```
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 "201304110000Z" -- April 11, 2013
        ORGANIZATION
          "IEEE 802.3 working group"
        CONTACT-INFO
            "WG-URL: http://www.ieee802.org/3/index.html
            WG-EMail: STDS-802-3-MIB@LISTSERV.IEEE.ORG

            Contact: Howard Frazier
            Postal:  3151 Zanker Road
                     San Jose, CA 95134
                     USA
            Tel:     +1.408.922.8164
            E-mail:  hfrazier@broadcom.com"
    DESCRIPTION
            "The objects in this MIB module are used to manage the
             Ethernet in the First Mile (EFM) Ethernet Passive Optical
             Network (EPON) Interfaces as defined in IEEE Std 802.3
             Clauses 60, 64, and 65.

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

    REVISION     "201304110000Z" -- April 11, 2013
    DESCRIPTION
            "Revision, based on an earlier version in IEEE Std 802.3.1-2011."

    REVISION     "201102020000Z" -- February 2, 2011
    DESCRIPTION
            "Initial version, based on an earlier version published
             as RFC 4837."

        ::= { org ieee(111) standards-association-numbers-series-standards(2)
              lan-man-stds(802) ieee802dot3(3) ieee802dot3dot1mibs(1) 9 }

dot3EponObjects OBJECT IDENTIFIER ::= { ieee8023dot3EponMIB 1}

dot3EponConformance OBJECT IDENTIFIER ::= { ieee8023dot3EponMIB 2}

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

dot3EponMpcpObjects
     OBJECT IDENTIFIER ::= { dot3EponObjects 1 }

dot3MpcpControlTable OBJECT-TYPE
    SYNTAX  SEQUENCE OF Dot3MpcpControlEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
            "A Table of dot3 MultiPoint Control Protocol (MPCP)
             MIB objects. The entries in the table are control and
             status objects of the MPCP.
             Each object has a row for every virtual link denoted by
             the corresponding ifIndex.
             The LLID field, as defined in the IEEE Std 802.3, is a 2-byte
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            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
            broadcast LLID."
     ::= { dot3EponMpcpObjects 1 }

dot3MpcpControlEntry OBJECT-TYPE
    SYNTAX  Dot3MpcpControlEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
            "An entry in the dot3 MPCP Control table.
            Rows exist for an OLT interface and an ONU interface.
            A row in the table is denoted by the ifIndex of the link
            and it is created when the ifIndex is created.
            The rows in the table for an ONU interface are created
            at system initialization.
            The row in the table corresponding to the OLT ifIndex
            and the row corresponding to the broadcast virtual link
            are created at system initialization.
            A row in the table corresponding to the ifIndex of a
            virtual links is created when a virtual link is
            established (ONU registers) and deleted when the virtual
            link is deleted (ONU deregisters)."
    INDEX  { ifIndex }
    ::= { dot3MpcpControlTable 1}

Dot3MpcpControlEntry ::=
    SEQUENCE {
        dot3MpcpOperStatus                  TruthValue,
        dot3MpcpAdminState                  TruthValue,
        dot3MpcpMode                        INTEGER,
        dot3MpcpSyncTime                    Unsigned32,
        dot3MpcpLinkID                      Unsigned32,
        dot3MpcpRemoteMACAddress            MacAddress,
        dot3MpcpRegistrationState           INTEGER,
        dot3MpcpTransmitElapsed             Unsigned32,
        dot3MpcpReceiveElapsed              Unsigned32,
        dot3MpcpRoundTripTime               Unsigned32,
        dot3MpcpMaximumPendingGrants        Unsigned32
    }

dot3MpcpOperStatus OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "This object reflects the operational state of the
            MultiPoint MAC Control sublayer as defined in
            IEEE Std 802.3, Clause 64 and or Clause 77.
            When the value is
            true(1), the interface will act as if the
            MultiPoint Control
            Protocol is enabled. When the value is false(2)
            , the interface
            will act as if the MultiPoint Control Protocol is
            disabled. The operational state can be changed using the
            dot3MpcpAdminState object.
            This object is applicable for an OLT, with the same
            value for all virtual interfaces, and for an ONU."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.2."
    ::= { dot3MpcpControlEntry 1 }

dot3MpcpAdminState OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS  read-write
    STATUS  current
    DESCRIPTION
            "This object is used to define the admin state of the
            MultiPoint MAC Control sublayer, as defined in
            IEEE Std 802.3, Clause 64Clause 64 or Clause 77,
            and to reflect its state.
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```
              When selecting the value as true(1), the MultiPoint
              Control Protocol of the interface is enabled.
              When selecting the value as false(2), the MultiPoint
              Control Protocol of the interface is disabled.
              This object reflects the administrative state of the
              MultiPoint Control Protocol of the interface.
              The write operation is not restricted in this document
              and can be done at any time. Changing
              dot3MpcpAdminState state can lead to disabling the
              MultiPoint Control Protocol on the respective interface,
              leading to the interruption of service for the users
              connected to the respective EPON interface.
              This object is applicable for an OLT, with the same
              value for all virtual interfaces, and for an ONU."
      REFERENCE   "IEEE Std 802.3, 30.3.5.2.1."
      DEFVAL { false }
      ::= { dot3MpcpControlEntry 2 }

dot3MpcpMode  OBJECT-TYPE
      SYNTAX  INTEGER {
              olt(1),
              onu(2)

      }
      MAX-ACCESS  read-only
      STATUS  current
      DESCRIPTION
              "This object is used to identify the operational
               state of the MultiPoint MAC Control sublayer as
               defined in IEEE Std 802.3, Clause 64 or Clause 77Clause 64 and Clause 77.
               Reading
               olt(1) for an OLT (server) mode and onu(2) for an ONU
               (client)
               mode. This object is used to identify the operational
               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, Clauses 60, 64, and 6564 or Clause 77.
               The
               value returned shall be (sync lock time ns)/16, rounded up
               to the nearest TQ. If this value exceeds (2^32-1), the
               value (2^32-1) 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
               Identifier (LLID) associated with the MAC of the virtual
               link as specified in IEEE Std 802.3, 65.1.3.2.2 or
               76.2.6.1.3.2,
               as appropriate.
               This object is applicable for an OLT and an ONU. At the
               OLT, it has a distinct value for each virtual interface.
               The ONU and the corresponding virtual MAC of the OLT,
```

```
                for the same virtual link, have the same value.
                Value is assigned when the ONU registers.
                Value is freed when the ONU deregisters."
        REFERENCE    "IEEE Std 802.3, 30.3.5.1.4."
        ::= { dot3MpcpControlEntry 5 }

dot3MpcpRemoteMACAddress OBJECT-TYPE
    SYNTAX  MacAddress
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that identifies the source_address
             parameter of the last MPCPDUs passed to the MAC Control.
             This value is updated on reception of a valid frame with
             1) a destination Field equal to the reserved multicast
             address for MAC Control as specified in IEEE Std 802.3, Annex
             31A; 2) the lengthOrType field value equal to the reserved
             Type for MAC Control as specified in IEEE Std 802.3, Annex
             31A; 3) an MPCP subtype value equal to the subtype
             reserved for MPCP as specified in IEEE Std 802.3, Annex 31A.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             The value reflects the MAC address of the remote entity
             and therefore the OLT holds a value for each LLID, which
             is the MAC address of the ONU; the ONU has a single
             value that is the OLT MAC address."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.5."
    ::= { dot3MpcpControlEntry 6 }

dot3MpcpRegistrationState OBJECT-TYPE
    SYNTAX  INTEGER {
            unregistered(1),
            registering(2),
            registered(3)
    }
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that identifies the registration state
             of the MultiPoint MAC Control sublayer as defined in
             IEEE Std 802.3, Clause 64 and Clause 77.
             When this object has the
             enumeration unregistered(1),
             the interface is
             unregistered and may be used for
             registering a link
             partner.
             When this object has the enumeration
             registering(2), the interface is in the process of
             registering a link-partner. When this object has the
             enumeration registered(3), the interface has an
             established link-partner.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.6."
    ::= { dot3MpcpControlEntry 7 }

dot3MpcpTransmitElapsed OBJECT-TYPE
    SYNTAX  Unsigned32
    UNITS       "TQ (16 ns)"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that reports the interval from the last
             MPCP frame transmission in increments of Time Quanta
             (TQ)-16ns. The value returned shall be (interval from
             last MPCP frame transmission in ns)/16. If this value
             exceeds (2^32-1), the value (2^32-1) shall be returned.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.19."
    ::= { dot3MpcpControlEntry 8 }
```

```
dot3MpcpReceiveElapsed OBJECT-TYPE
    SYNTAX  Unsigned32
    UNITS        "TQ (16 ns)"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that reports the interval from last MPCP frame
             reception in increments of Time Quanta (TQ)-16ns. The
             value returned shall be (interval from last MPCP frame
             reception in ns)/16. If this value exceeds (2^32-1), the
             value (2^32-1) shall be returned.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.20."
    ::= { dot3MpcpControlEntry 9 }

dot3MpcpRoundTripTime OBJECT-TYPE
    SYNTAX  Unsigned32 (0..'ffff'h)
    UNITS        "TQ (16 ns)"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that reports the MPCP round trip time in
             increments of Time Quanta (TQ)-16ns. The value returned
             shall be (round trip time in ns)/16. If this value
             exceeds (2^16-1), the value (2^16-1) shall be returned.
             This object is applicable for an OLT. At the
             OLT, it has a distinct value for each virtual interface."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.21."
    ::= { dot3MpcpControlEntry 10 }

dot3MpcpMaximumPendingGrants OBJECT-TYPE
    SYNTAX  Unsigned32 (0..255)
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "An object that reports the maximum number of grants
             that an ONU can store for handling. The maximum number
             of grants that an ONU can store for handling has a
             range of 0 to 255.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.24."
    ::= { dot3MpcpControlEntry 11 }



dot3MpcpStatTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot3MpcpStatEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
            "This table defines the list of statistics counters of
             an interface implementing the IEEE Std 802.3, Clause 64 or
             Clause 77 MPCP.
             Each object has a row for every virtual link denoted by
             the corresponding ifIndex.
             The LLID field, as defined in 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
             broadcast LLID."
::= { dot3EponMpcpObjects 2 }

dot3MpcpStatEntry OBJECT-TYPE
    SYNTAX      Dot3MpcpStatEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
            "An entry in the table of statistics counters of the
             IEEE Std 802.3, Clause 64 or Clause 77Clause 64, MPCP interface.
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```
                Rows exist for an OLT interface and an ONU interface.
                A row in the table is denoted by the ifIndex of the link
                and it is created when the ifIndex is created.
                The rows in the table for an ONU interface are created
                at system initialization.
                The row in the table corresponding to the OLT ifIndex
                and the row corresponding to the broadcast virtual link
                are created at system initialization.
                A row in the table corresponding to the ifIndex of a
                virtual link is created when a virtual link is
                established (ONU registers) and deleted when the virtual
                link is deleted (ONU deregisters)."
        INDEX  { ifIndex}
        ::= { dot3MpcpStatTable 1 }

Dot3MpcpStatEntry ::=
        SEQUENCE {
                dot3MpcpMACCtrlFramesTransmitted        Counter64,
                dot3MpcpMACCtrlFramesReceived           Counter64,
                dot3MpcpDiscoveryWindowsSent            Counter32,
                dot3MpcpDiscoveryTimeout                Counter32,
                dot3MpcpTxRegRequest                    Counter64,
                dot3MpcpRxRegRequest                    Counter64,
                dot3MpcpTxRegAck                        Counter64,
                dot3MpcpRxRegAck                        Counter64,
                dot3MpcpTxReport                        Counter64,
                dot3MpcpRxReport                        Counter64,
                dot3MpcpTxGate                          Counter64,
                dot3MpcpRxGate                          Counter64,
                dot3MpcpTxRegister                      Counter64,
                dot3MpcpRxRegister                      Counter64
        }

dot3MpcpMACCtrlFramesTransmitted OBJECT-TYPE
        SYNTAX  Counter64
        UNITS      "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of MPCP frames passed to the MAC sublayer for
                transmission. This counter is incremented when a
                MA_CONTROL.request service primitive is generated within
                the MAC control sublayer with an opcode indicating an
                MPCP frame.
                This object is applicable for an OLT and an ONU. At the
                OLT it has a distinct value for each virtual interface.
                Discontinuities of this counter can occur at
                re-initialization of the management system, and at other
                times as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
                module."
        REFERENCE   "IEEE Std 802.3, 30.3.5.1.7."
        ::= { dot3MpcpStatEntry 1 }

dot3MpcpMACCtrlFramesReceived OBJECT-TYPE
        SYNTAX  Counter64
        UNITS      "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of MPCP frames passed by the MAC sublayer to the
                MAC Control sublayer. This counter is incremented when a
                ReceiveFrame function call returns a valid frame with
                1) a lengthOrType field value equal to the reserved
                Type for 802.3_MAC_Control as specified in IEEE Std 802.3
                31.4.1.3, and
                2) an opcode indicating an MPCP frame.
                This object is applicable for an OLT and an ONU. At the
                OLT, it has a distinct value for each virtual interface.
                Discontinuities of this counter can occur at
                re-initialization of the management system and at other
                times, as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
```

```
                module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.8."
     ::= { dot3MpcpStatEntry 2}

dot3MpcpDiscoveryWindowsSent OBJECT-TYPE
    SYNTAX  Counter32
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of discovery windows generated. The counter is
             incremented by one for each generated discovery window.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the ONU, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.22."
     ::= { dot3MpcpStatEntry 3}

dot3MpcpDiscoveryTimeout OBJECT-TYPE
    SYNTAX  Counter32
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a discovery timeout
             occurs. Increment the counter by one for each discovery
             processing state-machine reset resulting from timeout
             waiting for message arrival.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.23."
     ::= { dot3MpcpStatEntry 4}

dot3MpcpTxRegRequest OBJECT-TYPE
    SYNTAX  Counter64
    UNITS      "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REGISTER_REQ MPCP
             frame transmission occurs. Increment the counter by one
             for each REGISTER_REQ MPCP frame transmitted as defined
             in IEEE Std 802.3, Clause 64 or Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.12."
     ::= { dot3MpcpStatEntry 5}

dot3MpcpRxRegRequest OBJECT-TYPE
    SYNTAX  Counter64
    UNITS      "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REGISTER_REQ MPCP
             frame reception occurs.
             Increment the counter by one for each REGISTER_REQ MPCP
             frame received as defined in IEEE Std 802.3, Clause 64 or
             Clause 77.
```

```
                This object is applicable for an OLT and an ONU. At the
                OLT, it has a distinct value for each virtual interface.
                At the ONU, the value should be zero.
                Discontinuities of this counter can occur at
                re-initialization of the management system and at other
                times, as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
                module."
     REFERENCE    "IEEE Std 802.3, 30.3.5.1.17."
        ::= { dot3MpcpStatEntry 6}

dot3MpcpTxRegAck OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REGISTER_ACK MPCP
             frame transmission occurs. Increment the counter by one
             for each REGISTER_ACK MPCP frame transmitted as defined
             in IEEE Std 802.3, Clause 64 or Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
  REFERENCE    "IEEE Std 802.3, 30.3.5.1.10."
        ::= { dot3MpcpStatEntry 7}

dot3MpcpRxRegAck OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REGISTER_ACK MPCP
             frame reception occurs.
             Increment the counter by one for each REGISTER_ACK MPCP
             frame received as defined in IEEE Std 802.3, Clause 64 or
             Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the ONU, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.15."
        ::= { dot3MpcpStatEntry 8}

dot3MpcpTxReport OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REPORT MPCP frame
             transmission occurs. Increment the counter by one for
             each REPORT MPCP frame transmitted as defined in
             IEEE Std 802.3, Clause 64 or Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE    "IEEE Std 802.3, 30.3.5.1.13."
```

```
        ::= { dot3MpcpStatEntry 9}

dot3MpcpRxReport OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a REPORT MPCP frame
             reception occurs.
             Increment the counter by one for each REPORT MPCP frame
             received as defined in IEEE Std 802.3, Clause 64 or
             Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the ONU, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.18."
    ::= { dot3MpcpStatEntry 10}

dot3MpcpTxGate OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a GATE MPCP frame
             transmission occurs.
             Increment the counter by one for each GATE MPCP frame
             transmitted as defined in IEEE Std 802.3, Clause 64 or
             Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the ONU, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.9."
    ::= { dot3MpcpStatEntry 11}

dot3MpcpRxGate OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of the number of times a GATE MPCP frame
             reception occurs.
             Increment the counter by one for each GATE MPCP frame
             received as defined in IEEE Std 802.3, Clause 64 or
             Clause 77.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.14."
    ::= { dot3MpcpStatEntry 12}

dot3MpcpTxRegister OBJECT-TYPE
    SYNTAX  Counter64
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS  current
```

```
      DESCRIPTION
             "A count of the number of times a REGISTER MPCP frame
              transmission occurs.
              Increment the counter by one for each REGISTER MPCP
              frame transmitted as defined in IEEE Std 802.3, Clause 64 or
              Clause 77.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.
              At the ONU, the value should be zero.
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
              ifCounterDiscontinuityTime object of the Interfaces Group MIB
              module."
      REFERENCE   "IEEE Std 802.3, 30.3.5.1.11."
       ::= { dot3MpcpStatEntry 13}

dot3MpcpRxRegister OBJECT-TYPE
      SYNTAX  Counter64
      UNITS       "frames"
      MAX-ACCESS  read-only
      STATUS  current
      DESCRIPTION
             "A count of the number of times a REGISTER MPCP frame
              reception occurs.
              Increment the counter by one for each REGISTER MPCP
              frame received as defined in IEEE Std 802.3, Clause 64 or
              Clause 77.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.
              At the OLT, the value should be zero.
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
              ifCounterDiscontinuityTime object of the Interfaces Group MIB
              module."
      REFERENCE   "IEEE Std 802.3, 30.3.5.1.16."
       ::= { dot3MpcpStatEntry 14}

-- Optical Multi Point Emulation (OMPEmulation)
-- managed object definitions

dot3OmpEmulationObjects OBJECT IDENTIFIER ::={dot3EponObjects 2}

dot3OmpEmulationTable OBJECT-TYPE
      SYNTAX  SEQUENCE OF Dot3OmpEmulationEntry
      MAX-ACCESS  not-accessible
      STATUS  current
      DESCRIPTION
             "A table of dot3 OmpEmulation MIB objects. The table
              contain objects for the management of the OMPEmulation
              sublayer.
              Each object has a row for every virtual link denoted by
              the corresponding ifIndex.
              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
              broadcast LLID."
       ::= { dot3OmpEmulationObjects 1 }

dot3OmpEmulationEntry OBJECT-TYPE
      SYNTAX  Dot3OmpEmulationEntry
      MAX-ACCESS  not-accessible
      STATUS  current
      DESCRIPTION
             "An entry in the dot3 OmpEmulation table.
              Rows exist for an OLT interface and an ONU interface.
              A row in the table is denoted by the ifIndex of the link
              and it is created when the ifIndex is created.
              The rows in the table for an ONU interface are created
              at system initialization.
```

```
                The row in the table corresponding to the OLT ifIndex
                and the row corresponding to the broadcast virtual link
                are created at system initialization.
                A row in the table corresponding to the ifIndex of a
                virtual links is created when a virtual link is
                established (ONU registers) and deleted when the virtual
                link is deleted (ONU deregisters)."
        INDEX  { ifIndex }
        ::= { dot3OmpEmulationTable 1 }

        Dot3OmpEmulationEntry ::=
        SEQUENCE {
                dot3OmpEmulationType            INTEGER
        }

dot3OmpEmulationType OBJECT-TYPE
        SYNTAX  INTEGER {
                unknown(1),
                olt(2),
                onu(3)
        }
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "An object that indicates the mode of operation
                 of the Reconciliation Sublayer for Point-to-Point
                 Emulation (see IEEE Std 802.3, 65.1 or 76.2 as appropriate).
                 unknown(1) value is assigned in initialization; true state
                 or type is not yet known. olt(2) value is assigned when the
                 sublayer is operating in OLT mode. onu(3) value is assigned when
                 the sublayer is operating in ONU mode.
                 This object is applicable for an OLT, with the same
                 value for all virtual interfaces, and for an ONU."
        REFERENCE   "IEEE Std 802.3, 30.3.7.1.2."
        ::= { dot3OmpEmulationEntry 1}

dot3OmpEmulationStatTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dot3OmpEmulationStatEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
                "This table defines the list of statistics counters of
                 IEEE Std 802.3, Clause 65 or Clause 76, OMPEmulation sublayer.
                 Each object has a row for every virtual link denoted by
                 the corresponding ifIndex.
                 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
                 broadcast LLID."
        ::= { dot3OmpEmulationObjects 2}

dot3OmpEmulationStatEntry OBJECT-TYPE
        SYNTAX      Dot3OmpEmulationStatEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION
                "An entry in the table of statistics counters of
                 IEEE Std 802.3, Clause 65 or Clause 76, OMPEmulation sublayer.
                 Rows exist for an OLT interface and an ONU interface.
                 A row in the table is denoted by the ifIndex of the link
                 and it is created when the ifIndex is created.
                 The rows in the table for an ONU interface are created
                 at system initialization.
                 The row in the table corresponding to the OLT ifIndex
                 and the row corresponding to the broadcast virtual link
                 are created at system initialization.
                 A row in the table corresponding to the ifIndex of a
                 virtual links is created when a virtual link is
                 established (ONU registers) and deleted when the virtual
                 link is deleted (ONU deregisters)."
        INDEX  { ifIndex}
```

```
     ::= { dot3OmpEmulationStatTable 1 }

Dot3OmpEmulationStatEntry::=
     SEQUENCE {
             dot3OmpEmulationSLDErrors                   Counter64,
             dot3OmpEmulationCRC8Errors                  Counter64,
             dot3OmpEmulationBadLLID                     Counter64,
             dot3OmpEmulationGoodLLID                    Counter64,
             dot3OmpEmulationOnuPonCastLLID              Counter64,
             dot3OmpEmulationOltPonCastLLID              Counter64,
             dot3OmpEmulationBroadcastBitNotOnuLlid      Counter64,
             dot3OmpEmulationOnuLLIDNotBroadcast         Counter64,
             dot3OmpEmulationBroadcastBitPlusOnuLlid     Counter64,
             dot3OmpEmulationNotBroadcastBitNotOnuLlid   Counter64
     }

dot3OmpEmulationSLDErrors OBJECT-TYPE
     SYNTAX   Counter64
     UNITS       "frames"
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
             "A count of frames received that do not contain a valid
              SLD field as defined in IEEE Std 802.3, 65.1.3.3.1 or
              76.2.6.1.3.1, as appropriate.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.s
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
              ifCounterDiscontinuityTime object of the Interfaces Group MIB
              module."
     REFERENCE    "IEEE Std 802.3, 30.3.7.1.3."
     ::= { dot3OmpEmulationStatEntry 1}

dot3OmpEmulationCRC8Errors OBJECT-TYPE
     SYNTAX   Counter64
     UNITS       "frames"
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
             "A count of frames received that contain a valid SLD
              field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1
              as appropriate, but do not pass the CRC-8 check as defined in
              IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3 as appropriate.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
              ifCounterDiscontinuityTime object of the Interfaces Group MIB
              module."
     REFERENCE    "IEEE Std 802.3, 30.3.7.1.4."
     ::= { dot3OmpEmulationStatEntry 2}

dot3OmpEmulationBadLLID OBJECT-TYPE
     SYNTAX   Counter64
     UNITS       "frames"
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
             "A count of frames received that contain a valid SLD field in an
              OLT, and pass the CRC-8 check, but are discarded due to the
              LLID check. The SLD is defined in IEEE Std 802.3, 65.1.3.3.1
              or 76.2.6.1.3.1, as appropriate. The CRC-8 check is defined in
              IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate. The
              LLID check is defined in IEEE Std 802.3, 65.1.3.3.2 or
              76.2.6.1.3.2, as appropriate.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
```

```
                  ifCounterDiscontinuityTime object of the Interfaces Group MIB
                  module."
          REFERENCE   "IEEE Std 802.3, 30.3.7.1.8."
          ::= { dot3OmpEmulationStatEntry 3}

dot3OmpEmulationGoodLLID OBJECT-TYPE
    SYNTAX  Counter64
    UNITS      "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of frames received that contain a valid SLD
             field, as defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1,
             as appropriate, and pass the CRC-8 check as defined in
             IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE   "IEEE Std 802.3, 30.3.7.1.5."
    ::= { dot3OmpEmulationStatEntry 4}

dot3OmpEmulationOnuPonCastLLID OBJECT-TYPE
    SYNTAX  Counter64
    UNITS      "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of frames received that: 1) contain a valid SLD field
             in an  ONU, 2) meet the rules for frame acceptance, and
             3) pass the CRC-8 check. The SLD is defined in
             IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as appropriate. The
             rules for LLID acceptance are defined in IEEE Std 802.3, 65.1.3.3.2
             or 76.2.6.1.3.2, as appropriate. The CRC-8 check is defined
             in IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the OLT, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
    REFERENCE   "IEEE Std 802.3, 30.3.7.1.6."
    ::= { dot3OmpEmulationStatEntry 5}

dot3OmpEmulationOltPonCastLLID OBJECT-TYPE
    SYNTAX  Counter64
    UNITS      "frames"
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "A count of frames received that contain a valid SLD field, as
             defined in IEEE Std 802.3, 65.1.3.3.1 or 76.2.6.1.3.1, as
             appropriate, pass the CRC-8 check, as defined in
             IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, as appropriate,
             and meet the rules of acceptance for an OLT defined in
             IEEE Std 802.3, 65.1.3.3.2 or 76.2.6.1.3.2, as appropriate.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface.
             At the ONU, the value should be zero.
             Discontinuities of this counter can occur at
             re-initialization of the management system and at other
             times, as indicated by the value of the
             ifCounterDiscontinuityTime object of the Interfaces Group MIB
             module."
  REFERENCE    "IEEE Std 802.3, 30.3.7.1.7."
    ::= { dot3OmpEmulationStatEntry 6}

dot3OmpEmulationBroadcastBitNotOnuLlid OBJECT-TYPE
```

```
            SYNTAX  Counter64
            UNITS      "frames"
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                    "A count of frames received that contain a valid SLD
                     field, as defined in IEEE Std 802.3,
                     65.1.3.3.1, pass the CRC-8 check, as defined in
                     IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the
                     broadcast
                     bit in the LLID and not the ONU's LLID (frame accepted)
                     as defined in IEEE Std 802.3, Clause 65 or Clause 76.
                     This object is applicable for an OLT and an ONU. At the
                     OLT, it has a distinct value for each virtual interface.
                     At the OLT, the value should be zero.
                     Discontinuities of this counter can occur at
                     re-initialization of the management system and at other
                     times, as indicated by the value of the
                     ifCounterDiscontinuityTime object of the Interfaces Group MIB
                     module."
        ::= { dot3OmpEmulationStatEntry 7}


dot3OmpEmulationOnuLLIDNotBroadcast OBJECT-TYPE
        SYNTAX  Counter64
        UNITS      "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of frames received that contain a valid SLD
                 field, as defined in IEEE Std 802.3,
                 65.1.3.3.1, pass the CRC-8 check, as defined in
                 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the ONU's
                 LLID
                 as defined in IEEE Std 802.3, Clause 65 or Clause 76.
                 This object is applicable for an OLT and an ONU. At the
                 OLT, it has a distinct value for each virtual interface.
                 At the OLT, the value should be zero.
                 Discontinuities of this counter can occur at
                 re-initialization of the management system and at other
                 times, as indicated by the value of the
                 ifCounterDiscontinuityTime object of the Interfaces Group MIB
                 module."
        ::= { dot3OmpEmulationStatEntry 8}

dot3OmpEmulationBroadcastBitPlusOnuLlid OBJECT-TYPE
        SYNTAX  Counter64
        UNITS      "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of frames received that contain a valid SLD
                 field, as defined in IEEE Std 802.3,
                 65.1.3.3.1, pass the CRC-8 check, as defined in
                 IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and contain the
                 broadcast
                 bit in the LLID and match the ONU's LLID (frame
                 reflected) as defined in IEEE Std 802.3, Clause 65 or Clause 76.
                 This object is applicable for an OLT and an ONU. At the
                 OLT, it has a distinct value for each virtual interface.
                 At the OLT, the value should be zero.
                 Discontinuities of this counter can occur at
                 re-initialization of the management system and at other
                 times, as indicated by the value of the
                 ifCounterDiscontinuityTime object of the Interfaces Group MIB
                 module."
        ::= { dot3OmpEmulationStatEntry 9}

dot3OmpEmulationNotBroadcastBitNotOnuLlid OBJECT-TYPE
        SYNTAX  Counter64
        UNITS      "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
```

```
             "A count of frames received that contain a valid SLD
              field, as defined in IEEE Std 802.3,
              65.1.3.3.1, pass the CRC-8 check, as defined in
              IEEE Std 802.3, 65.1.3.3.3 or 76.2.6.1.3.3, and do not contain
              the ONU's LLID as defined in IEEE Std 802.3, Clause 65 or
              Clause 76.
              This object is applicable for an OLT and an ONU. At the
              OLT, it has a distinct value for each virtual interface.
              At the OLT, the value should be zero.
              Discontinuities of this counter can occur at
              re-initialization of the management system and at other
              times, as indicated by the value of the
              ifCounterDiscontinuityTime object of the Interfaces Group MIB
              module."
      ::= { dot3OmpEmulationStatEntry 10}

--  FEC managed object definitions (30.5.1)

dot3EponFecObjects OBJECT IDENTIFIER ::={dot3EponObjects 3}

dot3EponFecTable OBJECT-TYPE
     SYNTAX   SEQUENCE OF Dot3EponFecEntry
     MAX-ACCESS   not-accessible
     STATUS   current
     DESCRIPTION
             "A table of dot3 EPON FEC management objects.
              The entries in the table are control and status objects
              and statistic counters for the FEC layer.
              Each object has a row for every virtual link denoted by
              the corresponding ifIndex.
              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
              broadcast LLID."
      ::= { dot3EponFecObjects 1 }

dot3EponFecEntry OBJECT-TYPE
     SYNTAX   Dot3EponFecEntry
     MAX-ACCESS   not-accessible
     STATUS   current
     DESCRIPTION
             "An entry in the dot3 EPON FEC table.
              Rows exist for an OLT interface and an ONU interface.
              A row in the table is denoted by the ifIndex of the link
              and it is created when the ifIndex is created.
              The rows in the table for an ONU interface are created
              at system initialization.
              The row in the table corresponding to the OLT ifIndex
              and the row corresponding to the broadcast virtual link
              are created at system initialization.
              A row in the table corresponding to the ifIndex of a
              virtual links is created when a virtual link is
              established (ONU registers) and deleted when the virtual
              link is deleted (ONU deregisters)."
     INDEX  { ifIndex}
      ::= { dot3EponFecTable 1 }

Dot3EponFecEntry ::=
     SEQUENCE {
             dot3EponFecPCSCodingViolation            Counter64,
             dot3EponFecAbility                       INTEGER,
             dot3EponFecMode                          INTEGER,
             dot3EponFecCorrectedBlocks               Counter64,
             dot3EponFecUncorrectableBlocks           Counter64,
             dot3EponFecBufferHeadCodingViolation     Counter64
     }

dot3EponFecPCSCodingViolation OBJECT-TYPE
     SYNTAX   Counter64
     UNITS     "octets"
     MAX-ACCESS   read-only
```

```
        STATUS  current
        DESCRIPTION
                "For a 100 Mb/s operation, it is a count of the number of
                 times an invalid code-group is received, other than the
                 /H/ code-group. For a 1000 Mb/s operation, it is a count
                 of the number of times an invalid codegroup is received,
                 other than the /V/ code-group. /H/ denotes a special
                 4b5b codeword of the IEEE Std 802.3 Clause 24 100 Mb/s PCS layer,
                 and /V/ denotes a special 8b10b codeword of the IEEE Std 802.3
                 Clause 36 1000 Mb/s PCS layer.
                 This object is applicable for an OLT and an ONU. At the
                 OLT, it has a distinct value for each virtual interface.
                 Discontinuities of this counter can occur at
                 re-initialization of the management system and at other
                 times, as indicated by the value of the
                 ifCounterDiscontinuityTime object of the Interfaces Group MIB
                 module."
        REFERENCE   "IEEE Std 802.3, 30.5.1.1.14."
        ::= { dot3EponFecEntry 1}

dot3EponFecAbility OBJECT-TYPE
        SYNTAX  INTEGER {
                unknown(1),
                supported(2),
                unsupported(3)
        }
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "An object that indicates the support of operation of the
                 optional FEC sublayer of the 1000BASE-PX PHY specified
                 in IEEE Std 802.3, 65.2.
                 unknown(1) value is assigned in the initialization, for non
                 FEC support state or type not yet known. unsupported(3)
                 value is assigned when the sublayer is not supported.
                 supported(2) value is assigned when the sublayer is
                 supported.
                 This object is applicable for an OLT, with the same
                 value for all virtual interfaces, and for an ONU.
                 The FEC counters will have a zero value when the
                 interface is not supporting FEC.
                 The counters:
                  dot3EponFecPCSCodingViolation - not affected by FEC
                  ability.
                  dot3EponFecCorrectedBlocks     - has a zero value when
                   dot3EponFecAbility is unknown(1) and unsupported(3).
                  dot3EponFecUncorrectableBlocks  - has a zero value when
                   dot3EponFecAbility is unknown(1) and unsupported(3).
                  dot3EponFecBufferHeadCodingViolation - has a zero value
                   when dot3EponFecAbility is unknown(1) and
                   unsupported(3)."
        REFERENCE   "IEEE Std 802.3, 30.5.1.1.15."
        ::= { dot3EponFecEntry 2}

dot3EponFecMode OBJECT-TYPE
        SYNTAX  INTEGER {
                unknown(1),
                disabled(2),
                enabled(3)
        }
        MAX-ACCESS  read-write
        STATUS  current
        DESCRIPTION
                "An object that defines the mode of operation of the
                 optional FEC sublayer of the 1000BASE-PX PHY, specified
                 in IEEE Std 802.3, 65.2, and reflects its state.
                 A GET operation returns the current mode of operation
                 of the PHY. A SET operation changes the mode of
                 operation of the PHY to the indicated value.
                 unknown(1) value is assigned in the initialization for non
                FEC support state or type not yet known.
                 disabled(2) value is assigned when the FEC sublayer is
                operating in disabled mode.
```

```
            enabled(3) value is assigned when the FEC sublayer is
            operating in FEC mode.
             The write operation is not restricted in this document
             and can be done at any time. Changing dot3EponFecMode
             state can lead to disabling the Forward Error Correction
             on the respective interface, which can lead to a
             degradation of the optical link, and therefore may lead
             to an interruption of service for 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.
             The counting of
             the FEC counters will stop when the FEC of the interface
             is disabled.
             The counters:
            dot3EponFecPCSCodingViolation - not affected by FEC
            mode.
            dot3EponFecCorrectedBlocks - stops counting when
            Rx_FEC is not enabled. (unknown(1) and disabled(2)).
            dot3EponFecUncorrectableBlocks - stops counting when
            Rx_FEC is not enabled (unknown(1) and disabled(2)).
            dot3EponFecBufferHeadCodingViolation - stops counting
            when Rx_FEC is not enabled (unknown(1) and
            disabled(2)).
            The object:
            dot3EponFecAbility - indicates the FEC ability and
            is not affected by the dot3EponFecMode object."
    REFERENCE   "IEEE Std 802.3, 30.5.1.1.16."
    DEFVAL { unknown }
    ::= { dot3EponFecEntry 3}


dot3EponFecCorrectedBlocks OBJECT-TYPE
    SYNTAX  Counter64
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "For 1000BASE-PX, 10/25/40/50/100/200/400GBASE-R, 10GBASE-PR
            or 10/1GBASE-PRX PHYs, it is a
            count of corrected FEC blocks.
            This counter will not
            increment for other PHY Types.
            Increment the counter by
            one for each received block that is
            corrected by the FEC
            function in the PHY.
            This object is applicable for an OLT and an ONU. At the
            OLT, it has a distinct value for each virtual interface.
            Discontinuities of this counter can occur at
            re-initialization of the management system and at other
            times, as indicated by the value of the
            ifCounterDiscontinuityTime object of the Interfaces Group MIB
            module."
    REFERENCE   "IEEE Std 802.3, 30.5.1.1.17."
    ::= { dot3EponFecEntry 4}


dot3EponFecUncorrectableBlocks OBJECT-TYPE
    SYNTAX  Counter64
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "For 1000BASE-PX, 10/25/40/50/100/200/400GBASE-R, 10GBASE-PR
            or 10/1GBASE-PRX PHYs1000BASE-PX, 10GBASE-PR or 10/1GBASE-PRX PHYs, it is a
            count of uncorrectable FEC blocks.
             This counter will not
            increment for other PHY Types.
            Increment the counter by
            one for each FEC block that is
            determined to be
            uncorrectable by the FEC function in the PHY.
            This object is applicable for an OLT and an ONU. At the
            OLT, it has a distinct value for each virtual interface.
            Discontinuities of this counter can occur at
            re-initialization of the management system and at other
```

```
                    times, as indicated by the value of the
                    ifCounterDiscontinuityTime object of the Interfaces Group MIB
                    module."
        REFERENCE    "IEEE Std 802.3, 30.5.1.1.18."
        ::= { dot3EponFecEntry 5}


dot3EponFecBufferHeadCodingViolation OBJECT-TYPE
        SYNTAX   Counter64
        UNITS       "octets"
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
                "For a 1000 Mb/s operation, it is a count of the number of
                 invalid code-group received directly from the link. The
                 value has a meaning only in 1000 Mb/s mode and it is
                 zero otherwise.
                 This object is applicable for an OLT and an ONU. At the
                 OLT, it has a distinct value for each virtual interface.
                 Discontinuities of this counter can occur at
                 re-initialization of the management system and at other
                 times, as indicated by the value of the
                 ifCounterDiscontinuityTime object of the Interfaces Group MIB
                 module."
        ::= { dot3EponFecEntry 6}


-- ExtendedPackage managed object definitions

dot3ExtPkgObjects OBJECT IDENTIFIER ::={dot3EponObjects 4}

dot3ExtPkgControlObjects OBJECT IDENTIFIER ::= { dot3ExtPkgObjects 1 }

dot3ExtPkgControlTable OBJECT-TYPE
        SYNTAX   SEQUENCE OF Dot3ExtPkgControlEntry
        MAX-ACCESS   not-accessible
        STATUS   current
        DESCRIPTION
                "A table of Extended package Control management
                 objects. Entries in the table are control and status
                 indication objects of an EPON interface, which are
                 gathered in an extended package as an addition to the
                 objects based on the IEEE Std 802.3, Clause 30, attributes.
                 Each object has a row for every virtual link denoted by
                 the corresponding ifIndex.
                 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
                 broadcast LLID."
        ::= { dot3ExtPkgControlObjects 1 }

dot3ExtPkgControlEntry OBJECT-TYPE
        SYNTAX   Dot3ExtPkgControlEntry
        MAX-ACCESS   not-accessible
        STATUS   current
        DESCRIPTION
                "An entry in the Extended package Control table.
                 Rows exist for an OLT interface and an ONU interface.
                 A row in the table is denoted by the ifIndex of the link
                 and it is created when the ifIndex is created.
                 The rows in the table for an ONU interface are created
                 at system initialization.
                 The row in the table corresponding to the OLT ifIndex
                 and the row corresponding to the broadcast virtual link
                 are created at system initialization.
                 A row in the table corresponding to the ifIndex of a
                 virtual links is created when a virtual link is
                 established (ONU registers) and deleted when the virtual
                 link is deleted (ONU deregisters)."
        INDEX  { ifIndex}
        ::= { dot3ExtPkgControlTable 1 }

Dot3ExtPkgControlEntry ::=
```

```
     SEQUENCE {
      dot3ExtPkgObjectReset                     INTEGER,
      dot3ExtPkgObjectPowerDown                 TruthValue,
      dot3ExtPkgObjectNumberOfLLIDs             Unsigned32,
      dot3ExtPkgObjectFecEnabled                INTEGER,
      dot3ExtPkgObjectReportMaximumNumQueues    Unsigned32,
      dot3ExtPkgObjectRegisterAction            INTEGER
     }

dot3ExtPkgObjectReset OBJECT-TYPE
     SYNTAX   INTEGER {
             running(1),
             reset(2)
     }
     MAX-ACCESS   read-write
     STATUS   current
     DESCRIPTION
             "This object is used to reset the EPON interface. The
              interface may be unavailable while the reset occurs and
              data may be lost.
              Setting this object to running(1) will cause the
              interface to enter into running mode. Setting this
              object to reset(2) will cause the interface to go into
              reset mode. When getting running(1), the interface is in
              running mode. When getting reset(2), the interface is in
              reset mode.
              The write operation is not restricted in this document
              and can be done at any time. Changing
              dot3ExtPkgObjectReset state can lead to a reset of the
              respective interface, leading to an interruption of
              service for 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.
              A reset for a specific virtual interface resets only
              this virtual interface and not the physical interface.
              Thus, a virtual link that is malfunctioning can be
              reset without affecting the operation of other virtual
              interfaces.
              The reset can cause Discontinuities in the values of the
              counters of the interface, similar to re-initialization
              of the management system. Discontinuity should be
              indicated by the ifCounterDiscontinuityTime object of
              the Interfaces Group MIB module."
     DEFVAL { running }
     ::= { dot3ExtPkgControlEntry 1 }

dot3ExtPkgObjectPowerDown OBJECT-TYPE
     SYNTAX   TruthValue
     MAX-ACCESS   read-write
     STATUS   current
     DESCRIPTION
             "This object is used to power down the EPON interface.
              The interface may be unavailable while the power down
              occurs and data may be lost.
              Setting this object to true(1) will cause the interface
              to enter into power down mode. Setting this object to
              false(2) will cause the interface to go out of power
              down mode. When getting true(1), the interface is in
              power down mode. When getting false(2), the interface is
              not in power down mode.
              The write operation is not restricted in this document
              and can be done at any time. Changing
              dot3ExtPkgObjectPowerDown state can lead to a power down
              of the respective interface, leading to 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.
              A power down/up of a specific virtual interface affects
              only the virtual interface and not the physical
              interface. Hence a virtual link, which needs a certain
              handling, can be powered down and then powered up without
```

```
                 disrupting the operation of other virtual interfaces.
                 The object is relevant when the admin state of the
                 interface is active as set by the dot3MpcpAdminState."
        DEFVAL { false }
        ::= { dot3ExtPkgControlEntry 2 }

    dot3ExtPkgObjectNumberOfLLIDs OBJECT-TYPE
        SYNTAX  Unsigned32
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A read only object that indicates the number of
                 registered LLIDs. The initialization value is 0.
                 This object is applicable for an OLT with the same
                 value for all virtual interfaces and for an ONU.
                 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
                 broadcast LLID. At the ONU the
                 number of LLIDs for an interface is one."
        ::= { dot3ExtPkgControlEntry 3 }

    dot3ExtPkgObjectFecEnabled OBJECT-TYPE
        SYNTAX  INTEGER {
                noFecEnabled(1),
                fecTxEnabled(2),
                fecRxEnabled(3),
                fecTxRxEnabled(4)
        }
        MAX-ACCESS  read-write
        STATUS  current
        DESCRIPTION
                "An object defining the FEC mode of operation of the
                 interface, and indicating its state. The modes defined in
                 this object are extensions to the FEC modes defined in
                 the dot3EponFecMode object.
                 When noFECEnabled(1), the interface does not enable FEC
                 mode.
                 When fecTxEnabled(2), the interface enables the FEC
                 transmit mode.
                 When fecRxEnabled(3), the interface enables the FEC
                 receive mode.
                 When fecTxRxEnabled(4), the interface enables the FEC
                 transmit and receive mode.
                 This object is applicable for an OLT and an ONU. At the
                 OLT, it has a distinct value for each virtual interface.
                 The FEC counters are referring to the receive path. The
                 FEC counters will stop when the FEC receive mode of the
                 interface is disabled, as defined by fecRxEnabled(3)
                 and fecTxRxEnabled(4) values.
                 The counters:
                  dot3EponFecPCSCodingViolation - not affected by FEC
                  mode.
                  dot3EponFecCorrectedBlocks - stops counting when
                  Rx_FEC is not enabled (noFecEnabled(1) and
                  fecTxEnabled(2)).
                  dot3EponFecUncorrectableBlocks - stops counting when
                  Rx_FEC is not enabled (noFecEnabled(1) and
                  fecTxEnabled(2)).
                  dot3EponFecBufferHeadCodingViolation - stops counting
                  when Rx_FEC is not enabled (noFecEnabled(1) and
                  fecTxEnabled(2)).
                 The objects:
                  dot3EponFecAbility - indicates the FEC ability and is
                  not affected by the FEC mode.
                  dot3EponFecMode - indicates the FEC mode for combined RX
                  and TX.
                 The write operation is not restricted in this document
                 and can be done at any time. Changing
                 dot3ExtPkgObjectFecEnabled state can lead to disabling
                 the Forward Error Correction on the respective interface,
```

```
                 which can lead to a degradation of the optical link, and
                 therefore may lead to an interruption of service for the
                 users connected to the respective EPON interface."
        DEFVAL { noFecEnabled }
        ::= { dot3ExtPkgControlEntry 4 }

dot3ExtPkgObjectReportMaximumNumQueues OBJECT-TYPE
        SYNTAX  Unsigned32 (0..7)
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                 "An object, that defines the maximal number of queues in
                  the REPORT message as defined in IEEE Std 802.3, Clause 64. For
                  further information please see the description of the
                  queue table.
                  This object is applicable for an OLT and an ONU. At the
                  OLT, it has a distinct value for each virtual interface."
        DEFVAL { 0 }
        ::= { dot3ExtPkgControlEntry 5 }

dot3ExtPkgObjectRegisterAction OBJECT-TYPE
        SYNTAX  INTEGER {
                 none(1),
                 register(2),
                 deregister(3),
                 reregister(4)
        }
        MAX-ACCESS  read-write
        STATUS  current
        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
                   and can be done at any time. Changing
                   dot3ExtPkgObjectRegisterAction state can lead to a change
                   in the registration state of the respective interface
                   leading to a deregistration and an interruption of
                   service of the users connected to the respective EPON
                   interface."
        DEFVAL { none }
        ::= { dot3ExtPkgControlEntry 6 }

  dot3ExtPkgQueueTable OBJECT-TYPE
        SYNTAX  SEQUENCE OF Dot3ExtPkgQueueEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
```

"A table of the extended package objects for queue
management. The IEEE Std 802.3 MPCP defines a report message
of the occupancy of the transmit queues for the feedback
BW request from the ONUs. These queues serve the uplink
transmission of the ONU and data is gathered there until
the ONU is granted for transmission.
The management table of the queues is added here mainly
to control the reporting and to gather some statistics
of their operation. This table is not duplicating
existing management objects of bridging queues,
specified in IEEE Std 802.1D, since the existence of a
dedicated transmit queuing mechanism is implied in the
IEEE Std 802.3, and the ONU may be a device that is not a
bridge with embedded bridging queues.
The format of the REPORT message, as specified
in IEEE Std 802.3, is presented below:

```
+--------------------------------+
|          Destination Address   |
+--------------------------------+
|          Source Address        |
+--------------------------------+
|          Length/Type           |
+--------------------------------+
|          OpCode                |
+--------------------------------+
|          TimeStamp             |
+--------------------------------+
|          Number of queue Sets  |
+--------------------------------+   /|\
|          Report bitmap         |    |
+--------------------------------+    |
|          Queue 0 report        |    |
+--------------------------------+    | repeated for
|          Queue 1 report        |    | every
+--------------------------------+    | queue_set
|          Queue 2 report        |    |
+--------------------------------+    |
|          Queue 3 report        |    |
+--------------------------------+    |
|          Queue 4 report        |    |
+--------------------------------+    |
|          Queue 5 report        |    |
+--------------------------------+    |
|          Queue 6 report        |    |
+--------------------------------+    |
|          Queue 7 report        |    |
+--------------------------------+   \|/
|          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
                  broadcast LLID.
                  The number of queues is between 0 and 7 and limited by
                  dot3ExtPkgObjectReportMaximumNumQueues."
        ::= { dot3ExtPkgControlObjects 2 }

dot3ExtPkgQueueEntry OBJECT-TYPE
        SYNTAX   Dot3ExtPkgQueueEntry
        MAX-ACCESS  not-accessible
        STATUS   current
        DESCRIPTION
                  "An entry in the Extended package Queue table. At the
                  OLT, the rows exist for each ifIndex and dot3QueueIndex.
                  At the ONU, rows exist for the single ifIndex for each
                  dot3QueueIndex.
                  Rows in the table are created when the ifIndex of the
                  link is created. A set of rows per queue are added for
                  each ifIndex, denoted by the dot3QueueIndex.
                  A set of rows per queue in the table, for an ONU
                  interface, are created at the system initialization.
                  A set of rows per queue in the table, corresponding to
                  the OLT ifIndex and a set of rows per queue
                  corresponding to the broadcast virtual link, are
                  created at the system initialization.
                  A set of rows per queue in the table, corresponding to
                  the ifIndex of a virtual link, are created when the
                  virtual link is established (ONU registers), and deleted
                  when the virtual link is deleted (ONU deregisters)."
        INDEX  { ifIndex, dot3QueueIndex }
        ::= { dot3ExtPkgQueueTable 1 }

Dot3ExtPkgQueueEntry ::=
        SEQUENCE {
         dot3QueueIndex                              _ Unsigned32,
         dot3ExtPkgObjectReportNumThreshold            Unsigned32,
         dot3ExtPkgObjectReportMaximumNumThreshold     Unsigned32,
         dot3ExtPkgStatTxFramesQueue                   Counter64,
         dot3ExtPkgStatRxFramesQueue                   Counter64,
         dot3ExtPkgStatDroppedFramesQueue              Counter64
        }

dot3QueueIndex OBJECT-TYPE
        SYNTAX   Unsigned32 (0..7)
        MAX-ACCESS  not-accessible
        STATUS   current
        DESCRIPTION
                  "An object that identifies an index for the queue table
                  reflecting the queue index of the queues that are
                  reported in the MPCP REPORT message as defined in
                  IEEE Std 802.3, Clause 64 or Clause 77.
                  The number of queues is between 0 and 7, and limited by
                  dot3ExtPkgObjectReportMaximumNumQueues."
        ::= { dot3ExtPkgQueueEntry 1 }

dot3ExtPkgObjectReportNumThreshold OBJECT-TYPE
        SYNTAX   Unsigned32 (0..7)
        MAX-ACCESS  read-write
        STATUS   current
        DESCRIPTION
                  "An object that defines the number of thresholds for each
                  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
                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.
                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 3 }

  dot3ExtPkgStatTxFramesQueue OBJECT-TYPE
        SYNTAX  Counter64
        UNITS       "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of the number of times a frame transmission
                occurs from the corresponding 'Queue'.
                Increment the counter by one for each frame transmitted,
                which is an output of the 'Queue'.
                The 'Queue' marking matches the REPORT MPCP message
                Queue field as defined in IEEE Std 802.3, Clause 64 or Clause 77.
                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.
                At the OLT the value should be zero.
                Discontinuities of this counter can occur at
                re-initialization of the management system and at other
                times, as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
                module."
        ::= { dot3ExtPkgQueueEntry 4}

  dot3ExtPkgStatRxFramesQueue OBJECT-TYPE
        SYNTAX  Counter64
        UNITS       "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of the number of times a frame reception
                occurs from the corresponding 'Queue'.
                Increment the counter by one for each frame received,
                which is an input to the corresponding 'Queue'.
                The 'Queue' marking matches the REPORT MPCP message
                Queue field as defined in IEEE Std 802.3, Clause 64 or Clause 77.
                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.
                Discontinuities of this counter can occur at
```

```
                re-initialization of the management system and at other
                times, as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
                module."
        ::= { dot3ExtPkgQueueEntry 5}

    dot3ExtPkgStatDroppedFramesQueue OBJECT-TYPE
        SYNTAX   Counter64
        UNITS       "frames"
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
                "A count of the number of times a frame drop
                occurs from the corresponding 'Queue'.
                Increment the counter by one for each frame dropped
                from the corresponding 'Queue'.
                The 'Queue' marking matches the REPORT MPCP message
                Queue field as defined in IEEE Std 802.3, Clause 64 or Clause 77.
                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.
                At the OLT, the value should be zero.
                Discontinuities of this counter can occur at
                re-initialization of the management system and at other
                times, as indicated by the value of the
                ifCounterDiscontinuityTime object of the Interfaces Group MIB
                module."
        ::= { dot3ExtPkgQueueEntry 6}

    dot3ExtPkgQueueSetsTable OBJECT-TYPE
        SYNTAX   SEQUENCE OF Dot3ExtPkgQueueSetsEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
                "A table of Extended package objects used for the
                 management of the queue_sets. Entries are control and
                 status indication objects of an EPON interface, which
                 are gathered in an extended package as an addition to
                 the objects based on the IEEE Std 802.3 attributes. The
                 objects in this table are specific for the queue_sets,
                 which are reported in the MPCP REPORT message as defined
                 in IEEE Std 802.3, Clause 64 or Clause 77.
                 The IEEE Std 802.3 MPCP defines a report message of the
                 occupancy of the transmit queues for the feedback BW
                 request from the ONUs. These queues serve the uplink
                 transmission of the ONU and data is gathered there until
                 the ONU is granted for transmission.
                 The management table of the queues_sets is added here
                 mainly to control the reporting and to gather some
                 statistics of their operation. This table is not
                 duplicating existing management objects of bridging
                 queues, specified in IEEE Std 802.1D1Q, since the existence of a
                 dedicated transmit queuing mechanism is implied in the
                 IEEE Std 802.3, and the ONU may be a device that is not a
                 bridge with embedded bridging queues.
                 The format of the REPORT message, as specified
                 in IEEE Std 802.3, is presented below:
                 +---------------------------------+
                 |          Destination Address    |
                 +---------------------------------+
                 |            Source Address        |
                 +---------------------------------+
                 |            Length/Type           |
                 +---------------------------------+
                 |            OpCode                |
                 +---------------------------------+
                 |            TimeStamp             |
                 +---------------------------------+
                 |         Number of queue Sets    |
                 +---------------------------------+   /|\
                 |           Report bitmap          |    |
                 +---------------------------------+    |
```

```
        |          Queue 0 report          |     |
        +----------------------------------+     | repeated for
        |          Queue 1 report          |     | every
        +----------------------------------+     | queue_set
        |          Queue 2 report          |     |
        +----------------------------------+     |
        |          Queue 3 report          |     |
        +----------------------------------+     |
        |          Queue 4 report          |     |
        +----------------------------------+     |
        |          Queue 5 report          |     |
        +----------------------------------+     |
        |          Queue 6 report          |     |
        +----------------------------------+     |
        |          Queue 7 report          |     |
        +----------------------------------+    \|/
        |          Pad/reserved            |
        +----------------------------------+
        |          FCS                     |
        +----------------------------------+
```

            As can be seen from the message format, the ONU
            interface reports of the status of up to 8 queues
            and it can report in a single MPCP REPORT message
            of a few sets of queues.
            The number of queue_sets defines the number of the
            reported sets, and it can reach a value of up to 8.
            It means that an ONU can hold a variable number of
            sets between 0 and 7.
            The dot3ExtPkgQueueSetsTable table has a variable
            queue_set size that is limited by the
            dot3ExtPkgObjectReportMaximumNumThreshold object as an
            ONU can have fewer queue_sets to report.
            The 'Queue report' field reports the occupancy of each
            uplink transmission queue. The queue_sets can be used to
            report the occupancy of the queues in a few levels as to
            allow granting, in an accurate manner, of only part of
            the data available in the queues. A Threshold is
            defined for each queue_set to define the level of the
            queue that is counted for the report of the occupancy.
            The threshold is reflected in the queue_set table by the
            dot3ExtPkgObjectReportThreshold object.
            For each queue set, the report bitmap defines which
            queues are present in the report, meaning that
            although the MPCP REPORT message can report of up to 8
            queues in a REPORT message, the actual number is
            flexible.
            The dot3ExtPkgQueueSetsTable table has a variable queue
            size that is limited by the
            dot3ExtPkgObjectReportMaximumNumQueues object as an ONU
            can have fewer queues to report.
            Each object has a row for every virtual link, for each
            queue in the report and for each queue_set in the queue.
            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
            broadcast LLID.
            The number of queues is between 0 and 7 and limited by
            dot3ExtPkgObjectReportMaximumNumQueues.
            The number of queues_sets is between 0 and 7 and limited
            by dot3ExtPkgObjectReportMaximumNumThreshold."
    ::= { dot3ExtPkgControlObjects 3 }

dot3ExtPkgQueueSetsEntry OBJECT-TYPE
    SYNTAX Dot3ExtPkgQueueSetsEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
            "An entry in the Extended package queue_set table. At
            the OLT, the rows exist for each ifIndex,
            dot3QueueSetQueueIndex and dot3QueueSetIndex. At the
```

```
                ONU, rows exist for the single ifIndex, for each
                dot3QueueSetQueueIndex and dot3QueueSetIndex.
                Rows in the table are created when the ifIndex of the
                link is created. A set of rows per queue and per
                queue_set are added for each ifIndex, denoted by
                dot3QueueSetIndex and dot3QueueSetQueueIndex.
                A set of rows per queue and per queue_set in the table,
                for an ONU interface are created at system
                initialization.
                A set of rows per queue and per queue_Set in the table,
                corresponding to the OLT ifIndex and a set of rows per
                queue and per queue_set, corresponding to the broadcast
                virtual link, are created at system initialization.
                A set of rows per queue and per queue_set in the table,
                corresponding to the ifIndex of a virtual link are
                created when the virtual link is established (ONU
                registers) and deleted when the virtual link is deleted
                (ONU deregisters)."
                INDEX { ifIndex,
            dot3QueueSetQueueIndex,dot3QueueSetIndex}
        ::= { dot3ExtPkgQueueSetsTable 1 }

    Dot3ExtPkgQueueSetsEntry ::=
        SEQUENCE {
         dot3QueueSetQueueIndex                    Unsigned32,
         dot3QueueSetIndex                         Unsigned32,
         dot3ExtPkgObjectReportThreshold           Unsigned32
        }

    dot3QueueSetQueueIndex OBJECT-TYPE
        SYNTAX  Unsigned32 (0..7)
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
                "An object that identifies the queue 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 queues is between 0 and 7, and limited by
                 dot3ExtPkgObjectReportMaximumNumQueues.
                 Value corresponds to the dot3QueueIndex of the queue
                 table."
        ::= { dot3ExtPkgQueueSetsEntry 1 }

    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 queues_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
               operation sets the value of the threshold.
               The write operation is not restricted in this document
               and can be done at any time. Changing
               dot3ExtPkgObjectReportThreshold 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 for 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,
               for each queue and for each queue_set. At the ONU, it has
               a distinct value for each queue and for each queue_set."
     DEFVAL { 0 }
     ::= { dot3ExtPkgQueueSetsEntry 3 }


--Optical Interface status tables

dot3ExtPkgOptIfTable OBJECT-TYPE
     SYNTAX     SEQUENCE OF Dot3ExtPkgOptIfEntry
     MAX-ACCESS not-accessible
     STATUS     current
     DESCRIPTION
            "This table defines the control and status indication
             objects for the optical interface of the EPON interface.
             Each object has a row for every virtual link denoted by
             the corresponding ifIndex.
             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
             broadcast LLID.
             Although the optical interface is a physical interface,
             there is a row in the table for each virtual interface.
             The reason for having a separate row for each virtual
             link is that the OLT has a separate link for each one of
             the ONUs. For instance, ONUs could be in different
             distances with different link budgets and different
             receive powers, therefore having different power alarms.
             It is quite similar to a case of different physical
             interfaces."
     ::= { dot3ExtPkgControlObjects 5}

dot3ExtPkgOptIfEntry OBJECT-TYPE
     SYNTAX     Dot3ExtPkgOptIfEntry
     MAX-ACCESS not-accessible
     STATUS     current
     DESCRIPTION
            "An entry in the optical interface table of the EPON
             interface.
             Rows exist for an OLT interface and an ONU interface.
             A row in the table is denoted by the ifIndex of the link
             and it is created when the ifIndex is created.
             The rows in the table for an ONU interface are created
             at system initialization.
             The row in the table corresponding to the OLT ifIndex
             and the row corresponding to the broadcast virtual link
             are created at system initialization.
             A row in the table corresponding to the ifIndex of a
             virtual links is created when a virtual link is
             established (ONU registers) and deleted when the virtual
             link is deleted (ONU deregisters)."
     INDEX      { ifIndex }
     ::= { dot3ExtPkgOptIfTable 1 }

 Dot3ExtPkgOptIfEntry ::=
   SEQUENCE {
     dot3ExtPkgOptIfSuspectedFlag            TruthValue,
     dot3ExtPkgOptIfInputPower               Integer32,
     dot3ExtPkgOptIfLowInputPower            Integer32,
     dot3ExtPkgOptIfHighInputPower           Integer32,
```

```
        dot3ExtPkgOptIfLowerInputPowerThreshold  Integer32,
        dot3ExtPkgOptIfUpperInputPowerThreshold  Integer32,
        dot3ExtPkgOptIfOutputPower               Integer32,
        dot3ExtPkgOptIfLowOutputPower            Integer32,
        dot3ExtPkgOptIfHighOutputPower           Integer32,
        dot3ExtPkgOptIfLowerOutputPowerThreshold Integer32,
        dot3ExtPkgOptIfUpperOutputPowerThreshold Integer32,
        dot3ExtPkgOptIfSignalDetect              TruthValue,
        dot3ExtPkgOptIfTransmitAlarm             TruthValue,
        dot3ExtPkgOptIfTransmitEnable            TruthValue
        }

dot3ExtPkgOptIfSuspectedFlag OBJECT-TYPE
  SYNTAX  TruthValue
  MAX-ACCESS  read-only
  STATUS  current
  DESCRIPTION
    "This object is a reliability indication.
     If true, the data in this entry may be unreliable.
     This object is applicable for an OLT and an ONU. At the
     OLT, it has a distinct value for each virtual interface."
  ::= { dot3ExtPkgOptIfEntry 1 }

dot3ExtPkgOptIfInputPower OBJECT-TYPE
  SYNTAX  Integer32
  UNITS  "0.1 dbm"
  MAX-ACCESS  read-only
  STATUS  current
  DESCRIPTION
    "The optical power monitored at the input.
     This object is applicable for an OLT and an ONU. At the
     OLT, it has a distinct value for each virtual interface."
::= { dot3ExtPkgOptIfEntry 2 }

dot3ExtPkgOptIfLowInputPower OBJECT-TYPE
  SYNTAX  Integer32
  UNITS  "0.1 dbm"
  MAX-ACCESS  read-only
  STATUS  current
  DESCRIPTION
    "The lowest optical power monitored at the input during the
     current 15-minute interval.
     This object is applicable for an OLT and an ONU. At the
     OLT, it has a distinct value for each virtual interface."
  ::= { dot3ExtPkgOptIfEntry 3 }
dot3ExtPkgOptIfHighInputPower OBJECT-TYPE
  SYNTAX  Integer32
  UNITS  "0.1 dbm"
  MAX-ACCESS  read-only
  STATUS  current
  DESCRIPTION
    "The highest optical power monitored at the input during the
     current 15-minute interval.
     This object is applicable for an OLT and an ONU. At the
     OLT, it has a distinct value for each virtual interface."
  ::= { dot3ExtPkgOptIfEntry 4 }

dot3ExtPkgOptIfLowerInputPowerThreshold OBJECT-TYPE
  SYNTAX  Integer32
  UNITS  "0.1 dbm"
  MAX-ACCESS  read-write
  STATUS  current
  DESCRIPTION
    "The lower limit threshold on input power. If
     dot3ExtPkgOptIfInputPower drops to this value or below,
     a Threshold Crossing Alert (TCA) should be sent.
     Reading will present the threshold value. Writing will
     set the value of the threshold.
     The write operation is not restricted in this document
     and can be done at any time. Changing
     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.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
   ::= { dot3ExtPkgOptIfEntry 5 }


dot3ExtPkgOptIfUpperInputPowerThreshold OBJECT-TYPE
   SYNTAX  Integer32
   UNITS  "0.1 dbm"
   MAX-ACCESS  read-write
   STATUS  current
   DESCRIPTION
     "The upper limit threshold on input power. If
      dot3ExtPkgOptIfInputPower reaches or exceeds this value,
      a Threshold Crossing Alert (TCA) should be sent.
      Reading will present the threshold value. Writing will
      set the value of the threshold.
      The write operation is not restricted in this document
      and can be done at any time. Changing
      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.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
   ::= { dot3ExtPkgOptIfEntry 6 }


dot3ExtPkgOptIfOutputPower OBJECT-TYPE
   SYNTAX  Integer32
   UNITS  "0.1 dbm"
   MAX-ACCESS  read-only
   STATUS  current
   DESCRIPTION
     "The optical power monitored at the output.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
   ::= { dot3ExtPkgOptIfEntry 7 }


dot3ExtPkgOptIfLowOutputPower OBJECT-TYPE
   SYNTAX  Integer32
   UNITS  "0.1 dbm"
   MAX-ACCESS  read-only
   STATUS  current
   DESCRIPTION
     "The lowest optical power monitored at the output during the
      current 15-minute interval.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
   ::= { dot3ExtPkgOptIfEntry 8 }


dot3ExtPkgOptIfHighOutputPower OBJECT-TYPE
   SYNTAX  Integer32
   UNITS  "0.1 dbm"
   MAX-ACCESS  read-only
   STATUS  current
   DESCRIPTION
     "The highest optical power monitored at the output during the
      current 15-minute interval.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
   ::= { dot3ExtPkgOptIfEntry 9 }


dot3ExtPkgOptIfLowerOutputPowerThreshold OBJECT-TYPE
   SYNTAX  Integer32
   UNITS  "0.1 dbm"
   MAX-ACCESS  read-write
   STATUS  current
   DESCRIPTION
     "The lower limit threshold on output power. If
      dot3ExtPkgOptIfOutputPower drops to this value or below,
      a Threshold Crossing Alert (TCA) should be sent.
      Reading will present the threshold value. Writing will
```

```
      set the value of the threshold.
      The write operation is not restricted in this document
      and can be done at any time. Changing
      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.
      This object is applicable for an OLT and an ONU. At the
      OLT, it has a distinct value for each virtual interface."
  ::= { dot3ExtPkgOptIfEntry 10 }

dot3ExtPkgOptIfUpperOutputPowerThreshold OBJECT-TYPE
  SYNTAX  Integer32
  UNITS  "0.1 dbm"
  MAX-ACCESS  read-write
  STATUS  current
  DESCRIPTION
    "The upper limit threshold on output power. If
     dot3ExtPkgOptIfOutputPower reaches or exceeds this value,
     a Threshold Crossing Alert (TCA) should be sent.
     Reading will present the threshold value. Writing will
     set the value of the threshold.
     The write operation is not restricted in this document
     and can be done at any time. Changing
     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 of the
     users connected to the respective EPON interface, depending on
     the system action on such an alert.
     This object is applicable for an OLT and an ONU. At the
     OLT, it has a distinct value for each virtual interface."
  ::= { dot3ExtPkgOptIfEntry 11 }

dot3ExtPkgOptIfSignalDetect OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "When getting true(1), there is a valid optical signal at
             the receive that is above the optical power level for
             signal detection. When getting false(2) the optical
             signal at the receive is below the optical power level
             for signal detection.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface."
    DEFVAL { false }
    ::= { dot3ExtPkgOptIfEntry 12 }

dot3ExtPkgOptIfTransmitAlarm OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
            "When getting true(1) there is a non-valid optical signal
             at the transmit of the interface, either a higher level
             or lower level than expected. When getting false(2) the
             optical signal at the transmit is valid and in the
             required range.
             This object is applicable for an OLT and an ONU. At the
             OLT, it has a distinct value for each virtual interface."
    DEFVAL { false }
    ::= { dot3ExtPkgOptIfEntry 13 }

dot3ExtPkgOptIfTransmitEnable OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS  read-write
    STATUS  current
    DESCRIPTION
            "Setting this object to true(1) will cause the optical
             interface to start transmission (according to the
             control protocol specified for the logical interface).
             Setting this object to false(2) will cause the
```

```
                interface to stop the optical transmission.
                When getting true(1), the optical interface is in
                transmitting mode (obeying to the logical control
                protocol).
                When getting false(2), the optical interface is not in
                transmitting mode.
                The write operation is not restricted in this document
                and can be done at any time. Changing
                dot3ExtPkgOptIfTransmitEnable state can lead to a halt
                in the optical transmission of the respective interface
                leading to an interruption of service of the users
                connected to the respective EPON interface.
                The object is relevant when the admin state of the
                interface is active as set by the dot3MpcpAdminState.
                This object is applicable for an OLT and an ONU. At the
                OLT it, has a distinct value for each virtual interface."
        DEFVAL { false }
        ::= { dot3ExtPkgOptIfEntry 14 }


        --
        -- The MulticastIDs Table
        --
dot3RecognizedMulticastIDsTable OBJECT-TYPE
    SYNTAX     SEQUENCE OF Dot3RecognizedMulticastIDsEntry
    MAX-ACCESS not-accessible
    STATUS     current
    DESCRIPTION
            "A table of MulticastIDs to be recognized by this device."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.25."
    ::= { dot3EponObjects 5 }

dot3RecognizedMulticastIDsEntry OBJECT-TYPE
    SYNTAX     Dot3RecognizedMulticastIDsEntry
    MAX-ACCESS not-accessible
    STATUS     current
    DESCRIPTION
            "An entry in the table of MulticastIDs to be recognized by this
             device."
    INDEX     { ifIndex, dot3RecognizedMulticastIDIndex }
    ::= { dot3RecognizedMulticastIDsTable 1 }

Dot3RecognizedMulticastIDsEntry ::=
    SEQUENCE {
            dot3RecognizedMulticastIDIndex    Unsigned32,
            dot3RecognizedMulticastID         Unsigned32
             }

dot3RecognizedMulticastIDIndex OBJECT-TYPE
    SYNTAX     Unsigned32 (0..127)
    MAX-ACCESS not-accessible
    STATUS     current
    DESCRIPTION
            "An index into the table of MulticastIDs to be recognized by this
             device."
    ::= { dot3RecognizedMulticastIDsEntry 1 }

dot3RecognizedMulticastID OBJECT-TYPE
    SYNTAX     Unsigned32
    MAX-ACCESS read-write
    STATUS     current
    DESCRIPTION
            "An Uunsigned32 representing a single MulticastID to be recognized
             by this device."
    REFERENCE   "IEEE Std 802.3, 30.3.5.1.25."
    ::= { dot3RecognizedMulticastIDsEntry 2 }

  -- Conformance statements

  -- Conformance Groups

  dot3EponGroups      OBJECT IDENTIFIER ::= { dot3EponConformance 1 }

  dot3MpcpGroupBase OBJECT-GROUP
```

```
    OBJECTS {
            dot3MpcpOperStatus,
            dot3MpcpAdminState,
            dot3MpcpMode,
            dot3MpcpSyncTime,
            dot3MpcpLinkID,
            dot3MpcpRemoteMACAddress,
            dot3MpcpRegistrationState,
            dot3MpcpMaximumPendingGrants,
            dot3MpcpTransmitElapsed,
            dot3MpcpReceiveElapsed,
            dot3MpcpRoundTripTime
    }
    STATUS  current
    DESCRIPTION
            "A collection of objects of dot3 Mpcp Control entity state
            definition. Objects are per LLID."
    ::= { dot3EponGroups 1 }

dot3MpcpGroupStat OBJECT-GROUP
    OBJECTS {
            dot3MpcpMACCtrlFramesTransmitted,
            dot3MpcpMACCtrlFramesReceived,
            dot3MpcpDiscoveryWindowsSent,
            dot3MpcpDiscoveryTimeout,
            dot3MpcpTxRegRequest,
            dot3MpcpRxRegRequest,
            dot3MpcpTxRegAck,
            dot3MpcpRxRegAck,
            dot3MpcpTxReport,
            dot3MpcpRxReport,
            dot3MpcpTxGate,
            dot3MpcpRxGate,
            dot3MpcpTxRegister,
            dot3MpcpRxRegister
    }
    STATUS  current
    DESCRIPTION
            "A collection of objects of dot3 Mpcp Statistics.
             Objects are per LLID."
    ::= { dot3EponGroups 2 }
dot3OmpeGroupID OBJECT-GROUP
    OBJECTS {
            dot3OmpEmulationType

    }
    STATUS  current
    DESCRIPTION
            "A collection of objects of dot3 OMP emulation entity
             state definition. Objects are per LLID."
    ::= { dot3EponGroups 3 }

dot3OmpeGroupStat OBJECT-GROUP
    OBJECTS {
            dot3OmpEmulationSLDErrors,
            dot3OmpEmulationCRC8Errors,
            dot3OmpEmulationBadLLID,
            dot3OmpEmulationGoodLLID,
            dot3OmpEmulationOnuPonCastLLID,
            dot3OmpEmulationOltPonCastLLID,
            dot3OmpEmulationBroadcastBitNotOnuLlid,
            dot3OmpEmulationOnuLLIDNotBroadcast,
            dot3OmpEmulationBroadcastBitPlusOnuLlid,
            dot3OmpEmulationNotBroadcastBitNotOnuLlid
    }
    STATUS  current
    DESCRIPTION
            "A collection of objects of dot3 OMP emulation
             Statistics. Objects are per LLID."
    ::= { dot3EponGroups 4 }

dot3EponFecGroupAll OBJECT-GROUP
    OBJECTS {
```

```
                dot3EponFecPCSCodingViolation,
                dot3EponFecAbility,
                dot3EponFecMode,
                dot3EponFecCorrectedBlocks,
                dot3EponFecUncorrectableBlocks,
                dot3EponFecBufferHeadCodingViolation
        }
        STATUS  current
        DESCRIPTION
                "A collection of objects of dot3 FEC group control and
                statistics. Objects are per LLID."
        ::= { dot3EponGroups 5 }

dot3ExtPkgGroupControl OBJECT-GROUP
        OBJECTS {
                dot3ExtPkgObjectReset,
                dot3ExtPkgObjectPowerDown,
                dot3ExtPkgObjectNumberOfLLIDs,
                dot3ExtPkgObjectFecEnabled,
                dot3ExtPkgObjectReportMaximumNumQueues,
                dot3ExtPkgObjectRegisterAction
        }
        STATUS  current
        DESCRIPTION
                "A collection of objects of dot3ExtPkg control
                 definition. Objects are per LLID."
        ::= { dot3EponGroups 6 }

dot3ExtPkgGroupQueue OBJECT-GROUP
        OBJECTS {
         dot3ExtPkgObjectReportNumThreshold,
         dot3ExtPkgObjectReportMaximumNumThreshold,
         dot3ExtPkgStatTxFramesQueue,
         dot3ExtPkgStatRxFramesQueue,
         dot3ExtPkgStatDroppedFramesQueue
        }
        STATUS  current
        DESCRIPTION
                "A collection of objects of dot3ExtPkg Queue
                 control. Objects are per LLID, per queue."
        ::= { dot3EponGroups 7 }

dot3ExtPkgGroupQueueSets OBJECT-GROUP
        OBJECTS {
         dot3ExtPkgObjectReportThreshold
        }
        STATUS  current
        DESCRIPTION
                "A collection of objects of dot3ExtPkg queue_set
                 control. Objects are per LLID, per queue, per
                 queue_set."
        ::= { dot3EponGroups 8 }

dot3ExtPkgGroupOptIf OBJECT-GROUP
        OBJECTS {
         dot3ExtPkgOptIfSuspectedFlag,
         dot3ExtPkgOptIfInputPower,
         dot3ExtPkgOptIfLowInputPower,
         dot3ExtPkgOptIfHighInputPower,
         dot3ExtPkgOptIfLowerInputPowerThreshold,
         dot3ExtPkgOptIfUpperInputPowerThreshold,
         dot3ExtPkgOptIfOutputPower,
         dot3ExtPkgOptIfLowOutputPower,
         dot3ExtPkgOptIfHighOutputPower,
         dot3ExtPkgOptIfLowerOutputPowerThreshold,
         dot3ExtPkgOptIfUpperOutputPowerThreshold,
         dot3ExtPkgOptIfSignalDetect,
         dot3ExtPkgOptIfTransmitAlarm,
         dot3ExtPkgOptIfTransmitEnable
         }
        STATUS  current
        DESCRIPTION
                "A collection of objects of control and status indication
```

```
               of the optical interface.
               Objects are per LLID."
        ::= { dot3EponGroups 9 }


dot3EponGroupMulticastIDs OBJECT-GROUP
       OBJECTS {
        dot3RecognizedMulticastID
         }
        STATUS  current
        DESCRIPTION
            "One of a set of MulticastIDs recognized by an EPON interface."
        ::= { dot3EponGroups 10 }


-- Compliance statements

   dot3EponCompliances
        OBJECT IDENTIFIER ::= { dot3EponConformance 2 }

dot3MPCPCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION "The compliance statement for MultiPoint
                  Control Protocol interfaces."

     MODULE  -- this module
     MANDATORY-GROUPS { dot3MpcpGroupBase}

      GROUP        dot3MpcpGroupStat
     DESCRIPTION "This group is mandatory for all MPCP supporting
                  interfaces for statistics collection."
        ::= { dot3EponCompliances 1}

dot3OmpeCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION "The compliance statement for OMPEmulation
                  interfaces."

     MODULE  -- this module
     MANDATORY-GROUPS { dot3OmpeGroupID}

     GROUP        dot3OmpeGroupStat
     DESCRIPTION "This group is mandatory for all OMPemulation
                  supporting interfaces for statistics collection."

        ::= { dot3EponCompliances 2}

dot3EponFecCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION "The compliance statement for FEC EPON interfaces.
                  This group is mandatory for all FEC supporting
                  interfaces for control and statistics collection."

     MODULE  -- this module
     MANDATORY-GROUPS { dot3EponFecGroupAll }

        ::= { dot3EponCompliances 3}

dot3ExtPkgCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION "The compliance statement for EPON Interfaces
                  using the extended package."
     MODULE  -- this module
     MANDATORY-GROUPS { dot3ExtPkgGroupControl }

     GROUP        dot3ExtPkgGroupQueue
     DESCRIPTION " This group is mandatory for all EPON interfaces
                  supporting REPORT queue management of the extended
                  package."

     GROUP        dot3ExtPkgGroupQueueSets
     DESCRIPTION " This group is mandatory for all EPON interfaces
                  supporting REPORT queue_sets management of the
                  extended package."
```

```
    GROUP        dot3ExtPkgGroupOptIf
    DESCRIPTION "This group is mandatory for all EPON interfaces
                 supporting optical interfaces management,
                 of the extended package."

    ::= { dot3EponCompliances 4}

dot3EponMulticastIDsCompliance MODULE-COMPLIANCE
    STATUS       current
    DESCRIPTION "The compliance statement for EPON Interfaces that
                 support MulticastIDs."
    MODULE  -- this module
    MANDATORY-GROUPS { dot3EponGroupMulticastIDs }

    ::= { dot3EponCompliances 5 }

END
```