
Full path	/applications/time/ntp/disable
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-55: "disable" command information

```
/cli/applications> time/ntp/disable ?

Usage:
  DISABLE         Disable global NTP time configuration.
```

Figure 7-75: CLI on line help on "disable" command usage in this node context

7.6.2.4.1.4 "enable" command

Name	enable
Description	enable global NTP time configuration.
Full path	/applications/time/ntp/enable
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-56: "enable" command information

```
/cli/applications> time/ntp/enable ?

Usage:
  ENABLE          Enable global NTP time configuration.
```

Figure 7-76: CLI on line help on "enable" command usage in this node context

7.6.2.4.1.5 "remove" command

Name	remove
Description	Removes a configured NTP server.
Full path	/applications/time/ntp/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-57: "remove" command information

```
/cli/applications> time/ntp/remove ?

Usage:
  REMOVE       Remove

   <MANDATORY>
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-77; CLI on line help on "remove" command usage in this node context

7.6.2.4.1.6 "show" command

Name	show
Description	Shows the current configuration
Full path	/applications/time/ntp/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-; table parameters description in Table 7-

Table 7-58: "show" command information

```
/cli/applications> time/ntp/show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-78: CLI on line help on "show" command usage in this node context

```
/cli/applications/time/ntp> show
+---------------------------------------+
|Global NTP State                       |
+---------------------------------------+
|Disabled                               |
+---------------------------------------+

+-------------------------------------------+
|Configured NTP Servers                     |
+---+-------+---------------+---------------+
|ID |Admin  |Name           |IP             |
+---+-------+---------------+---------------+
|1  |enable |ALAVARIUM      |10.112.84.114  |
+---+-------+---------------+---------------+
/cli/applications/time/ntp>
```

Figure 7-79: Output of "show" command in this node context

Parameter	Description
Global NTP state	Current Global NTP server state (enabled|disabled)
ID	Current NTP server ID
Admin	Current administrative state
Name	Current NTP server name
IP	Current NTP server IP address (IPv4 address)

Table 7-59: "show" command output table parameters

7.6.2.4.1.7 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/time/ntp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-60: "showconfig" command information

```
/cli/applications> time/ntp/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-80: CLI on line help on "showconfig" command usage in this node context

7.6.2.4.2 "time-zone" sub-node

This sub-node allows the configuration of the system time and the time zones.

7.6.2.4.2.1 "availableValues" command

Name	availableValues
Description	Displays all supported Time Zones and respective IDs.
Full path	/applications/time/time-zone/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7- . Table parameters described in Table 7-

Table 7-61: "availableValues" command information

```
/cli/applications> time/time-zone/availableValues ?

Usage:
  AVAILABLEVALUES  Display all supported Time Zones and respective IDs.
```

Figure 7-81: CLI on line help on "availableValues" command usage in this node context

```
+-------------------------------------------------------------------------------------------------------------------
|Time Zones Available Values
+-----+-------------------------------------------------------------+-----------------------------------------
|ID   |Time-Zone Name                                               |Time-Zone Description
+-----+-------------------------------------------------------------+-----------------------------------------
|412  |America/Denver                                               |Mountain Time
|413  |America/Boise                                                |Mountain Time - south Idaho & east Oregon
|414  |America/Shiprock                                             |Mountain Time - Navajo
|415  |America/Phoenix                                              |Mountain Standard Time - Arizona
|416  |America/Los_Angeles                                          |Pacific Time
|417  |America/Anchorage                                            |Alaska Time
|418  |America/Juneau                                               |Alaska Time - Alaska panhandle
|419  |America/Sitka                                                |Alaska Time - southeast Alaska panhandle
|420  |America/Yakutat                                              |Alaska Time - Alaska panhandle neck
|421  |America/Nome                                                 |Alaska Time - west Alaska
|422  |America/Adak                                                 |Aleutian Islands
|423  |America/Metlakatla                                           |Metlakatla Time - Annette Island
|424  |Pacific/Honolulu                                             |Hawaii
|425  |America/Montevideo                                           |
|426  |Asia/Samarkand                                               |west Uzbekistan
|427  |Asia/Tashkent                                                |east Uzbekistan
|428  |Europe/Vatican                                               |
|429  |America/St_Vincent                                           |
|430  |America/Caracas                                              |
|431  |America/Tortola                                              |
|432  |America/St_Thomas                                            |
|433  |Asia/Ho_Chi_Minh                                             |
|434  |Pacific/Efate                                                |
|435  |Pacific/Wallis                                               |
|436  |Pacific/Apia                                                 |
|437  |Asia/Aden                                                    |
|438  |Indian/Mayotte                                               |
|439  |Africa/Johannesburg                                          |
|440  |Africa/Lusaka                                                |
|441  |Africa/Harare                                                |
|--   |UTC                                                          |
+-----+-------------------------------------------------------------+-----------------------------------------
```

Figure 7-82: Partial output of "availableValues" command in this node context

Parameter	Description
ID	Time Zone identifier (number)
Time-Zone Name	Time Zone identifier (name)
Time-Zone description	Indicates region to which the indicated time zone is applicable

Table 7-62: "availableValues" command output table parameters

7.6.2.4.2.2 "config" command

Name	config
Description	Configures time-zone information.
Full path	/applications/time/time-zone/config
Mandatory Parameters	No
Screen Output	No

Table 7-63: "config" command information

```
/cli/applications> time/time-zone/config ?

Usage:
  CONFIG          Configure time-zone information.

   [OPTIONAL]
   --central-manager-time-zone    Select the time zone of the central manager. (string or
                                  ID from table 'availableValues') (STRING 63)
   --local-time-zone              Select the time zone of the current equipment. (string or
                                  ID from table 'availableValues') (STRING 63)
```

Figure 7-83: CLI on line help on "config" command usage in this node context

7.6.2.4.2.3 "show" command

Name	show
Description	Displays the current time zone configuration.
Full path	/applications/time/time-zone/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-, table parameters described Table 7-

Table 7-64: "show" command information

```
/cli/applications> time/time-zone/show ?

Usage:
  SHOW            Display the current time zone configuration.
```

Figure 7-84: CLI on line help on "show" command usage in this node context

```
/cli/applications/time/time-zone> show
+-------------------------------------------------------------------------------------------------------+
|Time Zones                                                                                             |
+-----------------------------+-------------------------------------------------------------------------+
|Reference                    |Time Zone                                                                |
+-----------------------------+-------------------------------------------------------------------------+
|Local                        |Europe/Lisbon                                                            |
|Network Management Platform  |UTC                                                                      |
+-----------------------------+-------------------------------------------------------------------------+
/cli/applications/time/time-zone>
```

Figure 7-85: Output of "show" command in this node context

Parameter	Description
Reference	Indicates the currently used reference used either by the equipment (Local) and the Network Management Platform
Time Zone	Indicates the currently used Time Zone

Table 7-65: "show" command output table parameters

7.6.2.4.2.4 showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/applications/time/time-zone/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-66: "showconfig" command information

```
/cli/applications> time/time-zone/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-86: CLI on line help on "showconfig" command usage in this node context

7.6.3 "backup-manager" node

7.6.3.1 "create" command

Name	create
Description	Creates a new backup file from the current system state.
Full path	/backup-manager/create
Mandatory Parameters	No
Screen Output	No

Table 7-67: "create" command information

```
/cli/backup-manager> create ?

Usage:
  CREATE              Creates a new backup file from the current system state.

   [OPTIONAL]
   --description     Set a description for the new backup file. Cannot be modified later.
                     (STRING 63)
```

Figure 7-87: CLI on line help on "create" command usage in this node context

7.6.3.2 "del-serv-conf" command

Name	del-serv-conf
Description	Delete the Service configuration. Resets to factory settings.
Full path	/backup-manager/del-serv-conf
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-68: "del-serv-conf" command information

```
/cli/backup-manager> del-serv-conf ?

Usage:
  DEL-SERV-CONF   Delete the Service configuration. Resets to factory settings.
```

Figure 7-88: CLI on line help on "del-serv-conf" command usage in this node context

7.6.3.3 "export" command

Name	export
Description	Send an existing backup file to a TFTP server.
Full path	/backup-manager/ export
Mandatory Parameters	--local-file --server-ip
Screen Output	No

Table 7-69: "export" command information

```
Usage EXPORT:
  EXPORT                Send an existing backup file to a TFTP server.

   <MANDATORY>
   --local-file         A file name on the local repository. (STRING 63)
   --server-ip          The TFTP server IP address

   [OPTIONAL]
   --remote-file        The Path/to/file on the TFTP server. (STRING 255)
   --server-port        The TFTP server port number
```

Figure 7-89: CLI on line help on "export" command usage in this node context

7.6.3.4 "import" command

Name	import
Description	Get a previously exported backup file from a TFTP server.
Full path	/backup-manager/import
Mandatory Parameters	--remote-file --server-ip
Screen Output	No

Table 7-70: "import" command information

```
Usage IMPORT:
  IMPORT                Get a previously exported backup file from a TFTP server.

   <MANDATORY>
   --remote-file        The Path/to/file on the TFTP server. (STRING 255)
   --server-ip          The TFTP server IP address

   [OPTIONAL]
   --local-file         A file name on the local repository. (STRING 63)
   --server-port        The TFTP server port number
```

Figure 7-90: CLI on line help on "import" command usage in this node context

7.6.3.5 "remove" command

Name	remove
Description	Deletes an existing backup file.
Full path	/backup-manager/remove
Mandatory Parameters	--local-file
Screen Output	No

Table 7-71: "remove" command information

```
/cli/backup-manager> remove ?

Usage REMOVE:
  REMOVE                  Deletes an existing backup file.

   <MANDATORY>
   --local-file           A file name on the local repository. (STRING 63)
```

Figure 7-91: CLI on line help on "remove" command usage in this node context

7.6.3.6 "restore" command

Name	restore
Description	Apply a backup file to the current system. The equipment will reboot.
Full path	/backup-manager/restore
Mandatory Parameters	--local-file
Screen Output	No

Table 7-72: "restore" command information

```
/cli/backup-manager> restore ?

Usage:
  RESTORE          Apply a backup file to the current system. The equipment will reboot.

   <MANDATORY>
  --local-file      A file name on the local repository. (STRING 63).
```

Figure 7-92: CLI on line help on "restore" command usage in this node context

7.6.3.7 "show" command

Name	show
Description	Display a table with all existing backup files.
Full path	/backup-manager/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-; table parameter description in Table 7-.

Table 7-73: "show" command information

```
/cli/backup-manager> show ?

Usage:
  SHOW            Display a table with all existing backup files.
```

Figure 7-93: CLI on line help on "show" command usage in this node context

```
/cli/backup-manager> show
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|Backups List                                                                                                                                           |
+-----------------------------------------------------------------+----------+--------+-------------------------------------------------------------------+
|Name                                                             |Date      |Time    |Description                                                        |
+-----------------------------------------------------------------+----------+--------+-------------------------------------------------------------------+
|file20140731_101921_10_112_105_87.db                             |2014/07/31|10:19:21|ghjkgj                                                             |
|file20140731_102010_10_112_105_87.db                             |2014/07/31|10:20:10|gyugiyu                                                            |
|file20140731_102048_10_112_105_87.db                             |2014/07/31|10:20:48|no commghjghjkhjkents                                               |
|file20140731_104010_10_112_105_87.db                             |2014/07/31|10:40:10|fghgh                                                              |
|file20140812_142352_10_112_105_87.db                             |2014/08/12|14:23:52|hugo_12_08_2014                                                    |
+-----------------------------------------------------------------+----------+--------+-------------------------------------------------------------------+
/cli/backup-manager> _
```

Figure 7-94: Output of "show" command in this node context

EN

Parameter	Description
Name	Backup filename
Date	Date of backup file creation
Time	Time of backup file creation
Description	Backup file short description

Table 7-74: "show" command output table parameters

7.6.4 "cfm-probe" node

```
/cli/cfm-probe> tree
+ cfm-probe[@config, @create, @remove, @show, @showconfig, @status]
   + unx-ccm[@remove, @show]
```

Figure 7-95: "cfm-node" tree

7.6.4.1 "config" command

Name	config
Description	Configure a specific CFM probe.
Full path	/cfm-probe/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-75: "config" command information

```
/cli/cfm-probe> config ?

Usage CONFIG:
  CONFIG                          Configure a specific CFM probe.

   <MANDATORY>
   --ID                           Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                        Administrative State. Enable/disable, in this context.
                                  enable|disable)
   --icc-umc                      Specify the concatenated ICC and UMC fields of the MEG ID
                                  according to ITU-T Y.1731
   --level                        Specify level (only 7 allowed)
   --md-format                    Specify the MD Name Format (no-md|dns-
                                  based|mac+integer|string)
   --md-name                      Specify the Maintenance Domain (MD) Name according to
                                  IEEE 802.1ag
   --mep                          Specify MEP Id
   --port                         Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                                  lag.1)
   --rmep                         Specify RMEP Id
   --sma-format                   Specify the Short MA Name Format (primary-
                                  vid|string|integer|rfc2685-vpn-id)
   --sma-name                     Specify the short MA Name according to IEEE 802.1ag
   --transmission-period          Specify the transmission period
                                  (10ms|100ms|1s|10s|1min|10min)
   --vlan                         Choose a VLAN ID.
```

Figure 7-96: CLI on line help on "config" command usage in this node context

7.6.4.2 "create" command

Name	create
Description	Create a new CFM probe.
Full path	/cfm-probe/create
Mandatory Parameters	--mep --port
Screen Output	No

Table 7-76: "create" command information

```
/cli/cfm-probe> create ?

Usage:
  CREATE                  Create a new CFM probe.

   <MANDATORY>
   --mep                  Specify MEP Id
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context.
                          enable|disable)
   --icc-umc              Specify the concatenated ICC and UMC fields of the MEG ID
                          according to ITU-T Y.1731
   --level                Specify level (only 7 allowed)
   --md-format            Specify the MD Name Format (no-md|dns-based|mac+integer|string)
   --md-name              Specify the Maintenance Domain (MD) Name according to IEEE
                          802.1ag
   --rmep                 Specify RMEP Id
   --sma-format           Specify the Short MA Name Format (primary-
                          vid|string|integer|rfc2685-vpn-id)
   --sma-name             Specify the short MA Name according to IEEE 802.1ag
   --transmission-period  Specify the transmission period (10ms|100ms|1s|10s|1min|10min)
   --vlan                 Choose a VLAN ID.
```

Figure 7-97: CLI on line help on "create" command usage in this node context

7.6.4.3 "remove" command

Name	remove
Description	Remove an existing CFM probe.
Full path	/cfm-probe/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-77: "remove" command information

```
/cli/cfm-probe> remove ?

Usage:
  REMOVE       Remove an existing CFM probe.

   <MANDATORY>
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-98: CLI on line help on "remove" command usage in this node context

7.6.4.4 "show" command

Name	show
Description	Show the current CFM probe configuration
Full path	/cfm-probe/show
Mandatory Parameters	No
Screen Output	Tables ,Figure 7- and Figure 7-; tables' parameters description in Table 7-.

Table 7-78: "show" command information

```
/cli/cfm-probe> show ?

Usage:
  SHOW        Show the current CFM probe configuration

   [OPTIONAL]
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-99: CLI on line help on "show" command usage in this node context

```
/cli> cfm-probe/show
+-------------------------------------------------------------------------------------------------------------------------------------------+
|CFM Probes                                                                                                                                 |
+----+---+---------+-------+------+------+-----+------------------+-------------------------------------------------------------+-----+
|Slot|ID |Admin    |Port   |MEP   |RMEP  |Level|Transmission Period|MEG ID / MAID                                                |VLAN |
+----+---+---------+-------+------+------+-----+------------------+-------------------------------------------------------------+-----+
|1   |1  |enable   |10GbE 4|44    |31    |7    |100ms              |MD/SMA: 0021 / 0022                                          |1000 |
|1   |2  |enable   |10GbE 1|41    |94    |7    |100ms              |MD/SMA: Ring-AIS-P1 / 1000                                   |1000 |
+----+---+---------+-------+------+------+-----+------------------+-------------------------------------------------------------+-----+
```

Figure 7-100: Output of "show" command without arguments in this node context

```
/cli> cfm-probe/show --ID=1
+-------------------------------------------------------------------------------------------------------------------------------------------+
|CFM Probe (1)                                                                                                                              |
+--------------------+----------------------------------------------------------------------------------------------------------------------+
|Parameter           |Value                                                                                                                 |
+--------------------+----------------------------------------------------------------------------------------------------------------------+
|Slot                |1                                                                                                                     |
|ID                  |1                                                                                                                     |
|Admin               |enable                                                                                                                |
|Port                |10GbE 4                                                                                                               |
|MEP                 |44                                                                                                                    |
|RMEP                |31                                                                                                                    |
|Level               |7                                                                                                                     |
|Timeout             |                                                                                                                      |
|VLAN                |1000                                                                                                                  |
|MEG ID / MAID       |MD/SMA: 0021 / 0022                                                                                                   |
|MEG ID / MAID (raw):|0404303032310204303032320000000000000000000000000000000000000000000000000000000000000000000000000000000000000000    |
+--------------------+----------------------------------------------------------------------------------------------------------------------+
```

Figure 7-101: Output of "show" command with arguments slot and ID in this node context

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring
MEP	MEP Identification forwarded by the probe in the CCM message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
Level	Probe OAM level, from 0-7 **Operator** (0, 1, 2) **Provider** (3, 4) **Customer** (5, 6, 7)
Transmission Period	Forwarding period of the CCM frames
MEG ID/MAID	Identification of the CFM maintenance group
VLAN	VLAN that encapsulates the CCM frame sent by the probe

Table 7-79: "show" command output table parameters

7.6.4.5 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/cfm-probe/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-: "showconfig" command information

```
/cli/cfm-probe> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-80: CLI on line help on "showconfig" command usage in this node context

7.6.4.6 "status" command

Name	status
Description	Show the current CFM probes status
Full path	/cfm-probe/status
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-; Table parameters description in Table 7-.

Table 7-81: "status" command information

```
/cli/cfm-probe> status ?

Usage:
  STATUS          Show the current CFM probes status
```

Figure 7-103: CLI on line help on "status" command usage in this node context

```
/cli> cfm-probe/status
+-----------------------------------------------------------------------------------------------+
|CFM Probe Status                                                                               |
+----+---+----------+-------+------+------+-------+------------+--------------------------+
|Slot|ID |Admin     |Port   |MEP   |RMEP  |VLAN   |Last CCM(ms)|Alarms                    |
+----+---+----------+-------+------+------+-------+------------+--------------------------+
|1   |1  |enable    |10GbE 4|44    |31    |1000   |80          |                          |
|1   |2  |enable    |10GbE 1|41    |94    |1000   |--          |LOC                       |
+----+---+----------+-------+------+------+-------+------------+--------------------------+
```

Figure 7-104: Output of "status" command in this node context

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring
MEP	MEP Identification forwarded by the probe in the CCM message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
VLAN	VLAN that encapsulates the CCM frame sent by the probe
Last CCM (ms)	Instant of time of arrival of last received CCM packet
Alarms	This alarms triggers when no packets are transmitted/received

Table 7-82: "status" command output table parameters

7.6.4.7 "unx-ccm" sub-node

7.6.4.7.1 "remove" command

Name	remove
Description	Clears the list of Unexpected CCMs received.
Full path	/cfm-probe/unx-ccm/remove
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-83: "remove" command information

```
/cli/cfm-probe/unx-ccm> remove ?

Usage:
  REMOVE          Clears the list of Unexpected CCMs received
```

Figure 7-105: CLI on line help on "remove" command usage in this node context

7.6.4.7.2 "show" command

Name	show
Description	Shows a list of Unexpected CCMs received.
Full path	/cfm-probe//unx-ccm/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-107. Table parameters description in Table 7-85

Table 7-84: "show" command information

```
/cli/cfm-probe/ unx-ccm>show ?

Usage:
  SHOW            Shows a list of Unexpected CCMs received
```

Figure 7-106: CLI on line help on "show" command usage in this node context

```
/cli/cfm-probe/unx-ccm> show
+-----------------------------------------------------------------------------------------------------------------------+
|Unexpected CCMs Received                                                                                               |
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
|Slot|ID |Port   |MEP   |RMEP  |MEG-Format|MEG ICC/UMC   |VLAN   |Fist occur.         |Last occur.         |# occur.|
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
```

Figure 7-107: Output of "show" command in this node context

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring
MEP	MEP Identification forwarded by the probe in the CCM message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
MEG-Format	ITU-T Y.1731 or IEEE 802.1a
MEG ICC/UMC	ITU Carrier Code or Unique MEG Code
VLAN	VLAN that encapsulates the CCM frame sent by the probe
Fist occur.	Date of first Unexpected CCM Packet type occurrence
Last occur.	Date of last Unexpected CCM Packet type occurrence
# occur.	Number of Unexpected CCM Packet type occurrences

Table 7-85: "show" command output table parameters

7.6.5 "dhcp" node

7.6.5.1 Circuit ID template String Syntax

The Syntax for the circuit ID template string is the following:

$accessnodeid PON $rack/$subrack/$slot/$port:$onuid.$svid

Template circuit ID parameters, variables and usable values are listed in the following table:

Parameter	Variable	Value
Access Node	$accessnodeid	String(63)
Rack	$rack	0..99
Sub-Rack	$subrack	0..99
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
ONU ID	$onuid	0..999
Slot	$slot	0..99
Port	$port	0..99
Q-VLAN ID	$qvid	0..4095
S-VLAN ID	$svid	0..4095
C-VLAN ID	$cvid	0..4095

Table 7-86: Template circuit ID syntax

```
/cli/dhcp> tree
+ dhcp[]
   + dhcp-services[@config, @show, @showconfig]
   + global[@config, @show, @showconfig]
   + leases[@remove, @show]
```

Figure 7-108: dhcp tree

7.6.5.2 "dhcp-services" sub-node

7.6.5.2.1 "config" Command

Name	config
Description	Configure DHCP parameters for a given service.
Full path	/dhcp/dhcp-services/config
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-87: "config" command information

```
/cli/dhcp/dhcp-services> config ?

Usage CONFIG:
  CONFIG                Configure DHCP parameters for a given service.

   <MANDATORY>
   --serviceID          Select an OLT service by ID.

   [OPTIONAL]
   --broadcast-flag     Configure the Broadcast flag for DHCP Discover and request
                        messages (transparent|force-set|force-clear)
   --circuit-id-str     template string for circuit-id (STRING 255)
   --dhcp-op18          Enable or disable the DHCP Op.18 (enable|disable)
   --dhcp-op37          Enable or disable the DHCP Op.37 (enable|disable)
   --dhcp-op82          Enable or disable the DHCP Op.82 (enable|disable)
   --eth-priority       pbit value in the DHCP packets (0=<n=<7)
   --use-global         If enabled, this service will use the global circuit-id string
                        (enable|disable)
```

Figure 7-109: CLI on line help on "config" command usage in this node context

7.6.5.2.2 "show" command

Name	show
Description	Show DHCP services information.
Full path	/dhcp/dhcp-services/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-111.Table parameter description in Table 7-89.

Table 7-88: "show" command information

```
/cli/dhcp/dhcp-services> show ?

Usage:
  SHOW            Show DHCP services information.
```

Figure 7-110: CLI on line help on "show" command usage in this node context

```
/cli/dhcp/dhcp-services> show
+-------------------------------------------------------------------------------------------------------------
|DHCP Services Configuration
+-----------------------------------------------------------+--------+-----------------------------------
|                                                           |DHCP Opt|Circuit-ID
+---+-------------------------------+--------+-------------+--+--+--+----------+-------------------------
|ID |Service Name                   |Priority|Broadcast flag|82|37|18|Use Global|Service Template String
+---+-------------------------------+--------+-------------+--+--+--+----------+-------------------------
|1  |ID 1                           |5       |transparent  |X |X |X |enable    |--
|2  |VOD                            |5       |transparent  |  |  |  |enable    |--
|6  |ID 6                           |5       |transparent  |  |  |  |enable    |--
|8  |ID 8                           |5       |transparent  |  |  |  |enable    |--
+---+-------------------------------+--------+-------------+--+--+--+----------+-------------------------
```

Figure 7-111: Output of "show" command in this node context

Parameter	Description
ID	OLT service ID
Service Name	OLT service Name.
DHCP Opt	DHCP Options:18/37/82 – Enabled DHCP options in the service
Priority	pbit value in the DHCP packets (0<=n<=7)
Broadcast Flag	
Circuit Id	**Use Global**: if Enabled the Circuit-Id configure in the Global DHCP configuration window is being used. **Service Template String**: Circuit-Id template used for the service if Use Global Disabled.

Table 7-89: "show" command output table parameters

7.6.5.2.3 "showconfig" command

Name	showconfig
Description	Show DHCP services information.
Full path	/dhcp/dhcp-services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-90: "showconfig" command information

```
/cli/dhcp/dhcp-services> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG            Print the command list that enforces the current configuration
```

Figure 7-112: CLI on line help on "show" command usage in this node context

7.6.5.3 "global" sub-node

7.6.5.3.1 "config" command

Name	config
Description	Configure global DHCP parameters.
Full path	/dhcp/global/config
Mandatory Parameters	--circuit-id-str
Screen Output	No

Table 7-91: "config" command information

```
/cli/dhcp/global> config ?

Usage:
  CONFIG          Configure global DHCP parameters.

   <MANDATORY>
   --circuit-id-str[=STRING]  template string for circuit-id (STRING 255)
```

Figure 7-113: CLI on line help on "config" command usage in this node context

7.6.5.3.2 "show" command

Name	show
Description	Show DHCP global configuration.
Full path	/dhcp/global/show
Mandatory Parameters	This command has no parameters
Screen Output	Text string, Figure 7-115.Template string parameter description in Table 7-86.

Table 7-92: "show" command information

```
/cli/dhcp/global> show ?

Usage:
  SHOW            Show DHCP global configuration.
```

Figure 7-114: CLI on line help on "show" command usage in this node context

```
/cli/dhcp/global> show
Global DHCP circuit ID Template String:
"$accessnodeid PON $rack/$subrack/$slot/$port:$onuid.$svid"
```

Figure 7-115: Output of "show" command in this node context

7.6.5.3.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/dhcp/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-93: "showconfig" command information

```
/cli/dhcp/global> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG            Print the command list that enforces the current configuration
```

Figure 7-116: CLI on line help on "showconfig" command usage in this node context

7.6.5.4 "leases" sub-node

7.6.5.4.1 "remove" command

Name	remove
Description	Remove DHCP leases from the Table
Full path	/dhcp/leases/remove
Mandatory Parameters	--mac --port --serviceID
Screen Output	No

Table 7-94: "remove" command information

```
/cli/dhcp/leases> remove ?

Usage REMOVE:
  REMOVE              Remove DHCP leases from the Table.

   <MANDATORY>
   --mac              Identify/Set a MAC entry, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID        Select an OLT service by ID.
```

Figure 7-117: CLI on line help on "remove" command usage in this node context

7.6.5.4.2 "show" command

Name	show
Description	Show DHCP leases information.
Full path	/dhcp/leases/show
Mandatory Parameters	No
Screen Output	Table Figure 7-119.Table parameter description in Table 7-96

Table 7-95: "show" command information

```
/cli/dhcp/leases> show ?

Usage:
  SHOW            Show DHCP leases information.
```

Figure 7-118: CLI on line help on "show" command usage in this node context

```
/cli> dhcp/leases/show
+-------------------------------------------------------------------------------------------------------------------------+
|DHCP Leases                                                                                                              |
+----+-------+------+-----------------------------+-----------------------------------------------+-----------------+----------+
|Slot|Port   |ONU ID|(ID)Service                  |IP                                             |MAC              |Leave Time|
+----+-------+------+-----------------------------+-----------------------------------------------+-----------------+----------+
+----+-------+------+-----------------------------+-----------------------------------------------+-----------------+----------+
```

Figure 7-119: Output of "show" command in this node context

Parameter	Description
Slot	Slot number
Port	Identifies interface
ONU ID	Identifies ONU (number)
(ID)	Service ID (number)
Service	Service name (text)
IP	IP address
MAC	MAC address
Leave Time	Use of Global circuit Id string (enabled|disabled)

Table 7-96: show command output table parameters

7.6.6 "equipment" node

```
/cli/equipment> tree
+ equipment[@status]
   + boards[@config, @reboot, @show, @showconfig]
   + slot[@apply, @config, @show, @showconfig]
   + switch-fabric[@show, @switch, @update, @upgrade-sw]
   + system[@config, @reboot, @show, @showconfig, @status]
```

Figure 7-120: "equipment" node tree Sub-node "boards"

7.6.6.1 "status" command

Name	status
Description	Show the current equipment status.
Full path	/equipment/status
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-. Table parameters description in Table 7-

Table 7-97: "status" command information

```
/cli/equipment> status ?

Usage:
  STATUS          Show the current equipment status.
```

Figure 7-121: CLI on line help on "status" command usage in this node context

```
/cli/equipment> status
+-----------------+
|Equipment Status|
+-----------------+
|Status           |
+-----------------+
|OK               |
+-----------------+
```

Figure 7-122: Output of "status" command in this node context

Parameter	Description
Status	Indicates equipment status

Table 7-98: "status" command output table parameters

7.6.6.2 "boards" sub-node

7.6.6.2.1 "config" command

Name	config
Description	Configure HW slots.
Full path	/equipment/boards/config
Mandatory Parameters	--admin --slot
Screen Output	No

Table 7-99: "config" command information

```
/cli/equipment/boards> config ?

Usage:
  CONFIG          Configure HW slotsbo

   <MANDATORY>
   --admin    Administrative State. Enable/disable, in this context. (enable|disable)
   --slot     Identifies a slot.
```

Figure 7-123: CLI on line help on "config" command usage in this node context

7.6.6.2.2 "reboot" command

Name	reboot
Description	Send the reboot command to one board.
Full path	/equipment/boards/reboot
Mandatory Parameters	--slot
Screen Output	No

Table 7-100: "reboot" command information

```
/cli/equipment/boards> reboot ?

Usage REBOOT:
  REBOOT                    Send the reboot command to one board.

   <MANDATORY>
   --slot                   Identifies a slot.
```

Figure 7-124: CLI on line help on "reboot" command usage in this node context

7.6.6.2.3 "show" Command

Name	show
Description	Show the current configuration.
Full path	/equipment/boards/show
Mandatory Parameters	This command has no parameters.
Screen Output	Tables Figure 7-126.Tables parameter description in Table 7-102

Table 7-101: "show" command information

```
/cli/equipment/boards> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-125: CLI on line help on "show" command usage in this node context

```
/cli/equipment/boards> show
+-----------------------------------------------------------------------------------------------------------------------------------+
|Equipment Boards Information                                                                                                       |
+----+---------------+---------------+--------+---------------+--------+----------+-----------+---------------+-------------------+
|Slot|Name           |State          |Admin   |Temperature (C)|CPU (%) |Memory (%)|Capacity (%)|Serial number  |FW / HW version    |
+----+---------------+---------------+--------+---------------+--------+----------+-----------+---------------+-------------------+
|--  |OLT1T0         |OK             |enable  |49.00          |7.21    |34.33     |56.34      |8010100013     |PCB 2.9            |
+----+---------------+---------------+--------+---------------+--------+----------+-----------+---------------+-------------------+


+-----------------------------------------------------------------------------------------------------+
|Equipment Fans Information                                                                           |
+-----+-----------------------------------------------------------------------------------------------+
|     |RPM                                                                                            |
+-----+----------+----------+----------+----------+----------+----------+----------+----------+------+
|Slot |Fan 1     |Fan 2     |Fan 3     |Fan 4     |Fan 5     |Fan 6     |Fan 7     |Fan 8     |
+-----+----------+----------+----------+----------+----------+----------+----------+----------+------+
|1    |0         |9490      |9407      |n/a       |n/a       |n/a       |n/a       |n/a       |
+-----+----------+----------+----------+----------+----------+----------+----------+----------+------+
/cli/equipment/boards>
```

Figure 7-126: Output of "show" command in this node

Parameter	Description
Slot	Slot number
Name	Board Name
State	Slot State
Admin	Board administrative State
Temperature (°C)	Board Temperature
CPU (%)	Board CPU usage
Memory (%)	Board Memory usage
Capacity (%)	Board capacity usage
Serial Number	Board serial number
FW / HW version	Board firmware and hardware version

Fan Nr	FAN current working speed (RPM)

Table 7-102: "show" command output table parameters

7.6.6.2.4 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/equipment/boards/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-103: "showconfig" command information

```
/cli/equipment/board> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-127: CLI on line help on "showconfig" command usage in this node context

7.6.6.3 "slot" sub-node

7.6.6.3.1 "apply" command

Name	apply
Description	Applies the current configuration to the HW
Full path	/equipment/slot/apply
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-104: "apply" command information

```
/cli/equipment/slot> apply ?

Usage:
  APPLY           Applies the current configuration to the HW
```

Figure 7-128: CLI on line help on "apply" command usage in this node context

7.6.6.3.2 "config" command

Name	config
Description	Configure HW slots (not immediately applied)
Full path	/equipment/slot/config
Mandatory Parameters	--mode
Screen Output	No

Table 7-105: "config" command information

```
/cli/equipment/slot> config ?

Usage:
  CONFIG          Configure HW slots (not immediately applied)

   <MANDATORY>
   --mode          Specify the mode (modeA|modeB|modeC)
```

Figure 7-129: CLI on line help on "config" command usage in this node context

7.6.6.3.3 "show" command

Name	show
Description	Show the current Slot-Mode configuration.
Full path	/equipment/slot/show
Mandatory Parameters	This command has no parameters.
Screen Output	Tables, Figure 7-131.Tables parameter description Table 7-107

Table 7-106: "show" command information

```
/cli/equipment/slot> show ?

Usage:
  SHOW            Show the current Slot-Mode configuration.
```

Figure 7-130: CLI on line help on "show" command usage in this node context

```
/cli/equipment/slot> show
+-------------------------------------------------------------------------------------------------------------------------------+
|Equipment Slot Information                                                                                                     |
+----+--------------------------------+---------------+-------+---------------+---------------+-------------------------------+
|Slot|Card Name                       |Card Status    |Admin  |Config. Mode   |FW Mode        |FW Status                      |
+----+--------------------------------+---------------+-------+---------------+---------------+-------------------------------+
|1   |OLT1T0                          |OK             |enable | --            | --            |Disabled                       |
+----+--------------------------------+---------------+-------+---------------+---------------+-------------------------------+
/cli/equipment/slot>
```

Figure 7-131: Output of "show" command in this node context

Parameter	Description
Slot	Slot number
Card Name	Name of the card in the specified slot
Card Status	Card status (newboard|operational|configuration error|absent|proc.)
Admin	Board administrative State
Config. Mode	Configured mode on card (Mode A|Mode B|Mode C)
FW Mode	Detected firmware mode on card (Mode A|Mode B|Mode C)
FW Status	Card firmware Status (OK|Disabled|Unsupported mode for this card)

Table 7-107: "show" command output table parameters

7.6.6.3.4 showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/equipment/slot/showconfig
Mandatory Parameters	This command has no parameters

Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-108: "showconfig" command information

```
/cli/equipment/slot> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-132: CLI on line help on "showconfig" command usage in this node context

7.6.6.4 "system" sub-node

7.6.6.4.1 "config" command

Name	config
Description	Configure Global system parameters.
Full path	/equipment/system/config
Mandatory Parameters	No
Screen Output	No

Table 7-109: "config" command information

```
/cli/equipment/system> config ?

Usage CONFIG:
  CONFIG                          Configure Global system parameters.

   [OPTIONAL]
   --access-node                  Access Node ID (STRING 63)
   --alarm-rep-mode               Define the alarm reporting mode. (none|snmp|xml)
   --auto-update                  Automatically upgrade the second matrix.
(enable|disable)
   --contact                      Set the OLT contact information as appropriate
(STRING 31)
   --date                         Set the system date as YYYY/MM/DD (UTC)
   --description                  Set the global OLT system description (STRING 63)
   --location                     Set the OLT location information as appropriate
(STRING 31)
   --name                         Set the global OLT system name (STRING 64)
   --numerical-rack               system rack (numerical value)
   --numerical-shelf              system shelf (numerical value)
   --numerical-sub-rack           system subrack (numerical value)
   --rack                         system rack (STRING 31)
   --shelf                        system shelf (STRING 31)
   --sub-rack                     system subrack (STRING 31)
   --time                         Set the system time as hh:mm:ss (UTC)
```

Figure 7-133: CLI on line help on "config" command usage in this node context

7.6.6.4.2 “reboot” command

Name	reboot
Description	Send the reboot command to the equipment.
Full path	/equipment/system/reboot
Mandatory Parameters	No
Screen Output	No

Table 7-110: “reboot” command information

```
/cli/equipment/system> reboot ?

Usage REBOOT:
  REBOOT                          Send the reboot command to the equipment.
```

Figure 7-134: CLI on line help on “reboot” command usage in this node context

7.6.6.4.3 “show” command

Name	show
Description	Show the current global system configuration.
Full path	/equipment/system/show
Mandatory Parameters	This command has no parameters.
Screen Output	Tables Figure 7-136.Tables parameter description Table 7-112

Table 7-111: “show” command information

```
/cli/equipment/system> show ?

Usage:
  SHOW            Show the current global system configuration.
```

Figure 7-135: CLI on line help on “show” command usage in this node context

```
/cli/equipment/system> show
+-----------------------------------------------------------------------------------------------------+
|System Configuration                                                                                 |
+--------------------------------------+--------------------------------------------------------------+
|Properties                            |Values                                                        |
+--------------------------------------+--------------------------------------------------------------+
|Equipment Type                        | --                                                           |
+--------------------------------------+--------------------------------------------------------------+
|Equipment Name                        |OLT1T0                                                        |
|Description                           |                                                              |
|Access Node ID                        |                                                              |
|Serial Number                         |8010100108                                                    |
|Rack                                  | 0 - 1                                                        |
|SubRack                               | 0 - 1                                                        |
|Shelf                                 | 0 - 1                                                        |
|Contact                               |ad                                                            |
|Location                              |234234                                                        |
+--------------------------------------+--------------------------------------------------------------+
|Firmware version                      | v3.4.0-r247                                                  |
+--------------------------------------+--------------------------------------------------------------+
|Date On Equipment (UTC)               |2014/08/27                                                    |
|Time On Equipment (UTC)               |16:45:11                                                      |
+--------------------------------------+--------------------------------------------------------------+
|Equipment IP (for management)         |10.112.105.87                                                 |
|Administrative Status                 |Not registered                                                |
|Alarms Reporting Mode                 |none                                                          |
+--------------------------------------+--------------------------------------------------------------+
/cli/equipment/system>
```

Figure 7-136: Output of ”show” command in this node context

Parameter	Description
Equipment Type	Type/Model of the equipment
Equipment Name	Name of the equipment
Description	Equipment brief description
Access Node ID	Identification of the Access Node
Serial Number	Equipment serial number
Rack	Equipment location rack (number)
Sub Rack	Equipment location sub-rack (number)
Shelf	Equipment location shelf (number)
Contact	contact information of the entity responsible for this equipment (department, person, etc)
Location	Equipment location
Firmware version	Version of the current firmware
Date On Equipment	Date
Time On Equipment	Time
Equipment IP (for management)	Equipment IPv4 address
Administrative status	Equipment administrative status
Alarms Reporting Mode	(none|SNMP|XML)
Automatically Upgrade the second Matrix	(enabled|disabled)

Table 7-112: "show" command output table parameters

7.6.6.4.4 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/equipment/system/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-113: "showconfig" command information

```
/cli/equipment/system> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-137: CLI on line help on "showconfig" command usage in this node context

7.6.6.4.5 "status" command

Name	status
Description	Show the current global system status.
Full path	/equipment/system/status
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-139; Table parameters description in Table 7-115.

Table 7-114: "status" command information

```
/cli/equipment/system> status ?

Usage STATUS:
  STATUS                          Show the current global system status.
```

Figure 7-138: CLI on line help on "status" command usage in this node context

```
/cli/equipment> system/status
+-------------------------------------------------+
|System Status                                    |
+-------------------------------+-----------------+
|Properties                     |Values           |
+-------------------------------+-----------------+
|Sensor 1 (AC Power Sensor)     |OK               |
|Sensor 2 (Open Door Sensor)    |closed door      |
+-------------------------------+-----------------+
```

Figure 7-139: Output of "status" command in this node context

Parameter	Description
Sensor 1 (AC Power Sensor)	Indicates the AC Power Sensor State (OK| NOK)
Sensor 2 (Open Door Sensor)	Indicates the Open Door Sensor State (Closed door|Open door))

Table 7-115: "status" command output table parameters

7.6.7 "erp-ring" node

```
/cli/erp-ring> tree
+ erp-ring[@config, @create, @remove, @show, @showconfig]
   + status[@command, @show]
      + aps-channel[@show]
```

Figure 7-116:"erp-ring" node tree

7.6.7.1 "config" command

Name	config
Description	Configure an existing ERP instance.
Full path	/erp-ring/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-116: "config" command information

```
/cli/erp-ring> config ?

Usage CONFIG:
  CONFIG                          Configure an existing ERP instance.

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --add-vlan                        Add one Protected vlan entry to the list (1..4094)
   --admin                           Administrative State. Enable/disable, in this
                                     context. (enable|disable)
   --aps-ch-vlan                     Set the APS channel VLAN (1..4094)
   --aps-meg-level                   Set APS channel MEG level value (0..7) min
   --del-vlan                        Delete one Protected vlan entry from the list
                                     (1..4094)
   --guard-time                      Set the guard time (1..200) x10ms
   --holdoff-time                    Set the hold off time, in hundreds of milliseconds
                                     (0..100) x100ms
   --open-ring                       Specify whether the ring is open or not.
                                     (enable|disable)
   --p0-cfm-probe-id                 Identify a CFM probe by ID (0 for none)
   --p0-port                         Identify a Port (e.g.: eth.1, pon.3, lag.2)
   --p0-slot                         Identify a Slot (not used for LAG)
   --p0-type                         Set the port type (non-rpl|rpl|rpl-neighbor)
   --p1-cfm-probe-id                 Identify a CFM probe by ID (0 for none)
   --p1-port                         Identify a Port (e.g.: eth.1, pon.3, lag.2)
   --p1-slot                         Identify a Slot (not used for LAG)
   --p1-type                         Set the port type (non-rpl|rpl|rpl-neighbor)
   --revertive                       Specify is reversion is enabled. (enable|disable)
   --ring-id                         Set the ring ID
   --wtr                             Set the Wait to Restore time (1..12) x10ms
```

Figure 7-141: CLI on line help on "config" command usage in this node context

7.6.7.2 "create" command

Name	create
Description	Create a new Ethernet Ring Protection (ERP) instance.
Full path	/erp-ring/create
Mandatory Parameters	No
Screen Output	No

Table 7-117: "create" command information

```
/cli/erp-ring> create ?

Usage CREATE:
  CREATE                          Create a new Ethernet Ring Protection (ERP) instance.

   [OPTIONAL]
   --ID                             Identifies a table entry by ID, in this context.
   --add-vlan                       Add one Protected vlan entry to the list (1..4094)
   --admin                          Administrative State. Enable/disable, in this
                                    context. (enable|disable)
   --aps-ch-vlan                    Set the APS channel VLAN (1..4094)
   --aps-meg-level                  Set APS channel MEG level value (0..7) min
   --del-vlan                       Delete one Protected vlan entry from the list
                                    (1..4094)
   --guard-time                     Set the guard time (1..200) x10ms
   --holdoff-time                   Set the hold off time, in hundreds of milliseconds
                                    (0..100) x100ms
   --open-ring                      Specify whether the ring is open or not.
                                    (enable|disable)
   --p0-cfm-probe-id                Identify a CFM probe by ID (0 for none)
   --p0-port                        Identify a Port (e.g.: eth.1, pon.3, lag.2)
   --p0-slot                        Identify a Slot (not used for LAG)
   --p0-type                        Set the port type (non-rpl|rpl|rpl-neighbor)
   --p1-cfm-probe-id                Identify a CFM probe by ID (0 for none)
   --p1-port                        Identify a Port (e.g.: eth.1, pon.3, lag.2)
   --p1-slot                        Identify a Slot (not used for LAG)
   --p1-type                        Set the port type (non-rpl|rpl|rpl-neighbor)
   --revertive                      Specify is reversion is enabled. (enable|disable)
   --ring-id                        Set the ring ID
   --wtr                            Set the Wait to Restore time (1..12) x10ms
```

Figure 7-142: CLI on line help on "create" command usage in this node context

7.6.7.3 "remove" command

Name	remove
Description	Remove an existing ERP instance.
Full path	/erp-ring/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-118: "remove" command information

```
/cli/erp-ring> remove ?

Usage:
  REMOVE            Remove an existing ERP instance.

   <MANDATORY>
   --ID            Identifies a table entry by ID, in this context.
```

Figure 7-143: CLI on line help on "remove" command usage in this node context

7.6.7.4 "show" command

Name	show
Description	Show the summary configuration for all ERP instances. Specify an ID to see details.

Full path	/erp-ring/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-145 and Figure 7-146; tables' parameters description in Table 7-120 and Table 7-121.

Table 7-119: "show" command information


```
/cli/erp-ring> show ?

Usage:
  SHOW        Show the summary configuration for all ERP instances. Specify an ID to see
              details.

   [OPTIONAL]
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-144: CLI on line help on "show" command usage in this node context

```
/cli/erp-ring> show
+-----------------------------------------------------------------------------------------------------------------------+
|Ethernet Ring Protection Instances Summary                                                                             |
+---------------------------------------+--------------+-----------------------------------------------------------------+
|                                       |APS Channel   |                                                                 |
+---+-------+---------+---------+-------+-----+--------+---------------------+---------------------+-------------------+
|ID |Admin  |Ring ID  |Open Ring|Revertive|VLAN |MEG Level|Wait to restore (min) |Holdoff Time (x100ms) |Guard time (x100ms) |
+---+-------+---------+---------+---------+-----+--------+---------------------+---------------------+-------------------+
|1  |disable|1        |enable   |enable   |0    |0       |5                    |0                    |5                  |
|2  |disable|1        |enable   |enable   |111  |0       |5                    |0                    |5                  |
|3  |disable|1        |enable   |enable   |1    |0       |5                    |0                    |5                  |
|4  |disable|1        |enable   |enable   |1    |0       |5                    |0                    |5                  |
|5  |disable|1        |enable   |enable   |1    |1       |5                    |1                    |5                  |
|6  |disable|1        |enable   |enable   |1    |0       |5                    |0                    |5                  |
+---+-------+---------+---------+---------+-----+--------+---------------------+---------------------+-------------------+
/cli/erp-ring>
```

Figure 7-145: Output of "show" command without arguments in this node context

Parameter	Description
ID	ERP instance Id
Admin	ERP administrative state
Ring ID	ERP Id
Open Ring	Open Ring Flag (enable/disable)
Revertive	Revertive flag (enable/disable)
APS Channel	**VLAN:** VLAN used by the Automatic Protection Switch Channel **MEG level:** Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
Wait to restore (min)	1 to 12 min, default value -5min
Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
Guard Time (x100ms)	10ms to 2secs, default value 500ms

Table 7-120: "show" command without arguments output table parameters "showconfig" command

```
+-------------------------------------------------------------------------------------------+
|Ethernet Ring Protection Instance -- ID 1                                                  |
+-----------------------+-------------------------------------------------------------------+
|Parameter              |Value                                                              |
+-----------------------+-------------------------------------------------------------------+
|Admin                  |disable                                                            |
|Ring ID                |1                                                                  |
|Open Ring              |disable                                                            |
|Revertive              |enable                                                             |
|Wait to restore   (min)|5                                                                  |
|Holdoff Time   (x100ms)|0                                                                  |
|Guard Time      (x10ms)|1                                                                  |
+-----------------------+-------------------------------------------------------------------+
|P0                     |                                                                   |
|   Slot / Interface    |1 / 10GbE 1                                                        |
|   Type                |non-RPL                                                            |
|   CFM Probe ID        |--                                                                 |
+-----------------------+-------------------------------------------------------------------+
|P1                     |                                                                   |
|   Slot / Interface    |1 / 10GbE 4                                                        |
|   Type                |non-RPL                                                            |
|   CFM Probe ID        |--                                                                 |
+-----------------------+-------------------------------------------------------------------+
|APS Channel VLAN       |1001                                                               |
|APS Channel MEG Level  |7                                                                  |
+-----------------------+-------------------------------------------------------------------+
|Protected VLANs        |                                                                   |
|                       |201                                                                |
|                       |202                                                                |
|                       |203                                                                |
|                       |204                                                                |
+-----------------------+-------------------------------------------------------------------+
```

Figure 7-146: Output of "show" command with argument ID in this node context

Parameter	Description
Admin	ERP administrative state
Ring ID	**ERP Id**
Open Ring	Open Ring Flag (enable/disable)
Revertive	Revertive flag (enable/disable)
Wait to restore (min)	1 to 12 min, default value -5min
Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
Guard Time (x100ms)	10ms to 2secs, default value 500ms
P0	**Slot/Interface :** P0 ERP port , identified by pair Slot/interface in the slot **Type:** ERP interface classification (RPL/Non RPL/RPL Neighbor) **CFM Probe ID:**
P1	**Slot/Interface :** P1 ERP port , identified by pair Slot/interface in the slot **Type:** ERP interface classification (RPL/Non RPL/RPL Neighbor) **CFM Probe ID:**
APS Channel	**VLAN:** VLAN used by the Automatic Protection Switch Channel **MEG level:** Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
Protected VLANs	Protected VLANs' Identifiers

Table 7-121: "show" command with argument ID output table parameters

7.6.7.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/erp-ring/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-122: "showconfig" command information

```
/cli/erp-ring> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-147: CLI on line help on "showconfig" command usage in this node context

7.6.7.6 "status" sub-node

7.6.7.6.1 "command" command

Name	command
Description	Specify the command to execute on a given ERP instance port.
Full path	/erp-ring/status/command
Mandatory Parameters	--ID --erp-port --type
Screen Output	No

Table 7-123: "command" command information

```
/cli/erp-ring/status> command ?

Usage:
  COMMAND         Specify the command to execute on a given ERP instance port.

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.
   --erp-port     Choose the ERP port to execute the command (p0|p1)
   --type         Identify the command to execute (clear|forced-switch|manual-switch)
```

Figure 7-148: CLI on line help on "command" command usage in this node context

7.6.7.6.2 "show" command

Name	show
Description	Show the status information for all active ERP instances.
Full path	/erp-ring/status/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 7-150; Table parameters description in Table 7-125.

Table 7-124: "show" command information

```
/cli/erp-ring/status> show ?

Usage:
  SHOW            Show the status information for all active ERP instances.
```

Figure 7-149: CLI on line help on "show" command usage in this node context

```
/cli/erp-ring> status/show
+-------------------------------------------------------------------------------------------------------------------------------------------+
|Active Ethernet Ring Protection Instances Status                                                                                           |
+-----------------------+-----------------------------------------+-----------------------------------------+-------------------------------+
|                       |P0                                       |P1                                       |Timers (ms)                    |
+---+-------------+-----+-----------+----------+-----+----------+-----------+----------+-----+----------+-------+-------+-------+-------+
|ID |Node State   |DNF  |Slot / Port |Type      |Alarm|State     |Slot / Port |Type      |Alarm|State     |Guard  |WTR    |WTB    |Holdoff|
+---+-------------+-----+-----------+----------+-----+----------+-----------+----------+-----+----------+-------+-------+-------+-------+
|2  |Protection   |NO   |1 / eth.5   |non-RPL   |SF   |Blocking  |1 / eth.8   |non-RPL   |--   |Flushing  |--     |--     |--     |--     |
+---+-------------+-----+-----------+----------+-----+----------+-----------+----------+-----+----------+-------+-------+-------+-------+
```

Figure 7-150: Output of "show" command without arguments in this node context

Parameter Group	Parameter	Description
	ID	ERP instance Id (number)
	Node State	Identifies node state Protection/--
	DNF	Do Not Flush – correspond to status DNF bit set when filtering database (FDB) flush is not necessary.
P0	**Slot/Port**	Identifies P0 interface in the system by Slot/ Port pair
	Type	Identifies P0 interface protection classification (RPL/Non RPL/RPL Neighbor)
	Alarm	This alarm signals activity in the P0 interface
	State	P0 Interface state (Blocking/Flushing)
P1	**Slot/Port**	Identifies P1 interface in the system by Slot/ Port pair
	Type	Identifies P1 interface protection classification (RPL/Non RPL/RPL Neighbor)
	Alarm	This alarm signals activity in the P1 interface
	State	P1 Interface state (Blocking/Flushing)
Timers (ms)	**Guard**	Shows configured guard timer value
	WTR	Shows configured Wait to Restore timer value
	WTB	Shows configured Wait to Block timer value
	Holdoff	Shows configured Holdoff timer value

Table 7-125: "show" command output table parameters

7.6.7.6.3 aps-channel" sub-node

7.6.7.6.3.1 "show" command

Name	show
Description	Show APS channel information (RX/TX) for a given ERP instance.
Full path	/erp-ring/status/aps-channel/show

Mandatory Parameters	--ID.
Screen Output	Table, Figure 7-152; Tables parameters description in Table 7-127.

Table 7-126: "show" command information

```
/cli/erp-ring> status/aps-channel/show ?

Usage SHOW:
  SHOW              Show APS channel information (RX/TX) for a given ERP instance.

   <MANDATORY>
   --ID             Identifies a table entry by ID, in this context..
```

Figure 7-151: CLI on line help on "show" command usage in this node context

```
/cli/erp-ring> status/aps-channel/show --ID=2
+-------------------------------------------------------------------------------+
|APS Channel Status                                                             |
+----------------------+--------------------+--------------------+--------------+
|Parameter             |APS channel RX - P0 |APS channel RX - P1 |APS channel TX|
+----------------------+--------------------+--------------------+--------------+
|Request State         |NR                  |SF                  |SF            |
|RPL Blocked           |NO                  |NO                  |NO            |
|Do Not Flush          |NO                  |YES                 |YES           |
|Blocked Port Reference|P0                  |P1                  |P0            |
|Remote Node ID        |00:00:00:00:00:00   |00:00:00:00:00:00   |--            |
+----------------------+--------------------+--------------------+--------------+
```

Figure 7-152: Output of "show" command in this node context

Parameter Group	Parameter	Description
APS Channel • **RX-P0** • **RX-P1** • **TX**	**Request State**	Received APS channel request state message
	RPL Blocked	RPL Blocked State
	Do Not Flush	Do not Flush message
	Blocked Port Reference	Blocked port reference ID
	Remote Node ID	Identification of Remote Node by ID

Table 7-127: "show" command with argument ID output table parameters

7.6.8 "eth-protection" node

```
/cli/eth-protection> tree
+ eth-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
```

Figure 7-153:" eth-protection" node tree

7.6.8.1 "command" command

Name	command
Description	Execute a command on a given Protection entity.
Full path	/eth-protection/command
Mandatory Parameters	--ID --type
Screen Output	No

Table 7-:128 "command" command information

```
/cli/eth-protection> command ?

Usage:
  COMMAND          Execute a command on a given Protection entity.

   <MANDATORY>
   --ID            Identifies a table entry by ID, in this context.
   --type          Identify the command to execute (clear|lockout|force-to-
                   protection|force-to-working|manual-to-protection|manual-to-working)
```

Figure 7-154: CLI on line help on command "command" usage in this node context

7.6.8.2 "config" command

Name	config
Description	Configure one Protection Group parameters.
Full path	/eth-protection/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-129: "config" command information

```
/cli/eth-protection> config ?

Usage:
  CONFIG                Configure ethernet Protection Group parameters.

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --hold-off-time      Hold Off Time (0..100) x100ms
   --hp-lc-fail         high priority: Generalized Line Card Failure (enable|disable)
   --hp-los             high priority: Generalized LOS (enable|disable)
   --p-port             Identifies the Protecting Interface ID.
   --reversible         Specify is reversion is enabled (enable|disable)
   --w-port             Identifies the Working Interface ID.
   --wtr-time           Wait to Restore Time (WTR) (5..12) min
```

Figure 7-155: CLI on line help on "config" command usage in this node context

7.6.8.3 "create" command

Name	create
Description	Create a new Protection Group.
Full path	/eth-protection/create
Mandatory Parameters	No
Screen Output	No

Table 7-130: "create" command information

```
/cli/eth-protection> create ?

Usage:
  CREATE              Create a new ethernet Protection Group..

   [OPTIONAL]
   --ID               Identifies a table entry by ID, in this context.
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --hold-off-time    Hold Off Time (0..100) x100ms
   --hp-lc-fail       high priority: Generalized Line Card Failure (enable|disable)
   --hp-los           high priority: Generalized LOS (enable|disable)
   --p-port           Identifies the Protecting Interface ID.
   --reversible       Specify is reversion is enabled (enable|disable)
   --w-port           Identifies the Working Interface ID.
   --wtr-time         Wait to Restore Time (WTR) (5..12) min   [OPTIONAL]
   --auto-removal     User's auto-removal (enable|disable)
   --expire-time      User's expire time (hours)
```

Figure 7-156: CLI on line help on "create" command usage in this node context

7.6.8.4 "remove" command

Name	remove
Description	Remove an existing Protection Group
Full path	/eth-protection/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-131: "remove" command information

```
/cli/eth-protection> remove ?

Usage:
  REMOVE                        Remove an existing ethernet Protection Group.

   <MANDATORY>
   --ID                         Identifies a table entry by ID, in this context.
```

Figure 7-157: CLI on line help on "remove" command usage in this node context

7.6.8.5 "show" command

Name	show
Description	Show the current configuration.
Full path	/eth-protection/show
Mandatory Parameters	No
Screen Output	Table Figure 7-159.Table parameters description in Table 7-133..

Table 7-132: "show" command information

```
cli/eth-protection> show ?

Usage:
  SHOW                          Show the current configuration

   [OPTIONAL]
   --ID                         Identifies a table entry by ID, in this context.
```

Figure 7-158: CLI on line help on "show" command usage in this node context

```
/cli/eth-protection> show
+-----------------------------------------------------------------------------------------------------+
|Ethernet Protection Groups                                                                           |
+------------------+-----------------+--------------------+-------------------------------------+
|                  |Interface Working|Interface Protecting|                                     |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|ID |Admin  |Mode  |Slot|Port        |Slot|Port           |Reversible|WTR (min)|Hold Off (x100ms)|
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|1  |enable |1 to 1|1   |10GbE 1     |1   |10GbE 3        |disable   |5        |0                |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
/cli/eth-protection> _
```

Figure 7-159: Output of "show" command without arguments in this node context

Parameter Group	Parameter	Description
	ID	Ethernet protection group Id
	Admin	Ethernet protection group administrative state
	Mode	1 to 1
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
Interface Protection	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Reversible	Indicates if reversion is enabled (enable|disable)
	WTR (min)	Wait to restore (5..12) min
	Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)

Table 7-133: "show" command (without arguments) output table parameters

7.6.8.6 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/eth-protection/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-134: "showconfig" command information

```
/cli/eth-protection> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-160: CLI on line help on "showconfig" command usage in this node context

7.6.8.7 "status" command

Name	status
Description	Show status information for one Protection Group.
Full path	/eth-protection/status
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-596.Table parameters description in Table 7-136.

Table 7-135: "show" command information

```
/cli/eth-protection> status ?

Usage:
  STATUS           Show status information for one Protection Group.
```

Figure 7-161: CLI on line help on "status" command usage in this node context

```
/cli/eth-protection> status
+-----------------------------------------------------------------------------------------------------------------------------------------------------+
|Ethernet Protection Group Status                                                                                                                     |
+---+-------------------------+-------------------------+-----------------------------------------------------------------------------------------+
|   |Interface Working        |Interface Protecting     |                                                                                         |
+---+----+------+--------------+----+------+--------------+----------+------+----------------------------------------+--------------------+
|ID |Slot|Port  |Status        |Slot|Port  |Status        |Active    |WTR(s)|Last Switch-over Cause                  |Last Cmd            |
+---+----+------+--------------+----+------+--------------+----------+------+----------------------------------------+--------------------+
|1  |1   |10GbE |OK            |1   |10GbE |OK            |working   |--    | --                                     |Forced to Protection|
+---+----+------+--------------+----+------+--------------+----------+------+----------------------------------------+--------------------+
/cli/eth-protection>
```

Figure 7-162: Output of "show" command in this node context

Parameter Group	Parameter	Description
	ID	Ethernet protection group Id
Interface Working	**Slot**	Identifies the Working slot
	Port	Identifies the Working Interface
	Status	Working interface Status information
Interface Protection	**Slot**	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Status	Protection interface Status information
	Active	Indicates which interface is active
	WTR (s)	Wait to restore
	Last Switch-over Cause	Indicates the cause for last switch-over
	Last Cmd	Indicates last executed Command

Table 7-136: "status" command output table parameters

7.6.9 "gpon-protection" node

```
/cli/gpon-protection> tree
+ gpon-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
```

Figure 7-163:"gpon-protection" node tree

7.6.9.1 "command" command

Name	command
Description	Execute a command on a given Protection entity.
Full path	/gpon-protection/command
Mandatory Parameters	--ID --type
Screen Output	No

Table 7-137: "command" command information

```
/cli/gpon-protection> command ?

Usage:
  COMMAND                          Execute a command on a given Protection entity.

   <MANDATORY>
   --ID                               Identifies a table entry by ID, in this context.
   --type                             Identify the command to execute (clear|lockout|force-
to-protection|force-to-working|manual-to-protection|manual-to-working)
```

Figure 7-164: CLI on line help on "command" command usage in this node context

7.6.9.2 "config" command

Name	config
Description	Configure one Protection Group parameters..
Full path	/gpon-protection/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-138: "config" command information

```
/cli/gpon-protection> config ?

Usage:
  CONFIG                     Configure one Protection Group parameters.

   <MANDATORY>
   --ID                      Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                   Administrative State. Enable/disable, in this context.
                             (enable|disable)
   --hold-off-time           Hold Off Time (0..100) x100ms
   --hp-lc-fail              high priority: Generalized Line Card Failure (enable|disable)
   --hp-losi-all-onus        high priority: Generalized LOSi on all ONUs connected to this
                             OLT interface  (enable|disable)
   --p-port                  Identifies the Protecting Interface ID. (e.g.: pon.2)
   --reversible              Specify is reversion is enabled (enable|disable)
   --w-port                  Identifies the Working Interface ID. (e.g.: pon.2)
   --wtr-time                Wait to Restore Time (WTR) (5..12) min
```

Figure 7-165: CLI on line help on "config" command usage in this node context

7.6.9.3 "create" command

Name	create
Description	Create a new Protection Group.
Full path	/gpon-protection/create
Mandatory Parameters	No
Screen Output	No

Table 7-139: "create" command information

```
/cli/gpon-protection> create ?

Usage:
  CREATE                        Create a new Protection Group.

   [OPTIONAL]
   --ID                         Identifies a table entry by ID, in this context.
   --admin                      Administrative State. Enable/disable, in this context.
                                (enable|disable)
   --hold-off-time              Hold Off Time (0..100) x100ms
   --hp-lc-fail                 high priority: Generalized Line Card Failure
                                enable|disable)
   --hp-losi-all-onus           high priority: Generalized LOSi on all ONUs connected to
                                this OLT interface  (enable|disable)
   --p-port                     Identifies the Protecting Interface ID. (e.g.: pon.2)
    --reversible                Specify is reversion is enabled (enable|disable)
   --w-port                     Identifies the Working Interface ID. (e.g.: pon.2)
   --wtr-time                   Wait to Restore Time (WTR) (5..12) min
```

Figure 7-166: CLI on line help on "create" command usage in this node context

7.6.9.4 "remove" command

Name	remove
Description	Remove an existing ERP instance.
Full path	/gpon-protection/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-140: "remove" command information

```
cli/gpon-protection> remove ?

Usage:
  REMOVE                          Remove an existing Protection Group.

   <MANDATORY>
   --ID                           Identifies a table entry by ID, in this context.
```

Figure 7-167: CLI on line help on "remove" command usage in this node context

7.6.9.5 "show" command

Name	show
Description	Show the current configuration.
Full path	/gpon-protection/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-; tables' parameters description in Table 7-.

Table 7-141: "show" command information

```
cli/gpon-protection> show ?

Usage:
  SHOW                    Show the current configuration

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 7-168: CLI on line help on "show" command usage in this node context

```
/cli/gpon-protection> show
+-------------------------------------------------------------------------------------------------------+
|GPON Protection Type B Groups                                                                          |
+------------------+-----------------+--------------------+---------------------------------------+
|                  |Interface Working|Interface Protecting|                                       |
+---+--------+-----+----+------------+----+---------------+----------+---------+-----------------+
|ID |Admin   |Mode |Slot|Port        |Slot|Port           |Reversible|WTR (min)|Hold Off (x100ms)|
+---+--------+-----+----+------------+----+---------------+----------+---------+-----------------+
+---+--------+-----+----+------------+----+---------------+----------+---------+-----------------+
/cli/gpon-protection>
```

Figure 7-169: Output of "show" command without arguments in this node context

Parameter Group	Parameter	Description
	ID	GPON Type B protection group Id
	Admin	GPON Type B protection group administrative state
	Mode	1to 1
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
Interface Protection	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Reversible	Indicates if reversion is enabled (enable|disable)
	WTR (min)	Wait to restore (5..12) min
	Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)

Table 7-142: "show" command without arguments output table parameters

7.6.9.6 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/gpon-protection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-143: "showconfig" command information

```
/cli/gpon-protection> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-170: CLI on line help on “showconfig” command usage in this node context

EN

7.6.9.7 “status” command

Name	status
Description	Show status information for one Protection Group.
Full path	/gpon-protection/status
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-172. Table parameters description in Table 7-145.

Table 7-144: “show” command information

```
/cli/gpon-protection> status ?

Usage:
  STATUS                    Show status information for one Protection Group.
```

Figure 7-171: CLI on line help on “status” command usage in this node context

```
|GPON Protection Type B Group Status                                                                                                  |
+---+-----------------------------+---------------------------------------------------------------------------------------------------+
|   |Interface Working            |Interface Protecting        |                                                                      |
+---+----+------+---------------+----+------+---------------+----------+--------------------+------+------------------------------+-------------------+
|ID |Slot|Port  |Status         |Slot|Port  |Status         |Active    |Sync. Status        |WTR(s)|Last Switch-over Cause        |Last Cmd           |
+---+----+------+---------------+----+------+---------------+----------+--------------------+------+------------------------------+-------------------+
+---+----+------+---------------+----+------+---------------+----------+--------------------+------+------------------------------+-------------------+
```

Figure 7-172: Output of ”show” command in this node context

Parameter Group	Parameter	Description
	ID	GPON Type B protection group Id
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
	Status	Working interface Status information
Interface Protecting	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Status	Protection interface Status information
	Active	Indicates which interface is active
	Sync. Status	Indicates synchronism Status
	WTR (s)	Wait to restore time
	Last Switch-over Cause	Indicates the cause for last switch-over
	Last Cmd	Indicates last executed Command

Table 7-145: “status” command output table parameters

7.6.10 “interfaces” node

```
/cli/interfaces> tree
+ interfaces[]
   + analog-rf[@config, @show, @showconfig]
      + status[@show]
   + ethernet[@config, @show, @showconfig]
      + cos[@config, @show, @showconfig]
      + dhcp[@config, @show, @showconfig]
      + multicast[@config, @show, @showconfig]
      + services[@add, @availableValues, @config, @remove, @show, @showconfig]
         + statistics[]
            + counters[@availableValues, @show, @show-active, @start, @stop]
            + dhcp[@show]
            + igmp[@show]
      + statistics[@show]
      + status[@show]
         + SFPs[@show]
         + active-channels[@show]
      + vlan[@config, @show, @showconfig]
   + gpon[@config, @show, @showconfig]
      + cos[@config, @show, @showconfig]
      + dhcp[@config, @show, @showconfig]
      + multicast[@config, @show, @showconfig]
      + statistics[]
         + errors[@show]
         + ethernet[@show]
         + gpon[@show]
      + status[@show]
         + SFPs[@show]
         + rx-power[@read-all, @show]
   + lag[@config, @create, @remove, @show, @showconfig]
      + cos[@config, @show, @showconfig]
      + mapping[@attach, @availableValues, @detach]
      + statistics[@show]
      + status[@show]
   + rf-overlay[@config, @show, @showconfig]
      + status[@show]
```

Figure 7-173:” Interfaces” node tree

7.6.10.1 “ethernet” sub-node

This node is used to configure Ethernet interfaces in all slots.

7.6.10.1.1 “config” command

Name	config
Description	Configure the given Ethernet interface.
Full path	/interfaces/ethernet/config
Mandatory Parameters	--port
Screen Output	No

Table 7-146: “config” command information

```
/cli/interfaces/ethernet> config ?

Usage CONFIG:
  CONFIG                Configure the given Ethernet interface

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --esmc               Enables sending SSM packets over ESMCChannel. (enable|disable)
   --ip-source-guard    Enable/Disable IP Source Guard filtering for the specified
                        interface. (enable|disable)
   --media-type         Media Type (100-base-X-full|1000-base-X-full-auto-neg-on|1000-
                        base-X-full-auto-neg-off|1000-base-T-full-auto-neg-off|10G-base-
   --mtu                Sets the Maximum Transmission Unit, which corresponds to the
                        largest packet that can be transmitted(1518..9600 Bytes).
   --timeout            Set the timeout used by the LACPDUs packets (short|long)(1s|30s)
```

Figure 7-174: CLI on line help on "config" command usage in this node context

7.6.10.1.2 "show" command

Name	show
Description	Show the current configuration.
Full path	/interfaces/ethernet/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-176 Tables parameter description in Table 7-141

Table 7-147: "show" command information

```
/cli/interfaces/ethernet> show ?

Usage:
  SHOW            Shows Ethernet information for a specific slot.
```

Figure 7-174: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet> show
+-----------------------------------------------------------------------------------------------------------------------+
|OLT1T0 - Ethernet Configuration                                                                                        |
+---+----------+----------+----------+----------+------------------------+---------------+-----+----------+------------+
|ID |Name      |Admin     |LAG       |Timeout   |Media Type              |Flow Control   |MTU  |ESMC      |IP Src Guard|
+---+----------+----------+----------+----------+------------------------+---------------+-----+----------+------------+
|1  |GbE 1     |enable    |--        |--        |1000BASE-X              |Disabled       |1518 |Disabled  |--          |
|2  |GbE 2     |enable    |--        |--        |1000BASE-X              |Disabled       |1518 |Disabled  |--          |
|3  |GbE 3     |enable    |--        |--        |1000BASE-X              |Disabled       |1518 |Disabled  |--          |
|4  |GbE 4     |enable    |Lag 1     |short     |1000BASE-X              |Disabled       |1518 |Disabled  |--          |
|5  |10GbE 1   |enable    |--        |--        |1000BASE-X              |Disabled       |9600 |Disabled  |--          |
|6  |10GbE 2   |enable    |--        |--        |1000BASE-X              |Disabled       |9600 |Disabled  |--          |
|7  |10GbE 3   |enable    |--        |--        |10G BASE X              |Disabled       |9600 |Disabled  |--          |
|8  |10GbE 4   |enable    |--        |--        |10G BASE X              |Disabled       |9600 |Disabled  |--          |
+---+----------+----------+----------+----------+------------------------+---------------+-----+----------+------------+
/cli/interfaces/ethernet>
```

Figure 7-176: Output of "show" command, without arguments, in this node context

Parameter	Description
ID	Interface ID (number)
Name	Name of the board inserted in a slot
Admin	Interface administrative state
LAG	Lag identification
Timeout	Timeout used by the LACPDUs packets (short|long)
Media Type	Interface standard
Flow Control	(enabled|disabled)
MTU	Maximum transfer unit (number)
ESMC	SSM packets over ESMC Channel sending (enabled|disabled)
IP Src Guard	IP Source Guard filtering for the specified interface; Flag (enable|disable)

Table 7-148: "show" command output table parameters

7.6.10.1.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/cli/interfaces/Ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-149: "showconfig" command information

```
/cli/interfaces/ethernet> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-177: CLI on line help on "showconfig" command usage in this node context

7.6.10.1.4 "cos" sub-node

This node is used to manage CoS configuration of ethernet interfaces.

7.6.10.1.4.1 "config" command

Name	config
Description	Configure CoS information for Eth interfaces.
Full path	/interfaces/ethernet/cos/config
Mandatory Parameters	--cos --port
Screen Output	No

Table 7-150: "config" command information

```
/cli/interfaces/ethernet/cos> config ?

Usage:
  CONFIG           Configure CoS information for Eth interfaces.

   <MANDATORY>
   --cos           Identifies a Class of Service (1..8)
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --pcp-bits      Identifies the p-bits associated to the Class of Service. (0..7)
   --profileID     Identifies a profile by ID.
   --scheduler     Identifies the type of Scheduler (strict|weighted)
```

Figure 7-178: CLI on line help on "config" command usage in this node context

7.6.10.1.4.2 "show" command

This command provides information on all the equipment Ethernet interfaces CoS configuration: CoS traffic profile and scheduler policy.

Name	show
Description	Show the current CoS configuration.
Full path	/interfaces/ethernet/cos/show
Mandatory Parameters	No
Screen Output	Table Figure 7-180. Table parameter description in Table 7-152.

Table 7-151: "show" command information

```
/cli/interfaces/ethernet/cos> show ?

Usage:
  SHOW             Show the current CoS configuration
```

Figure 7-179: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/cos> show
+-------------------------------------------------------------------------+
|Card 1 - OLT1T0: Ethernet CoS Bit Mapping                                |
+----------+---+---------------+-----------------------------+----------+
|          |   |PCPs           |                             |          |
+----------+---+-+-+-+-+-+-+-+-+-----------------------------+----------+
|Port      |CoS|0|1|2|3|4|5|6|7|(ID) Ethernet Profile        |Scheduler |
+----------+---+-+-+-+-+-+-+-+-+-----------------------------+----------+
|GbE 2     |1  |x| | | | | | | |(0)No Profile                |strict    |
|          |2  | |x| | | | | | |(0)No Profile                |strict    |
|          |3  | | |x| | | | | |(0)No Profile                |strict    |
|          |4  | | | |x| | | | |(0)No Profile                |strict    |
|          |5  | | | | |x| | | |(0)No Profile                |strict    |
|          |6  | | | | | |x| | |(0)No Profile                |strict    |
|          |7  | | | | | | |x| |(0)No Profile                |strict    |
|          |8  | | | | | | | |x|(0)No Profile                |strict    |
+----------+---+-+-+-+-+-+-+-+-+-----------------------------+----------+
|GbE 3     |1  |x| | | | | | | |(0)No Profile                |strict    |
|          |2  | |x| | | | | | |(0)No Profile                |strict    |
|          |3  | | |x| | | | | |(0)No Profile                |strict    |
|          |4  | | | |x| | | | |(0)No Profile                |strict    |
|          |5  | | | | |x| | | |(0)No Profile                |strict    |
|          |6  | | | | | |x| | |(0)No Profile                |strict    |
|          |7  | | | | | | |x| |(0)No Profile                |strict    |
|          |8  | | | | | | | |x|(0)No Profile                |strict    |
+----------+---+-+-+-+-+-+-+-+-+-----------------------------+----------+
```

Figure 7-180: "show" command output in this node context – partial view

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Port	Ethernet port identification in the board
CoS	Class of Service identification (Number 1..8)
PCPs	p-bit associated to the Class of Service (0..8) marked X
(ID) Ethernet Profile	Profile ID (number) Ethernet Profile Name
Scheduler	Scheduler policy (strict|weighted)

Table 7-152:"show" command without arguments output table parameters

7.6.10.1.4.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/Ethernet/cos/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-153: "showconfig" command information

7.6.10.1.5 dhcp" sub-node

7.6.10.1.5.1 "config" command

Name	config
Description	Configure DHCP mode parameter for the given interfaces.
Full path	/interfaces/ethernet/dhcp/config
Mandatory Parameters	--port --slot
Screen Output	No

Table 7-154: "config" command information

```
/cli/interfaces/ethernet/dhcp> config ?

Usage CONFIG:
  CONFIG                  Configure DHCP mode parameter for the given interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --is-trusted           Set the DHCP mode {default: untrusted / mode: 0 - untrusted, 1
                          - trusted}
```

Figure 7-181: CLI on line help on "config" command usage in this node context

7.6.10.1.5.2 "show" command

Name	show
Description	Shows DHCP mode information for a specific HW slot.
Full path	/interfaces/ethernet/dhcp/show
Mandatory Parameters	No
Screen Output	Table

Table 7-155: "show" command information

```
/cli/interfaces/ethernet/dhcp> show ?

Usage SHOW:
  SHOW                          Shows DHCP mode information for a specific HW slot.
```

Figure 7-182: CLI on line help on "show" command usage in this node context

7.6.10.1.5.3 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/dhcp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-156: "showconfig" command information

```
/cli/interfaces/ethernet/dhcp> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

Figure 7-183: CLI on line help on "showconfig" command usage in this node context

7.6.10.1.6 "multicast" sub-node

7.6.10.1.6.1 "config" command

Name	config
Description	Configure multicast parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/multicast/config
Mandatory Parameters	--port
Screen Output	No

Table 7-: "config" command information

```
/cli/interfaces/ethernet/multicast> config ?

Usage CONFIG:
  CONFIG              Configure multicast parameters for the given ETH interfaces.

   <MANDATORY>
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --max-bandwidth    Set the multicast group maximum bandwidth in Kbps(unlimited or
                      0..100000000000)
   --max-groups       Set the maximum number of multicast groups (unlimited or
                      0..16384)
```

Figure 7-184: CLI on line help on "config" command usage in this node context

7.6.10.1.6.2 "show" command

Name	show
Description	Shows ETH multicast information for a specific HW slot.
Full path	/interfaces/ethernet/multicast/show
Mandatory Parameters	No
Screen Output	Table

Table 7-158: "show" command information

```
/cli/interfaces/ethernet/multicast> show ?

Usage SHOW:
  SHOW              Shows ETH multicast information for a specific HW slot.
```

Figure 7-185: CLI on line help on "show" command usage in this node context

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, multicast is configured in the board and detailed information is available

Table 7-159. "show" command output table parameters

7.6.10.1.6.3 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/multicast/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-160: "showconfig" command information

```
/cli/interfaces/ethernet/multicast> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG           Print the command list that enforces the current configuration
```

Figure 7-186: CLI on line help on "showconfig" command usage in this node context

7.6.10.1.7 services" sub-node

7.6.10.1.7.1 "add" command

Name	add
Description	Add a client service to map one Ethernet interface to an existing network service.
Full path	/interfaces/ethernet/services/add
Mandatory Parameters	--name --port --serviceID--upstream-eth-profile-id
Screen Output	No

Table 7-161: "add" command information

```
/cli/interfaces/ethernet/services> add ?

Usage ADD:
  ADD                          Add a client service to map one Ethernet interface to an
                               existing network service.

   <MANDATORY>
   --name                      Set a name for this Client Service (STRING 65)
   --port                      Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                               lag.1)
   --serviceID                 Select an OLT service by ID.
   --upstream-eth-profile-id   Choose an existing upstream Ethernet profile by ID

   [OPTIONAL]
   --admin                     Administrative State. Enable/disable, in this context.
                               (enable|disable)
   --dhcp-op18                 DHCP Op.18 flag
   --dhcp-op37                 DHCP Op.37 flag
   --dhcp-op82                 DHCP Op.82 flag
   --igmp                      IGMP (enable|disable)
   --mac-limit                 Specifies the maximum number of MAC addresses allowed for a
                               given client service (unlimited or 1..99)
   --max-bandwidth             Set the multicast group maximum bandwidth in Kbps
                               (unlimited or 0..100000000)
   --max-groups                Set the maximum number of multicast groups (unlimited or
                               0..16384)
   --nni-ctag                  Inner VLAN ID (client) on the network-facing (Ethernet)
                               interface. (1..4094)
   --remoteID                  Remote ID field added to DHCP packets in DHCPop.82 enabled
                               services. (STRING 63)
   --serviceID-client          Choose a client service by ID.
   --uni-ctag                  VLAN ID delivered/received from the (Ethernet) subscriber-
                               facing interface at the ONU. (1..4094)
   --use-global-dhcp-ops       Use DHCP options defined in the OLT global service.
```

Figure 7-187: CLI on line help on "add" command usage in this node context

7.6.10.1.7.2 "availableValues" command

Name	availableValues
Description	Shows available options for each argument.
Full path	/interfaces/ethernet/services/availableValues
Mandatory Parameters	No
Screen Output	Tables, Figure 7-189. Tables' parameter description in Table 7-163 and Table 7-164.

Table 7-162: "availableValues" command information

```
/cli/interfaces/ethernet/services> availableValues ?

Usage:
  AVAILABLEVALUES
```

Figure 7-188: CLI on line help on "availableValues" command usage in this node context

```
/cli/interfaces/ethernet/services> availableValues
+-----------------------------------------------+
|Available Interfaces For Client Services       |
+-----+----------+------------------------------+
|Slot |Card Name |Eth Interfaces                |
+-----+----------+------------------------------+
+-----+----------+------------------------------+

+-----------------------------------------------------------------------------------------+
|Available Network Services To associate with Client Services                             |
+---+--------------------------------+--------+--------+--------+--------------------+
|ID |Name                            |Admin   |NNI-STAG|UNI-CTAG|Slot                |
+---+--------------------------------+--------+--------+--------+--------------------+
+---+--------------------------------+--------+--------+--------+--------------------+
/cli/interfaces/ethernet/services>
```

Figure 7-189: Output of "availableValues" command in this node context

Parameter	Description
Slot	Slot number
Card Name	Name of the card inserted in the slot
Ethernet interfaces	Available card ethernet interfaces

Table 7-163: "availableValues" command output table parameters- Table "Available interfaces for client services"

Parameter	Description
ID	Network service identifier (number)
Name	Network service name
Admin	Network service administrative status
NNI-STAG	Outer VLAN ID (service) on the network-facing (Ethernet) interface.(1..4094)
UNI-CTAG	VLAN ID delivered/received from the (Ethernet) subscriber-facing interface at the ONU. (1..4094)
Slot	Slot where the network service is available (number)

Table 7-164: "availableValues" command output table parameters- Table "Available network services to associate with client service

7.6.10.1.7.3 "config" command

Name	config
Description	Configure client service parameters.
Full path	/interfaces/ethernet/services/config
Mandatory Parameters	--serviceID-client
Screen Output	No

Table 7-165: "config" command information

```
/cli/interfaces/ethernet/services> config ?

Usage CONFIG:
  CONFIG                          Configure client service parameters.

   <MANDATORY>
   --serviceID-client             Choose a client service by ID.

   [OPTIONAL]
   --admin                        Administrative State. Enable/disable, in this context.
                                  (enable|disable)
   --dhcp-op18                    DHCP Op.18 flag
   --dhcp-op37                    DHCP Op.37 flag
   --dhcp-op82                    DHCP Op.82 flag
   --igmp                         IGMP (enable|disable)
   --mac-limit                    Specifies the maximum number of MAC addresses allowed for
                                  a given client service (unlimited or 1..99)
   --max-bandwidth                Set the multicast group maximum bandwidth in Kbps
                                  (unlimited or 0..100000000)
   --max-groups                   Set the maximum number of multicast groups (unlimited or
                                  0..16384)
   --name                         Set a name for this Client Service (STRING 65)
   --nni-ctag                     Inner VLAN ID (client) on the network-facing (Ethernet)
                                  interface. (1..4094)
   --remoteID                     Remote ID field added to DHCP packets in DHCPop.82
                                  enabled services. (STRING 63)
   --serviceID                    Select an OLT service by ID.
   --uni-ctag                     VLAN ID delivered/received from the (Ethernet)
                                  subscriber-facing interface at the ONU. (1..4094)
   --upstream-eth-profile-id      Choose an existing upstream Ethernet profile by ID
   --use-global-dhcp-ops          Use DHCP options defined in the OLT global service.
```

Figure 7-190: CLI on line help on "config" command usage in this node context

7.6.10.1.7.4 "remove" command

Name	remove
Description	Remove an existing service
Full path	/interfaces/ethernet/services/remove
Mandatory Parameters	--serviceID-client
Screen Output	No

Table 7-166: "remove" command information

```
/cli/interfaces/ethernet/services> remove ?

Usage:
  REMOVE                      Remove an existing service.

   <MANDATORY>
   --serviceID-client        Choose a client service by ID.
```

Figure 7-191: CLI on line help on "remove" command usage in this node context

7.6.10.1.7.5 "show" command

Name	show
Description	Show the current ethernet Services configuration.
Full path	/interfaces/ethernet/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-193. Table parameter description in Table 7-168.

Table 7-167: "show" command information

```
/cli/interfaces/ethernet/services> show ?

Usage:
  SHOW            Show the current ethernet Services configuration

   [OPTIONAL]
   --serviceID-client Choose a client service by ID.
```

Figure 7-192: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services> show
+-------------------------------------+
|General Information                  |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |OLT1T0         |               |
+----+---------------+---------------+
/cli/interfaces/ethernet/services>
```

Figure 7-193: Output of "show" command in this node context

Parameter	Description
Slot	Slot number
Card Name	Name of the card inserted in the slot
Details	If Yes detailed information on services is available via show command with argument --slot

Table 7-168: "show" command output table parameters

7.6.10.1.7.6 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/interfaces/ethernet/services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-169: "showconfig" command information

```
/cli/interfaces/ethernet/services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-194: CLI on line help on "showconfig" command usage in this node context

7.6.10.1.7.7 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/interfaces/ethernet/services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-170: "showconfig" command information

```
/cli/interfaces/ethernet/services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-195: CLI on line help on "showconfig" command usage in this node context

7.6.10.1.7.8 "statistics" sub-node

This node is used to view the traffic statistics on a specified Ethernet interfaces in a specified slot.

7.6.10.1.7.8.1 "counters" sub-node

7.6.10.1.7.8.1.1 "availableValues" command

Name	availableValues
Description	Display all client services where counters can be activated
Full path	/interfaces/ethernet/services/statistics/counters/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-197. Table parameters description inTable 7-172.

Table 7-171: "availableValues" command information

```
/cli/interfaces/ethernet/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES Display all client services where counters can be activated.
```

Figure 7-196: CLI on line help on "availableValues" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> availableValues
+-----------------------------------------------------+
|Client Services Where Counters Can Be Activated      |
+-----------------------------------------------------+
|Client Service (ID) Name                             |
+-----------------------------------------------------+
|(4) Id 4                                             |
|(6) Id 6                                             |
|(7) Id 7                                             |
|(8) Id 8                                             |
|(11) Id 11                                           |
|(12) Id 12                                           |
|(13) Id 13                                           |
|(14) Id 14                                           |
|(15) Id 15                                           |
|(5) Id 5                                             |
|(9) Id 9                                             |
|(10) Id 10                                           |
|(16) Id 16                                           |
|(17) Id 17                                           |
|(18) Id 18                                           |
|(19) Id 19                                           |
+-----------------------------------------------------+
```

Figure 7-197: Output of "availableValues" command in this node context

Parameter	Description
Client Service (ID) Name	Available Client Service identified by Service ID (number) and Service Name

Table 7-172: "availableValues" command output table parameters

7.6.10.1.7.8.1.2 "show" command

Name	show
Description	Show the statistics for a given client service, whose counter has already been activated.
Full path	/interfaces/ethernet/services/statistics/counters/show
Mandatory Parameters	--serviceID-client
Screen Output	Table, Figure 7-199. Table parameters description in Table 7-174

Table 7-173: "show" command information

```
/cli/interfaces/ethernet/services/statistics/counters> show ?

Usage:
  SHOW                  Show the statistics for a given client service, whose counter has
                        already been activated.

   <MANDATORY>
   --serviceID-client    Choose a client service by ID.
```

Figure 7-198: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show --serviceID-client=11
+-----------------------------------------------------------+
|Statistics for Client Service (11) Id 11                   |
+----------+---------------------+---------------------+----+
|          |Uplink               |Downlink             |
+----------+----------+----------+----------+----------+----+
|Parameter |Rx        |Tx        |Rx        |Tx        |
+----------+----------+----------+----------+----------+----+
|Total     |0         |0         |0         |0         |
|Unicast   |0         |0         |0         |0         |
|Multicast |0         |0         |0         |0         |
|Broadcast |0         |0         |0         |0         |
|Dropped   |0         |0         |0         |0         |
+----------+----------+----------+----------+----------+----+
```

Figure 7-199: Output of "show" command in this node context

Parameter	Description
Total	Total number of packets (Unicast+Multicast+Broadcast+Dropped) Uplink Rx/Tx||Downlink Rx/Tx
Unicast	Number of Unicast packets Uplink Rx/Tx||Downlink Rx/Tx
Multicast	Number of Multicast packets Uplink Rx/Tx||Downlink Rx/Tx
Broadcast	Number of Broadcast packets Uplink Rx/Tx||Downlink Rx/Tx
Dropped	Number of Dropped packets Uplink Rx/Tx||Downlink Rx/Tx

Table 7-174: "show" command output table parameters

7.6.10.1.7.8.1.3 "show-active" command

Name	Show-active
Description	Display all active counters.
Full path	/interfaces/ethernet/services/statistics/counters/show-active
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-201. Table parameters description in Table 7-176

Table 7-175: "show-active" command information

```
/cli/interfaces/ethernet/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active counters.
```

Figure 7-: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show-active
+-----------------------------------------------------------+
|Active Counters Gathering Client Service Statistics        |
+-----------------------------------------------------------+
|Client Service (ID) Name                                   |
+-----------------------------------------------------------+
|(11) Id 11                                                 |
+-----------------------------------------------------------+
```

Figure 7-201: Output of "show-active" command in this node context

Parameter	Description
Client Service (ID) Name	Client Service identified by Service ID (number) and Service Name with active counters gathering service statistics

Table 7-176: "show-active" command output table parameters

7.6.10.1.7.8.1.4 "start" command

Name	start
Description	Start the statistics counter for a given client service.
Full path	/interfaces/ethernet/services/statistics/counters/start
Mandatory Parameters	--serviceID-client
Screen Output	No

Table 7-177: "start" command information

```
/cli/interfaces/ethernet/services/statistics/counters> start ?

Usage:
  START                Start the statistics counter for a given client service.

   <MANDATORY>
   --serviceID-client  Choose a client service by ID.
```

Figure 7-202: CLI on line help on "start" command usage in this node context

7.6.10.1.7.8.1.5 "stop" command

Name	stop
Description	Stop an active statistics counter.
Full path	/interfaces/ethernet/services/statistics/counters/stop
Mandatory Parameters	--serviceID-client
Screen Output	No

Table 7-178: "stop" command information

```
cli/interfaces/ethernet/services/statistics/counters> stop ?

Usage:
  STOP                  Stop an active statistics counter.

   <MANDATORY>
   --serviceID-client   Choose a client service by ID.
```

Figure 7-203: CLI on line help on "stop" command usage in this node context

7.6.10.1.7.8.2 "dhcp" sub-node

7.6.10.1.7.8.2.1 "show" command

Name	show
Description	Show DHCP statistics for a client service with DHCP enabled.
Full path	/interfaces/ethernet/services/statistics/dhcp/show
Mandatory Parameters	--port --serviceID-client
Screen Output	Table.

Table 7-179: "show" command information

```
/cli/interfaces/ethernet/services> statistics/dhcp/show ?

Usage SHOW:
  SHOW                    Show DHCP statistics for a client service with DHCP enabled.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client     Choose a client service by ID.
```

Figure 7-204: CLI on line help on "show" command usage in this node context

7.6.10.1.7.8.3 "igmp" sub-node

7.6.10.1.7.8.3.1 "show" command

Name	show
Description	Show the IGMP statistics for a given multicast client service.
Full path	/interfaces/ethernet/services/statistics/igmp/show
Mandatory Parameters	--port --serviceID-client
Screen Output	Table.

Table 7-180: "show" command information

```
/cli/interfaces/ethernet/services/statistics/igmp> show ?

Usage SHOW:
  SHOW                      Show the IGMP statistics for a given multicast client service.

   <MANDATORY>
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client       Choose a client service by ID.
```

Figure 7-205: CLI on line help on "show" command usage in this node context

7.6.10.1.8 "statistics" sub-node

7.6.10.1.8.1 "show" command

Name	show
Description	Show the current ethernet statistics.
Full path	/interfaces/ethernet/statistics/show
Mandatory Parameters	--port
Screen Output	Table, Figure 7-207 Table parameters description in Table 7-182.

Table 7-181: "show" command information

```
/cli/interfaces/ethernet/ statistics>show ?

Usage:
  SHOW            Show the current ethernet statistics.
   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-206: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/statistics> show --port=eth.1
+-------------------------------------------------------------------------------------------+
|Slot 1 GbE 1 - Ethernet Statistics                                                         |
+-------------------------+-------------------------------+-------------------------------+
|Parameter                |Rx                             |Tx                             |
+-------------------------+---------------+---------------+---------------+---------------+
|                         |Total          |Partial        |Total          |Partial        |
+-------------------------+---------------+---------------+---------------+---------------+
|Drop Events              |0              |0              |0              |0              |
|Octets                   |3665           |0              |0              |0              |
|Packets                  |22             |0              |0              |0              |
|Broadcast Packets        |4              |0              |0              |0              |
|Multicast Packets        |18             |0              |0              |0              |
|CRC Align Errors         |0              |0              |-              |-              |
|Undersize Packets        |0              |0              |-              |-              |
|Oversize Packets         |0              |0              |0              |0              |
|Fragments                |0              |0              |-              |-              |
|Jabbers                  |0              |0              |-              |-              |
|Collisions               |-              |-              |0              |0              |
|Packets     64    Octets |0              |0              |0              |0              |
|Packets   65-127  Octets |5              |0              |0              |0              |
|Packets  128-255  Octets |16             |0              |0              |0              |
|Packets  256-511  Octets |1              |0              |0              |0              |
|Packets  512-1023 Octets |0              |0              |0              |0              |
|Packets   >=1024  Octets |0              |0              |0              |0              |
|Throughput (bps)         |0              |-              |0              |-              |
+-------------------------+---------------+---------------+---------------+---------------+
```

Figure 7-207: Output of "show" command in this node context

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes
Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 256-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1024 Octets	Number of packets with size equal to or higher than 1024 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate

Table 7-182: "show" command output table

7.6.10.1.9 "status" sub-node

This node is used to view the status of ethernet interfaces in all slots.

7.6.10.1.9.1 "show" command

Name	show
Description	Show status information for Eth interfaces
Full path	/interfaces/ethernet//status/show
Mandatory Parameters	No
Screen Output	Table Figure 7-209. Table parameters description in Table 7-184

Table 7-183: "show" command information

```
/cli/interfaces/ethernet/status> show ?

Usage:
  SHOW            Show status information for Eth interfaces.
```

Figure 7-208: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/status> show
+-------------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Slot 1 - Ethernet Interfaces Status                                                                                                                                |
+----------+-------+----------+----------+--------------------+----------+--------+--------------------+--------+--------+-----------------+--------+-----+
|          |       |          |          |                    |          |Status  |                    |Power (dbm)      |                 |        |     |
+----------+-------+----------+----------+--------------------+----------+----+---+---+--------------------+--------+--------+-----------------+--------+-----+
|Interface |Admin  |High Layer|Auto Neg  |Media Type          |Collisions|Link|Tx |Rx |SFP/XFP             |Tx      |Rx      |Bias Current (mA)|Temp(C) |Laser|
+----------+-------+----------+----------+--------------------+----------+----+---+---+--------------------+--------+--------+-----------------+--------+-----+
|GbE 1     |enable |LAG 1     |--        |1000BASE-X          |NO        |YES |NO |NO |FTLF1319P1BTL       |-5.97   |-4.90   |20.41            |51      |ON   |
|GbE 2     |enable |none      |--        |10 BASE T HALF      |--        |NO  |-- |-- |--                  |--      |--      |--               |--      |--   |
|GbE 3     |enable |none      |--        |10 BASE T HALF      |--        |NO  |-- |-- |1000BASE-LX         |-5.50   |-Inf    |7.13             |46      |ON   |
|GbE 4     |enable |none      |--        |10 BASE T HALF      |--        |NO  |-- |-- |--                  |--      |--      |--               |--      |--   |
|10GbE 1   |enable |none      |--        |10G BASE X          |NO        |YES |NO |YES|--                  |-24.32  |-9.54   |0.00             |37      |OFF  |
|10GbE 2   |enable |none      |--        |10 BASE T HALF      |--        |NO  |-- |-- |1000BASE-LX         |-7.24   |-Inf    |6.63             |42      |ON   |
|10GbE 3   |enable |none      |--        |10G BASE X          |NO        |YES |YES|YES|--                  |-19.24  |-8.60   |0.00             |38      |OFF  |
|10GbE 4   |enable |none      |--        |10 BASE T HALF      |--        |NO  |-- |-- |SPP5300LR-GL-W      |-2.68   |-Inf    |34.31            |44      |ON   |
+----------+-------+----------+----------+--------------------+----------+----+---+---+--------------------+--------+--------+-----------------+--------+-----+
/cli/interfaces/ethernet/status>
```

Figure 7-209:"show" command output in this node context

Parameter	Description
Interface	Ethernet Interface identifier
Admin	Ethernet port Administrative State
High layer	Indicates to each LAG (in case the port is a LAG member) the port belongs to
Auto Neg	If the port is configured to Auto negotiation, indicates the Auto Negotiation State
Media Type	Link Speed by indicating the applicable standard
Collisions	Not applicable in Full Duplex interfaces
Status Link	Indicates the Link State
Status Tx	Indicates if the interface is transmitting packets
Status Rx	Indicates if the interface is receiving packets
SFP/XFP	SFP/XFP module designation
Power Tx (dBm)	Indicates the transmitted optical power in dBm
Power Rx (dBm)	Indicates the received optical power in dBm
Bias Current (mA)	Indicates the laser BIAS current in mA
Temperature (ºC)	Indicates the XFP module temperature in ºC
Laser	Indicates the Laser operational States (ON|OFF)

Table 7-184 "show" command output table

7.6.10.1.9.2 "SFPs" sub-node

7.6.10.1.9.2.1 "show" command

Name	show
Description	Show details for an SFP entry from table ethernet/status/show.
Full path	/interfaces/ethernet/status/SFPs/show
Mandatory Parameters	--port
Screen Output	Table, Figure 7-211.

Table 7-185: "show" command information

```
/cli/interfaces/ethernet/status/SFPs> show ?

Usage:
  SHOW            Show details for an SFP entry from table ethernet/status/show

   <MANDATORY>
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-210: CLI on line help on "show" command usage in this node context

This command displays for the SFPs/XFPs inserted in the specified port, slot, the Base ID fields and the Extended ID fields' information

```
+-------------------------------------------------------------------------------------------------------------+
|SFP Info - Slot 1 'GbE 1'                                                                                    |
+------------------------------+------------------------------------------------------------------------------+
|Parameter                     |Value                                                                         |
+------------------------------+------------------------------------------------------------------------------+
|Base ID Fields                |                                                                              |
|   Identifier                 |SFP                                                                           |
|   Connector                  |LC                                                                            |
|   Transceiver                |0000000212100105h                                                             |
|   Encoding                   |8B10B                                                                         |
|   Nominal BitRate  (MBits/s) |2100                                                                          |
|   Length (9um)           (Km)|10                                                                            |
|   Length (9um)            (m)|10000                                                                         |
|   Length (50um)           (m)|0                                                                             |
|   Length (62,5um)         (m)|0                                                                             |
|   Length (Copper)         (m)|0                                                                             |
|   Vendor Name                |FINISAR CORP.                                                                 |
|   Vendor OUI                 |009065                                                                        |
|   Vendor Serial Number       |FTLF1319P1BTL                                                                 |
|   Vendor Revision            |A                                                                             |
|   Laser Wavelength       (nm)|1310                                                                          |
+------------------------------+------------------------------------------------------------------------------+
|Extended ID Fields            |                                                                              |
|   Options Implemented:       |                                                                              |
|                              |Loss of Signal Implemented, signal as defined in SFP MSA                      |
|                              |TX_DISABLE signal implemented                                                 |
|   Max Baudrate            (%)|0                                                                             |
|   Min Baudrate            (%)|0                                                                             |
|   Vendor Serial Number       |PKP5WNL                                                                       |
|   Date Code                  |11/06/06                                                                      |
|   Lot  Code                  |                                                                              |
|   Diagnostic Monitoring Type:|                                                                              |
|                              |Received power measurement type = Average Power                               |
|                              |Externally Calibrated                                                         |
|                              |Digital diagnostic monitoring implemented                                     |
|   Enhanced Options:          |                                                                              |
|                              |Optional Soft RX_LOS monitoring implemented                                   |
|                              |Optional Soft TX_DISABLE control and monitoring implemented                   |
|                              |Optional Alarm/Warning flags implemented for all monitored quantities         |
|   SFF-8472 Compliance        |SFF-8472 Rev 9.3                                                              |
+------------------------------+------------------------------------------------------------------------------+
|AD Status Bits                |                                                                              |
|   Temperature             (C)|49.8                                                                          |
|   Voltage                 (V)|3.345                                                                         |
|   Tx Bias                (mA)|20.46                                                                         |
|   Tx Power               (mW)|0.253                                                                         |
|   Rx Power               (mW)|0.321100                                                                      |
|   Op Status                  |00h                                                                           |
+------------------------------+------------------------------------------------------------------------------+
```

Figure 7-211: Output of "show" command in this node context

7.6.10.1.9.3 "active-channels" sub-node

7.6.10.1.9.3.1 "show" command

Name	show
Description	Show the active channels on a given Client Service.
Full path	/interfaces/ethernet/status/active-channels/show
Mandatory Parameters	--port --serviceID-client
Screen Output	Table, Figure 7-213. Table parameters description in Table 7-187.

Table 7-186: "show" command information

```
/cli/interfaces/ethernet/status/active-channels> show ?

Usage:
  SHOW                        Show the active channels on a given Client Service.

   <MANDATORY>
   --port                     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client         Choose a client service by ID.
```

Figure 7-212: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet> status/show/active-channels/show --port=eth.1 --serviceID-client=7 --slot=5
+-------------------------------------------------------------------+
|Active Channels on Client Service: (7) Id 7                        |
+--------------------+----------------------------------------------+
|Source IP           |IP Address                                    |
+--------------------+----------------------------------------------+
|0.0.0.0             |235.0.0.1                                     |
+--------------------+----------------------------------------------+
```

Figure 7-213: Output of "show" command in this node context

Parameter	Description
Source IP	Active-channel Source IP address
IP address	Active Channel IP address

Table 7-187: "show" command output table

7.6.10.1.10 "vlan" sub-node

7.6.10.1.10.1 "config" command

Name	config
Description	Configure vlan information for Eth interfaces.
Full path	/interfaces/ethernet/vlan/config
Mandatory Parameters	--port
Screen Output	No

Table 7-188: "config" command information

```
//cli/interfaces/ethernet/vlan> config ?

Usage CONFIG:
  CONFIG                       Configure vlan information for Eth interfaces.

   <MANDATORY>
   --port                      Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                               lag.1)

   [OPTIONAL]
   --acceptable-frame-types    Acceptable frame types {default: all / range: 1 - all, 2 -
                               tagged only, 3 - untagged only}
   --default-priority          Priority applied {default: 0 / range: 0..7}
   --default-vlan-id           VlanId applied to all income untagged frames {default: 1 /
                               range: 1..4095}
```

Figure 7-214: CLI on line help on "config" command usage in this node context

7.6.10.1.10.2 "show" command

Name	show
Description	Show the current vlan configuration.
Full path	/interfaces/gpon/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-216. Tables parameter description in Table 7-190.

Table 7-189: "show" command information

```
/cli/interfaces/ethernet/vlan> show ?

Usage:
  SHOW         Show the current vlan configuration
```

Figure 7-215: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/vlan> show
+-----------------------------------------------------------------------------------------+
|Card 1 - OLT1T0: VLAN Configuration                                                      |
+----------+---------------+--------------------------+---------------+-------------------+
|ID        |Name           |Acceptable Frame Types    |Default VLANID |Default Priority   |
+----------+---------------+--------------------------+---------------+-------------------+
|1         |GbE 1          |all                       |1              |0                  |
|2         |GbE 2          |all                       |1              |0                  |
|3         |GbE 3          |all                       |1              |0                  |
|4         |GbE 4          |all                       |1              |0                  |
|5         |10GbE 1        |all                       |1              |0                  |
|6         |10GbE 2        |all                       |1              |0                  |
|7         |10GbE 3        |all                       |1              |0                  |
|8         |10GbE 4        |all                       |1              |0                  |
+----------+---------------+--------------------------+---------------+-------------------+
```

Figure 7-216: Output of "show" command in this node context

Parameter	Description
ID	Table entry identifier (number)
Name	Ethernet interface identifier
Acceptable Frame Types	Indicates acceptable frame type
Default VLANID	Indicates used default VLAN identifier
Default Priority	Indicates used default Priority

Table 7-190: "show" command output table

7.6.10.1.10.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/Ethernet/vlan/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-191: "showconfig" command information

```
/cli/interfaces/gpon> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-217: CLI on line help on "showconfig" command usage in this node context

7.6.10.2 "gpon" sub-node

7.6.10.2.1 "config" command

Name	config
Description	Configure the given PON interfaces.
Full path	/interfaces/gpon/config
Mandatory Parameters	--port
Screen Output	No

Table 7-192: "config" command information

```
/cli/interfaces/gpon> config ?

Usage CONFIG:
  CONFIG                  Configure the given PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context.
                          (enable|disable)
   --ber                  Bit Error Rate (BER) Interval according to G.984.3. Value in
                          seconds. (1..3600 s)
   --fec-downstream       Forward Error Correction (FEC) on the Downstream side.
                          (enable|disable)
   --ip-source-guard      Enable/Disable IP Source Guard filtering for the specified
                          interface. (enable|disable)
   --mac-agging           Time it takes for a MAC address to be removed from the GPON MAC
                          table. Value in seconds. (120..3600 s)
   --mapping-mode         Specify the mapping mode to be applied to GPON interface.
                          Defaults to VLAN. (VLAN|VLAN+PBITS)
   --max-distance         Sets the maximum distance in Km for which the interface can
                          detect ONUs (20..60 Km)
   --min-distance         Sets the minimum distance in Km for which the interface can
                          detect ONUs.(0..40 Km)
   --onu-auto-discovery   New ONUs are automatically added to the discovery table for a
                          given PON interface. (enable|disable)
```

Figure 7-218: CLI on line help on "config" command usage in this node context

7.6.10.2.2 "show" command

Name	show
Description	Shows PON information for a specific HW slot.
Full path	/interfaces/gpon/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-220. Table parameter description in Table 7-194.

Table 7-193: "show" command information


```
/cli/interfaces/gpon> show ?

Usage:
  SHOW            Shows PON information for a specific HW slot.
```

Figure 7-219: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|OLT1T0 - GPON Configuration                                                                                                                                |
+---+----------+----------+-------------+-------------+-------------+---------+-------------+------------------+-----+-----------+------------+
|ID |Name      |Admin     |Mac Aging (s)|Max Dist. (Km)|Min Dist. (Km)|BER (s)  |Downstream FEC|ONU Auto Discovery|MTU  |IP Src Guard|Mapping Mode|
+---+----------+----------+-------------+-------------+-------------+---------+-------------+------------------+-----+-----------+------------+
|1  |PON 1     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|2  |PON 2     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|3  |PON 3     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|4  |PON 4     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|5  |PON 5     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|6  |PON 6     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|7  |PON 7     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |disable     |VLAN        |
|8  |PON 8     |enable    |240          |20           |0            |20       |disable      |enable            |2048 |enable      |VLAN        |
+---+----------+----------+-------------+-------------+-------------+---------+-------------+------------------+-----+-----------+------------+
/cli/interfaces/gpon>
```

Figure 7-220: Output of "show" command used with argument –slot, in this node context

Parameter	Description
ID	GPON Interface identifier (number)
Name	GPON interface name
Admin	Administrative GPON interface Status (enabled|disabled)
Mac Aging (sec)	Time it takes for a MAC address to be removed from the GPON MAC table, in the case it hasn't been received any packet with that source address in that GPON port. This value must be in the range between 120 and 3600 seconds. (Note: The MAC addresses in the GPON interface are only learnt in Unicast Unstacked Services)
Max distance (Km)	Maximum distance for which the interface can detect ONU's. The difference between the minimum and the maximum can't exceed 20km, and the maximum distance can't be higher than 60km
Min. distance (Km)	Minimum distance for which the interface can detect ONU's. The difference between the minimum and the maximum can't exceed 20km, and the maximum distance can't be higher than 60km
BER (s)	PON port Bit Error Rate in the downstream in sec
Downstream FEC	Flag; Downstream FEC enabled at this PON port if selected
ONU Auto Discovery	Flag; Auto Discovery ONUs at this PON port enabled if selected
MTU	MTU configured value
IP SRc. Guard	Flag; IP Source Guard enabled if selected
Mapping Mode	Used Mapping mode (VLAN | VLAN + P-bits)

Table 7-194: show command with argument slot - output table parameters

7.6.10.2.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/cli/interfaces/gpon/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-195: "showconfig" command information

```
/cli/interfaces/gpon> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-221: CLI on line help on "showconfig" command usage in this node context

7.6.10.2.4 "cos" sub-node

This sub-node is used to manage CoS configuration of PON interfaces in all slots.

7.6.10.2.4.1 "config" command

Name	config
Description	Configure CoS information for PON interfaces.
Full path	/interfaces/gpon/cos/config
Mandatory Parameters	--cos --port
Screen Output	No

Table 7-196: "config" command information

```
/cli/interfaces/gpon/cos> config ?

Usage:
  CONFIG          Configure CoS information for PON interfaces.

   <MANDATORY>
   --cos          Identifies a Class of Service (1..8)
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --pcp-bits     Identifies the p-bits associated to the Class of Service. (0..7)
   --profileID    Identifies a profile by ID.
   --scheduler    Identifies the type of Scheduler (strict|weighted)
```

Figure 7-:222 CLI on line help on "config" command usage in this node context

7.6.10.2.4.2 "show" command

Name	show
Description	Show the current CoS configuration.

Full path	/interfaces/gpon/cos/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-224. Table parameter description in Table 7-198

Table 7-197: "show" command information

```
/cli/interfaces/gpon/cos> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-223: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/cos> show
+-------------------------------------------------------------------------+
|Card 1 - OLT1T0: PON CoS Bit Mapping                                     |
+----------+---+---------------+------------------------------+----------+
|          |   |PCPs           |                              |          |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|Port      |CoS|0|1|2|3|4|5|6|7|(ID) Ethernet Profile         |Scheduler |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|PON 1     |1  |x| | | | | | | |(0)No Profile                 |strict    |
|          |2  | |x| | | | | | |(0)No Profile                 |strict    |
|          |3  | | |x| | | | | |(0)No Profile                 |strict    |
|          |4  | | | |x| | | | |(0)No Profile                 |strict    |
|          |5  | | | | |x| | | |(0)No Profile                 |strict    |
|          |6  | | | | | |x| | |(0)No Profile                 |strict    |
|          |7  | | | | | | |x| |(0)No Profile                 |strict    |
|          |8  | | | | | | | |x|(0)No Profile                 |strict    |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|PON 2     |1  |x| | | | | | | |(0)No Profile                 |strict    |
|          |2  | |x| | | | | | |(0)No Profile                 |strict    |
|          |3  | | |x| | | | | |(0)No Profile                 |strict    |
|          |4  | | | |x| | | | |(0)No Profile                 |strict    |
|          |5  | | | | |x| | | |(0)No Profile                 |strict    |
|          |6  | | | | | |x| | |(0)No Profile                 |strict    |
|          |7  | | | | | | |x| |(0)No Profile                 |strict    |
|          |8  | | | | | | | |x|(0)No Profile                 |strict    |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
```

Figure 7-224: Partial view of the output of "show" command in this node context

Parameter	Description
Port	PON port identification in the board
CoS	Class of Service (Number 1..8)
PCPs	p-bit associated to the Class of Service (0..8) marked X
(ID)	Profile ID (number)
Ethernet Profile	Profile Name
Scheduler	Scheduler policy (strict|weighted)

Table 7-198: "show" command, output table parameters

7.6.10.2.4.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/cli/interfaces/gpon/cos/showconfig
Mandatory Parameters	This command has no parameters

Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-199: "showconfig" command information

```
/cli/interfaces/gpon/cos> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-225: CLI on line help on "showconfig" command usage in this node context

7.6.10.2.5 "dhcp" sub-node

7.6.10.2.5.1 "config" command

Name	config
Description	Configure DHCP mode parameter for the given interfaces.
Full path	/interfaces/gpon/dhcp/config
Mandatory Parameters	--port --slot
Screen Output	No

Table 7-200: "config" command information

```
/cli/interfaces/gpon/dhcp> config ?

Usage CONFIG:
  CONFIG              Configure DHCP mode parameter for the given interfaces.

   <MANDATORY>
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot             Identifies a slot.

   [OPTIONAL]
   --is-trusted       Set the DHCP mode {default: untrusted / mode: 0 - untrusted, 1 -
                      trusted}
```

Figure 7-226: CLI on line help on "config" command usage in this node context

7.6.10.2.5.2 "show" command

This command used without arguments provides information on all the equipment Cards with detailed dhcp configuration information available. The command used with slot argument shows DHCP mode information for the specified HW slot.

Name	show
Description	Shows DHCP mode information for a specific HW slot.
Full path	/interfaces/gpon/dhcp/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-228.Table parameters description in Table 7-202

Table 7-201: "show" command information

```
/cli/interfaces/gpon/dhcp> show ?

Usage SHOW:
  SHOW                          Shows DHCP mode information for a specific HW slot.
```

Figure 7-227: CLI on line help on "show" command usage in this node context


```
/cli/interfaces/gpon/dhcp> show
+-----------------------------------------+
|Card 1 - OLT1T0: DHCP Mode               |
+----------+---------------+---------------+
|ID        |Name           |DHCP Mode      |
+----------+---------------+---------------+
|1         |PON 1          |untrusted      |
|2         |PON 2          |untrusted      |
|3         |PON 3          |untrusted      |
|4         |PON 4          |untrusted      |
|5         |PON 5          |untrusted      |
|6         |PON 6          |untrusted      |
|7         |PON 7          |untrusted      |
|8         |PON 8          |untrusted      |
+----------+---------------+---------------+
```

Figure 7-228: Output of "show" command with argument slot in this node context

Parameter	Description
ID	Table entry identifier (number)
Name	PON port Identification in the board
DHCP Mode	PON port configured DHCP mode (trusted|untrusted)

Table 7-202. "show" command with argument slot output table parameters

7.6.10.2.5.3 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/dhcp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-203: "showconfig" command information

```
/cli/interfaces/gpon/dhcp> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG          Print the command list that enforces the current configuration
```

Figure 7-229: CLI on line help on "showconfig" command usage in this node context

7.6.10.2.6 "multicast" sub-node

7.6.10.2.6.1 "config" command

Name	config
Description	Configure multicast parameters for the given GPON interfaces.
Full path	/interfaces/gpon/multicast/config
Mandatory Parameters	--port
Screen Output	No

Table 7-204: "config" command information

```
/cli/interfaces/gpon/multicast> config ?

Usage CONFIG:
  CONFIG                Configure multicast parameters for the given PON interfaces.

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --max-bandwidth      Set the multicast group maximum bandwidth in Kbps (unlimited
                        or 0..100000000000)
   --max-groups         Set the maximum number of multicast groups (unlimited or
                        0..16384)
```

Figure 7-230: CLI on line help on "config" command usage in this node context

7.6.10.2.6.2 "show" command

Name	show
Description	Shows PON multicast information for a specific HW slot.
Full path	/interfaces/gpon/multicast/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-232.Table parameters description in Table 7-206.

Table 7-205: "show" command information

```
/cli/interfaces/gpon/multicast> show ?

Usage SHOW:
  SHOW              Shows PON multicast information for a specific HW slot.
```

Figure 7-231: CLI on line help on "show" command usage in this node context

```
+-------------------------------------------------------------------+
|Multicast Configuration                                            |
+---+----------+-------------------------+-------------------------+
|ID |Name      |Maximum Bandwidth (kbps) |Maximum Number of Groups |
+---+----------+-------------------------+-------------------------+
|1  |PON 1     |unlimited                |unlimited                |
|2  |PON 2     |unlimited                |unlimited                |
|3  |PON 3     |unlimited                |unlimited                |
|4  |PON 4     |unlimited                |unlimited                |
|5  |PON 5     |unlimited                |unlimited                |
|6  |PON 6     |unlimited                |unlimited                |
|7  |PON 7     |unlimited                |unlimited                |
|8  |PON 8     |unlimited                |unlimited                |
+---+----------+-------------------------+-------------------------+
```

Figure 7-232: Output of "show" command with argument slot in this node context

Parameter	Description
ID	Table entry identifier (number)
Name	PON port identification in the board
Max. Bandwidth (kbips)	PON port maximum configured bandwidth (unlimited|limited)
Max. Nr. Of Groups	PON port maximum configured number of groups (unlimited|limited)

Table 7-206. "show" command with argument slot output table parameters

7.6.10.2.6.3 "showconfig" command

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/multicast/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-207: "showconfig" command information

```
/cli/interfaces/gpon/multicast> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG            Print the command list that enforces the current configuration
```

Figure 7-233: CLI on line help on "showconfig" command usage in this node context

7.6.10.2.7 "statistics" sub-node

This node is used to view traffic statistics for GPON interfaces. On a GPON interface there are three types of statistics gathered: errors, gpon, and ethernet.

7.6.10.2.7.1 "errors" sub-node

7.6.10.2.7.1.1 "show" command

Name	show
Description	Show Error Statistics for a given Gpon Interface
Full path	/interfaces/gpon/statistics/errors/show
Mandatory Parameters	--port
Screen Output	Tables Figure 7-235. Table parameter description in Table 7-209

Table 7-208: "show" command information

```
/cli/interfaces/gpon/statistics/errors> show ?

Usage:
  SHOW            Show Error Statistics for a given Gpon Interface

   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-234: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/errors> show --port=pon.1
+-------------------------------------------------------------------------------+
|Slot 1 PON 1 - Gpon Errors Statistics                                          |
+----------+------------------------------+------------------------------+
|ONU ID    |BIP8                          |REI                           |
+----------+---------------+--------------+---------------+--------------+
|          |Total          |Partial       |Total          |Partial       |
+----------+---------------+--------------+---------------+--------------+
+----------+---------------+--------------+---------------+--------------+
```

Figure 7-235: Output of "show" command in this node context

Parameter	Description
ONU ID	ONU identifier (number)
BIP8 (total/partial)	Errors received by the OLT for each of the ONU's(upstream direction)
REI (total/partial)	Errors received by each of the ONUs(downstream direction)

Table 7-209: "show" command output table parameters

7.6.10.2.7.2 "ethernet" sub –node

7.6.10.2.7.2.1 "show" command

Name	show
Description	Show Ethernet Statistics for a given Gpon Interface
Full path	/interfaces/gpon/statistics/ethernet/show
Mandatory Parameters	--port
Screen Output	Tables Figure 7-237.Table parameter description in Table 7-211

Table 7-210: "show" command information

```
/cli/interfaces/gpon/statistics/ethernet> show ?

Usage:
  SHOW            Show Ethernet Statistics for a given Gpon Interface

   <MANDATORY>
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-236: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/ethernet> show --port=pon.1
+-------------------------------------------------------------------------------------------+
|Slot 1 PON 1 - Gpon Ethernet Statistics                                                    |
+-------------------------+-------------------------------+-------------------------------+
|Parameter                |Rx                             |Tx                             |
+-------------------------+---------------+---------------+---------------+---------------+
|                         |Total          |Partial        |Total          |Partial        |
+-------------------------+---------------+---------------+---------------+---------------+
|Drop Events              |0              |0              |0              |0              |
|Octets                   |2165775        |160            |5394350        |160            |
|Packets                  |27215          |2              |27883          |2              |
|Broadcast Packets        |31             |0              |4              |0              |
|Multicast Packets        |0              |0              |0              |0              |
|CRC Align Errors         |0              |0              |-              |-              |
|Undersize Packets        |0              |0              |-              |-              |
|Oversize Packets         |0              |0              |0              |0              |
|Fragments                |0              |0              |-              |-              |
|Jabbers                  |0              |0              |-              |-              |
|Collisions               |-              |-              |0              |0              |
|Packets     64    Octets |0              |0              |539            |0              |
|Packets   65-127  Octets |27212          |2              |25135          |2              |
|Packets  128-255  Octets |2              |0              |7              |0              |
|Packets  256-511  Octets |0              |0              |4              |0              |
|Packets  512-1023 Octets |0              |0              |1              |0              |
|Packets   >=1024  Octets |1              |0              |2197           |0              |
|Throughput (bps)         |0              |-              |0              |-              |
+-------------------------+---------------+---------------+---------------+---------------+
```

Figure 7-237: Output of "show" command in this node context

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes
Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 255-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1025 Octets	Number of packets with size between 1024 to 1518 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate (1Mbit/s Granularity)

Table 7-211: "show" command output table parameters

7.6.10.2.7.3 "gpon" sub-node

7.6.10.2.7.3.1 "show" command

Name	show
Description	Show the current CoS configuration.
Full path	/interfaces/gpon/statistics/gpon/show
Mandatory Parameters	--port --slot
Screen Output	Tables Figure 7-239. Table parameter description in Table 7-213

Table 7-212: "show" command information

```
/cli/interfaces/gpon/statistics/gpon> show ?

Usage:
  SHOW            Show Error Statistics for a given Gpon Interface

   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot         Identifies a slot.
```

Figure 7-238: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/gpon> show --port=pon.3
+-------------------------------------------------------------------------------------------------------------+
|Slot 1 PON 3 - GPON Statistics                                                                               |
+-------------------------+-----------------------------------------+-----------------------------------------+
|Parameter                |Rx                                       |Tx                                       |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|                         |Total               |Partial             |Total               |Partial             |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|Network Packets Valid    |14401985            |946                 |14274980            |924                 |
|                Error    |0                   |0                   |-                   |-                   |
|                Dropped  |3006                |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|PON Packets     Valid    |14274980            |924                 |14284777            |923                 |
|                Error    |0                   |0                   |-                   |-                   |
|                Dropped  |3                   |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|PLOAM           Valid    |3588                |0                   |76508               |6                   |
|                Error    |0                   |0                   |-                   |-                   |
|                Dropped  |0                   |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
```

Figure 7-239: Output of "show" command in this node context

Parameter	Description
Network Packets	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted packets from/to the network
PON Packets	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted packets from/to the GPON
PLOAM	In this parameter is possible to check the GPON valid/error/dropped received/ transmitted PLOAM packets from/to the network

Table 7-213: "show" command output table parameters

7.6.10.2.8 "status" sub-node

This node is used to view the status of GPON interfaces in all slots.

7.6.10.2.8.1 "show" command

Name	show
Description	Show status information for PON interfaces
Full path	/interfaces/gpon/status/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-241. Tables' parameters description in nd Table 7-215.

Table 7-214: "show" command information

```
/cli/interfaces/gpon> status/show ?

Usage SHOW:
  SHOW              Show status information for PON interfaces.
```

Figure 7-240: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/status> show
+---------+-------+--------------+--------------+--------------+--------------+--------------------+--------+--------+-----------------+--------+-----+------+
|PON Interfaces Status                                                                                                                                    |
+---------+-------+--------------+--------------+--------------+--------------+--------------------+--------+--------+-----------------+--------+-----+------+
|Interface|Admin  |Fixed (Kbps)  |Assured (Kbps)|Maximum (Kbps)|CBR (Kbps)    |SFP                 |Tx (dBm)|Rx Info.|Bias Current (mA)|Temp(C) |Laser|Alarms|
+---------+-------+--------------+--------------+--------------+--------------+--------------------+--------+--------+-----------------+--------+-----+------+
|PON 1    |disable|0             |0             |0             |0             | --                 | --     | --     | --              | --     | --  | --   |
|PON 2    |disable|0             |0             |0             |0             | --                 | --     | --     | --              | --     | --  | --   |
|PON 3    |enable |2048          |0             |2048          |2048          |GPON B+ I Temp.     |-8.7    |YES     |9.5              |35      |ON   |OK    |
|PON 4    |disable|81024         |0             |81024         |81024         | --                 | --     | --     | --              | --     | --  | --   |
|PON 5    |disable|0             |0             |0             |0             | --                 | --     | --     | --              | --     | --  | --   |
|PON 6    |enable |2048          |0             |2048          |2048          |GPON B+ I Temp.     |-10.3   |YES     |11.2             |41      |ON   |OK    |
|PON 7    |enable |8192          |0             |8192          |8192          |GPON B+ I Temp.     |-8.7    |YES     |13.8             |42      |ON   |OK    |
|PON 8    |disable|7040          |0             |7040          |7040          | --                 | --     | --     | --              | --     | --  | --   |
+---------+-------+--------------+--------------+--------------+--------------+--------------------+--------+--------+-----------------+--------+-----+------+
/cli/interfaces/gpon/status>
```

Figure 7-241: Output of "show" command in this node context

Parameter	Description
Interfaces	GPON interface identifier
Admin	GPON interface administrative state
Fixed (Kbps)	Fixed Bandwidth (must be less than 1,2Gb/s)
Assured(Kbps)	Assured Bandwidth (must be less than 1,2Gb/s)
Maximum(Kbps)	Maximum Bandwidth
CBR(Kbps)	CBR Fixed Bandwidth (must be less than 480Mb/s)
SFP	SFP Module
Tx (dBm)	Indicates the transmitted optical power
Rx(dBm)	Indicates the received optical power
Bias Current(mA)	Indicates the laser BIAS current
Temp.(ºC)	Indicates the SFP module temperature
Laser	Indicates the Laser operational States
Alarms	Indicates the SFP Alarms

Table 7-215: "show" command with argument slot, output table parameters

7.6.10.2.8.2 "SPFs" sub-node

7.6.10.2.8.2.1 "show" command

Name	show
Description	Show details for an SFP entry from table gpon/status/show
Full path	/interfaces/gpon/status/SFPs/show
Mandatory Parameters	--port
Screen Output	Table, Figure 7-243

Table 7-216: "show" command information

```
/cli/interfaces/gpon/ status/SFPs>show ?

Usage:
  SHOW            Show details for an SFP entry from table gpon/status/show

   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-242: CLI on line help on "show" command usage in this node context

This command displays for the SFPs/XFPs inserted in the specified port, slot, the Base ID fields and the Extended ID fields' information.

```
|SFP Info - Slot 1 'PON 3'                                                                                    |
+-----------------------------+-------------------------------------------------------------------------------+
|Parameter                    |Value                                                                          |
+-----------------------------+-------------------------------------------------------------------------------+
|Base ID Fields               |                                                                               |
|   Identifier                |SFP                                                                            |
|   Connector                 |SC                                                                             |
|   Transceiver               |0000000000000000h                                                              |
|   Encoding                  |NRZ                                                                            |
|   Nominal BitRate  (MBits/s)|2500                                                                           |
|   Length (9um)          (Km)|20                                                                             |
|   Length (9um)           (m)|20000                                                                          |
|   Length (50um)          (m)|0                                                                              |
|   Length (62,5um)        (m)|0                                                                              |
|   Length (Copper)        (m)|0                                                                              |
|   Vendor Name               |NEOPHOTONICS                                                                   |
|   Vendor OUI                |000000                                                                         |
|   Vendor Serial Number      |PTB38J0-6548E-SC                                                               |
|   Vendor Revision           |1.0                                                                            |
|   Laser Wavelength      (nm)|1490                                                                           |
+-----------------------------+-------------------------------------------------------------------------------+
|Extended ID Fields           |                                                                               |
|   Options Implemented:      |                                                                               |
|                             |Loss of Signal Implemented, signal inverted from standard definition in SFP MSA|
|                             |TX_FAULT signal implemented                                                    |
|                             |TX_DISABLE signal implemented                                                  |
|   Max Baudrate           (%)|0                                                                              |
|   Min Baudrate           (%)|0                                                                              |
|   Vendor Serial Number      |A0413617836                                                                    |
|   Date Code                 |13/04/09                                                                       |
|   Lot  Code                 |                                                                               |
|   Diagnostic Monitoring Type:|                                                                              |
|                             |Received power measurement type = Average Power                                |
|                             |Externally Calibrated                                                          |
|                             |Digital diagnostic monitoring implemented                                      |
|   Enhanced Options:         |                                                                               |
|                             |Optional Soft TX_FAULT monitoring implemented                                  |
|                             |Optional Soft TX_DISABLE control and monitoring implemented                    |
|                             |Optional Alarm/Warning flags implemented for all monitored quantities          |
|   SFF-8472 Compliance       |SFF-8472 Rev 9.4                                                               |
+-----------------------------+-------------------------------------------------------------------------------+
|AD Status Bits               |                                                                               |
|   Temperature            (C)|35.9                                                                           |
|   Voltage                (V)|3.335                                                                          |
|   Tx Bias               (mA)|9.60                                                                           |
|   Tx Power              (mW)|0.134                                                                          |
|   Rx Power              (mW)|0.000000                                                                       |
|   Op Status                 |00h                                                                            |
+-----------------------------+-------------------------------------------------------------------------------+
```

Figure 7-243: Output of "show" command in this node context

7.6.10.2.8.3 "rx-power" sub-node

7.6.10.2.8.3.1 "read-all" command

This command reads all rx-power entries for all ONUs on the selected GPON interface specified by slot and port arguments and updates the database fields used to fill the rx-power table displayed as output of the show command, executed in this sub-node.

This command does not return displayed information on the terminal.

This command must be executed before the "/interfaces/gpon/status/rx-power/show" command otherwise the output of the show command will be either outdated data information or an empty table.

Name	read-all
Description	Read rx-power entries for all ONUs on the selected interface.
Full path	/interfaces/gpon/status/rx-power/read-all
Mandatory Parameters	--port
Screen Output	No

Table 7-217: "read-all" command information

```
/cli/interfaces/gpon> status/rx-power/read-all ?

Usage:
  READ-ALL        Read rx-power entries for all ONUs on the selected interface.

   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-244: CLI on line help on "read-all" command usage in this node context

7.6.10.2.8.3.2 "show" command

This command displays detailed rx-power information for an SFP on a GPON interface specified by slot and port arguments. In order to have updated values of the received optical power in the PON interface the "read-all" command must be executed before the "show" command

Name	show
Description	Show details for a 'Rx-Info.' entry from table gpon/status/show
Full path	/cli/interfaces/gpon/status/rx-power/show
Mandatory Parameters	--port
Screen Output	Table, Figure 7-246 Table parameters description in Table 7-219.

Table 7-218: "show" command information

```
/cli/interfaces/gpon/status/rx-power> show ?

Usage:
  SHOW            Show details for a 'Rx-Info.' entry from table gpon/status/show

   <MANDATORY>
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-245: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/status/rx-power> show --port=pon.3
+-------------------------------------------------------+
|RX-Power in Slot 1 PON 3                               |
+-------------------+-----------------------------------+
|                   |Last Read                          |
+------+------------+-----------+----------+-----------+
|ONU ID|Presence    |Power (dBm)|Date      |Time       |
+------+------------+-----------+----------+-----------+
|2     |connected   |0.0        |28/08/2014|09:22:19   |
+------+------------+-----------+----------+-----------+
/cli/interfaces/gpon/status/rx-power>
```

Figure 7-246: Output of "show" command in this node context

Parameter	Description
ONU ID	ONU identifier
Presence	Indicates if the ONU identified by ONU ID is present (Connected|Disconnected)
Power (dBm)	Optical power received at the specified PON port from each ONU at Date dd/mm/yyy, Time hh:mm:ss
Date	Date of last "read-all" command received Rx-Power from ONU reading; format dd/mm/yyy
Time	Time of last "read-all" command received Rx-Power from ONU reading; format hh:mm:ss

Table 7-219: "show" command output table parameters

7.6.10.3 "lag" sub-node

This node is used to manage the LAG configuration.

7.6.10.3.1 "config" command

Name	config
Description	Configure a given LAG interface.
Full path	/interfaces/lag/config
Mandatory Parameters	--lag-id
Screen Output	No

Table 7-220: "config" command information

```
/cli/interfaces/lag> config ?

Usage:
  CONFIG        Configure a given LAG interface.

   <MANDATORY>
   --lag-id     Identifies a LAG by ID. (0..14)

   [OPTIONAL]
   --admin      Administrative State. Enable/disable, in this context. (enable|disable)
   --balance    Traffic Load Balancing of the LAG interface. (SA|DA|SDA)
   --static     Indicates if the LAG is Static (doesn't transmit neither processes LACPDU
                packets) (enable|disable)
```

Figure 7-247: CLI on line help on "config" command usage in this node context

7.6.10.3.2 "create" command

Name	create
Description	Create a new LAG entity.
Full path	/interfaces/lag/create
Mandatory Parameters	No
Screen Output	No

Table 7-221: "create" command information

```
cli/interfaces/lag> create ?

Usage CREATE:
  CREATE               Create a new LAG entity.

   [OPTIONAL]
   --lag-id            Identifies a LAG by ID. (1..15)
```

Figure 7-248: CLI on line help on "create" command usage in this node context

7.6.10.3.3 "remove" command

Name	remove
Description	Remove an existing LAG.
Full path	/interfaces/lag/remove
Mandatory Parameters	--lagID
Screen Output	No

Table 7-222: "remove" command information

```
/cli/interfaces/lag> remove ?

Usage:
  REMOVE          Remove an existing LAG.

   <MANDATORY>
   --lag-id       Identifies a LAG by ID. (0..14)
```

Figure 7-249: CLI on line help on "remove" command usage in this node context

7.6.10.3.4 "show" command

Name	show
Description	Shows the current LAGs configured. If a LAG ID is given shows information for that LAG only.
Full path	/interfaces/lag/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-251.Table parameter description Table 7-224

Table 7-223: "show" command information

```
/cli/interfaces/lag> show ?

Usage:
  SHOW          Shows the current LAGs configured. If a LAG ID is given shows information
for that LAG only.

   [OPTIONAL]
   --lag-id     Identifies a LAG by ID. (0..14)
```

Figure 7-250: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag> show
+-------------------------------------------------------------------------------------------------------------------------------
|Configured LAGs Information
+---+----------+----------+----------+---------------+-------------------------------------------------------------------------
|ID |Name      |Admin     |Static    |Balance        |Attached Interfaces (Slot/Name)
+---+----------+----------+----------+---------------+-------------------------------------------------------------------------
|1  |LAG 1     |enable    |enable    |Source MAC     |(1/GbE 1)
|2  |LAG 2     |disable   |enable    |Source MAC     | --
+---+----------+----------+----------+---------------+-------------------------------------------------------------------------
/cli/interfaces/lag>
```

Figure 7-251: Output of "show" command in this node context"

Figure 7-252: Output of "show" command with argument –lag-id in this node context

Parameter	Description
ID	LAG Identifier(number)
Name	LAG Interface name
Admin	LAG administrative State (enable|disable)
Static	Indicates if the LAG is Static (enable|disable)
Balance	Indicates type of traffic Load Balancing of the LAG interface (Source MAC | Destination MAC | Source and Destination MAC)
Attached Interfaces (Slot/Name)	Indicates the Ports that belong to the LAG identified by slot/port pair

Table 7-224: "show" command - output table parameters

7.6.10.3.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/lag/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-225: "showconfig" command information

```
/cli/interfaces/lag> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-253: CLI on line help on "showconfig" command usage in this node context

7.6.10.3.6 "cos" sub-node

This node is used to manage CoS configuration for each LAG.

7.6.10.3.6.1 "config" command

Name	config
Description	Configure CoS information for LAG interfaces.
Full path	/interfaces/lag/cos/config
Mandatory Parameters	--cos --port
Screen Output	No

Table 7-226: "config" command information

```
/cli/interfaces/lag/cos> config ?

Usage:
  CONFIG          Configure CoS information for LAG interfaces.

   <MANDATORY>
   --cos           Identifies a Class of Service (1..8)
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --pcp-bits      Identifies the p-bits associated to the Class of Service. (0..7)
   --profileID     Identifies a profile by ID.
   --scheduler     Identifies the type of Scheduler (strict|weighted)
```

Figure 7-254: CLI on line help on "config" command usage in this node context

7.6.10.3.6.2 "show" command

This command used without arguments provides information on all the equipment LAG interfaces CoS configuration: CoS traffic profile and scheduler policy. When used with the argument slot it displays that information only for the specific slot.

Name	show
Description	Show the current configuration.
Full path	/interfaces/lag/cos/show
Mandatory Parameters	No
Screen Output	Table Figure 7-256. Table parameter description in Table 7-228.

Table 7-227: "show" command information

```
/cli/interfaces/lag/cos> show ?

Usage:
  SHOW            Show the current configuration

   [OPTIONAL]
   --lag-id       Identifies a LAG by ID. (0..14)
```

Figure 7-255: CLI on line help on show command usage in this node context

```
/cli/interfaces/lag/cos> show
+-------------------------------------------------------------------------+
|LAG CoS Bit Mapping                                                      |
+----------+---+---------------+------------------------------+----------+
|          |   |PCPs           |                              |          |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|Port      |CoS|0|1|2|3|4|5|6|7|(ID) Ethernet Profile         |Scheduler |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|LAG 1     |1  |x| | | | | | | |(0)No Profile                 |strict    |
|          |2  | |x| | | | | | |(0)No Profile                 |strict    |
|          |3  | | |x| | | | | |(0)No Profile                 |strict    |
|          |4  | | | |x| | | | |(0)No Profile                 |strict    |
|          |5  | | | | |x| | | |(0)No Profile                 |strict    |
|          |6  | | | | | |x| | |(0)No Profile                 |strict    |
|          |7  | | | | | | |x| |(0)No Profile                 |strict    |
|          |8  | | | | | | | |x|(0)No Profile                 |strict    |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
|LAG 2     |1  |x| | | | | | | |(0)No Profile                 |strict    |
|          |2  | |x| | | | | | |(0)No Profile                 |strict    |
|          |3  | | |x| | | | | |(0)No Profile                 |strict    |
|          |4  | | | |x| | | | |(0)No Profile                 |strict    |
|          |5  | | | | |x| | | |(0)No Profile                 |strict    |
|          |6  | | | | | |x| | |(0)No Profile                 |strict    |
|          |7  | | | | | | |x| |(0)No Profile                 |strict    |
|          |8  | | | | | | | |x|(0)No Profile                 |strict    |
+----------+---+-+-+-+-+-+-+-+-+------------------------------+----------+
/cli/interfaces/lag/cos>
```

Figure 7-256: Output of "show" command in this node context

Parameter	Description
Port	LAG I port identification
CoS	Class of Service identification (Number 1..8)
PCPs	p-bit associated to the Class of Service (0..8) marked X
(ID)	Profile ID (number)
Ethernet Profile	Profile Name
Scheduler	Scheduler policy (strict|weighted)

Table 7-228: show command output table parameters

7.6.10.3.6.3 Command "showconfig"

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/lag/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-229:"showconfig" command information

```
/cli/interfaces/lag> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-257: CLI on line help on "showconfig" command usage in this node context

7.6.10.3.6.4 "mapping" sub-node

This node is used to manage the interfaces that belong to each LAG.

7.6.10.3.6.4.1 "attach" command

Name	attach
Description	Add the specified interface by 'slot, port' to the given LAG ID.
Full path	/interfaces/lag/mapping/attach
Mandatory Parameters	--lag-id --port
Screen Output	No

Table 7-230: "attach" command information

```
/cli/interfaces/lag/mapping> attach ?

Usage:
  ATTACH          Add the specified interface by 'slot, port' to the given LAG ID.

   <MANDATORY>
   --lag-id       Identifies a LAG by ID. (0..14)
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-258: CLI on line help on "attach" command usage in this node context

7.6.10.3.6.4.2 "availableValues" command

Name	availableValues
Description	Display the interfaces that can be used to attach/detach.
Full path	/interfaces/lag/mapping/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7- . Table parameters description in Table 7-.

Table 7-:231 "availableValues" command information

```
/cli/interfaces/lag/mapping> availableValues ?

Usage:
  AVAILABLEVALUES    Display the interfaces that can be used to attach/detach
```

Figure 7-259: CLI on line help on "availableValues" command usage in this node context

```
/cli/interfaces/lag/mapping> availableValues
+---------------------------------------+
|Available interfaces for Attach        |
+-----+---------------------------------+
|Slot |Interface                        |
+-----+---------------------------------+
|1    |GbE 4                            |
+-----+---------------------------------+
/cli/interfaces/lag/mapping>
```

Figure 7-260:"availableValues" command output partial in this node context

Parameter	Description
Slot	Slot identifier
Interface	Ethernet interface Identifier

Table 7-232: "availableValues" command output table parameters

7.6.10.3.6.4.3 "detach" command

Name	detach
Description	Remove the specified interface by 'slot, port' from the given LAG ID.
Full path	/interfaces/lag/mapping/detach
Mandatory Parameters	--lag-id --port
Screen Output	No

Table 7-233: "detach" command information

```
/cli/interfaces/lag/mapping> detach ?

Usage:
  DETACH          Remove the specified interface by 'slot, port' from the given LAG ID.

   <MANDATORY>
   --lag-id       Identifies a LAG by ID. (0..14)
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-261: CLI on line help on "detach" command usage in this node context

7.6.10.3.6.5 "statistics" sub-node

7.6.10.3.6.5.1 "show" command

Name	show
Description	Show the statistics information for LAG ports.
Full path	/interfaces/lag/statistics/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 7-263. Table parameters description in Table 7-235

Table 7-234: "show" command information

```
/cli/interfaces/lag/statistics> show ?

Usage:
  SHOW        Show
```

Figure 7-262: CLI on line help on "show" command usage in this node context


```
/cli/interfaces/lag/statistics> show
+-------------------------------------------------------------------------------------------------------+
|LAG Statistics                                                                                         |
+--------------------+-----------------------------------------+-----------------------------------------+
|LAG ID Slot / Port  |Rx                                       |Tx                                       |
+--------------------+--------------------+--------------------+--------------------+--------------------+
|                    |Total               |Partial             |Total               |Partial             |
+--------------------+--------------------+--------------------+--------------------+--------------------+
|LAG 1   1 / GbE 1   |0                   |0                   |0                   |0                   |
+--------------------+--------------------+--------------------+--------------------+--------------------+
```

Figure 7-263: Output of "show" command in this node context

Parameter	Description
LAG	Indicates the LAG Identifier
Slot	Identifies the slot to where the card to which the Port belongs is inserted
Port	Indicates the Ports that belong to the LAG.
Rx (Total/Partial)	Indicates the (Total/Partial) number of LACPDUs received
Tx (Total/Partial)	Indicates the (Total/Partial) number of LACPDUs transmitted

Table 7-235: "show" command output table parameters

7.6.10.3.6.6 "status" sub-node

7.6.10.3.6.6.1 "show" command

Name	show
Description	Show the status information for the LAG interfaces.
Full path	/interfaces/lag/status/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 7-265. Table parameters description in Table 7-237

Table 7-236: "show" command information

```
/cli/interfaces/lag/status> show ?
Usage:
  SHOW            Show status information for LAG interfaces.
```

Figure 7-264: CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/status> show
+-------------------------------------------------------------------------------+
|LAG Status                                                                     |
+-------------------------------------------------+-----------------------------+
|                                                 |Underlying Interfaces        |
+---+----------+-----------+------------+---------+---------------+-----------+
|ID |Name      |Admin      |Link Status |Channel Type|Slot/Port      |Status     |
+---+----------+-----------+------------+---------+---------------+-----------+
|1  |LAG 1     |enable     |Up          |Static      |1/GbE 1        |Active     |
+---+----------+-----------+------------+---------+---------------+-----------+
|2  |LAG 2     |disable    | --         | --         | --            | --        |
+---+----------+-----------+------------+---------+---------------+-----------+
/cli/interfaces/lag/status>
```

Figure 7-265: Output of "show" command in this node context

Parameter Group	Parameter	Description
	ID	Indicates the LAG Identifier (number)
	Name	Indicates the LAG Name
	Admin	Indicates the LAG Administrative State.
	Link Status	If at least one of the LAG members is up, the status is Up, otherwise is Down
	Channel Type	Indicates if the LAG is Static, in this case it doesn't process or send LACPDUs, or it's Dynamic, in this case it processes and send's LACPDUs
Underlying Interfaces	Slot/port	Indicates the Ports (identified by the pair slot/port) that belong to the LAG
	Status	Indicates if the status of the ports in the LAG (Active | Inactive)

Table 7-237: "show" command output table parameters

7.6.11 "ip" node

```
/cli/ip> tree
+ ip[@apply, @save]
   + interfaces[]
      + inband[@config, @show, @showconfig]
      + ip[@config, @show, @showconfig]
   + networking[@config, @show, @showconfig]
   + route[@create, @remove, @show, @showconfig]
```

Figure 7-266: "ip" node tree

7.6.11.1 "apply" command

Name	apply
Description	Will apply to the HW the last saved IP configuration..
Full path	/ip/apply
Mandatory Parameters	This command has no parameters.
Screen Output	No

Table 7-: "apply" command information

```
/cli/ip> apply ?

Usage:
  APPLY                          Will apply to the HW the last saved IP configuration.
```

Figure 7-267: CLI on line help on "apply" command usage in this node context

7.6.11.2 "save" command

Name	save
Description	Save the current IP+configuration to the system startup configuration.
Full path	/ip/save
Mandatory Parameters	This command has no parameters.
Screen Output	No

Table 7-239: "save" command information

```
/cli/ip> save ?

Usage:
  SAVE              Save the current IP configuration to the system startup configuration.
```

Figure 7-268: CLI on line help on "save" command usage in this node context

7.6.11.3 "interfaces" sub-node

7.6.11.3.1 "inband" sub-node

7.6.11.3.1.1 "config" command

Name	config
Description	Configure an Inband interface.
Full path	/ip/interfaces/inband/config
Mandatory Parameters	--port --set-InBand
Screen Output	No

Table 7-240: "config" command information

```
/cli/ip/interfaces/inband> config ?

Usage:
  CONFIG              Configure

   <MANDATORY>
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --set-InBand       Set the given interface for inBand mgmt or not. (true/false)
```

Figure 7-269: CLI on line help on "config" command usage in this node context

7.6.11.3.1.2 "show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Name	show
Description	Show the current configuration.
Full path	/ip/interfaces/inband/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-271.Table parameters description inTable 7-242

Table 7-241: "show" command information

```
/cli/ip/interfaces/inband> show ?

Usage:
  SHOW         Show the current configuration
```

Figure 7-270: CLI on line help on "show" command usage in this node context

```
/cli/ip/interfaces/inband> show
+---------------------------------+
|InBand Interfaces                |
+-----+---------------+-----------+
|Slot |Port           |InBand     |
+-----+---------------+-----------+
|--   |LAG 1          |YES        |
|1    |GbE 2          |--         |
|1    |GbE 3          |--         |
|1    |GbE 4          |--         |
|1    |10GbE 1        |--         |
|1    |10GbE 2        |--         |
|1    |10GbE 3        |--         |
|1    |10GbE 4        |--         |
+-----+---------------+-----------+
/cli/ip/interfaces/inband>
```

Figure 7-271: Output of "show" command in this node context

Parameter	Description
Slot	Slot number of the uplink interface (not applicable for LAG)
Port	Interface (or LAG)
Inband	Indicates if the interface is used or not to manage the system, YES if in use.

Table 7-242: show command "output" table parameters

7.6.11.3.1.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/ip/interfaces/inband/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-243: "showconfig" command information

```
/cli//ip/interfaces/inband > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-272: CLI on line help on "showconfig" command usage in this node context

7.6.11.3.2 "ip" sub-node

7.6.11.3.2.1 "config" command

This command configures the ethernet and inBand management interfaces

Name	config
Description	Configure the ethernet and inBand management interfaces
Full path	/ip/interfaces/ip/config
Mandatory Parameters	--ID
Screen Output	No

Figure 7-273: "config" command information

```
/cli/ip/interfaces/ip> config ?

Usage:
  CONFIG          Configure

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-address   IPv4 address
   --mask-bits    IPv4 Subnet Mask bits (0..32)
   --vlan         Choose a VLAN ID.
```

Figure 7-274: CLI on line help on "config" command usage in this node context

7.6.11.3.2.2 "show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Name	show
Description	Show the current configuration.
Full path	/ip/interfaces/ip/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-276. Table parameters description in Table 7-245

Table 7-244: "show" command information

```
/cli/ip/interfaces/ip> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 7-275: CLI on line help on "show" command usage in this node context

```
/cli/ip/interfaces/ip> show
+-------------------------------------------------------------------------------------------+
|IP Interfaces                                                                              |
+---+------------------------------+----------+--------------------+----------+----------+
|ID |Name                          |Admin     |Address             |Mask Bits |Mgmt VLAN |
+---+------------------------------+----------+--------------------+----------+----------+
|0  |eth0                          |enable    |10.112.105.87       |16        |--        |
|1  |InBand                        |enable    |168.1.1.1           |24        |999       |
+---+------------------------------+----------+--------------------+----------+----------+
/cli/ip/interfaces/ip>
```

Figure 7-276: Output of "show" command in this node context

Parameter	Description
ID	Interface identifier (number)
Name	Interface name
Admin	Administrative state of the interface
Address	IP address of the interface
Mask Bits	Network mask of the Interface
Mgmt Vlan	VLAN identifier used in the inBand interface

Table 7-245: "show" command output table parameters

7.6.11.3.2.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/ip/interfaces/ip/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-246: "showconfig" command information

```
/cli//ip/interfaces/inband > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-277: CLI on line help on "showconfig" command usage in this node context

7.6.11.4 "networking" sub-node

7.6.11.4.1 "config" command

This command configures the Ethernet and Inband management interfaces

Name	config
Description	Configures the current management interface.
Full path	/ip/networking/config
Mandatory Parameters	No
Screen Output	No

Table 7-247: "config" command information

```
/cli/ip/networking> config ?

Usage:
  CONFIG              Configure

   [OPTIONAL]
   --mgmt-interface   Choose the management interface to use.
```

Figure 7-278: CLI on line help on "config" command usage in this node context

7.6.11.4.2 "show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for Inband configuration and showing current InBand configuration.

Name	show
Description	Show the current configuration.
Full path	/ip/networking/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-280 Table parameters description in Table 7-249

Table 7-248: "show" command information

```
/cli/ip/interfaces/ip> show ?

Usage:
  SHOW           Show the current configuration
```

Figure 7-279: CLI on line help on "config" command usage in this node context

```
/cli/ip/networking> show
+-------------------------------------------------+
|Networking                                       |
+--------------------+----------------------------+
|Parameter           |Value                       |
+--------------------+----------------------------+
|mgmt-interface      |eth0                        |
+--------------------+----------------------------+
/cli/ip/networking>
```

Figure 7-280: Output of "show" command in this node context

Parameter	Description
Parameter	Identification of the networking parameter, e.g. management interface (mgmt-interface)
Value	Parameter value, e.g. eth1 for the current management interface

Table 7-249: "show" command output table parameters

7.6.11.4.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/ip/networking/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-250: "showconfig" command information

```
/cli//ip/networking> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-281: CLI on line help on "showconfig" command usage in this node context

7.6.11.5 "route" sub-node

This sub-node allows the creation and configure of an IP route to reach the manager entity, if necessary.

7.6.11.5.1 "create" command

This command creates an IP route. There can only be one IP route.

Name	create
Description	Creates an IP route
Full path	/ip/route/create
Mandatory Parameters	--gw-ip
Screen Output	No

Table 7-251 : "create" command information

```
/cli/ip/route> create ?

Usage CREATE:
  CREATE                      Create

   [OPTIONAL]
   --ID                       Identifies a table entry by ID, in this context.
   --gw-device                Interface to use for the configured network (eth1|InBand)
   --gw-ip                    Gateway to the configured network
   --ip-address               IPv4 address
   --ip-mask                  IPv4 Subnet Mask
```

Figure 7-282: CLI on line help on "create" command usage in this node context

7.6.11.5.2 "remove" command

This command deletes the IP route. There can only be one IP route.

Name	remove
Description	Deletes the current IP route.
Full path	/ip/route/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-252: "remove" command information

```
/cli/ip/route> remove ?

Usage REMOVE:
  REMOVE                          Remove

   <MANDATORY>
   --ID                          Identifies a table entry by ID, in this context.
```

Figure 7-283: CLI on line help on "remove" command usage in this node context

7.6.11.5.3 "show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for Inband configuration and showing current InBand configuration.

Name	show
Description	Show the current configuration.
Full path	/ip/route/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-285. Table parameters description in Table 7-254

Table 7-253: "show" command information

```
/cli/ip/route> show ?

Usage:
  SHOW           Show the current configuration
```

Figure 7-285: CLI on line help on "show" command usage in this node context

```
/cli/ip/route> show
+-------------------------------------------------------------------+
|IP Route                                                           |
+----+--------------------+--------------------+--------------------+
|ID  |Destination Address |Destination Mask    |Gateway/Device      |
+----+--------------------+--------------------+--------------------+
|1   |0.0.0.0             |0.0.0.0             |10.112.105.87       |
+----+--------------------+--------------------+--------------------+
/cli/ip/route>
```

Figure 7-286: Output of "show" command in this node context

Parameter	Description
Destination Address	IPv4 network destination address
Destination Mask	IPv4 network destination mask
Gateway	IPv4 network destination gateway

Table 7-254: "show" command output table parameters

7.6.11.5.4 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/ip/route/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-255: "showconfig" command information

```
/cli//ip/networking> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-286: CLI on line help on "showconfig" command usage in this node context

7.6.12 "ip-source-guard" node

```
/cli/ip-source-guard> tree
+ ip-source-guard[@config, @create, @remove, @show, @showconfig]
```

Figure 7-287: Logs node tree

7.6.12.1 "config" command

Name	config
Description	Configure IP Source Guard parameters.
Full path	/ip-source-gurad/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-256: "config" command information

```
/cli/ip-source-guard> config ?

Usage CONFIG:
  CONFIG            Configure IP Source Guard parameters.

   <MANDATORY>
   --ID             Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin          Administrative State. Enable/disable, in this context.
                    (enable|disable)
   --ip-address     IPv4/IPv6 address
   --mac            Identify/Set a MAC entry, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID      Select an OLT service by ID.
```

Figure 7-288: CLI on line help on "config" command usage in this node context

7.6.12.2 "create" command

Name	create
Description	Create a new IP Source Guard entry.
Full path	/ip-source-guard/create
Mandatory Parameters	No
Screen Output	No

Table 7-257: "create" command information

```
/cli/ip-source-guard> create ?

Usage CREATE:
  CREATE                Create a new IP Source Guard entry.

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --ip-address         IPv4/IPv6 address
   --mac                Identify/Set a MAC entry, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID          Select an OLT service by ID.
```

Figure 7-289: CLI on line help on "create" command usage in this node context

7.6.12.3 "remove" command

This command deletes the IP route. There can only be one IP route.

Name	remove
Description	Remove an existing IP Source Guard entry.
Full path	/ip-source-guard/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-258: "remove" command information

```
/cli/ip-source-guard> remove ?

Usage REMOVE:
  REMOVE                Remove an existing IP Source Guard entry.

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.
```

Figure 7-290: CLI on line help on "remove" command usage in this node context

7.6.12.4 "show" command

Name	show
Description	Show the current configuration.
Full path	/ip-source-guard/show
Mandatory Parameters	No
Screen Output	Table Figure 7-292. Table parameters description in Table 7-260

Table 7-259: "show" command information

```
/cli/ip-source-guard> show ?

Usage SHOW:
  SHOW                  Show the current configuration

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context
```

Figure 7-291: CLI on line help on "show" command usage in this node context

```
/cli/ip-source-guard> show
+-----------------------------------------------------------------------------------------------------------------------+
|IP Source Guard List                                                                                                   |
+---+--------+---------------------------------+----+-------+---------------------------------------+-----------------+
|ID |Admin   |Service (ID) Name                |Slot|Port   |IP Address                             |MAC Address      |
+---+--------+---------------------------------+----+-------+---------------------------------------+-----------------+
+---+--------+---------------------------------+----+-------+---------------------------------------+-----------------+
```

Figure 7-292: Output of "show" command in this node context

Parameter	Description
ID	Table entry Identifier (number)
Admin	IPsource Guard Filter administrative state
Service (ID) Name	Service identifier (number) and Name
Slot	Slot Identifier
Port	Port identifier on the card in the slot
IP Address	IPv4/IPv6 address
MAC Address	MAC address

Table 7-260: "show" command output table parameters

7.6.12.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/ip-source-guard/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-261: "showconfig" command information

```
/cli//ip-source-guard> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-293: CLI on line help on "showconfig" command usage in this node context

7.6.13 "logs" node

This node is used to view logs for all the system events.

```
/cli/logs> tree
+ logs[]
   + alarms[@clear, @show]
```

Figure 7-294: Logs node tree

7.6.13.1 "alarms" sub-node

7.6.13.1.1 "clear" command

Name	clear
Description	Clear all alarms for a given slot or all alarms for all slots.
Full path	/ip/logs/alarms/clear
Mandatory Parameters	No
Screen Output	No

Table 7-262: "clear" command information

```
/cli/logs/alarms> clear ?

Usage:
  CLEAR           Clear all alarms for a given slot or all alarms for all slots.
```

Figure 7-295: CLI on line help on "clear" command usage in this node context

7.6.13.1.2 "show" command

This command displays the registered alarms: global alarms if the command is used without arguments or slot specific alarms if the command is used with argument slot.

Name	show
Description	Show registered alarms (Global or slot specific).
Full path	/ip/logs/alarms/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-297 and Figure 7-298. Tables parameters description in Table 7-264

Table 7-263: "show" command information

```
/cli/logs/alarms> show ?

Usage:
  SHOW            Show registered alarms (Global or slot specific).
```

Figure 7-296: CLI on line help on "show" command usage in this node context

```
/cli/logs/alarms> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|Alarms List  -- Page (1)                                                                                                                                   |
+----------+----------+----------+----------+----------+-------------------------------------------------------------------------------------------------+
|Equipment |Index     |Date      |Hour      |Code      |Description                                                                                      |
+----------+----------+----------+----------+----------+-------------------------------------------------------------------------------------------------+
|OLT       | --       |1970/01/01 |00:00:17  |16        |The system was rebooted.                                                                         |
|OLT       |Eth 2     |2014/08/27 |18:35:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 3     |2014/08/27 |18:35:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 4     |2014/08/27 |18:35:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 6     |2014/08/27 |18:35:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 8     |2014/08/27 |18:35:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Source A  |2014/08/27 |18:36:19  |12        |Begin Power failure                                                                              |
|OLT       | --       |2014/08/27 |18:36:20  |99902     |Begin Fan module absent                                                                          |
|OLT       | --       |2014/08/27 |18:36:20  |99902     |Begin Fan module absent                                                                          |
|OLT       | --       |2014/08/27 |18:36:20  |99902     |Begin Fan module absent                                                                          |
|OLT       | --       |2014/08/27 |18:36:33  |542       |Begin LOS on synchronism junction 1                                                              |
|OLT       | --       |2014/08/27 |18:36:33  |50        |Synchronism switch (-- -> 5)                                                                     |
|OLT       |Eth 2     |2014/08/27 |18:36:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 3     |2014/08/27 |18:36:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 4     |2014/08/27 |18:36:34  |36866     |Begin Eth link down                                                                              |
|OLT       |Eth 6     |2014/08/27 |18:36:34  |36866     |Begin Eth link down                                                                              |
```

Figure 7-297: Output of "show" command used with no argument in this node context – Global alarm list

```
|OLT       |Eth 8     |2014/08/28 |13:07:36  |36866     |End Eth link down                                                                                |
|OLT       |Eth 8     |2014/08/28 |13:07:37  |36866     |End Eth link down                                                                                |
|OLT       |Eth 8     |2014/08/28 |13:07:37  |36866     |End Eth link down                                                                                |
|OLT       |PON 8     |2014/08/28 |13:08:48  |18        |Begin Loss of signal                                                                             |
|OLT       |PON 8     |2014/08/28 |13:08:52  |18        |End Loss of signal                                                                               |
|ONU 8.1   |Eth 1     |2014/08/28 |13:09:53  |36866     |Begin Eth link down                                                                              |
|ONU 8.1   |Eth 2     |2014/08/28 |13:09:53  |36866     |Begin Eth link down                                                                              |
|ONU 8.1   |Eth 3     |2014/08/28 |13:09:53  |36866     |Begin Eth link down                                                                              |
|ONU 8.1   |Eth 4     |2014/08/28 |13:09:53  |36866     |Begin Eth link down                                                                              |
|ONU 8.1   |Eth 1     |2014/08/28 |13:09:56  |36866     |End Eth link down                                                                                |
|OLT       | --       |2014/08/28 |13:11:27  |110080    |The Ethernet Protection Group with ID 1  has switched to working.                                |
+----------+----------+----------+----------+----------+-------------------------------------------------------------------------------------------------+
/cli/logs/alarms>
```

Figure 7-298: Partial view of "show" command with argument –slot output in this node context

Parameter	Description
Table Title	Alarms List – Page (#) page number if more than one page with registered alarms to display
Equipment	Alarm or event source (equipment)
Index	Alarm or event source (port if applicable)
Date and hour	Date and hour when the alarm or event occurred
Code	Alarm Code
Description	Alarm or event description

Table 7-264: "show" command -output table parameters

7.6.14 "mac-table" node

```
/cli/mac-table> tree
+ mac-table[@config, @show, @showconfig]
   + status[]
      + gpon[@remove, @show]
      + switch[@remove, @show]
```

Figure 7-299: mac-table node tree

7.6.14.1 "config" command

This command configures the mac-table switch parameters

Name	config
Description	Configures the mac-table switch parameters.
Full path	/mac-table/config
Mandatory Parameters	--mac-aging
Screen Output	No

Table 7-265: "config" command information

```
/cli/mac-table> config ?

Usage:
  CONFIG              Configure

   <MANDATORY>
   --mac-aging        Define the MAC aging time in seconds (10..1000000)
```

Figure 7-300: CLI on line help on "config" command usage in this node context

7.6.14.2 "show" command

This command displays the Aging Time which defines the maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system.

Name	show
Description	Show the current configuration.
Full path	/mac-table/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-. Table parameters description in Table 7-

Table 7-266: "show" command information

```
/cli/mac-table> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-301: CLI on line help on "show" command usage in this node context

```
/cli/mac-table> show
+------------------------------+
|Global MAC Aging (seconds)    |
+------------------------------+
|300                           |
+------------------------------+
/cli/mac-table>
```

Figure 7-302: Output of "show" command in this node context

Parameter	Description
Global Mac Aging (seconds)	Currently configured value for the maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system

Table 7-267: "show" command - output table parameters

7.6.14.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/mac-aging/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-268: "showconfig" command information

```
/cli//ip/networking> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-303: CLI on line help on "showconfig" command usage in this node context

7.6.14.4 "status" sub-node

7.6.14.4.1 "gpon" sub-node

7.6.14.4.1.1 "remove" command

Name	remove
Description	Remove one GPON MAC entry from the Table.
Full path	/mac-table/status/gpon/remove
Mandatory Parameters	--mac --onuID --port --serviceID
Screen Output	No

Table 7-269: "remove" command information

```
REMOVE                          Remove one GPON MAC entry from the Table.

 <MANDATORY>
 --mac                Identify/Set a MAC entry, in this context.
 --onuID              Identifies an ONU by ID, in this context.
 --port               the value from column 'Port' from the show table. (e.g.: pon.2;
                      eth.3; lag.1, SF)
 --serviceID          Select an OLT service by ID.
```

Figure 7-304: CLI on line help on "remove" command usage in this node context

7.6.14.4.1.2 "show" command

Name	Show
Description	Show the GPON MAC Table.
Full path	/mac-table/status/gpon/show
Mandatory Parameters	No
Screen Output	Table Figure 7-306. Table parameters description in Table 7-271

Table 7-270: "show" command information

```
/cli/mac-table/status/gpon> show ?

Usage:
  SHOW            Show the GPON MAC Table.

   [OPTIONAL]
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-305: CLI on line help on "show" command usage in this node context

```
/cli/mac-table/status/gpon> show
+-------------------------------------------------------------------------------+
|GPON MAC Table                                                                 |
+-----+-------+------+----------------------------------------+-----------------+
|Slot |Port   |ONU ID|(ID) OLT Service                        |MAC              |
+-----+-------+------+----------------------------------------+-----------------+
+-----+-------+------+----------------------------------------+-----------------+
Total Number of MAC entries: 0

/cli/mac-table/status/gpon>
```

Figure 7-306: Output of "show" command in this node context

Parameter	Description
Slot	Indicates the Slot
Port	Indicates the Port
ONT ID	Indicates the ONU identifier
(ID) OLT Service	Indicates the service identifier (ID) and name
MAC	Indicates the learned MAC address

Table 7-271: "show" command output table parameters

7.6.14.4.2 "switch" sub–node

7.6.14.4.2.1 "remove" command

Name	remove
Description	Remove one Switch MAC entry from the Table. All parameters are mandatory except when shown "--".
Full path	/mac-table/status/switch/remove
Mandatory Parameters	--mac
Screen Output	No

Table 7-272: "remove" command information

```
/cli/mac-table/status> switch/remove ?

Usage REMOVE:
  REMOVE                Remove one Switch MAC entry from the Table. All parameters are
                        mandatory except when shown "--".

   <MANDATORY>
   --mac                Identify/Set a MAC entry, in this context.

   [OPTIONAL]
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID          Select an OLT service by ID.
   --vlan               Choose a VLAN ID.
```

Figure 7-307: CLI on line help on "remove" command usage in this node context

7.6.14.4.2.2 "show" command

Name	show
Description	Show the Switch MAC Table.
Full path	/mac-table/status/switch/show
Mandatory Parameters	No
Screen Output	Table Figure 7-309. Table parameters description in Table 7-274

Table 7-273: "show" command information

```
cli/mac-table/status> switch/show ?

Usage SHOW:
  SHOW               Show the Switch MAC Table. If no slot is provided, the MACs will be
                     read on the active switch fabric slot.

   [OPTIONAL]
   --mac             Identify/Set a MAC entry, in this context.
   --port            Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID       Select an OLT service by ID.
   --vlan            Choose a VLAN ID.
```

Figure 7-308: CLI on line help on "show" command usage in this node context

```
/cli/mac-table/status/switch> show
+-------------------------------------------------------------------------------------------+
|Slot 1 OLT1T0 - Switch MAC Table                                                           |
+-----+---------+------+-----------------------------------------+-----+-----------------+
|Slot |Port     |ONU ID|(ID) OLT Service                         |VLAN |MAC              |
+-----+---------+------+-----------------------------------------+-----+-----------------+
|1    |         |--    |--                                       |4092 |00:06:91:08:98:72|
|1    |         |--    |--                                       |4092 |00:99:88:77:66:55|
|1    |         |--    |--                                       |4092 |00:99:88:77:66:56|
|1    |         |--    |--                                       |4092 |00:99:88:77:66:57|
|1    |         |--    |--                                       |4092 |00:99:88:77:66:58|
+-----+---------+------+-----------------------------------------+-----+-----------------+
Total Number of MAC entries: 5

/cli/mac-table/status/switch>
```

Figure 7-309: Output of "show" command in this node context

Parameter	Description
Slot	Indicates the Slot
Port	Indicates the Port
ONT ID	Indicates the ONT identifier
(ID) OLT Service	Indicates the service identifier (ID) and name
VLAN	Indicates the used VLAN
MAC	Indicates the learned MAC address

Table 7-274: "show" command output table parameters

7.6.15 “multicast” node

```
+ multicast[]
   + active-groups[@status]
   + group-list[@config, @create, @remove, @show, @showconfig]
   + igmp[]
      + global[@config, @show, @showconfig]
      + proxy[@config, @show, @showconfig]
      + querier[@config, @show, @showconfig]
   + probes[@config, @create, @remove, @show, @showconfig]
      + statistics[@show]
```

Figure 7-310: “multicast” node tree

7.6.15.1 “active-groups” sub-node

7.6.15.1.1 ”status” command

Name	status
Description	With no arguments shows the active-channels list. With both arguments shows the users list for the selected channel.
Full path	/multicast/active-groups/status
Mandatory Parameters	No
Screen Output	Table, Figure 7-312. Table parameter description Table 7-276.

Table 7-275: “status” command information

```
/cli/multicast/active-groups> status ?

Usage:
  STATUS             With no arguments shows the active-channels list. With both arguments
                     shows the users list for the selected channel.

   [OPTIONAL]
   --ip-address      IPv4 address
   --serviceID       Select an OLT service by ID.
   --static-group    Search for a static or dynamic group (enable|disable)
```

Figure 7-311: CLI on line help on “status” command usage in this node context

```
/cli/multicast> active-groups/status
+-------------------------------------------------------------------------------+
|Active Channels List                                                           |
+-----------------------------------+----------+----------------+----------------+
|(ID) Service                       |Static    |Source IP       |IP Address      |
+-----------------------------------+----------+----------------+----------------+
|(5)MCast#600                       |disable   |--              |235.0.0.1       |
|(6)MCast#700                       |disable   |--              |236.0.0.1       |
+-----------------------------------+----------+----------------+----------------+
```

Figure 7-312: Output of ”status” command with no arguments in this node context”

Parameter	Description
(ID) Service	Indicates the service identifier (ID) and name
Static	Indicates if the channel is Static
IP	Indicates the IPv4 multicast address
Source	Indicates the multicast Source

Table 7-276: "status" command output table parameters

7.6.15.2 "group-list" sub-node

7.6.15.2.1 "config" command

Name	config
Description	Configure an existing multicast group.
Full path	/multicast/group-list/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-277: "config" command information

```
/cli/multicast/group-list> config ?

Usage CONFIG:
  CONFIG               Configure an existing multicast group.

   <MANDATORY>
   --ID                Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin             Administrative State. Enable/disable, in this context.
                       (enable|disable)
   --bandwidth         Specify the multicast group bandwidth in units of Kbps
   --group-mask        Group IPv4 address mask (0 | 22..32)
   --ip-address        IPv4 address
   --name              Set a name for the specified multicast group. (STRING 31)
   --serviceID         Select an OLT service by ID.
   --src-ipv4-addr     Specify the source IPv4 address or 'any' to specify any IP
   --static-group      Configure the multicast group as dynamic(default) or as static
```

Figure 7-313: CLI on line help on "config" command usage in this node context

7.6.15.2.2 "create" command

Name	create
Description	Create a new multicast group
Full path	/ multicast/group-list /create
Mandatory Parameters	--ip-address --name --serviceID
Screen Output	No

Table 7-278: "create" command information

```
/cli/multicast/group-list> create ?

Usage CREATE:
  CREATE                Create a new multicast group

   <MANDATORY>
   --ip-address         IPv4 address
   --name               Set a name for the specified multicast group. (STRING 31)
   --serviceID          Select an OLT service by ID.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --bandwidth          Specify the multicast group bandwidth in units of Kbps
   --group-mask         Group IPv4 address mask (0 | 22..32)
   --src-ipv4-addr      Specify the source IPv4 address or 'any' to specify any IP
   --static-group       Configure the multicast group as dynamic(default) or as static
```

Figure 7-314: CLI on line help on "create" command usage in this node context

7.6.15.2.3 "remove" command

Name	remove
Description	Remove an existing multicast group
Full path	/multicast/group-list/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-279: "remove" command information

```
/cli/multicast/group-list> remove ?

Usage:
  REMOVE      Remove an existing multicast group

   <MANDATORY>
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-315: CLI on line help on "remove" command usage in this node context

7.6.15.2.4 "show" command

Name	show
Description	Show the current configured multicast groups
Full path	/multicast/group-list/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-317.Tables parameter description Table 7-281

Table 7-280: "show" command information

```
/cli/multicast/group-list> show ?

Usage:
  SHOW            Show the current configured multicast groups
```

Figure 7-316: CLI on line help on "show" command usage in this node context

```
/cli/multicast/group-list> show
+-------------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Group List                                                                                                                                                         |
+---+--------+------------------------------+-----------------------------------+--------+---------------+----------+---------------+---------------+
|ID |Admin   |Name                          |Service                            |Static  |Group IP Address|Group Mask|Src IP Address  |Bandwidth(Kbps)|
+---+--------+------------------------------+-----------------------------------+--------+---------------+----------+---------------+---------------+
|2  |enabled |233.0.0.x                     |(15) ID 15                         |disabled|232.0.1.0      |24        |any            |45674          |
|1  |enabled |wrwerew                       |(03) ID 3                          |disabled|232.0.0.0      |24        |any            |0              |
+---+--------+------------------------------+-----------------------------------+--------+---------------+----------+---------------+---------------+
/cli/multicast/group-list>
```

Figure 7-317: Partial view of "show" command output in this node context

Parameter	Description
ID	Indicates the group ID
Admin	Indicates the group Administrative State
Name	Indicates the group Name
Service	Identifies service, by (ID) and Name
Static	Indicates if the Multicast group is Static (enabled|disabled)
Group IP address	Indicates IPv4 group address
Group Mask	Indicates the group mask
Src IP address	Indicates IPv4 source address
Bandwidth (Kbps)	Indicates Group Bandwidth

Table 7-281: "show" command output table parameters

7.6.15.2.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/multicast/group-list/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-282: "showconfig" command information

```
/cli/ multicast/group-list> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-318: CLI on line help on "showconfig" command usage in this node context

7.6.15.3 "igmp" sub-node

7.6.15.3.1 "global" sub-node

7.6.15.3.1.1 "config" command

Name	config
Description	Configure global IGMP options.
Full path	/multicast/igmp/global/config
Mandatory Parameters	No
Screen Output	No

Table 7-283: "config" command information

```
cli/multicast/igmp> global/config ?

Usage CONFIG:
  CONFIG                  Configure global IGMP options.

   [OPTIONAL]
   --bandwidth-ctrl       Enable or disable bandwidth control. (enable|disable)
   --group-endpoint       Specify the multicast group endpoint. (uni|nni)
   --group-limit-ctrl     Enable or disable group limit control. (enable|disable)
```

Figure 7-319: CLI on line help on "config" command usage in this node context

7.6.15.3.1.2 "show" command

Name	show
Description	Show the current configuration
Full path	/multicast/igmp/global/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables, Figure 7-321. Table parameters description, Table 7-285.

Table 7-284: "show" command information

```
/cli/multicast/igmp/global> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-320: CLI on line help on "show" command usage in this node context

```
/cli/multicast/igmp> global/show
+-------------------------------------------------------------------+
|IGMP Global                                                        |
+-------------------------+------------------+----------------------+
|Static Group Endpoint    |Bandwidth control |Group Limit control   |
+-------------------------+------------------+----------------------+
|uni                      |disable           |disable               |
+-------------------------+------------------+----------------------+
```

Figure 7-321: Output of "show" command in this node context

Parameter	Description
Static Group Endpoint	Identifies the configured Static Group Endpoint (uni|nni)
Bandwidth Control	Indicates if Bandwidth control is enabled
Group Limit Control	Indicates if Group Limit Control is enabled

Table 7-285: "show" command output table parameters

7.6.15.3.1.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/multicast/igmp/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-286: "showconfig" command information

```
/cli/ multicast/igmp/global> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-322: CLI on line help on "showconfig" command usage in this node context

7.6.15.3.2 "proxy" sub-node

7.6.15.3.2.1 "config" command

Name	config
Description	Configure the IGMP proxy information.
Full path	/multicast/igmp/proxy/config
Mandatory Parameters	No
Screen Output	No

Table 7-287: "config" command information

```
/cli/multicast/igmp> proxy/config ?

Usage CONFIG:
  CONFIG                              Configure the IGMP proxy.

   [OPTIONAL]
   --admin                            Administrative State. Enable/disable, in this
                                      context. (enable|disable)
   --client-version                   Maximum allowed version for the OLT client side.
                                      [2,3]
   --max-records-per-report           Maximum number of group-records that can be included
                                      in the same membership report. [1..64]
   --network-version                  Maximum allowed version for the OLT network side.
                                      [2,3]
   --priority                         Priority used in the IGMP packets.
   --robustness                       Number of retransmissions sent. Should be adjusted
                                      for the expected packet loss on the network. [1..7]
   --unsolicited-report-interval      Time interval between repetitions of a host's initial
                                      group membership report. [1..10]
```

Figure 7-323: CLI on line help on "config" command usage in this node context

7.6.15.3.2.2 "show" command

Name	show
Description	Show the current configuration
Full path	/multicast/igmp/proxy/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables, Figure 7-325. Table parameters description, Table 7-289.

Table 7-288: "show" command information

```
/cli/multicast/igmp/proxy> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-324: CLI on line help on "show" command usage in this node context

```
/cli/multicast/igmp> proxy/show
+-------------------------------------------------------------------------------------------------------------------+
|IGMP Proxy                                                                                                         |
+-------+---------+---------------+--------------+-----------+---------------------------+----------------------+
|Admin  |Priority |Network Version |Client Version |Robustness |Unsolicited Report Interval |Max Records per Report |
+-------+---------+---------------+--------------+-----------+---------------------------+----------------------+
|enable |5        |2              |2             |3          |2                          |64                    |
+-------+---------+---------------+--------------+-----------+---------------------------+----------------------+
```

Figure 7-325: Output of "show" command in this node context

Parameter	Description
Admin	IGMP Proxy Administrative State
Priority	pbit value in the IGMP packets (0<=n<=7)
Network version	IGMP version used in the Network interfaces (2|3)
Client version	IGMP version used in the Client interfaces (2|3)
Robustness	Specifies the number of retransmissions sent. Should be adjusted for the expected packet loss on the network.
Unsolicited Report Interval	Time interval between repetitions of a host's initial group membership report.
Max Records per Report	Maximum number of group-records that can be included in the same membership report.

Table 7-289: "show" command output table parameters

7.6.15.3.2.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/multicast/igmp/proxy/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-290: "showconfig" command information

```
/cli/ multicast/igmp/proxy> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-326: CLI on line help on "showconfig" command usage in this node context

7.6.15.3.3 "querier" sub-node

7.6.15.3.3.1 "config" command

Name	config
Description	Configure the IGMP querier information.
Full path	/multicast/igmp/querier/config
Mandatory Parameters	No
Screen Output	No

Table 7-291: "config" command information

```
/cli/multicast/igmp> querier/config ?

Usage CONFIG:
  CONFIG                          Configure the IGMP querier information.

   [OPTIONAL]
   --last-member-query-count      Number of Group-Specific Queries sent before assuming a
                                  specific group has no more local members.
   --last-member-query-interval   The Max Response Time inserted into Group-Specific queries
                                  sent in response to Leave Group messages.
   --querier-ip                   Querier IP Address
   --query-interval               Interval between General Queries. [2..3175]
   --query-response-interval      The Max Response Time inserted into the periodic General
                                  Queries. [1..31744]
   --startup-query-count          Number of retransmissions of general queries sent on
                                  startup.
   --startup-query-interval       Interval between retransmissions of general queries sent
                                  on startup.
```

Figure 7-327: CLI on line help on "config" command usage in this node context

7.6.15.3.3.2 "show" command

Name	show
Description	Show the current configuration
Full path	/multicast/igmp/querier/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables, Figure 7-329. Table parameters description, Table 7-293.

Table 7-292: "show" command information

```
/cli/multicast/igmp/querier> show ?

Usage:
 SHOW        Show the current configuration
```

Figure 7-328: CLI on line help on "show" command usage in this node context

```
/cli/multicast/igmp/querier> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|Querier                                                                                                                                                    |
+---------------+----------------+----------------------+--------------------+------------------+-------------------------+----------------------+
|Querier IP     |Query Interval  |Query Response Interval|Startup Query Interval|Startup Query Count|Last Member Query Interval|Last Member Query Count|
+---------------+----------------+----------------------+--------------------+------------------+-------------------------+----------------------+
|10.0.0.10      |125             |1000                  |31                  |2                 |10                       |2                     |
+---------------+----------------+----------------------+--------------------+------------------+-------------------------+----------------------+
/cli/multicast/igmp/querier>
```

Figure 7-329: Output of "show" command in this node context

Parameter	Description
Querier IP	Querier IP Address
Query Interval	Time Interval (in seconds) between the transmissions of each General Querier to the clients. The value must be in the range 30 to 1800.
Query Response Interval	Interval between retransmissions of general queries sent to the clients.
Startup Querier Interval	Interval between retransmissions of general queries sent by the proxy on startup.
Startup Querier Count	Number of general queries sent by the proxy on startup. Should be adjusted for the expected packet loss on the network.
Last Member Querier Interval	Max Response Time used to calculate the Max Resp Code inserted into Group-Specific queries sent in response to Leave Group messages.
Last Member Querier Count	Number of Group-Specific Queries sent before the router assumes there are no local members.

Table 7-293: "show" command output table parameters

7.6.15.3.3.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/multicast/igmp/querier/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-294: "showconfig" command information

```
/cli/ multicast/igmp/querier> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-330: CLI on line help on "showconfig" command usage in this node context

7.6.15.4 "probes" sub-node

7.6.15.4.1 "config" command

Name	config
Description	Modify parameters for an existing probe.
Full path	/multicast/probes/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-295: "config" command information

```
/cli/multicast/probes> config ?

Usage:
  CONFIG          Modify parameters for an existing probe.

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin        Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-mcast     IPv4 multicast address
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID    Select an OLT service by ID.
```

Figure 7-331: CLI on line help on "config" command usage in this node context

7.6.15.4.2 "create" command

Name	create
Description	Create a Probe for a multicast service uplink interface
Full path	/ multicast/probes/create
Mandatory Parameters	--ip-mcast --port --serviceID
Screen Output	No

Table 7-296: "create" command information

```
/cli/multicast/probes> create ?

Usage:
  CREATE                  Create a Probe for a multicast service uplink interface.

   <MANDATORY>
   --ip-mcast[=STRING]    IPv4 multicast address
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID            Select an OLT service by ID.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context.
                          (enable|disable)
```

Figure 7-332: CLI on line help on "create" command usage in this node context

7.6.15.4.3 "remove" command

Name	remove
Description	Remove an existing Probe.
Full path	/multicast/probes/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-297: "remove" command information

```
/cli/multicast/probes> remove ?

Usage:
  REMOVE          Remove an existing Probe.

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.
```

Figure 7-333: CLI on line help on "remove" command usage in this node context

7.6.15.4.4 "show" command

Name	show
Description	Show the current multicast probes configuration.
Full path	/multicast/probes/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables, Figure 7-335. Table parameters description, Table 7-299.

Table 7-298: "show" command information

```
/cli/multicast/probes> show ?

Usage:
  SHOW            Show the current multicast probes configuration.
```

Figure 7-334: CLI on line help on "show" command usage in this node context

```
/cli/multicast/probes> show
+-------------------------------------------------------------------------------+
|Multicast Probes                                                               |
+---+--------+----+-------+-------------------------------------+---------------+
|ID |Admin   |Slot|Port   |Service (ID) Name                    |Multicast IP   |
+---+--------+----+-------+-------------------------------------+---------------+
+---+--------+----+-------+-------------------------------------+---------------+
/cli/multicast/probes>
```

Figure 7-335: Output of "show" command in this node context

Parameter	Description
ID	Indicates the multicast probe ID
Admin	Indicates the Administrative State
Slot	Indicates the Slot the multicast probe is applied to
Port	Indicates the Port the multicast probe is applied to
Service (ID) name	Identifies service, to which the probe belongs to, by ID and Name
Multicast IP	Indicates IPv4 Multicast address

Table 7-299: "show" command output table parameters

7.6.15.4.5 "showconfig" command

Name	Showconfig
Description	Print the command list that enforces the current configuration
Full path	/ multicast/probes/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-300: "showconfig" command information

```
/cli/ multicast/probes > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-336: CLI on line help on "showconfig" command usage in this node context

7.6.15.4.6 "statistics" sub-node

7.6.15.4.6.1 "show" command

Name	show
Description	Show the statistics information for the selected probe by ID.
Full path	/multicast/probes/statistics/show
Mandatory Parameters	--ID
Screen Output	Tables Figure 7-338. Table parameters description Table 7-302

Table 7-301: "show" command information

```
/cli/multicast/probes/statistics> show ?

Usage:
  SHOW            Show

   <MANDATORY>
   --ID           Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-337: CLI on line help on "show" command usage in this node context

```
/cli/multicast/probes> statistics/show --ID=1
+-------------------------------------------------------------------------------+
|Probe ID 1 Counters                                                            |
+---------------+-------------------------------+-------------------------------+
|               |Upstream                       |Downstream                     |
+---------------+---------------+---------------+---------------+---------------+
|               |Total          |Partial        |Total          |Partial        |
+---------------+---------------+---------------+---------------+---------------+
|Total          |-              |-              |285            |0              |
|Unicast        |-              |-              |192            |0              |
|Multicast      |-              |-              |0              |0              |
|Broadcast      |-              |-              |93             |0              |
|Dropped        |-              |-              |590            |0              |
+---------------+---------------+---------------+---------------+---------------+
qPress 'q' to quit or 'r' to reset
```

Figure 7-338: Output of "show" command in this node context

Upstream&downstream (Total & Partial) counters	
Parameter	**Description**
Total	Number (all types) of packets
Unicast	Number of Unicast packets
Multicast	Number of Multicast packets
Broadcast	Number of Broadcast packets
Dropped	Number of Dropped packets

Table 7-302: "show" command output table parameters

7.6.16 "profiles" node

```
/cli/profiles> tree
+ profiles[]
   + dscp-to-pbits[@config, @create, @remove, @show, @showconfig]
   + ethernet[@config, @create, @remove, @show, @showconfig]
   + onu[@config, @create, @remove, @show, @showconfig]
   + pbits-to-pq[@config, @create, @remove, @show, @showconfig]
   + upstream-dba[@config, @create, @remove, @show, @showconfig]
   + voip[]
      + server[@availableValues, @config, @create, @remove, @show, @showconfig]
      + specific[@config, @create, @remove, @show, @showconfig]
```

Figure 7-339: "profiles" node tree

7.6.16.1 "dscp-to-pbits" sub-node

7.6.16.1.1 "config" command

Name	config
Description	Configure/activate an existing profile.
Full path	/profiles/dscp-to-pbits/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-303: "config" command information

```
/cli/profiles/dscp-to-pbits> config ?

Usage CONFIG:
  CONFIG               Configure/activate an existing profile.

   <MANDATORY>
   --ID                Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin             Administrative State. Enable/disable, in this context.
                       (enable|disable)
   --dscp              Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
   --name              Define a name for the specified profile.
   --p-bits            Define the P-bits value (0..7).
```

Figure 7-340: CLI on line help on "config" command usage in this node context

7.6.16.1.2 "create" command

Name	create
Description	Create a new profile that assigns DSCP to P-bits
Full path	/profiles/dscp-to-pbits/create
Mandatory Parameters	No
Screen Output	No

Table 7-304: "create" command parameters

```
/cli/profiles/dscp-to-pbits> create ?

Usage CREATE:
  CREATE              Create a new profile that assigns DSCP to P-bits.

   [OPTIONAL]
   --ID                Identifies a table entry by ID, in this context.
   --admin             Administrative State. Enable/disable, in this context.
                       (enable|disable)
   --dscp              Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
   --name              Define a name for the specified profile.
   --p-bits            Define the P-bits value (0..7).
```

Figure 7-341: CLI on line help on "create" command usage in this node context

7.6.16.1.3 "remove" command

Name	remove
Description	Remove an existing profile
Full path	/profiles/dscp-to-pbits/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-305: "remove" command parameters

```
/cli/profiles/dscp-to-pbits> remove ?

Usage REMOVE:
  REMOVE                  Remove an existing profile.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 7-342: CLI on line help on "remove" command usage in this node context

7.6.16.1.4 "show" command

Name	show
Description	Show existing profiles
Full path	/profiles/dscp-to-pbits/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-344 and Figure 7-345. Tables' parameters description, Table 7-307 and Table 7-308.

Table 7-306: "show" command information

```
//cli/profiles/dscp-to-pbits> show ?

Usage SHOW:
  SHOW                   Show existing profiles.

   [OPTIONAL]
   --ID                  Identifies a table entry by ID, in this context.
```

Figure 7-343: CLI on line help on "show" command usage in this node context

```
/cli/profiles/dscp-to-pbits> show
+-----------------------------------------------+
|DSCP to P-bits Profiles                        |
+-------+-------------------------------+-------+
|ID     |Name                           |Admin  |
+-------+-------------------------------+-------+
|7      |DSCP 0-63 -> P-bits 0          |enable |
+-------+-------------------------------+-------+
```

Figure 7-344: Output of "show" command without arguments in this node context

Parameter	Description
ID	Identifies DSCP to P-bits profile by ID
Name	Indicates DSCP to P-bits profile name
Admin	Indicates DSCP to P-bits profile administrative state

Table 7-307: "show" command without arguments output table parameters

```
/cli/profiles/dscp-to-pbits> show --ID=7
+-------------------------------------------------------+
|DSCP to P-bits Profile 7 - DSCP 0-63 -> P-bits 0       |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |0 |1 |2 |3 |4 |5 |6 |7 |8 |9 |10|11|12|13|14|15|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |48|49|50|51|52|53|54|55|56|57|58|59|60|61|62|63|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

Figure 7-345: Output of "show" command with argument ID in this node context

Parameter	Description
DSCP	DSCP values (0 to 63)
P-bits	P-bit mapped by DSCP value

Table 7-308: "show" command with argument ID output table parameters

7.6.16.1.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/dscp-to-pbits/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-309: "showconfig" command information

```
/cli/profiles/dscp-to-pbits> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-346: CLI on line help on "showconfig" command usage in this node context

7.6.16.2 "ethernet" sub-node

In this sub-node, it is possible to view, configure, create and remove Ethernet profiles.

- Ethernet are created according to MEF naming convention.
- There are two Ethernet default profiles created and they can neither be changed nor removed.
- Ethernet profiles in use cannot be changed or removed.

7.6.16.2.1 "config" command

Name	config
Description	Configure ethernet traffic profiles.
Full path	/profiles/ethernet/config
Mandatory Parameters	--profileID
Screen Output	No

Table 7-310: "config" command information

```
/cli/profiles/ethernet> config ?

Usage CONFIG:
  CONFIG              Configure ethernet traffic profiles.

   <MANDATORY>
   --profileID        Identifies a profile by ID.

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --cbs              Committed Burst Size: maximum number of bytes in a burst of packets
                      that should be guaranteed (0..262144 bytes)
   --cir              Committed Information Rate: bandwidth that should be guaranteed, on
                      average (0..1000000000 bit/s)
   --ebs              Excess Burst Size: maximum number of bytes in a burst of packets if
                      there is no traffic congestion (0..+Inf. bytes)
   --eir              Excess Information Rate: bandwidth in excess that can be supplied in
                      case there is no traffic congestion (0..+Inf. bits/s)
   --name             Define a name for the specified profile. (STRING 31)
```

Figure 7-347: CLI on line help on "config" command usage in this node context

7.6.16.2.2"create" command

Name	create
Description	Create an Ethernet traffic profile
Full path	/ profiles/ethernet/create
Mandatory Parameters	No
Screen Output	No

Table 7-311: "create" command information

```
cli/profiles/ethernet> create ?

Usage CREATE:
  CREATE                 Create an Ethernet traffic profile

   [OPTIONAL]
   --profileID           Identifies a profile by ID.
```

Figure 7-348: CLI on line help on "create" command usage in this node context

7.6.16.2.3 "remove" command

Name	remove
Description	Remove an Ethernet traffic profile
Full path	/profiles/ethernet/remove
Mandatory Parameters	--profileID
Screen Output	No

Table 7-312: "remove" command information

```
/cli/profiles/ethernet> remove ?

Usage:
  REMOVE          Remove an Ethernet traffic profile

   <MANDATORY>
   --profileID     Identifies a profile by ID.
```

Figure 7-349: CLI on line help on "remove" command usage in this node context

7.6.16.2.4 "show" command

Name	show
Description	Show the current configured multicast groups
Full path	/profiles/ethernet/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-351. Tables parameter description Table 7-314

Table 7-313: "show" command information

```
/cli/profiles/ethernet> show ?

Usage:
  SHOW            Show ethernet traffic profiles.
```

Figure 7-350: CLI on line help on "show" command usage in this node context

```
/cli/profiles/ethernet> show
+-------------------------------------------------------------------------------------------------------------------+
|Ethernet Profiles                                                                                                  |
+---+--------------------------------+-------+---------------+---------------+---------------+---------------+
|ID |Name                            |Admin  |CIR            |CBS            |EIR            |EBS            |
+---+--------------------------------+-------+---------------+---------------+---------------+---------------+
|1  |CIR_1G_Default                  |enable |1000000000     |9600           |0              |0              |
|2  |CIR_100M_Default                |enable |100000000      |9600           |0              |0              |
+---+--------------------------------+-------+---------------+---------------+---------------+---------------+
```

Figure 7-351: Output of "show" command in this node context"

EN

Parameter	Description
ID	Identifies Ethernet profile by ID
Name	Indicates Ethernet profile name
Admin	Indicates Ethernet profile administrative state
CIR	Indicates Committed information rate
CBS	Indicates Committed Burst Size
EIR	Indicates Excess Information Rate
EBS	Indicates Excess Burst Size

Table 7-314: "show" command output table parameters

7.6.16.2.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-315: "showconfig" command information

```
/cli/profiles/ethernet> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-352: CLI on line help on "showconfig" command usage in this node context

7.6.16.3 "ONUs" sub-node

This node is used to configure, create and remove profiles for remote ONUs.

7.6.16.3.1 "config" command

Name	config
Description	Configure ONU profiles.
Full path	/profiles/onu/config
Mandatory Parameters	--profileID
Screen Output	No

Table 7-316: "config" command information

```
/cli/profiles/onu> config ?

Usage CONFIG:
  CONFIG                Configure an existing ONU profile.

   <MANDATORY>
   --profileID          Identifies a profile by ID.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --model              Define the Model Name (STRING 47)
   --name               Define a name for this profile. (STRING 47)
   --port-num           The number of ports for a given port type (max: 4 ETH , 1 PON , 1
                        RF , 2 VoIP, 4 E1, 1 VEIP )
   --port-type          The type of a port (eth|pon|voip|rf|e1|veip)
   --vendor             Define the Vendor Name (STRING 15)
```

Figure 7-353: CLI on line help on "config" command usage in this node context

7.6.16.3.2 "create" command

Name	create
Description	Create a new ONU profile
Full path	/profiles/onu/create
Mandatory Parameters	No
Screen Output	No

Table 7-317: "create" command parameters

```
/cli/profiles/onu> create ?

Usage CREATE:
  CREATE              Create a new ONU profile.

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --model            Define the Model Name (STRING 47)
   --name             Define a name for this profile. (STRING 47)
   --port-num         The number of ports for a given port type (max: 4 ETH , 1 PON , 1 RF
                      , 2 VoIP, 4 E1, 1 VEIP )
   --port-type        The type of a port (eth|pon|voip|rf|e1|veip)
   --profileID        Identifies a profile by ID.
   --vendor           Define the Vendor Name (STRING 15)
```

Figure 7-354: CLI on line help on "create" command usage in this node context

7.6.16.3.3 "remove" command

Name	remove
Description	Remove an ONU profile
Full path	/profiles/onu/remove
Mandatory Parameters	--profileID
Screen Output	No

Table 7-318: "remove" command parameters

```
/cli/profiles/onu> remove ?

Usage:
  REMOVE          Remove

   <MANDATORY>
   --profileID     Identifies a profile by ID.
```

Figure 7-355: CLI on line help on "remove" command usage in this node context

7.6.16.3.4 "show" command

Name	show
Description	Show the current configuration
Full path	/profiles/onu/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-357. Table parameters description, Table 7-320.

Table 7-319: "show" command information

```
/cli/profiles/onu> show ?

Usage:
  SHOW            Show the current configuration.
```

Figure 7-356: CLI on line help on "show" command usage in this node context

```
/cli/profiles/onu> show
+-------------------------------------------------------------------------------------------------------------------+
|ONUs Profiles                                                                                                      |
+-------------------------------------------------------------------------------+-----------------------------------+
|                                                                               |Ports                              |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
|ID |Name                |Admin  |Vendor              |Model               |PON  |Eth  |RF   |VoIP |E1   |VEIP |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
|1  |SFU                 |enable |PTIN                |SFU                 |1    |1    |1    |0    |0    |0    |
|2  |4GE-2FXS            |enable |PTIN                |4GE-2FXS            |1    |4    |1    |2    |0    |0    |
|3  |RGW                 |enable |PTIN                |PTIN                |1    |4    |0    |2    |0    |1    |
|4  |RGW_cRF             |enable |PTIN                |RGW_cRF             |1    |4    |1    |0    |0    |1    |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
/cli/profiles/onu>
```

Figure 7-357: Output of "show" command in this node context

Parameter	Description
ID	Indicates the Profile ID
Name	Indicates the Profile Name
Admin	Indicates Administrative State
Vendor	ONU Vendor Name
Model	ONU Model name
Ports	-
PON	Number of ONU GPON ports
Eth	Number of ONU Ethernet ports
RF	Number of ONU RF ports
VoIP	Number of ONU FXS ports

Table 7-320: "show" command output table parameters

7.6.16.3.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-321: "showconfig" command information

```
/cli/profiles/onu> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-358: CLI on line help on "showconfig" command usage in this node context

7.6.16.4 "pbits-to pq" sub-node

7.6.16.4.1 "config" command

Name	config
Description	Configure/activate an existing profile.
Full path	/profiles/pbits-to-pq/config

Mandatory Parameters	--ID
Screen Output	No

Table 7-322: "config" command information

```
/cli/profiles/pbits-to-pq> config ?

Usage CONFIG:
  CONFIG                Configure/activate an existing profile.

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --name               Define a name for the specified profile.
   --p-bits             Define the P-bits value (0..7).
   --p-queue            Specify the Priority Queue (0..7)
```

Figure 7-359: CLI on line help on "config" command usage in this node context

7.6.16.4.2 "create" command

Name	create
Description	Create a new profile that assigns P-bits to Priority Queues
Full path	/profiles/pbits-to-pq/create
Mandatory Parameters	No
Screen Output	No

Table 7-323: "create" command parameters

```
cli/profiles/pbits-to-pq> create ?

Usage CREATE:
  CREATE                Create a new profile that assigns P-bits to Priority Queues.

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --name               Define a name for the specified profile.
   --p-bits             Define the P-bits value (0..7).
   --p-queue            Specify the Priority Queue (0..7)
```

Figure 7-360: CLI on line help on "create" command usage in this node context

7.6.16.4.3 "remove" command

Name	remove
Description	Remove an existing profile
Full path	/profiles/pbits-to-pq/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-324: "remove" command parameters

```
cli/profiles/pbits-to-pq> remove ?

Usage REMOVE:
  REMOVE                    Remove an existing profile.

   <MANDATORY>
   --ID                     Identifies a table entry by ID, in this context.
```

Figure 7-361: CLI on line help on "remove" command usage in this node context

7.6.16.4.4 "show" command

Name	show
Description	Show existing profiles.
Full path	/profiles/pbits-to-pq/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-363. Table parameters description, Table 7-326.

Table 7-325: "show" command information

```
/cli/profiles/pbits-to-pq> show ?

Usage SHOW:
 SHOW                Show existing profiles.
```

Figure 7-362: CLI on line help on "show" command usage in this node context

```
/cli/profiles/pbits-to-pq> show
+-------------------------------------------------------------------------+
|P-bits to Priority Queue Profiles                                        |
+---+--------------------------------+-------+-------+---------------+
|   |                                |       |       |P-bits         |
+---+--------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|ID |Name                            |Admin  |P-Queue|0|1|2|3|4|5|6|7|
+---+--------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|1  |default                         |enable |0      |x|x|x|x|x|x|x|x|
|1  |                                |enable |1      | | | | | | | | |
|1  |                                |enable |2      | | | | | | | | |
|1  |                                |enable |3      | | | | | | | | |
|1  |                                |enable |4      | | | | | | | | |
|1  |                                |enable |5      | | | | | | | | |
|1  |                                |enable |6      | | | | | | | | |
|1  |                                |enable |7      | | | | | | | | |
+---+--------------------------------+-------+-------+-+-+-+-+-+-+-+-+
```

Figure 7-363: Output of "show" command in this node context

Parameter	Description
ID	Indicates the Profile ID
Name	Indicates the Profile Name
Admin	Indicates Administrative State
Prior.	Indicates Priority
PCPs	Indicates PCP configuration bits (0 to 7)

Table 7-326: "show" command output table parameters

7.6.16.4.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/pbits-to-pq/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-327: "showconfig" command information

```
/cli/profiles/pbits-to-pq> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-364: CLI on line help on "showconfig" command usage in this node context

7.6.16.5 "upstream-dba" sub-node

7.6.16.5.1 "config" command

Name	config
Description	Configure GPON upstream DBA profiles.
Full path	/profiles/upstream-dba/config
Mandatory Parameters	--profileID
Screen Output	No

Table 7-328: "config" Command parameters

```
/cli/profiles/upstream-dba> config ?

Usage CONFIG:
  CONFIG                Configure GPON upstream DBA profiles.

   <MANDATORY>
   --profileID          Identifies a profile by ID.

   [OPTIONAL]
   --BWeligibility      Defines how the non assured bandwidth is handled. (non-
                        assured|best-effort)
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --assuredBW          Maximum bandwidth for DYN type with a granularity of 8kbps.
   --dba                Set the MAC GPON DBA algorithm to 'Status Reporting' if enabled,
                        or 'Traffic Monitoring' if disabled. (enable|disable)
   --fixedBW            Fixed bandwidth used in CBR and UBR types with a granularity of
                        8kbps.
   --maxBW              Maximum bandwidth that results from the sum: Fixed BW + Assured
                        BW + bandwidth not assured.
   --name               Define a name for this profile. (STRING 31)
   --type               Identifies the profile type. (cbr|ubr|dyn)
```

Figure 7-365: CLI on line help on "config" command usage in this node context

7.6.16.5.2 "create" command

Name	create
Description	Create a GPON upstream DBA profile
Full path	/profiles/upstream-dba/create
Mandatory Parameters	--fixedBW --name --type
Screen Output	No

Table 7-329: "create" Command information

```
/cli/profiles/upstream-dba> create ?

Usage CREATE:
  CREATE                Create a new profile.

   <MANDATORY>
   --fixedBW            Fixed bandwidth used in CBR and UBR types with a granularity of
                        8kbps.
   --name               Define a name for this profile. (STRING 31)
   --type               Identifies the profile type. (cbr|ubr|dyn)

   [OPTIONAL]
   --BWeligibility      Defines how the non assured bandwidth is handled. (non-
                        assured|best-effort)
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --assuredBW          Maximum bandwidth for DYN type with a granularity of 8kbps.
   --dba                Set the MAC GPON DBA algorithm to 'Status Reporting' if enabled,
                        or 'Traffic Monitoring' if disabled. (enable|disable)
   --maxBW              Maximum bandwidth that results from the sum: Fixed BW + Assured BW
                        + bandwidth not assured.
   --profileID          Identifies a profile by ID.
```

Figure 7-366: CLI on line help on create command usage in this node context

7.6.16.5.3 "remove" command

Name	remove
Description	Remove a GPON upstream DBA profile
Full path	/profiles/upstream-dba/remove
Mandatory Parameters	--profileID
Screen Output	No

Table 7-330: "remove" command information

```
/cli/profiles/upstream-dba> remove ?

Usage:
  REMOVE          Remove

   <MANDATORY>
   --profileID     Identifies a profile by ID.
```

Figure 7-367: CLI on line help on "remove" command usage in this node context

7.6.16.5.4 "show" command

Name	show
Description	Show GPON upstream DBA profile.
Full path	/profiles/upstream/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-369. Table parameters description Table 7-332.

Table 7-331: "show" command information

```
/cli/profiles/upstream-dba> show ?

Usage:
  SHOW            Show GPON upstream DBA profile.
```

Figure 7-368: CLI on line help on "show" command usage in this node context

```
/cli/profiles/upstream-dba> show
+-----------------------------------------------------------------------------------------------------------------------------+
|Upstream DBA Profiles                                                                                                        |
+---+--------------------------------+---------+----+---------+---------+---------+--------------+--------------------+
|ID |Name                            |Admin    |Type|Fixed BW |Assured BW|Max BW  |BW Eligibility|DBA Algorithm       |
+---+--------------------------------+---------+----+---------+---------+---------+--------------+--------------------+
|1  |FIXED_2M                        |enable   |cbr |2048     |0        |2048     |--            |disable             |
|2  |ASSURED_10M                     |enable   |dyn |0        |10048    |10048    |--            |disable             |
|3  |ASSURED_10M_MAX_20M             |enable   |dyn |0        |10048    |20096    |non-assured   |disable             |
|4  |MAX_20M                         |enable   |dyn |0        |0        |20096    |best-effort   |disable             |
|5  |FIXED_5M_ASSURED_10M_MAX_50M    |enable   |dyn |5056     |10048    |50240    |non-assured   |disable             |
+---+--------------------------------+---------+----+---------+---------+---------+--------------+--------------------+
```

Figure 7-369: Output of "show" command in this node context

Parameter	Description
ID	Identifies upstream profile by ID
Name	Identifies upstream profile by name
Admin	Indicates upstream profile administrative state
Type	Indicates upstream profile type
Fixed BW	indicates upstream profile fixed bandwidth
Assured BW	Indicates upstream profile assured bandwidth
Max BW	Indicates upstream profile maximum bandwidth
BW eligibility	Indicates upstream profile bandwidth eligibility
DBA algorithm	Indicates if DBA algorithm is used

Table 7-332: show command - output table parameters

7.6.16.5.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/upstream-dba/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-333: "showconfig" command information

```
/cli/profiles/upstream-dba> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-370: CLI on line help on "showconfig" command usage in this node context

7.6.16.6 "voip" sub-node

7.6.16.6.1 "server" sub-node

7.6.16.6.1.1 "availableValues" command

Name	availableValues
Description	Show Available Values for each parameter
Full path	/profiles/voip/server/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-372. Table parameters description Table 7-335

Table 7-334: "availableValues" command information

```
/cli/profiles/voip/server> availableValues ?

Usage:
  AVAILABLEVALUES    Show Available Values for each parameter
```

Figure 7-371: CLI on line help on "show" command usage in this node context

```
/cli/profiles/voip/server> availableValues
+-----------------------------------------------+
|Available Values                               |
+----------+-----+-----------------------------+
|Parameter |Value|Meaning                      |
+----------+-----+-----------------------------+
|voice-gw  |1    |Megaco GR 303 TR08           |
|          |2    |Megaco V5.x                  |
|          |3    |Megaco SoftSwitch            |
|          |4    |SIP BroadSoft                |
|          |5    |SIP Nortel/SoftSwitch        |
+----------+-----+-----------------------------+
```

Figure 7-372: Output of "availableValues" command in this node context

Parameter	Description
Parameter	Identifies parameter by name
Value	Indicates parameter value
Meaning	Short description for each parameter value

Table 7-335: availableValues command - output table parameters

7.6.16.6.1.2 "config" command

Name	config
Description	Configure voip server profiles.
Full path	/profiles/voip/server/config
Mandatory Parameters	--profileID
Screen Output	No

Table 7-336: "config "command information

```
/cli/profiles/voip/server> config ?

Usage:
  CONFIG          Configure

   <MANDATORY>
   --profileID         Identifies a profile by ID.

   [OPTIONAL]
   --admin             Administrative State. Enable/disable, in this context.
                       (enable|disable)
   --gw-ip             IPv4 address for the default GW
   --name              Insert a name STRING.
   --server-ip         IPv4 address for the VoIP server
   --server-port       The VoIP server port
   --voice-gw          The Voice Gateway to choose. (see 'availableValues') (1..5)
```

Figure 7-373: CLI on line help on "config" command usage in this node context

7.6.16.6.1.3 "create" command

Name	create
Description	Create a voip server profile
Full path	/profiles/ voip/server/create
Mandatory Parameters	No
Screen Output	No

Table 7-337: "create" command information

```
/cli/profiles/voip/server> create ?

Usage CREATE:
  CREATE                Create a new VoIP srver profile.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --gw-ip              IPv4 address for the default GW
   --name               Define a name for this profile. (STRING 15)
   --server-ip          IPv4 address for the VoIP server
   --server-port        The VoIP server port
   --voice-gw           The Voice Gateway to choose. (see 'availableValues') (1..5)
```

Figure 7-374: CLI on line help on "create" command usage in this node context

7.6.16.6.1.4 "remove" command

Name	remove
Description	Remove a voip server profile
Full path	/ profiles/voip/server/remove
Mandatory Parameters	--profileID
Screen Output	No

Table 7-338: "remove" command information

```
/cli/profiles/voip/server> remove ?

Usage:
  REMOVE          Remove an existing profile

   <MANDATORY>
   --profileID     Identifies a profile by ID.
```

Figure 7-375: CLI on line help on "remove" command usage in this node context

7.6.16.6.1.5 "show" command

Name	show
Description	Show the current configuration.
Full path	/profiles/voip/server/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-377. Table parameters description, Table 7-340.

Table 7-339: "show" command information

```
/cli/profiles/voip/server> show ?

Usage:
  SHOW            Show the current configuration.
```

Figure 7-376: CLI on line help on "show" command usage in this node context

```
/cli/profiles/voip/server> show
+-------------------------------------------------------------------------------------------------------------------+
|VoIP Server Profiles                                                                                               |
+---+--------------------+----------+-----------------------------+---------------+----------+-----------------+
|ID |Name                |Admin     |Voice Gateway                |Server IP      |Port      |Default Gateway  |
+---+--------------------+----------+-----------------------------+---------------+----------+-----------------+
+---+--------------------+----------+-----------------------------+---------------+----------+-----------------+
```

Figure 7-377: Output of "show" command in this node context

Parameter	Description
ID	Identifies a VoIP server profile by ID
Name	Identifies a VoIP server profile by name
Admin	Indicates VoIP server profile administrative state
Voice Gateway	Indicates the voice gateway in use
Server IP	Indicates IPv4 address for the VoIP server
Port	Indicates VoIP server TCP/IP port
Default Gateway	Indicates default Gateway IPv4 address

Table 7-340: "show" command output table parameters

EN

7.6.16.6.1.6 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/voip/server/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-341: "showconfig" command information

```
/cli/profiles/voip/server> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-378: CLI on line help on "showconfig" command usage in this node context

7.6.16.6.2 "specific" sub-node

7.6.16.6.2.1 "config" command

Name	config
Description	Configure voip specific profiles.
Full path	/profiles/voip/specific/config
Mandatory Parameters	--profileID
Screen Output	No

Table 7-:342 "config" command information

```
/cli/profiles/voip/specific> config ?

Usage CONFIG:
  CONFIG              Configure an existing profile.

   <MANDATORY>
   --profileID        Identifies a profile by ID.

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --ftp-ip           Set the FTP server IP address
   --name             Define a name for this profile. (STRING 15)
```

Figure 7-379: CLI on line help on "configure" command usage in this node context

7.6.16.6.2.2 "create" command

Name	create
Description	Create a voip specific profile
Full path	/profiles/voip/specific/create
Mandatory Parameters	No
Screen Output	No

Table 7-343: "create" command information

```
/cli/profiles/voip/specific> create ?

Usage CREATE:
  CREATE                          Create a new VoIP specific profile.

   [OPTIONAL]
   --admin                        Administrative State. Enable/disable, in this context.
                                  (enable|disable)
   --ftp-ip                       Set the FTP server IP address
   --name                         Define a name for this profile. (STRING 15)
```

Figure 7-:380 CLI on line help on "create" command usage in this node context

7.6.16.6.2.3 "remove" command

Name	remove
Description	Remove an existing profile
Full path	/profiles/voip/specific/remove
Mandatory Parameters	--profileID
Screen Output	No

Table 7-344: "remove" command information

```
/cli/profiles/voip/specific> remove ?

Usage:
  REMOVE          Remove an existing profile

   <MANDATORY>
   --profileID     Identifies a profile by ID.
```

Figure 7-381: CLI on line help on "remove" command usage in this node context

7.6.16.6.2.4 "show" command

Name	show
Description	Show the current configuration.
Full path	/profiles/voip/specific/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-383. Table parameters description Table 7-346

Table 7-345: "show" command information

```
/cli/profiles/voip/specific> show ?

Usage:
  SHOW            Show the current configuration.
```

Figure 7-382: CLI on line help on "show" command usage in this node context

```
/cli/profiles/voip/specific> show
+-------------------------------------------------+
|VoIP Specific Profiles                           |
+---+--------------------+----------+-------------+
|ID |Name                |Admin     |FTP Server   |
+---+--------------------+----------+-------------+
+---+--------------------+----------+-------------+
```

Figure 7-383: Output of "show" command in this node context

Parameter	Description
ID	Identifies a profile by ID
Name	Identifies a profile by name
Admin	Indicates profile administrative state
FTP Server	Indicates FTP server IPv4 address

Table 7-346: "show" command output table parameters

7.6.16.6.2.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/profiles/voip/specific/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-347: "showconfig" command information

```
/cli/profiles/voip/specific> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-384: CLI on line help on "showconfig" command usage in this node context

7.6.17 "remote-eq" node

This node is used to manage remote equipments (ONUs) that the system is aware of (discovery sub-node).

In the discovery sub-node the user can see the available equipments, insert them to start being managed by this OLT, or provision the OLT for adding remote equipments later.

On the ONUs sub-node the user can make all the possible configurations on the remote equipment as well as view all the relative information.

On the status sub-node the user can view the status of links, and interfaces.

```
/cli/remote-eq> tree
+ remote-eq[@config-onu-id, @connect, @disconnect, @showconnected]
   + discovery[@change-reg-type, @command, @config, @create, @insert, @insert-all, @reboot,
@reboot-all, @remove, @remove-all, @show, @showconfig]
   + onu[@show, @showconfig]
      + analog-rf[@config, @show, @showconfig]
      + e1[@config-e1, @config-lsp, @config-pw, @show, @showconfig, @status]
      + ethernet[@config, @show, @showconfig]
      + ext-vlan-tag-op[@config, @show, @showconfig]
         + operation-table[@config, @create, @remove, @show, @showconfig]
      + ptp-source[@availableValues, @config, @create, @remove, @show]
      + services[@add, @availableValues, @config, @remove, @show, @showconfig]
         + t-cont-mapping[@config, @show, @showconfig]
      + system[@config, @show, @showconfig]
      + t-cont[@config, @create, @remove, @show, @showconfig]
      + voip[@config, @show, @showconfig]
   + statistics[]
      + fec[@show]
   + status[@show]
      + ethernet[]
         + statistics[@show]
      + firmware[@activate, @commit, @stop-transfer]
      + gem-port[]
         + statistics[@show]
      + services[@show]
         + active-channels[@show]
         + statistics[]
            + counters[@availableValues, @show, @show-active, @start, @stop]
            + dhcp[@show]
            + igmp[@show]
      + t-cont[@show]
```

Figure 7-385 : "remote-eq" node tree

7.6.17.1 "config-onu-id" command

Name	config-onu-id
Description	Configure an ONU ID for one ONU in state 'new'.
Full path	/remote-eq/ config-onu-id
Mandatory Parameters	--onuID --serial-number
Screen Output	No

Table 7-348: " config-onu-id " command information

```
/cli/remote-eq> config-onu-id ?

Usage:
  CONFIG-ONU-ID       Configure an ONU ID for one ONU in state 'new'.

   <MANDATORY>
   --onuID            Identifies an ONU by ID, in this context.
   --serial-number    Identify an ONU by serial Number. (STRING 16).
```

Figure 7-386: CLI on line help on "config-onu-id" command usage in this node context

7.6.17.2 "connect" command

This command defines the remote Equipment that will be used for all following commands.

Name	connect
Description	Set the ONU identifiers (slot, port, onuID) to be used in all future commands.
Full path	/remote-eq/connect
Mandatory Parameters	--onuID --port
Screen Output	No

Table 7-349: "connect" command information

```
/cli/remote-eq> connect ?

Usage:
  CONNECT         Set the ONU identifiers (slot, port, onuID) to be used in all future
commands.

   <MANDATORY>
   --onuID    Identifies an ONU by ID, in this context.
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-387: CLI on line help on "connect" command usage in this node context

7.6.17.3 "disconnect" command

Name	disconnect
Description	Clear the connected ONU identifiers.
Full path	/remote-eq/disconnect
Mandatory Parameters	This command has no parameters
Screen Output	No

Table 7-350: "disconnect" command information

```
/cli/remote-eq> disconnect ?

Usage:
  DISCONNECT      Clear the connected ONU identifiers.
```

Figure 7-388: CLI on line help on "disconnect" command usage in this node context

7.6.17.4 "showconnected" command

Name	showconnected
Description	Clear the connected ONU identifiers.
Full path	/remote-eq/ showconnected
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-390. Table parameters description in Table 7-352

Table 7-351: " showconnected " command information

```
/cli/remote-eq> showconnected ?

Usage:
  SHOWCONNECTED   Show the connected ONU identifiers.
```

Figure 7-389: CLI on line help on "showconnected" command usage in this node context

```
/cli/remote-eq> showconnected
+------------------------+
|Remote ONU Connected    |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
| --  | --       | --   |
+-----+----------+------+
```

Figure 7-390: Output of "showconnected" command in this node context

Parameter	Description
Slot	Identifies the slot
Port	Identifies the OLT Port the ONU is connected to
ONU ID	Identifies ONU by ID

Table 7-352: "showconnected" command output table parameters

7.6.17.5 "discovery" sub-node

7.6.17.5.1 "change-reg-type" command

Name	change-reg-type
Description	Modify the register type for a single ONU.
Full path	/remote-eq/discovery/change-reg-type
Mandatory Parameters	--onuID --port --register-type
Screen Output	No

Table 7-353: "change-reg-type" command information

```
/cli/remote-eq/discovery> change-reg-type ?

Usage:
  CHANGE-REG-TYPE         Modify the register type for a single ONU.

   <MANDATORY>
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --register-type        Set the ONU registration type. (serial-number|password|both)

   [OPTIONAL]
   --password             Set the password for ONU registration. Up to 10 ASCII characters
                          or precisely 20 in HEX format (STRING 20)
   --serial-number        Set the serial number for ONU registration (STRING 16)
```

Figure 7-391: CLI on line help on "change-reg-type" command usage in this node context

7.6.17.5.2 "command" command

Name	command
Description	Send one command to a specific ONU.
Full path	/remote-eq/discovery/command
Mandatory Parameters	--type
Screen Output	No

Table 7-354: "command" command information

```
/cli/remote-eq/discovery> command ?

Usage:
  COMMAND            Send one command to a specific ONU.

   <MANDATORY>
   --type             Send ITU-T G.984.3 'Disable_Serial_Number' or ONU MIB re-synch.
                      command. (disable-sn|enable-sn|resynch|forced-resynch)

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-392: CLI on line help on "command" command usage in this node context

7.6.17.5.3 "config" command

Name	config
Description	Identify an ONU by (1)(slot,port,onuID) or (2)(serial-number). To modify the serial-number use (1)(2).
Full path	/remote-eq/discovery/config
Mandatory Parameters	No
Screen Output	No

Table 7-355: "config" command information

```
/cli/remote-eq/discovery> config ?

Usage CONFIG:
  CONFIG                Configure one ONU parameters.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --fec-upstream       Forward Error Correction (FEC) on the Upstream side.
                        (enable|disable)
   --omci-encryption    Encryption on the OMCI channel. (enable|disable)
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --profileID          Identifies a profile by ID.
   --sw-upgrade-mode    Set the upgrade mode for this ONU. By choosing 'planned' the
                        argument 'sw-version' must be given as well. (off|auto|planned)
   --sw-version         Define a string to match with a firmware file sw-version string.
                        (STRING 15)
```

Figure 7-393: CLI on line help on "config" command usage in this node context

7.6.17.5.4 "create" command

Name	create
Description	Create a new ONU.
Full path	/remote-eq/discovery/ create
Mandatory Parameters	--onuID --port --profileID
Screen Output	No

Table 7-356: "create" command information

```
cli/remote-eq/discovery> create ?

Usage CREATE:
  CREATE                Create a new ONU.

   <MANDATORY>
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --profileID          Identifies a profile by ID.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --fec-upstream       Forward Error Correction (FEC) on the Upstream side.
                        (enable|disable)
   --omci-encryption    Encryption on the OMCI channel. (enable|disable)
   --password           Set the password for ONU registration. Up to 10 ASCII characters
                        or precisely 20 in HEX format (STRING 20)
   --serial-number      Set the serial number for ONU registration (STRING 16)
   --sw-upgrade-mode    Set the upgrade mode for this ONU. By choosing 'planned' the
                        argument 'sw-version' must be given as well. (off|auto|planned)
   --sw-version         Define a string to match with a firmware file sw-version string.
                        (STRING 15).
```

Figure 7-394: CLI on line help on "create" command usage in this node context

7.6.17.5.5 "insert" command

Name	insert
Description	Start managing a remote ONU. It must be in the 'new' state.
Full path	/remote-eq/discovery/ insert
Mandatory Parameters	--profileID --serial-number
Screen Output	No

Table 7-357: "insert" command information

```
/cli/remote-eq/discovery> insert ?

Usage INSERT:
  INSERT                Start managing one remote ONU. ONUs must be in the 'New' state.

   <MANDATORY>
   --profileID          Identifies a profile by ID.
   --serial-number      Select the ONU by serial number. (STRING 16)

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context.
                        (enable|disable)
   --fec-upstream       Forward Error Correction (FEC) on the Upstream side.
                        (enable|disable)
   --omci-encryption    Encryption on the OMCI channel. (enable|disable)
   --onuID              Identifies an ONU by ID, in this context.
   --sw-upgrade-mode    Set the upgrade mode for this ONU. By choosing 'planned' the
                        argument 'sw-version' must be given as well. (off|auto|planned)
   --sw-version         Define a string to match with a firmware file sw-version string.
                        (STRING 15)
```

Figure 7-395: CLI on line help on "insert" command usage in this node context

7.6.17.5.6 "insert-all" command

Name	insert
Description	Start managing all ONUs (in 'NEW' state) on a given Slot, or interface. Default values will be used for all parameters.
Full path	/remote-eq/discovery/ insert-all
Mandatory Parameters	No
Screen Output	No

Table 7-358: "insert-all" command information

```
/cli/remote-eq/discovery> insert-all ?

Usage INSERT-ALL:
  INSERT-ALL           Start managing all ONUs (in 'NEW' state) on a given Slot, or
                       interface. Default values will be used for all parameters.

   [OPTIONAL]
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-396: CLI on line help on "insert-all" command usage in this node context

7.6.17.5.7 "reboot" command

Name	reboot
Description	Send the reboot command to one ONU.
Full path	/remote-eq/discovery/reboot
Mandatory Parameters	No
Screen Output	No

Table 7-359: "reboot" command information

```
/cli/remote-eq/discovery> reboot ?

Usage REBOOT:
  REBOOT             Send the reboot command to one ONU.

   [OPTIONAL]
   --onuID           Identifies an ONU by ID, in this context.
   --port            Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-397: CLI on line help on "reboot" command usage in this node context

7.6.17.5.8 "reboot-all" command

Name	reboot-all
Description	Send the reboot command to all ONUs (on a given Slot, or interface).
Full path	/remote-eq/discovery/reboot-all
Mandatory Parameters	No
Screen Output	No

Table 7-360: "reboot-all" command information

```
/cli/remote-eq/discovery> reboot-all ?

Usage:
  REBOOT-ALL      Send the reboot command to all ONUs (on a given Slot, or interface).

   [OPTIONAL]
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-398: CLI on line help on "reboot-all" command usage in this node context

7.6.17.5.9 "remove" command

Name	remove
Description	Stop managing one remote ONU. It will return to the 'NEW' state if physically connected.
Full path	/remote-eq/discovery/ remove
Mandatory Parameters	No
Screen Output	No

Table 7-361: "remove" command information

```
/cli/remote-eq/discovery> remove ?

Usage REMOVE:
  REMOVE            Stop managing one remote ONU. It will return to the 'NEW' state if
                    physically connected.

   [OPTIONAL]
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-399: CLI on line help on "remove" command usage in this node context

7.6.17.5.10 "remove-all" command

Name	remove-all
Description	Remove all inserted ONUs on a given Slot, or interface. Affected ONUs will return to the 'NEW' state if physically connected.
Full path	/remote-eq/discovery/remove-all
Mandatory Parameters	No
Screen Output	No

Table 7-362: "remove-all" command information

```
/cli/remote-eq/discovery> remove-all ?

Usage:
  REMOVE-ALL       Remove all inserted ONUs on a given Slot, or interface. Affected ONUs
                   will return to the 'NEW' state if physically connected.

   [OPTIONAL]
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1
```

Figure 7-400: CLI on line help on "remove-all" command usage in this node context

7.6.17.5.11 "show" command

Name	show
Description	Show the current configuration
Full path	/remote-eq/discovery/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-402. Table parameters description in Table 7-364.

Table 7-363: "show" command information

```
cli/remote-eq/discovery> show ?

Usage SHOW:
  SHOW                            Show a list with all ONUs known. Filters can be applied
                                  with the arguments below.

   [OPTIONAL]
   --matching-serial-number       Show ONU matching the serial number specified (STRING 16)
   --only-new                     Show only entries with state equal to 'new'. (true|false)
   --password-format              Choose the display format for the Password column (ascii-
                                  string|hex-string) default: hex-string
   --port                         Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
lag.1)
   --serial-number-format         Choose the display format for the Serial Number column
                                  (ascii-string|hex-string) default: hex-string
```

Figure 7-401: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/discovery> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Remote Equipments List -- Page 1                                                                                                                                                               |
+----+------+---+-------+---------+-----------------+--------------------+--------------------+-------+---------------+--------------+-------+---------+--------+
|Slot|Port  |ONU|Admin  |Reg. Type|Serial Number    |Password (HEX)      |Profile             |SW mode|SW version     |Status        |FEC    |OMCI-encr.|Commands|
+----+------+---+-------+---------+-----------------+--------------------+--------------------+-------+---------------+--------------+-------+---------+--------+
|1   |PON 1 |1  |disable|S/N      |5054494E1DCEEBDA |--                  |(3) RGW             |Off    | --            |Out of service|disable|enable   | --     |
|1   |PON 2 |0  |disable|S/N      |5054494E262762C5 |46453338394431373341|(1) SFU             |Off    | --            |New           |disable|enable   | --     |
|1   |PON 2 |0  |disable|S/N      |5054494E0282CE3E |00000000000000000000|(1) SFU             |Off    | --            |New           |disable|enable   | --     |
|1   |PON 2 |0  |disable|S/N      |5054494E393ABE76 |46453144383541313938|(1) SFU             |Off    | --            |New           |disable|enable   | --     |
|1   |PON 2 |1  |enable |S/N      |5054494E02826522 |00000000000000000000|(1) SFU             |Off    | --            |OK            |disable|enable   |reboot  |
|1   |PON 3 |2  |enable |S/N      |5054494E07C1300B |--                  |(3) RGW             |Off    | --            |Absent        |disable|enable   | --     |
|1   |PON 4 |1  |enable |S/N      |5054494E0615EC44 |--                  |(4) RGW_cRF         |Off    | --            |Absent        |disable|enable   | --     |
|1   |PON 6 |1  |enable |S/N      |5054494E2627F8A2 |46453338394338313544|(1) SFU             |Off    | --            |OK            |disable|enable   |reboot  |
|1   |PON 6 |2  |enable |S/N      |5054494E2627F86A |46453338394338313935|(1) SFU             |Off    | --            |OK            |disable|enable   |reboot  |
|1   |PON 6 |3  |enable |S/N      |5054494E2627595C |46453338394432304133|(1) SFU             |Off    | --            |OK            |disable|enable   |reboot  |
|1   |PON 8 |1  |enable |S/N      |5054494E07C12BC5 |--                  |(3) RGW             |Off    | --            |Absent        |disable|enable   | --     |
+----+------+---+-------+---------+-----------------+--------------------+--------------------+-------+---------------+--------------+-------+---------+--------+
/cli/remote-eq/discovery>
```

Figure 7-402: Output of "show" command in this node context – partial view

Parameter	Description
Slot	Indicates a slot
Port	Indicates an OLT port
ONU	Identifies the ONU by ONU ID (number)
Admin	Indicates the ONU administrative state

Reg. Type	Register type
Serial Number	Indicates the ONU serial number
Password (HEX)	Indicates password (Hexadecimal)
Profile	Identifies the ONU profile by ID and name
SW Mode	Indicates the ONU configured software upgrade mode
SW version	Indicates the SW version
Status	Indicates the ONT state
FEC	Indicates if FEC is enabled
OMCI-encr.	Indicates if OMCI encriptation is enabled
Commands	Indicates the available commands for use

Table 7-364: "show" command output table parameters

7.6.17.5.12 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/discovery/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-365: "showconfig" command information

```
/cli/remote-eq/discovery> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG          Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-403: CLI on line help on "showconfig" command usage in this node context

7.6.17.6 "ONUs" sub-node

This node can be used to configure the remote ONU equipments.

All the commands in this node (and children) always apply to a specific ONU.

When executing each command the identification of the ONU must be provided.

In this sense all commands will have at least three parameters: slot, port, onuID.

If the user does not give those arguments, the command will use the information stored with **/remote-eq/connect**. If there is no information saved, it will display en error.

If there is information saved with the **connect** command, but the user gives another set of argument values, then the user given values take precedence over the existing ones.

All the **showconfig** commands will have the three parameters as well.

So, their structure will change (for this node and children only) and be the one depicted below.

7.6.17.6.1 "show" command

This command will give the user an overview of how many ONUs exists and where (slot, port), This command should be executed when trying to find the right values for the arguments <slot,port,onuID>.

For each slot, displays all the PONs and respective ONUs IDs.

The table can grow to be very large, hence it accepts two optional parameters to filter the information displayed.

Name	show
Description	Display a table with all ONU IDs and their respective interfaces. Can filter the results with the optional arguments.
Full path	/remote-eq/onu/ show
Mandatory Parameters	No
Screen Output	Table, Figure 7-405. Table parameters description in Table 7-367.

Table 7-366: "show" command information

```
/cli/remote-eq/onu> show ?

Usage:
  SHOW          Display a table with all ONU IDs and their respective interfaces. Can filter
                the results with the optional arguments.

   [OPTIONAL]
   --port       Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-404: CLI on line help on "show" command usage in this node context

```
+-------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                  |
+------+------+--------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                             |
+------+------+--------------------------------------------------------------------------+
|1     |PON 1 | 01                                                                       |
|1     |PON 2 | 00 01 00 00                                                              |
|1     |PON 3 | 02                                                                       |
|1     |PON 4 | 01                                                                       |
|1     |PON 5 |                                                                          |
|1     |PON 6 | 02 03 01                                                                 |
|1     |PON 7 |                                                                          |
|1     |PON 8 | 01                                                                       |
+------+------+--------------------------------------------------------------------------+
/cli/remote-eq/onu> _
```

Figure 7-405: Output of "show" command in this node context

Parameter	Description
Slot	Indicates a slot
Port	Indicates an OLT interface
ONU ID List	Lists the ONUs connected to a PON port ONU ID (number)

Table 7-367: "show" command output table parameters

7.6.17.6.2 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/showconfig

Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-368: "showconfig" command information

```
/cli/remote-eq/onu> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG           Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-406: CLI on line help on "showconfig" command usage in this node context

7.6.17.6.3 "analog-rf" sub-node

7.6.17.6.3.1 "config" command

Name	config
Description	Configures analog-RF parameters for the specified ONU
Full path	/remote-eq/onu/analog-rf/config
Mandatory Parameters	No
Screen Output	No

Table 7-369: "config" command information

```
/cli/remote-eq/onu/analog-rf> config ?

Usage:
  CONFIG       Configure Analog RF parameters for a single ONU

   [OPTIONAL]
   --admin     Administrative State. Enable/disable, in this context. (enable|disable)
   --filter    Choose how many channels to filter. (all|15|25|35)
   --onuID     Identifies an ONU by ID, in this context.
   --port      Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-407: CLI on line help on "config" command usage in this node context

7.6.17.6.3.2 "show" command

The show command used without parameters shows analog-RF information for the ONU specified with the command

/cli> /remote-eq/connect –onuID=xx –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message.

```
/cli/remote-eq/onu/analog-rf> show
No remote ONU specified.
```

Figure 7-408: "show" command error message

Name	show
Description	Show the current configuration
Full path	/remote-eq/onu/analog-rf/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-410. Table parameters description in Table 7-371.

Table 7-370: "show" command information

```
/cli/remote-eq/onu/analog-rf> show ?

Usage:
  SHOW            Show the current configuration

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-409: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/analog-rf> show --port=pon.1 --onuID=1
+-----------------------------------------------------------+
|Analog RF Interface                                        |
+----------+-----------+-------------+------ -------------+
|ID        |Port       |Admin        |Filter               |
+----------+-----------+-------------+---------------------+
|0         |RF 1       |disable      |All channels         |
+----------+-----------+-------------+---------------------+
```

Figure 7-410: Output of "show" command in this node context

Parameter	Description
ID	Identifies analog RF interface by ID
Port	Identifies analog RF interface by name
Admin	Indicates analog RF interface administrative state
Filter	Indicates type of channel filter used (how many filtered channels)

Table 7-371: "show" command - output table parameters

7.6.17.6.3.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/analog-rf/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-372: "showconfig" command information

```
/cli/remote-eq/onu/analog-rf> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG          Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-411: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.4 "e1" sub-node

7.6.17.6.4.1 "config-e1" command

Name	config-e1
Description	Configures E1 interfaces for a given ONU
Full path	/remote-eq/onu/e1/config-e1
Mandatory Parameters	-ID
Screen Output	No

Table 7-373: "config-e1" command information

```
/cli/remote-eq/onu/e1> config-e1 ?

Usage CONFIG-E1:
  CONFIG-E1           Configure E1 interfaces for a given ONU.

   <MANDATORY>
   --ID               Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --jitter           E1 timing configuration (dcr|re-timing|acr)
   --loop             E1 loop configuration (no-loop|local|remote)
   --monitor          E1 Frame (none|g.704|g.704-g.706)
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-412: CLI on line help on "config-e1" command usage in this node context

7.6.17.6.4.2 "config-lsp" command

Name	config-lsp
Description	Configure LSP Ig/Eg paramters for a given ONU E1 interface.
Full path	/remote-eq/onu/e1/config-lsp
Mandatory Parameters	--ID --lsp-egress --lsp-ingress
Screen Output	No

Table 7-374: "config-lsp" command information

```
/cli/remote-eq/onu/e1> config-lsp ?

Usage:
  CONFIG-LSP           Configure LSP Ig/Eg parameters for a given ONU E1 interface.

   <MANDATORY>
   --ID                Identifies a table entry by ID, in this context.
   --lsp-egress        Egress LSP label (16..1048575)
   --lsp-ingress                    Ingress LSP label (16..1048575)

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-413: CLI on line help on "config-lsp" command usage in this node context

7.6.17.6.4.3 "config-pw" command

Name	config-pw
Description	Configure Pseudowire Ig/Eg parameters for a given ONU E1 interface.
Full path	/remote-eq/onu/e1/config-pw
Mandatory Parameters	-ID
Screen Output	No

Table 7-375: "config-pw" command information

```
/cli/remote-eq/onu/e1> config-pw ?

Usage:
  CONFIG-PW            Configure Pseudowire Ig/Eg parameters for a given ONU E1
interface.

   <MANDATORY>
   --ID                Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --pw-egress         Egress pseudowire label (16..1048575)
   --pw-ingress        Ingress pseudowire label (16..1048575)
```

Figure 7-414: CLI on line help on "config-pw" command usage in this node context

7.6.17.6.4.4 "show" command

The show command used without parameters shows **e1** information for the ONU specified with the command

/cli> /remote-eq/connect –onuID=xx –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message: "No remote ONU specified"

Name	show
Description	Show the current configuration

Full path	/remote-eq/onu/e1/show
Mandatory Parameters	No
Screen Output	Table

Table 7-376: "show" command information

```
//cli/remote-eq/onu/e1> show ?

Usage:
  SHOW                Show all the current E1 interfaces configuration for a given ONU.

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-415: CLI on line help on "show" command usage in this node context

7.6.17.6.4.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/e1/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-377: "showconfig" command information

```
cli/remote-eq/onu/e1> showconfig ?

Usage:
  SHOWCONFIG          Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-416: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.4.6 "status" command

The status command used without parameters shows e1interfaces status information for the ONU specified with the command

/remote-eq/connect –onuID=xx –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message,

```
/cli/remote-eq/onu/e1> status
No remote ONU specified.
```

Figure 7-417: "show" command error message

Name	status
Description	Show all the current E1 interfaces status for a given ONU.
Full path	/remote-eq/onu/e1/status
Mandatory Parameters	No
Screen Output	Table.

Table 7-378: "status" command information

```
/cli/remote-eq/onu/e1> status ?

Usage:
  STATUS                Show all the current E1 interfaces status for a given ONU.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-418: CLI on line help on "status" command usage in this node contex

7.6.17.6.5 "ethernet" sub-node

7.6.17.6.5.1 "config" command

Name	config
Description	Configures ethernet parameters for the specified ONU
Full path	/ remote-eq/onu/ethernet/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-379: "config" command information

```
/cli/remote-eq/onu/ethernet> config ?

Usage:
  CONFIG          Configure

   <MANDATORY>
   --ID               Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --media-type       Identifies the ethernet media type  (auto|10|100|1000 BaseT Full
                      Duplex)
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-419: CLI on line help on "config" command usage in this node context

7.6.17.6.5.2 "show" command

Name	show
Description	Show the current configuration
Full path	/remote-eq/onu/ethernet/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-421. Table parameters description in Table 7-381.

Table 7-380: "show" command information

```
/cli/remote-eq/onu/ethernet> show ?

Usage:
  SHOW            Show the current configuration

   [OPTIONAL]
   --onuID         Identifies an ONU by ID, in this context.
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-420: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ethernet> show --port=pon.1 --onuID=1
+-------------------------------------------------------------------------------------+
|Ethernet Interfaces                                                                  |
+---+-------+------------------------------+---------------+---------------+---------------+
|ID |Admin  |Name                          |Media Type     |Flow Control   |Loop           |
+---+-------+------------------------------+---------------+---------------+---------------+
|0  |enable |Eth 1                         |auto           |Disabled       |none           |
|1  |enable |Eth 2                         |auto           |Disabled       |none           |
|2  |enable |Eth 3                         |auto           |Disabled       |none           |
|3  |enable |Eth 4                         |auto           |Disabled       |none           |
+---+-------+------------------------------+---------------+---------------+---------------+
```

Figure 7-421: show command - output in this node context

Parameter	Description
ID	Identifies an interface by ID
Admin	Indicates interface administrative state
Name	Identifies an interface by name
Media Type	Indicates media type - Link Speed and Duplex (Autoneg,10BASE-T Full Duplex,100BASE-T Full Duplex,1000BASE-T Full Duplex)

Flow Control	Indicates if flow control (transmission and processing of Pause Frames) is enabled or disabled
Loop	Indicates if port loop is used

Table 7-381: "show" command output table parameters

7.6.17.6.5.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/cli/remote-eq/onu/ethernet/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-382: "showconfig" command information

```
cli/remote-eq/onu/ethernet> showconfig ?

Usage:
  SHOWCONFIG           Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-422: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.6 "ext-vlan-tag-op" sub-node

7.6.17.6.6.1 "config" command

Name	config
Description	Configure the Extended VLAN Tagging Operation Global Attributes
Full path	/remote-eq/onu/ext-vlan-tag-op/config
Mandatory Parameters	--onu-port
Screen Output	No

Table 7-383: "config" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op> config ?

Usage:
  CONFIG                      Configure the Extended VLAN Tagging Operation Global  Attributes

   <MANDATORY>
   --onu-port                 Identifies an interface on the ONU

   [OPTIONAL]
   --dscp-to-pbit-profile-id  Specifies the profile for mapping DSCP to P bits
   --enable                   Enable/disable Extended VLAN Tagging operations on the
                              specified ONU port. (enable|disable)
   --input-tpid               Special TPID value for operations on the input (filtering) side
                              of the table in HEX format.
   --onuID                    Identifies an ONU by ID, in this context.
   --output-tpid              Special TPID value for operations on the output (tagging) side
                              of    the table in HEX format.
   --port                     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-423: CLI on line help on "config" command usage in this node context

7.6.17.6.6.2 "show" command

Name	show
Description	Show Extended VLAN Tagging Operation information on this ONU
Full path	/ remote-eq/onu/ ext-vlan-tag-op/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-424. Table parameters description in Table 7-385..

Table 7-384: "show" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op> show ?

Usage:
  SHOW                    Show Extended VLAN Tagging Operation information on this ONU.

   [OPTIONAL]
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-424: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op> show --port=pon.1 --onuID=1
+-----------------------------------------------------------------------------------------------------+
|Extended VLAN Tagging Operation Config.                                                              |
+----------+----------+------------------+------------------+---------------------------------------+
|ONU Port  |Enable    |Input TPID        |Output TPID       |(ID) DSCP to P-bits Profile            |
+----------+----------+------------------+------------------+---------------------------------------+
|Eth 1     |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
|Eth 2     |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
|Eth 3     |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
|Eth 4     |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
|VEIP 1    |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
+----------+----------+------------------+------------------+---------------------------------------+
```

Figure 7-425: show command - output in this node context

Parameter	Description
ONU Port	Identifies an ONU port by ID
Enable	Flag; indicates if the port is enabled.
Input TPID	Identifies input VLAN tag
Output TPID	Indicates output VLAN tag
(ID)	DSCP to PBIT profile identifier (Number)
DSCP to PBIT profile	Indicates DSCP to PBIT profile bit mapping

Table 7-385: "show" command output table parameters

7.6.17.6.6.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/cli/remote-eq/onu/ext-vlan-tag-op/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-386: "showconfig" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op> showconfig ?

Usage:
  SHOWCONFIG            Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-426: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.6.4 "operation-table" sub-node

7.6.17.6.6.4.1 "config" command

Name	config
Description	Configure an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/config
Mandatory Parameters	--ID --onu-port
Screen Output	No

Table 7-387: "config" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> config ?

Usage CONFIG:
  CONFIG                    Configure an Extended VLAN Tagging Operation Table entry

   <MANDATORY>
   --ID                     Identifies a table entry by ID, in this context.
   --onu-port               Identifies an interface on the ONU

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context.
                            (enable|disable)
   --f-ethertype            Filter by ETHERTYPE (any|IPoE|PPPoE|ARP|IPv6_IPoE)
   --f-inner-priority       Filter by Inner Priority (0..7|any)
   --f-inner-tpid           Filter by Inner TPID (any|8100|input-dei-any|input-dei-0|input-
                            dei-1)
   --f-inner-vid            Filter by Inner VID
   --onuID                  Identifies an ONU by ID, in this context.
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-onu          Choose a ONU service by ID.
   --t-op-vid               Treatment - VID Operation (add|replace|discard)
   --t-priority             Treatment - Priority (0..7|copy|derive-from-dscp)
   --t-tpid                 Treatment - TPID (0x8100)
```

Figure 7-427: CLI on line help on "config" command usage in this node context

7.6.17.6.6.4.2 "create" command

Name	create
Description	Create an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/config
Mandatory Parameters	--onu-port --type
Screen Output	No

Table 7-388: "create" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> create ?

Usage CREATE:
  CREATE                   Create an Extended VLAN Tagging Operation Table entry

   <MANDATORY>
   --onu-port              Identifies an interface on the ONU
   --type                  Specifies the input frame type (untagged|single-tag)

   [OPTIONAL]
   --ID                    Identifies a table entry by ID, in this context.
   --admin                 Administrative State. Enable/disable, in this context.
                           (enable|disable)
   --f-ethertype           Filter by ETHERTYPE (any|IPoE|PPPoE|ARP|IPv6_IPoE)
   --f-inner-priority      Filter by Inner Priority (0..7|any)
   --f-inner-tpid          Filter by Inner TPID (any|8100|input-dei-any|input-dei-0|input-
                           dei-1)
   --f-inner-vid           Filter by Inner VID
   --onuID                 Identifies an ONU by ID, in this context.
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-onu         Choose a ONU service by ID.
   --t-op-vid              Treatment - VID Operation (add|replace|discard)
   --t-priority            Treatment - Priority (0..7|copy|derive-from-dscp)
   --t-tpid                Treatment - TPID (0x8100)
```

Figure 7-428: CLI on line help on "create" command usage in this node context

7.6.17.6.6.4.3 "remove" command

Name	remove
Description	Remove an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/remove
Mandatory Parameters	--ID --onu-port
Screen Output	No

Table 7-389: "remove" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> remove ?

Usage:
  REMOVE                Remove an Extended VLAN Tagging Operation Table entry

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.
   --onu-port           Identifies an interface on the ONU

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-429: CLI on line help on "remove" command usage in this node context

7.6.17.6.6.4.4 "show" command

Name	show
Description	Show the Extended VLAN Tagging Operation Table on this ONU.

Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-431. Table parameters description in Table 7-391.

Table 7-390: "show" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> show ?

Usage:
  SHOW                    Show the Extended VLAN Tagging Operation Table on this ONU.

   [OPTIONAL]
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)cd op
```

Figure 7-430: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> show --port=pon.1 --onuID=1
+-------------------------------------------------------------------------------------------------------------------------------------------------+
|Extended VLAN Tagging Operation Table                                                                                                            |
+--------------------+-----------------------------------+-----------------------------------------------------------------------------------------+
|                    |Filter                             |Treatment                                                                                |
+--------+--+-------+-+---------------+-------------+---------+---------+-----------------------------------+----------------+-----------------+
|ONU Port|ID|Admin  |T|Inner Pri/VID  |Inn. TPID    |ETHTYPE  |Operation|(ID) Service                       |Priority        |TPID             |
+--------+--+-------+-+---------------+-------------+---------+---------+-----------------------------------+----------------+-----------------+
+--------+--+-------+-+---------------+-------------+---------+---------+-----------------------------------+----------------+-----------------+
```

Figure 7-431: show command - output in this node context

Parameter Group	Parameter	Description
	ONU Port	ONU Port Identifier
	ID	Table entry numeric Identifier
	Admin	Indicates upstream profile administrative state
	T	
Filter	**Inner Pri/VID**	Indicates Priotity/VID
	Inner TPID	Indicates Inner TPID
	Ethertype	Indicates ETHERTYPE
Treatment	**Operation**	Indicates Operation
	(ID) Service	Indicates service by ID (number and Name Identifier
	Priority	Indicates Priority
	TPID	Indicates TPID

Table 7-391: "show" command output table parameters

7.6.17.6.6.4.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-392: "showconfig" command information

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> showconfig ?

Usage:
  SHOWCONFIG               Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID                 Identifies an ONU by ID, in this context.
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-432: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.7 "ptp-source" sub-node

7.6.17.6.7.1 "availableValues" command

Name	availableValues
Description	Show the available values for argument 'add-onu-port'.
Full path	/remote-eq/onu/ptp-source/availableValues
Mandatory Parameters	No
Screen Output	Command not implemented.

Table 7-393: "availableValues" command information

```
/cli/remote-eq/onu/ptp-source> availableValues ?

Usage:
  AVAILABLEVALUES   Show the available values for argument 'add-onu-port'.

   [OPTIONAL]
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-433: CLI on line help on "availableValues" command usage in this node context

7.6.17.6.7.2 "config" command

Name	config
Description	Configure one ONU PTP source instance parameters.
Full path	/remote-eq/onu/ptp-source/config
Mandatory Parameters	--olt-ptp-port-ID
Screen Output	No

Table 7-394: "config" command information

```
/cli/remote-eq/onu/ptp-source> config ?

Usage:
  CONFIG              Configure one ONU PTP source instance parameters.

   <MANDATORY>
   --olt-ptp-port-ID  Identify one OLT PTP port instance by ID.

   [OPTIONAL]
   --add-onu-port     Attach an ONU interface to an ONU service. See available values by
                      executing the command 'availableValues'.
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--uni-ctag            VLAN ID delivered/received from the (Ethernet) subscriber-facing
                      interface at the ONU. (1..4094)
```

Figure 7-434: CLI on line help on "config" command usage in this node context

7.6.17.6.7.3 "create" command

Name	create
Description	Create a new PTP source instance on a given ONU, and associate it with an existing OLT PTP port.
Full path	/remote-eq/onu/ptp-source/create
Mandatory Parameters	--olt-ptp-port-ID
Screen Output	No

Table 7-395: "create" command information

```
/cli/remote-eq/onu/ptp-source> create ?

Usage:
  CREATE              Create a new PTP source instance on a given ONU, and associate it
                      with an existing OLT PTP port.

   <MANDATORY>
   --olt-ptp-port-ID  Identify one OLT PTP port instance by ID.

   [OPTIONAL]
   --add-onu-port     Attach an ONU interface to an ONU service. See available values by
                      executing the command 'availableValues'.
   --admin            Administrative State. Enable/disable, in this context.
                      (enable|disable)
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--uni-ctag            VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface             at the ONU. (1..4094)
```

Figure 7-435: CLI on line help on "create" command usage in this node context

7.6.17.6.7.4 "remove" command

Name	remove
Description	Remove an ONU PTP source instance on a given ONU
Full path	/profiles/ voip/server/remove
Mandatory Parameters	--olt-ptp-port-ID
Screen Output	No

Table 7-396: "remove" command information

```
/cli/remote-eq/onu/ptp-source> remove ?

Usage:
  REMOVE              Remove

   <MANDATORY>
   --olt-ptp-port-ID  Identify one OLT PTP port instance by ID.
```

Figure 7-436: CLI on line help on "remove" command usage in this node context

7.6.17.6.7.5 "show" command

Name	show
Description	Show PTP source instances on this ONU.
Full path	/remote-eq/onu/ptp-source/show
Mandatory Parameters	This command has no parameters
Screen Output	Command not implemented.

Table 7-397: "show" command information

```
/cli/remote-eq/onu/ptp-source> show ?

Usage:
  SHOW            Show PTP source instances on this ONU.
```

Figure 7-437: CLI on line help on "show" command usage in this node context

7.6.17.6.8 "services" sub-node

7.6.17.6.8.1 "add" command

Name	add
Description	Add an OLT service to a specific ONU.
Full path	/remote-eq/onu/services/add
Mandatory Parameters	--name --serviceID
Screen Output	No

Table 7-398: "add " command information

```
/cli/remote-eq/onu/services> add ?

Usage ADD:
  ADD                          Add an OLT service to a specific ONU.

   <MANDATORY>
   --name                      Define a name for the ONU Client Service. (STRING 65)
   --serviceID                 Select an OLT service by ID.

   [OPTIONAL]
   --add-onu-port              Attach an ONU interface to an ONU service. See available values
                               by executing the command 'availableValues'.
   --admin                     Administrative State. Enable/disable, in this context.
                               (enable|disable)
   --dhcp-op18                 DHCP Op.18 flag
   --dhcp-op37                 DHCP Op.37 flag
   --dhcp-op82                 DHCP Op.82 flag
   --encryption                Enable or disable encryption.
   --ethernet-profileID        View available Ethernet profile IDs in /profiles/ethernet (use
                               zero for no profile)
   --igmp                      IGMP (enable|disable)
   --ip-mgmt                   If enabled, use this service for IP management of the ONU
                               (enable|disable)
   --mac-limit                 Specifies the maximum number of MAC addresses allowed for a
                               given client service (unlimited or 1..99)
   --max-bandwidth             Set the multicast group maximum bandwidth in Kbps (unlimited or
                               0..100000000)
   --max-groups                Set the maximum number of multicast groups (unlimited or
                               0..16384)
   --nativeVlan                All traffic through the client port will be untagged, upstream
                               and downstream. (enable|disable)
   --nni-ctag                  Inner VLAN ID (client) on the network-facing (Ethernet)
                               interface. (1..4094)
   --onuID                     Identifies an ONU by ID, in this context.
   --pbits-to-pq-profile-id    Specify an existing P-bits to Priority Queue Profile
   --port                      Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --remoteID                  Remote ID field added to DHCP packets in DHCPop.82 enabled
                               services. (STRING 63)
   --serviceID-onu             Choose a ONU service by ID.
   --uni-ctag                  VLAN ID delivered/received from the (Ethernet) subscriber-
                               facing interface at the ONU. (1..4094)
   --upstream-dba-profile-id   (mandatory for non-multicast services) View available Upstream
                               DBA profile IDs in /profiles/upstream-dba
   --use-global-dhcp-ops       Use the DHCP options defined in the OLT global service.
                               (enable|disable)
```

Figure 7-438: CLI on line help on "add" command usage in this node context

7.6.17.6.8.2 "availableValues" command

Name	availableValues
Description	Show the available values for argument 'remote-port'
Full path	/profiles/voip/server/ availableValues
Mandatory Parameters	No
Screen Output	Table, Figure 7-440.Table parameters description in Table 7-400.

Table 7-399: "availableValues " command information

```
/cli/remote-eq/onu/services> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for argument 'remote-port'.

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-439: CLI on line help on "availableValues" command usage in this node context

```
/cli> remote-eq/onu/services/availableValues --port=pon.1 --onuID=1

Available Values for arguments 'add-onu-port and 'del-onu-port':
+--------------------------+
|Remote ONU Interface List|
+--------------------------+
|Eth 1                     |
|Eth 2                     |
|Eth 3                     |
|Eth 4                     |
|VEIP 1                    |
+--------------------------+
```

Figure 7-440: "availableValues" command in this node context

Parameter	Description
Remote ONU Interface List	Lists the available interfaces on the Remote ONU

Table 7-400: availableValues command - output table parameters

7.6.17.6.8.3 "config" command

Name	config
Description	Configure/activate an existing service on this ONU.
Full path	/remote-eq/onu/services/config
Mandatory Parameters	--serviceID-onu
Screen Output	No

Table 7-401:"config" command information

```
/cli/remote-eq/onu/services> config ?

Usage CONFIG:
  CONFIG                        Configure/activate an existing service on this ONU.

   <MANDATORY>
   --serviceID-onu              Choose a ONU service by ID.

   [OPTIONAL]
   --add-onu-port               Attach an ONU interface to an ONU service. See available
                                values by executing the command 'availableValues'.
   --admin                      Administrative State. Enable/disable, in this context.
                                (enable|disable)
   --del-onu-port               Remove an ONU interface from an ONU service. See available
                                values by executing the command 'availableValues'.
   --dhcp-op18                  DHCP Op.18 flag
   --dhcp-op37                  DHCP Op.37 flag
   --dhcp-op82                  DHCP Op.82 flag
   --encryption                 Enable or disable encryption.
   --ethernet-profileID         View available Ethernet profile IDs in /profiles/ethernet (use
                                zero for no profile)
   --igmp                       IGMP (enable|disable)
   --ip-mgmt                    If enabled, use this service for IP management of the ONU
                                (enable|disable)
   --mac-limit                  Specifies the maximum number of MAC addresses allowed for a
                                given client service (unlimited or 1..99)
   --max-bandwidth              Set the multicast group maximum bandwidth in Kbps (unlimited
                                or 0..100000000)
   --max-groups                 Set the maximum number of multicast groups (unlimited or
                                0..16384)
   --name                       Define a name for the ONU Client Service. (STRING 65)
   --nativeVlan                 All traffic through the client port will be untagged, upstream
                                and downstream. (enable|disable)
   --nni-ctag                   Inner VLAN ID (client) on the network-facing (Ethernet)
                                interface. (1..4094)
   --onuID                      Identifies an ONU by ID, in this context.
   --pbits-to-pq-profile-id     Specify an existing P-bits to Priority Queue Profile
   --port                       Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                                lag.1)
   --remoteID                   Remote ID field added to DHCP packets in DHCPop.82 enabled
                                services. (STRING 63)
   --serviceID                  Select an OLT service by ID.
   --uni-ctag                   VLAN ID delivered/received from the (Ethernet) subscriber-
                                facing interface at the ONU. (1..4094)
   --upstream-dba-profile-id    (mandatory for non-multicast services) View available
                                Upstream DBA profile IDs in /profiles/upstream-dba
   --use-global-dhcp-ops        Use the DHCP options defined in the OLT global service.
                                (enable|disable)
```

Figure 7-441: CLI on line help on "config" command usage in this node context

7.6.17.6.8.4 "remove" command

Name	remove
Description	Remove a service from a specific ONU.
Full path	/remote-eq/onu/services/remove
Mandatory Parameters	--serviceID-onu
Screen Output	No

Table 7-402: "remove" command information

```
/cli/remote-eq/onu/services> remove ?

Usage:
  REMOVE          Remove a service from a specific ONU.

   <MANDATORY>
   --serviceID-onuChoose a ONU service by ID.

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-442: CLI on line help on "remove" command usage in this node context

7.6.17.6.8.5 "show" command

Name	show
Description	Show Services information on this ONU. Give a service ID to see the full information for that service.
Full path	/remote-eq/onu/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-444 and. Figure 7-445. Tables' parameters description in Table 7-404 andTable 7-405.

Table 7-403: "show" command information

```
/cli/remote-eq/onu/services> show ?

Usage:
  SHOW                Show Services information on this ONU. Give a service ID to see
                      the full information for that service.

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-onu    Choose a ONU service by ID.
```

Figure 7-443: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/services> show
+----------------------+
|Remote ONU Connected   |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
|1    |PON 1     |1     |
+-----+----------+------+
+-------------------------------------------------------------------------------------------------------------------------------------------------+
|Remote ONU Service List                                                                                                                          |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
|ID |Admin   |ONU Service Name    |(ID) OLT Service-Name|Upstream DBA Profile|Ethernet Profile|NNI-CTAG|Native  |Encryp. |UNI-CTAG|IP mgmt   |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
|1  |enable  |Id 1                |(19) ID 19          |(1) FIXED_2M        |(0) No Profile  |500     |disable |enable  |151     |disable   |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
/cli/remote-eq/onu/services>
```

Figure 7-444: Output of "show" command in this node context

```
/cli/remote-eq/onu/services> show --serviceID-onu=1
+-----------------------+
|Remote ONU Connected   |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
|1    |PON 1     |1     |
+-----+----------+------+
+-------------------------------------------------------------------------------------------------+
|Remote ONU Service -- (1) Id 1                                                                   |
+-------------------------+-----------------------------------------------------------------------+
|Parameter                |Value                                                                  |
+-------------------------+-----------------------------------------------------------------------+
|ID                       |1                                                                      |
|Admin                    |enable                                                                 |
|Name                     |Id 1                                                                   |
|OLT (ID)Service-Name     |(19) ID 19                                                             |
|Upstream DBA Profile     |(1) FIXED_2M                                                           |
|Ethernet Profile         |(0) No Profile                                                         |
|NNI-CTAG                 |500                                                                    |
|Native                   |disable                                                                |
|Encryption               |enable                                                                 |
|UNI-CTAG                 |151                                                                    |
|IP Mgmt                  |disabled                                                               |
|Number of MACs           |--                                                                     |
|ONU Ports Attached       |Eth 1                                                                  |
+-------------------------+-----------------------------------------------------------------------+
/cli/remote-eq/onu/services>
```

Figure 7-445: Output of "show" command with argument –serviceID-onu in this node context

Parameter	Description
ID	Identifies a table entry(Service) by ID
Admin	Indicates ONU service administrative state
Name	Identifies ONU service by name
OLT (ID) Service Name	Identifies an OLT service by ID and Name
Upstream DBA Profile	Indicates the upstream profile associated to the service by ID and name
Ethernet Profile	Indicates the Ethernet profile associated to the service by ID and name
P-bits to P-Queue Profile	Indicates the P-bits to P-Queue profile associated to the service.
NNI-CTAG	Indicates the client vlan used in the service
Native	Indicates if the Native service is active. It's only possible to have a single Native service by ONU port. In case this service is untagged in the client port, this option must be active.
Encryp.	Indicates if the encryptation is enabled
UNI-CTAG	Indicates the vlan delivered/received to/from the ONU
IP mgmt	Indicates if IP management is enabled

Table 7-404: "show" command output table parameters

Parameter	Description
ID	Identifies a table entry(Service) by ID
Admin	Indicates ONU service administrative state
ONU Service Name	Identifies ONU service by name
(ID) OLT Service-Name	Identifies an OLT service by ID and Name
Upstream DBA Profile	Indicates the upstream profile associated to the service by ID and name
Ethernet Profile	Indicates the Ethernet profile associated to the service by ID and name
NNI-CTAG	Indicates the client vlan used in the service
Native	Indicates if the Native service is active. It's only possible to have a Native service by ONU port. In case this service is untagged in the client port, this option must be active.
Encryp.	Indicates if the encryptation is enabled
UNI-CTAG	Indicates the vlan delivered/received to/from the ONU
IP mgmt	Indicates if IP management is enabled
Number of MACs	Indicates the configured maximum number of MAC addresses allowed for a given client service (unlimited or 1..99)
ONU Ports Attached	Indicates ONU Ports attached

Table 7-405: "show" command with agument serviceID-onu output table parameters

7.6.17.6.8.6 "t-cont-mapping" sub-node

7.6.17.6.8.6.1 "config" command

Name	config
Description	Configure an association of a specific Priority Queue from a service to a T-CON
Full path	/remote-eq/onu/services/t-cont-mapping/config
Mandatory Parameters	--p-queue --serviceID-onu
Screen Output	No

Table 7-406:"config" command information

```
/cli/remote-eq/onu/services/t-cont-mapping> config ?

Usage CONFIG:
  CONFIG                  Configure an association of a specific Priority Queue from a
                          service to a T-CONT..

   <MANDATORY>
   --p-queue              Specify the Priority Queue (0..7)
   --serviceID-onu        Choose a ONU service by ID.

   [OPTIONAL]
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --t-cont-id            Specify an existing T-CONT (0 for none)
```

Figure 7-446: CLI on line help on "config" command usage in this node context

7.6.17.6.8.6.2 "show" command

Name	show
Description	Show T-CONT information on this ONU
Full path	/remote-eq/onu/services/t-cont-mapping/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-448. Tables parameters description in Table 7-408.

Table 7-407: "show" command information

```
/cli/remote-eq/onu/services/t-cont-mapping> show ?

Usage:
  SHOW                  Show T-CONT information on this ONU.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-onu      Choose a ONU service by ID.
```

Figure 7-447: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/services/t-cont-mapping> show --port=pon.1 --onuID=1
+-----------------------------------------------------------------------------------------------+
|ONU Service to T-CONT associations                                                             |
+--------------------------------------+-------+--------------+-----------------------------------+
|ONU Service ID                        |P-Queue|P-bits        |T-CONT (Upstream Profile)          |
+--------------------------------------+-------+--------------+-----------------------------------+
+--------------------------------------+-------+--------------+-----------------------------------+
```

Figure 7-448: Output of "show" command in this node context

Parameter	Description
ONU Service ID	Identifies an ONU Service by ID
P-Queue	Indicates Service P-Queue
P-bits	Indicates used P-bits
T-CONT (Upstream Profile)	Indicates used T-CONT

Table 7-408: "show" command output table parameters

7.6.17.6.8.6.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/services/t-cont-mapping/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-409: "showconfig" command information

```
/cli/remote-eq/onu/services/t-cont-mapping> showconfig ?

Usage:
  SHOWCONFIG        Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-449: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.9 "system" sub-node

7.6.17.6.9.1 "config" command

Name	config
Description	Configures system information for the specified ONU
Full path	/remote-eq/onu/system/config
Mandatory Parameters	No
Screen Output	No

Table 7-410: "config" command information

```
/cli/remote-eq/onu/system> config ?

Usage:
  CONFIG              Configure

   [OPTIONAL]
   --contact          Set contact information as appropriate
   --description      Set a description, in this context.
   --location         Set the system location as appropriate
   --name             Insert a name STRING.
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-450: CLI on line help on "config" command usage in this node context

7.6.17.6.9.2 "show" command

Name	show
Description	Show the current configuration
Full path	/ remote-eq/onu/system/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-452. Table parameters description in Table 7-412.

Table 7-411: "show" command information

```
/cli/remote-eq/onu/system> show ?

Usage:
  SHOW            Show the current configuration

   [OPTIONAL]
   --onuID         Identifies an ONU by ID, in this context.
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-451: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/system> show
+-----------------------+
|Remote ONU Connected   |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
|1    |PON 1     |1     |
+-----+----------+------+
+-------------------------------------------------------------------------------------------------+
|System Parameters                                                                                |
+-------------------------+-----------------------------------------------------------------------+
|Parameter                |Value                                                                  |
+-------------------------+-----------------------------------------------------------------------+
|Equipment Name           |ONU 1.1.1                                                              |
|Description              |ONU 1.1.1                                                              |
|Serial Number            |5054494E1DCEEBDA                                                       |
|Contact                  |                                                                       |
|Location                 |                                                                       |
+-------------------------+-----------------------------------------------------------------------+
|Date on equipment        |2014/08/29                                                             |
|Time on equipment        |16:50:32                                                               |
+-------------------------+-----------------------------------------------------------------------+
|HW Version               |ONTRGW1214A002                                                         |
|Administrative Status    |Not registered                                                         |
|Model                    |GR2417G                                                                |
+-------------------------+-----------------------------------------------------------------------+
/cli/remote-eq/onu/system>
```

Figure 7-452: Output of "show" command in this node context

Parameter	Description
Equipment Name	Indicates the equipment name
Description	Brief description of the equipment
Serial Number	Indicates the ONU serial number
Contact	Indicates the entity responsible for this equipment
Location	Indicates the equipment location
Date on equipment	Indicates the date on the equipment
Time on the equipment	Indicates the time on the equipment
HW Version	Indicates the equipment hardware version
Administrative Status	Indicates the equipment administrative state
Model	Indicates ONU model

Table 7-412: "show" command output table parameters

7.6.17.6.9.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/system/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-413: "showconfig" command information

```
/cli/remote-eq/onu/system> showconfig ?

Usage:
  SHOWCONFIG           Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-453: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.10 "t-cont" sub-node

7.6.17.6.10.1 "config" command

Name	config
Description	Configure/activate an existing T-CONT on this ONU.
Full path	/remote-eq/onu/t-cont/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-414: "config" command information

```
/cli/remote-eq/onu/t-cont> config ?

Usage:
  CONFIG                        Configure/activate an existing T-CONT on this ONU.

   <MANDATORY>
   --ID                         Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                      Administrative State. Enable/disable, in this context.
                                (enable|disable)
   --onuID                      Identifies an ONU by ID, in this context.
   --port                       Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                                lag.1)
   --upstream-dba-profile-id    View available Upstream DBA profile IDs in /profiles/
                                upstream-dba
```

Figure 7-454: CLI on line help on "config" command usage in this node context

7.6.17.6.10.2 "create" command

Name	create
Description	Add a T-CONT to a specific ONU.
Full path	/remote-eq/onu/t-cont/create
Mandatory Parameters	No
Screen Output	No

Table 7-415: "create" command information

```
/cli/remote-eq/onu/t-cont> create ?

Usage:
  CREATE                          Add a T-CONT to a specific ONU.

   [OPTIONAL]
   --ID                           Identifies a table entry by ID, in this context.
   --admin                        Administrative State. Enable/disable, in this context.
                                  (enable|disable)
   --onuID                        Identifies an ONU by ID, in this context.
   --port                         Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                                  lag.1)
    --upstream-dba-profile-id     View available Upstream DBA profile IDs in /profiles/
                                  upstream-dba
```

Figure 7-455: CLI on line help on "create" command usage in this node context

7.6.17.6.10.3 "remove" command

Name	remove
Description	Remove a T-CONT from a specific ONU.
Full path	/remote-eq/onu/t-cont/remove
Mandatory Parameters	No
Screen Output	No

Table 7-416: "remove" command information

```
/cli/remote-eq/onu/t-cont> remove ?

Usage:
  REMOVE            Remove a T-CONT from a specific ONU.

   [OPTIONAL]
   --ID             Identifies a table entry by ID, in this context.
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-456: CLI on line help on "remove" command usage in this node context

7.6.17.6.10.4 "show" command

Name	show
Description	Show T-CONT information on this ONU.
Full path	/remote-eq/onu/t-cont/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-458. Table parameters description in Table 7-418..

Table 7-417: "show" command information

```
/cli/remote-eq/onu/t-cont> show ?

Usage:
  SHOW                Show T-CONT information on this ONU.

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-457: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/t-cont> show --onuID=1 --port=pon.1 --slot=9
+----------------------------------+
|ONU T-CONT List                   |
+---+---------+--------------------+
|ID |Admin    |Upstream DBA Profile|
+---+---------+--------------------+
+---+---------+--------------------+
```

Figure 7-458: show command - output in this node context

Parameter	Description
ID	Table entry numeric Identifier
Admin	Indicates administrative state
Upstream DBA profile	Indicates upstream profile

Table 7-418: "show" command output table parameters

7.6.17.6.10.4.1 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/t-cont/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-419: "showconfig" command information

```
/cli/remote-eq/onu/t-cont> showconfig ?

Usage:
  SHOWCONFIG           Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID             Identifies an ONU by ID, in this context.
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-459: CLI on line help on "showconfig" command usage in this node contex

7.6.17.6.11 "voip" sub- node

7.6.17.6.11.1 "config" command

Name	config
Description	Configure a remote ONU VoIP interface
Full path	/remote-eq/onu/voip/config
Mandatory Parameters	--onu-voip-port
Screen Output	No

Table 7-420: "config" command information

```
/cli/remote-eq/onu/voip> config ?

Usage:
  CONFIG                          Configure a remote ONU VoIP interface

   <MANDATORY>
   --onu-voip-port                Identifies the VoIP port to be configured. (e.g voip.1)

   [OPTIONAL]
   --admin                        Administrative State. Enable/disable, in this context.
                                  (enable|disable)
   --client-ip                    VoIP client IP address. If the value is 0.0.0.0, the IP
                                  address will be         obtained by DHCP.
   --ftp-passwd                   User password to login in the FTP server to get the XML
                                  file with the    VoIP client configuration
   --ftp-username                 User name to login in the FTP server to get the XML file
                                  with the VoIP   client configuration
   --hold-over-time               Time during which POTS loop voltage is held up when the
                                  ONU is not      ranged on the GPON.
   --ip-mask                      IP Network Mask.
   --onuID                        Identifies an ONU by ID, in this context.
   --port                         Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
                                  lag.1)
   --remote-file                  This is the .xml file that contains the client
                                  configuration (e.g. supported   codecs, number, etc)
   --rx-gain                      Specifies the receiver gain (dB) (-12..6)
   --specific-profile             Identifies a VoIP specific profile by ID (manage profiles in
                                  '/profiles/voip/specific-profiles/' node)
   --termination-id               Used for MEGACO(H.248) to identify the line termination
   --tx-gain                      Specifies the transmitter gain (dB) (-12..6)
   --voip-profile                 Identifies a VoIP profile by ID (manage profiles in '/
                                  profiles/voip/' node)
```

Figure 7-460: CLI on line help on "config" command usage in this node context

7.6.17.6.11.2 "show" command

Name	show
Description	Show the current configuration
Full path	/remote-eq/onu/voip/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-462. Table parameters description inTable 7-422.

Table 7-:421 "show" command information

```
/cli/remote-eq/onu/voip> show ?

Usage:
  SHOW                Show the current VoIP interface configuration.

   [OPTIONAL]
   --onu-voip-port    Identifies the VoIP port to be configured. (e.g. voip.1)
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-461: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/voip> show --port=pon.1 --onuID=1
+-------------------------------------------------------------------------------+
|VoIP Interfaces                                                                |
+----------+----------+--------------------+---------------+---------------+
|VoIP Port |Admin     |Hold Over Time (s)  |Gain Rx (dB)   |Gain Tx (dB)   |
+----------+----------+--------------------+---------------+---------------+
|voip.1    |disable   |0                   |0.00           |0.00           |
|voip.2    |disable   |0                   |0.00           |0.00           |
+----------+----------+--------------------+---------------+---------------+
```

Figure 7-462: Output of "show" command in this node context

Name	Description
VoIP Port	Port Identifier
Admin	Indicates administrative state
Hold Over Time (s)	Indicates the time during which POTS loop voltage is held up when the ONU is not ranged on the PON. When the ONU ranges successfully on the PON, it restores POTS loop voltage immediately and reset the timer
Gain Rx (dB)	Indicates the specified receiver gain (-12.0…+6 dBm)
Gain Tx (dB)	Indicates the specified transmitter gain (-12.0…+6 dBm)

Table 7-422: "show" command output table parameters

7.6.17.6.11.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/voip/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-423: "showconfig" command information

```
/cli/remote-eq/onu/voip> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG               Print the command list that enforces the current configuration

   [OPTIONAL]
   --onu-voip-port         Identifies the VoIP port to be configured. (e.g voip.1)
   --onuID                 Identifies an ONU by ID, in this context.
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-463: CLI on line help on "showconfig" command usage in this node contex

7.6.17.7 "statistics" sub-node

7.6.17.7.1 "fec" sub-node

7.6.17.7.1.1 "show" command

Name	show
Description	Show FEC statistics in the upstream direction
Full path	/remote-eq/statistics/fec/show
Mandatory Parameters	No
Screen Output	Table.

Table 7-424: "show" command information

```
/cli/remote-eq/statistics/fec> show ?

Usage:
  SHOW            Show FEC statistics in the upstream direction

   [OPTIONAL]
   --onuID         Identifies an ONU by ID, in this context.
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-464: CLI on line help on "show" command usage in this node context

7.6.17.8 "status" sub-node

7.6.17.8.1 "show" command

This command displays status information on all the parameters for the specified ONU:

- Ethernet Status Table
- Analog RF Status Table
- GPON Status Table
- Service Status Table
- Firmware Status Table

Name	show
Description	Show status information on all the parameters for the specified ONU
Full path	/ remote-eq/status/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-466. Tables parameters description in Table 7-426 to Table 7-431

Table 7-425: "show" command information

```
/cli/remote-eq/status> show ?

Usage:
  SHOW            Show

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-465: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status> show --port=pon.1 --onuID=1

+-----------------------------------------------------+
|Ethernet Status (Slot:1 Port:'PON 1' ONU ID:1)       |
+-----------+-------+-------------------------+------+
|Remote Port|Admin  |Type                     |Link  |
+-----------+-------+-------------------------+------+
|Eth 1      |enable |--                       |Not OK|
|Eth 2      |enable |--                       |Not OK|
|Eth 3      |enable |--                       |Not OK|
|Eth 4      |enable |1000 BASE T FULL         |OK    |
+-----------+-------+-------------------------+------+

+-----------------------------------------------+
|Analog RF Status (Slot:1 Port:'PON 1' ONU ID:1)|
+----------+-------+-----------------------------+
|Port      |Admin  |State                        |
+----------+-------+-----------------------------+
+----------+-------+-----------------------------+

+-----------------------------------------------------------------------------------------------------------+
|GPON Status (Slot:1 Port:'PON 1' ONU ID:1)                                                                 |
+----------+--------------------+--------------------+--------------------+--------------------+-----------+
|Port      |Rx Power 1550nm (dbm)|Rx Power 1490nm (dbm)|Tx Power 1310nm (dbm)|Temperature (C)     |Distance (Km)|
+----------+--------------------+--------------------+--------------------+--------------------+-----------+
|Pon 1     |--                  |-19.00              |2.70                |33.00               |0.00       |
+----------+--------------------+--------------------+--------------------+--------------------+-----------+

+-----------------------------------------------+
|Services Status (Slot:1 Port:'PON 1' ONU ID:1) |
+-----------------------------------------+-----+
|(ID) ONU Service Name                    |Admin|
+-----------------------------------------+-----+
|(1) Id 1                                 |enable|
+-----------------------------------------+-----+

+-----------------------------------------------------------------------------------+
|Firmware Status (Slot:1 Port:'PON 1' ONU ID:1)                                     |
+------------+----------------------------------------------------------------------+
|Parameter   |Value                                                                 |
+------------+----------------------------------------------------------------------+
|Image 0     |                                                                      |
|   Active   |Yes                                                                   |
|   Committed|Yes                                                                   |
|   Valid    |Yes                                                                   |
|   Version  |3RGW030201r087                                                        |
|Image 1     |                                                                      |
|   Active   |No                                                                    |
|   Committed|No                                                                    |
|   Valid    |Yes                                                                   |
|   Version  |3RGW030200r082                                                        |
+------------+----------------------------------------------------------------------+
|Maintenance | --                                                                   |
+------------+----------------------------------------------------------------------+
|Alarms      |                                                                      |
+------------+----------------------------------------------------------------------+
```

Figure 7-466: "show" command output in this node context

Parameter	Description
Remote Port	Indicates the Ethernet port at the ONU
Admin	Indicates the Administrative state
Type	Indicates the link speed and duplex
Link	Indicates the physical port state.

Table 7-426: "show" command output table parameters –Ethernet Status table

Parameter	Description
Port	Indicates the ONU Analog RF port
Admin	Indicates the administrative state
State	Indicates the port operational state

Table 7-427: "show" command output tables parameters –Analog RF Status table

Parameter	Description
Port	Indicates the ONU GPON port
Rx Power 1550nm (dBm)	Indicates the 1550 nm Received Optical Power in dBm
Tx Power 1490nm (dBm)	Indicates the 1490 nm Received Optical Power in dBm
Tx Power 1310nm (dBm)	Indicates the 1310 nm Transmitted Optical Power in dBm
Temperature (ºC)	Indicates the ONU Temperature in ºC
Distance (Km)	Indicates the ONU distance in Km

Table 7-428: "show" command output tables parameters –GPON Status table

Parameter	Description
(ID) ONT Service Name	Indicates the ONU service by ID and name
Admin	Indicates the ONU service administrative state

Table 7-429: show command – Services output table parameters

Parameter	Description
Image 0/1	Indicates the Image name
Active	Indicates which of the images is active
Committed	Indicates which of the images is active after a reboot
Valid	Indicates if the SW/FW version is Valid
Version	Indicates the SW/FW version name

Table 7-430: "show" command output tables parameters –Firmware Status table

Parameter	Description
Maintenance	Indicates if ONU is in maintenace
Alarms	Indicates alarms if existing

Table 7-431: "show" command output tables parameters –Maintenance and Alarms status

7.6.17.8.2 "ethernet" sub-node

7.6.17.8.2.1 "statistics" sub-node

7.6.17.8.2.1.1 "show" command

Name	show
Description	Show ethernet statistics
Full path	/remote-eq/status/ethernet/statistics/show
Mandatory Parameters	--remote-port
Screen Output	Table, Figure 7-468. Table parameters description in Table 7-433

Table 7-32: "show" command information

```
/cli/remote-eq/status/ethernet/statistics> show ?

Usage:
  SHOW                Show ethernet statistics

   <MANDATORY>
   --remote-port      Identifies an interface on a remote device.

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-467: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/ethernet/statistics> show --port=pon.1 --onuID=1 --remote-port=eth.1
+-------------------------------------------------------------------------------+
|Ethernet Statistics for Slot:1 Port:'PON 1' ONU-ID:0 -- interface:'Eth 1')     |
+-------------------------+-----------------------------+-----------------------+
|Parameter                |Rx                           |Tx                     |
+-------------------------+--------------+--------------+---------------+-------+
|                         |Total         |Partial       |Total          |Partial|
+-------------------------+--------------+--------------+---------------+-------+
|Drop Events              |0             |0             |0              |0      |
|Octets                   |0             |0             |0              |0      |
|Packets                  |0             |0             |0              |0      |
|Unicast Packets          |0             |0             |0              |0      |
|Broadcast Packets        |0             |0             |0              |0      |
|Multicast Packets        |0             |0             |0              |0      |
|CRC Align Errors         |0             |0             |-              |-      |
|Undersize Packets        |0             |0             |-              |-      |
|Oversize Packet          |0             |0             |0              |0      |
|Fragments                |0             |0             |-              |-      |
|Jabbers                  |0             |0             |-              |-      |
|Collisions               |-             |-             |0              |0      |
|Buffer Overflows         |0             |0             |0              |0      |
|Packets     64    Octets |0             |0             |0              |0      |
|Packets   65-127  Octets |0             |0             |0              |0      |
|Packets  128-255  Octets |0             |0             |0              |0      |
|Packets  256-511  Octets |0             |0             |0              |0      |
|Packets  512-1023 Octets |0             |0             |0              |0      |
|Packets   >=1024  Octets |0             |0             |0              |0      |
+-------------------------+--------------+--------------+---------------+-------+
qPress 'q' to quit or 'r' to reset
```

Figure 7-468: Output of "show" command in this node context

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Unicast Packets	Number of Unicast Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes
Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 256-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1024 Octets	Number of packets with size equal to or higher than 1024 bytes

Table 7-433: show command – output table parameters

7.6.17.8.3 "firmware" sub-node

This sub-node allows the manual management of the firmware that is active in a specific ONU.

For bulk operations on firmware versions, the node **/applications/firmware-upgrade** should be used.

7.6.17.8.3.1 "activate" command

Name	activate
Description	Forces an ONU to reboot and startup with the specified image.
Full path	/ remote-eq/status/firmware/activate
Mandatory Parameters	--imageID
Screen Output	No

Table 7-434: "activate" command information

```
/cli/remote-eq/status/firmware> activate ?

Usage:
  ACTIVATE        Forces an ONU to reboot and startup with the specified image.

   <MANDATORY>
   --imageID      Identify an image by ID (0|1)

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-469: CLI on line help on "activate" command usage in this node context

7.6.17.8.3.2 "commit" command

Name	commit
Description	Indicates which of the images is used after the next reboot.
Full path	/remote-eq/status/firmware/commit
Mandatory Parameters	--imageID
Screen Output	No

Table 7-435: "commit" command information

```
/cli/remote-eq/status/firmware> commit ?

Usage:
  COMMIT          Indicates which of the images is used after the next reboot.

   <MANDATORY>
   --imageID      Identify an image by ID (0|1)

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-470: CLI on line help on "commit" command usage in this node context

7.6.17.8.3.3 "stop-transfer" command

Name	stop-transfer
Description	Stop an ongoing image transfer to a given ONU.
Full path	/remote-eq/status/firmware/stop-transfer
Mandatory Parameters	--imageID
Screen Output	No

Table 7-436: "stop-transfer" command information

```
/cli/remote-eq/status/firmware> stop-transfer ?

Usage:
  STOP-TRANSFER   Stop an ongoing image transfer to a given ONU.

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-471: CLI on line help on "stop-transfer" command usage in this node context

7.6.17.8.4 "gem-port" sub-node

7.6.17.8.4.1 "statistics" sub-node

7.6.17.8.4.1.1 "show" command

Name	show
Description	Show the GEM packet statistics for a given ONU.
Full path	/remote-eq/status/gem-port/statistics/show
Mandatory Parameters	--remote-port
Screen Output	Table, Figure 7-473. Table parameters description in Table 7-438.

Table 7-437: "show" command information

```
/cli/remote-eq/status/gem-port/statistics> show ?

Usage:
  SHOW            Show the GEM packet statistics for a given ONU.

   [OPTIONAL]
   --onuID         Identifies an ONU by ID, in this context.
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-472: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/gem-port/statistics> show --port=pon.1 --onuID=1
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|GEM Port counters                                                                                                                                          |
+-----+--------------------+-----------------------------------+-----------------+-----------------+-----------------+---------------------+
|GEM  |ONU Service Name    |OLT Service                        |Rx Dropped Packets|Packets Received |Blocks Received  |Blocks Transmitted   |
+-----+--------------------+-----------------------------------+-----------------+-----------------+-----------------+---------------------+
|512  |Id 1                |(14)Unicast_200                    |0                |0                |0                |24                   |
+-----+--------------------+-----------------------------------+-----------------+-----------------+-----------------+---------------------+
```

Figure 7-473: Output of "show" command in this node context

Parameter	Description
GEM	Gem Identifier (number)
ONU Service Name	ONU Service identified by name
OLT service	Indicates the OLT service identifier and name
Rx Dropped Packets	Indicates the number of dropped packets
Packets Received	Indicates the number of received packets
Blocks Received	Indicates the number of received GEM blocks
Bocks Transmitted	Indicates the number of transmitted GEM blocks

Table 7-438: "show" command output table parameters

7.6.17.8.5 "services" sub- node

7.6.17.8.5.1 "show" command

Name	show
Description	Show the current configuration.
Full path	/remote-eq/status/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 7-475. Table parameter description in Table 7-440

Table 7-439: "show" command information

```
/cli/remote-eq/status/services> show ?

Usage:
  SHOW            Show the current configuration

   [OPTIONAL]
   --onuID        Identifies an ONU by ID, in this context.
   --port         Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-474: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services> show
+-----------------------+
|Remote ONU Connected   |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
|1    |PON 1     |1     |
+-----+----------+------+
+-------------------------------------------------+
|Services Status (Slot:1 Port:'PON 1' ONU ID:1)   |
+-------------------------------------+-----------+
|(ID) ONU Service Name                |Admin      |
+-------------------------------------+-----------+
|(1) Id 1                             |enable     |
+-------------------------------------+-----------+
/cli/remote-eq/status/services>
```

Figure 7-475: Output of "show" command in this node context

Parameter	Description
(ID) ONU Service Name	Indicates the ONU service identifier and name
Admin	Indicates the ONU service administrative state

Table 7-440: "show" command output table parameters

7.6.17.8.5.2 "active-channels" sub-node

7.6.17.8.5.2.1 "show" command

Name	show
Description	Show the active channels on a given ONU.
Full path	/remote-eq/status/services/active-channels/show
Mandatory Parameters	--serviceID-onu
Screen Output	Tables, Figure 7-477. Table parameter description in Table 7-442.

Table 7-441: "show" command information

```
/cli/remote-eq/status/services/active-channels> show ?

Usage:
  SHOW                Show the active channels on a given ONU.

   <MANDATORY>
   --serviceID-onu    Choose a ONU service by ID.

   [OPTIONAL]
   --onuID            Identifies an ONU by ID, in this context.
   --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-476: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status> services/active-channels/show --serviceID-onu=2 --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------------------------+
|Active Channels on ONU Service: (2) Id 2                               |
+--------------------+--------------------------------------------------+
|Source IP           |IP Address                                        |
+--------------------+--------------------------------------------------+
|0.0.0.0             |236.0.0.2                                         |
+--------------------+--------------------------------------------------+
```

Figure 7-477 : Output of "show" command in this node context

Parameter	Description
Source IP	Indicates active channel Source IP address
IP Address	Indicates active channel IP address

Table 7-442 "show" command output table parameters

7.6.17.8.5.3 statistics" sub-node

7.6.17.8.5.3.1 "counters" sub-node

7.6.17.8.5.3.1.1 "availableValues" command

Name	availableValues
Description	Display all ONU services where counters can be activated
Full path	/remote-eq/status/services/statistics/counters/availableValues
Mandatory Parameters	No
Screen Output	Table, Figure 7-479. Table parameters description in Table 7-444.

Table 7-443: "availableValues" command information

```
/cli/remote-eq/status/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES       Display all ONU services where counters can be activated.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-478: CLI on line help on "availableValues" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> availableValues --onuID=1 --port=pon.1 --slot=9
+---------------------------------------------+
|Services where Counters can be Activated     |
+---------------------------------------------+
|ONU Service (ID) Name                        |
+---------------------------------------------+
|(5) Id 5                                     |
+---------------------------------------------+
```

Figure 7-479: Output of "availableValues" command in this node context

Parameter	Description
ONU Service (ID) Name	Available ONU Service identified by Service ID (number) and Service Name

Table 7-444: "availableValues" command output table parameters

7.6.17.8.5.3.1.2 "show" command

Name	show
Description	Show the statistics for a given ONU service, whose counter has already been activated.
Full path	/remote-eq/status/services/statistics/counters/show
Mandatory Parameters	--serviceID-onu
Screen Output	Table, Figure 7-481, if Service Statistics Counter is active. Table parameters description in Table 7-446.

Table 7-445: "show" command information

```
/cli/remote-eq/status/services/statistics/counters> show ?

Usage:
  SHOW                  Show the statistics for a given ONU service, whose counter has
                        already been activated.

   <MANDATORY>
   --serviceID-onu      Choose a ONU service by ID.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-480: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> show --serviceID-onu=5 --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------------+
|Statistics for ONU Service (5) Id 5                        |
+----------+----------------------+-----------------------+
|          |OLT Eth/LAG Interface|OLT PON Interface      |
+----------+----------+----------+-----------+-----------+
|Parameter |Rx        |Tx        |Rx         |Tx         |
+----------+----------+----------+-----------+-----------+
|Total     |--        |--        |0          |0          |
|Unicast   |--        |--        |0          |0          |
|Multicast |--        |--        |0          |0          |
|Broadcast |--        |--        |0          |0          |
|Dropped   |--        |--        |0          |0          |
+----------+----------+----------+-----------+-----------+
```

Figure 7-481: Output of "show" command in this node context

Parameter	Description
OLT Eth/LAG Interface || OLT PON Interface (Rx/Tx)	OLT Eth/LAG or PON Interface as applicable for the selected Service. Rx/Tx counter values for the applicable interface
Total	Total number of packets
Unicast	Total number of Unicast packets
Multicast	Total number of Multicast packets
Broadcast	Total number of Broadcast packets
Dropped	Total number of Dropped packets

Table 7-446: "show" command output table parameters

7.6.17.8.5.3.1.3 "show-active" command

Name	show-active
Description	Display all active counters.
Full path	/remote-eq/status/services/statistics/counters/show-active
Mandatory Parameters	No
Screen Output	Table, Figure 7-483. Table parameters description in Table 7-448.

Table 7-447: "show-active" command information

```
/cli/remote-eq/status/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active ONU service counters.

   [OPTIONAL]
   --onuID         Identifies an ONU by ID, in this context.
   --port          Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-482: CLI on line help on "show-active" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> show-active --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------+
|Active Counters gathering Services Statistics    |
+-------------------------------------------------+
|ONU Service (ID) Name                            |
+-------------------------------------------------+
|(5) Id 5                                         |
+-------------------------------------------------+
```

Figure 7-483: Output of "show-active" command in this node context

Parameter	Description
ONU Service (ID) Name	Indicates an ONU service by ID and Service Name with active counters gathering service statistics

Table 7-448: "show-active" command output table parameters

7.6.17.8.5.3.1.4 "start" command

Name	start
Description	Activate one statistics counter on the given ONU service.
Full path	/remote-eq/status/services/statistics/counters/start
Mandatory Parameters	--serviceID-onu
Screen Output	No

Table 7-449: "start" command information

```
/cli/remote-eq/status/services/statistics/counters> start ?

Usage:
  START              Activate one statistics counter on the given ONU service.

   <MANDATORY>
   --serviceID-onu   Choose a ONU service by ID.

   [OPTIONAL]
   --onuID           Identifies an ONU by ID, in this context.
   --port            Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-484: CLI on line help on "start" command usage in this node context

7.6.17.8.5.3.1.5 "stop" command

Name	stop
Description	Disable an active counter on the given ONU service.
Full path	/remote-eq/status/services/statistics/counters/stop
Mandatory Parameters	--serviceID-onu
Screen Output	No

Table 7-450: "stop" command information

```
/cli/remote-eq/status/services/statistics/counters> stop ?

Usage:
  STOP                  Disable an active counter on the given ONU service.

   <MANDATORY>
   --serviceID-onu      Select an ONU service by ID.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-485: CLI on line help on "stop" command usage in this node context

7.6.17.8.5.3.2 "dhcp" sub-node

7.6.17.8.5.3.2.1 "show" command

Name	show
Description	Show the DHCP statistics for a given unicast service that has DHCPop82 enabled.
Full path	/remote-eq/status/services/statistics/dhcp/show
Mandatory Parameters	--serviceID-onu
Screen Output	Table, Figure 7-487. Table parameters description in Table 7-452.

Table 7-451: "show" command information

```
/cli/remote-eq/status/services/statistics/dhcp> show ?

Usage:
  SHOW              Show the DHCP statistics for a given unicast service that has DHCPop82
                    enabled.

   <MANDATORY>
   --serviceID-onu  Choose an ONU service by ID.

   [OPTIONAL]
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot           Identifies a slot. (not used for LAG)
```

Figure 7-486: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services> statistics/dhcp/show --serviceID-onu=3 --port=pon.3 --onuID=1
+-------------------------------------------------------------------------------+
|(Slot:1 Port:'PON 3' ONU ID:1) DHCP Statistics on Service: (3) Id 3            |
+-----------------------------------------------------+-----------+-----------+
|Parameter                                            |Rx         |Tx         |
+-----------------------------------------------------+-----------+-----------+
|Valid Packets                                        |18834      |0          |
|Drop                                                 |0          |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Request Without Options                       |18834      |--         |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Server Replies Without Options                       |--         |0          |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Packets Trusted                               |--         |--         |
|Client Packets With Opts Untrusted                   |0          |--         |
|Server Packets Untrusted                             |0          |--         |
|Server Packets Without Opts Trusted                  |--         |--         |
+-----------------------------------------------------+-----------+-----------+
```

Figure 7-487: Output of "show" command in this node context

Parameter	Description
Valid Packets	Indicates the number of transmitted and received valid DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets • **Without Options** • **Option 82** • **Option 37** • **Option 17**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets • **Without Options:** • **Option 82** • **Option 37** • **Option 17**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Pack with Opts Untrusted	Number of dropped packets because they are client requests with options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)
Server Pack without Options Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

Table 7-452: "show" command output table

7.6.17.8.5.3.3 "igmp" sub-node

7.6.17.8.5.3.3.1 "show" command

Name	show
Description	Show the IGMP statistics for a given multicast client service.
Full path	/remote-eq/status/services/statistics/igmp/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-489. Table parameters description in Table 7-454.

Table 7-453: "show" command information

```
/cli/remote-eq/status/services/statistics/igmp> show ?

Usage:
 SHOW                          Show the IGMP statistics for a given multicast service, on this ONU.

  [OPTIONAL]
  --onuID                      Identifies an ONU by ID, in this context.
  --port                       Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-488: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services> statistics/igmp/show --onuID=1 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------------------+
|Remote ONU IGMP Statistics                                                                                                     |
+-----------------------------------+-------------------------------------------------------------+-----------------------------+
|Parameter                          |Rx                                                           |Tx                           |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
|                                   |Total                         |Partial                       |Total         |Partial       |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
|Packets Total                      |0                             |0                             |0             |0             |
|        Dropped                    |0                             |0                             |-             |-             |
|        Valid                      |0                             |0                             |-             |-             |
|        Invalid                    |0                             |0                             |-             |-             |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
|v2      Join                       |0                             |0                             |0             |0             |
|        Invalid Join               |0                             |0                             |-             |-             |
|        Leave                      |0                             |0                             |0             |0             |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
|v3      Membership Report          |0                             |0                             |0             |0             |
|        Invalid Membership Report  |0                             |0                             |-             |-             |
|        To-Include                 |0                             |0                             |0             |0             |
|        To-Exclude                 |0                             |0                             |0             |0             |
|        Is-Include                 |0                             |0                             |0             |0             |
|        Is-Exclude                 |0                             |0                             |0             |0             |
|        Allow                      |0                             |0                             |0             |0             |
|        Block                      |0                             |0                             |0             |0             |
|        Invalid To-Include         |0                             |0                             |-             |-             |
|        Invalid To-Exclude         |0                             |0                             |-             |-             |
|        Invalid Is-Include         |0                             |0                             |-             |-             |
|        Invalid Is-Exclude         |0                             |0                             |-             |-             |
|        Invalid Allow              |0                             |0                             |-             |-             |
|        Invalid Block              |0                             |0                             |-             |-             |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
|Queries General                    |0                             |0                             |0             |0             |
|        Group Specific             |0                             |0                             |0             |0             |
|        Group and Source Specific  |0                             |0                             |0             |0             |
+-----------------------------------+------------------------------+------------------------------+--------------+--------------+
```

Figure 7-489: Output of "show" command in this node context

Parameter	Description
Packets: **Total and Partial counters**	Indicates the number of transmitted and received packets • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2: **Total and Partial counters**	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3: **Total and Partial counters**	Number of Transmitted and Received IGMPv3 packets of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**

Queries: **Total and Partial counters**	Number of transmitted and Received Queries • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

Table 7-454: "show" command output table

7.6.17.8.6 "t-cont" sub-node

7.6.17.8.6.1 "show" command

Name	show
Description	Show the current configuration.
Full path	/remote-eq/status/t-cont/show
Mandatory Parameters	No
Screen Output	Table, Figure 7-491. Table parameters description in Table 7-456.

Table 7-455: "show" command information

```
/cli/remote-eq/status/t-cont> show ?

Usage:
  SHOW              Show the current configuration

   [OPTIONAL]
   --onuID          Identifies an ONU by ID, in this context.
   --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-490: CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/t-cont> show --port=pon.1 --onuID=1
+-----------------------------------------------------------------------------------------------+
|T-CONT (Slot:1 Port:'PON 1' ONU ID:1)                                                          |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
|T-CONT    |ONU Service Name    |P-bits       |GEM    |Priority Queue |ALLOC-ID  |T-CONT ME ID |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
|--        |(1) Id 1            |0            |512    |0              |256       |32768        |
|          |(1) Id 1            |1            |512    |0              |          |             |
|          |(1) Id 1            |2            |512    |0              |          |             |
|          |(1) Id 1            |3            |512    |0              |          |             |
|          |(1) Id 1            |4            |512    |0              |          |             |
|          |(1) Id 1            |5            |512    |0              |          |             |
|          |(1) Id 1            |6            |512    |0              |          |             |
|          |(1) Id 1            |7            |512    |0              |          |             |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
```

Figure 7-491: Output of "show" command in this node context

Parameter	Description
T-CONT	Identifies the T-CONT
ONU Service Name	Indicates Client Service
P-bits	Indicates used priority bits
GEM	Indicates used GEM
Priority Queue	Indicates Used priority queue
ALLOC-ID	Indicates ALLOC-ID
T-CONT ME ID	Indicates T-CONT MEID

Table 7-456: "show" command output table

7.6.18 "routing" node

```
/cli/routing> tree
+ routing[]
   + arp-table[@remove, @status]
   + ipv4-interface[@config, @create, @remove, @show, @showconfig]
   + ping[@create, @remove, @show, @showconfig, @status]
   + route-table[@config, @create, @remove, @show, @showconfig, @status]
   + traceroute[@create, @remove, @show, @showconfig, @status]
```

Figure 7-492: "routing" node tree

7.6.18.1 "arp-table" node

7.6.18.1.1 "remove" command

Name	remove
Description	Remove an existing ARP table.
Full path	/routing/arp-table/remove
Mandatory Parameters	-ip-address
Screen Output	No

Table 7-457: "remove" command information

```
/cli/routing/arp-table> remove ?

Usage REMOVE:
  REMOVE                Remove an existing ARP entry

   <MANDATORY>
   --ip-address         IPv4 address
```

Figure 7-493: CLI on line help on "remove" command usage in this node context

7.6.18.1.2 "status" command

Name	status
Description	Display existing problems with the file repository.
Full path	/routing/arp-table/status
Mandatory Parameters	No parameters
Screen Output	Table, Figure 7-495.Table parameters description in Table 7-459..

Table 7-458: "show" command information

```
/cli/routing/arp-table> status ?

Usage STATUS:
  STATUS            Show the current ARP table status
```

Figure 7-494: CLI on line help on "status" command usage in this node context

```
/cli/routing> arp-table/status
+-------------------------------------------------------------------------------------------------------------------------------+
|ARP Table                                                                                                                      |
+-----------------------------------+-----------------------------------------------+-----------------+----------+-----------+
|(ID) Routing Interface             |IP Address                                     |MAC Address      |Type      |Age        |
+-----------------------------------+-----------------------------------------------+-----------------+----------+-----------+
|(  2) NB_RT_2                      |30.0.0.254                                     |00:06:91:07:CD:5A | Local    | --        |
|(  4) NB_Amora_1                   |173.10.20.31                                   |00:06:91:07:CD:59 | Local    | --        |
|(  5) NB_Amora_2                   |173.10.20.131                                  |00:06:91:07:CD:5A | Local    | --        |
+-----------------------------------+-----------------------------------------------+-----------------+----------+-----------+
```

Figure 7-495: Output of "status" command in this node context

Parameter	Description
(ID) Routing Interface	Routing Interface identificatier
IP Address	IP address of the system for ARP mapping.
MAC Adress	MAC address of the system mapped to the IP address.
Type	Type of ARP entry (LOCAL|Dynamic)
Age	Aging time.tiem during which the MAC Address is active.

Table 7-459: Status command – output table parameters

7.6.18.2 "ipv4-interface" sub-node

7.6.18.2.1 "config" command

Name	config
Description	Configure parameters for an IPv4 routing interface
Full path	/routing/ipv4-interface/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-460: "config" command information

```
/cli/routing/ipv4-interface> config ?

Usage CONFIG:
  CONFIG                          Configure

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                           Administrative State. Enable/disable, in this
context. (enable|disable)
   --ip-address                      IPv4 address
   --mtu                             Interface MTU [68 - 9198].
   --name                            IP interface name. (STRING 31)
   --serviceID                       Select an OLT service by ID.
   --subnet-mask                     IPv4 Subnet Mask
```

Figure 7-496: CLI on line help on "config" command usage in this node context

7.6.18.2.2 "create" command

Name	create
Description	Create a new entity.
Full path	/routing/ipv4-interface/create
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-461: "create" command information

```
/cli/routing/ipv4-interface> create ?

Usage CREATE:
  CREATE                          Create a new entity.

   <MANDATORY>
   --serviceID                       Select an OLT service by ID.

   [OPTIONAL]
   --admin                           Administrative State. Enable/disable, in this
context. (enable|disable)
   --ip-address                      IPv4 address
   --mtu                             Interface MTU [68 - 9198].
   --name                            IP interface name. (STRING 31)
   --subnet-mask                     IPv4 Subnet Mask
```

Figure 7-497: CLI on line help on "create" command usage in this node context

7.6.18.2.3 "remove" command

Name	remove
Description	Remove an existing entity by ID
Full path	/routing/ipv4-interface/remove
Mandatory Parameters	-ID
Screen Output	No

Table 7-462: "remove" command information

```
/cli/routing/ipv4-interface> remove ?

Usage REMOVE:
  REMOVE                  Remove an existing entity by ID.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 7-498: CLI on line help on "remove" command usage in this node context

7.6.18.2.4 "show" command

Name	show
Description	Show the current configuration.
Full path	/routing/ipv4-interface/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 7-500. Table parameters description in Table 7-464.

Table 7-499: CLI on line help on "show" command usage in this node context

```
/cli/routing/ipv4-interface> show ?

Usage SHOW:
  SHOW                            Show the current configuration
```

Figure 7-499: CLI on line help on "show" command usage in this node context

```
cli/routing> ipv4-interface/show
-------------------------------------------------------------------------------------------------------------------------------
IPv4 Interfaces
---+-------+------------------------------+------------------------------------+----------------+----------------+-----
ID |Admin  |Name                          |(ID) Network Service                |IP Address      |Subnet Mask     |MTU
---+-------+------------------------------+------------------------------------+----------------+----------------+-----
1  |enable |Cenas                         |(  1) ID 1                          |20.0.0.254      |255.255.255.0   |1500
2  |enable |NB_RT_2                       |(  2) ID 2                          |30.0.0.254      |255.255.255.0   |2048
3  |disable|NB_RT_3                       |(  3) ID 3                          |40.0.0.254      |255.255.255.0   |2048
4  |enable |NB_Amora_1                    |(  4) ID 4                          |173.10.20.31    |255.255.255.128 |2048
5  |enable |NB_Amora_2                    |(  5) ID 5                          |173.10.20.131   |255.255.255.248 |2048
6  |disable|NB_Amora_3                    |(  6) ID 6                          |173.10.20.139   |255.255.255.248 |2048
---+-------+------------------------------+------------------------------------+----------------+----------------+-----
```

Figure 7-500: Output of "show" command in this node context"

Parameter	Description
ID	IPv4 Interface identifier (number)
Admin	IPv4 Interface administrative state
Name	IPv4 Interface identifier (name)
(ID) Network Service	OLT Network Service Identifier (number) and name
IP Address	IP address of the system for ARP mapping.
Subnet Mask	IPv4 Subnet Mask
MTU	IPv4 Interface MTU (68 to 9198)

Table 7-464: "show" command - output table parameters

7.6.18.2.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/routing/ipv4-interface/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-465: "showconfig" command information

```
/cli/routing/ipv4-interface> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

Figure 7-501: CLI on line help on "showconfig" command usage in this node context

7.6.18.3 "ping" sub-node

7.6.18.3.1 "create" command

Name	create
Description	Create a new ping session.
Full path	/routing/ping/create
Mandatory Parameters	--ip-address
Screen Output	No

Table 7-466: "create" command information

```
/cli/routing/ping> create ?

Usage CREATE:
  CREATE                          Create a new ping session.

   <MANDATORY>
   --ip-address                      IPv4 address

   [OPTIONAL]
   --probe-count                     Number of probes to send. (1..15)
   --probe-interval                  Interval (in seconds) between each probe.
(1..60)
   --probe-size                      Probe size. (0..65507)
```

Figure 7-502: CLI on line help on "create" command usage in this node context

7.6.18.3.2 "remove" command

Name	remove
Description	Remove an existing ping session
Full path	/routing/ping/remove
Mandatory Parameters	-ID
Screen Output	No

Table 7-467: "remove" command information

```
/cli/routing/ping> remove ?

Usage REMOVE:
  REMOVE                          Remove an existing ping session.

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context.
```

Figure 7-503: CLI on line help on "remove" command usage in this node context

7.6.18.3.3 "show" command

Name	show
Description	Show the current ping sessions configuration
Full path	/routing/ping/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 7-505. Table parameters description in Table 7-469.-.

Table 7-468: "show" command information

```
/cli/routing/ping> show ?

Usage SHOW:
  SHOW                            Show the current ping sessions configuration

   [OPTIONAL]
   --ID                              Identifies a table entry by ID, in this context.
```

Figure 7-504: CLI on line help on "show" command usage in this node context

```
/cli/routing/ping> show
+-----------------------------------------------------+
|Ping Sessions                                        |
+---------------------+-------------------------------+
|                     |Probes                         |
+---+-----------------+---------+---------+---------+
|ID |IP Address       |Count    |Size     |Interval |
+---+-----------------+---------+---------+---------+
+---+-----------------+---------+---------+---------+
```

Figure 7-505: Output of "show" command in this node context"

Parameter	Description
ID	Table entry identifier
IP Address	IP address of the system to ping.
Probes	**Count:** Number of packets to send **Size:** Size of packets to send **Interval:** Interval between packets to send

Table 7-469: "show" command - output table parameters

7.6.18.3.4 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/routing/ping/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-470: "showconfig" command information

```
/cli/routing/ping> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                    Print the command list that enforces the current
configuration
```

Figure 7-506: CLI on line help on "showconfig" command usage in this node context

7.6.18.3.5 "status" command

Name	status
Description	Show the current ping sessions status.
Full path	/routing/ping/status
Mandatory Parameters	No
Screen Output	Tables Figure 7-508.Tables parameter description Table 7-472.

Table 7-471: "status" command information

```
/cli/routing/ping> status ?

Usage STATUS:
  STATUS                        Show the current ping sessions status

   [OPTIONAL]
   --ID                            Identifies a table entry by ID, in this context.
```

Figure 7-507: CLI on line help on "status" command usage in this node context

```
/cli/routing/ping> status
+-------------------------------------------------------------------+
|Ping Sessions Status                                               |
+-----------+--------------------------+----------------------+
|           |Probes                    |Round-trip time (us)  |
+---+-------+--------+--------+--------+-------+-------+-------+
|ID |Active |Sent    |Success |Fail    |Min    |Avg    |Max    |
+---+-------+--------+--------+--------+-------+-------+-------+
+---+-------+--------+--------+--------+-------+-------+-------+
```

Figure 7-508: Output of "status" command with no arguments in this node context"

Parameter	Description
ID	Table entry identifier
Active	Flag; enabled if probe active.
Probes	**Send:** Number of sent packets. **Success:** Number of received packets. **Fail:** Number of failled packets.
Round trip time (us)	**Min:** Minimum observed Round trip time **Avg:** Average observed Round trip time **Max:** Maximum observed Round trip time

Table 7-472: "status" command output table parameters

7.6.18.4 "route-table" sub-node

7.6.18.4.1 "config" command

Name	config
Description	Configure an existing static route by ID.
Full path	/routing/route-table/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-473: "config" command information

```
/cli/routing> route-table/config ?

Usage CONFIG:
  CONFIG                          Configure an existing static route by ID.

   <MANDATORY>
   --ID                             Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                          Administrative State. Enable/disable, in this
context. (enable|disable)
   --dst-ip-addr                    Destination IP address.
   --dst-ip-mask                    Destination IP mask.
   --gw-ip-addr                     Gateway IP address.
   --preference                     Route preference.
```

Figure 7-509: CLI on line help on "config" command usage in this node context

7.6.18.4.2 "create" command

Name	create
Description	Create a new static route.
Full path	/routing/route-table/create
Mandatory Parameters	--dst-ip-address --dst-ip-mask --gw-ip-addr
Screen Output	No

Table 7-474: "create" command information

```
/cli/routing/route-table> create ?

Usage CREATE:
  CREATE                          Create a new static route.

   <MANDATORY>
   --dst-ip-addr                     Destination IP address.
   --dst-ip-mask                     Destination IP mask.
   --gw-ip-addr                      Gateway IP address.

   [OPTIONAL]
   --admin                           Administrative State. Enable/disable, in this
context. (enable|disable)
   --preference                      Route preference.
```

Figure 7-510: CLI on line help on "create" command usage in this node context

7.6.18.4.3 "remove" command

Name	remove
Description	Remove an existing static route by ID
Full path	/routing/route-table/remove
Mandatory Parameters	-ID
Screen Output	No

Table 7-475: "remove" command information

```
/cli/routing/route-table> remove ?

Usage REMOVE:
  REMOVE                          Remove an existing static route by ID.

   <MANDATORY>
   --ID                           Identifies a table entry by ID, in this context
```

Figure 7-511: CLI on line help on "remove" command usage in this node context

7.6.18.4.4 "show" command

Name	show
Description	Show the current configuration.
Full path	/routing/route-table/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 7-513. Table parameters description in Table 7-477.

Table 7-: "show" command information

```
/cli/routing/route-table> show ?

Usage SHOW:
  SHOW                          Show the current configuration

   [OPTIONAL]
   --ID                           Identifies a table entry by ID, in this context.
```

Figure 7-512: CLI on line help on "show" command usage in this node context

```
/cli/routing> route-table/show
+-----------------------------------------------------------------------------------------
|Static Routes
+---+-------+--------------------+--------------------+------------------+------
|ID |Admin  |Destination IP Addr |Destination IP Mask |Gateway IP Addr   |Prefer
+---+-------+--------------------+--------------------+------------------+------
|1  |enable |0.0.0.0             |0.0.0.0             |173.10.20.30      |5
+---+-------+--------------------+--------------------+------------------+------
```

Figure 7-513: Output of "show" command in this node context

Parameter	Description
ID	Table entry identifier
Admin	Static Route administrative state
Destination IP Addr	Static Route Destination IP address
Destination IP Mask	Static Route Destination IP Mask
Gateway IP Addr	Static Route Gateway IP address
Preference	Static Route preference

Table 7-477: "show" command - output table parameters

7.6.18.4.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/routing/route-table/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-478: "showconfig" command information

```
/cli/routing/route-table> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                    Print the command list that enforces the current
configuration
```

Figure 7-514: CLI on line help on "showconfig" command usage in this node context

7.6.18.4.6 "status" command

Name	status
Description	Show the current route table status.
Full path	/routing/route-table/status
Mandatory Parameters	No
Screen Output	Table, Figure 7-516. Table parameters description in Table 7-480.

Table 7-479: "status" command information

```
/cli/routing/route-table> status ?

Usage STATUS:
  STATUS                          Show the current route-table status
```

Figure 7-515: CLI on line help on "status" command usage in this node contex

```
/cli/routing/route-table> status
+---------------------------------------------------------------------------------------------------------------------------
|Route Table
+-------------------------------------+----------+------------------+--------------------+--------------------+----------------+----------
|(ID) Routing Interface               |Protocol  |Update Time       |Destination IP Addr |Destination IP Mask |Gateway IP Addr |Preference
+-------------------------------------+----------+------------------+--------------------+--------------------+----------------+----------
|(  4) NB_Amora_1                     |Default   |00d 00h 02m 32s   |0.0.0.0             |0.0.0.0             |173.10.20.30    |5
|(  2) NB_RT_2                        |Local     |00d 00h 02m 32s   |30.0.0.0            |255.255.255.0       |30.0.0.254      | --
|(  4) NB_Amora_1                     |Local     |00d 00h 02m 32s   |173.10.20.0         |255.255.255.128     |173.10.20.31    | --
|(  5) NB_Amora_2                     |Local     |00d 00h 02m 32s   |173.10.20.128       |255.255.255.248     |173.10.20.131   | --
+-------------------------------------+----------+------------------+--------------------+--------------------+----------------+----------
```

Figure 7-516: Output of "status" command in this node context"

Parameter	Description
(ID) Routing Interface	Routing interface identifier
Protocol	Used protocol identifier
Update time	Route update time
Destination IP Address	Route Destination IP Address
Destination IP Mask	Route Destination IP Mask
Gateway IP Addr	Route used Gateway IP Address
Preference	Route Preference
Metric	Route Metric (number of hops)

Table 7-480: "status" command - output table parameters

7.6.18.5 "traceroute" sub-node

7.6.18.5.1 "create" command

Name	create
Description	Create a new traceroute session.
Full path	/routing/traceroute /create
Mandatory Parameters	--ip-address
Screen Output	No

Table 7-481: "create" command information

```
/cli/routing/traceroute> create ?

Usage CREATE:
  CREATE                          Create a new traceroute session.

   <MANDATORY>
   --ip-address                      IPv4 address

   [OPTIONAL]
   --dont-fragment                   Enable or disable fragmenting of the traceroute
probe (true/false)
   --init-ttl                        Initial TTL for the traceroute probes. (1..255)
   --max-fails                       Max number of failed probes for each hop before the
traceroute session in stopped. (0..255)
   --max-ttl                         Max TTL for the traceroute probes. (1..255)
   --port                            Destination port for the traceroute probe.
(0..65535)
   --probe-interval                  Interval (in seconds) between each probe. (1..60)
   --probe-size                      Probe size. (0..65507)
   --probes-per-hop                  Number of probes to send. (1..10)
```

Figure 7-517: CLI on line help on "create" command usage in this node context

7.6.18.5.2 "remove" command

Name	remove
Description	Remove an existing traceroute session
Full path	/routing/traceroute/remove
Mandatory Parameters	-ID
Screen Output	No

Table 7-482: "remove" command information

```
/cli/routing/traceroute> remove ?

Usage REMOVE:
  REMOVE                          Remove an existing traceroute session.

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context
```

Figure 7-518: CLI on line help on "remove" command usage in this node context

7.6.18.5.3 "show" command

Name	show
Description	Show the current configuration.
Full path	/routing/traceroute/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 7-520. Table parameters description in Table 7-484.

Table 7-483: "show" command information

```
/cli/routing/traceroute> show ?

Usage SHOW:
  SHOW                              Show the current traceroute sessions configuration

   [OPTIONAL]
   --ID                                Identifies a table entry by ID, in this context.
```

Figure 7-519: CLI on line help on "show" command usage in this node context


```
/cli/routing/traceroute> show
+-------------------------------------------------------------------------------------------------------+
|Traceroute Sessions                                                                                    |
+--------------------+-------------------------+-------------------------------------------------------+
|                    |Probes                   |                                                       |
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
|ID |IP Address      |Per Hop |Size  |Interval |Don't Fragment |Port  |Max TTL |Init TTL |Max Fails  |
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
```

Figure 7-520: Output of "show" command in this node context

Parameter Group	Parameter	Description
	ID	Table entry identifier
	IP Address	IPv4 Address
Probes	Per Hop	Number of probes to send (1 to 10)
	Size	Probe Size (0 to 65507)
	Interval	Interval in seconds between each probe (1 to 60)
	Don't Fragment	Flag; Indicates if fragmenting of the traceroute probe is enable
	Port	Destination port for the trace route probe (0 to 65535)
	Max TTL	Maximum time to live for the traceroute probe
	Init TTL	Initial time to live for the traceroute probe (1 to 255)
	Max Fails	Max number of failed probes for each hop before the traceroute session in stopped. (0 to 255)

Table 7-484: "show" command - output table parameters

7.6.18.5.4 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/routing/traceroute/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-485: "showconfig" command information

```
/cli/routing/traceroute> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                        Print the command list that enforces the current
configuration
```

Figure 7-521: CLI on line help on "showconfig" command usage in this node context

7.6.18.5.5 "status" command

Name	status
Description	Show the current route table status.
Full path	/routing/traceroute/status
Mandatory Parameters	No
Screen Output	Table, Figure 7-523. Table parameters description in Table 7-487.

Table 7-486: "status" command information

```
/cli> routing/traceroute/status ?

Usage STATUS:
  STATUS                        Show the current traceroute sessions status

   [OPTIONAL]
   --ID                          Identifies a table entry by ID, in this context.
```

Figure 7-522: CLI on line help on "status" command usage in this node contex

```
/cli/routing/traceroute> status
+-------------------------------------------------------+
|Traceroute Sessions Status                             |
+---------------------------------------+---------------+
|                                       |Probes         |
+---+-------+-------------+-------------+-----+---------+
|ID |Active |Current TTL  |Current Hops |Sent |Success  |
+---+-------+-------------+-------------+-----+---------+
+---+-------+-------------+-------------+-----+---------+
```

Figure 7-523: Output of "status" command in this node context"

Parameter Group	Parameter	Description
	ID	Table entry identifier
	Active	Flag; Indicates if traceroute session is active
	Current TTL	Current traceroute session time to live
	Current Hops	Current number of traceroute hops
Probes	Sent	Number of traceroute probes sent
	Success	Number of traceroute probes with success

Table 7-487: "status" command - output table parameters

7.6.19 "services" node

This node is used to configure, create and remove services and view traffic statistics information.

```
/cli/services> tree
+ services[@availableValues, @config, @create, @remove, @show, @showconfig]
   + rate-limiters[@config, @show, @showconfig]
   + statistics[]
      + counters[@availableValues, @show, @show-active, @start, @stop]
      + dhcp[@availableValues, @show]
      + igmp[@availableValues, @show]
```

Figure 7-524: "services" node tree

7.6.19.1 "availableValues" command

Name	availableValues
Description	Show the available <slot-port> combination values for creating new services.
Full path	/services/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-526.Table parameters description Table 7-489

Table 7-488: "availableValues" command information

```
/cli/services> availableValues ?

Usage:
  AVAILABLEVALUES Show the available <slot-port> combination values for creating
new services.
```

Figure 7-525: CLI on line help on "availableValues" command usage in this node context

```
/cli/services> availableValues
+-------------------------------------------------------------------------------+
|Available Uplink interfaces                                                    |
+-----+-------------------------------------------------------------------------+
|Slot |Interfaces                                                               |
+-----+-------------------------------------------------------------------------+
|--   |LAG 1, LAG 2                                                             |
+-----+-------------------------------------------------------------------------+

+-------------------------------------------------------------------------------+
|Available Downlink interfaces                                                  |
+-----+-------------------------------------------------------------------------+
|Slot |Interface                                                                |
+-----+-------------------------------------------------------------------------+
|1    |PON 1, PON 2, PON 3, PON 4, PON 5, PON 6, PON 7, PON 8                   |
+-----+-------------------------------------------------------------------------+
```

Figure 7-526: Output of "availableValues" command in this node context

Parameter Group	Parameter	Description
Availabe Uplink interfaces	**Slot**	Indicates the slots with uplink interfaces
	Interfaces	Indicates the OLT uplink interfaces
Availabe Downlink interfaces	**Slot**	Indicates the slots with downlink interfaces
	Interfaces	Indicates the OLT interfaces

Table 7-489: "availableValues" command output Uplink/Downlink table parameters

7.6.19.2 "config" command

Name	config
Description	Configure parameters for a given service. Flags PPPoE, McFlood, IGMP and DHCP are ignored for Bitstream services
Full path	/services/config
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-490: "config" command information

```
/cli/services> config ?

Usage CONFIG:
  CONFIG                          Configure parameters for a given service. Flags
PPPoE, McFlood, IGMP and DHCP are ignored for Bitstream services.

   <MANDATORY>
   --serviceID                    Select an OLT service by ID.

   [OPTIONAL]
   --add-downlink-ports           Add interfaces to the Downlink interface List,
for a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --add-uplink-lags              Add LAG interfaces to the Uplink interface List
for a given service. (format: lagID : 1,2,3)
   --add-uplink-ports             Add interfaces to the Uplink interface List, for
a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --admin                        Administrative State. Enable/disable, in this
context. (enable|disable)
   --del-downlink-ports           Remove interfaces from the Downlink interface
List, for a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --del-uplink-lags              Remove LAG interfaces from the Uplink interface
List, for a given service. (format: lagID : 1,2,3)
   --del-uplink-ports             Remove interfaces from the Uplink interface List,
for a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --dhcp                         Enable or disable the DHCP relay for a given
service. (enable|disable)
   --igmp                         Enable or disable IGMP for a given service.
(enable|disable)
   --mcFlood                      Multicast flooding. (enable|disable)
   --nni-stag                     Outer VLAN ID (service) on the network-facing
(Ethernet) interface. (1..4094)
   --pppoe                        Enable or disable PPPoE for a given service.
(enable|disable)
   --serviceName                  The Name for the new service. (STRING 31)
   --stacked                      Frame format for the uplink interface. If
enabled, it has two VLAN tags, otherwise only one VLAN tag. (enable|disable)
   --type                         Identifies the type of service. (unicast|multicast
|bitstream|univoip|mac bridge)
   --uni-ctag                     VLAN ID delivered/received from the (Ethernet)
subscriber-facing interface at the ONU. (1..4094)
```

Figure 7-527: CLI on line help on "config" command usage in this node context

7.6.19.3 "create" command

Name	create
Description	Create a new network service.
Full path	/services/create
Mandatory Parameters	--nni-stag --serviceName --type --uni-ctag
Screen Output	No

Table 7-: "create" command information

```
/cli/services> create ?

Usage CREATE:
  CREATE                          Create a new network service.

   <MANDATORY>
   --nni-stag                        Outer VLAN ID (service) on the network-facing
(Ethernet) interface. (1..4094)
   --serviceName                     The Name for the new service. (STRING 31)
   --type                            Identifies the type of service. (unicast|multicast
|bitstream|univoip|mac bridge)
   --uni-ctag                        VLAN ID delivered/received from the (Ethernet)
subscriber-facing interface at the ONU. (1..4094)

   [OPTIONAL]
   --add-downlink-ports              Add interfaces to the Downlink interface List,
for a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --add-uplink-lags                 Add LAG interfaces to the Uplink interface List
for a given service. (format: lagID : 1,2,3)
   --add-uplink-ports                Add interfaces to the Uplink interface List, for
a given service. (format: slot.port|slot(all) : 3.1,3.5,7)
   --admin                           Administrative State. Enable/disable, in this
context. (enable|disable)
   --dhcp                            Enable or disable the DHCP relay for a given
service. (enable|disable)
   --igmp                            Enable or disable IGMP for a given service.
(enable|disable)
   --mcFlood                         Multicast flooding. (enable|disable)
   --pppoe                           Enable or disable PPPoE for a given service.
(enable|disable)
   --stacked                         Frame format for the uplink interface. If
enabled, it has two VLAN tags, otherwise only one VLAN tag. (enable|disable)
```

Figure 7-528: CLI on line help on "create" command usage in this node context

About the service type:

- Unicast: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed.
- Multicast: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy.
- UniVoIP: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONT, VoIP configurations are downloaded to the ONT.
- Bitstream: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled.

7.6.19.4 "remove" command

Name	remove
Description	Remove an existing service
Full path	/services/remove
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-492: "remove" command information

```
/cli/services> remove ?

Usage:
  REMOVE          Remove an existing service.

   <MANDATORY>
   --serviceID       Select an OLT service by ID.
```

Figure 7-529: CLI on line help on "remove" command usage in this node context

7.6.19.5 "show" command

Name	show
Description	Show the current services configuration. If a service ID is given shows all the downlink ports.
Full path	/services/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-531 and Figure 7-532 Table parameters description in Table 7-494 and Table 7-495.

Table 7-493: "show" command information

```
/cli/services> show ?

Usage:
  SHOW            Show the current services configuration. If a service ID is given shows
all the downlink ports.

   [OPTIONAL]
   --serviceID       Select an OLT service by ID.
```

Figure 7-530: CLI on line help on "show" command usage in this node context

```
/cli/services> show
+-------------------------------------------------------------------------------------------------------------------------------------------+
|Network Services Summary                                                                                                                   |
+---+--------------------------------+---------+--------------+---------+---------+---------+---------+---------+---------+---------+
|ID |Name                            |Admin    |Type          |Stacked  |MC Flood |DHCP     |PPPoE    |IGMP     |NNI-STAG |UNI-CTAG |
+---+--------------------------------+---------+--------------+---------+---------+---------+---------+---------+---------+---------+
|1  |pbits                           |disable  |mac bridge    |disable  |disable  |disable  |disable  |disable  |50       |100      |
|2  |VOD                             |enable   |mac bridge    |disable  |disable  |disable  |disable  |enable   |100      |101      |
|3  |ID 3                            |enable   |multicast     |disable  |disable  |disable  |disable  |disable  |102      |101      |
|4  |unicast_unstc                   |enable   |unicast       |disable  |enable   |enable   |disable  |disable  |300      |301      |
|5  |unicast_stck                    |enable   |unicast       |enable   |enable   |enable   |disable  |disable  |400      |401      |
|6  |MAC_B_unstck                    |enable   |mac bridge    |disable  |enable   |enable   |disable  |disable  |500      |501      |
|7  |MAC_B_stck                      |enable   |mac bridge    |enable   |enable   |enable   |disable  |disable  |600      |601      |
|8  |bit_unstck                      |enable   |bitstream     |disable  |enable   |disable  |disable  |disable  |700      |701      |
|9  |hsi delta                       |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |9        |10       |
|10 |vod delta                       |enable   |unicast       |enable   |disable  |disable  |disable  |enable   |11       |12       |
|11 |iptv delta                      |enable   |multicast     |disable  |disable  |disable  |disable  |disable  |111      |12       |
|12 |hsi spirent                     |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |90       |100      |
|13 |uni sta robert                  |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |1001     |2001     |
|14 |vos spirent                     |enable   |unicast       |enable   |disable  |disable  |disable  |enable   |110      |120      |
|15 |ID 15                           |enable   |multicast     |disable  |disable  |disable  |disable  |disable  |200      |201      |
|16 |DD1_UC                          |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |330      |331      |
|17 |iptv spirent                    |enable   |multicast     |disable  |disable  |disable  |disable  |disable  |1111     |120      |
|18 |Uplink                          |enable   |unicast       |disable  |disable  |disable  |disable  |enable   |250      |255      |
|19 |ID 19                           |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |238      |151      |
|20 |ID 20                           |enable   |unicast       |enable   |disable  |disable  |disable  |disable  |239      |565      |
+---+--------------------------------+---------+--------------+---------+---------+---------+---------+---------+---------+---------+
/cli/services>
```

Figure 7-532: Output of "show" command used with parameter –serviceID, in this node context

Parameter	Description
ID	Service Identifier
Name	Name that identifies the Service
Admin	Service Administrative State

Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONU. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled.
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.
MC Flood	Indicates Multicast flooding. configuration for a given service(enable|disable)
DHCP	Identifies if the service must work has a DHCP Relay Agent.
PPPoE	Indicates PPPoE configuration for a given service. (enable|disable)
IGMP	Indicates IGMP configuration for a given service. (enable|disable)
NNI S-TAG	Identifies the outer tag of the service used in the uplink port
UNI C-TAG	Identifies the VLAN delivered/received to/from the ONU. After this VLAN can be translated in the ONU.

Table 7-494: "show" command output table parameters

This command used with serviceID parameter provides detailed information on the specified service configuration,

```
/cli/services> show --serviceID=1
+-------------------------------------------------------------------------------------------+
|Network Service (1) 'pbits'                                                                |
+--------------------+----------------------------------------------------------------------+
|Parameter           |Value                                                                 |
+--------------------+----------------------------------------------------------------------+
|Admin               |disable                                                               |
|Type                |mac bridge                                                            |
|Stacked             |disable                                                               |
|MC Flood            |disable                                                               |
|DHCP                |disable                                                               |
|PPPoE               |disable                                                               |
|IGMP                |disable                                                               |
+--------------------+----------------------------------------------------------------------+
|NNI-STAG            |50                                                                    |
|UNI-CTAG            |100                                                                   |
+--------------------+----------------------------------------------------------------------+
|Uplink Interfaces   |1/10GbE 4                                                             |
+--------------------+----------------------------------------------------------------------+
|Downlink Interfaces |1/PON 8                                                               |
+--------------------+----------------------------------------------------------------------+
/cli/services>
```

Figure 7-532: Output of "show" command used with parameter –serviceID, in this node context

Parameter	Description
Admin	Service Administrative State
Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONU. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled.
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.
Mult. Flood	Multicast flooding. (enable|disable)
DHCP	Identifies if the service must work has a DHCP Relay Agent.
PPPoE	Enable or disable PPPoE for a given service. (enable|disable)
IGMP	Enable or disable IGMP for a given service. (enable|disable)
NNI S-TAG	Identifies the outer tag of the service on the network-facing (Ethernet) interface in the uplink port (1..4094)
UNI C-TAG	Identifies the VLAN delivered/received to/from the (Ethernet) subscriber-facing interface at the ONU. (1..4094) After this VLAN can be translated in the ONU.
Uplink Interfaces	Uplink Slot/port pair (NNI)
Downlink Interfaces	Slot/Port (PON) pair (UNI).Identifies the GPON port(s) associated to the Service

Table 7-495: Show command, used with serviceId parameter, output table parameters

7.6.19.6 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-496: "showconfig" command information

```
/cli/services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-533: CLI on line help on "showconfig" command usage in this node context

7.6.19.7 "rate-limiters" sub-node

7.6.19.7.1 "config" command

Name	config
Description	Configure the global rate limiters.
Full path	/services/rate-limiters/config
Mandatory Parameters	No mandatory parameters
Screen Output	No

Table 7-497: "config" command information

```
/cli/services/rate-limiters> config ?

Usage:
  CONFIG                          Configure the global rate limiters.

   [OPTIONAL]
   --broadcast                      all broadcast (0..1000000)
   --multicast                      all multicast (0..1000000)
   --unknown-unicast                all unicast (0..1000000)
```

Figure 7-534: CLI on line help on "config" command usage in this node contextxt

7.6.19.7.2 "show" command

Name	show
Description	Show the current global rate limiters configuration.
Full path	/services/rate-limiters/show
Mandatory Parameters	No
Screen Output	Tables, Figure 7-536. Table parameters description in Table 7-499.

Table 7-: "show" command information

```
/cli/services/rate-limiters> show ?

Usage:
  SHOW                Show the current global rate limiters configuration.
```

Figure 7-: CLI on line help on "show" command usage in this node context

```
/cli/services/rate-limiters> show
+-----------------------------------------------------------------+
|Global Rate Limiters (bps)                                       |
+--------------------+--------------------+---------------------+
|Broadcast           |Multicast           |Unknown Unicast      |
+--------------------+--------------------+---------------------+
|1000000             |1000000             |1000000              |
+--------------------+--------------------+---------------------+
```

Figure 7-536: Output of "show" command in this node context

Parameter	Description
Broadcast	Global Rate Limiter for Broadcast services (bps)
Multicast	Global Rate Limiter for Multicast services (bps)
Unknow Unicast	Global Rate Limiter for Unknown Unicast services (bps)

Table 7-499: "show" command output table parameters

7.6.19.7.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/services/rate-limiters/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-500: "showconfig" command information

```
/cli/services/rate-limiters> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-537: CLI on line help on "showconfig" command usage in this node context

7.6.19.8 "statistics" sub-node

This sub-node is used to view statistics information for each service. Before statistics are available a counter must be set on the desired interface. Service statistics use a few resources on the hardware so they must activated when needed and disabled otherwise.

The information shown depends on the type of service; each type of service will display a different table and different information.

7.6.19.8.1 "counters" sub-node

This sub node is used to activate or deactivate the service counters.

7.6.19.8.1.1 "availableValues" command

Name	availableValues
Description	Display all services and Interfaces where counters can be activated.
Full path	/services/statistics/counters/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-539. Table parameters description in Table 7-502.

Table 7-501: "availableValues" command information

```
/cli/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES Display all services and Interfaces where counters can be activated.
```

Figure 7-538: CLI on line help on "availableValues" command usage in this node context

```
+-------------------------------------------------------------------------------------------------------------------+
|Interfaces where Counters can be Activated                                                                         |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|Service (ID) Name                  |Slot |Port                                                                     |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(2) VOD                            |1    |GbE 2, GbE 3, 10GbE 2, 10GbE 4                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(3) ID 3                           |1    |GbE 2, 10GbE 2, 10GbE 4, PON 6, PON 8                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(4) unicast_unstc                  |1    |10GbE 4, PON 6                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(5) unicast_stck                   |1    |10GbE 4, PON 8                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(6) MAC_B_unstck                   |1    |GbE 2, 10GbE 4                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(7) MAC_B_stck                     |1    |10GbE 4                                                                  |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(8) bit_unstck                     |1    |GbE 2, 10GbE 4, PON 6                                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(9) hsi delta                      |1    |10GbE 4, PON 6                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(10) vod delta                     |1    |10GbE 4, PON 6                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(11) iptv delta                    |1    |GbE 2, 10GbE 4, PON 6                                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(12) hsi spirent                   |1    |10GbE 4, PON 2                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(13) uni sta robert                |1    |10GbE 4, PON 8                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(14) vos spirent                   |1    |10GbE 4, PON 2                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(15) ID 15                         |1    |10GbE 4, PON 6, PON 8                                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(16) DD1_UC                        |1    |10GbE 4, PON 3                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(17) iptv spirent                  |1    |10GbE 4, PON 2                                                           |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(18) Uplink                        |1    |10GbE 1, 10GbE 3, PON 3                                                  |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(19) ID 19                         |1    |GbE 2, PON 1, PON 6                                                      |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(20) ID 20                         |1    |GbE 2, PON 1                                                             |
+-----------------------------------+-----+-------------------------------------------------------------------------+
```

Figure 7-539: Output of "availableValues" command in this node context

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

Table 7-502: "availableValues" command output table parameters

7.6.19.8.1.2 "show" command

Name	show
Description	Show the statistics for a given service and interface, whose counter has already been activated.
Full path	/services/statistics/counters/show
Mandatory Parameters	--serviceID
Screen Output	Table, Figure 7-541. Table parameters description in Table 7-504.

Table 7-503: "show" command information

```
/cli/services/statistics/counters> show ?

Usage:
  SHOW            Show the statistics for a given service and interface, whose counter has
already been activated.

   <MANDATORY>
   --serviceID                      Select an OLT service by ID.

   [OPTIONAL]
   --port                           Identifies an interface on the OLT. (e.g.: pon.2; eth.3;
lag.1)
```

Figure 7-540: CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/counters> show --serviceID=4 --port=pon.3
+-------------------------------------------------------------------------------------------------------------------------------+
|Slot 1, intEth 3, Service (4) 'Bitstream'                                                                                      |
+----------+-----------------------------------------------------------+-----------------------------------------------------------+
|Parameter |Rx                                                         |Tx                                                         |
+----------+----------------------------+----------------------------+----------------------------+----------------------------+
|          |Total                       |Partial                     |Total                       |Partial                     |
+----------+----------------------------+----------------------------+----------------------------+----------------------------+
|Total     |0                           |0                           |0                           |0                           |
|Unicast   |0                           |0                           |0                           |0                           |
|Multicast |0                           |0                           |0                           |0                           |
|Broadcast |0                           |0                           |0                           |0                           |
|Dropped   |0                           |0                           |0                           |0                           |
+----------+----------------------------+----------------------------+----------------------------+----------------------------+
qPress 'q' to quit or 'r' to reset
```

Figure 7-541: Output of "show" command in this node context

Parameter Group	Parameter	Description
Rx/Tx	Unicast	Total number of Unicast packets
	Multicast	Total number of Multicast packets
	Broadcast	Total number of Broadcast packets
	Dropped	Total number of Dropped packets
	Total	Total number (all types) of packets

Table 7-504: "show" command output table parameters

7.6.19.8.1.3 "show-active" command

Name	Show-active
Description	Display all active counters.
Full path	/services/statistics/counters/show-active
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-543. Table parameters description in Table 7-506.

Table 7-505: "show-active" command information

```
/cli/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active counters.
```

Figure 7-542: CLI on line help on "show-active" command usage in this node context

```
/cli/services/statistics/counters> show-active
+-------------------------------------------------------------------------------------------------------------------------------+
|Active Counters gathering Services Statistics                                                                                  |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|Service (ID) Name                  |Slot |Port                                                                                 |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(4) Bitstream                      |1    |PON 3                                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
```

Figure 7-543: Output of "show-active" command in this node context

Parameter	Description
Service (ID) Name	Service identified by Service ID (number) and Service Name with active counters gathering service statistics
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

Table 7-506: "show-active" command output table

7.6.19.8.1.4 "start" command

Name	start
Description	Start the statistics counter for a given interface and service.
Full path	/services/statistics/counters/start
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-507: "start" command information

```
/cli/services/statistics/counters> start ?

Usage:
  START           Start the statistics counter for a given interface and service.

   <MANDATORY>
   --serviceID       Select an OLT service by ID.

   [OPTIONAL]
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-544: CLI on line help on "start" command usage in this node context

7.6.19.8.1.5 "stop" command

Name	stop
Description	Stop an active statistics counter.
Full path	/services/statistics/counters/stop
Mandatory Parameters	--serviceID
Screen Output	No

Table 7-508: "stop" command information

```
/cli/services/statistics/counters> stop ?

Usage:
  STOP            Stop an active statistics counter.

   <MANDATORY>
   --serviceID       Select an OLT service by ID.

   [OPTIONAL]
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-545: CLI on line help on "stop" command usage in this node context

7.6.19.8.2 "dhcp" sub-node

7.6.19.8.2.1 "availableValues" command

Name	availableValues
Description	Display possible values for service IDs and Interfaces.
Full path	/services/statistics/dhcp/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-. Table parameters description in Table 7-.

Table 7-509: "availableValues" command information

```
/cli/services/statistics/dhcp> availableValues ?

Usage:
  AVAILABLEVALUES Display possible values for service IDs and Interfaces.
```

Figure 7-546: CLI on line help on "availableValues" command usage in this node context

```
/cli/services/statistics/dhcp> availableValues
+-------------------------------------------------------------------------------------------------------------------+
|Slots and Interfaces with DHCP statistics Available                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|Service (ID) Name                  |Slot |Port                                                                     |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(4) unicast_unstc                  |1    |PON 6                                                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
|(5) unicast_stck                   |1    |PON 8                                                                    |
+-----------------------------------+-----+-------------------------------------------------------------------------+
/cli/services/statistics/dhcp>
```

Figure 7-547: Output of "availableValues" command in this node context

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

Table 7-510: "availableValues" command output table parameters"show" command

Name	show
Description	Show DHCP statistics for a unicast service with DHCPop82 enabled. If no port is given, show the slot information.
Full path	/services/statistics/dhcp/show
Mandatory Parameters	--serviceID --slot
Screen Output	Table, Figure 7-549. Table parameter description in Table 7-512.

Table 7-511:"show" command information

```
/cli/services/statistics/dhcp> show ?

Usage:
  SHOW            Show DHCP statistics for a unicast service with DHCPop82 enabled. If no
port is given, show the slot information.

   <MANDATORY>
   --serviceID       Select an OLT service by ID.
   --slot     Identifies a slot.

   [OPTIONAL]
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 7-548: CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/dhcp> show --serviceID=7 --slot=1 --port=pon.3
+-------------------------------------------------------------------------------+
|Slot 1, PON 3, Service (7) Unicast_stacked                                     |
+-----------------------------------------------------+-----------+-----------+
|Parameter                                            |Rx         |Tx         |
+-----------------------------------------------------+-----------+-----------+
|Valid Packets                                        |0          |0          |
|Drop                                                 |0          |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Request Without Options                       |0          |--         |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Server Replies Without Options                       |--         |0          |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Packets Trusted                               |--         |--         |
|Client Packets With Opts Untrusted                   |0          |--         |
|Server Packets Untrusted                             |0          |--         |
|Server Packets Without Opts Trusted                  |--         |--         |
+-----------------------------------------------------+-----------+-----------+
```

Figure 7-549: Output of "show" command in this node context

Parameter	Description
Valid Packets	Indicates the number of transmitted and received valid DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets • **Without Options** • **Option 82** • **Option 37** • **Option 17**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets • **Without Options:** • **Option 82** • **Option 37** • **Option 17**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Pack with Opts Untrusted	Number of dropped packets because they are client requests with options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)

Server Pack without Options Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

Table 7-512: "show" command output table

7.6.19.8.3 "igmp" sub-node

7.6.19.8.3.1 "availableValues" command

Name	availableValues
Description	Display possible values for service IDs and Interfaces.
Full path	/services/statistics/igmp/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-551. Table parameters description in Table 7-514.

Table 7-513: "availableValues" command information

```
/cli/services/statistics/igmp> availableValues ?

Usage:
  AVAILABLEVALUES Display possible values for service IDs and Interfaces.
```

Figure 7-550: CLI on line help on "availableValues" command usage in this node context

```
/cli/services/statistics/igmp> availableValues
+-------------------------------------------------------------------------------------------------------------------------------+
|Interfaces with IGMP statistics Available                                                                                      |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|Service (ID) Name                  |Slot |Port                                                                                 |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(2) VOD                            |1    |PON 6, PON 8                                                                         |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(3) ID 3                           |1    |GbE 2, 10GbE 2, 10GbE 4, PON 6, PON 8                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(10) vod delta                     |1    |PON 6                                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(11) iptv delta                    |1    |GbE 2, 10GbE 4, PON 6                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(14) vos spirent                   |1    |PON 2                                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(15) ID 15                         |1    |10GbE 4, PON 6, PON 8                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(17) iptv spirent                  |1    |10GbE 4, PON 2                                                                       |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
|(18) Uplink                        |1    |PON 3                                                                                |
+-----------------------------------+-----+-------------------------------------------------------------------------------------+
/cli/services/statistics/igmp>
```

Figure 7-551: Output of "availableValues" command in this node context

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

Table 7-514: "availableValues" command output table parameters

7.6.19.8.3.2 "show" command

Name	show
Description	Show the IGMP statistics for a given multicast service and respective interface.
Full path	/services/statistics/igmp/show

Mandatory Parameters	--port --serviceID
Screen Output	Table, Figure 7-553. Table parameter description in Table 7-516.

Table 7-515: "show" command information

```
/cli/services/statistics/igmp> show ?

Usage:
  SHOW            Show the IGMP statistics for a given multicast service and respective
interface.

   <MANDATORY>
   --port     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID       Select an OLT service by ID.
```

Figure 7-552: CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/igmp> show --serviceID=2 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------------------+
|IGMP Statistics for Network Service (2) Multicast_301                                                                          |
+-------------------------------+-----------------------------------------------+-----------------------------------------------+
|Parameter                      |Rx                                             |Tx                                             |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|                               |Total                  |Partial                |Total                  |Partial                |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|Packets Total                  |0                      |0                      |0                      |0                      |
|        Dropped                |0                      |0                      |-                      |-                      |
|        Valid                  |0                      |0                      |-                      |-                      |
|        Invalid                |0                      |0                      |-                      |-                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|v2      Join                   |0                      |0                      |0                      |0                      |
|        Invalid Join           |0                      |0                      |-                      |-                      |
|        Leave                  |0                      |0                      |0                      |0                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|v3      Membership Report      |0                      |0                      |0                      |0                      |
|        Invalid Membership Report |0                    |0                      |-                      |-                      |
|        To-Include             |0                      |0                      |0                      |0                      |
|        To-Exclude             |0                      |0                      |0                      |0                      |
|        Is-Include             |0                      |0                      |0                      |0                      |
|        Is-Exclude             |0                      |0                      |0                      |0                      |
|        Allow                  |0                      |0                      |0                      |0                      |
|        Block                  |0                      |0                      |0                      |0                      |
|        Invalid To-Include     |0                      |0                      |-                      |-                      |
|        Invalid To-Exclude     |0                      |0                      |-                      |-                      |
|        Invalid Is-Include     |0                      |0                      |-                      |-                      |
|        Invalid Is-Exclude     |0                      |0                      |-                      |-                      |
|        Invalid Allow          |0                      |0                      |-                      |-                      |
|        Invalid Block          |0                      |0                      |-                      |-                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|Queries General                |0                      |0                      |0                      |0                      |
|        Group Specific         |0                      |0                      |0                      |0                      |
|        Group and Source Specific |0                    |0                      |0                      |0                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
```

Figure 7-553: Output of "show" command in this node context

Parameter	Description
Packets: **Rx/Tx Total and Partial counters displayed**	Indicates the number of transmitted and received packets • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2: **Rx/Tx Total and Partial counters displayed**	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**

V3: **Rx/Tx Total and Partial counters displayed**	Number of Transmitted and Received IGMPv3 packets of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**
Queries : **Rx/Tx Total and Partial counters displayed**	Number of transmitted and Received Queries • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

Table 7-516: "show" command output table parameters

7.6.20 "synchronism" node

```
/cli/synchronism> tree
+ synchronism[]
   + global[@config, @show, @showconfig]
      + sources[@availableValues, @config, @show, @showconfig]
   + ptp[@config, @show, @showconfig]
      + port[@availableValues, @config, @create, @remove, @show, @showconfig]
         + ip-access-list[@config, @create, @remove, @show]
   + status[]
      + global[@command, @show]
         + sources[@command, @show]
      + ptp[@show]
```

Figure 7-554: "synchronism" node tree

7.6.20.1 "global" sub-node

7.6.20.1.1 "config" command

Name	config
Description	Configure synchronism global parameters
Full path	/synchronism/global/config
Mandatory Parameters	No
Screen Output	No

Table 7-517: "config" command information

```
/cli/synchronism/global> config ?

Usage:
  CONFIG          Configure synchronism global parameters

   [OPTIONAL]
   --free-run-source  Activate or deactivate the free-run source     (enable|disable)
   --holdover-msg-delay      Set the Holdover message delay (500..2000 ms)
   --min-quality-before-squelch      Set the Minimum quality before squelch
   --quality-level-mode      Enables synchronism quality level (enable|disable)
   --reversibility-level-modeEnables revertive switching mode when recovering
from a failure (enable|disable)
   --reversibility-time      Set the Reversibility time (0..3600 sec.)
   --send-val-after-quality-unknown  Set the value to be sent in case Quality Unknown
is    received
   --switching-msg-delay     Set the Switching message delay (180..500 ms)
```

Figure 7-: CLI on line help on "config" command usage in this node context

7.6.20.1.2 "show" command

Name	show
Description	Show the current services configuration. If a service ID is given shows all the downlink ports.
Full path	/synchronism/global/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-557. Table parameters description in Table 7-519

Table 7-518: "show" command information

```
/cli/synchronism/global> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-556: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/global> show
+-----------------------------------------------+
|Synchronism Global Information                 |
+-----------------------------------+-----------+
|Parameter                          |Value      |
+-----------------------------------+-----------+
|Quality level mode                 |Enabled    |
|Reversibility level mode           |Disabled   |
|Reversibility time              (s)|0          |
|Holdover message delay         (ms)|1200       |
|Switching message delay        (ms)|350        |
|Minimum quality before Squelch     |SEC        |
|Send value after quality unknown   |DNU        |
|Number of junctions                |1          |
|Source free-run                    |Disabled   |
+-----------------------------------+-----------+
/cli/synchronism/global>
```

Figure 7-: Output of "show" command in this node context

Parameter	Description
Quality level-mode	Configured Synchronism quality level. If enabled the user can set the equipment synchronization to take into account the SSM synchronization sources (Synchronization Status Message)
Reversilibity-level-Mode	Configured reversal switching mode when recovering from a failure. If Enabled: the status machine of the equipment only considers for synchronization source, a source that does not show timing flaws and where the Reversibility Time has expired. If the quality/priority of this source (depending on the current configuration of the Quality Level Mode) is higher than the current source, the equipment will use this quality/priority source. Otherwise the source is not changed. If Disabled: a source that has been previously considered invalid will only be used for synchronization, if the current source fails and if there is no other source with a higher quality/priority
Reversibility-time (s)	Configured reversibility time - time, in seconds: after this period of time, the fault condition disappears and the invalid source will be reconsidered for synchronization. This time is considered after the Wait-To-Restore time has elapsed
Holdover-message delay (ms)	Configured Holdover message delay - time, in milliseconds, considered in the case where the equipment is in Holdover mode. This state is due to a fault condition in the selected synchronization source and when there is no other available source.

Switching message delay (ms)	Configured switching message delay in milliseconds, applicable in the case where changing to another synchronization source is carried out with a different Quality Level value. This delay sets the elapsed time between the trigger of the new synchronization source and a change in the output Quality Level.
Minimum quality before Squelch	Configured Minimum quality before squelch value. The equipment will squelch the synchronization source if there is no other source with a quality level equal to or better than the selected source.
Send value after quality unknown	Configured value to be sent if Quality Unknown is received. The equipment will make the SSM output with the respective Quality Level configured if there is no synchronization source with a Quality Level other than Quality Unknown
Number of junctions	Number of junctions that can be used for as synchronism source
Source free-run	Source free-run If enabled the system always synchronizes with its internal clock (array unit PLL).

Table 7-519: "show" command output table parameters

7.6.20.1.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/synchronism/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-520: "showconfig" command information

```
/cli/synchronism/global> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-558: CLI on line help on "showconfig" command usage in this node context

7.6.20.1.4 "sources" sub-node

7.6.20.1.4.1 "availableValues" command

Name	availableValues
Description	Show the available values for configurable parameters. Can filter by source ID.
Full path	/synchronism/global/sources/availableValues
Mandatory Parameters	No
Screen Output	Table, Figure 7-560. Table parameters description in Table 7-522.

Table 7-521: "availableValues" command information

```
/cli/synchronism/global/sources> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for configurable parameters. Can filter by
source ID.

   [OPTIONAL]
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-559: CLI on line help on "availableValues" command usage in this node context

```
/cli/synchronism/global/sources> availableValues
+-------------------------------------------------------------------+
|Synchronism Global Sources - Show Available Values                 |
+---+----------+----------------------------------------------------+
|   |          |Possible Values for Argument                        |
+---+----------+----------+-----------------------------------------+
|ID |Source    |SA bits   |Interface                                |
+---+----------+----------+-----------------------------------------+
|1  |J1        |4..8      |(0) 2 Mbps 75 Ohm                        |
|   |          |--        |(1) 2 MHz  75 Ohm                        |
|   |          |4..8      |(2) 2 Mbps 120 Ohm                       |
|   |          |--        |(3) 2 MHz  120 Ohm                       |
+---+----------+----------+-----------------------------------------+
|2  |GbE 1     |--        |GbE 1                                    |
|   |          |--        |GbE 2                                    |
|   |          |--        |GbE 3                                    |
|   |          |--        |GbE 4                                    |
|   |          |          |10GbE 1                                  |
```

Figure 7-560: Output of "availableValues" command in this node context

Parameter	Description
ID	Identifies a synchronism source by ID
Source	Identifies a synchronism source by Name
SA bits	Indicates the available values for the SA bits
Interface	Identifies the synchronism interface by ID and Name

Table 7-522: availableValues command – output table parameters

7.6.20.1.4.2 "config" command

Name	config
Description	Configure synchronism sources information.
Full path	/synchronism/sources/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-523: "config" command information

```
/cli/synchronism/global/sources> config ?

Usage:
  CONFIG          Configure synchronism sources information.

   <MANDATORY>
   --ID       Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --QL-SSM   Set the Quality-Level for this particular clock source
   --active   Enables clock source activation (enable|disable)
   --hold-off-time    If a source goes down, wait 'n' (ms) before removing it from the clock
selection (300..1800 ms)
   --interface        Set the interface of the card to be used as clock source.     (@
availableValues)
   --priority Set the clock source priority value (1..253)
   --sa-bit-RX        Configure SA bit used for reception of SSM packets(4..8)
   --sa-bit-TX        Configure SA bit used for transmission of SSM packets(4..8)
   --wait-to-restore  Amount of time before including a new clock source in clock   selection
(0..12 min.)
```

Figure 7-561: CLI on line help on "config" command usage in this node context

7.6.20.1.4.3 "show" command

Name	show
Description	Show the current services configuration. If a service ID is given shows all the downlink ports.
Full path	/synchronism/global/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-563.Table parameters description in Table 7-525

Table 7-524: "show" command information

```
/cli/synchronism/global/sources> show ?

Usage:
  SHOW            Show the current sources configuration
```

Figure 7-562: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/global/sources> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------+
|Synchronism Global Sources                                                                                                                           |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-----------------------------+
|ID |Source    |Active    |Interface      |Priority  |QL_SSM    |SA-bit-TX |SA-bit-RX |Hold Off Time (ms)  |Wait to Restore Time (min)   |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-----------------------------+
|1  |J1        |enable    |2 Mbps 75 Ohm  |1         |received  |8         |8         |1000                |5                            |
|2  |GbE 1     |enable    |GbE 1          |1         |received  |--        |--        |1000                |5                            |
|3  |GbE 2     |enable    |GbE 2          |1         |received  |--        |--        |1000                |5                            |
|4  |GbE 3     |enable    |GbE 3          |1         |received  |--        |--        |1000                |5                            |
|5  |GbE 4     |enable    |GbE 4          |1         |received  |--        |--        |1000                |5                            |
|6  |10GbE 1   |enable    |10GbE 1        |1         |received  |--        |--        |1000                |5                            |
|7  |10GbE 2   |enable    |10GbE 2        |1         |received  |--        |--        |1000                |5                            |
|8  |10GbE 3   |enable    |10GbE 3        |1         |received  |--        |--        |1000                |5                            |
|9  |10GbE 4   |enable    |10GbE 4        |1         |received  |--        |--        |1000                |5                            |
|10 |PTP       |enable    |--             |1         |received  |--        |--        |1000                |5                            |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-----------------------------+
/cli/synchronism/global/sources>
```

Figure 7-563: Output of "show" command in this node context

Parameter	Description
ID	Table entry Identifier
Source	Lists all possible interfaces (slots and junctions) for synchronization
Active	Allows a given synchronization source to be enabled or disabled.
Interface	This column allows selection of an n Ethernet interface, within a certain module, which can be used as a possible synchronization source. In the case of the junctions, it is possible to configure if this operates at 2MHz or 2Mbits
Priority	Allows setting the source priority. The lower the priority value, the greater the preference of this source over the others. Note that, for sources having equal priority, the concept of reversibility has no meaning.
QL-SSM	Quality Level; The user can select the intended SSM value for the source. This value overrides the value received by the equipment. When the SSM value is overridden, the following precautions should be taken: In case of interface LOS, this source is not used. If the received value is DNU, the equipment will continue to use this synchronization source.
SA-bit-Tx	Allows setting the value of the transmission Sa bit in the case of 2Mbps (only for the synchronization junctions);
SA-bit-Rx	Allows setting the value of the reception Sa bit in the case of 2Mbps (only for the synchronization junctions)
Hold-Off time (ms)	The Hold-Off time ensures that the activation, even if short, of the signal failure has no influence on the synchronization source selection process. This value can vary between 300ms and 1800ms
Wait-To-Restore time (min)	The Wait-To-Restore time ensures that a prior fault in the synchronization source will only be considered valid for this selection process if it is maintained without failure for a specified period of time. This parameter can have values ranging from 0 to 12 minutes with 1 minute resolution. The default value is 5 minutes.

Table 7-: "show" command output table parameters

7.6.20.1.5 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/synchronism/global/sources/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-526: "showconfig" command information

```
/cli/synchronism/globa/sourcesl> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-564: CLI on line help on "showconfig" command usage in this node context

7.6.20.2 "ptp" sub-node

7.6.20.2.1 "config" command

Name	config
Description	Configure global PTP parameters
Full path	/synchronism/ptp/config
Mandatory Parameters	No
Screen Output	No

Table 7-527: "config" command information

```
//cli/synchronism/ptp> config ?

Usage CONFIG:
  CONFIG                          Configure global PTP parameters

   [OPTIONAL]
   --alternate-master               Enables the alternate master flag
(enable|disable)
   --bmca                           Enables Best Master Clock Algorithm
(enable|disable)
   --clock-accuracy                 Specify the clock Quality accuracy type
   --clock-class                    Specify the default clock Quality class(0..255)
   --clock-type                     Set the clock type (ordinary|boundary)
   --priority-1                     Override criteria for best master clock
selection (1..253)
   --priority-2                     Specify a particular switch priority when
criteria matches (1..253)
   --slave-only                     Enables slave only configuration of the PTP
machine (enable|disable)
   --telecom-profile               Enables Telecom profile configuration of the PTP
machine (enable|disable)
   --two-step-clock                 Enables Two-step clock configuration of the PTP
machine (enable|disable)
   --unicast-negotiation            Enables Unicast negotiation configuration of the
PTP machine (enable|disable)
```

Figure 7-565: CLI on line help on "config" command usage in this node context

7.6.20.2.2 "show" command

Name	show
Description	Show the current global PTP configuration
Full path	/synchronism/ptp/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 7-567.Table parameters description in Table 7-529

Table 7-528: "show" command information

```
/cli/synchronism/ptp> show ?

Usage:
  SHOW            Show the current global PTP configuration
```

Figure 7-566: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/ptp> show
+----------------------------------------+
|Synchronism PTP Information             |
+--------------------+-------------------+
|Parameter           |Value              |
+--------------------+-------------------+
|Clock Type          |boundary           |
|Clock Class         |255                |
|Clock Accuracy      |unknown            |
|Priority 1          |128                |
|Priority 2          |128                |
|Slave Only          |Disabled           |
|TwoStep Clock       |Disabled           |
+--------------------+-------------------+
|Telecom Profile     |Disabled           |
|Unicast Negotiation |Enabled            |
|BMCA                |Disabled           |
|Alternate Master    |Disabled           |
+--------------------+-------------------+
/cli/synchronism/ptp>
```

Figure 7-567: Output of "show" command in this node context"

Parameter	Description
Clock Type	Indicates Clock Type
Clock Class	Indicates clock class
Clock Accuracy	Indicates clock accuracy
Priority1	Indicates over-ride criteria for best master clock selection
Priority 2	Indicates the particular switch priority when criteria matches
Slave Only	Indicates if slave only configuration of the PTP machine is enabled
Two Step Clock	Indicates if two-clock configuration of the PTP machine is enabled
Telecom Profile	Indicates if Telecom profile is enabled
Unicast Negotiation	Indicates if Unicast negotiation is enabled
BMCA	Indicates if BMCA is enabled
Alternate Master	Indicates if alternate master is enabled

Table 7-529: "show" command output table parameters

7.6.20.2.3 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/synchronism/ptp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-530: "showconfig" command information

```
/cli/synchronism/ptp> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-568: CLI on line help on "showconfig" command usage in this node context

7.6.20.2.4 "port" sub-node

7.6.20.2.4.1 "availableValues" command

Name	availableValues
Description	Show the available values for configurable arguments.
Full path	/synchronism/ptp/port/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-570.Table parameters description Table 7-532

Table 7-531: "availableValues " command information

```
/cli/synchronism/ptp/port> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for configurable arguments.
```

Figure 7-569: CLI on line help on "availableValues" command usage in this node context

```
/cli/synchronism/ptp/port> availableValues
+-----------------------------------------------------------+
|Available Values for Synchronism PTP Port Entities         |
+-----+-----------------------------------------------------+
|Slot |Port                                                 |
+-----+-----------------------------------------------------+
|1    |GbE 1, GbE 2, GbE 3, GbE 4, 10GbE 1, 10GbE 2, 10Gb|
|--   |LAG 1                                                |
|--   |LAG 2                                                |
+-----+-----------------------------------------------------+
/cli/synchronism/ptp/port>
```

Figure 7-570: Output of "availableValues" command in this node context

Parameter	Description
Slot	Indicates the slot
Port	Indicates the OLT interface

Table 7-532: "availableValues" command output table parameters

7.6.20.2.4.2 "config" command

Name	config
Description	Configure a specific PTP port.
Full path	/synchronism/ptp/port/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-533: "config" command information

```
/cli/synchronism/ptp/port> config ?

Usage CONFIG:
  CONFIG                          Configure a specific PTP port.

   <MANDATORY>
   --ID                             Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                          Administrative State. Enable/disable, in this
context. (enable|disable)
   --announce-interval              Set the Announce message transmission interval
   --announce-receipt-timeout       Set the Announce receipt timeout associated with
this clock port(2..10 sec.)
   --delay-mechanism                Specify the delay mechanism used (end2end)
   --local-priority                 Set the priority for this clock port
   --min-delay-req-interval         Set the delay-request minimum interval
   --peer-ip                        Specify the PTP clock port Peer IP address
   --peer-ip-mask                   Specify the PTP clock port Peer IP Mask (0..32)
   --pkt-size                       Set the PTP config port packet size (86..1510
Bytes)
   --port                           Identifies an interface on the OLT. (e.g.: pon.2;
eth.3; lag.1)
   --role                           Specify the PTP clock port role (slave|master)
   --self-ip                        Specify the PTP clock port Self IP address
   --self-ip-mask                   Specify the PTP clock port Self IP Mask (0..32)
   --sync-interval                  Set the synchronism message transmission
interval
   --vlan                           Choose a VLAN ID.
```

Figure 7-571: CLI on line help on "config" command usage in this node context

7.6.20.2.4.3 "create" command

Name	create
Description	Create a new PTP port.
Full path	/synchronism/ptp/port/create
Mandatory Parameters	--port
Screen Output	No

Table 7-: "create" command information

```
/cli/synchronism/ptp/port> create ?

Usage CREATE:
  CREATE                          Create a new PTP port.

   <MANDATORY>
   --port                            Identifies an interface on the OLT. (e.g.: pon.2;
eth.3; lag.1)

   [OPTIONAL]
   --admin                           Administrative State. Enable/disable, in this
context. (enable|disable)
   --announce-interval               Set the Announce message transmission interval
   --announce-receipt-timeout        Set the Announce receipt timeout associated with
this clock port(2..10 sec.)
   --delay-mechanism                 Specify the delay mechanism used (end2end)
   --local-priority                  Set the priority for this clock port
   --min-delay-req-interval          Set the delay-request minimum interval
   --peer-ip                         Specify the PTP clock port Peer IP address
   --peer-ip-mask                    Specify the PTP clock port Peer IP Mask (0..32)
   --pkt-size                        Set the PTP config port packet size (86..1510
Bytes)
   --role                            Specify the PTP clock port role (slave|master)
   --self-ip                         Specify the PTP clock port Self IP address
   --self-ip-mask                    Specify the PTP clock port Self IP Mask (0..32)
   --sync-interval                   Set the synchronism message transmission
interval
   --vlan                            Choose a VLAN ID.
```

Figure 7-572: CLI on line help on "create" command usage in this node context

7.6.20.2.4.4 "remove" command

Name	remove
Description	Remove an existing PTP port
Full path	/synchronism/ptp/port/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-535: "remove" command information

```
/cli/synchronism/ptp/port> remove ?

Usage:
  REMOVE          Remove an existing PTP port.

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context.
```

Figure 7-573: CLI on line help on "remove"command usage in this node context

7.6.20.2.4.5 "show" command

Name	show
Description	Show the current PTP port configuration.
Full path	/synchronism/ptp/port/show
Mandatory Parameters	No
Screen Output	Table Figure 7-575. Table parameters description in Table 7-537.

Table 7-536: "show" command information

```
/cli/synchronism/ptp/port> show ?

Usage:
  SHOW            Show the current PTP port configuration

   [OPTIONAL]
   --ID       Identifies a table entry by ID, in this context.
```

Figure 7-574: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/ptp/port> show
+-------------------------------------------------------------------------------------------------+
|Synchronism PTP Port                                                                             |
+---+-------+----------+------+----------------+-------------+----------------+-------------+
|ID |Admin  |NNI-STAG  |Role  |Self IP         |Self IP Mask |Peer IP         |Peer IP Mask |
+---+-------+----------+------+----------------+-------------+----------------+-------------+
+---+-------+----------+------+----------------+-------------+----------------+-------------+
/cli/synchronism/ptp/port>
```

Figure 7-575: Output of "show" command in this node context

Parameter	Description
ID	Identifies a PTP port by ID
Admin	Indicates PTP port administrative state
NNI-STAG	Indicates Outer VLAN ID (service) on the network-facing (Ethernet) interface.
Role	Indicates if the PTP port acts as a slave or as a master
Self IP	Indicates the origin PTP port IP address
Self IP Mask	Indicates the origin PTP port IP Mask
Peer IP	Indicates the destination PTP port IP address
Peer IP Mask	Indicates the destination PTP port IP Mask

Table 7-537: "show" command output table parameters

7.6.20.2.4.6 "showconfig" command

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/synchronism/ptp/port/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Table 7-538: "showconfig" command information

```
/cli/synchronism/ptp/port> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Figure 7-576: CLI on line help on "showconfig" command usage in this node context

7.6.20.2.4.7 "ip-access-list" sub-node

7.6.20.2.4.7.1 "config" command

Name	config
Description	Configure.
Full path	/synchronism/ptp/port/ip-access-list/config
Mandatory Parameters	--ID
Screen Output	No

Table 7-539: "config" command information

```
//cli/synchronism/ptp/port/ip-access-list> config ?

Usage CONFIG:
 CONFIG                Configure

  <MANDATORY>
  --ID                 Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --gw-ip               Set the gateway IP address
  --ip-address          IPv4 address
  --ip-mask             IPv4 Subnet Mask
  --olt-ptp-port-ID       Identify one OLT PTP port instance by ID.
  --role               Set the access list entry role (allow|deny)
```

Figure 7-577: CLI on line help on "config" command usage in this node context

7.6.20.2.4.7.2 "create" command

Name	create
Description	Create.
Full path	/synchronism/ptp/port/ip-access-list/create
Mandatory Parameters	--olt-ptp-port-ID
Screen Output	No

Table 7-540: "create" command information

```
/cli/synchronism/ptp/port/ip-access-list> create ?

Usage CREATE:
  CREATE                        Create

   <MANDATORY>
   --olt-ptp-port-ID               Identify one OLT PTP port instance by ID.

   [OPTIONAL]
   --ID                            Identifies a table entry by ID, in this context.
   --admin                         Administrative State. Enable/disable, in this
context. (enable|disable)
   --gw-ip                         Set the gateway IP address
   --ip-address                    IPv4 address
   --ip-mask                       IPv4 Subnet Mask
   --role                          Set the access list entry role (allow|deny)
```

Figure 7-578: CLI on line help on "create" command usage in this node context

7.6.20.2.4.7.3 "remove" command

Name	remove
Description	Remove
Full path	/synchronism/ptp/port/ip-access-list/remove
Mandatory Parameters	--ID
Screen Output	No

Table 7-541: "remove" command information

```
/cli/synchronism/ptp/port/ip-access-list> remove ?

Usage REMOVE:
  REMOVE                          Remove

   <MANDATORY>
   --ID                              Identifies a table entry by ID, in this context.
```

Figure 7-579: CLI on line help on "remove" command usage in this node context

7.6.20.2.4.7.4 "show" command

Name	show
Description	Show the current PTP port configuration.
Full path	/synchronism/ptp/port/ip-access-list/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 7-. Table patrameters description in Table 7-.

Table 7-542: "show" command information

```
/cli/synchronism/ptp/port/ip-access-list> show ?

Usage:
  SHOW            Show the current configuration
```

Figure 7-580: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/ptp/port/ip-access-list> show
+-------------------------------------------------------------------------------+
|PTP Port IP Access List                                                        |
+---+-------------+----------+------------+------------+------------+------------+
|ID |Admin        |PTP Port  |IP          |Mask        |GW          |Role        |
+---+-------------+----------+------------+------------+------------+------------+
+---+-------------+----------+------------+------------+------------+------------+
/cli/synchronism/ptp/port/ip-access-list>
```

Figure 7-581: Output of "show" command in this node context

Parameter	Description
ID	Identifies a PTP port by ID
Admin	Indicates PTP port administrative state
PTP Port	PTP port Identifier
IP	IPv4 port address
Mask	Ipv4 subnetwork mask
Gw	Gateway IPv4 address
Role	Indicates the access list entry role (allow|deny)

Table 7-543: "show" command output table parameters

7.6.20.3 "status" sub-node

7.6.20.3.1 "global" sub- node

7.6.20.3.1.1 "command" command

Name	command
Description	Execute a command on a given source.
Full path	/synchronism/status/global/command
Mandatory Parameters	--ID --type
Screen Output	No

Table 7-544: "command" command information

```
/cli/synchronism/status> global/sources/command ?

Usage COMMAND:
  COMMAND                          Execute a command on a synchronism source.

   <MANDATORY>
   --ID                               Identifies a table entry by ID, in this context.
   --type                             Enable/clear a lockout configuration on the
specified clock source (clear|lockout)
```

Figure 7-582: CLI on line help on command "command" usage in this node context

7.6.20.3.1.2 "show" command

Name	show
Description	Show the global status information
Full path	/synchronism/status/global/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 7-584. Table parameters description in Table 7-456..

Table 7-545: "show" command information

```
/cli/synchronism/status/global> show ?

Usage:
  SHOW            Show the global status information
```

Figure 7-583: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/status/global> show
+-------------------------------------------------------------------------------------------------------------------+
|Synchronism Status Global                                                                                          |
+-------------+-------------+---------------+-------------------+----------+---------------------------------------+
|Quality Level|Active Source|Nbr Of Junctions|PLL Status         |Lock Alarm|Available Commands                     |
+-------------+-------------+---------------+-------------------+----------+---------------------------------------+
|enabled      |--           |1              |freerun            |Not locked|manual-switch / force-switch / clear   |
+-------------+-------------+---------------+-------------------+----------+---------------------------------------+
/cli/synchronism/status/global>
```

Figure 7-584: Output of "show" command in this node context

Parameter	Description
Quality level	May be enabled or disabled
Active Source	Synchronization source (slot or junction number) of the respective PLL;
Nr. of Junctions	Number of synchronism junctions
PLL Status	Equipment system PLL is controlled by a state machine according to G.781 recommendation and can have one of the following status: **Hold Over**: The PLL will switch to this status if it ceases to be a valid synchronization source. This status provides a stable synchronization clock based on the original clock memorization; **Free Run**: The PLL is synchronized by the local clock; **Normal**: The PLL is synchronized by the programmed synchronization source
Lock alarm	This alarm is triggered when the PLL is not locked
Available Commands	There are several external commands that are available to the user, for example for maintenance purposes commands. These commands are independent and have different impacts on the selection processes. Enabling and disabling external commands associated with the synchronization selection process is defined below. Only one of these external commands is enabled by the selection process at a time. It is possible to carry out the following commands in the active synchronism sources, • **Clear** • **Manual Switch** • **Force Switch**

Table 7-546: "show" command output table parameters

7.6.20.3.1.3 "sources" sub-node

7.6.20.3.1.3.1 "command" command "

Name	command
Description	Execute a command on a synchronism source.
Full path	/synchronism/status/global/sources/command
Mandatory Parameters	--ID --type
Screen Output	No

Table 7-547: "command" command information

```
/cli/synchronism/status/global/sources> command ?

Usage:
  COMMAND         Execute a command on a synchronism source.

   <MANDATORY>
   --ID       Identifies a table entry by ID, in this context.
   --type     Enable/clear a lockout configuration on the specified clock source
(clear|lockout)
```

Figure 7-585: CLI on line help on command "command" usage in this node context

7.6.20.3.1.3.2 "show" command

Name	show
Description	Show the status information
Full path	/synchronism/status/global/sources/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 7-587. Table parameters description in Table 7-549

Table 7-548: "show" command information

```
/cli/synchronism/status/global/sources> show ?

Usage:
  SHOW            Show the status information.
```

Figure 7-586: CLI on line help on "show" command usage in this node context

```
/cli/synchronism/status/global/sources> show
+-------------------------------------------------------------------+
|Synchronism Status Sources                                         |
+---+----------+----------+----------+-----------+-----------------+
|ID |Source    |SSM RX    |SSM Used  |Signal Fail|Attenuation (dB)|
+---+----------+----------+----------+-----------+-----------------+
|1  |J1        |unknown   |DNU       |Absent     |> -2.5           |
|2  |GbE 1     |DNU       |DNU       |OK         |--               |
|3  |GbE 2     |DNU       |DNU       |Absent     |--               |
|4  |GbE 3     |DNU       |DNU       |Absent     |--               |
|5  |GbE 4     |DNU       |DNU       |Absent     |--               |
|6  |10GbE 1   |DNU       |DNU       |Absent     |--               |
|7  |10GbE 2   |DNU       |DNU       |Absent     |--               |
|8  |10GbE 3   |DNU       |DNU       |Absent     |--               |
|9  |10GbE 4   |DNU       |DNU       |Absent     |--               |
+---+----------+----------+----------+-----------+-----------------+
/cli/synchronism/status/global/sources>
```

Figure 7-587: Output of "show" command in this node context

Parameter	Description
ID	Indicates synchronization source
Source	Indicates synchronization source (slot or junction number)
SSM Rx	This column identifies the received SSM (Synchronization Status Message);
SSM Used	This column identifies the used SSM
Signal Fail	Signal failure of the respective synchronism source
Attenuation	Attenuation (measured in dB) associated with each of the existing synchronism junctions

Table 7-549: "show" command output table parameters

7.6.20.3.2 "ptp" sub-node

7.6.20.3.2.1 "show" command

Name	show
Description	Show the current status information
Full path	/synchronism/status/ptp/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table

Table 7-550: "show" command information

```
/cli/synchronism/status/ptp> show ?

Usage:
  SHOW            Show the current status information
```

Figure 7-588: CLI on line help on "show" command usage in this node context

7.6.21 "users" node

```
/cli/users> tree
+ users[@config, @create, @remove, @show, @status]
```

Figure 7-589: "users" node tree

7.6.21.1 "config" command

This command is only available for users with administrator's permissions.

Name	config
Description	Configure an existing user login
Full path	/users/config
Mandatory Parameters	--change-passwd[=STRING] --login
Screen Output	No

Table 7-551: "config" command information

```
/cli/users> config ?

Usage:
  CONFIG          Configure an existing user login.

   <MANDATORY>
   --change-passwd[=STRING]  Trigger a password change
   --login    User's login

   [OPTIONAL]
   --auto-removal     User's auto-removal (enable|disable)
   --expire-time      User's expire time (hours)
   --permissions      User's permissions
   --renew    Renew expired user (enable)
```

Figure 7-590: CLI on line help on "config" command usage in this node context

7.6.21.2 "create" command

This command is only available for users with administrator's permissions.

Name	create
Description	Create a new user login.
Full path	/users/create
Mandatory Parameters	--login --permissions
Screen Output	No

Table 7-552: "create" command information

```
/cli/users> create ?

Usage:
  CREATE          Create a new user login.

   <MANDATORY>
   --login    User's login
   --permissions      User's permissions

   [OPTIONAL]
   --auto-removal     User's auto-removal (enable|disable)
   --expire-time      User's expire time (hours)
```

Figure 7-591: CLI on line help on "create" command usage in this node context

7.6.21.3 "remove" command

This command is only available for users with administrator's permissions.

Name	remove
Description	Remove an existing user login
Full path	/users/remove
Mandatory Parameters	--login
Screen Output	No

Table 7-553: "remove" command information

```
/cli/users> remove ?

Usage:
  REMOVE          Remove an existing user login.

   <MANDATORY>
   --login    User's login.
```

Figure 7-592: CLI on line help on "remove" command usage in this node context

7.6.21.4 "show" command

This command is only available for users with administrator's permissions.

Name	show
Description	Show the current users login configuration.
Full path	/users/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-594.Table parameters description in Table 7-555.

Table 7-554: "show" command information

```
/cli/users> show ?

Usage:
 SHOW        Show the current users login configuration..
```

Figure 7-593: CLI on line help on "show" command usage in this node context

```
/cli/users> show
+-----------------------------------------------------------------+
|Users Configurations                                             |
+---------------+---------------+---------------+---------------+
|Login          |Permissions    |Auto-Removal   |Timeout        |
+---------------+---------------+---------------+---------------+
|admin          |administrator  |--             |--             |
|standard       |poweruser      |--             |--             |
|guestuser      |guest          |--             |--             |
|b              |poweruser      |enabled        |1 hours        |
+---------------+---------------+---------------+---------------+
/cli/users>
```

Figure 7-594: Output of "show" command in this node context

Parameter	Description
Login	Identifies a user by Users' login
Permissions	Indicates the user's permissions
Auto-Removal	Indicates if user's auto-removal feature is enabled or disabled
Timeout	Indicates the user's login expire time

Table 7-555: "show" command output table parameters

7.6.21.5 "status" command

Name	status
Description	Show the current users login configuration.
Full path	/users/status
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 7-596.Table parameters description in Table 7-557.

Table 7-556: "show" command information

```
/cli/users> status ?

Usage:
  STATUS          Show the current users login status.
```

Figure 7-595: CLI on line help on "status" command usage in this node context

```
/cli/users> status
+-----------------------------------------------+
|Users Status                                   |
+---------------+---------+--------------------+
|Login          |Active   |Remaining Time      |
+---------------+---------+--------------------+
|admin          |active   |--                  |
|standard       |active   |--                  |
|guestuser      |active   |--                  |
|b              |inactive |--                  |
+---------------+---------+--------------------+
/cli/users>
```

Figure 7-596: Output of "show" command in this node context

Parameter	Description
Login	Identifies a user by Users' login
Active	Indicates if the user is active
Remaining Time	Indicates the remaining time till the user's login expires

Table 7-: Status command – output table parameters

7.6.22 utils" node

```
/cli/utils> tree
+ utils[@ping, @tcpdump, @telnet, @traceroute]
```

Figure 7-597: "utils" node tree

7.6.22.1 "ping" command

Name	ping
Description	Execute ping
Full path	/utils/ping
Mandatory Parameters	--dst-ip
Screen Output	Yes

Table 7-558: "ping" command information

```
/cli/utils> ping ?

Usage PING:
  PING                          Execute Ping

   <MANDATORY>
   --dst-ip                        Set Destination IP Address

   [OPTIONAL]
   --count                         Count
```

Figure 7-598: CLI on line help on "ping" command usage in this node context

7.6.22.2 "tcpdump" command

Name	tcpdump
Description	Execute tcpdump
Full path	/utils/tcpdump
Mandatory Parameters	No
Screen Output	Yes

Table 7-559: "tcpdump" command information

```
/cli/utils> tcpdump ?

Usage TCPDUMP:
  TCPDUMP                       Execute Tcpdump

   [OPTIONAL]
   --dns-resolv                    Translate IP addresses (and port numbers) using
DNS (true/false)
   --filter                       Filter by protocol, IP, ports, etc. Syntax is
equal to linux tcpdump
   --src-interface                 Set Source Interface
   --verbosity                     Verbosity level (-1 .. 3)
```

Figure 7-599: CLI on line help on "tcpdump" command usage in this node context

7.6.22.3 "telnet" command

Name	telnet
Description	Execute telnet connection
Full path	/utils/telnet
Mandatory Parameters	--dst-ip
Screen Output	Yes

Table 7-560: "telnet" command information

```
/cli/utils> telnet ?

Usage TELNET:
  TELNET                          Execute Telnet connection

   <MANDATORY>
   --dst-ip                          Set Destination IP Address

   [OPTIONAL]
   --dst-port                        Set Destination Port
```

Figure 7-600: CLI on line help on "telnet" command usage in this node context

7.6.22.4 "traceroute" command

Name	traceroute
Description	Execute traceroute
Full path	/utils/traceroute
Mandatory Parameters	--dst-ip
Screen Output	Yes

Table 7-561: "traceroute" command information

```
/cli/utils> traceroute ?

Usage TRACEROUTE:
  TRACEROUTE                      Execute Traceroute

   <MANDATORY>
   --dst-ip                          Set Destination IP Address

   [OPTIONAL]
   --dns-resolv                      Translate IP addresses (and port numbers) using
DNS (true/false)
   --src-interface                   Set Source Interface
   --src-ip                          Set Source IP Address
```

Figure 7-601: CLI on line help on "traceroute" command usage in this node context

8. Troubleshooting

This chapter describes the most common problems on the OLT1T3 equipment configuration and operation and the procedures to handle with those via the WEBTI (local management interface).

8.1 Common Problem Handling

Problem description	Possible Cause(s)	Procedure
WEBTI window incorrect display	• The browser you are using is not internet explorer • You are using the internet explorer without compatibility view configured • The equipment you are accessing with the WEBTI local management is not in the Explorer compatibility view list.	Use internet explorer browser with compatibility mode to access the equipment via local management WebTi interface; Please refer to section 5.1.2 Configuring the Web Browser
The ONU is an ONT-RGW , the VoIP interface was selected at OLT ONU configuration tables, but VoIP is not working properly at the client side	If the ONU is an ONT-RGW, VoIP is not configured at the OLT but it is configured at the ONT-RGW GUI (Graphical User Interface);	Please refer to ONT Gateway Family user manual for the VoIP service configuration.
While making a service configuration at the ONT-RGW, the OLT ONU configuration table is not available	The most common cause for this issue is the interface associated to the service was one of the ETH ONT-RGW interfaces	Any service configured at the ONT-RGW must have as associated interface the VEIP (Virtual Ethernet Interface Port) OLT configuration tables for this ONT-RGW at the Services tables, for the service not working, select the view link at the details column to view the service configuration details, at the port configuration verify is VEIP is the associated port; if not correct it.
An ONU equipment just added is shown in status absent a few seconds afterwards	--	Use refresh button to force the update of the window
A configured multicast service is not working	• A an unicast service associated to the multicast service (with the same UNI-C-VLAN used for the Multicast service) must always be configured for the IGMP messages • The Multicast Group List was not configured • The IGMP Proxy is not enabled.	• At the Configuration menus item services, verify at the services table that a unicast service exists configured with the same UNI-C-TAG as the multicast service, with IGMP flag selected and that is administratively up. If such service does not exist or not correctly configured change its configuration and save it. • Go to Configuration, Multicast, Group List and add the multicast groups needed for that service • Go to Configuration, Multicast, Proxy and enable it.
You have just upgraded the OS of your OLT and are trying to configure admin up or down an uplink port and receive the following error message: **0703010A::NULL message received from client applications**	--	Close the browser and clean the cache.

Table 8-1: Common Problem Handling list

8.2 Equipment Error Codes

Equipment Error Code(hexadecimal)	Description
0x08030001	Unavailable resources for counter activation
0x08030006	Unavailable resources for the service in the OLT
0x08030100	Service has active probe or counter
0x08XXXXXX 0x69XXXXXX	Equipment firmware error (XX means any value)
0x07XXXXXX	Internal Equipment Error (IPC Error) (XX means any value)
0x0A03000E	Invalid Operational State
0x0A030113	The proposed serial number already exists.
0x0A030114	ONTs list is updating
0x0A030115	The serial number is invalid.
0x0A030117	The password is being used by another ONU
0x0A030118	Register type is invalid.
0x0D030100	The minimum distance is greater than the maximum
0x0D030101	The difference between minimum and maximum distance is greater than allowed
0x0D030102	There are ONTs connected to the PON port which do not allow it to be disabled
0x0D030103	FEC Downstream is not enabled on the PON port
0x0D030104	FEC Upstream is not enabled on the ONT
0x0D030105	The PON port has ONTs with services
0x0D030106	The PON port is used in unstacked services with different MAC Bridge type
0x0D030107	The PON port is in VLAN mapping mode
0x0D030108	The PON port is in VLAN + P-Bit mapping mode
0x0D034320	Invalid protection group administrative state
0x0D034321	Invalid protection group mode
0x0D034322	Invalid protection group reversibility
0x0D034323	Invalid protection group 'wait to restore' value
0x0D034324	Invalid protection group 'hold-off timer' value
0x0D034325	Invalid protection group primary port
0x0D034326	Invalid protection group protection port
0x0D034327	Protection group primary port is not active
0x0D034328	Protection group protection port is active
0x0D034330	The ports of the protection group cannot be the same
0x0D034331	The protection group is active
0x0D034332	The protection group is not active
0x0D034333	The protection group entity ID already exists
0x0D034334	Port in use by a protection group
0x0D034335	Protection port has ONUs
0x0D034336	Protection port has services
0x0D034337	The protection and working ports of the protection group belong to the same card
0x0D034338	The protection is being activated/deactivated or sinchronyzing
0x0D034339	The protection information is not synchronized
0x0D034891	Service is in use on a Multicast Channel
0x0D03489A	There is at least one ACL associated to the service
0x0D0348A0	There is at least one probe associated to the service
0x1D030303	Incompatible hardware version
0x1D034880	Invalid ID
0x1D034881	Invalid Admin
0x1D034882	Invalid Type
0x1D034883	Invalid Client Port
0x1D034884	Not enough resources to active ONU counter. Max nbr reached
0x1D034886	The respective OLT service is not admin enabled
0x1D034890	Only inactive services can be removed
0x1D034891	UNI-C-Tag already in use by another service in this ONU

0x1D034893	Only one multicast service is allowed per ONU
0x1D034894	Network Service already associated with another Client Service (same ONU).
0x1D034895	NNI C-Tag is in use by another ONU
0x1D034896	NNI C-Tag < min
0x1D034897	NNI C-Tag > max
0x1D034898	MAX service num
0x1D034899	(multicast) NNI C-Tag cannot be zero
0x1D03489A	The NNI C-TAG can't be 0 for unicast stacked services
0x1D03489B	service has attached ONU interface(s)
0x1D03489C	OLT service does not include this ONU interface
0x1D03489D	service has attached interfaces(s)
0x1D03489F	Reached Maximum nbr of downstream services for this Slot
0x1D0348B0	max Upstream BW
0x1D0348BA	VoIP services can only have VoIP interfaces
0x1D0348BB	VoIP services must have at least one VoIP interface
0x1D0348BC	The unicast service associated is admin disabled 0x1D0348BD The multicast service associated is admin enabled
0x1D0348BE	Invalid DHCP configurations
0x1D0348BF	Invalid remote-id string
0x1D0348C0	Unable to configure more than one unicast IGMP service per ONU
0x1D0348C1	No unicast IGMP service for this ONU
0x1D0348C2	No active unicast IGMP service for this ONU
0x1D0348C3	IP Management can only be configured for unicast services
0x1D0348C4	Requested ONU cannot have more than one service with IP Management
0x1D0348C5	Encryption flag cannot be used in multicast services
0x1D0348C6	All multicast services must be deactivated prior to deactivating the unicast IGMP service
0x1D0348C7	Unable to remove service Bridge master until the remaing Bridge services are removed
0x1D0348C8	Unable to configure a downstream traffic profile on unstacked services
0x1D0348C9	NNI C-Tag is used by another Client Service associated with a Network Service with the same NNI S-Tag
0x1D0348CA	The selected ethernet profile does not exist
0x1D0348CB	The selected upstream profile does not exist
0x1D0348CC	The service has no T-CONTs mapping
0x1D0348CD	The service has T-CONTs mapping
0x1D0348CE	Invalid PCP profile
0x1D035010	Duplicated Client Service referencing the same Unstacked Network Service on this Interface
0x1D035011	Requested NNI C-Tag does not match the remaining ONUs assoc iated with the same N:1 Bridge OltService
0x1D035012	EthernetProfileId MUST match for all OntServices that belong to the same ONU and N:1 Bridge OltService
0x1D035013	EthernetProfileId MUST match for all OntServices that belong to the same card and 1:1 Bridge OltService
0x1D035014	Client Service has no interface associated
0x1D035015	Unstacked Services: Duplicated UNI C-TAG --Stacked Services: UNI C-TAG cannot duplicate NNI C-TAG
0x1D035016	Duplicated UNI-CTAG for the chosen service type
0x1D035020	The network service has no IGMP
0x1D035021	IGMP override flag cannot be done on active service 0x1D035030 Maximum number of MACs out of range
0x1D035031	Maximum number of MACs not supported for service type
0x1D035032	Extended VLAN tagging is active in a service port
0x1D035033	The service is referenced by Extended VLAN tagging rules
0x1D039211	The upstream profile can't be changed with upstream profiles
0x1D039212	The type of the upstream traffic profile is invalid
0x1D039213	Invalid parameter for upstream traffic profile
0x1D039214	Empty String for Profile name
0x1D039215	The specified ONU profile ID does not exist

0x1D039216	The specified ONU profile ID is not ADMIN Enabled
0x1D039230	Invalid T-CONT admin state
0x1D039231	Invalid upstream profile
0x1D039240	The T-CONT is active
0x1D039241	The internal ALLOC ID pool is exhausted
0x1D039242	The T-CONT is being used by a service
0x1D039250	Invalid T-CONT ID
0x1D039251	Invalid client service ID for T-CONT mapping
0x1D039252	Invalid priority for T-CONT mapping
0x1D039260	The specified priority does not exist on the P-Bit profile of the PON
0x1D039261	The Service has an upstream profile
0x1D039262	Invalid T-CONT admin state
0x1D03A400	Invalid rule admin state
0x1D03A401	Invalid outer priority filter
0x1D03A402	Invalid inner priority filter
0x1D03A403	Invalid inner VID filter
0x1D03A404	Invalid outer VID filter
0x1D03A405	Invalid inner TPID filter
0x1D03A406	Invalid outer TPID filter
0x1D03A407	Invalid ethertype filter
0x1D03A408	Invalid number of tags to remove
0x1D03A409	Invalid inner priority action
0x1D03A40A	Invalid outer priority action
0x1D03A40B	Invalid inner VID action
0x1D03A40C	Invalid outer VID action
0x1D03A40D	Invalid inner TPID action
0x1D03A40E	Invalid outer TPID action
0x1D03A40F	Invalid client service
0x1D03A410	The rule is active
0x1D03A411	Duplicate filter
0x1D03A420	Invalid enable value
0x1D03A421	Invalid association type
0x1D03A422	Invalid associated entity ID
0x1D03A423	Invalid input TPID
0x1D03A424	Invalid output TPID
0x1D03A425	Invalid DSCP to P-Bit mapping profile
0x1D03A430	The port has services
0x1E034893	For unicast/multicat services the pair service type/uni-vlan has to be unique in the OLT
0x1E0348DD	Stacked services can only have one uplink port
0x1E034901	UNI C-Tag already in use in the NNI S-Tag of a non-multicast network service
0x1E034902	UNI C-Tag já em uso na NNI S-Tag dum serviço de rede multicastUNI C-Tag already in use in the NNI S-Tag of a multicast network service
0x1E039213	Invalid parameters in the configuration Upstream profile
0x21030300	Static groups end point value not valid
0x21030301	Cannot change static group end point - there is at least one static active group list entry.
0x50034896	Only 32 bits mask is allowed in static groups
0x5D030101	Invalid Downlink interface
0x5D030102	Multicast service interface is not mapped in any of the associated unicast services interfaces
0x5D030103	Unicast service interface is a member of a UC/MC association
0x5D030104	Invalid interface Role
0x5D030105	Invalid Admin State
0x5D030106	Invalid uplink interface
0x5D030107	Invalid downlink interface
0x5D030108	Interface and NNI S-TAG already used in synchronism
0x5D034850	The service must contain at least one uplink interface
0x5D034850	The service must contain at least one uplink interface

0x5D034851	The service must contain at least two interfaces (uplink+downlink)
0x5D034852	Stacked services cannot have multiple uplink interfaces
0x5D034853	Unable add this interface because an active PTP entry with the same NNI S-TAG already exists
0x5D034854	Selected port belongs to an invalid card for this service type
0x5D034854	Selected port belongs to an invalid card for this service type
0x5D034860	Stacked services for this service type, must contain only one uplink port
0x5D034861	Selected port belongs to a Static Probe
0x54030103	There is already an entry with the same service/mac
0x5A030103	Invalid IP address for active probe
0x60030104	Unknown parameter in the circuit ID string
0x65030101	Invalid ACL id
0x65030102	Invalid ACL administrative state
0x65030103	Invalid ACL type
0x65030104	ACL is used on a rule
0x65030105	ACL is used on an interface
0x65030106	ACL is used on a service
0x65030107	Invalid ACL rule administrative state
0x65030108	Invalid ACL rule action
0x65030109	Invalid ACL rule ethernet type
0x65030110	Invalid ACL rule CoS
0x65030111	Invalid ACL rule IP protocol
0x65030112	Invalid ACL rule port
0x65030113	Invalid ACL rule DSCP
0x65030114	Invalid ACL rule precedence
0x65030115	Invalid ACL rule flow label
0x65030116	Maximum number of rules per ACL reached
0x65030117	Cannot remove/disable the last rule for an ACL with enabled associations
0x65030118	ACL interface association: invalid administrative state
0x65030119	ACL interface association: invalid direction
0x65030120	ACL interface association: invalid interface id
0x65030121	ACL interface association: invalid ACL id
0x65030122	ACL interface association: invalid interface id
0x65030123	ACL interface association: invalid ACL id
0x65030124	ACL service association: invalid administrative state
0x65030125	ACL service association: invalid direction
0x65030126	ACL service association: invalid ACL id
0x65030127	ACL service association: invalid network service id
0x65030128	ACL service association: service is not active
0x66030101	Invalid Interface for IP Source Guard
0x66030102	Invalid Admin State
0x66030103	Invalid IP Version
0x66030104	The associated Network Service must be enabled
0x66030105	Unknown Network Service.
0x66030106	Cannot change admin enabled entities
0x66030107	Interface must be active
0x66030108	Interface must be IP Source Guard Enabled (interface configuration)
0x66030109	Interface must belong the NS downlink port list
0x6603010A	Interface must belong the NS downlink card list.
0x6603010B	MAC cannot be full zeros

Table 8-2: Equipment Error Codes List

9. Glossary of Terms and Abbreviations

AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BMCA	Best Master Clock Algorithm
CCM	Continuity Check Message
CDP	Cisco Discovery Protocol
CFM	Connectivity Fault Management
C-Tag	Client Tag
CWDM	Coarse Wavelength Division Multiplexing
DBA	Dynamic Bandwidth Allocation
DHCP	Dynamic Host Configuration Protocol
DMAC	Destination MAC address
E1	European digital transmission format 1
ETH	Ethernet
ETSI	European Telecommunications Standards Institute
FEC	Forward Error Correction
FSAN	Full Service Access Network
GbE	Giga bit Ethernet
GEM	GPON Encapsulation Mode
GPON	Gigabit-capable Passive Optical Network
ICC	ITU-T Carrier Code
ID	Identification
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IP	Internet Protocol

IPTV	Internet Protocol Television
L2	Layer 2 - Data Link Layer
LACP	Link Aggregation Control Protocol
LACPDU	Link Aggregation Control Protocol Data Unit
LAG	Link Aggregation Group
LC/PC	LC/PC Fiber Optic Connector
MAC	Media Access Control
MAID	Maintenance Association Identifier. An identifier for a Maintenance Association, unique over the OAM domain. The MAID has two parts: the MD Name and the Short MA Name. A MAID is equivalent to the ITUs term MEG ID.
MD	Maintenance Domain. The part of a network for which faults in connectivity can be managed.
ME	Maintenance Entity. A point-to-point relationship between two MEPs within a single MEG.
MEG	Maintenance Entity Group. Equivalent to a Maintenance Association (MA). A set of MEs that exist in the same administrative boundary, with the same MEG Level and MEG ID.
MEG ID	Maintenance Entity Group Identifier. Equivalent to the IEEE term Maintenance Association Identifier (MAID). An identifier for a MEG, unique over the domain that SOAM is to protect against the accidental concatenation of service instances.
MEP	Maintenance association End Point [IEEE 802.1ag], or equivalently MEG End Point [ITU-T Y.1731]. An actively managed SOAM entity associated with a specific service instance that can generate and receive SOAM PDUs and track any responses. It is an end point of a single MEG, and is an endpoint of a separate Maintenance Entity for each of the other MEPs in the same MEG.
MSA	Multi Source Agreement
MTU	Maximum Transmission Unit
ODN	Optical Distribution Network
OLT	Optical Line Terminal
OMCI	ONT Management Control Interface
ONT	Optical Network Terminal
ONU	Optical Network Unit
OSPF	Open Shortest Path First adaptive routing protocol
PON	Passive Optical Network
PDU	Protocol Data Unit
PDV	Packet Delay Variation

QoS	Quality of Service
RF	Radio Frequency
RG	Residential Gateway
RIP	Routing Information Protocol
RMEP	Remote MEP
NG-PON	Next Generation Passive Optical Network
SC/APC	SC/APC Fiber Optic Connector
SC/PC	SC/PC Fiber Optic Connector
SDH	Synchronous Digital Hierarchy
SFP	Small Form-factor Pluggable transceiver
PDU	PDU Protocol Data Unit
PDV	Packet Delay Variation
QoS	Quality of Service
RF	Radio Frequency
RG	Residential Gateway
RIP	Routing Information Protocol
RMEP	Remote MEP
NG-PON	Next Generation Passive Optical Network
SC/APC	SC/APC Fiber Optic Connector
SC/PC	SC/PC Fiber Optic Connector
SDH	Synchronous Digital Hierarchy
SFP	Small Form-factor Pluggable transceiver
SONET	Synchronous Optical Networking
S-Tag	Service Tag
STP	Spanning Tree Protocol
TLS	Transparent LAN Services

T-CONT Traffic Container

TWDM Time domain and Wavelength Division Multiplexing

UMC Unique MEG-ID code

USB Universal Serial Bus

UTP Unshielded Twisted Pair

VLAN Virtual Local Area Network

VoIP Voice over Internet Protocol

SFP+ 10 Gigabit Small Form Factor Pluggable transceiver

XGPON Extra Large Gigabit Passive Optical Network


European technology Made in EUrope