

## 9. Ethernet passive optical networks (EPON) MIB module

### 9.1 Overview

This clause defines a MIB module for use with SNMP to manage 1-G-EPON interfaces for Ethernet Passive Optical Networks. The clause contains a list of management objects based on the attributes defined in the relevant parts of Clause 30 of IEEE Std 802.3, referring to EPON.

#### 9.1.1 EPON architecture highlights

##### 9.1.1.1 Introduction

The EPON standard, now part of IEEE Std 802.3, defines the Physical Layer and Media Access Control sublayer of EPON interfaces. EPON is a variant of Gigabit Ethernet used in optical access. The passive optical network (PON) comprises sections of single-mode fiber connected with passive optical splitter/coupler devices, forming a passive optical tree, as shown in Figure 9-1. Individual branches of the PON are terminated with the optical line terminal (OLT) in the central office and optical network units (ONUs) near the subscribers. ONUs can be located either in some remote location (e.g., basement in a multidwelling unit) or directly at the subscriber premises. Various types of customer premises equipment (CPE) can be connected to ONUs or even integrated with such devices. Figure 9-1 presents an example PON topology.

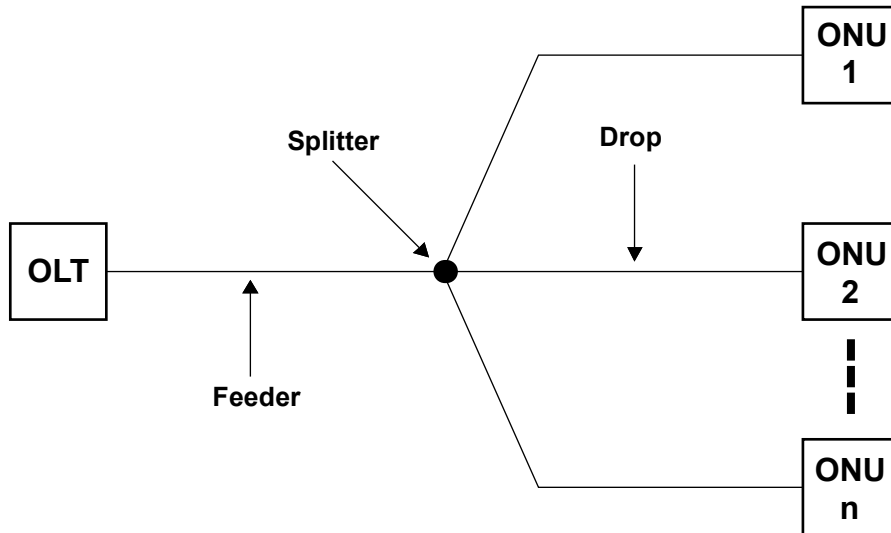


Figure 9-1—PON topology example

The IEEE layering architecture of an EPON interface is defined in the diagram of Figure 56-2 in IEEE Std 802.3. The following clauses in IEEE Std 802.3 define the corresponding layers of an EPON interface:

- Clause 30: Management
- Clause 60: PMD for EPON media (burst-mode PMD)
- Clause 64: MPCP (Multipoint Control Protocol), which defines the Multipoint architecture, and control protocol for the media access of EPON.
- Clause 65: Reconciliation Sublayer and Physical Coding Sublayer, which defines a number of extensions to standard Gigabit Ethernet PCS, i.e.:
  - a) Definition of Point-to-Point emulation function for EPON.
  - b) Definition of the optional (frame-based) FEC for EPON.
  - c) PMA for EPON.



### 9.1.1.2 Principles of operation

The EPON interface specification extends the specification of Gigabit Ethernet as described in Clause 35 and Clause 36 of IEEE Std 802.3. The Ethernet MAC operates at the data rate of 1 Gb/s, and it is connected to a media-dependent interface through the GMII interface, as described in Clause 35. The EPON PCS layer extends the Gigabit Ethernet PCS as described in Clause 36. New, EPON-specific layers are added to Gigabit Ethernet layers in the following locations:

- MPCP is placed in the MAC control layer, providing EPON media access, station discovery, and registration protocol.
- Functionality of the reconciliation sublayer (RS) of Gigabit Ethernet was extended, creating logical links over shared passive optical medium, providing private transmission channels to each of the connected ONUs.
- (Optional) FEC functionality located between the PCS and PMA layers was added, extending the Gigabit Ethernet PCS layer, enhancing reach and split performance of the EPON optical link.

Figure 9-2 presents the EPON layering model.

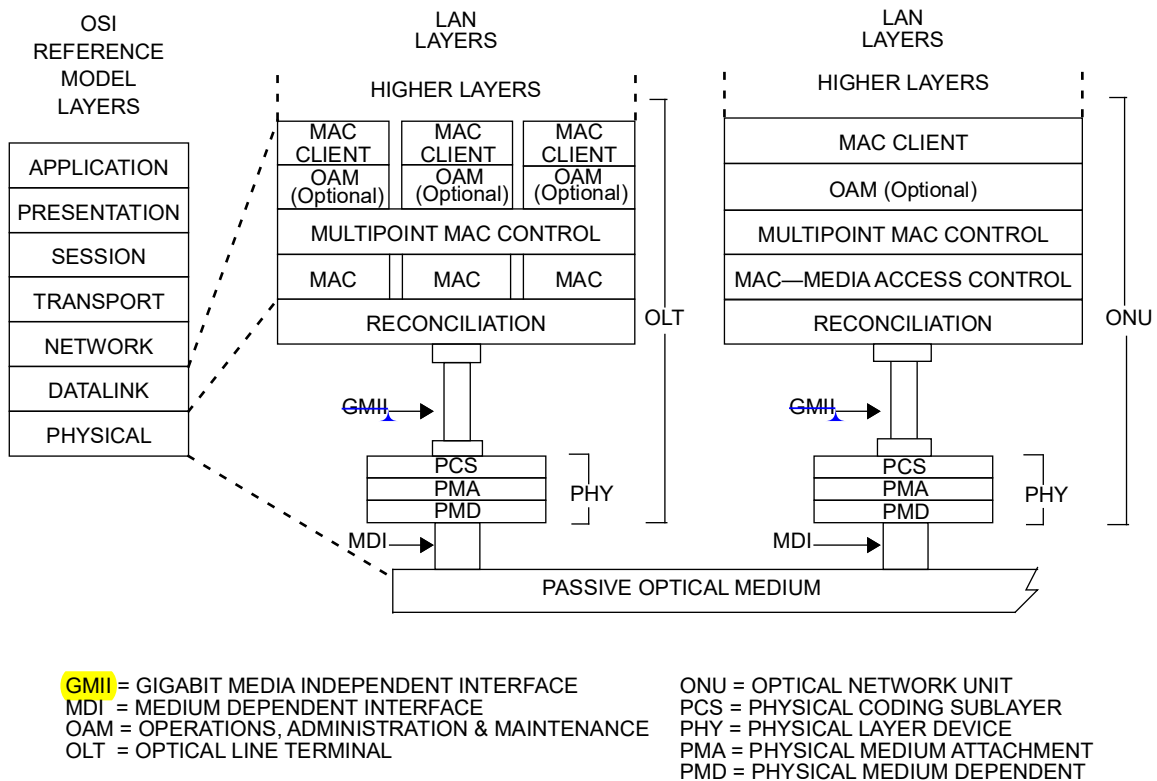


Figure 9-2—Relationship of Multipoint MAC control and the OSI protocol stack

### 9.1.1.3 Physical media

The physical link in EPON comprises single-mode fiber. The OLT and ONUs are connected through a passive optical network comprising sections of single-mode fiber interconnected with passive splitter/coupler devices.

1 The term *downstream* denotes transmission from the OLT to all connected ONUs, while the term *upstream*  
2 denotes transmission from the connected ONUs (one at the time) to the OLT. Upstream and downstream  
3 transmissions are wavelength division multiplexed (WDM) into a single strand of single-mode fiber, sharing  
4 the same physical link.  
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8 The downstream transmission channel is continuously available to the OLT; thus, Time Division  
9 Multiplexing (TDM) is used. Transmissions from the OLT arrive at all of the connected ONUs and the  
10 individual ONUs filter data from the OLT's transmission based on the logical link identifiers (LLIDs)  
11 assigned to them during the registration and discovery process.  
12

13  
14 The upstream transmission channel is shared among a number of connected and registered ONUs using  
15 Time Division Multiple Access (TDMA). Access to the upstream channel is controlled via the Multipoint  
16 Control Protocol (MPCP), where the OLT plays the role of the master and ONUs play the role of slave  
17 devices. An ONU upon registration remains silent until registered, and once registered, it transmits data  
18 toward OLT only when granted a transmission opportunity (slot).  
19  
20

#### 21 22 **9.1.1.4 PMD specifications** 23

24  
25 The EPON PMD specifications are based on a wavelength plan similar to that used by ITU-T G.983.1. The  
26 OLT and ONU optical parameters were derived in part from earlier ~~1000-Mb/s~~ Ethernet PMD specifications,  
27 with the addition of WDM capabilities, and burst mode operation for ONU transmitters and the OLT  
28 receiver.  
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31  
32 The upstream burst mode operation capability corresponds directly to the TDMA operation in the upstream  
33 direction, where queued data is burst from individual ONUs at full data rate for the duration of the allocated  
34 transmission period. Once completed, the ONU goes silent and another ONU starts transmitting its data.  
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#### 37 38 **9.1.1.5 Point-to-point emulation** 39

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41 The downstream link is a broadcast medium, which means that all data transmitted by the OLT is received  
42 by all connected ONUs. In order to facilitate compliance of EPON with Ethernet architecture, the P2PE  
43 function was included in the RS, creating a series of logical links between the OLT and connected ONUs.  
44 An additional broadcast link is also provided for delivery of any broadcast content. In this way, EPON  
45 becomes a collection of logical P2P connections established between the OLT and the ONUs. Therefore, the  
46 OLT can be seen as an Ethernet device with N+1 logical ports (N P2P logical interfaces and 1 broadcast  
47 interface, where N designates the number of connected ONUs).  
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50  
51 Logical links also provide a solution for privacy of data, which otherwise would be shared by all subscribers  
52 connected to a single OLT port. In this way, each subscriber is isolated and restricted to accessing data  
53 streams addressed only to that particular subscriber.  
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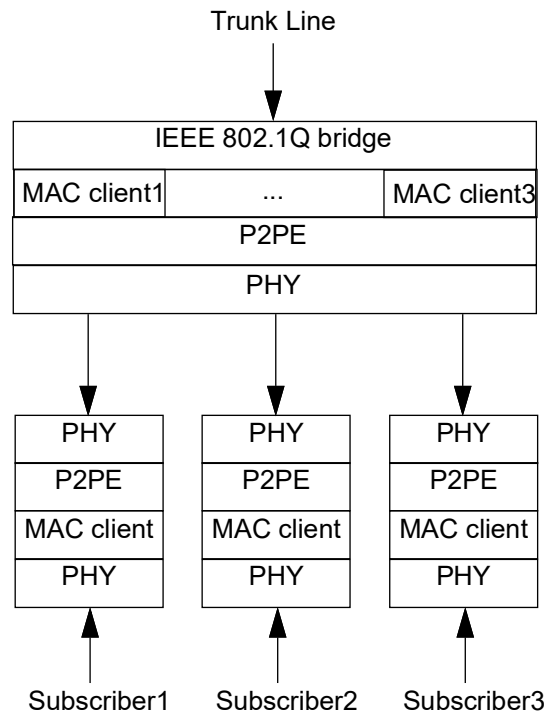
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56 This concept is illustrated in Figure 9-3, which shows an example of an EPON with a single OLT and three  
57 connected ONUs.  
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61 The single copy broadcast channel (addressed with a special, reserved LLID, see 65.1.3.1 of  
62 IEEE Std 802.3) was added to take advantage of the broadcast transmission capability of the underlying  
63 physical medium. In this way, it is very simple and very bandwidth efficient to deliver broadcast content to  
64 all ONUs at the same time, avoiding the need to replicate data into a series of P2P links.  
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**Editor's Note (to be removed prior to publication):**

Reference to IEEE Std 802.1D was replaced with IEEE Std 802.1Q (text and Figure 9-3) per Maintenance Request 1383 (see [https://www.ieee802.org/3/maint/requests/maint\\_1383.pdf](https://www.ieee802.org/3/maint/requests/maint_1383.pdf))

The ONUs filter all downstream data and drop all frames addressed to other devices. Only broadcast frames and frames with correct unicast logical link ID (LLID) are admitted and processed. The LLID replaces two octets of the Ethernet frame preamble, identifying a logical link established between the OLT and the given ONU during the discovery and registration process. The LLID indicates the destination port in the downstream and the source port in the upstream. The logical links are used effectively to prevent EPON from violating the IEEE 802.1Q bridging rules.



**Figure 9-3—Example of point-to-point emulation used between an OLT and three ONUs**

### 9.1.1.6 Principles of the MPCP

The EPON standard comprises a mechanism for media access control, referred to as the Multipoint Control Protocol (MPCP). An access network architecture is different from a typical LAN environment, primarily in terms of network provisioning. An access network is an administrated environment, with an operator providing services and subscribers consuming it depending on service provisioning contracts. The operator controls the network, manages traffic and medium access, and enforces the service level agreements (SLAs). For instance, the available bandwidth is controlled and subscribers may be billed for services. In this sense, the access network (and EPON specifically) requires a media access control protocol that provides a mechanism for station discovery and registration as well as bandwidth provisioning capabilities.

1 In the MPCP, the OLT is considered to be the master, controlling a series of connected ONUs (slave  
2 devices). The OLT manages the network and controls access to network resources from individual slave  
3 devices. The MPCP is also used for provisioning upstream channel access to individual slave devices via a  
4 MPCPDU pair, i.e., GATE and REPORT. The MPCP is part of the MAC control layer, and MPCPDUs are  
5 considered MAC control messages, carrying a specific Ethertype of 0x8808. These messages are not  
6 forwarded outside of the EPON domain and are used to manage the EPON link only.  
7  
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9 A concept of time exists in the MPCP in order to schedule the upstream transmission. A timestamp, which is  
10 transmitted in the MPCPDUs downstream by the OLT and received by the connected ONUs, is used to  
11 synchronize slave devices to the master device clock. This coordinates upstream transmissions from  
12 individual ONUs so that the transmissions arrive at the OLT at precisely the anticipated time, and thus, data  
13 from different ONUs does not overlap.  
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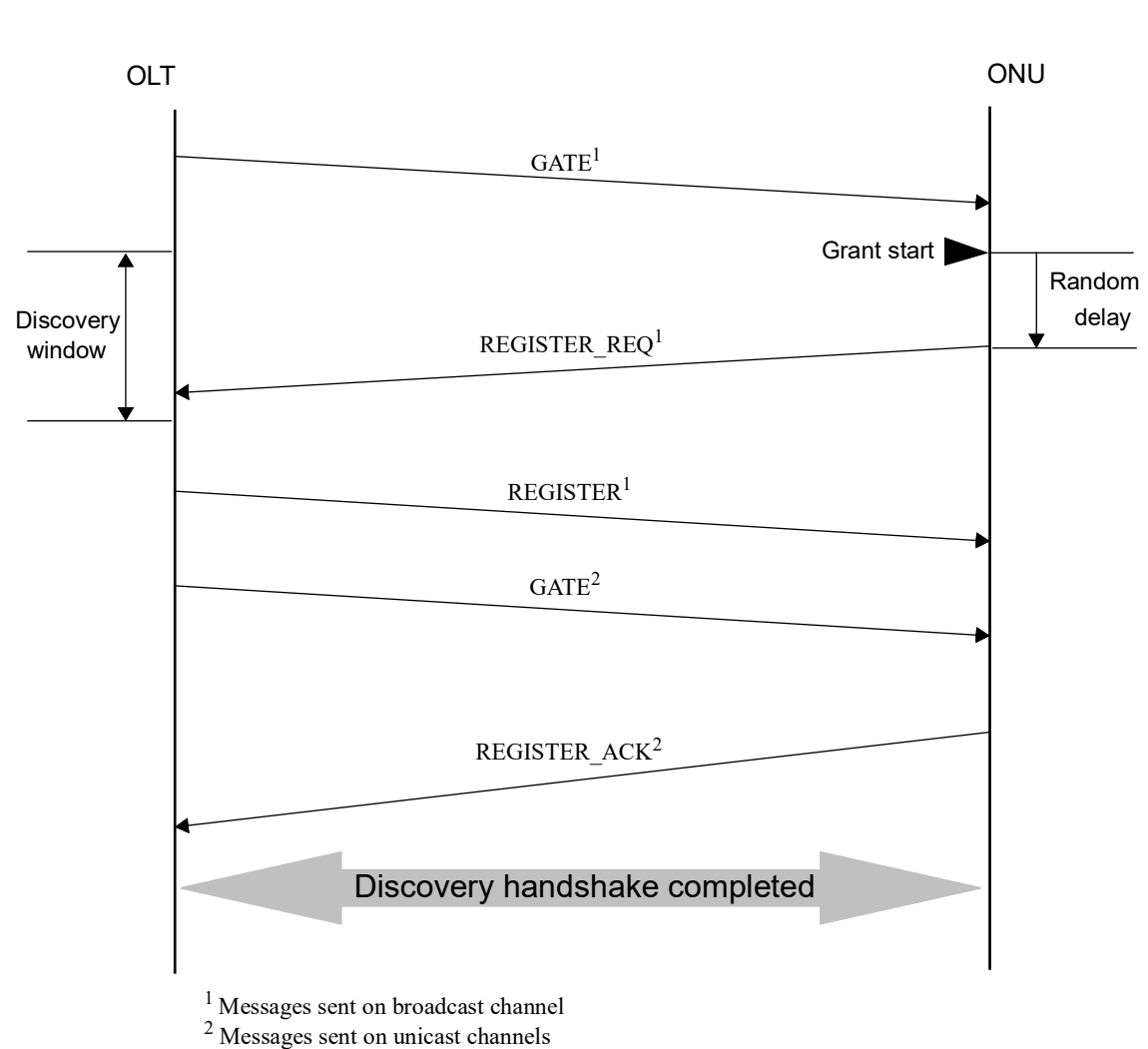
16 The MPCP plane is also used to measure the round-trip time (RTT) for each connected ONU. Each  
17 MPCPDU carries a generalized timestamp field, which is filled in by the transmitting station with the  
18 current value of its MPCP clock at the time when the given MPCPDU is transmitted. The RTT is measured  
19 first during the discovery and registration process and then updated regularly upon each exchange of  
20 MPCPDUs between the OLT and one of the ONUs. RTT is used by the OLT bandwidth scheduler to  
21 schedule upstream transmission slots for individual ONUs in a non-overlapping manner. The IEEE 802.3  
22 EPON standard provides support for the network diameter (distance between the OLT and the farthest ONU)  
23 of nominally up to 20 km, which corresponds to the RTT of approximately 200  $\mu$ s. However, nothing in the  
24 standard precludes support for larger network diameters.  
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28 The TDMA control is performed using a pair of MPDPUs, namely GATE generated by the OLT to indicate  
29 a future transmission opportunity to an ONU and REPORT generated by the ONU with information on the  
30 current queue status (bandwidth demand). Internal structure and possible encoding of GATE and REPORT  
31 MPCPDUs are defined in [Clause 64 of IEEE Std 802.3](#).  
32  
33

34 A scheduling algorithm at the OLT, which is not defined in IEEE Std 802.3, is responsible for dividing the  
35 bandwidth and controlling the transmission delay of each ONU according to its SLA. The MPCP defines a  
36 closed loop operation in order for this algorithm to be efficient. The MPCP allows the ONUs to report on the  
37 amount of bandwidth they require for transmission using a special REPORT message. This allows allocating  
38 bandwidth to an ONU only when requested, relying on the statistical burst property of the traffic, and  
39 allowing different peak bandwidths for different ONUs at different times, hence, allowing oversubscription  
40 of the bandwidth. The REPORT message reports the amount of data waiting in the ONU queues.  
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44 In addition, the MPCP defines a protocol of auto-discovery and registration of ONUs.  
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46 The MPCP registration process is presented in Figure 9-4, while details are described in [Clause 64 of  
47 IEEE Std 802.3](#).  
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**Figure 9-4—Discovery handshake message exchange**

A new ONU requests to register during a special upstream window (called Discovery Window), sending the REGISTER\_REQ MPCPDU. More than one ONU may attempt registration during that window, which means that their REGISTER\_REQ MPCPDUs can potentially collide at the OLT receiver, since the ONU-specific RTT is not yet known and transmissions from individual ONUs cannot be scheduled in a non-overlapping manner. A random backoff mechanism was therefore developed and is used to increase the registration success probability.

When the OLT receives a REGISTER\_REQ MPCPDU from an ONU, a decision on registration is taken and an LLID is assigned to that ONU. Next, the OLT sends a REGISTER MPCPDU to that ONU, informing the given slave device whether it is admitted to a network or not. The registration process is completed with the ONU sending REGISTER\_ACK MPCPDU to the OLT, confirming assigned parameters and registration in the network. From that point onward, the OLT can schedule transmissions from that ONU using its LLID, using the measured RTT so that its transmissions do not collide with other ONUs.

Additional higher layer protocols may be employed to authenticate the ONU and allow it to participate in the network; however, their specification is outside the scope of IEEE Std 802.3.

### 9.1.1.7 Forward error correction (FEC)

The optional FEC mechanism is defined to enhance the EPON link budget. All the passive components of the fiber plant attenuate the optical signal; thus, the target distance (network diameter) and the number of supported splits are limited by the available link budget. The optional FEC mechanism increases the available link budget by improving the link BER from  $10^{-4}$  to  $10^{-12}$  (the target BER at the MAC), effectively increasing the target network diameter and/or split ratio. The target use of the increased power budget remains at the sole discretion of the network architects and is out of the scope of IEEE Std 802.3.

The optional FEC used in EPON is frame-based, meaning that parity information is added at the end of each Ethernet packet. Extra space between individual Ethernet packets is provided by the MAC rate adaptation function, while extra idle symbols were replaced within the FEC function.

The start and end of packet codewords also define the FEC boundaries, and they are outside the FEC protection. They are replaced by a series of symbols to reduce their vulnerability to link errors.

Figure 9-5 presents the structure of an FEC-protected EPON frame.

The optional FEC function is added to the extended Gigabit Ethernet PCS per 65.2 in IEEE Std 802.3. The added, optional FEC function introduces a fixed delay in the receive path and in the transmit path.



Figure 9-5—FEC-protected frame

### 9.1.2 Management architecture

All EPON layers are accompanied by a management interface that is controlled through mechanisms defined in Clause 30 of IEEE Std 802.3. Since IEEE Std 802.3 specifications may be used for different applications (and hence are extensible), and some of the clauses may be used separately, the management clause allocates a separate package for each independent layer. The structure of the MIB modules follows this separation.

Figure 9-6 presents the relation of the MIB module groups to the individual IEEE 802.3 layers.

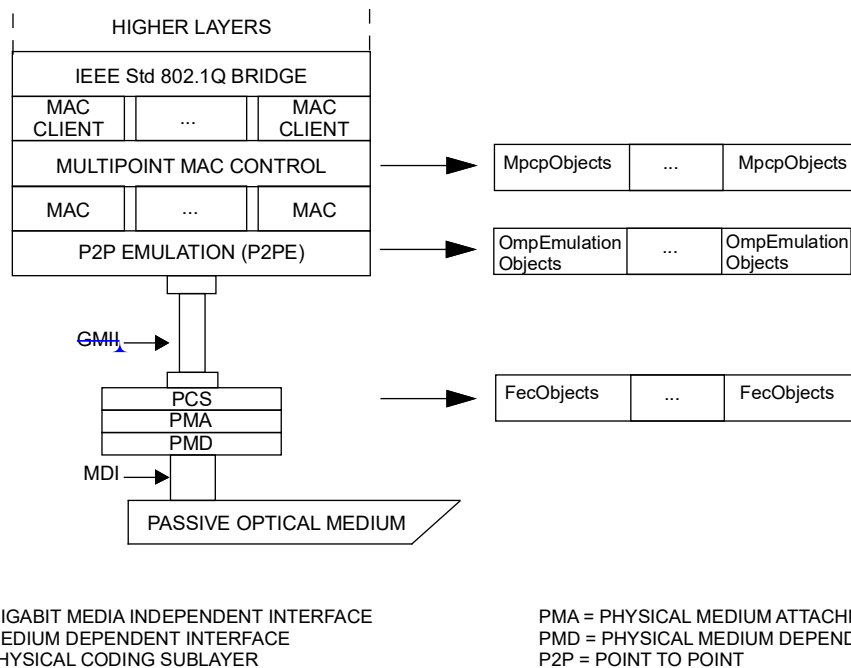
***Editor's Note (to be removed prior to publication):***

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The association is straightforward for the ONU interface. There is one logical and one physical interface, and a single copy of each layer can be remotely queried by the OLT.

The OLT has a single physical interface and N logical interfaces, one for each logical link connected to an ONU. There is also one logical interface for the single copy broadcast link. Per layering diagram in Figure 9-6, the MAC sublayer is virtually replicated. Therefore, in this clause it was elected that management of logical interfaces is performed in the manner identical to management of any physical interfaces—an interface index is allocated for each one of the logical links, and an additional interface index is allocated for the OLT.

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**Figure 9-6—Relationship of the MIB groups to the EPON sublayers**

For each physical interface, there would be an entry (ifIndex) in the tables of the interface MIB module defined in IETF RFC 2863, the MAU MIB module defined in Clause 13, and the Ethernet-like MIB module defined in Clause 10. Additionally, there would be entries (ifIndexes) for the virtual interfaces of the OLT interface. The justification for the additional allocation of indexes is that the virtual interfaces are quite well distinguished, as they connect different physical ONUs from the OLT side. For instance, there is a meaning for separate bad frames counter or bad octets counter for each virtual link, as the ONUs can be differently distanced. This is quite similar to a case of separate physical interfaces.

The same partition concept exists for the MIB module of this clause. Each row in the tables is indexed according to the ifIndex; specifically, there is a row for each virtual link. There are some control objects that are shared and are the same for the virtual interfaces (and they should have the same value for each ifIndex), but most of the objects have different values for N+1 logical interfaces at the OLT. This is done for each MIB group. It is different from the EPON layering diagram, which presents the P2MP layer as a single layer, while duplicating the MAC and MAC client layers (please see Figure 9-6). However, from a management perspective, it is more convenient to partition the management of the layers for the virtual links, as the atomic managed entity is the virtual link. It is also convenient to use the interface index of the virtual link for that purpose, as it is already used to index the rows of the virtual links at the Interface, MAU, and Ethernet-like interface MIBs.

## 9.2 MIB structure

This subclause defines the DOT3 EPON MIB module. The DOT3 EPON MIB module defines the objects used for management of the IEEE Std 802.3 EPON interfaces. These MIB objects are included in the following four groups:



- 1 a) MPCP MIB objects—MIB objects related to ~~Clause 64 of IEEE Std 802.3~~, Multipoint Control Pro-  
2 tocol attributes. The following tables are presented in this group:  
3  
4 1) The dot3MpcpControlTable defines the objects used for the configuration and status indication,  
5 which are per logical link, of MPCP compliant interfaces.  
6 2) The dot3MpcpStatTable defines the statistics objects that are per logical link, of MPCP  
7 compliant interfaces.  
8 3) The operational mode of an OLT/ONU for the tables is defined by the dot3MpcpMode object in  
9 the dot3MpcpControlTable.  
10  
11 b) The OMPEmulation MIB objects—MIB objects related to ~~Clause 65 of IEEE Std 802.3~~, point-to-  
12 point emulation attributes. The following tables are presented in this group:  
13  
14 1) The dot3OmpEmulationTable defines the objects used for the configuration and status  
15 indication, which are per logical links, of OMPEmulation compliant interfaces.  
16 2) The dot3OmpEmulationStatTable defines the statistics objects that are per logical link, of  
17 OMPEmulation compliant interfaces.  
18 3) The operational mode of an OLT/ONU for the tables is defined by the dot3OmpEmulationType  
19 object in the dot3OmpEmulationTable.  
20  
21 c) The FEC MIB objects—MIB objects related to ~~Clause 60 and Clause 65 of IEEE Std 802.3~~, EPON  
22 FEC attributes. The following table is presented in this group:  
23  
24 1) The dot3EponFecTable defines the objects used for the configuration and status indication,  
25 which are per logical link, of FEC EPON compliant interfaces.  
26  
27 d) The EPON extended package MIB objects—MIB objects used for configuration and status  
28 indication with extended capabilities of the EPON interfaces. The following tables are presented in  
29 this group:  
30  
31 1) The dot3ExtPkgControlTable defines the objects, which are per logical link, used for the  
32 configuration and status indication of EPON compliant interfaces.  
33 2) The dot3ExtPkgQueueTable defines the objects, which are per logical link, and per queue, used  
34 for the configuration and status indication of the ONU queues reported in the MPCP REPORT  
35 message, of EPON compliant interfaces.  
36 3) The dot3ExtPkgQueueSetsTable defines the objects, which are per logical link, per queue, and  
37 per queue\_set, used for the configuration and status indication of the ONU queue\_sets reported  
38 in the MPCP REPORT message, of EPON compliant interfaces.  
39 4) The dot3ExtPkgOptIfTable defines the objects, which are per logical link, used for the control  
40 and status indication of the optical interface of EPON compliant interfaces.  
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43 The interface MIB module defined in IETF RFC 2863 defines the interface index (ifIndex). Interface Index,  
44 as specified in IETF RFC 2863, is used in this MIB module as an index to the EPON MIB tables. The  
45 ifIndex is used to denote the physical interface and the virtual link interfaces at the OLT. The OLT interface  
46 and the virtual link interfaces are stacked using the ifStack table defined in IETF RFC 2863 and the  
47 ifInvStack defined in IETF RFC 2864. The OLT interface is the lower layer of all other interfaces associated  
48 with the virtual links.  
49

50  
51 As described in 9.1.2, each row in the tables is indexed according to the ifIndex; specifically, there is a row  
52 for each virtual link. There are a few control objects that are shared and have the same value for the virtual  
53 interfaces (and they should have the same value for each ifIndex), but most of the objects have different  
54 values for N+1 logical interfaces at the OLT. This is done for each MIB group. It is a bit different from the  
55 EPON layering diagram, which presents the P2MP layer as a single layer while duplicating the MAC and  
56 MAC client layers. However, from a management perspective, it is more convenient to partition the  
57 management of the layers for the virtual links, as the atomic managed entity is the virtual link. It is also  
58 convenient to use the interface index of the virtual link for that purpose, as it is already used to index the  
59 rows of the virtual links at the Interface, MAU, and Ethernet-like interface MIB modules.  
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63 The creation of the rows of the ONU interface is done at initialization. Table 9-1 presents the MPCP control  
64 table of ONU1 after initialization. A single row exists in the table.  
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**Table 9-1—MPCP control table of ONU1 after initialization**

MPCP control MIB object	Value
ifIndex	100
dot3MpcpOperStatus	true
dot3MpcpAdminState	true
dot3MpcpMode	onu
dot3MpcpSyncTime	0
dot3MpcpLinkID	0
dot3MpcpRemoteMACAddress	00:00:00:00:00:00
dot3MpcpRegistrationState	unregistered
dot3MpcpTransmitElapsed	0
dot3MpcpReceiveElapsed	0
dot3MpcpRoundTripTime	0

Table 9-2 presents the MPCP control table of ONU1 in working mode. A single row exists in the table.

**Table 9-2—MPCP control table of ONU1 in working mode**

MPCP control MIB object	Value
ifIndex	100
dot3MpcpOperStatus	true
dot3MpcpAdminState	true
dot3MpcpMode	onu
dot3MpcpSyncTime	25
dot3MpcpLinkID	1
dot3MpcpRemoteMACAddress	OLT_MAC_Address <sup>a</sup>
dot3MpcpRegistrationState	registered
dot3MpcpTransmitElapsed	10
dot3MpcpReceiveElapsed	10
dot3MpcpRoundTripTime	100

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<sup>a</sup>OLT\_MAC\_Address is the MAC address of the OLT EPON interface.

The creation of the rows of the OLT interface and the broadcast virtual interface is done at initialization.

The creation of rows of the virtual interfaces at the OLT is done when the link is established (ONU registers) and the deletion is done when the link is deleted (ONU deregisters).

Table 9-3 presents the MPCP control table of the OLT after initialization, before the ONUs register. A single row exists in this table associated with the virtual broadcast link.

**Table 9-3—MPCP control table of the OLT after initialization**

MPCP control MIB object	Value
ifIndex	165535
dot3MpcpOperStatus	true
dot3MpcpAdminState	true
dot3MpcpMode	olt
dot3MpcpSyncTime	25
dot3MpcpLinkID	65535
dot3MpcpRemoteMACAddress	BRCT_MAC_Address <sup>a</sup>
dot3MpcpRegistrationState	registered
dot3MpcpTransmitElapsed	10
dot3MpcpReceiveElapsed	100000
dot3MpcpRoundTripTime	0

<sup>a</sup>BRCT\_MAC\_Address is the MAC address of the broadcast EPON interface, which is the OLT MAC address.

Table 9-4 presents the MPCP control table of the OLT in working mode. Three rows exist in the table associated with the virtual links.

## 9.3 Relationship to other MIB modules

### 9.3.1 Relation to the Interfaces Group MIB and Ethernet-like interface MIB

This MIB module extends the objects of the Interfaces Group MIB and the Ethernet-like interface MIB for the EPON type interface. Therefore, if this module is implemented, the Interfaces Group MIB module

**Table 9-4—MPCP control table of the OLT in working mode**

MPCP control MIB object	Value	Value	Value
ifIndex	100001	100002	165535
dot3MpcpOperStatus	true	true	true
dot3MpcpAdminState	true	true	true
dot3MpcpMode	olt	olt	olt
dot3MpcpSyncTime	25	25	25
dot3MpcpLinkID	1	2	65535
dot3MpcpRemote MACAddress	ONU1_MAC_Address <sup>a</sup>	ONU2_MAC_Address <sup>b</sup>	BRCT_MAC_Address <sup>c</sup>
dot3MpcpRegistrationState	registered	registered	registered
dot3MpcpTransmitElapsed	10	10	10
dot3MpcpReceiveElapsed	10	10	10
dot3MpcpRoundTripTime	100	60	0

<sup>a</sup>ONU1\_MAC\_Address is the MAC address of the ONU1 EPON interface.

<sup>b</sup>ONU2\_MAC\_Address is the MAC address of the ONU2 EPON interface.

<sup>c</sup>BRCT\_MAC\_Address is the MAC address of the broadcast EPON interface, which is the OLT MAC address.

defined in IETF RFC 2863 and the Ethernet-like interface MIB module defined in Clause 10 shall also be implemented.

Thus, each managed EPON interface would have a corresponding entry in the mandatory tables of the Ethernet-like MIB module found in Clause 10, and likewise in the tables of the Interfaces Group MIB module found in IETF RFC 2863. Also, each managed virtual EPON interface would have a corresponding entry in the mandatory tables of the Ethernet-like MIB module found in Clause 10, and likewise in the tables of the Interfaces Group MIB module found in IETF RFC 2863 with a dedicated ifIndex for this interface.

In this clause, there is no replication of the objects from these MIBs. Therefore, for instance, the clause is defining the dot3MpcpRemoteMACAddress only while assuming that the local MAC address object is already defined in Clause 10.

This clause defines the specific EPON objects of an ONU interface and an OLT interface. Information in the tables is per LLID. The rows in the EPON MIB tables referring to the LLIDs are denoted with the corresponding ifIndexes of the virtual link interfaces.

Note that all virtual interfaces have the same physical MAC address at the OLT since the physical OLT interface used by all virtual interfaces is the same. The value of this physical MAC interface is specified in [64.1.2 of IEEE Std 802.3](#). The corresponding object of the Ethernet-like interface MIB is replicated for all virtual interfaces.

For example, the values of the Interfaces Group MIB objects are presented in the following tables, for an OLT with three registered ONUs.

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Table 9-5 presents the objects of the Interfaces Group MIB of an ONU in working mode.

**Table 9-5—Interfaces Group MIB of an ONU in working mode**

Interfaces Group MIB object	Value
ifIndex	1
ifDescr	“interface description”
ifType	ethernetCsmacd (6) 1000base-Px
ifMtu	MTU size (1522)
ifSpeed	1000000000
ifPhysAddress	ONU_MAC_Address <sup>a</sup>
ifAdminStatus	up
ifOperStatus	Up
ifLastChange	ONUup_time
ifInOctets	ONU_octets_number
ifInUcastPkts	ONU_unicast_frame_number
ifInNUcastPkts	ONU_non_unicast_frame_number
ifInDiscards	ONU_discard_frame_number
ifInErrors	ONU_error_frame_number
ifInUnknownProtos	ONU_unknown_frame_number
ifOutOctets	ONU_octets_number
ifOutUcastPkts	ONU_unicast_frame_number
ifOutNUcastPkts	ONU_non_unicast_frame_number
ifOutDiscards	ONU_discard_frame_number
ifOutErrors	ONU_error_frame_number
ifOutQLen	ONU_queue_frame_number

<sup>a</sup>ONU\_MAC\_Address is the MAC address of the ONU EPON interface.

Table 9-6 presents the objects of the Interfaces Group MIB of the ONU interface.

**Table 9-6—Interfaces Group MIB of the ONU interface**

Interfaces Group MIB object	Value
ifIndex	100
ifDescr	“interface description”
ifType	ethernetCsmacd (6) 1000base-Px
ifMtu	MTU size (1522)
ifSpeed	1000000000
ifPhysAddress	ONU_MAC_Address <sup>a</sup>
ifAdminStatus	up
ifOperStatus	Up
ifLastChange	up_time
ifInOctets	ONU1_octets_number
ifInUcastPkts	ONU1_unicast_frame_number
ifInNUcastPkts	ONU1_non_unicast_frame_number
ifInDiscards	ONU1_discard_frame_number
ifInErrors	ONU1_error_frame_number
ifInUnknownProtos	ONU1_unknown_frame_number
ifOutOctets	ONU1_octets_number
ifOutUcastPkts	ONU1_unicast_frame_number
ifOutNUcastPkts	ONU1_non_unicast_frame_number
ifOutDiscards	ONU1_discard_frame_number
ifOutErrors	ONU1_error_frame_number
ifOutQLen	ONU1_queue_frame_number

<sup>a</sup>ONU\_MAC\_Address is the MAC address of the ONU EPON interface.

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1 The following values will be set in the ifStack and ifInvStack tables related to this example.

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3 ifStackTable:

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5 — ifStackHigherLayer = 100, ifStackLowerLayer = 1 – map between the physical interface and the  
6 ONU  
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9 ifInvStackTable:

- 10  
11 — ifStackLowerLayer = 1, ifStackHigherLayer = 100 – map between the ONU and the physical  
12 interface  
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14  
15 Table 9-7 presents the Interfaces Group MIB objects of an OLT interface.  
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19 **Table 9-7—Interfaces Group MIB objects of an OLT interface**

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Interfaces Group MIB object	Value
ifIndex	2
ifDescr	“interface description”
ifType	ethernetCsmacd (6) 1000base-Px
ifMtu	MTU size (1522)
ifSpeed	1000000000
ifPhysAddress	OLT_MAC_Address <sup>a</sup>
ifAdminStatus	up
ifOperStatus	Up
ifLastChange	OLTup_time
ifInOctets	OLT_octets_number
ifInUcastPkts	OLT_unicast_frame_number
ifInNUcastPkts	OLT_non_unicast_frame_number
ifInDiscards	OLT_discard_frame_number
ifInErrors	OLT_error_frame_number
ifInUnknownProtos	OLT_unknown_frame_number
ifOutOctets	OLT_octets_number
ifOutUcastPkts	OLT_unicast_frame_number
ifOutNUcastPkts	OLT_non_unicast_frame_number

**Table 9-7—Interfaces Group MIB objects of an OLT interface (continued)**

Interfaces Group MIB object	Value
ifOutDiscards	OLT_discard_frame_number
ifOutErrors	OLT_error_frame_number
ifOutQLen	OLT_queue_frame_number

<sup>a</sup>OLT\_MAC\_Address is the MAC address of the OLT EPON interface.

Table 9-8 presents the Interfaces Group MIB objects of an OLT interface, associated with the virtual link interfaces.

**Table 9-8—Interfaces Group MIB objects of an OLT interface, associated with the virtual link interfaces**

Interface MIB object	Value	Value	Value
ifIndex	200001	200002	265535
ifDescr	“interface description”	“interface description”	“interface description”
ifType	ethernetCsmacd (6)	ethernetCsmacd (6)	ethernetCsmacd (6)
ifMtu	MTUsize(1522)	MTUsize(1522)	MTUsize(1522)
ifSpeed	1000000000	1000000000	1000000000
ifPhysAddress	OLT_MAC_Address <sup>a</sup>	OLT_MAC_Address	OLT_MAC_Address
ifAdminStatus	up	up	up
ifOperStatus	Up	Up	Up
ifLastChange	ONU1_up_time	ONU2_up_time	up_time
ifInOctets	ONU1_octets_number	ONU2_octets_number	BRCT_octets_number
ifInUcastPkts	ONU1_unic_frame_num	ONU2_unic_frame_num	BRCT_unic_frame_num
ifInNUcastPkts	ONU1_non_unic_frame_num	ONU2_non_unic_frame_num	BRCT_non_unic_frame_num
ifInDiscards	ONU1_disc_frame_num	ONU2_disc_frame_num	BRCT_disc_frame_num <sup>r</sup>
ifInErrors	ONU1_err_frame_num	ONU2_err_frame_num	BRCT_err_frame_num
ifInUnknownProtos	ONU1_unknw_frame_num	ONU2_unknw_frame_num	BRCT_unknw_frame_num
ifOutOctets	ONU1_octets_number	ONU2_octets_number	BRCT_octets_number
ifOutUcastPkts	ONU1_unic_frame_num	ONU2_unic_frame_num	BRCT_unic_frame_num
ifOutNUcastPkts	ONU1_non_unic_frame_num	ONU2_non_unic_frame_num	BRCT_non_unic_frame_num

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**Table 9-8—Interfaces Group MIB objects of an OLT interface, associated with the virtual link interfaces (continued)**

Interface MIB object	Value	Value	Value
ifOutDiscards	ONU1_disc_frame_num	ONU2_disc_frame_num	BRCT_disc_frame_num
ifOutErrors	ONU1_err_frame_num	ONU2_err_frame_num	BRCT_err_frame_num
ifOutQLen	ONU1_queue_frame_num	ONU2_queue_frame_num	BRCT_queue_frame_num

<sup>a</sup>OLT\_MAC\_Address is the MAC address of the OLT EPON interface.

The following values will be set in the ifStack and ifInvStack tables related to this example:

ifStackTable:

- ifStackHigherLayer = 265535, ifStackLowerLayer = 2 – map between the OLT physical interface and its broadcast virtual interface
- ifStackHigherLayer = 200001, ifStackLowerLayer = 2 – map between the OLT physical interface and its virtual interface of the 1st ONU
- ifStackHigherLayer = 200002, ifStackLowerLayer = 2 – map between the OLT physical interface and its virtual interface of the 2nd ONU
- ifStackHigherLayer = 200003, ifStackLowerLayer = 2 – map between the OLT physical interface and its virtual interface of the 3rd ONU

ifInvStackTable:

- ifStackLowerLayer = 2, ifStackHigherLayer = 265535 – map between the broadcast interface of the OLT and the OLT physical interface
- ifStackLowerLayer = 2, ifStackHigherLayer = 200001 – map between the OLT virtual interface of the 1st ONU and the OLT physical interface
- ifStackLowerLayer = 2, ifStackHigherLayer = 200002 – map between the OLT virtual interface of the 2nd ONU and the OLT physical interface
- ifStackLowerLayer = 2, ifStackHigherLayer = 200003 – map between the OLT virtual interface of the 3rd ONU and the OLT physical interface

The rows for the ONU interface, the OLT interface, and the OLT broadcast interface are created in initialization. The creation of a row for a virtual link is done when the virtual link is established (ONU registers), and deletion is done when the virtual link is deleted (ONU deregisters).

The EPON MIB module also extends the Interfaces Group MIB module with a set of counters, which are specific for the EPON interface. The EPON MIB module implements the same handling of the counters when the operation of the interface starts or stops. The interface MIB clause describes the possible behavior of counters when an interface is re-initialized using the ifCounterDiscontinuityTime indicator, indicating the discontinuity of the counters. See Section 3.1.5 of IETF RFC 2863 for more information. The counters of the EPON MIB should be handled in a similar manner.

### 9.3.2 Relation to the IEEE 802.3 MAU MIBs

The MAU types of the EPON Interface are defined in Clause 13. This clause assumes the implementation of the MAU MIB for this purpose and does not repeat the EPON MAU types. Therefore, if this module is implemented, the MAU-MIB module defined in Clause 13 shall also be implemented.

The handling of the ifMAU tables for the EPON case is similar to the handling described in the former subclause for the Interface and Ethernet-like interface MIBs. A single row exists for the ONU in the ifMauTable. A row for each virtual link (N+1 rows) exists at the OLT, with a separate value of ifMauIfIndex for each virtual link.

As specified above, the rows for the ONU interface, the OLT interface, and the OLT broadcast interface are created in initialization. The creation of a row for a virtual link is done when the virtual link is established (ONU registers), and deletion is done when the virtual link is deleted (ONU deregisters).

### 9.3.3 Relation to the Ethernet OAM MIB

The EPON interfaces are intended for use in optical subscriber access networks and most probably will be accompanied with the implementation of the OAM protocol defined in Clause 57 of IEEE Std 802.3. Therefore, the Ethernet OAM MIB module defined in Clause 6 may be implemented when this MIB module is implemented defining managed objects for the OAM protocol that are complementary to the EPON MIB module.

### 9.3.4 Relation to the bridge MIB

***Editor's Note (to be removed prior to publication):***

Reference to IEEE Std 802.1D was replaced with IEEE Std 802.1Q per Maintenance Request 1383 (see [https://www.ieee802.org/3/maint/requests/maint\\_1383.pdf](https://www.ieee802.org/3/maint/requests/maint_1383.pdf))

It is very probable that an EPON OLT will implement a bridging functionality above the EPON interface layer, bridging between the EPON users and the network. Bridge functionality is specified in IEEE Std 802.1Q. In this scenario, the virtual ports of the EPON are corresponding to the virtual bridge ports. There is a direct mapping between the bridge ports and the LLIDs, which are virtual EPON channels.

Therefore, the bridge MIB modules defined in IEEE Std 802.1Q [B5] may be implemented when the EPON MIB module is implemented for an EPON OLT, defining managed objects for the bridge layer.

The values of dot1dBasePortIfIndex would correspond to the ifIndex of the virtual port (1 for LLID1, 2 for LLID2, etc.).

The broadcast virtual EPON interface of the OLT has no direct mapping to a virtual bridge port as it is not port specific but used for broadcast traffic.

## 9.4 Mapping of IEEE 802.3 managed objects

This subclause contains the mapping between the managed objects defined in this clause and the attributes defined in Clause 30 of IEEE Std 802.3. Table 9-9 provides the mapping between the dot3EPON MIB module MPCP objects and the MPCP attributes of Clause 30 of IEEE Std 802.3.

Table 9-10 provides the mapping between the dot3EPON MIB module OMPeMulation objects and the OMPE attributes of Clause 30 of IEEE Std 802.3.

**Table 9-9—oMPCP managed object class (30.3.5 of IEEE Std 802.3)**

dot3EPON MIB module object	IEEE 802.3 attribute	Reference
ifIndex	aMPCPID	30.3.5.1.1
dot3MpcpOperStatus	aMPCPAdminState	30.3.5.1.2
dot3MpcpMode	aMPCPMode	30.3.5.1.3
dot3MpcpLinkID	aMPCPLinkID	30.3.5.1.4
dot3MpcpRemoteMACAddress	aMPCPRemoteMACAddress	30.3.5.1.5
dot3MpcpRegistrationState	aMPCPRegistrationState	30.3.5.1.6
dot3MpcpMACCtrlFramesTransmitted	aMPCPMACCtrlFramesTransmitted	30.3.5.1.7
dot3MpcpMACCtrlFramesReceived	aMPCPMACCtrlFramesReceived	30.3.5.1.8
dot3MpcpTxGate	aMPCPTxGate	30.3.5.1.9
dot3MpcpTxRegAck	aMPCPTxRegAck	30.3.5.1.10
dot3MpcpTxRegister	aMPCPTxRegister	30.3.5.1.11
dot3MpcpTxRegRequest	aMPCPTxRegRequest	30.3.5.1.12
dot3MpcpTxReport	aMPCPTxReport	30.3.5.1.13
dot3MpcpRxGate	aMPCPRxGate	30.3.5.1.14
dot3MpcpRxRegAck	aMPCPRxRegAck	30.3.5.1.15
dot3MpcpRxRegister	aMPCPRxRegister	30.3.5.1.16
dot3MpcpRxRegRequest	aMPCPRxRegRequest	30.3.5.1.17
dot3MpcpRxReport	aMPCPRxReport	30.3.5.1.18
dot3MpcpTransmitElapsed	aMPCPTransmitElapsed	30.3.5.1.19
dot3MpcpReceiveElapsed	aMPCPReceiveElapsed	30.3.5.1.20
dot3MpcpRoundTripTime	aMPCPRoundTripTime	30.3.5.1.21
dot3MpcpDiscoveryWindowsSent	aMPCPDiscoveryWindowsSent	30.3.5.1.22
dot3MpcpDiscoveryTimeout	aMPCPDiscoveryTimeout	30.3.5.1.23
dot3MpcpMaximumPendingGrants	aMPCPMaximumPendingGrants	30.3.5.1.24
dot3MpcpAdminState	aMPCPAdminControl	30.3.5.2.1
dot3MpcpSyncTime	SyncTime	64.3.3.2

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**Table 9-10—oOMPEmulation managed object class (30.3.7 of IEEE Std 802.3)**

dot3EPON MIB module object	IEEE 802.3 attribute	Reference
ifIndex	aOMPEmulationID	30.3.7.1.1
dot3OmpEmulationType	aOMPEmulationType	30.3.7.1.2
dot3OmpEmulationSLDErrors	aSLDErrors	30.3.7.1.3
dot3OmpEmulationCRC8Errors	aCRC8Errors	30.3.7.1.4
dot3OmpEmulationGoodLLID	aGoodLLID	30.3.7.1.5
dot3OmpEmulationOnuPonCastLLID	aONUPONcastLLID	30.3.7.1.6
dot3OmpEmulationOltPonCastLLID	aOLTPONcastLLID	30.3.7.1.7
dot3OmpEmulationBadLLID	aBadLLID	30.3.7.1.8
dot3OmpEmulationBroadcastBitNotOnuLLid	N/A	—
dot3OmpEmulationOnuLLIDNotBroadcast	N/A	—
dot3OmpEmulationBroadcastBitPlusOnuLlid	N/A	—
dot3OmpEmulationNotBroadcastBitNotOnuLlid	N/A	—

Table 9-11 provides the mapping between the dot3EPON MIB module FEC objects and the MAU attributes of Clause 30 of IEEE Std 802.3.

**Table 9-11—oMAU managed object class (30.5.1 of IEEE Std 802.3)**

dot3EPON MIB module object	IEEE 802.3 attribute	Reference
dot3EponFecPCSCodingViolation	aPCSCodingViolation	30.5.1.1.14
dot3EponFecAbility	aFECAbility	30.5.1.1.15
dot3EponFecMode	aFECmode	30.5.1.1.16
dot3EponFecCorrectedBlocks	aFECCorrectedBlocks	30.5.1.1.17
dot3EponFecUncorrectableBlocks	aFECUncorrectableBlocks	30.5.1.1.18
dot3EponFecBufferHeadCodingViolation	N/A	—

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1 **9.5 Security considerations for Ethernet passive optical network (EPON) MIB**  
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4

5 There are number of managed objects defined in this MIB module that have a MAX-ACCESS clause of  
6 read-write or read-create. Writing to these objects can have potentially disruptive effects on network  
7 operation, including those listed in 9.5.1 to 9.5.13.  
8

9  
10 **9.5.1 dot3MpcpAdminState**  
11

12 Changing the dot3MpcpAdminState state can lead to disabling the Multipoint Control Protocol on the  
13 respective interface, leading to the interruption of service for the users connected to the respective EPON  
14 interface.  
15

16  
17 **9.5.2 dot3EponFecMode**  
18

19 Changing the dot3EponFecMode state can lead to disabling the Forward Error Correction on the respective  
20 interface, which can lead to a degradation of the optical link, and therefore, it may lead to an interruption of  
21 service for the users connected to the respective EPON interface.  
22  
23

24  
25 **9.5.3 dot3ExtPkgObjectReset**  
26

27 Changing the dot3ExtPkgObjectReset state can lead to a reset of the respective interface leading to an  
28 interruption of service for the users connected to the respective EPON interface.  
29  
30

31 **9.5.4 dot3ExtPkgObjectPowerDown**  
32

33 Changing the dot3ExtPkgObjectPowerDown state can lead to a power down of the respective interface,  
34 leading to an interruption of service for the users connected to the respective EPON interface.  
35  
36

37 **9.5.5 dot3ExtPkgObjectFecEnabled**  
38

39 Changing the dot3ExtPkgObjectFecEnabled state can lead to disabling the Forward Error Correction on the  
40 respective interface, which can lead to a degradation of the optical link, and therefore, it may lead to an  
41 interruption of service for the users connected to the respective EPON interface.  
42  
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45 **9.5.6 dot3ExtPkgObjectRegisterAction**  
46

47 Changing the dot3ExtPkgObjectRegisterAction state can lead to a change in the registration state of the  
48 respective interface, leading to a deregistration and an interruption of service for the users connected to the  
49 respective EPON interface.  
50  
51

52 **9.5.7 dot3ExtPkgObjectReportNumThreshold**  
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54 Changing the dot3ExtPkgObjectReportNumThreshold can lead to a change in the reporting of the ONU  
55 interface and therefore to a change in the bandwidth allocation of the respective interface. This change may  
56 lead to a degradation or an interruption of service for the users connected to the respective EPON interface.  
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60 **9.5.8 dot3ExtPkgObjectReportThreshold**  
61

62 Changing the dot3ExtPkgObjectReportThreshold can lead to a change in the reporting of the ONU interface  
63 and therefore to a change in the bandwidth allocation of the respective interface. This change may lead to a  
64 degradation or an interruption of service for the users connected to the respective EPON interface.  
65

### 9.5.9 dot3ExtPkgOptIfLowerInputPowerThreshold

Changing the dot3ExtPkgOptIfLowerInputPowerThreshold can lead to a Threshold Crossing Alert (TCA) being sent for the respective interface. This alert may be leading to an interruption of service for the users connected to the respective EPON interface, depending on the system action on such an alert.

### 9.5.10 dot3ExtPkgOptIfUpperInputPowerThreshold

Changing the dot3ExtPkgOptIfUpperInputPowerThreshold can lead to a Threshold Crossing Alert (TCA) being sent for the respective interface. This alert may be leading to an interruption of service for the users connected to the respective EPON interface, depending on the system action on such an alert.

### 9.5.11 dot3ExtPkgOptIfLowerOutputPowerThreshold

Changing the dot3ExtPkgOptIfLowerOutputPowerThreshold can lead to a Threshold Crossing Alert (TCA) being sent for the respective interface. This alert may be leading to an interruption of service for the users connected to the respective EPON interface, depending on the system action on such an alert.

### 9.5.12 dot3ExtPkgOptIfUpperOutputPowerThreshold

Changing the dot3ExtPkgOptIfUpperOutputPowerThreshold can lead to a Threshold Crossing Alert (TCA) being sent for the respective interface. This alert may be leading to an interruption of service for the users connected to the respective EPON interface, depending on the system action on such an alert.

### 9.5.13 dot3ExtPkgOptIfTransmitEnable

Changing the dot3ExtPkgOptIfTransmitEnable state can lead to a halt in the optical transmission of the respective interface, leading to an interruption of service for the users connected to the respective EPON interface.

## 9.6 MIB module definition

***Editor's Note (to be removed prior to publication):***

Update MIB URL once this standard is published.

An ASCII text version of the MIB definition can be found at the following URL<sup>16</sup>:

[http://www.ieee802.org/3/1/public/mib\\_modules/20130411/802dot3dot1C9mib.txt](http://www.ieee802.org/3/1/public/mib_modules/20130411/802dot3dot1C9mib.txt)

<sup>16</sup>Copyright release for MIB modules: Users of this standard may freely reproduce the MIB module contained in this subclause so that it can be used for its intended purpose.

IEEE8023-DOT3-EPON-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, Counter32,

Integer32, Unsigned32, Counter64, org

FROM SNMPv2-SMI

TruthValue, MacAddress

FROM SNMPv2-TC

ifIndex

FROM IF-MIB

MODULE-COMPLIANCE, OBJECT-GROUP

FROM SNMPv2-CONF

;

ieee8023dot3EponMIB MODULE-IDENTITY

LAST-UPDATED "202307310000Z" - July 31, 2023

ORGANIZATION

"IEEE 802.3 Working Group"

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DESCRIPTION

"The objects in this MIB module are used to manage the

1 Ethernet in the First Mile (EFM) Ethernet Passive Optical  
2  
3 Network (EPON) Interfaces as defined in IEEE Std 802.3  
4  
5 Clauses 60, 64, and 65.  
6  
7  
8  
9

10 Of particular interest are Clause 64 (MultiPoint Control  
11  
12 Protocol - MPCP), Clause 65 (Point-to-Multipoint  
13  
14 Reconciliation Sublayer - P2MP RS), Clause 60 (Ethernet  
15  
16 Passive Optical Network Physical Medium Dependent - EPON  
17  
18 PMDs), Clause 30, 'Management', and Clause 45, 'Management  
19  
20 Data Input/Output (MDIO) Interface'."

21  
22  
23  
24  
25 REVISION "202307310000Z" - July 31, 2023

26  
27 DESCRIPTION

28  
29 "Revision, based on an earlier version in IEEE Std 802.3.1-2013  
30  
31 addressing changes from IEEE Std 802.3 revisions 2012, 2015, 2018,  
32  
33 and 2022."  
34  
35  
36  
37

38 REVISION "201304110000Z" -- April 11, 2013

39  
40 DESCRIPTION

41  
42 "Revision, based on an earlier version in IEEE Std 802.3.1-2011."  
43  
44  
45  
46

47 REVISION "201102020000Z" -- February 2, 2011

48  
49 DESCRIPTION

50  
51 "Initial version, based on an earlier version published  
52  
53 as RFC 4837."  
54  
55  
56  
57

58 ::= { org ieee(111) standards-association-numbers-series-standards(2)

59  
60 lan-man-stds(802) ieee802dot3(3) ieee802dot3dot1mibs(1) 9 }

61  
62  
63  
64 dot3EponObjects OBJECT IDENTIFIER ::= { ieee8023dot3EponMIB 1}



1  
2  
3 dot3EponConformance OBJECT IDENTIFIER ::= { ieee8023dot3EponMIB 2 }  
4  
5  
6

7 -- MPCP MIB modules definitions (IEEE Std 802.3, Clause 30.3.5)  
8  
9

10  
11  
12 dot3EponMpcpObjects

13  
14     OBJECT IDENTIFIER ::= { dot3EponObjects 1 }  
15  
16  
17

18  
19 dot3MpcpControlTable OBJECT-TYPE

20  
21     SYNTAX SEQUENCE OF Dot3MpcpControlEntry

22  
23     MAX-ACCESS not-accessible

24  
25     STATUS current

26  
27     DESCRIPTION

28  
29         "A Table of dot3 MultiPoint Control Protocol (MPCP)

30  
31         MIB objects. The entries in the table are control and  
32  
33         status objects of the MPCP.

34  
35         Each object has a row for every virtual link denoted by  
36  
37         the corresponding ifIndex.

38  
39         The LLID field, as defined in the IEEE Std 802.3, is a 2-byte

40  
41         register (15-bit field and a broadcast bit) limiting the

42  
43         number of virtual links to 32768. Typically the number

44  
45         of expected virtual links in a PON is like the number of

46  
47         ONUs, which is 32-64, plus an additional entry for

48  
49         broadcast LLID."  
50  
51

52  
53     ::= { dot3EponMpcpObjects 1 }  
54  
55  
56  
57

58  
59 dot3MpcpControlEntry OBJECT-TYPE

60  
61     SYNTAX Dot3MpcpControlEntry

62  
63     MAX-ACCESS not-accessible

64  
65     STATUS current

```

1      DESCRIPTION
2
3          "An entry in the dot3 MPCP Control table.
4
5          Rows exist for an OLT interface and an ONU interface.
6
7          A row in the table is denoted by the ifIndex of the link
8
9          and it is created when the ifIndex is created.
10
11         The rows in the table for an ONU interface are created
12
13         at system initialization.
14
15         The row in the table corresponding to the OLT ifIndex
16
17         and the row corresponding to the broadcast virtual link
18
19         are created at system initialization.
20
21         A row in the table corresponding to the ifIndex of a
22
23         virtual links is created when a virtual link is
24
25         established (ONU registers) and deleted when the virtual
26
27         link is deleted (ONU deregisters)."
```

```

31     INDEX { ifIndex }
32
33     ::= { dot3MpcpControlTable 1 }
34
35
36
37
38     Dot3MpcpControlEntry ::=
39
40     SEQUENCE {
41
42         dot3MpcpOperStatus          TruthValue,
43
44         dot3MpcpAdminState          TruthValue,
45
46         dot3MpcpMode                INTEGER,
47
48         dot3MpcpSyncTime            Unsigned32,
49
50         dot3MpcpLinkID              Unsigned32,
51
52         dot3MpcpRemoteMACAddress    MacAddress,
53
54         dot3MpcpRegistrationState   INTEGER,
55
56         dot3MpcpTransmitElapsed     Unsigned32,
57
58         dot3MpcpReceiveElapsed     Unsigned32,
59
60         dot3MpcpRoundTripTime      Unsigned32,
61
62         dot3MpcpMaximumPendingGrants Unsigned32
63
64
65
```

```
1      }
2
3
4
5 dot3MpcpOperStatus OBJECT-TYPE
6
7     SYNTAX  TruthValue
8
9     MAX-ACCESS  read-only
10
11     STATUS  current
12
13     DESCRIPTION
14
15         "This object reflects the operational state of the
16
17         MultiPoint MAC Control sublayer as defined in
18
19         IEEE Std 802.3, Clause 64 or Clause 77.
20
21         When the value is true(1), the interface will act as if the
22
23         MultiPoint Control Protocol is enabled. When the value is false(2)
24
25         , the interface will act as if the MultiPoint Control Protocol is
26
27         disabled. The operational state can be changed using the
28
29         dot3MpcpAdminState object.
30
31         This object is applicable for an OLT, with the same
32
33         value for all virtual interfaces, and for an ONU."
34
35     REFERENCE  "IEEE Std 802.3, 30.3.5.1.2"
36
37     ::= { dot3MpcpControlEntry 1 }
38
39
40
41
42
43
44
45 dot3MpcpAdminState OBJECT-TYPE
46
47     SYNTAX  TruthValue
48
49     MAX-ACCESS  read-write
50
51     STATUS  current
52
53     DESCRIPTION
54
55         "This object is used to define the admin state of the
56
57         MultiPoint MAC Control sublayer, as defined in
58
59         IEEE Std 802.3, Clause 64 or Clause 77,
60
61         and to reflect its state.
62
63         When selecting the value as true(1), the MultiPoint
64
65
```

1 Control Protocol of the interface is enabled.  
2  
3 When selecting the value as false(2), the MultiPoint  
4  
5 Control Protocol of the interface is disabled.  
6  
7 This object reflects the administrative state of the  
8  
9 MultiPoint Control Protocol of the interface.  
10  
11 The write operation is not restricted in this document  
12  
13 and can be done at any time. Changing  
14  
15 dot3MpcpAdminState state can lead to disabling the  
16  
17 MultiPoint Control Protocol on the respective interface,  
18  
19 leading to the interruption of service for the users  
20  
21 connected to the respective EPON interface.  
22  
23 This object is applicable for an OLT, with the same  
24  
25 value for all virtual interfaces, and for an ONU."  
26  
27  
28  
29 REFERENCE "IEEE Std 802.3, 30.3.5.2.1"  
30  
31 DEFVAL { false }  
32  
33 ::= { dot3MpcpControlEntry 2 }  
34  
35  
36  
37  
38 dot3MpcpMode OBJECT-TYPE  
39  
40 SYNTAX INTEGER {  
41  
42 olt(1),  
43  
44 onu(2)  
45  
46 }  
47  
48  
49 MAX-ACCESS read-only  
50  
51 STATUS current  
52  
53 DESCRIPTION  
54  
55 "This object is used to identify the operational  
56  
57 state of the MultiPoint MAC Control sublayer as  
58  
59 defined in IEEE Std 802.3, [Clause 64 or Clause 77](#).  
60  
61 Reading olt(1) for an OLT (server) mode and onu(2) for an ONU  
62  
63 (client) mode. This object is used to identify the operational  
64  
65

mode for the MPCP tables.

This object is applicable for an OLT, with the same value for all virtual interfaces, and for an ONU."

REFERENCE "IEEE Std 802.3, 30.3.5.1.3"

DEFVAL { olt }

::= { dot3MpcpControlEntry 3 }

dot3MpcpSyncTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "TQ (16 ns)"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An object that reports the 'sync lock time' of the OLT receiver in increments of Time Quanta (TQ)-16ns as defined in IEEE Std 802.3, [Clause 64 or Clause 77](#). The value returned shall be (sync lock time ns)/16, rounded up to the nearest TQ. If this value exceeds (2<sup>32</sup>-1), the value (2<sup>32</sup>-1) shall be returned. This object is applicable for an OLT, with distinct values for all virtual interfaces, and for an ONU."

REFERENCE "IEEE Std 802.3, [64.3.3.2 and 77.3.3.2](#)"

::= { dot3MpcpControlEntry 4 }

dot3MpcpLinkID OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An object that identifies the Logical Link

1 Identifier (LLID) associated with the MAC of the virtual  
2 link as specified in IEEE Std 802.3, 65.1.3.2.2 or  
3 76.2.6.1.3.2, as appropriate.  
4  
5

6  
7 This object is applicable for an OLT and an ONU. At the  
8 OLT, it has a distinct value for each virtual interface.  
9  
10 The ONU and the corresponding virtual MAC of the OLT,  
11 for the same virtual link, have the same value.  
12  
13 Value is assigned when the ONU registers.  
14  
15 Value is freed when the ONU deregisters."  
16  
17  
18  
19

20 REFERENCE "IEEE Std 802.3, 30.3.5.1.4"  
21

22 ::= { dot3MpcpControlEntry 5 }  
23  
24  
25

26  
27 dot3MpcpRemoteMACAddress OBJECT-TYPE  
28

29 SYNTAX MacAddress  
30

31 MAX-ACCESS read-only  
32

33 STATUS current  
34  
35

36 DESCRIPTION  
37

38 "An object that identifies the source\_address  
39 parameter of the last MPCPDUs passed to the MAC Control.  
40  
41 This value is updated on reception of a valid frame with  
42  
43 1) a destination Field equal to the reserved multicast  
44  
45 address for MAC Control as specified in IEEE Std 802.3, Annex  
46  
47 31A; 2) the lengthOrType field value equal to the reserved  
48  
49 Type for MAC Control as specified in IEEE Std 802.3, Annex  
50  
51 31A; 3) an MPCP subtype value equal to the subtype  
52  
53 reserved for MPCP as specified in IEEE Std 802.3, Annex 31A.  
54  
55 This object is applicable for an OLT and an ONU. At the  
56  
57 OLT, it has a distinct value for each virtual interface.  
58  
59 The value reflects the MAC address of the remote entity  
60  
61 and therefore the OLT holds a value for each LLID, which  
62  
63  
64  
65

1                   is the MAC address of the ONU; the ONU has a single  
2  
3                   value that is the OLT MAC address."  
4  
5       REFERENCE    "IEEE Std 802.3, 30.3.5.1.5"  
6  
7       ::= { dot3MpcpControlEntry 6 }  
8  
9  
10  
11  
12 dot3MpcpRegistrationState OBJECT-TYPE  
13  
14       SYNTAX    INTEGER {  
15  
16                   unregistered(1),  
17  
18                   registering(2),  
19  
20                   registered(3)  
21  
22       }  
23  
24  
25       MAX-ACCESS   read-only  
26  
27       STATUS       current  
28  
29       DESCRIPTION  
30  
31                    "An object that identifies the registration state  
32                    of the MultiPoint MAC Control sublayer as defined in  
33                    IEEE Std 802.3, [Clause 64 and Clause 77](#).  
34                    When this object has the enumeration unregistered(1),  
35                    the interface is unregistered and may be used for  
36                    registering a link partner.  
37                    When this object has the enumeration  
38                    registering(2), the interface is in the process of  
39                    registering a link-partner. When this object has the  
40                    enumeration registered(3), the interface has an  
41                    established link-partner.  
42                    This object is applicable for an OLT and an ONU. At the  
43                    OLT, it has a distinct value for each virtual interface."  
44  
45       REFERENCE    "IEEE Std 802.3, 30.3.5.1.6"  
46  
47       ::= { dot3MpcpControlEntry 7 }  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1 dot3MpcpTransmitElapsed OBJECT-TYPE

2  
3 SYNTAX Unsigned32

4  
5 UNITS "TQ (16 ns)"

6  
7 MAX-ACCESS read-only

8  
9 STATUS current

10  
11 DESCRIPTION

12  
13  
14 "An object that reports the interval from the last  
15  
16 MPCP frame transmission in increments of Time Quanta  
17  
18 (TQ)-16ns. The value returned shall be (interval from  
19  
20 last MPCP frame transmission in ns)/16. If this value  
21  
22 exceeds  $(2^{32}-1)$ , the value  $(2^{32}-1)$  shall be returned.  
23  
24 This object is applicable for an OLT and an ONU. At the  
25  
26 OLT, it has a distinct value for each virtual interface."

27  
28  
29 REFERENCE "IEEE Std 802.3, 30.3.5.1.19"

30  
31 ::= { dot3MpcpControlEntry 8 }

32  
33  
34  
35  
36 dot3MpcpReceiveElapsed OBJECT-TYPE

37  
38 SYNTAX Unsigned32

39  
40 UNITS "TQ (16 ns)"

41  
42 MAX-ACCESS read-only

43  
44 STATUS current

45  
46 DESCRIPTION

47  
48  
49 "An object that reports the interval from last MPCP frame  
50  
51 reception in increments of Time Quanta (TQ)-16ns. The  
52  
53 value returned shall be (interval from last MPCP frame  
54  
55 reception in ns)/16. If this value exceeds  $(2^{32}-1)$ , the  
56  
57 value  $(2^{32}-1)$  shall be returned.  
58  
59 This object is applicable for an OLT and an ONU. At the  
60  
61 OLT, it has a distinct value for each virtual interface."

62  
63  
64 REFERENCE "IEEE Std 802.3, 30.3.5.1.20"

65



```
1      ::= { dot3MpcpControlEntry 9 }
2
3
4
5 dot3MpcpRoundTripTime OBJECT-TYPE
6
7     SYNTAX  Unsigned32 (0..'ffff'h)
8
9     UNITS      "TQ (16 ns)"
10
11     MAX-ACCESS  read-only
12
13     STATUS  current
14
15     DESCRIPTION
16
17         "An object that reports the MPCP round trip time in
18
19         increments of Time Quanta (TQ)-16ns. The value returned
20
21         shall be (round trip time in ns)/16. If this value
22
23         exceeds (2^16-1), the value (2^16-1) shall be returned.
24
25         This object is applicable for an OLT. At the
26
27         OLT, it has a distinct value for each virtual interface."
28
29     REFERENCE  "IEEE Std 802.3, 30.3.5.1.21"
30
31     ::= { dot3MpcpControlEntry 10 }
32
33
34 dot3MpcpMaximumPendingGrants OBJECT-TYPE
35
36
37     SYNTAX  Unsigned32 (0..255)
38
39     MAX-ACCESS  read-only
40
41     STATUS  current
42
43     DESCRIPTION
44
45         "An object that reports the maximum number of grants
46
47         that an ONU can store for handling. The maximum number
48
49         of grants that an ONU can store for handling has a
50
51         range of 0 to 255.
52
53         This object is applicable for an OLT and an ONU. At the
54
55         OLT, it has a distinct value for each virtual interface.
56
57         At the OLT, the value should be zero."
58
59     REFERENCE  "IEEE Std 802.3, 30.3.5.1.24"
```

1 ::= { dot3MpcpControlEntry 11 }

2  
3  
4  
5 dot3MpcpStatTable OBJECT-TYPE

6  
7 SYNTAX SEQUENCE OF Dot3MpcpStatEntry

8  
9 MAX-ACCESS not-accessible

10  
11 STATUS current

12  
13 DESCRIPTION

14  
15  
16 "This table defines the list of statistics counters of  
17  
18 an interface implementing the IEEE Std 802.3, Clause 64 or  
19  
20 Clause 77 MPCP.

21  
22 Each object has a row for every virtual link denoted by  
23  
24 the corresponding ifIndex.

25  
26 The LLID field, as defined in IEEE Std 802.3, is a 2-byte  
27  
28 register (15-bit field and a broadcast bit) limiting the  
29  
30 number of virtual links to 32768. Typically the number  
31  
32 of expected virtual links in a PON is like the number of  
33  
34 ONUs, which is 32-64, plus an additional entry for  
35  
36 broadcast LLID."  
37  
38  
39

40 ::= { dot3EponMpcpObjects 2 }

41  
42  
43  
44 dot3MpcpStatEntry OBJECT-TYPE

45  
46 SYNTAX Dot3MpcpStatEntry

47  
48 MAX-ACCESS not-accessible

49  
50 STATUS current

51  
52 DESCRIPTION

53  
54  
55 "An entry in the table of statistics counters of the  
56  
57 IEEE Std 802.3, Clause 64 or Clause 77 MPCP interface.

58  
59 Rows exist for an OLT interface and an ONU interface.

60  
61 A row in the table is denoted by the ifIndex of the link  
62  
63 and it is created when the ifIndex is created.  
64  
65

1           The rows in the table for an ONU interface are created  
2  
3           at system initialization.  
4  
5           The row in the table corresponding to the OLT ifIndex  
6  
7           and the row corresponding to the broadcast virtual link  
8  
9           are created at system initialization.  
10  
11           A row in the table corresponding to the ifIndex of a  
12  
13           virtual link is created when a virtual link is  
14  
15           established (ONU registers) and deleted when the virtual  
16  
17           link is deleted (ONU deregisters)."  
18  
19  
20  
21       INDEX { ifIndex}  
22  
23       ::= { dot3MpcpStatTable 1 }  
24  
25  
26  
27       Dot3MpcpStatEntry ::=  
28  
29       SEQUENCE {  
30  
31           dot3MpcpMACCtrlFramesTransmitted       Counter64,  
32  
33           dot3MpcpMACCtrlFramesReceived         Counter64,  
34  
35           dot3MpcpDiscoveryWindowsSent           Counter32,  
36  
37           dot3MpcpDiscoveryTimeout               Counter32,  
38  
39           dot3MpcpTxRegRequest                    Counter64,  
40  
41           dot3MpcpRxRegRequest                    Counter64,  
42  
43           dot3MpcpTxRegAck                        Counter64,  
44  
45           dot3MpcpRxRegAck                        Counter64,  
46  
47           dot3MpcpTxReport                        Counter64,  
48  
49           dot3MpcpRxReport                        Counter64,  
50  
51           dot3MpcpTxGate                          Counter64,  
52  
53           dot3MpcpRxGate                          Counter64,  
54  
55           dot3MpcpTxRegister                      Counter64,  
56  
57           dot3MpcpRxRegister                      Counter64  
58  
59  
60  
61  
62       }  
63  
64  
65

1 dot3MpcpMACCtrlFramesTransmitted OBJECT-TYPE

2  
3 SYNTAX Counter64

4  
5 UNITS "frames"

6  
7 MAX-ACCESS read-only

8  
9 STATUS current

10  
11 DESCRIPTION

12  
13  
14 "A count of MPCP frames passed to the MAC sublayer for  
15  
16 transmission. This counter is incremented when a  
17  
18 MA\_CONTROL.request service primitive is generated within  
19  
20 the MAC control sublayer with an opcode indicating an  
21  
22 MPCP frame.  
23  
24 This object is applicable for an OLT and an ONU. At the  
25  
26 OLT it has a distinct value for each virtual interface.  
27  
28 Discontinuities of this counter can occur at  
29  
30 re-initialization of the management system, and at other  
31  
32 times as indicated by the value of the  
33  
34 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
35  
36 module."  
37  
38

39  
40 REFERENCE "IEEE Std 802.3, 30.3.5.1.7"

41  
42 ::= { dot3MpcpStatEntry 1 }

43  
44  
45  
46  
47 dot3MpcpMACCtrlFramesReceived OBJECT-TYPE

48  
49 SYNTAX Counter64

50  
51 UNITS "frames"

52  
53 MAX-ACCESS read-only

54  
55 STATUS current

56  
57 DESCRIPTION

58  
59  
60 "A count of MPCP frames passed by the MAC sublayer to the  
61  
62 MAC Control sublayer. This counter is incremented when a  
63  
64 ReceiveFrame function call returns a valid frame with  
65

1            1) a lengthOrType field value equal to the reserved  
2  
3            Type for 802.3\_MAC\_Control as specified in IEEE Std 802.3  
4  
5            31.4.1.3, and  
6  
7            2) an opcode indicating an MPCP frame.  
8  
9            This object is applicable for an OLT and an ONU. At the  
10            OLT, it has a distinct value for each virtual interface.  
11  
12            Discontinuities of this counter can occur at  
13  
14            re-initialization of the management system and at other  
15  
16            times, as indicated by the value of the  
17  
18            ifCounterDiscontinuityTime object of the Interfaces Group MIB  
19  
20            module."  
21  
22            module."  
23  
24            module."  
25            REFERENCE    "IEEE Std 802.3, 30.3.5.1.8"  
26  
27            ::= { dot3MpcpStatEntry 2}  
28  
29  
30  
31  
32            dot3MpcpDiscoveryWindowsSent OBJECT-TYPE  
33  
34            SYNTAX    Counter32  
35  
36            MAX-ACCESS    read-only  
37  
38            STATUS    current  
39  
40            DESCRIPTION  
41  
42                       "A count of discovery windows generated. The counter is  
43                       incremented by one for each generated discovery window.  
44                       This object is applicable for an OLT and an ONU. At the  
45                       OLT, it has a distinct value for each virtual interface.  
46                       At the ONU, the value should be zero.  
47                       Discontinuities of this counter can occur at  
48                       re-initialization of the management system and at other  
49                       times, as indicated by the value of the  
50                       ifCounterDiscontinuityTime object of the Interfaces Group MIB  
51                       module."  
52                       module."  
53                       module."  
54                       module."  
55                       module."  
56                       module."  
57                       module."  
58                       module."  
59                       module."  
60                       module."  
61                       module."  
62                       module."  
63                       module."  
64                       module."  
65            REFERENCE    "IEEE Std 802.3, 30.3.5.1.22"

```
1      ::= { dot3MpcpStatEntry 3}
2
3
4
5 dot3MpcpDiscoveryTimeout OBJECT-TYPE
6
7     SYNTAX Counter32
8
9     MAX-ACCESS read-only
10
11     STATUS current
12
13     DESCRIPTION
14
15         "A count of the number of times a discovery timeout
16
17         occurs. Increment the counter by one for each discovery
18
19         processing state-machine reset resulting from timeout
20
21         waiting for message arrival.
22
23         This object is applicable for an OLT and an ONU. At the
24
25         OLT, it has a distinct value for each virtual interface.
26
27         Discontinuities of this counter can occur at
28
29         re-initialization of the management system and at other
30
31         times, as indicated by the value of the
32
33         ifCounterDiscontinuityTime object of the Interfaces Group MIB
34
35         module."
36
37     REFERENCE "IEEE Std 802.3, 30.3.5.1.23"
38
39     ::= { dot3MpcpStatEntry 4}
40
41
42
43
44
45
46
47 dot3MpcpTxRegRequest OBJECT-TYPE
48
49     SYNTAX Counter64
50
51     UNITS "frames"
52
53     MAX-ACCESS read-only
54
55     STATUS current
56
57     DESCRIPTION
58
59         "A count of the number of times a REGISTER_REQ MPCP
60
61         frame transmission occurs. Increment the counter by one
62
63         for each REGISTER_REQ MPCP frame transmitted as defined
64
65
```

1 in IEEE Std 802.3, [Clause 64 or Clause 77](#).

2  
3 This object is applicable for an OLT and an ONU. At the  
4  
5 OLT, it has a distinct value for each virtual interface.

6  
7 At the OLT, the value should be zero.

8  
9 Discontinuities of this counter can occur at  
10  
11 re-initialization of the management system and at other  
12  
13 times, as indicated by the value of the  
14  
15 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
16  
17  
18 module."  
19

20  
21 REFERENCE "IEEE Std 802.3, 30.3.5.1.12"

22  
23 ::= { dot3MpcpStatEntry 5}

24  
25  
26  
27 dot3MpcpRxRegRequest OBJECT-TYPE

28  
29 SYNTAX Counter64

30  
31 UNITS "frames"

32  
33 MAX-ACCESS read-only

34  
35 STATUS current

36  
37 DESCRIPTION

38  
39 "A count of the number of times a REGISTER\_REQ MPCP  
40  
41 frame reception occurs.

42  
43 Increment the counter by one for each REGISTER\_REQ MPCP  
44  
45 frame received as defined in IEEE Std 802.3, [Clause 64 or](#)  
46  
47 [Clause 77](#).

48  
49 This object is applicable for an OLT and an ONU. At the  
50  
51 OLT, it has a distinct value for each virtual interface.

52  
53 At the ONU, the value should be zero.

54  
55 Discontinuities of this counter can occur at  
56  
57 re-initialization of the management system and at other  
58  
59 times, as indicated by the value of the  
60  
61 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
62  
63  
64  
65

```
1         module."
2
3     REFERENCE    "IEEE Std 802.3, 30.3.5.1.17"
4
5     ::= { dot3MpcpStatEntry 6}
6
7
8
9
10    dot3MpcpTxRegAck OBJECT-TYPE
11
12        SYNTAX Counter64
13
14        UNITS      "frames"
15
16        MAX-ACCESS read-only
17
18        STATUS current
19
20        DESCRIPTION
21
22            "A count of the number of times a REGISTER_ACK MPCP
23
24                frame transmission occurs. Increment the counter by one
25
26                for each REGISTER_ACK MPCP frame transmitted as defined
27
28                in IEEE Std 802.3, Clause 64 or Clause 77.
29
30                This object is applicable for an OLT and an ONU. At the
31
32                OLT, it has a distinct value for each virtual interface.
33
34                At the OLT, the value should be zero.
35
36                Discontinuities of this counter can occur at
37
38                re-initialization of the management system and at other
39
40                times, as indicated by the value of the
41
42                ifCounterDiscontinuityTime object of the Interfaces Group MIB
43
44                module."
45
46    REFERENCE    "IEEE Std 802.3, 30.3.5.1.10"
47
48    ::= { dot3MpcpStatEntry 7}
49
50
51
52
53
54
55
56    dot3MpcpRxRegAck OBJECT-TYPE
57
58        SYNTAX Counter64
59
60        UNITS      "frames"
61
62        MAX-ACCESS read-only
63
64        STATUS current
65
```



1 DESCRIPTION  
2  
3 "A count of the number of times a REGISTER\_ACK MPCP  
4  
5 frame reception occurs.  
6  
7 Increment the counter by one for each REGISTER\_ACK MPCP  
8  
9 frame received as defined in IEEE Std 802.3, [Clause 64 or](#)  
10  
11 [Clause 77](#).  
12  
13 This object is applicable for an OLT and an ONU. At the  
14  
15 OLT, it has a distinct value for each virtual interface.  
16  
17 At the ONU, the value should be zero.  
18  
19 Discontinuities of this counter can occur at  
20  
21 re-initialization of the management system and at other  
22  
23 times, as indicated by the value of the  
24  
25 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
26  
27 module."  
28  
29  
30  
31 REFERENCE "IEEE Std 802.3, 30.3.5.1.15"  
32  
33 ::= { dot3MpcpStatEntry 8}  
34  
35  
36  
37  
38 dot3MpcpTxReport OBJECT-TYPE  
39  
40 SYNTAX Counter64  
41  
42 UNITS "frames"  
43  
44 MAX-ACCESS read-only  
45  
46 STATUS current  
47  
48 DESCRIPTION  
49  
50  
51 "A count of the number of times a REPORT MPCP frame  
52  
53 transmission occurs. Increment the counter by one for  
54  
55 each REPORT MPCP frame transmitted as defined in  
56  
57 IEEE Std 802.3, [Clause 64 or Clause 77](#).  
58  
59 This object is applicable for an OLT and an ONU. At the  
60  
61 OLT, it has a distinct value for each virtual interface.  
62  
63 At the OLT, the value should be zero.  
64  
65

1                   Discontinuities of this counter can occur at  
2  
3                   re-initialization of the management system and at other  
4  
5                   times, as indicated by the value of the  
6  
7                   ifCounterDiscontinuityTime object of the Interfaces Group MIB  
8  
9                   module."

10  
11  
12       REFERENCE    "IEEE Std 802.3, 30.3.5.1.13"

13  
14       ::= { dot3MpcpStatEntry 9}

15  
16  
17  
18       dot3MpcpRxReport OBJECT-TYPE

19  
20       SYNTAX       Counter64

21  
22       UNITS         "frames"

23  
24       MAX-ACCESS   read-only

25  
26       STATUS       current

27  
28       DESCRIPTION

29  
30       "A count of the number of times a REPORT MPCP frame  
31  
32       reception occurs.

33  
34       Increment the counter by one for each REPORT MPCP frame  
35  
36       received as defined in IEEE Std 802.3, [Clause 64 or](#)  
37  
38       [Clause 77](#).

39  
40       This object is applicable for an OLT and an ONU. At the  
41  
42       OLT, it has a distinct value for each virtual interface.

43  
44       At the ONU, the value should be zero.

45  
46       Discontinuities of this counter can occur at  
47  
48       re-initialization of the management system and at other  
49  
50       times, as indicated by the value of the  
51  
52       ifCounterDiscontinuityTime object of the Interfaces Group MIB  
53  
54       module."

55  
56  
57       REFERENCE    "IEEE Std 802.3, 30.3.5.1.18"

58  
59  
60       ::= { dot3MpcpStatEntry 10}

61  
62  
63  
64  
65

1 dot3MpcpTxGate OBJECT-TYPE

2  
3 SYNTAX Counter64

4  
5 UNITS "frames"

6  
7 MAX-ACCESS read-only

8  
9 STATUS current

10  
11 DESCRIPTION

12  
13  
14 "A count of the number of times a GATE MPCP frame  
15 transmission occurs.

16  
17  
18 Increment the counter by one for each GATE MPCP frame  
19 transmitted as defined in IEEE Std 802.3, Clause 64 or  
20  
21 Clause 77.

22  
23  
24  
25 This object is applicable for an OLT and an ONU. At the  
26 OLT, it has a distinct value for each virtual interface.  
27  
28 At the ONU, the value should be zero.

29  
30  
31 Discontinuities of this counter can occur at  
32 re-initialization of the management system and at other  
33  
34 times, as indicated by the value of the  
35  
36 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
37  
38 module."  
39

40  
41  
42 REFERENCE "IEEE Std 802.3, 30.3.5.1.9"

43  
44 ::= { dot3MpcpStatEntry 11}

45  
46  
47  
48  
49 dot3MpcpRxGate OBJECT-TYPE

50  
51 SYNTAX Counter64

52  
53 UNITS "frames"

54  
55 MAX-ACCESS read-only

56  
57 STATUS current

58  
59 DESCRIPTION

60  
61  
62 "A count of the number of times a GATE MPCP frame  
63 reception occurs.  
64  
65

1 Increment the counter by one for each GATE MPCP frame  
2  
3 received as defined in IEEE Std 802.3, [Clause 64 or](#)  
4  
5 [Clause 77](#).  
6  
7 This object is applicable for an OLT and an ONU. At the  
8  
9 OLT, it has a distinct value for each virtual interface.  
10  
11 At the OLT, the value should be zero.  
12  
13 Discontinuities of this counter can occur at  
14  
15 re-initialization of the management system and at other  
16  
17 times, as indicated by the value of the  
18  
19 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
20  
21 module."  
22  
23  
24  
25 REFERENCE "IEEE Std 802.3, 30.3.5.1.14"  
26  
27 ::= { dot3MpcpStatEntry 12}  
28  
29  
30  
31  
32 dot3MpcpTxRegister OBJECT-TYPE  
33  
34 SYNTAX Counter64  
35  
36 UNITS "frames"  
37  
38 MAX-ACCESS read-only  
39  
40 STATUS current  
41  
42 DESCRIPTION  
43  
44 "A count of the number of times a REGISTER MPCP frame  
45  
46 transmission occurs.  
47  
48 Increment the counter by one for each REGISTER MPCP  
49  
50 frame transmitted as defined in IEEE Std 802.3, [Clause 64 or](#)  
51  
52 [Clause 77](#).  
53  
54 This object is applicable for an OLT and an ONU. At the  
55  
56 OLT, it has a distinct value for each virtual interface.  
57  
58 At the ONU, the value should be zero.  
59  
60 Discontinuities of this counter can occur at  
61  
62 re-initialization of the management system and at other  
63  
64  
65

```
1         times, as indicated by the value of the
2
3         ifCounterDiscontinuityTime object of the Interfaces Group MIB
4
5         module."
6
7     REFERENCE    "IEEE Std 802.3, 30.3.5.1.11"
8
9     ::= { dot3MpcpStatEntry 13}
10
11
12
13
14 dot3MpcpRxRegister OBJECT-TYPE
15
16     SYNTAX      Counter64
17
18     UNITS       "frames"
19
20     MAX-ACCESS  read-only
21
22     STATUS      current
23
24     DESCRIPTION
25
26         "A count of the number of times a REGISTER MPCP frame
27
28         reception occurs.
29
30         Increment the counter by one for each REGISTER MPCP
31
32         frame received as defined in IEEE Std 802.3, Clause 64 or
33
34         Clause 77.
35
36         This object is applicable for an OLT and an ONU. At the
37
38         OLT, it has a distinct value for each virtual interface.
39
40         At the OLT, the value should be zero.
41
42         Discontinuities of this counter can occur at
43
44         re-initialization of the management system and at other
45
46         times, as indicated by the value of the
47
48         ifCounterDiscontinuityTime object of the Interfaces Group MIB
49
50         module."
51
52     REFERENCE    "IEEE Std 802.3, 30.3.5.1.16"
53
54     ::= { dot3MpcpStatEntry 14}
55
56
57
58
59
60
61
62 -- Optical Multi Point Emulation (OMPEmulation)
63
64 -- managed object definitions
65
```

1  
2  
3 dot3OmpEmulationObjects OBJECT IDENTIFIER ::= {dot3EponObjects 2}  
4  
5  
6

7  
8 dot3OmpEmulationTable OBJECT-TYPE

9  
10 SYNTAX SEQUENCE OF Dot3OmpEmulationEntry

11  
12 MAX-ACCESS not-accessible

13  
14 STATUS current

15  
16 DESCRIPTION

17  
18 "A table of dot3 OmpEmulation MIB objects. The table

19  
20 contain objects for the management of the OMPEmulation  
21  
22 sublayer.

23  
24 Each object has a row for every virtual link denoted by  
25  
26 the corresponding ifIndex.

27  
28 The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
29  
30 register (15-bit field and a broadcast bit) limiting the  
31  
32 number of virtual links to 32768. Typically the number  
33  
34 of expected virtual links in a PON is like the number of  
35  
36 ONUs, which is 32-64, plus an additional entry for  
37  
38 broadcast LLID."  
39  
40  
41

42 ::= { dot3OmpEmulationObjects 1 }  
43  
44  
45

46  
47 dot3OmpEmulationEntry OBJECT-TYPE

48  
49 SYNTAX Dot3OmpEmulationEntry

50  
51 MAX-ACCESS not-accessible

52  
53 STATUS current

54  
55 DESCRIPTION

56  
57 "An entry in the dot3 OmpEmulation table.

58  
59 Rows exist for an OLT interface and an ONU interface.

60  
61 A row in the table is denoted by the ifIndex of the link  
62  
63 and it is created when the ifIndex is created.  
64  
65

```
1           The rows in the table for an ONU interface are created
2
3           at system initialization.
4
5           The row in the table corresponding to the OLT ifIndex
6
7           and the row corresponding to the broadcast virtual link
8
9           are created at system initialization.
10
11          A row in the table corresponding to the ifIndex of a
12
13          virtual links is created when a virtual link is
14
15          established (ONU registers) and deleted when the virtual
16
17          link is deleted (ONU deregisters)."
```

```
20
21  INDEX { ifIndex }
22
23  ::= { dot3OmpEmulationTable 1 }
24
25
26
27  Dot3OmpEmulationEntry ::=
28
29  SEQUENCE {
30
31          dot3OmpEmulationType          INTEGER
32
33  }
34
35
36
37
38  dot3OmpEmulationType OBJECT-TYPE
39
40  SYNTAX  INTEGER {
41
42          unknown(1),
43
44          olt(2),
45
46          onu(3)
47
48  }
49
50
51  MAX-ACCESS  read-only
52
53  STATUS  current
54
55  DESCRIPTION
56
57          "An object that indicates the mode of operation
58
59          of the Reconciliation Sublayer for Point-to-Point
60
61          Emulation (see IEEE Std 802.3, 65.1 or 76.2 as appropriate).
62
63          unknown(1) value is assigned in initialization; true state
64
65
```

1 or type is not yet known. olt(2) value is assigned when the  
2  
3 sublayer is operating in OLT mode. onu(3) value is assigned when  
4  
5 the sublayer is operating in ONU mode.  
6

7 This object is applicable for an OLT, with the same  
8  
9 value for all virtual interfaces, and for an ONU."  
10

11  
12 REFERENCE "IEEE Std 802.3, 30.3.7.1.2"  
13

14 ::= { dot3OmpEmulationEntry 1}  
15

16  
17  
18 dot3OmpEmulationStatTable OBJECT-TYPE  
19

20 SYNTAX SEQUENCE OF Dot3OmpEmulationStatEntry  
21

22  
23 MAX-ACCESS not-accessible  
24

25 STATUS current  
26

27 DESCRIPTION  
28

29 "This table defines the list of statistics counters of  
30  
31 IEEE Std 802.3, Clause 65 or Clause 76, OMPEmulation sublayer.  
32  
33 Each object has a row for every virtual link denoted by  
34  
35 the corresponding ifIndex.  
36

37  
38 The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
39  
40 register (15-bit field and a broadcast bit) limiting the  
41  
42 number of virtual links to 32768. Typically the number  
43  
44 of expected virtual links in a PON is like the number of  
45  
46 ONUs, which is 32-64, plus an additional entry for  
47  
48 broadcast LLID."  
49

50  
51 ::= { dot3OmpEmulationObjects 2}  
52

53  
54  
55 dot3OmpEmulationStatEntry OBJECT-TYPE  
56

57 SYNTAX Dot3OmpEmulationStatEntry  
58

59  
60 MAX-ACCESS not-accessible  
61

62 STATUS current  
63

64 DESCRIPTION  
65



1 "An entry in the table of statistics counters of  
2  
3 IEEE Std 802.3, Clause 65 or Clause 76, OMPEmulation sublayer.  
4  
5 Rows exist for an OLT interface and an ONU interface.  
6  
7 A row in the table is denoted by the ifIndex of the link  
8  
9 and it is created when the ifIndex is created.  
10  
11 The rows in the table for an ONU interface are created  
12  
13 at system initialization.  
14  
15 The row in the table corresponding to the OLT ifIndex  
16  
17 and the row corresponding to the broadcast virtual link  
18  
19 are created at system initialization.  
20  
21 A row in the table corresponding to the ifIndex of a  
22  
23 virtual links is created when a virtual link is  
24  
25 established (ONU registers) and deleted when the virtual  
26  
27 link is deleted (ONU deregisters)."  
28  
29  
30  
31  
32 INDEX { ifIndex}  
33  
34 ::= { dot3OmpEmulationStatTable 1 }  
35  
36  
37  
38 Dot3OmpEmulationStatEntry::=  
39  
40 SEQUENCE {  
41  
42 dot3OmpEmulationSLDErrors Counter64,  
43  
44 dot3OmpEmulationCRC8Errors Counter64,  
45  
46 dot3OmpEmulationBadLLID Counter64,  
47  
48 dot3OmpEmulationGoodLLID Counter64,  
49  
50 dot3OmpEmulationOnuPonCastLLID Counter64,  
51  
52 dot3OmpEmulationOltPonCastLLID Counter64,  
53  
54 dot3OmpEmulationBroadcastBitNotOnuLlid Counter64,  
55  
56 dot3OmpEmulationOnuLLIDNotBroadcast Counter64,  
57  
58 dot3OmpEmulationBroadcastBitPlusOnuLlid Counter64,  
59  
60 dot3OmpEmulationNotBroadcastBitNotOnuLlid Counter64  
61  
62  
63  
64  
65 }

1  
2  
3 dot3OmpEmulationSLDErrors OBJECT-TYPE  
4

5 SYNTAX Counter64  
6

7 UNITS "frames"  
8

9  
10 MAX-ACCESS read-only  
11

12 STATUS current  
13

14 DESCRIPTION  
15

16 "A count of frames received that do not contain a valid  
17  
18 SLD field as defined in IEEE Std 802.3, 65.1.3.3.1 or  
19  
20 76.2.6.1.3.1, as appropriate.  
21  
22

23 This object is applicable for an OLT and an ONU. At the  
24  
25 OLT, it has a distinct value for each virtual interface.s  
26  
27 Discontinuities of this counter can occur at  
28  
29 re-initialization of the management system and at other  
30  
31 times, as indicated by the value of the  
32  
33 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
34  
35 module."  
36  
37

38 REFERENCE "IEEE Std 802.3, 30.3.7.1.3"  
39

40 ::= { dot3OmpEmulationStatEntry 1}  
41  
42  
43  
44

45 dot3OmpEmulationCRC8Errors OBJECT-TYPE  
46

47 SYNTAX Counter64  
48

49 UNITS "frames"  
50

51  
52 MAX-ACCESS read-only  
53

54 STATUS current  
55

56 DESCRIPTION  
57

58 "A count of frames received that contain a valid SLD  
59  
60 field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1  
61  
62 as appropriate, but do not pass the CRC-8 check as defined in  
63  
64 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3 as appropriate.  
65

1           This object is applicable for an OLT and an ONU. At the  
2  
3           OLT, it has a distinct value for each virtual interface.  
4  
5           Discontinuities of this counter can occur at  
6  
7           re-initialization of the management system and at other  
8  
9           times, as indicated by the value of the  
10  
11           ifCounterDiscontinuityTime object of the Interfaces Group MIB  
12  
13           module."  
14  
15  
16       REFERENCE    "IEEE Std 802.3, 30.3.7.1.4"  
17  
18       ::= { dot3OmpEmulationStatEntry 2}  
19  
20  
21  
22  
23   dot3OmpEmulationBadLLID OBJECT-TYPE  
24  
25       SYNTAX   Counter64  
26  
27       UNITS     "frames"  
28  
29       MAX-ACCESS   read-only  
30  
31       STATUS   current  
32  
33       DESCRIPTION  
34  
35                "A count of frames received that contain a valid SLD field in an  
36  
37                OLT, and pass the CRC-8 check, but are discarded due to the  
38  
39                LLID check. The SLD is defined in IEEE Std 802.3, [65.1.3.3.1](#)  
40  
41                [or 76.2.6.1.3.1, as appropriate.](#) The CRC-8 check is defined in  
42  
43                IEEE Std 802.3, [65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.](#) The  
44  
45                LLID check is defined in IEEE Std 802.3, [65.1.3.3.2 or](#)  
46  
47                [76.2.6.1.3.2, as appropriate.](#)  
48  
49                This object is applicable for an OLT and an ONU. At the  
50  
51                OLT, it has a distinct value for each virtual interface.  
52  
53                Discontinuities of this counter can occur at  
54  
55                re-initialization of the management system and at other  
56  
57                times, as indicated by the value of the  
58  
59                ifCounterDiscontinuityTime object of the Interfaces Group MIB  
60  
61                module."  
62  
63  
64  
65

1 REFERENCE "IEEE Std 802.3, 30.3.7.1.8"  
2  
3 ::= { dot3OmpEmulationStatEntry 3}  
4  
5  
6  
7  
8 dot3OmpEmulationGoodLLID OBJECT-TYPE  
9  
10 SYNTAX Counter64  
11  
12 UNITS "frames"  
13  
14 MAX-ACCESS read-only  
15  
16 STATUS current  
17  
18 DESCRIPTION  
19  
20 "A count of frames received that contain a valid SLD  
21 field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1,  
22 as appropriate, and pass the CRC-8 check as defined in  
23 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.  
24  
25 This object is applicable for an OLT and an ONU. At the  
26 OLT, it has a distinct value for each virtual interface.  
27  
28 Discontinuities of this counter can occur at  
29 re-initialization of the management system and at other  
30 times, as indicated by the value of the  
31 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
32 module."  
33  
34 REFERENCE "IEEE Std 802.3, 30.3.7.1.5"  
35  
36 ::= { dot3OmpEmulationStatEntry 4}  
37  
38  
39  
40  
41 dot3OmpEmulationOnuPonCastLLID OBJECT-TYPE  
42  
43 SYNTAX Counter64  
44  
45 UNITS "frames"  
46  
47 MAX-ACCESS read-only  
48  
49 STATUS current  
50  
51 DESCRIPTION  
52  
53 "A count of frames received that: 1) contain a valid SLD field

1 in an ONU, 2) meet the rules for frame acceptance, and  
2  
3 3) pass the CRC-8 check. The SLD is defined in  
4  
5 IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate. The  
6  
7 rules for LLID acceptance are defined in IEEE Std 802.3, 65.1.3.3.2  
8  
9 or 76.2.6.1.3.2, as appropriate. The CRC-8 check is defined  
10  
11 in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.  
12  
13 This object is applicable for an OLT and an ONU. At the  
14  
15 OLT, it has a distinct value for each virtual interface.  
16  
17 At the OLT, the value should be zero.  
18  
19 Discontinuities of this counter can occur at  
20  
21 re-initialization of the management system and at other  
22  
23 times, as indicated by the value of the  
24  
25 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
26  
27 module."  
28  
29  
30  
31 REFERENCE "IEEE Std 802.3, 30.3.7.1.6"  
32  
33 ::= { dot3OmpEmulationStatEntry 5}  
34  
35  
36  
37  
38 dot3OmpEmulationOltPonCastLLID OBJECT-TYPE  
39  
40 SYNTAX Counter64  
41  
42 UNITS "frames"  
43  
44 MAX-ACCESS read-only  
45  
46 STATUS current  
47  
48 DESCRIPTION  
49  
50  
51 "A count of frames received that contain a valid SLD field, as  
52  
53 defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as  
54  
55 appropriate, pass the CRC-8 check, as defined in  
56  
57 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate,  
58  
59 and meet the rules of acceptance for an OLT defined in  
60  
61 IEEE Std 802.3, 65.1.3.3.2 or 76.2.6.1.3.2, as appropriate.  
62  
63 This object is applicable for an OLT and an ONU. At the  
64  
65

1 OLT, it has a distinct value for each virtual interface.  
2  
3 At the ONU, the value should be zero.  
4  
5 Discontinuities of this counter can occur at  
6  
7 re-initialization of the management system and at other  
8  
9 times, as indicated by the value of the  
10  
11 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
12  
13 module."  
14

15 REFERENCE "IEEE Std 802.3, 30.3.7.1.7"

16 ::= { dot3OmpEmulationStatEntry 6}

17  
18  
19  
20  
21  
22  
23 dot3OmpEmulationBroadcastBitNotOnuLlid OBJECT-TYPE

24 SYNTAX Counter64

25 UNITS "frames"

26 MAX-ACCESS read-only

27 STATUS current

28 DESCRIPTION

29  
30  
31  
32  
33  
34  
35  
36 "A count of frames received that contain a valid SLD  
37  
38 field, as defined in IEEE Std 802.3,  
39  
40 65.1.3.3.1, pass the CRC-8 check, as defined in  
41  
42 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the  
43  
44 broadcast bit in the LLID and not the ONU's LLID (frame accepted)  
45  
46 as defined in IEEE Std 802.3, Clause 65 or Clause 76.  
47  
48

49 This object is applicable for an OLT and an ONU. At the  
50  
51 OLT, it has a distinct value for each virtual interface.  
52  
53 At the OLT, the value should be zero.  
54  
55 Discontinuities of this counter can occur at  
56  
57 re-initialization of the management system and at other  
58  
59 times, as indicated by the value of the  
60  
61 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
62  
63 module."  
64  
65

```
1      ::= { dot3OmpEmulationStatEntry 7}
2
3
4
5 dot3OmpEmulationOnuLLIDNotBroadcast OBJECT-TYPE
6
7     SYNTAX Counter64
8
9     UNITS      "frames"
10
11     MAX-ACCESS read-only
12
13     STATUS current
14
15     DESCRIPTION
16
17         "A count of frames received that contain a valid SLD
18
19         field, as defined in IEEE Std 802.3,
20
21         65.1.3.3.1, pass the CRC-8 check, as defined in
22
23         IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the ONU's
24
25         LLID as defined in IEEE Std 802.3, Clause 65 or Clause 76.
26
27         This object is applicable for an OLT and an ONU. At the
28
29         OLT, it has a distinct value for each virtual interface.
30
31         At the OLT, the value should be zero.
32
33         Discontinuities of this counter can occur at
34
35         re-initialization of the management system and at other
36
37         times, as indicated by the value of the
38
39         ifCounterDiscontinuityTime object of the Interfaces Group MIB
40
41         module."
42
43     ::= { dot3OmpEmulationStatEntry 8}
44
45
46
47
48
49
50
51 dot3OmpEmulationBroadcastBitPlusOnuLlid OBJECT-TYPE
52
53     SYNTAX Counter64
54
55     UNITS      "frames"
56
57     MAX-ACCESS read-only
58
59     STATUS current
60
61     DESCRIPTION
62
63         "A count of frames received that contain a valid SLD
64
65
```

1 field, as defined in IEEE Std 802.3,  
2  
3 65.1.3.3.1, pass the CRC-8 check, as defined in  
4  
5 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the  
6  
7 broadcast bit in the LLID and match the ONU's LLID (frame  
8  
9 reflected) as defined in IEEE Std 802.3, Clause 65 or Clause 76.  
10  
11 This object is applicable for an OLT and an ONU. At the  
12  
13 OLT, it has a distinct value for each virtual interface.  
14  
15 At the OLT, the value should be zero.  
16  
17 Discontinuities of this counter can occur at  
18  
19 re-initialization of the management system and at other  
20  
21 times, as indicated by the value of the  
22  
23 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
24  
25 module."  
26  
27 ::= { dot3OmpEmulationStatEntry 9}  
28  
29  
30  
31  
32  
33  
34 dot3OmpEmulationNotBroadcastBitNotOnuLlid OBJECT-TYPE  
35  
36 SYNTAX Counter64  
37  
38 UNITS "frames"  
39  
40 MAX-ACCESS read-only  
41  
42 STATUS current  
43  
44 DESCRIPTION  
45  
46 "A count of frames received that contain a valid SLD  
47  
48 field, as defined in IEEE Std 802.3,  
49  
50 65.1.3.3.1, pass the CRC-8 check, as defined in  
51  
52 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and do not contain  
53  
54 the ONU's LLID as defined in IEEE Std 802.3, Clause 65 or  
55  
56 Clause 76.  
57  
58 This object is applicable for an OLT and an ONU. At the  
59  
60 OLT, it has a distinct value for each virtual interface.  
61  
62 At the OLT, the value should be zero.  
63  
64  
65



```
1           Discontinuities of this counter can occur at
2
3           re-initialization of the management system and at other
4
5           times, as indicated by the value of the
6
7           ifCounterDiscontinuityTime object of the Interfaces Group MIB
8
9           module."
10
11
12      ::= { dot3OmpEmulationStatEntry 10}
13
14
15
16  -- FEC managed object definitions (30.5.1)
17
18
19
20  dot3EponFecObjects OBJECT IDENTIFIER ::= {dot3EponObjects 3}
21
22
23
24
25  dot3EponFecTable OBJECT-TYPE
26
27      SYNTAX SEQUENCE OF Dot3EponFecEntry
28
29      MAX-ACCESS not-accessible
30
31      STATUS current
32
33      DESCRIPTION
34
35          "A table of dot3 EPON FEC management objects.
36
37          The entries in the table are control and status objects
38
39          and statistic counters for the FEC layer.
40
41          Each object has a row for every virtual link denoted by
42
43          the corresponding ifIndex.
44
45          The LLID field, as defined in the IEEE Std 802.3, is a 2-byte
46
47          register (15-bit field and a broadcast bit) limiting the
48
49          number of virtual links to 32768. Typically the number
50
51          of expected virtual links in a PON is like the number of
52
53          ONUs, which is 32-64, plus an additional entry for
54
55          broadcast LLID."
56
57      ::= { dot3EponFecObjects 1 }
58
59
60
61
62
63
64  dot3EponFecEntry OBJECT-TYPE
65
```

```
1      SYNTAX Dot3EponFecEntry
2
3      MAX-ACCESS not-accessible
4
5      STATUS current
6
7      DESCRIPTION
8
9          "An entry in the dot3 EPON FEC table.
10
11          Rows exist for an OLT interface and an ONU interface.
12
13          A row in the table is denoted by the ifIndex of the link
14
15          and it is created when the ifIndex is created.
16
17          The rows in the table for an ONU interface are created
18
19          at system initialization.
20
21          The row in the table corresponding to the OLT ifIndex
22
23          and the row corresponding to the broadcast virtual link
24
25          are created at system initialization.
26
27          A row in the table corresponding to the ifIndex of a
28
29          virtual links is created when a virtual link is
30
31          established (ONU registers) and deleted when the virtual
32
33          link is deleted (ONU deregisters)."
```

```
38      INDEX { ifIndex}
39
40      ::= { dot3EponFecTable 1 }
41
42
43
44
45      Dot3EponFecEntry ::=
46
47          SEQUENCE {
48
49              dot3EponFecPCSCodingViolation          Counter64,
50
51              dot3EponFecAbility                      INTEGER,
52
53              dot3EponFecMode                          INTEGER,
54
55              dot3EponFecCorrectedBlocks              Counter64,
56
57              dot3EponFecUncorrectableBlocks          Counter64,
58
59              dot3EponFecBufferHeadCodingViolation    Counter64
60
61          }
62
63
64
65
```

1 dot3EponFecPCSCodingViolation OBJECT-TYPE

2  
3 SYNTAX Counter64

4  
5 UNITS "octets"

6  
7 MAX-ACCESS read-only

8  
9 STATUS current

10  
11 DESCRIPTION

12  
13  
14 "For a 100 Mb/s operation, it is a count of the number of  
15 times an invalid code-group is received, other than the  
16 /H/ code-group. For a 1000 Mb/s operation, it is a count  
17 of the number of times an invalid codegroup is received,  
18 other than the /V/ code-group. /H/ denotes a special  
19 4b5b codeword of the IEEE Std 802.3 Clause 24 100 Mb/s PCS layer,  
20 and /V/ denotes a special 8b10b codeword of the IEEE Std 802.3  
21 Clause 36 1000 Mb/s PCS layer.  
22  
23  
24  
25  
26  
27  
28  
29  
30

31 This object is applicable for an OLT and an ONU. At the  
32 OLT, it has a distinct value for each virtual interface.  
33  
34 Discontinuities of this counter can occur at  
35  
36 re-initialization of the management system and at other  
37  
38 times, as indicated by the value of the  
39  
40  
41  
42 ifCounterDiscontinuityTime object of the Interfaces Group MIB  
43  
44 module."

45  
46  
47 REFERENCE "IEEE Std 802.3, 30.5.1.1.14"

48  
49 ::= { dot3EponFecEntry 1 }

50  
51  
52  
53  
54 dot3EponFecAbility OBJECT-TYPE

55  
56 SYNTAX INTEGER {

57  
58 unknown(1),

59  
60 supported(2),

61  
62 unsupported(3)

63  
64  
65 }

```
1      MAX-ACCESS read-only
2
3      STATUS current
4
5      DESCRIPTION
6
7          "An object that indicates the support of operation of the
8
9          optional FEC sublayer of the 1000BASE-PX PHY specified
10         in IEEE Std 802.3, 65.2.
11
12         unknown(1) value is assigned in the initialization, for non
13
14         FEC support state or type not yet known. unsupported(3)
15         value is assigned when the sublayer is not supported.
16
17         supported(2) value is assigned when the sublayer is
18         supported.
19
20         This object is applicable for an OLT, with the same
21         value for all virtual interfaces, and for an ONU.
22
23         The FEC counters will have a zero value when the
24         interface is not supporting FEC.
25
26         The counters:
27
28         dot3EponFecPCSCodingViolation - not affected by FEC
29         ability.
30
31         dot3EponFecCorrectedBlocks - has a zero value when
32         dot3EponFecAbility is unknown(1) and unsupported(3).
33
34         dot3EponFecUncorrectableBlocks - has a zero value when
35         dot3EponFecAbility is unknown(1) and unsupported(3).
36
37         dot3EponFecBufferHeadCodingViolation - has a zero value
38         when dot3EponFecAbility is unknown(1) and
39         unsupported(3)."
```

```
56     REFERENCE "IEEE Std 802.3, 30.5.1.1.15"
57
58     ::= { dot3EponFecEntry 2 }
59
60
61
62 dot3EponFecMode OBJECT-TYPE
63
64     SYNTAX INTEGER {
```

```
1         unknown(1),
2
3         disabled(2),
4
5         enabled(3)
6
7     }
8
9     MAX-ACCESS read-write
10
11     STATUS current
12
13     DESCRIPTION
14
15         "An object that defines the mode of operation of the
16
17         optional FEC sublayer of the 1000BASE-PX PHY, specified
18
19         in IEEE Std 802.3, 65.2, and reflects its state..
20
21         A GET operation returns the current mode of operation
22
23         of the PHY. A SET operation changes the mode of
24
25         operation of the PHY to the indicated value.
26
27         unknown(1) value is assigned in the initialization for non
28
29         FEC support state or type not yet known.
30
31         disabled(2) value is assigned when the FEC sublayer is
32
33         operating in disabled mode.
34
35         enabled(3) value is assigned when the FEC sublayer is
36
37         operating in FEC mode.
38
39         The write operation is not restricted in this document
40
41         and can be done at any time. Changing dot3EponFecMode
42
43         state can lead to disabling the Forward Error Correction
44
45         on the respective interface, which can lead to a
46
47         degradation of the optical link, and therefore may lead
48
49         to an interruption of service for the users connected to
50
51         the respective EPON interface.
52
53         This object is applicable for an OLT and an ONU. At the
54
55         OLT, it has a distinct value for each virtual interface.
56
57         The counting of
58
59         the FEC counters will stop when the FEC of the interface
```

1           is disabled.  
2  
3           The counters:  
4  
5           dot3EponFecPCSCodingViolation - not affected by FEC  
6  
7           mode.  
8  
9           dot3EponFecCorrectedBlocks - stops counting when  
10          Rx\_FEC is not enabled. (unknown(1) and disabled(2)).  
11  
12          dot3EponFecUncorrectableBlocks - stops counting when  
13          Rx\_FEC is not enabled (unknown(1) and disabled(2)).  
14  
15          dot3EponFecBufferHeadCodingViolation - stops counting  
16          when Rx\_FEC is not enabled (unknown(1) and  
17          disabled(2)).  
18  
19          The object:  
20  
21          dot3EponFecAbility - indicates the FEC ability and  
22          is not affected by the dot3EponFecMode object."  
23  
24          REFERENCE    "IEEE Std 802.3, 30.5.1.1.16"  
25  
26          DEFVAL { unknown }  
27  
28          ::= { dot3EponFecEntry 3}  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41   dot3EponFecCorrectedBlocks OBJECT-TYPE  
42  
43       SYNTAX   Counter64  
44  
45       MAX-ACCESS   read-only  
46  
47       STATUS   current  
48  
49       DESCRIPTION  
50  
51                "For 1000BASE-PX, 10/25/40/50/100/200/400GBASE-R, 10GBASE-PR  
52                or 10/1GBASE-PRX PHYs, it is a count of corrected FEC blocks.  
53                This counter will not increment for other PHY Types.  
54                Increment the counter by one for each received block that is  
55                corrected by the FEC function in the PHY.  
56                This object is applicable for an OLT and an ONU. At the  
57                OLT, it has a distinct value for each virtual interface.  
58  
59  
60  
61  
62  
63  
64  
65

```
1           Discontinuities of this counter can occur at
2
3           re-initialization of the management system and at other
4
5           times, as indicated by the value of the
6
7           ifCounterDiscontinuityTime object of the Interfaces Group MIB
8
9           module."
10
11
12    REFERENCE    "IEEE Std 802.3, 30.5.1.1.17"
13
14    ::= { dot3EponFecEntry 4}
15
16
17
18    dot3EponFecUncorrectableBlocks OBJECT-TYPE
19
20        SYNTAX Counter64
21
22        MAX-ACCESS read-only
23
24        STATUS current
25
26        DESCRIPTION
27
28            "For 1000BASE-PX, 10/25/40/50/100/200/400GBASE-R, 10GBASE-PR
29
30            or 10/1GBASE-PRX PHYs, it is a count of uncorrectable FEC blocks.
31
32            This counter will not increment for other PHY Types.
33
34            Increment the counter by one for each FEC block that is
35
36            determined to be uncorrectable by the FEC function in the PHY.
37
38            This object is applicable for an OLT and an ONU. At the
39
40            OLT, it has a distinct value for each virtual interface.
41
42            Discontinuities of this counter can occur at
43
44            re-initialization of the management system and at other
45
46            times, as indicated by the value of the
47
48            ifCounterDiscontinuityTime object of the Interfaces Group MIB
49
50            module."
51
52
53    REFERENCE    "IEEE Std 802.3, 30.5.1.1.18"
54
55    ::= { dot3EponFecEntry 5}
56
57
58
59
60
61
62    dot3EponFecBufferHeadCodingViolation OBJECT-TYPE
63
64        SYNTAX Counter64
65
```

```
1     UNITS      "octets"
2
3     MAX-ACCESS read-only
4
5     STATUS    current
6
7     DESCRIPTION
8
9
10        "For a 1000 Mb/s operation, it is a count of the number of
11
12        invalid code-group received directly from the link. The
13
14        value has a meaning only in 1000 Mb/s mode and it is
15
16        zero otherwise.
17
18        This object is applicable for an OLT and an ONU. At the
19
20        OLT, it has a distinct value for each virtual interface.
21
22        Discontinuities of this counter can occur at
23
24        re-initialization of the management system and at other
25
26        times, as indicated by the value of the
27
28        ifCounterDiscontinuityTime object of the Interfaces Group MIB
29
30        module."
31
32
33
34     ::= { dot3EponFecEntry 6}
35
36
37
38 -- ExtendedPackage managed object definitions
39
40
41
42
43 dot3ExtPkgObjects OBJECT IDENTIFIER ::= {dot3EponObjects 4}
44
45
46
47 dot3ExtPkgControlObjects OBJECT IDENTIFIER ::= { dot3ExtPkgObjects 1}
48
49
50
51
52 dot3ExtPkgControlTable OBJECT-TYPE
53
54     SYNTAX  SEQUENCE OF Dot3ExtPkgControlEntry
55
56     MAX-ACCESS not-accessible
57
58     STATUS  current
59
60     DESCRIPTION
61
62         "A table of Extended package Control management
63
64         objects. Entries in the table are control and status
65
```



1           indication objects of an EPON interface, which are  
2  
3           gathered in an extended package as an addition to the  
4  
5           objects based on the IEEE Std 802.3, Clause 30, attributes.  
6  
7           Each object has a row for every virtual link denoted by  
8  
9           the corresponding ifIndex.  
10  
11           The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
12  
13           register (15-bit field and a broadcast bit) limiting the  
14  
15           number of virtual links to 32768. Typically the number  
16  
17           of expected virtual links in a PON is like the number of  
18  
19           ONUs, which is 32-64, plus an additional entry for  
20  
21           broadcast LLID."  
22  
23           ::= { dot3ExtPkgControlObjects 1 }  
24  
25  
26  
27  
28  
29  
30 dot3ExtPkgControlEntry OBJECT-TYPE  
31  
32       SYNTAX   Dot3ExtPkgControlEntry  
33  
34       MAX-ACCESS   not-accessible  
35  
36       STATUS   current  
37  
38       DESCRIPTION  
39  
40                "An entry in the Extended package Control table.  
41  
42                Rows exist for an OLT interface and an ONU interface.  
43  
44                A row in the table is denoted by the ifIndex of the link  
45  
46                and it is created when the ifIndex is created.  
47  
48                The rows in the table for an ONU interface are created  
49  
50                at system initialization.  
51  
52                The row in the table corresponding to the OLT ifIndex  
53  
54                and the row corresponding to the broadcast virtual link  
55  
56                are created at system initialization.  
57  
58                A row in the table corresponding to the ifIndex of a  
59  
60                virtual links is created when a virtual link is  
61  
62                established (ONU registers) and deleted when the virtual  
63  
64  
65

```

1          link is deleted (ONU deregisters)."
```

```

2
```

```

3     INDEX { ifIndex}
4
```

```

5     ::= { dot3ExtPkgControlTable 1 }
6
```

```

7
```

```

8
```

```

9
```

```

10    Dot3ExtPkgControlEntry ::=
11
```

```

12        SEQUENCE {
13
```

```

14            dot3ExtPkgObjectReset                INTEGER,
```

```

15
```

```

16            dot3ExtPkgObjectPowerDown            TruthValue,
```

```

17
```

```

18            dot3ExtPkgObjectNumberOfLLIDs        Unsigned32,
```

```

19
```

```

20            dot3ExtPkgObjectFecEnabled            INTEGER,
```

```

21
```

```

22            dot3ExtPkgObjectReportMaximumNumQueues Unsigned32,
```

```

23
```

```

24            dot3ExtPkgObjectRegisterAction        INTEGER
25
```

```

26        }
27
```

```

28
```

```

29
```

```

30
```

```

31
```

```

32    dot3ExtPkgObjectReset OBJECT-TYPE
33
```

```

34        SYNTAX  INTEGER {
35
```

```

36            running(1),
37
```

```

38            reset(2)
39
```

```

40        }
41
```

```

42
```

```

43        MAX-ACCESS  read-write
44
```

```

45        STATUS  current
46
```

```

47        DESCRIPTION
48
```

```

49            "This object is used to reset the EPON interface. The
50
```

```

51            interface may be unavailable while the reset occurs and
52
```

```

53            data may be lost.
54
```

```

55
```

```

56            Setting this object to running(1) will cause the
57
```

```

58            interface to enter into running mode. Setting this
59
```

```

60            object to reset(2) will cause the interface to go into
61
```

```

62            reset mode. When getting running(1), the interface is in
63
```

```

64            running mode. When getting reset(2), the interface is in
65
```

1           reset mode.  
2  
3           The write operation is not restricted in this document  
4  
5           and can be done at any time. Changing  
6  
7           dot3ExtPkgObjectReset state can lead to a reset of the  
8  
9           respective interface, leading to an interruption of  
10  
11           service for the users connected to the respective EPON  
12  
13           interface.  
14  
15           This object is applicable for an OLT and an ONU. At the  
16  
17           OLT, it has a distinct value for each virtual interface.  
18  
19           A reset for a specific virtual interface resets only  
20  
21           this virtual interface and not the physical interface.  
22  
23           Thus, a virtual link that is malfunctioning can be  
24  
25           reset without affecting the operation of other virtual  
26  
27           interfaces.  
28  
29           The reset can cause Discontinuities in the values of the  
30  
31           counters of the interface, similar to re-initialization  
32  
33           of the management system. Discontinuity should be  
34  
35           indicated by the ifCounterDiscontinuityTime object of  
36  
37           the Interfaces Group MIB module."  
38  
39           DEFVAL { running }  
40  
41           ::= { dot3ExtPkgControlEntry 1 }  
42  
43           dot3ExtPkgObjectPowerDown OBJECT-TYPE  
44  
45           SYNTAX TruthValue  
46  
47           MAX-ACCESS read-write  
48  
49           STATUS current  
50  
51           DESCRIPTION  
52  
53           "This object is used to power down the EPON interface.  
54  
55           The interface may be unavailable while the power down  
56  
57           occurs and data may be lost.  
58  
59  
60  
61  
62  
63  
64  
65

1           Setting this object to true(1) will cause the interface  
2  
3           to enter into power down mode. Setting this object to  
4  
5           false(2) will cause the interface to go out of power  
6  
7           down mode. When getting true(1), the interface is in  
8  
9           power down mode. When getting false(2), the interface is  
10  
11           not in power down mode.  
12  
13           The write operation is not restricted in this document  
14  
15           and can be done at any time. Changing  
16  
17           dot3ExtPkgObjectPowerDown state can lead to a power down  
18  
19           of the respective interface, leading to an interruption  
20  
21           of service of the users connected to the respective EPON  
22  
23           interface.  
24  
25           This object is applicable for an OLT and an ONU. At the  
26  
27           OLT, it has a distinct value for each virtual interface.  
28  
29           A power down/up of a specific virtual interface affects  
30  
31           only the virtual interface and not the physical  
32  
33           interface. Hence a virtual link, which needs a certain  
34  
35           handling, can be powered down and then powered up without  
36  
37           disrupting the operation of other virtual interfaces.  
38  
39           The object is relevant when the admin state of the  
40  
41           interface is active as set by the dot3MpcpAdminState."  
42  
43           DEFVAL { false }  
44  
45           ::= { dot3ExtPkgControlEntry 2 }  
46  
47  
48  
49  
50  
51  
52  
53  
54   dot3ExtPkgObjectNumberOfLLIDs OBJECT-TYPE  
55  
56       SYNTAX   Unsigned32  
57  
58       MAX-ACCESS   read-only  
59  
60       STATUS   current  
61  
62       DESCRIPTION  
63  
64           "A read only object that indicates the number of  
65

1 registered LLIDs. The initialization value is 0.  
2  
3 This object is applicable for an OLT with the same  
4  
5 value for all virtual interfaces and for an ONU.  
6  
7 The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
8  
9 register (15-bit field and a broadcast bit) limiting the  
10  
11 number of virtual links to 32768. Typically the number  
12  
13 of expected virtual links in a PON is like the number of  
14  
15 ONUs, which is 32-64, plus an additional entry for  
16  
17 broadcast LLID. At the ONU the  
18  
19 number of LLIDs for an interface is one."  
20  
21 ::= { dot3ExtPkgControlEntry 3 }  
22  
23  
24  
25  
26  
27 dot3ExtPkgObjectFecEnabled OBJECT-TYPE  
28  
29 SYNTAX INTEGER {  
30  
31 noFecEnabled(1),  
32  
33 fecTxEnabled(2),  
34  
35 fecRxEnabled(3),  
36  
37 fecTxRxEnabled(4)  
38  
39 }  
40  
41  
42 MAX-ACCESS read-write  
43  
44 STATUS current  
45  
46 DESCRIPTION  
47  
48 "An object defining the FEC mode of operation of the  
49  
50 interface, and indicating its state. The modes defined in  
51  
52 this object are extensions to the FEC modes defined in  
53  
54 the dot3EponFecMode object.  
55  
56 When noFECEnabled(1), the interface does not enable FEC  
57  
58 mode.  
59  
60 When fecTxEnabled(2), the interface enables the FEC  
61  
62 transmit mode.  
63  
64  
65

1           When fecRxEnabled(3), the interface enables the FEC  
2  
3           receive mode.

4  
5           When fecTxRxEnabled(4), the interface enables the FEC  
6  
7           transmit and receive mode.

8  
9  
10          This object is applicable for an OLT and an ONU. At the  
11  
12          OLT, it has a distinct value for each virtual interface.  
13  
14          The FEC counters are referring to the receive path. The  
15  
16          FEC counters will stop when the FEC receive mode of the  
17  
18          interface is disabled, as defined by fecRxEnabled(3)  
19  
20          and fecTxRxEnabled(4) values.

21  
22  
23          The counters:

24  
25           dot3EponFecPCSCodingViolation - not affected by FEC  
26  
27           mode.

28  
29           dot3EponFecCorrectedBlocks - stops counting when  
30  
31           Rx\_FEC is not enabled (noFecEnabled(1) and  
32  
33           fecTxEnabled(2)).

34  
35           dot3EponFecUncorrectableBlocks - stops counting when  
36  
37           Rx\_FEC is not enabled (noFecEnabled(1) and  
38  
39           fecTxEnabled(2)).

40  
41           dot3EponFecBufferHeadCodingViolation - stops counting  
42  
43           when Rx\_FEC is not enabled (noFecEnabled(1) and  
44  
45           fecTxEnabled(2)).

46  
47  
48          The objects:

49  
50           dot3EponFecAbility - indicates the FEC ability and is  
51  
52           not affected by the FEC mode.

53  
54           dot3EponFecMode - indicates the FEC mode for combined RX  
55  
56           and TX.

57  
58  
59          The write operation is not restricted in this document  
60  
61          and can be done at any time. Changing  
62  
63          dot3ExtPkgObjectFecEnabled state can lead to disabling  
64  
65

1 the Forward Error Correction on the respective interface,  
2  
3 which can lead to a degradation of the optical link, and  
4  
5 therefore may lead to an interruption of service for the  
6  
7 users connected to the respective EPON interface."  
8  
9  
10 DEFVAL { noFecEnabled }  
11  
12 ::= { dot3ExtPkgControlEntry 4 }  
13  
14  
15  
16 dot3ExtPkgObjectReportMaximumNumQueues OBJECT-TYPE  
17  
18 SYNTAX Unsigned32 (0..7)  
19  
20 MAX-ACCESS read-only  
21  
22 STATUS current  
23  
24 DESCRIPTION  
25  
26 "An object, that defines the maximal number of queues in  
27  
28 the REPORT message as defined in IEEE Std 802.3, [Clause 64](#). For  
29  
30 further information please see the description of the  
31  
32 queue table.  
33  
34 This object is applicable for an OLT and an ONU. At the  
35  
36 OLT, it has a distinct value for each virtual interface."  
37  
38  
39  
40 DEFVAL { 0 }  
41  
42 ::= { dot3ExtPkgControlEntry 5 }  
43  
44  
45  
46  
47 dot3ExtPkgObjectRegisterAction OBJECT-TYPE  
48  
49 SYNTAX INTEGER {  
50  
51 none(1),  
52  
53 register(2),  
54  
55 deregister(3),  
56  
57 reregister(4)  
58  
59 }  
60  
61  
62 MAX-ACCESS read-write  
63  
64 STATUS current  
65

## DESCRIPTION

"An object configuring the registration state of an interface, and indicating its registration state.

Write operation changes the registration state to its new value.

Read operation returns the value of the state.

The registration state is reflected in this object and in the dot3MpcpRegistrationState object.

none(1) indicates an unknown state,

register(2) indicates a registered LLID,

deregister(3) indicates a deregistered LLID,

reregister(4) indicates an LLID that is reregistering.

The following list describes the operation of the interface, as specified in the IEEE Std 802.3, when a write operation is setting a value.

none(1) - not doing any action.

register(2) - registering an LLID that has been requested for registration (The LLID is in registering mode.

dot3MpcpRegistrationState - registering(2) ).

deregister(3) - deregisters an LLID that is registered (dot3MpcpRegistrationState - registered(3) ).

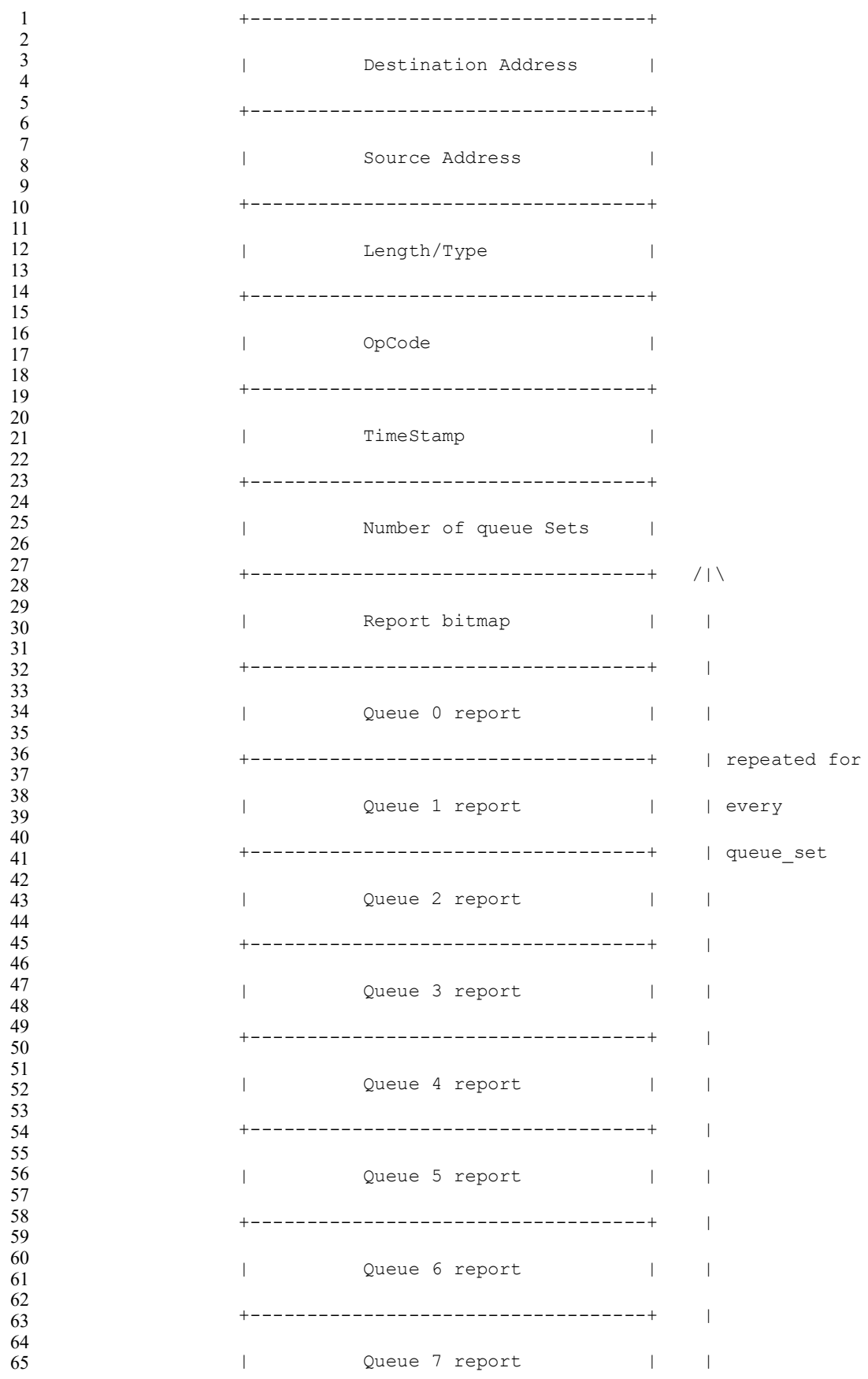
reregister(4) - reregister an LLID that is registered (dot3MpcpRegistrationState - registered(3) ).

The behavior of an ONU and OLT interfaces, at each one of the detailed operation at each state, is described in the registration state machine [of figure 64-22, IEEE Std 802.3.](#)

This object is applicable for an OLT and an ONU. At the OLT, it has a distinct value for each virtual interface. The write operation is not restricted in this document



1 and can be done at any time. Changing  
2  
3 dot3ExtPkgObjectRegisterAction state can lead to a change  
4  
5 in the registration state of the respective interface  
6  
7 leading to a deregistration and an interruption of  
8  
9 service of the users connected to the respective EPON  
10  
11 interface."  
12  
13  
14 DEFVAL { none }  
15  
16 ::= { dot3ExtPkgControlEntry 6 }  
17  
18  
19  
20 dot3ExtPkgQueueTable OBJECT-TYPE  
21  
22 SYNTAX SEQUENCE OF Dot3ExtPkgQueueEntry  
23  
24 MAX-ACCESS not-accessible  
25  
26 STATUS current  
27  
28 DESCRIPTION  
29  
30 "A table of the extended package objects for queue  
31  
32 management. The IEEE Std 802.3 MPCP defines a report message  
33  
34 of the occupancy of the transmit queues for the feedback  
35  
36 BW request from the ONUs. These queues serve the uplink  
37  
38 transmission of the ONU and data is gathered there until  
39  
40 the ONU is granted for transmission.  
41  
42 The management table of the queues is added here mainly  
43  
44 to control the reporting and to gather some statistics  
45  
46 of their operation. This table is not duplicating  
47  
48 existing management objects of bridging queues,  
49  
50 specified in IEEE Std 802.1D, since the existence of a  
51  
52 dedicated transmit queuing mechanism is implied in the  
53  
54 IEEE Std 802.3, and the ONU may be a device that is not a  
55  
56 bridge with embedded bridging queues.  
57  
58 The format of the REPORT message, as specified  
59  
60 in IEEE Std 802.3, is presented below:  
61  
62  
63  
64  
65



1  
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52  
53  
54  
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56  
57  
58  
59  
60  
61  
62  
63  
64  
65

```
+-----+ \|\|
|          Pad/reserved          |
+-----+
|          FCS                    |
+-----+
```

The 'Queue report' field reports the occupancy of each uplink transmission queue.

The number of queue sets defines the number of the reported sets, as would be explained in the description of the dot3ExtPkgQueueSetsTable table. For each set the report bitmap defines which queue is present in the report, meaning that although the MPCP REPORT message can report up to 8 queues in a REPORT message, the actual number is flexible. The Queue table has a variable size that is limited by the dot3ExtPkgObjectReportMaximumNumQueues object, as an ONU can have fewer queues to report.

The entries in the table are control and status indication objects for managing the queues of an EPON interface that are gathered in an extended package as an addition to the objects that are based on the IEEE Std 802.3 attributes.

Each object has a row for every virtual link and for every queue in the report.

The LLID field, as defined in the IEEE Std 802.3, is a 2-byte register (15-bit field and a broadcast bit) limiting the number of virtual links to 32768. Typically the number of expected virtual links in a PON is like the number of ONUs, which is 32-64, plus an additional entry for

```
1          broadcast LLID.
2
3          The number of queues is between 0 and 7 and limited by
4
5          dot3ExtPkgObjectReportMaximumNumQueues."
6
7      ::= { dot3ExtPkgControlObjects 2 }
8
9
10
11
12 dot3ExtPkgQueueEntry OBJECT-TYPE
13
14     SYNTAX  Dot3ExtPkgQueueEntry
15
16     MAX-ACCESS  not-accessible
17
18     STATUS  current
19
20     DESCRIPTION
21
22         "An entry in the Extended package Queue table. At the
23
24         OLT, the rows exist for each ifIndex and dot3QueueIndex.
25
26         At the ONU, rows exist for the single ifIndex for each
27
28         dot3QueueIndex.
29
30         Rows in the table are created when the ifIndex of the
31
32         link is created. A set of rows per queue are added for
33
34         each ifIndex, denoted by the dot3QueueIndex.
35
36         A set of rows per queue in the table, for an ONU
37
38         interface, are created at the system initialization.
39
40         A set of rows per queue in the table, corresponding to
41
42         the OLT ifIndex and a set of rows per queue
43
44         corresponding to the broadcast virtual link, are
45
46         created at the system initialization.
47
48         A set of rows per queue in the table, corresponding to
49
50         the ifIndex of a virtual link, are created when the
51
52         virtual link is established (ONU registers), and deleted
53
54         when the virtual link is deleted (ONU deregisters)."
```

```
60     INDEX  { ifIndex, dot3QueueIndex }
61
62     ::= { dot3ExtPkgQueueTable 1 }
63
64
65
```

```
1   Dot3ExtPkgQueueEntry ::=
2
3   SEQUENCE {
4
5       dot3QueueIndex                Unsigned32,
6
7       dot3ExtPkgObjectReportNumThreshold    Unsigned32,
8
9       dot3ExtPkgObjectReportMaximumNumThreshold    Unsigned32,
10
11      dot3ExtPkgStatTxFramesQueue        Counter64,
12
13      dot3ExtPkgStatRxFramesQueue        Counter64,
14
15      dot3ExtPkgStatDroppedFramesQueue    Counter64
16
17  }
18
19
20
21
22
23  dot3QueueIndex OBJECT-TYPE
24
25      SYNTAX  Unsigned32 (0..7)
26
27      MAX-ACCESS  not-accessible
28
29      STATUS  current
30
31      DESCRIPTION
32
33          "An object that identifies an index for the queue table
34
35          reflecting the queue index of the queues that are
36
37          reported in the MPCP REPORT message as defined in
38
39          IEEE Std 802.3, Clause 64 or Clause 77.
40
41          The number of queues is between 0 and 7, and limited by
42
43          dot3ExtPkgObjectReportMaximumNumQueues."
44
45      ::= { dot3ExtPkgQueueEntry 1 }
46
47
48
49
50
51  dot3ExtPkgObjectReportNumThreshold OBJECT-TYPE
52
53      SYNTAX  Unsigned32 (0..7)
54
55      MAX-ACCESS  read-write
56
57      STATUS  current
58
59      DESCRIPTION
60
61          "An object that defines the number of thresholds for each
62
63          queue in the REPORT message as defined in IEEE Std 802.3,
```

Clause 64 or Clause 77

Each queue\_set reporting will provide information on the queue occupancy of frames below the matching Threshold.

Read operation reflects the number of thresholds.

Write operation sets the number of thresholds for each queue.

The write operation is not restricted in this document and can be done at any time. Value cannot exceed the maximal value defined by the dot3ExtPkgObjectReportMaximumNumThreshold object.

Changing dot3ExtPkgObjectReportNumThreshold can lead to a change in the reporting of the ONU interface and therefore to a change in the bandwidth allocation of the respective interface. This change may lead a degradation or an interruption of service of the users connected to the respective EPON interface.

This object is applicable for an OLT and an ONU. At the OLT, it has a distinct value for each virtual interface and for each queue. At the ONU, it has a distinct value for each queue."

DEFVAL { 0 }

::= { dot3ExtPkgQueueEntry 2 }

dot3ExtPkgObjectReportMaximumNumThreshold OBJECT-TYPE

SYNTAX Unsigned32 (0..7)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An object, that defines the maximal number of thresholds for each queue in the REPORT message as defined in

1 IEEE Std 802.3, [Clause 64 or Clause 77](#). Each queue\_set  
2  
3 reporting will provide information on the queue occupancy of  
4  
5 frames below the matching Threshold.  
6  
7 This object is applicable for an OLT and an ONU. At the  
8  
9 OLT, it has a distinct value for each virtual interface  
10  
11 and for each queue. At the ONU, it has a distinct value  
12  
13 for each queue."  
14  
15  
16 DEFVAL { 0 }  
17  
18 ::= { dot3ExtPkgQueueEntry 3 }  
19  
20  
21  
22  
23 dot3ExtPkgStatTxFramesQueue OBJECT-TYPE  
24  
25 SYNTAX Counter64  
26  
27 UNITS "frames"  
28  
29 MAX-ACCESS read-only  
30  
31 STATUS current  
32  
33 DESCRIPTION  
34  
35  
36 "A count of the number of times a frame transmission  
37  
38 occurs from the corresponding 'Queue'.  
39  
40 Increment the counter by one for each frame transmitted,  
41  
42 which is an output of the 'Queue'.  
43  
44 The 'Queue' marking matches the REPORT MPCP message  
45  
46 Queue field as defined in IEEE Std 802.3, [Clause 64 or Clause 77](#).  
47  
48 This object is applicable for an OLT and an ONU. At the  
49  
50 OLT, it has a distinct value for each virtual interface  
51  
52 and for each queue. At the ONU, it has a distinct value  
53  
54 for each queue.  
55  
56 At the OLT the value should be zero.  
57  
58 Discontinuities of this counter can occur at  
59  
60 re-initialization of the management system and at other  
61  
62 times, as indicated by the value of the  
63  
64  
65

```
1         ifCounterDiscontinuityTime object of the Interfaces Group MIB
2
3         module."
4
5     ::= { dot3ExtPkgQueueEntry 4}
6
7
8
9
10    dot3ExtPkgStatRxFramesQueue OBJECT-TYPE
11
12        SYNTAX Counter64
13
14        UNITS "frames"
15
16        MAX-ACCESS read-only
17
18        STATUS current
19
20        DESCRIPTION
21
22
23            "A count of the number of times a frame reception
24
25            occurs from the corresponding 'Queue'.
26
27            Increment the counter by one for each frame received,
28
29            which is an input to the corresponding 'Queue'.
30
31            The 'Queue' marking matches the REPORT MPCP message
32
33            Queue field as defined in IEEE Std 802.3, Clause 64 or Clause 77.
34
35            This object is applicable for an OLT and an ONU. At the
36
37            OLT, it has a distinct value for each virtual interface
38
39            and for each queue. At the ONU, it has a distinct value
40
41            for each queue.
42
43            Discontinuities of this counter can occur at
44
45            re-initialization of the management system and at other
46
47            times, as indicated by the value of the
48
49            ifCounterDiscontinuityTime object of the Interfaces Group MIB
50
51            module."
52
53
54        ::= { dot3ExtPkgQueueEntry 5}
55
56
57
58
59
60    dot3ExtPkgStatDroppedFramesQueue OBJECT-TYPE
61
62        SYNTAX Counter64
63
64        UNITS "frames"
```



```
1      MAX-ACCESS read-only
2
3      STATUS current
4
5      DESCRIPTION
6
7          "A count of the number of times a frame drop
8
9          occurs from the corresponding 'Queue'.
10
11          Increment the counter by one for each frame dropped
12
13          from the corresponding 'Queue'.
14
15          The 'Queue' marking matches the REPORT MPCP message
16
17          Queue field as defined in IEEE Std 802.3, Clause 64 or Clause 77.
18
19          This object is applicable for an OLT and an ONU. At the
20
21          OLT, it has a distinct value for each virtual interface
22
23          and for each queue. At the ONU, it has a distinct value
24
25          for each queue.
26
27          At the OLT, the value should be zero.
28
29          Discontinuities of this counter can occur at
30
31          re-initialization of the management system and at other
32
33          times, as indicated by the value of the
34
35          ifCounterDiscontinuityTime object of the Interfaces Group MIB
36
37          module."
38
39      ::= { dot3ExtPkgQueueEntry 6}
40
41
42
43
44
45
46
47      dot3ExtPkgQueueSetsTable OBJECT-TYPE
48
49          SYNTAX SEQUENCE OF Dot3ExtPkgQueueSetsEntry
50
51          MAX-ACCESS not-accessible
52
53          STATUS current
54
55          DESCRIPTION
56
57              "A table of Extended package objects used for the
58
59              management of the queue_sets. Entries are control and
60
61              status indication objects of an EPON interface, which
62
63              are gathered in an extended package as an addition to
64
65
```

1 the objects based on the IEEE Std 802.3 attributes. The  
 2  
 3 objects in this table are specific for the queue\_sets,  
 4  
 5 which are reported in the MPCP REPORT message as defined  
 6  
 7 in IEEE Std 802.3, [Clause 64 or Clause 77](#).  
 8  
 9 The IEEE Std 802.3 MPCP defines a report message of the  
 10  
 11 occupancy of the transmit queues for the feedback BW  
 12  
 13 request from the ONUs. These queues serve the uplink  
 14  
 15 transmission of the ONU and data is gathered there until  
 16  
 17 the ONU is granted for transmission.  
 18  
 19 The management table of the queues\_sets is added here  
 20  
 21 mainly to control the reporting and to gather some  
 22  
 23 statistics of their operation. This table is not  
 24  
 25 duplicating existing management objects of bridging  
 26  
 27 queues, specified in IEEE Std 802.1Q, since the existence of a  
 28  
 29 dedicated transmit queuing mechanism is implied in the  
 30  
 31 IEEE Std 802.3, and the ONU may be a device that is not a  
 32  
 33 bridge with embedded bridging queues.  
 34  
 35 The format of the REPORT message, as specified  
 36  
 37 in IEEE Std 802.3, is presented below:

```

42 +-----+
43 |          Destination Address          |
44 +-----+
45 |          Source Address              |
46 +-----+
47 |          Length/Type                 |
48 +-----+
49 |          OpCode                      |
50 +-----+
51 |          TimeStamp                   |
52 +-----+

```

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65

```

1      |          Number of queue Sets          |
2
3      +-----+ /|\
4
5      |          Report bitmap              | |
6
7      +-----+ |
8
9      |          Queue 0 report            | |
10
11     +-----+ | repeated for
12
13     |          Queue 1 report            | | every
14
15     +-----+ | queue_set
16
17     |          Queue 2 report            | |
18
19     +-----+ |
20
21     |          Queue 3 report            | |
22
23     +-----+ |
24
25     |          Queue 4 report            | |
26
27     +-----+ |
28
29     |          Queue 5 report            | |
30
31     +-----+ |
32
33     |          Queue 6 report            | |
34
35     +-----+ |
36
37     |          Queue 7 report            | |
38
39     +-----+ |
40
41     |          Queue 7 report            | |
42
43     +-----+ \|/
44
45     |          Pad/reserved              |
46
47     +-----+
48
49     |          FCS                        |
50
51     +-----+
52
53
54
55

```

56 As can be seen from the message format, the ONU  
57 interface reports of the status of up to 8 queues  
58 and it can report in a single MPCP REPORT message  
59 of a few sets of queues.

60 The number of queue\_sets defines the number of the  
61  
62  
63  
64  
65

1 reported sets, and it can reach a value of up to 8.  
2  
3 It means that an ONU can hold a variable number of  
4  
5 sets between 0 and 7.  
6  
7 The dot3ExtPkgQueueSetsTable table has a variable  
8  
9 queue\_set size that is limited by the  
10  
11 dot3ExtPkgObjectReportMaximumNumThreshold object as an  
12  
13 ONU can have fewer queue\_sets to report.  
14  
15 The 'Queue report' field reports the occupancy of each  
16  
17 uplink transmission queue. The queue\_sets can be used to  
18  
19 report the occupancy of the queues in a few levels as to  
20  
21 allow granting, in an accurate manner, of only part of  
22  
23 the data available in the queues. A Threshold is  
24  
25 defined for each queue\_set to define the level of the  
26  
27 queue that is counted for the report of the occupancy.  
28  
29 The threshold is reflected in the queue\_set table by the  
30  
31 dot3ExtPkgObjectReportThreshold object.  
32  
33 For each queue set, the report bitmap defines which  
34  
35 queues are present in the report, meaning that  
36  
37 although the MPCP REPORT message can report of up to 8  
38  
39 queues in a REPORT message, the actual number is  
40  
41 flexible.  
42  
43 The dot3ExtPkgQueueSetsTable table has a variable queue  
44  
45 size that is limited by the  
46  
47 dot3ExtPkgObjectReportMaximumNumQueues object as an ONU  
48  
49 can have fewer queues to report.  
50  
51 Each object has a row for every virtual link, for each  
52  
53 queue in the report and for each queue\_set in the queue.  
54  
55 The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
56  
57 register (15-bit field and a broadcast bit) limiting the  
58  
59 number of virtual links to 32768. Typically the number  
60  
61  
62  
63  
64  
65

1 of expected virtual links in a PON is like the number of  
2  
3 ONUs, which is 32-64, plus an additional entry for  
4  
5 broadcast LLID.  
6  
7 The number of queues is between 0 and 7 and limited by  
8  
9 dot3ExtPkgObjectReportMaximumNumQueues.  
10  
11 The number of queues\_sets is between 0 and 7 and limited  
12  
13 by dot3ExtPkgObjectReportMaximumNumThreshold."  
14  
15 ::= { dot3ExtPkgControlObjects 3 }

16  
17  
18  
19  
20  
21 dot3ExtPkgQueueSetsEntry OBJECT-TYPE

22  
23 SYNTAX Dot3ExtPkgQueueSetsEntry

24  
25 MAX-ACCESS not-accessible

26  
27 STATUS current

28  
29 DESCRIPTION

30  
31 "An entry in the Extended package queue\_set table. At  
32  
33 the OLT, the rows exist for each ifIndex,  
34  
35 dot3QueueSetQueueIndex and dot3QueueSetIndex. At the  
36  
37 ONU, rows exist for the single ifIndex, for each  
38  
39 dot3QueueSetQueueIndex and dot3QueueSetIndex.  
40  
41 Rows in the table are created when the ifIndex of the  
42  
43 link is created. A set of rows per queue and per  
44  
45 queue\_set are added for each ifIndex, denoted by  
46  
47 dot3QueueSetIndex and dot3QueueSetQueueIndex.  
48  
49 A set of rows per queue and per queue\_set in the table,  
50  
51 for an ONU interface are created at system  
52  
53 initialization.  
54  
55 A set of rows per queue and per queue\_Set in the table,  
56  
57 corresponding to the OLT ifIndex and a set of rows per  
58  
59 queue and per queue\_set, corresponding to the broadcast  
60  
61 virtual link, are created at system initialization.  
62  
63  
64  
65

```
1           A set of rows per queue and per queue_set in the table,
2
3           corresponding to the ifIndex of a virtual link are
4
5           created when the virtual link is established (ONU
6
7           registers) and deleted when the virtual link is deleted
8
9           (ONU deregisters)."
```

```
11          INDEX { ifIndex,
12
13                dot3QueueSetQueueIndex,dot3QueueSetIndex}
14
15 ::= { dot3ExtPkgQueueSetsTable 1 }
```

```
16
17
18
19
20
21 Dot3ExtPkgQueueSetsEntry ::=
22
23     SEQUENCE {
24
25         dot3QueueSetQueueIndex                Unsigned32,
26
27         dot3QueueSetIndex                    Unsigned32,
28
29         dot3ExtPkgObjectReportThreshold      Unsigned32
30
31     }
32
33
34
35
36 dot3QueueSetQueueIndex OBJECT-TYPE
37
38     SYNTAX  Unsigned32 (0..7)
39
40     MAX-ACCESS  not-accessible
41
42     STATUS  current
43
44     DESCRIPTION
45
46         "An object that identifies the queue index for the
47
48         dot3ExtPkgQueueSetsTable table. The queues are reported
49
50         in the MPCP REPORT message as defined in IEEE Std 802.3,
51
52         Clause 64 or Clause 77.
53
54         The number of queues is between 0 and 7, and limited by
55
56         dot3ExtPkgObjectReportMaximumNumQueues.
57
58         Value corresponds to the dot3QueueIndex of the queue
59
60         table."
61
62 ::= { dot3ExtPkgQueueSetsEntry 1 }
```

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

dot3QueueSetIndex OBJECT-TYPE

SYNTAX Unsigned32 (0..7)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An object that identifies the queue\_set index for the dot3ExtPkgQueueSetsTable table. The queues are reported in the MPCP REPORT message as defined in IEEE Std 802.3, [Clause 64 or Clause 77](#).

The number of queue\_sets is between 0 and 7, and limited by dot3ExtPkgObjectReportMaximumNumThreshold."

::= { dot3ExtPkgQueueSetsEntry 2 }

dot3ExtPkgObjectReportThreshold OBJECT-TYPE

SYNTAX Unsigned32

UNITS "TQ (16 ns)"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An object that defines the value of a threshold report for each queue\_set in the REPORT message as defined in IEEE Std 802.3, [Clause 64 or Clause 77](#). The number of sets for each queue is dot3ExtPkgObjectReportNumThreshold.

In the REPORT message, each queue\_set reporting will provide information on the occupancy of the queues for frames below the matching Threshold.

The value returned shall be in Time quanta (TQ), which is 16 ns or 2 octets increments.

Read operation provides the threshold value. Write

1 operation sets the value of the threshold.  
2  
3 The write operation is not restricted in this document  
4  
5 and can be done at any time. Changing  
6  
7 dot3ExtPkgObjectReportThreshold can lead to a change in  
8  
9 the reporting of the ONU interface and therefore to a  
10  
11 change in the bandwidth allocation of the respective  
12  
13 interface. This change may lead a degradation or an  
14  
15 interruption of service for the users connected to the  
16  
17 respective EPON interface.  
18  
19  
20 This object is applicable for an OLT and an ONU. At the  
21  
22 OLT, it has a distinct value for each virtual interface,  
23  
24 for each queue and for each queue\_set. At the ONU, it has  
25  
26 a distinct value for each queue and for each queue\_set."  
27  
28  
29  
30 DEFVAL { 0 }  
31  
32 ::= { dot3ExtPkgQueueSetsEntry 3 }  
33  
34  
35  
36 --Optical Interface status tables  
37  
38  
39  
40  
41 dot3ExtPkgOptIfTable OBJECT-TYPE  
42  
43 SYNTAX SEQUENCE OF Dot3ExtPkgOptIfEntry  
44  
45 MAX-ACCESS not-accessible  
46  
47 STATUS current  
48  
49 DESCRIPTION  
50  
51 "This table defines the control and status indication  
52  
53 objects for the optical interface of the EPON interface.  
54  
55 Each object has a row for every virtual link denoted by  
56  
57 the corresponding ifIndex.  
58  
59  
60 The LLID field, as defined in the IEEE Std 802.3, is a 2-byte  
61  
62 register (15-bit field and a broadcast bit) limiting the  
63  
64 number of virtual links to 32768. Typically the number  
65



1 of expected virtual links in a PON is like the number of  
2  
3 ONUs, which is 32-64, plus an additional entry for  
4  
5 broadcast LLID.  
6

7 Although the optical interface is a physical interface,  
8  
9 there is a row in the table for each virtual interface.  
10  
11 The reason for having a separate row for each virtual  
12  
13 link is that the OLT has a separate link for each one of  
14  
15 the ONUs. For instance, ONUs could be in different  
16  
17 distances with different link budgets and different  
18  
19 receive powers, therefore having different power alarms.  
20  
21 It is quite similar to a case of different physical  
22  
23 interfaces."  
24  
25

26  
27 ::= { dot3ExtPkgControlObjects 5}  
28  
29  
30

31  
32 dot3ExtPkgOptIfEntry OBJECT-TYPE  
33

34 SYNTAX Dot3ExtPkgOptIfEntry  
35

36 MAX-ACCESS not-accessible  
37

38 STATUS current  
39

40 DESCRIPTION  
41

42 "An entry in the optical interface table of the EPON  
43  
44 interface.  
45

46  
47 Rows exist for an OLT interface and an ONU interface.  
48

49  
50 A row in the table is denoted by the ifIndex of the link  
51  
52 and it is created when the ifIndex is created.  
53

54  
55 The rows in the table for an ONU interface are created  
56  
57 at system initialization.  
58

59  
60 The row in the table corresponding to the OLT ifIndex  
61  
62 and the row corresponding to the broadcast virtual link  
63  
64 are created at system initialization.  
65

A row in the table corresponding to the ifIndex of a

1 virtual links is created when a virtual link is  
2  
3 established (ONU registers) and deleted when the virtual  
4  
5 link is deleted (ONU deregisters)."  
6

```
7 INDEX { ifIndex }  
8  
9 ::= { dot3ExtPkgOptIfTable 1 }  
10  
11  
12  
13  
14 Dot3ExtPkgOptIfEntry ::=  
15  
16 SEQUENCE {  
17  
18 dot3ExtPkgOptIfSuspectedFlag TruthValue,  
19  
20 dot3ExtPkgOptIfInputPower Integer32,  
21  
22 dot3ExtPkgOptIfLowInputPower Integer32,  
23  
24 dot3ExtPkgOptIfHighInputPower Integer32,  
25  
26 dot3ExtPkgOptIfLowerInputPowerThreshold Integer32,  
27  
28 dot3ExtPkgOptIfUpperInputPowerThreshold Integer32,  
29  
30 dot3ExtPkgOptIfOutputPower Integer32,  
31  
32 dot3ExtPkgOptIfLowOutputPower Integer32,  
33  
34 dot3ExtPkgOptIfHighOutputPower Integer32,  
35  
36 dot3ExtPkgOptIfLowerOutputPowerThreshold Integer32,  
37  
38 dot3ExtPkgOptIfUpperOutputPowerThreshold Integer32,  
39  
40 dot3ExtPkgOptIfSignalDetect TruthValue,  
41  
42 dot3ExtPkgOptIfTransmitAlarm TruthValue,  
43  
44 dot3ExtPkgOptIfTransmitEnable TruthValue  
45  
46  
47  
48 }  
49  
50
```

```
51  
52  
53  
54 dot3ExtPkgOptIfSuspectedFlag OBJECT-TYPE  
55  
56 SYNTAX TruthValue  
57  
58 MAX-ACCESS read-only  
59  
60 STATUS current  
61  
62 DESCRIPTION  
63  
64 "This object is a reliability indication.  
65
```

```
1         If true, the data in this entry may be unreliable.
2
3         This object is applicable for an OLT and an ONU. At the
4
5         OLT, it has a distinct value for each virtual interface."
6
7         ::= { dot3ExtPkgOptIfEntry 1 }
8
9
10
11
12 dot3ExtPkgOptIfInputPower OBJECT-TYPE
13
14     SYNTAX  Integer32
15
16     UNITS   "0.1 dbm"
17
18     MAX-ACCESS  read-only
19
20     STATUS  current
21
22     DESCRIPTION
23
24         "The optical power monitored at the input.
25
26         This object is applicable for an OLT and an ONU. At the
27
28         OLT, it has a distinct value for each virtual interface."
29
30     ::= { dot3ExtPkgOptIfEntry 2 }
31
32
33
34
35
36 dot3ExtPkgOptIfLowInputPower OBJECT-TYPE
37
38     SYNTAX  Integer32
39
40     UNITS   "0.1 dbm"
41
42     MAX-ACCESS  read-only
43
44     STATUS  current
45
46     DESCRIPTION
47
48         "The lowest optical power monitored at the input during the
49
50         current 15-minute interval.
51
52         This object is applicable for an OLT and an ONU. At the
53
54         OLT, it has a distinct value for each virtual interface."
55
56     ::= { dot3ExtPkgOptIfEntry 3 }
57
58
59
60 dot3ExtPkgOptIfHighInputPower OBJECT-TYPE
61
62     SYNTAX  Integer32
63
64     UNITS   "0.1 dbm"
```

```
1      MAX-ACCESS  read-only
2
3      STATUS  current
4
5      DESCRIPTION
6
7          "The highest optical power monitored at the input during the
8
9          current 15-minute interval.
10
11          This object is applicable for an OLT and an ONU. At the
12
13          OLT, it has a distinct value for each virtual interface."
14
15      ::= { dot3ExtPkgOptIfEntry 4 }
16
17
18
19
20
21 dot3ExtPkgOptIfLowerInputPowerThreshold OBJECT-TYPE
22
23     SYNTAX  Integer32
24
25     UNITS   "0.1 dbm"
26
27     MAX-ACCESS  read-write
28
29     STATUS  current
30
31     DESCRIPTION
32
33         "The lower limit threshold on input power. If
34
35         dot3ExtPkgOptIfInputPower drops to this value or below,
36
37         a Threshold Crossing Alert (TCA) should be sent.
38
39         Reading will present the threshold value. Writing will
40
41         set the value of the threshold.
42
43         The write operation is not restricted in this document
44
45         and can be done at any time. Changing
46
47         dot3ExtPkgOptIfLowerInputPowerThreshold can lead to a Threshold
48
49         Crossing Alert (TCA) being sent for the respective interface.
50
51         This alert may be leading to an interruption of service for the
52
53         users connected to the respective EPON interface, depending on
54
55         the system action on such an alert.
56
57         This object is applicable for an OLT and an ONU. At the
58
59         OLT, it has a distinct value for each virtual interface."
60
61     ::= { dot3ExtPkgOptIfEntry 5 }
62
63
64
65
```

```
1
2
3 dot3ExtPkgOptIfUpperInputPowerThreshold OBJECT-TYPE
4
5     SYNTAX      Integer32
6
7     UNITS       "0.1 dbm"
8
9
10    MAX-ACCESS  read-write
11
12    STATUS      current
13
14    DESCRIPTION
15
16        "The upper limit threshold on input power. If
17
18        dot3ExtPkgOptIfInputPower reaches or exceeds this value,
19
20        a Threshold Crossing Alert (TCA) should be sent.
21
22        Reading will present the threshold value. Writing will
23
24        set the value of the threshold.
25
26        The write operation is not restricted in this document
27
28        and can be done at any time. Changing
29
30        dot3ExtPkgOptIfUpperInputPowerThreshold can lead to a Threshold
31
32        Crossing Alert (TCA) being sent for the respective interface.
33
34        This alert may be leading to an interruption of service for the
35
36        users connected to the respective EPON interface, depending on
37
38        the system action on such an alert.
39
40        This object is applicable for an OLT and an ONU. At the
41
42        OLT, it has a distinct value for each virtual interface."
43
44    ::= { dot3ExtPkgOptIfEntry 6 }
45
46
47
48
49
50
51 dot3ExtPkgOptIfOutputPower OBJECT-TYPE
52
53     SYNTAX      Integer32
54
55     UNITS       "0.1 dbm"
56
57
58    MAX-ACCESS  read-only
59
60    STATUS      current
61
62    DESCRIPTION
63
64        "The optical power monitored at the output.
65
```

```
1         This object is applicable for an OLT and an ONU. At the
2
3         OLT, it has a distinct value for each virtual interface."
4
5     ::= { dot3ExtPkgOptIfEntry 7 }
6
7
8
9
10    dot3ExtPkgOptIfLowOutputPower OBJECT-TYPE
11
12        SYNTAX  Integer32
13
14        UNITS   "0.1 dbm"
15
16        MAX-ACCESS  read-only
17
18        STATUS   current
19
20        DESCRIPTION
21
22            "The lowest optical power monitored at the output during the
23
24            current 15-minute interval.
25
26            This object is applicable for an OLT and an ONU. At the
27
28            OLT, it has a distinct value for each virtual interface."
29
30            ::= { dot3ExtPkgOptIfEntry 8 }
31
32
33
34
35
36    dot3ExtPkgOptIfHighOutputPower OBJECT-TYPE
37
38        SYNTAX  Integer32
39
40        UNITS   "0.1 dbm"
41
42        MAX-ACCESS  read-only
43
44        STATUS   current
45
46        DESCRIPTION
47
48            "The highest optical power monitored at the output during the
49
50            current 15-minute interval.
51
52            This object is applicable for an OLT and an ONU. At the
53
54            OLT, it has a distinct value for each virtual interface."
55
56            ::= { dot3ExtPkgOptIfEntry 9 }
57
58
59
60
61
62    dot3ExtPkgOptIfLowerOutputPowerThreshold OBJECT-TYPE
63
64        SYNTAX  Integer32
65
```

```
1     UNITS "0.1 dbm"
2
3     MAX-ACCESS read-write
4
5     STATUS current
6
7     DESCRIPTION
8
9     "The lower limit threshold on output power. If
10
11     dot3ExtPkgOptIfOutputPower drops to this value or below,
12
13     a Threshold Crossing Alert (TCA) should be sent.
14
15     Reading will present the threshold value. Writing will
16
17     set the value of the threshold.
18
19     The write operation is not restricted in this document
20
21     and can be done at any time. Changing
22
23     dot3ExtPkgOptIfLowerOutputPowerThreshold can lead to a Threshold
24
25     Crossing Alert (TCA) being sent for the respective interface.
26
27     This alert may be leading to an interruption of service for the
28
29     users connected to the respective EPON interface, depending on
30
31     the system action on such an alert.
32
33     This object is applicable for an OLT and an ONU. At the
34
35     OLT, it has a distinct value for each virtual interface."
36
37 ::= { dot3ExtPkgOptIfEntry 10 }
38
39
40
41
42
43
44
45 dot3ExtPkgOptIfUpperOutputPowerThreshold OBJECT-TYPE
46
47     SYNTAX Integer32
48
49     UNITS "0.1 dbm"
50
51     MAX-ACCESS read-write
52
53     STATUS current
54
55     DESCRIPTION
56
57     "The upper limit threshold on output power. If
58
59     dot3ExtPkgOptIfOutputPower reaches or exceeds this value,
60
61     a Threshold Crossing Alert (TCA) should be sent.
62
63     Reading will present the threshold value. Writing will
64
65
```

```
1      set the value of the threshold.
2
3      The write operation is not restricted in this document
4
5      and can be done at any time. Changing
6
7      dot3ExtPkgOptIfUpperOutputPowerThreshold can lead to a Threshold
8
9      Crossing Alert (TCA) being sent for the respective interface.
10
11     This alert may be leading to an interruption of service of the
12
13     users connected to the respective EPON interface, depending on
14
15     the system action on such an alert.
16
17     This object is applicable for an OLT and an ONU. At the
18
19     OLT, it has a distinct value for each virtual interface."
20
21     ::= { dot3ExtPkgOptIfEntry 11 }
22
23
24
25
26
27 dot3ExtPkgOptIfSignalDetect OBJECT-TYPE
28
29     SYNTAX      TruthValue
30
31     MAX-ACCESS  read-only
32
33     STATUS      current
34
35     DESCRIPTION
36
37         "When getting true(1), there is a valid optical signal at
38
39         the receive that is above the optical power level for
40
41         signal detection. When getting false(2) the optical
42
43         signal at the receive is below the optical power level
44
45         for signal detection.
46
47         This object is applicable for an OLT and an ONU. At the
48
49         OLT, it has a distinct value for each virtual interface."
50
51     DEFVAL { false }
52
53     ::= { dot3ExtPkgOptIfEntry 12 }
54
55
56
57
58
59
60 dot3ExtPkgOptIfTransmitAlarm OBJECT-TYPE
61
62     SYNTAX      TruthValue
63
64     MAX-ACCESS  read-only
65
```



```
1      STATUS current
2
3      DESCRIPTION
4
5          "When getting true(1) there is a non-valid optical signal
6
7          at the transmit of the interface, either a higher level
8
9          or lower level than expected. When getting false(2) the
10
11         optical signal at the transmit is valid and in the
12
13         required range.
14
15         This object is applicable for an OLT and an ONU. At the
16
17         OLT, it has a distinct value for each virtual interface."
18
19
20     DEFVAL { false }
21
22     ::= { dot3ExtPkgOptIfEntry 13 }
23
24
25
26
27 dot3ExtPkgOptIfTransmitEnable OBJECT-TYPE
28
29     SYNTAX TruthValue
30
31     MAX-ACCESS read-write
32
33     STATUS current
34
35     DESCRIPTION
36
37         "Setting this object to true(1) will cause the optical
38
39         interface to start transmission (according to the
40
41         control protocol specified for the logical interface).
42
43         Setting this object to false(2) will cause the
44
45         interface to stop the optical transmission.
46
47         When getting true(1), the optical interface is in
48
49         transmitting mode (obeying to the logical control
50
51         protocol).
52
53         When getting false(2), the optical interface is not in
54
55         transmitting mode.
56
57         The write operation is not restricted in this document
58
59         and can be done at any time. Changing
60
61         dot3ExtPkgOptIfTransmitEnable state can lead to a halt
62
63
64
65
```

```
1           in the optical transmission of the respective interface
2
3           leading to an interruption of service of the users
4
5           connected to the respective EPON interface.
6
7           The object is relevant when the admin state of the
8
9           interface is active as set by the dot3MpcpAdminState.
10
11          This object is applicable for an OLT and an ONU. At the
12
13          OLT it, has a distinct value for each virtual interface."
14
15          DEFVAL { false }
16
17          ::= { dot3ExtPkgOptIfEntry 14 }
18
19          --
20
21          -- The MulticastIDs Table
22
23          --
24
25          dot3RecognizedMulticastIDsTable OBJECT-TYPE
26
27          SYNTAX      SEQUENCE OF Dot3RecognizedMulticastIDsEntry
28
29          MAX-ACCESS  not-accessible
30
31          STATUS      current
32
33          DESCRIPTION
34
35              "A table of MulticastIDs to be recognized by this device."
36
37          REFERENCE   "IEEE Std 802.3, 30.3.5.1.25"
38
39          ::= { dot3EponObjects 5 }
40
41          dot3RecognizedMulticastIDsEntry OBJECT-TYPE
42
43          SYNTAX      Dot3RecognizedMulticastIDsEntry
44
45          MAX-ACCESS  not-accessible
46
47          STATUS      current
48
49          DESCRIPTION
50
51              "An entry in the table of MulticastIDs to be recognized by this
52
53              device."
54
55          INDEX      { ifIndex, dot3RecognizedMulticastIDIndex }
```

```

1      ::= { dot3RecognizedMulticastIDsTable 1 }
2
3
4
5  Dot3RecognizedMulticastIDsEntry ::=
6
7      SEQUENCE {
8
9
10         dot3RecognizedMulticastIDIndex    Unsigned32,
11
12         dot3RecognizedMulticastID        Unsigned32
13
14         }
15
16
17
18  dot3RecognizedMulticastIDIndex OBJECT-TYPE
19
20      SYNTAX      Unsigned32 (0..127)
21
22      MAX-ACCESS  not-accessible
23
24
25      STATUS      current
26
27      DESCRIPTION
28
29          "An index into the table of MulticastIDs to be recognized by this
30
31          device."
32
33      ::= { dot3RecognizedMulticastIDsEntry 1 }
34
35
36
37
38  dot3RecognizedMulticastID OBJECT-TYPE
39
40      SYNTAX      Unsigned32
41
42      MAX-ACCESS  read-write
43
44
45      STATUS      current
46
47      DESCRIPTION
48
49          "An unsigned32 representing a single MulticastID to be recognized
50
51          by this device."
52
53      REFERENCE   "IEEE Std 802.3, 30.3.5.1.25"
54
55      ::= { dot3RecognizedMulticastIDsEntry 2 }
56
57
58
59
60  -- Conformance statements
61
62
63
64
65  -- Conformance Groups

```

```
1
2
3 dot3EponGroups      OBJECT IDENTIFIER ::= { dot3EponConformance 1 }
4
5
6
7
8 dot3MpcpGroupBase OBJECT-GROUP
9
10    OBJECTS {
11
12        dot3MpcpOperStatus,
13
14        dot3MpcpAdminState,
15
16        dot3MpcpMode,
17
18        dot3MpcpSyncTime,
19
20        dot3MpcpLinkID,
21
22        dot3MpcpRemoteMACAddress,
23
24        dot3MpcpRegistrationState,
25
26        dot3MpcpMaximumPendingGrants,
27
28        dot3MpcpTransmitElapsed,
29
30        dot3MpcpReceiveElapsed,
31
32        dot3MpcpRoundTripTime
33
34    }
35
36
37
38    STATUS current
39
40    DESCRIPTION
41
42        "A collection of objects of dot3 Mpcp Control entity state
43
44        definition. Objects are per LLID."
45
46    ::= { dot3EponGroups 1 }
47
48
49
50
51 dot3MpcpGroupStat OBJECT-GROUP
52
53    OBJECTS {
54
55        dot3MpcpMACCtrlFramesTransmitted,
56
57        dot3MpcpMACCtrlFramesReceived,
58
59        dot3MpcpDiscoveryWindowsSent,
60
61        dot3MpcpDiscoveryTimeout,
62
63        dot3MpcpTxRegRequest,
64
65
```

```
1         dot3MpcpRxRegRequest,
2
3         dot3MpcpTxRegAck,
4
5         dot3MpcpRxRegAck,
6
7         dot3MpcpTxReport,
8
9         dot3MpcpRxReport,
10
11        dot3MpcpTxGate,
12
13        dot3MpcpRxGate,
14
15        dot3MpcpTxRegister,
16
17        dot3MpcpRxRegister
18
19    }
20
21    STATUS current
22
23    DESCRIPTION
24
25        "A collection of objects of dot3 Mpcp Statistics.
26
27        Objects are per LLID."
28
29        ::= { dot3EponGroups 2 }
30
31    dot3OmpGroupID OBJECT-GROUP
32
33        OBJECTS {
34
35            dot3OmpEmulationType
36
37        }
38
39    STATUS current
40
41    DESCRIPTION
42
43        "A collection of objects of dot3 OMP emulation entity
44
45        state definition. Objects are per LLID."
46
47        ::= { dot3EponGroups 3 }
48
49
50
51
52
53
54
55
56
57
58    dot3OmpGroupStat OBJECT-GROUP
59
60        OBJECTS {
61
62            dot3OmpEmulationSLDErrors,
63
64            dot3OmpEmulationCRC8Errors,
```

```
1         dot3OmpEmulationBadLLID,
2
3         dot3OmpEmulationGoodLLID,
4
5         dot3OmpEmulationOnuPonCastLLID,
6
7         dot3OmpEmulationOltPonCastLLID,
8
9         dot3OmpEmulationBroadcastBitNotOnuLlid,
10
11        dot3OmpEmulationOnuLLIDNotBroadcast,
12
13        dot3OmpEmulationBroadcastBitPlusOnuLlid,
14
15        dot3OmpEmulationNotBroadcastBitNotOnuLlid
16
17    }
18
19    STATUS current
20
21    DESCRIPTION
22
23        "A collection of objects of dot3 OMP emulation
24
25        Statistics. Objects are per LLID."
26
27    ::= { dot3EponGroups 4 }
28
29
30
31
32
33
34 dot3EponFecGroupAll OBJECT-GROUP
35
36     OBJECTS {
37
38         dot3EponFecPCSCodingViolation,
39
40         dot3EponFecAbility,
41
42         dot3EponFecMode,
43
44         dot3EponFecCorrectedBlocks,
45
46         dot3EponFecUncorrectableBlocks,
47
48         dot3EponFecBufferHeadCodingViolation
49
50     }
51
52     STATUS current
53
54     DESCRIPTION
55
56         "A collection of objects of dot3 FEC group control and
57
58         statistics. Objects are per LLID."
59
60     ::= { dot3EponGroups 5 }
61
62
63
64
65
```

```
1 dot3ExtPkgGroupControl OBJECT-GROUP
2
3 OBJECTS {
4
5     dot3ExtPkgObjectReset,
6
7     dot3ExtPkgObjectPowerDown,
8
9     dot3ExtPkgObjectNumberOfLLIDs,
10
11     dot3ExtPkgObjectFecEnabled,
12
13     dot3ExtPkgObjectReportMaximumNumQueues,
14
15     dot3ExtPkgObjectRegisterAction
16
17 }
18
19 STATUS current
20
21 DESCRIPTION
22
23     "A collection of objects of dot3ExtPkg control
24
25     definition. Objects are per LLID."
26
27 ::= { dot3EponGroups 6 }
28
29
30
31
32
33
34 dot3ExtPkgGroupQueue OBJECT-GROUP
35
36 OBJECTS {
37
38     dot3ExtPkgObjectReportNumThreshold,
39
40     dot3ExtPkgObjectReportMaximumNumThreshold,
41
42     dot3ExtPkgStatTxFramesQueue,
43
44     dot3ExtPkgStatRxFramesQueue,
45
46     dot3ExtPkgStatDroppedFramesQueue
47
48 }
49
50 STATUS current
51
52 DESCRIPTION
53
54     "A collection of objects of dot3ExtPkg Queue
55
56     control. Objects are per LLID, per queue."
57
58 ::= { dot3EponGroups 7 }
59
60
61
62
63
64
65 dot3ExtPkgGroupQueueSets OBJECT-GROUP
```

```
1     OBJECTS {
2
3     dot3ExtPkgObjectReportThreshold
4
5     }
6
7     STATUS    current
8
9     DESCRIPTION
10
11         "A collection of objects of dot3ExtPkg queue_set
12         control. Objects are per LLID, per queue, per
13         queue_set."
14
15     ::= { dot3EponGroups 8 }
16
17
18
19
20
21
22
23 dot3ExtPkgGroupOptIf OBJECT-GROUP
24
25     OBJECTS {
26
27     dot3ExtPkgOptIfSuspectedFlag,
28
29     dot3ExtPkgOptIfInputPower,
30
31     dot3ExtPkgOptIfLowInputPower,
32
33     dot3ExtPkgOptIfHighInputPower,
34
35     dot3ExtPkgOptIfLowerInputPowerThreshold,
36
37     dot3ExtPkgOptIfUpperInputPowerThreshold,
38
39     dot3ExtPkgOptIfOutputPower,
40
41     dot3ExtPkgOptIfLowOutputPower,
42
43     dot3ExtPkgOptIfHighOutputPower,
44
45     dot3ExtPkgOptIfLowerOutputPowerThreshold,
46
47     dot3ExtPkgOptIfUpperOutputPowerThreshold,
48
49     dot3ExtPkgOptIfSignalDetect,
50
51     dot3ExtPkgOptIfTransmitAlarm,
52
53     dot3ExtPkgOptIfTransmitEnable
54
55     }
56
57     STATUS    current
58
59     DESCRIPTION
60
61         "A collection of objects of control and status indication
62
63
64
65
```



```
1           of the optical interface.
2
3           Objects are per LLID."
4
5       ::= { dot3EponGroups 9 }
6
7
8
9
10      dot3EponGroupMulticastIDs OBJECT-GROUP
11
12          OBJECTS {
13
14              dot3RecognizedMulticastID
15
16          }
17
18          STATUS current
19
20          DESCRIPTION
21
22              "One of a set of MulticastIDs recognized by an EPON interface."
23
24      ::= { dot3EponGroups 10 }
25
26
27
28
29
30      -- Compliance statements
31
32
33
34      dot3EponCompliances
35
36          OBJECT IDENTIFIER ::= { dot3EponConformance 2 }
37
38
39
40
41      dot3MPCPCompliance MODULE-COMPLIANCE
42
43          STATUS current
44
45          DESCRIPTION "The compliance statement for MultiPoint
46
47              Control Protocol interfaces."
48
49
50
51          MODULE -- this module
52
53          MANDATORY-GROUPS { dot3MpcpGroupBase}
54
55
56
57
58          GROUP dot3MpcpGroupStat
59
60          DESCRIPTION "This group is mandatory for all MPCP supporting
61
62              interfaces for statistics collection."
63
64      ::= { dot3EponCompliances 1}
```

```
1
2
3 dot3OmpeCompliance MODULE-COMPLIANCE
4
5     STATUS          current
6
7     DESCRIPTION "The compliance statement for OMPEmulation
8
9                 interfaces."
10
11
12
13
14     MODULE -- this module
15
16     MANDATORY-GROUPS { dot3OmpeGroupID}
17
18
19
20
21     GROUP           dot3OmpeGroupStat
22
23     DESCRIPTION "This group is mandatory for all OMPemulation
24
25                 supporting interfaces for statistics collection."
26
27
28
29
30     ::= { dot3EponCompliances 2}
31
32
33
34 dot3EponFecCompliance MODULE-COMPLIANCE
35
36     STATUS          current
37
38     DESCRIPTION "The compliance statement for FEC EPON interfaces.
39
40                 This group is mandatory for all FEC supporting
41
42                 interfaces for control and statistics collection."
43
44
45
46
47     MODULE -- this module
48
49     MANDATORY-GROUPS { dot3EponFecGroupAll }
50
51
52
53
54     ::= { dot3EponCompliances 3}
55
56
57
58 dot3ExtPkgCompliance MODULE-COMPLIANCE
59
60     STATUS          current
61
62     DESCRIPTION "The compliance statement for EPON Interfaces
63
64                 using the extended package."
65
```

```
1      MODULE -- this module
2
3      MANDATORY-GROUPS { dot3ExtPkgGroupControl }
4
5
6
7      GROUP          dot3ExtPkgGroupQueue
8
9
10     DESCRIPTION " This group is mandatory for all EPON interfaces
11
12                 supporting REPORT queue management of the extended
13
14                 package."
15
16
17
18     GROUP          dot3ExtPkgGroupQueueSets
19
20
21     DESCRIPTION " This group is mandatory for all EPON interfaces
22
23                 supporting REPORT queue_sets management of the
24
25                 extended package."
26
27
28
29
30     GROUP          dot3ExtPkgGroupOptIf
31
32
33     DESCRIPTION "This group is mandatory for all EPON interfaces
34
35                 supporting optical interfaces management,
36
37                 of the extended package."
38
39
40
41     ::= { dot3EponCompliances 4}
42
43
44
45     dot3EponMulticastIDsCompliance MODULE-COMPLIANCE
46
47     STATUS          current
48
49     DESCRIPTION "The compliance statement for EPON Interfaces that
50
51                 support MulticastIDs."
52
53
54     MODULE -- this module
55
56     MANDATORY-GROUPS { dot3EponGroupMulticastIDs }
57
58
59
60     ::= { dot3EponCompliances 5 }
61
62
63
64
65     END
```

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