```
IEEE8023-EtherLike-MIB DEFINITIONS ::= BEGIN

    IMPORTS
        MODULE-IDENTITY, OBJECT-TYPE,
        Integer32, Counter32, Counter64, org, Unsigned32
            FROM SNMPv2-SMI
        MODULE-COMPLIANCE, OBJECT-GROUP
            FROM SNMPv2-CONF
        TruthValue
            FROM SNMPv2-TC
        ifIndex, InterfaceIndex
            FROM IF-MIB;

    ieee8023etherMIB 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 MIB module to describe generic objects for
                   Ethernet-like network interfaces."

       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
          in RFC 3635."

       ::= { org ieee(111) standards-association-numbers-series-standards(2)
             lan-man-stds(802) ieee802dot3(3) ieee802dot3dot1mibs(1) 10 }


    ieee8023etherMIBObjects OBJECT IDENTIFIER ::= { ieee8023etherMIB 1 }

    -- the Ethernet-like Statistics group

    dot3StatsTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dot3StatsEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION "Statistics for a collection of Ethernet-like
                    interfaces attached to a particular system.
                    There will be one row in this table for each
                    Ethernet-like interface in the system."
        ::= { ieee8023etherMIBObjects 2 }

    dot3StatsEntry OBJECT-TYPE
        SYNTAX      Dot3StatsEntry
        MAX-ACCESS not-accessible
        STATUS      current
        DESCRIPTION "Statistics for a particular interface to an
                    Ethernet-like medium."
        INDEX       { dot3StatsIndex }
        ::= { dot3StatsTable 1 }

    Dot3StatsEntry ::=
        SEQUENCE {

            dot3StatsIndex                  InterfaceIndex,
            dot3StatsAlignmentErrors        Counter32,
            dot3StatsFCSErrors              Counter32,
```

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           dot3StatsSingleCollisionFrames       Counter32,
           dot3StatsMultipleCollisionFrames     Counter32,
           dot3StatsSQETestErrors               Counter32,
           dot3StatsDeferredTransmissions       Counter32,
           dot3StatsLateCollisions              Counter32,
           dot3StatsExcessiveCollisions         Counter32,
           dot3StatsInternalMacTransmitErrors   Counter32,
           dot3StatsCarrierSenseErrors          Counter32,
           dot3StatsFrameTooLongs               Counter32,
           dot3StatsInternalMacReceiveErrors    Counter32,
           dot3StatsSymbolErrors                Counter32,
           dot3StatsDuplexStatus                INTEGER,
           dot3StatsRateControlAbility          TruthValue,
           dot3StatsRateControlStatus           INTEGER,
           dot3StatsMaxFrameLength              INTEGER
       }

dot3StatsIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An index value that uniquely identifies an
                interface to an Ethernet-like medium. The
                interface identified by a particular value of
                this index is the same interface as identified
                by the same value of ifIndex."
    REFERENCE   "IETF RFC 2863, ifIndex"
    ::= { dot3StatsEntry 1 }

dot3StatsAlignmentErrors OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of frames received on a particular
                interface that are not an integral number of
                octets in length and do not pass the FCS check.

                The count represented by an instance of this
                object is incremented when the alignmentError
                status is returned by the MAC service to the
                LLC (or other MAC user). Received frames for
                which multiple error conditions pertain are,
                according to the conventions of IEEE 802.3
                Layer Management, counted exclusively according
                to the error status presented to the LLC.

                This counter does not increment for group
                encoding schemes greater than 4 bits per group.

                For interfaces operating at 10 Gb/s, this
                counter can roll over in less than 5 minutes if
                it is incrementing at its maximum rate. Since
                that amount of time could be less than a
                management station's poll cycle time, in order
                to avoid a loss of information, a management
                station is advised to poll the
                dot3HCStatsAlignmentErrors object for 10 Gb/s
                or faster interfaces.

                Discontinuities in the value of this counter can
                occur at re-initialization of the management
                system, and at other times as indicated by the
                value of ifCounterDiscontinuityTime."
    REFERENCE   "IEEE Std 802.3, 30.3.1.1.7,
                aAlignmentErrors"
    ::= { dot3StatsEntry 2 }

dot3StatsFCSErrors OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of frames received on a particular
                interface that are an integral number of octets
```

in length but do not pass the FCS check. This
count does not include frames received with
frame-too-long or frame-too-short error.

The count represented by an instance of this
object is incremented when the frameCheckError
status is returned by the MAC service to the
LLC (or other MAC user). Received frames for
which multiple error conditions pertain are,
according to the conventions of IEEE 802.3
Layer Management, counted exclusively according
to the error status presented to the LLC.

Note: Coding errors detected by the Physical
Layer for speeds above 10 Mb/s will cause the
frame to fail the FCS check.

For interfaces operating at 10 Gb/s, this
counter can roll over in less than 5 minutes if

it is incrementing at its maximum rate. Since
that amount of time could be less than a
management station's poll cycle time, in order
to avoid a loss of information, a management
station is advised to poll the
dot3HCStatsFCSErrors object for 10 Gb/s or
faster interfaces.

Discontinuities in the value of this counter can
occur at re-initialization of the management
system, and at other times as indicated by the
value of ifCounterDiscontinuityTime."
          REFERENCE   "IEEE Std 802.3, 30.3.1.1.6,
                       aFrameCheckSequenceErrors."
          ::= { dot3StatsEntry 3 }

dot3StatsSingleCollisionFrames OBJECT-TYPE
          SYNTAX   Counter32
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION "A count of frames that are involved in a single
                       collision, and are subsequently transmitted
                       successfully.

                       A frame that is counted by an instance of this
                       object is also counted by the corresponding
                       instance of either the ifOutUcastPkts,
                       ifOutMulticastPkts, or ifOutBroadcastPkts,
                       and is not counted by the corresponding
                       instance of the dot3StatsMultipleCollisionFrames
                       object.

                       This counter does not increment when the
                       interface is operating in full-duplex mode.

                       Discontinuities in the value of this counter can
                       occur at re-initialization of the management
                       system, and at other times as indicated by the
                       value of ifCounterDiscontinuityTime."
          REFERENCE   "IEEE Std 802.3, 30.3.1.1.3,
                       aSingleCollisionFrames."
          ::= { dot3StatsEntry 4 }

dot3StatsMultipleCollisionFrames OBJECT-TYPE
          SYNTAX   Counter32
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION "A count of frames that are involved in more

                       than one collision and are subsequently
                       transmitted successfully.

                       A frame that is counted by an instance of this

```
                    object is also counted by the corresponding
                    instance of either the ifOutUcastPkts,
                    ifOutMulticastPkts, or ifOutBroadcastPkts,
                    and is not counted by the corresponding
                    instance of the dot3StatsSingleCollisionFrames
                    object.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.4,
                    aMultipleCollisionFrames."
        ::= { dot3StatsEntry 5 }

dot3StatsSQETestErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of times that the SQE TEST ERROR
                    is received on a particular interface. The
                    SQE TEST ERROR is set in accordance with the
                    rules for verification of the SQE detection
                    mechanism in the PLS Carrier Sense Function as
                    described in IEEE Std 802.3, 7.2.4.6.

                    This counter does not increment on interfaces
                    operating at speeds greater than 10 Mb/s, or on
                    interfaces operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 7.2.4.6, also 30.3.2.1.4,
                    aSQETestErrors."
        ::= { dot3StatsEntry 6 }

dot3StatsDeferredTransmissions OBJECT-TYPE
        SYNTAX      Counter32

        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of frames for which the first
                    transmission attempt on a particular interface
                    is delayed because the medium is busy.

                    The count represented by an instance of this
                    object does not include frames involved in
                    collisions.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.9,
                    aFramesWithDeferredXmissions."
        ::= { dot3StatsEntry 7 }

dot3StatsLateCollisions OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The number of times that a collision is
                    detected on a particular interface later than
                    one slotTime into the transmission of a packet.
```

```
                    A (late) collision included in a count
                    represented by an instance of this object is
                    also considered as a (generic) collision for
                    purposes of other collision-related
                    statistics.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.10,
                    aLateCollisions."
        ::= { dot3StatsEntry 8 }

    dot3StatsExcessiveCollisions OBJECT-TYPE
        SYNTAX      Counter32

        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of frames for which transmission on a
                    particular interface fails due to excessive
                    collisions.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.11,
                    aFramesAbortedDueToXSColls."
        ::= { dot3StatsEntry 9 }

    dot3StatsInternalMacTransmitErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of frames for which transmission on a
                    particular interface fails due to an internal
                    MAC sublayer transmit error. A frame is only
                    counted by an instance of this object if it is
                    not counted by the corresponding instance of
                    either the dot3StatsLateCollisions object, the
                    dot3StatsExcessiveCollisions object, or the
                    dot3StatsCarrierSenseErrors object.

                    The precise meaning of the count represented by
                    an instance of this object is implementation-
                    specific. In particular, an instance of this
                    object may represent a count of transmission
                    errors on a particular interface that are not
                    otherwise counted.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 5 minutes if
                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCStatsInternalMacTransmitErrors object for
                    10 Gb/s or faster interfaces.

                    Discontinuities in the value of this counter can

                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.12,
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```
                            aFramesLostDueToIntMACXmitError."
        ::= { dot3StatsEntry 10 }

    dot3StatsCarrierSenseErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The number of times that the carrier sense
                    condition was lost or never asserted when
                    attempting to transmit a frame on a particular
                    interface.

                    The count represented by an instance of this
                    object is incremented at most once per
                    transmission attempt, even if the carrier sense
                    condition fluctuates during a transmission
                    attempt.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.13,
                    aCarrierSenseErrors."
        ::= { dot3StatsEntry 11 }

    -- { dot3StatsEntry 12 } is not assigned

    dot3StatsFrameTooLongs OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of frames received on a particular
                    interface that exceed the maximum permitted
                    frame size.

                    The count represented by an instance of this
                    object is incremented when the frameTooLong
                    status is returned by the MAC service to the
                    LLC (or other MAC user). Received frames for
                    which multiple error conditions pertain are,

                    according to the conventions of IEEE 802.3
                    Layer Management, counted exclusively according
                    to the error status presented to the LLC.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 80 minutes if
                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCStatsFrameTooLongs object for 10 Gb/s
                    or faster interfaces.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.25,
                    aFrameTooLongErrors."
        ::= { dot3StatsEntry 13 }

    -- { dot3StatsEntry 14 } is not assigned

    -- { dot3StatsEntry 15 } is not assigned

    dot3StatsInternalMacReceiveErrors OBJECT-TYPE
        SYNTAX      Counter32
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        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of frames for which reception on a
                    particular interface fails due to an internal
                    MAC sublayer receive error. A frame is only
                    counted by an instance of this object if it is
                    not counted by the corresponding instance of
                    either the dot3StatsFrameTooLongs object, the
                    dot3StatsAlignmentErrors object, or the
                    dot3StatsFCSErrors object.

                    The precise meaning of the count represented by
                    an instance of this object is implementation-
                    specific. In particular, an instance of this
                    object may represent a count of receive errors
                    on a particular interface that are not
                    otherwise counted.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 5 minutes if

                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCStatsInternalMacReceiveErrors object for
                    10 Gb/s or faster interfaces.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.15,
                        aFramesLostDueToIntMACRcvError."
        ::= { dot3StatsEntry 16 }

    dot3StatsSymbolErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "For an interface operating at 100 Mb/s, the
                    number of times there was an invalid data symbol
                    when a valid carrier was present.

                    For an interface operating in half-duplex mode
                    at 1000 Mb/s, the number of times the receiving
                    media is non-idle (a carrier event) for a period
                    of time equal to or greater than slotTime, and
                    during which there was at least one occurrence
                    of an event that causes the PHY to indicate
                    'Data reception error' or 'carrier extend error'
                    on the GMII.

                    For an interface operating in full-duplex mode
                    at 1000 Mb/s, the number of times the receiving
                    media is non-idle (a carrier event) for a period
                    of time equal to or greater than minFrameSize,
                    and during which there was at least one
                    occurrence of an event that causes the PHY to
                    indicate 'Data reception error' on the GMII.

                    For an interface operating at 10 Gb/s, 40 Gb/s, and
                    100 Gb/s, it is a count of the number of times the
                    receiving media is non-idle (the time between the
                    Start of Packet Delimiter and the End of Packet
                    Delimiter) for a period of time equal to or greater
                    than minFrameSize, and during which there was at least
                    one occurrence of an event that causes the PHY to
                    indicate 'Receive Error' on the XGMII, the XLGMII,
                    or the CGMII.

                    The count represented by an instance of this
```

```
                    object is incremented at most once per carrier
                    event, even if multiple symbol errors occur
                    during the carrier event. This count does
                    not increment if a collision is present.

                    This counter does not increment when the
                    interface is operating at 10 Mb/s.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 5 minutes if
                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCStatsSymbolErrors object for 10 Gb/s
                    or faster interfaces.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.2.1.5,
                    aSymbolErrorDuringCarrier."
        ::= { dot3StatsEntry 17 }

dot3StatsDuplexStatus OBJECT-TYPE
        SYNTAX      INTEGER {
                        unknown(1),
                        halfDuplex(2),
                        fullDuplex(3)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The current mode of operation of the MAC
                    entity. 'unknown' indicates that the current
                    duplex mode could not be determined.

                    Management control of the duplex mode is
                    accomplished through the MAU MIB. When
                    an interface does not support autonegotiation,
                    or when autonegotiation is not enabled, the
                    duplex mode is controlled using
                    ifMauDefaultType. When autonegotiation is
                    supported and enabled, duplex mode is controlled
                    using ifMauAutoNegAdvertisedBits. In either
                    case, the currently operating duplex mode is
                    reflected both in this object and in ifMauType.

                    Note that this object provides redundant
                    information with ifMauType. Normally, redundant
                    objects are discouraged. However, in this
                    instance, it allows a management application to
                    determine the duplex status of an interface
                    without having to know every possible value of
                    ifMauType. This was felt to be sufficiently
                    valuable to justify the redundancy."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.32,
                    aDuplexStatus."
        ::= { dot3StatsEntry 18 }

dot3StatsRateControlAbility OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "'true' for interfaces operating at speeds above
                    1000 Mb/s that support Rate Control through
                    lowering the average data rate of the MAC
                    sublayer, with frame granularity, and 'false'
                    otherwise."
        REFERENCE   "IEEE Std 802.3, 30.3.1.1.33,
                    aRateControlAbility."
        ::= { dot3StatsEntry 19 }
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dot3StatsRateControlStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                    rateControlOff(1),
                    rateControlOn(2),
                    unknown(3)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "The current Rate Control mode of operation of
                the MAC sublayer of this interface."
    REFERENCE   "IEEE Std 802.3, 30.3.1.1.34,
                aRateControlStatus."
    ::= { dot3StatsEntry 20 }

dot3StatsMaxFrameLength OBJECT-TYPE
    SYNTAX      INTEGER {
                    unknown(1),
                    baseFrame(2),
                    qTaggedFrame(3),
                    envelopeFrame(4)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "This indicates the MAC frame length at
                 which the dot3StatsFrameTooLongs counter is
                 incremented."
    REFERENCE   "IEEE Std 802.3, 30.3.1.1.37, aMaxFrameLength."
    ::= { dot3StatsEntry 21 }

-- the Ethernet-like Collision Statistics group

-- Implementation of this group is optional; it is appropriate
-- for all systems which have the necessary metering

dot3CollTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot3CollEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "A collection of collision histograms for a
                particular set of interfaces."
    REFERENCE   "IEEE Std 802.3, 30.3.1.1.30,
                aCollisionFrames."
    ::= { ieee8023etherMIBObjects 5 }

dot3CollEntry OBJECT-TYPE
    SYNTAX      Dot3CollEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "A cell in the histogram of per-frame
                collisions for a particular interface. An

                instance of this object represents the
                frequency of individual MAC frames for which
                the transmission (successful or otherwise) on a
                particular interface is accompanied by a
                particular number of media collisions."
    INDEX       { ifIndex, dot3CollCount }
    ::= { dot3CollTable 1 }

Dot3CollEntry ::=
    SEQUENCE {
        dot3CollCount        Integer32,
        dot3CollFrequencies  Counter32
    }

-- { dot3CollEntry 1 } is no longer in use

dot3CollCount OBJECT-TYPE
    SYNTAX      Integer32 (1..16)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "The number of per-frame media collisions for
```

```
                    which a particular collision histogram cell
                    represents the frequency on a particular
                    interface."
        ::= { dot3CollEntry 2 }

dot3CollFrequencies OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of individual MAC frames for which the
                    transmission (successful or otherwise) on a
                    particular interface occurs after the
                    frame has experienced exactly the number
                    of collisions in the associated
                    dot3CollCount object.

                    For example, a frame which is transmitted
                    on interface 77 after experiencing
                    exactly 4 collisions would be indicated
                    by incrementing only dot3CollFrequencies.77.4.
                    No other instance of dot3CollFrequencies would
                    be incremented in this example.

                    This counter does not increment when the
                    interface is operating in full-duplex mode.

                    Discontinuities in the value of this counter can

                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        ::= { dot3CollEntry 3 }

dot3ControlTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot3ControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "A table of descriptive and status information
                    about the MAC Control sublayer on the
                    Ethernet-like interfaces attached to a
                    particular system. There will be one row in
                    this table for each Ethernet-like interface in
                    the system which implements the MAC Control
                    sublayer. If some, but not all, of the
                    Ethernet-like interfaces in the system implement
                    the MAC Control sublayer, there will be fewer
                    rows in this table than in the dot3StatsTable."
        ::= { ieee8023etherMIBObjects 9 }

dot3ControlEntry OBJECT-TYPE
    SYNTAX      Dot3ControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An entry in the table, containing information
                    about the MAC Control sublayer on a single
                    Ethernet-like interface."
    INDEX       { dot3StatsIndex }
        ::= { dot3ControlTable 1 }

Dot3ControlEntry ::=
    SEQUENCE {
        dot3ControlFunctionsSupported       BITS,
        dot3ControlInUnknownOpcodes         Counter32,
        dot3HCControlInUnknownOpcodes       Counter64
    }

dot3ControlFunctionsSupported OBJECT-TYPE
    SYNTAX      BITS {
                    pause(0),   _____ -- 802.3 pause flow control
                    mpcp(1),    _____ -- 802.3 multi-point control protocol
                    pfc(2),     _____ -- 802.3 priority-based flow control
                    extension(3)       -- 802.3 extension MAC control frame
                }
```

```
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION "A list of the possible MAC Control functions
                      implemented for this interface."
          REFERENCE   "IEEE Std 802.3, 30.3.3.2,
                      aMACControlFunctionsSupported."

          ::= { dot3ControlEntry 1 }

   dot3ControlInUnknownOpcodes OBJECT-TYPE
          SYNTAX      Counter32
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION "A count of MAC Control frames received on this
                      interface that contain an opcode that is not
                      supported by this device.

                      For interfaces operating at 10 Gb/s, this
                      counter can roll over in less than 5 minutes if
                      it is incrementing at its maximum rate. Since
                      that amount of time could be less than a
                      management station's poll cycle time, in order
                      to avoid a loss of information, a management
                      station is advised to poll the
                      dot3HCControlInUnknownOpcodes object for 10 Gb/s
                      or faster interfaces.

                      Discontinuities in the value of this counter can
                      occur at re-initialization of the management
                      system, and at other times as indicated by the
                      value of ifCounterDiscontinuityTime."
          REFERENCE   "IEEE Std 802.3, 30.3.3.5,
                      aUnsupportedOpcodesReceived"
          ::= { dot3ControlEntry 2 }

   dot3HCControlInUnknownOpcodes OBJECT-TYPE
          SYNTAX      Counter64
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION "A count of MAC Control frames received on this
                      interface that contain an opcode that is not
                      supported by this device.

                      This counter is a 64-bit version of
                      dot3ControlInUnknownOpcodes. It should be used
                      on interfaces operating at 10 Gb/s or faster.

                      Discontinuities in the value of this counter can
                      occur at re-initialization of the management
                      system, and at other times as indicated by the
                      value of ifCounterDiscontinuityTime."
          REFERENCE   "IEEE Std 802.3, 30.3.3.5,
                      aUnsupportedOpcodesReceived"
          ::= { dot3ControlEntry 3 }


   dot3PauseTable OBJECT-TYPE
          SYNTAX      SEQUENCE OF Dot3PauseEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION "A table of descriptive and status information
                      about the MAC Control PAUSE function on the
                      Ethernet-like interfaces attached to a
                      particular system. There will be one row in
                      this table for each Ethernet-like interface in
                      the system which supports the MAC Control PAUSE
                      function (i.e., the 'pause' bit in the
                      corresponding instance of
                      dot3ControlFunctionsSupported is set). If some,
                      but not all, of the Ethernet-like interfaces in
                      the system implement the MAC Control PAUSE
                      function (for example, if some interfaces only
                      support half-duplex), there will be fewer rows
```

```
                in this table than in the dot3StatsTable."
    ::= { ieee8023etherMIBObjects 10 }

dot3PauseEntry OBJECT-TYPE
    SYNTAX      Dot3PauseEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An entry in the table, containing information
                about the MAC Control PAUSE function on a single
                Ethernet-like interface."
    INDEX       { dot3StatsIndex }
    ::= { dot3PauseTable 1 }

Dot3PauseEntry ::=

    SEQUENCE {
        dot3PauseAdminMode              INTEGER,
        dot3PauseOperMode               INTEGER,
        dot3InPauseFrames               Counter32,
        dot3OutPauseFrames              Counter32,
        dot3HCInPauseFrames             Counter64,
        dot3HCOutPauseFrames            Counter64
    }

dot3PauseAdminMode OBJECT-TYPE
    SYNTAX      INTEGER {
                    disabled(1),
                    enabledXmit(2),
                    enabledRcv(3),
                    enabledXmitAndRcv(4)
                }

    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION "This object is used to configure the default
                administrative PAUSE mode for this interface.

                This object represents the
                administratively-configured PAUSE mode for this
                interface. If Auto-Negotiation is not enabled
                or is not implemented for the active MAU
                attached to this interface, the value of this
                object determines the operational PAUSE mode
                of the interface whenever it is operating in
                full-duplex mode. In this case, a set to this
                object will force the interface into the
                specified mode.

                If Auto-Negotiation is implemented and enabled
                for the MAU attached to this interface, the
                PAUSE mode for this interface is determined by
                Auto-Negotiation, and the value of this object
                denotes the mode to which the interface will
                automatically revert if/when Auto-Negotiation is
                later disabled. Note that when Auto-Negotiation
                is running, administrative control of the PAUSE
                mode may be accomplished using the
                ifMauAutoNegCapAdvertisedBits object in the
                MAU-MIB module.

                Note that the value of this object is ignored
                when the interface is not operating in
                full-duplex mode.

                An attempt to set this object to
                'enabledXmit(2)' or 'enabledRcv(3)' will fail
                on interfaces that do not support operation
                at greater than 100 Mb/s."
    ::= { dot3PauseEntry 1 }

dot3PauseOperMode OBJECT-TYPE
    SYNTAX      INTEGER {
                    disabled(1),
```

```
                        enabledXmit(2),
                        enabledRcv(3),
                        enabledXmitAndRcv(4)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "This object reflects the PAUSE mode currently

                    in use on this interface, as determined by
                    either (1) the result of the Auto-Negotiation
                    function or (2) if Auto-Negotiation is not
                    enabled or is not implemented for the active MAU
                    attached to this interface, by the value of
                    dot3PauseAdminMode. Interfaces operating at
                    100 Mb/s or less will never return
                    'enabledXmit(2)' or 'enabledRcv(3)'. Interfaces
                    operating in half-duplex mode will return
                    'disabled(1)'. Interfaces on which
                    Auto-Negotiation is enabled but not yet
                    completed should return the value
                    'disabled(1)'."
        ::= { dot3PauseEntry 2 }

dot3InPauseFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of MAC Control frames received on this
                    interface with an opcode indicating the PAUSE
                    operation.

                    This counter does not increment when the
                    interface is operating in half-duplex mode.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 5 minutes if
                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCInPauseFrames object for 10 Gb/s or
                    faster interfaces.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.4.3,
                    aPAUSEMACCtrlFramesReceived."
        ::= { dot3PauseEntry 3 }

dot3OutPauseFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current

        DESCRIPTION "A count of MAC Control frames transmitted on
                    this interface with an opcode indicating the
                    PAUSE operation.

                    This counter does not increment when the
                    interface is operating in half-duplex mode.

                    For interfaces operating at 10 Gb/s, this
                    counter can roll over in less than 5 minutes if
                    it is incrementing at its maximum rate. Since
                    that amount of time could be less than a
                    management station's poll cycle time, in order
                    to avoid a loss of information, a management
                    station is advised to poll the
                    dot3HCOutPauseFrames object for 10 Gb/s or
                    faster interfaces.
```

```
                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.4.2,
                    aPAUSEMACCtrlFramesTransmitted."
        ::= { dot3PauseEntry 4 }

    dot3HCInPauseFrames OBJECT-TYPE
        SYNTAX      Counter64
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of MAC Control frames received on this
                    interface with an opcode indicating the PAUSE
                    operation.

                    This counter does not increment when the
                    interface is operating in half-duplex mode.

                    This counter is a 64-bit version of
                    dot3InPauseFrames. It should be used on
                    interfaces operating at 10 Gb/s or faster.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.4.3,
                    aPAUSEMACCtrlFramesReceived."
        ::= { dot3PauseEntry 5 }


    dot3HCOutPauseFrames OBJECT-TYPE
        SYNTAX      Counter64
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of MAC Control frames transmitted on
                    this interface with an opcode indicating the
                    PAUSE operation.

                    This counter does not increment when the
                    interface is operating in half-duplex mode.

                    This counter is a 64-bit version of
                    dot3OutPauseFrames. It should be used on
                    interfaces operating at 10 Gb/s or faster.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management
                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.4.2,
                    aPAUSEMACCtrlFramesTransmitted."
        ::= { dot3PauseEntry 6 }

    dot3HCStatsTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dot3HCStatsEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION "A table containing 64-bit versions of error
                    counters from the dot3StatsTable. The 32-bit
                    versions of these counters may roll over quite
                    quickly on higher speed Ethernet interfaces.
                    The counters that have 64-bit versions in this
                    table are the counters that apply to full-duplex
                    interfaces, since 10 Gb/s and faster
                    Ethernet-like interfaces do not support
                    half-duplex, and very few 1000 Mb/s
                    Ethernet-like interfaces support half-duplex.

                    Entries in this table are recommended for
                    interfaces capable of operating at 1000 Mb/s or
```

```
                    faster, and are required for interfaces capable
                    of operating at 10 Gb/s or faster. Lower speed
                    Ethernet-like interfaces do not need entries in
                    this table, in which case there may be fewer
                    entries in this table than in the
                    dot3StatsTable. However, implementations
                    containing interfaces with a mix of speeds may
                    choose to implement entries in this table for
                    all Ethernet-like interfaces."
        ::= { ieee8023etherMIBObjects 11 }

dot3HCStatsEntry OBJECT-TYPE
    SYNTAX      Dot3HCStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An entry containing 64-bit statistics for a
                    single Ethernet-like interface."
    INDEX       { dot3StatsIndex }
    ::= { dot3HCStatsTable 1 }

Dot3HCStatsEntry ::=
    SEQUENCE {
        dot3HCStatsAlignmentErrors          Counter64,
        dot3HCStatsFCSErrors                Counter64,
        dot3HCStatsInternalMacTransmitErrors Counter64,
        dot3HCStatsFrameTooLongs            Counter64,
        dot3HCStatsInternalMacReceiveErrors  Counter64,
        dot3HCStatsSymbolErrors             Counter64,
        dot3HCStatsTransmitLPIMicroseconds  Counter64,
        dot3HCStatsReceiveLPIMicroseconds   Counter64,
        dot3HCStatsTransmitLPITransitions   Counter64,
        dot3HCStatsReceiveLPITransitions    Counter64
}

dot3HCStatsAlignmentErrors OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of frames received on a particular
                    interface that are not an integral number of
                    octets in length and do not pass the FCS check.

                    The count represented by an instance of this
                    object is incremented when the alignmentError
                    status is returned by the MAC service to the
                    LLC (or other MAC user). Received frames for
                    which multiple error conditions pertain are,
                    according to the conventions of IEEE 802.3
                    Layer Management, counted exclusively according
                    to the error status presented to the LLC.

                    This counter does not increment for group
                    encoding schemes greater than 4 bits per group.

                    This counter is a 64-bit version of
                    dot3StatsAlignmentErrors. It should be used
                    on interfaces operating at 10 Gb/s or faster.

                    Discontinuities in the value of this counter can
                    occur at re-initialization of the management

                    system, and at other times as indicated by the
                    value of ifCounterDiscontinuityTime."
    REFERENCE   "IEEE Std 802.3, 30.3.1.1.7,
                    aAlignmentErrors"
        ::= { dot3HCStatsEntry 1 }

dot3HCStatsFCSErrors OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of frames received on a particular
                    interface that are an integral number of octets
```

```
                   in length but do not pass the FCS check. This
                   count does not include frames received with
                   frame-too-long or frame-too-short error.

                   The count represented by an instance of this
                   object is incremented when the frameCheckError
                   status is returned by the MAC service to the
                   LLC (or other MAC user). Received frames for
                   which multiple error conditions pertain are,
                   according to the conventions of IEEE 802.3
                   Layer Management, counted exclusively according
                   to the error status presented to the LLC.

                   Note:  Coding errors detected by the Physical
                   Layer for speeds above 10 Mb/s will cause the
                   frame to fail the FCS check.

                   This counter is a 64-bit version of
                   dot3StatsFCSErrors. It should be used on
                   interfaces operating at 10 Gb/s or faster.

                   Discontinuities in the value of this counter can
                   occur at re-initialization of the management
                   system, and at other times as indicated by the
                   value of ifCounterDiscontinuityTime."
        REFERENCE  "IEEE Std 802.3, 30.3.1.1.6,
                   aFrameCheckSequenceErrors."
        ::= { dot3HCStatsEntry 2 }

   dot3HCStatsInternalMacTransmitErrors OBJECT-TYPE
        SYNTAX     Counter64
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION "A count of frames for which transmission on a
                   particular interface fails due to an internal
                   MAC sublayer transmit error. A frame is only

                   counted by an instance of this object if it is
                   not counted by the corresponding instance of
                   either the dot3StatsLateCollisions object, the
                   dot3StatsExcessiveCollisions object, or the
                   dot3StatsCarrierSenseErrors object.

                   The precise meaning of the count represented by
                   an instance of this object is implementation-
                   specific. In particular, an instance of this
                   object may represent a count of transmission
                   errors on a particular interface that are not
                   otherwise counted.

                   This counter is a 64-bit version of
                   dot3StatsInternalMacTransmitErrors. It should
                   be used on interfaces operating at 10 Gb/s or
                   faster.

                   Discontinuities in the value of this counter can
                   occur at re-initialization of the management
                   system, and at other times as indicated by the
                   value of ifCounterDiscontinuityTime."
        REFERENCE  "IEEE Std 802.3, 30.3.1.1.12,
                   aFramesLostDueToIntMACXmitError."
        ::= { dot3HCStatsEntry 3 }

   dot3HCStatsFrameTooLongs OBJECT-TYPE
        SYNTAX     Counter64
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION "A count of frames received on a particular
                   interface that exceed the maximum permitted
                   frame size.

                   The count represented by an instance of this
                   object is incremented when the frameTooLong
```

```
                        status is returned by the MAC service to the
                        LLC (or other MAC user). Received frames for
                        which multiple error conditions pertain are,
                        according to the conventions of IEEE 802.3
                        Layer Management, counted exclusively according
                        to the error status presented to the LLC.

                        This counter is a 64-bit version of
                        dot3StatsFrameTooLongs. It should be used on
                        interfaces operating at 10 Gb/s or faster.

                        Discontinuities in the value of this counter can

                        occur at re-initialization of the management
                        system, and at other times as indicated by the
                        value of ifCounterDiscontinuityTime."
         REFERENCE      "IEEE Std 802.3, 30.3.1.1.25,
                        aFrameTooLongErrors."
         ::= { dot3HCStatsEntry 4 }

    dot3HCStatsInternalMacReceiveErrors OBJECT-TYPE
         SYNTAX      Counter64
         MAX-ACCESS  read-only
         STATUS      current
         DESCRIPTION "A count of frames for which reception on a
                        particular interface fails due to an internal
                        MAC sublayer receive error. A frame is only
                        counted by an instance of this object if it is
                        not counted by the corresponding instance of
                        either the dot3StatsFrameTooLongs object, the
                        dot3StatsAlignmentErrors object, or the
                        dot3StatsFCSErrors object.

                        The precise meaning of the count represented by
                        an instance of this object is implementation-
                        specific. In particular, an instance of this
                        object may represent a count of receive errors
                        on a particular interface that are not
                        otherwise counted.

                        This counter is a 64-bit version of
                        dot3StatsInternalMacReceiveErrors. It should be
                        used on interfaces operating at 10 Gb/s or
                        faster.

                        Discontinuities in the value of this counter can
                        occur at re-initialization of the management
                        system, and at other times as indicated by the
                        value of ifCounterDiscontinuityTime."
         REFERENCE      "IEEE Std 802.3, 30.3.1.1.15,
                        aFramesLostDueToIntMACRcvError."
         ::= { dot3HCStatsEntry 5 }

    dot3HCStatsSymbolErrors OBJECT-TYPE
         SYNTAX      Counter64
         MAX-ACCESS  read-only
         STATUS      current
         DESCRIPTION "For an interface operating at 100 Mb/s, the
                        number of times there was an invalid data symbol
                        when a valid carrier was present.

                        For an interface operating in half-duplex mode
                        at 1000 Mb/s, the number of times the receiving
                        media is non-idle (a carrier event) for a period
                        of time equal to or greater than slotTime, and
                        during which there was at least one occurrence
                        of an event that causes the PHY to indicate
                        'Data reception error' or 'carrier extend error'
                        on the GMII.

                        For an interface operating in full-duplex mode
                        at 1000 Mb/s, the number of times the receiving
```

```
                media is non-idle (a carrier event) for a period
                of time equal to or greater than minFrameSize,
                and during which there was at least one
                occurrence of an event that causes the PHY to
                indicate 'Data reception error' on the GMII.

                For an interface operating at 10 Gb/s, 40 Gb/s and
                100 Gb/s, the number of times the receiving media is
                non-idle (a carrier event) for a period of time equal
                to or greater than minFrameSize, and during which
                there was at least one occurrence of an event
                that causes the PHY to indicate 'Receive Error'
                on the XGMII, the XLGMII, or the CGMII.

                The count represented by an instance of this
                object is incremented at most once per carrier
                event, even if multiple symbol errors occur
                during the carrier event. This count does
                not increment if a collision is present.

                This counter is a 64-bit version of
                dot3StatsSymbolErrors. It should be used on
                interfaces operating at 10 Gb/s or faster.

                Discontinuities in the value of this counter can
                occur at re-initialization of the management
                system, and at other times as indicated by the
                value of ifCounterDiscontinuityTime."
        REFERENCE   "IEEE Std 802.3, 30.3.2.1.5,
                     aSymbolErrorDuringCarrier."
        ::= { dot3HCStatsEntry 6 }

    dot3HCStatsTransmitLPIMicroseconds   OBJECT-TYPE
        SYNTAX      Counter64
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count reflecting the amount of time that the
                     LPI_REQUEST parameter has the value ASSERT. The
                     request is indicated to the PHY according to the
                     requirements of the RS (see IEEE Std 802.3, 22.7,
                     35.4, and 46.4).

                     This counter has a maximum increment rate of
                     1 000 000 counts per second."
        REFERENCE   "IEEE Std 802.3, 30.3.2.1.8 aTransmitLPIMicroseconds."
        ::= { dot3HCStatsEntry 7 }

    dot3HCStatsReceiveLPIMicroseconds   OBJECT-TYPE
        SYNTAX      Counter64
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count reflecting the amount of time that the
                     LPI_INDICATION parameter has the value ASSERT. The
                     indication reflects the state of the PHY according to
                     the requirements of the RS (see IEEE Std 802.3, 22.7,
                     35.4, and 46.4).

                     This counter has a maximum increment rate of
                     1 000 000 counts per second."
        REFERENCE   "IEEE Std 802.3, 30.3.2.1.9 aReceiveLPIMicroseconds."
        ::= { dot3HCStatsEntry 8 }


    dot3HCStatsTransmitLPITransitions   OBJECT-TYPE
        SYNTAX      Counter64
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "A count of occurrences of the transition from
                      state LPI_DEASSERTED to state LPI_ASSERTED of
                      the LPI transmit state diagram is the RS.
                      The state transition corresponds to the assertion
                      of the LPI_REQUEST parameter. The request is indicated
                      to the PHY according to the requirements of the RS
```

```
                    (see IEEE Std 802.3, 22.7, 35.4, 46.4.)

                     This counter has a maximum increment rate of 50 000
                     counts per second at 100 Mb/s; 90 000 counts per
                     second at 1000 Mb/s; and 230 000 counts per second
                     at 10 Gb/s."
        REFERENCE    "IEEE Std 802.3, 30.3.2.1.10 aTransmitLPITransitions."
        ::= { dot3HCStatsEntry 9 }

        dot3HCStatsReceiveLPITransitions   OBJECT-TYPE
        SYNTAX       Counter64
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION "A count of occurrences of the transition from DEASSERT
                     to ASSERT of the LPI_INDICATE parameter. The
                     indication reflects the state of the PHY according to
                     the requirements of the RS
                     (see IEEE Std 802.3, 22.7, 35.4, and 46.4).

                     This counter has a maximum increment rate of 50 000
                     counts per second at 100 Mb/s; 90 000 counts per second
                     at 1000 Mb/s; and 230 000 counts per second at 10 Gb/s."
        REFERENCE    "IEEE Std 802.3, 30.3.2.1.11 aReceiveLPITransitions."
        ::= { dot3HCStatsEntry 10 }

        dot3SlowProtocolFrameLimit OBJECT-TYPE
        SYNTAX       Integer32
        MAX-ACCESS   read-write
        STATUS       current
        DESCRIPTION "The maximum number of Slow Protocol frames
                     of a given subtype that can be transmitted
                     in a one second interval. The default value
                     is 10."
        REFERENCE    "IEEE Std 802.3, 30.3.1.1.38,
                     aSlowProtocolFrameLimit."
        DEFVAL    { 10 }
        ::= { ieee8023etherMIBObjects 12 }

        dot3ExtensionTable OBJECT-TYPE
        SYNTAX       SEQUENCE OF Dot3ExtensionEntry
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION "A table of status information
                     about the Extension MAC Control frames transmitted
                     and received on the Ethernet-like interfaces attached
                     to a particular system. There will be one row in
                     this table for each Ethernet-like interface in
                     the system which supports Extension MAC Control
                     function (i.e., the 'mpcp' bit in the
                     corresponding instance of
                     dot3ControlFunctionsSupported is set). If some,
                     but not all, of the Ethernet-like interfaces in
                     the system implement the Extension MAC Control
                     function, there will be fewer rows
                     in this table than in the dot3StatsTable."
        ::= { ieee8023etherMIBObjects 13 }

    dot3ExtensionEntry OBJECT-TYPE
        SYNTAX       Dot3ExtensionEntry
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION "An entry in the table, containing information
                     about the Extension MAC Control function on a single
                     Ethernet-like interface."
        INDEX        { dot3StatsIndex }
        ::= { dot3ExtensionTable 1 }

    Dot3ExtensionEntry ::=

        SEQUENCE {
            dot3HCInExtensionFrames         Counter64,
            dot3HCOutExtensionFrames        Counter64,
            dot3ExtensionMacCtrlStatus      Unsigned32
```

```
        }

dot3HCInExtensionFrames OBJECT-TYPE
     SYNTAX       Counter64
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION "A count of Extension MAC Control frames received on
                  this interface.

                  Discontinuities in the value of this counter can
                  occur at re-initialization of the management
                  system, and at other times as indicated by the
                  value of ifCounterDiscontinuityTime."
     REFERENCE    "IEEE Std 802.3, 30.3.8.2
                  aEXTENSIONMACCtrlFramesReceived."

     ::= { dot3ExtensionEntry 1 }

dot3HCOutExtensionFrames OBJECT-TYPE
     SYNTAX       Counter64
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION "A count of Extension MAC Control frames transmitted on
                  this interface.

                  Discontinuities in the value of this counter can
                  occur at re-initialization of the management
                  system, and at other times as indicated by the
                  value of ifCounterDiscontinuityTime."
     REFERENCE    "IEEE Std 802.3, 30.3.8.1
                  aEXTENSIONMACCtrlFramesTransmitted."
     ::= { dot3ExtensionEntry 2 }

dot3ExtensionMacCtrlStatus OBJECT-TYPE
     SYNTAX       Unsigned32
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION "The current EXTENSIONMACCtrlStatus as described in
                   IEEE Std 802.3, 30.3.8.3."
     REFERENCE    "IEEE Std 802.3, 30.3.8.3, aEXTENSIONMACCtrlStatus."
     ::= { dot3ExtensionEntry 3 }

dot3PFCTable OBJECT-TYPE
     SYNTAX       SEQUENCE OF Dot3PFCEntry
     MAX-ACCESS   not-accessible
     STATUS       current
     DESCRIPTION "A table of descriptive and status information
                  about the MAC Control Priority-based Flow Control
                  function on the Ethernet-like interfaces attached to
                  a particular system. There will be one row in
                  this table for each Ethernet-like interface in
                  the system which supports the MAC Control PFC
                  function (i.e., the 'pfc' bit in the
                  corresponding instance of
                  dot3ControlFunctionsSupported is set). If some,
                  but not all, of the Ethernet-like interfaces in
                  the system implement the MAC Control PFC
                  function (for example, if some interfaces only
                  support half-duplex), there will be fewer rows
                  in this table than in the dot3StatsTable."
     ::= { ieee8023etherMIBObjects 14 }

dot3PFCEntry OBJECT-TYPE
     SYNTAX       Dot3PFCEntry
     MAX-ACCESS   not-accessible
     STATUS       current
     DESCRIPTION "An entry in the table, containing information
                  about the MAC Control PFC function on a single
                  Ethernet-like interface."
     INDEX        { dot3StatsIndex }
     ::= { dot3PFCTable 1 }

Dot3PFCEntry ::=
```

> **Commented [MH1]:** It is defined
>
> ### 30.3.8.3 aEXTENSIONMACCtrlStatus
>
> ATTRIBUTE
>
> APPROPRIATE SYNTAX:
>   An ENUMERATED VALUE that
>
> BEHAVIOUR DEFINED AS:
>   A read-write value that identifies t
>   the EXTENSION MAC Control f

```
    SEQUENCE {
        dot3PFCAdminMode                INTEGER,
        dot3PFCOperMode                 INTEGER,
        dot3HCInPFCFrames               Counter64,
        dot3HCOutPFCFrames              Counter64
    }

dot3PFCAdminMode OBJECT-TYPE
    SYNTAX      INTEGER {
                    disabled(1),
                    enabled(2)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION "This object is used to configure the default
                administrative PFC mode for this interface.

                This object represents the
                administratively-configured PFC mode for this
                interface. The value of this
                object determines the operational PFC mode
                of the interface. A set to this
                object will force the interface into the
                specified mode.

                Note that the value of this object is ignored
                when the interface is not operating in
                full-duplex mode."
    ::= { dot3PFCEntry 1 }

dot3PFCOperMode OBJECT-TYPE
    SYNTAX      INTEGER {
                    disabled(1),
                    enabled(2)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "This object reflects the PFC mode currently
                in use on this interface, as determined by
                by the value of dot3PFCAdminMode."
    REFERENCE   "IEEE Std 802.3, 30.3.3.6 aPFCenableStatus"
    ::= { dot3PFCEntry 2 }

dot3HCInPFCFrames OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of MAC Control frames received on this
                interface with an opcode indicating the PFC
                operation.

                Discontinuities in the value of this counter can
                occur at re-initialization of the management
                system, and at other times as indicated by the
                value of ifCounterDiscontinuityTime."

    ::= { dot3PFCEntry 3 }


dot3HCOutPFCFrames OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "A count of MAC Control frames transmitted on
                this interface with an opcode indicating the
                PFC operation.

                Discontinuities in the value of this counter can
                occur at re-initialization of the management
                system, and at other times as indicated by the
                value of ifCounterDiscontinuityTime."
    ::= { dot3PFCEntry 4 }
```

```
-- { ieee8023etherMIBObjects 6 }, the dot3ChipSets tree,
--   is defined in [RFC2666]

-- Conformance statements

etherConformance OBJECT IDENTIFIER ::= { ieee8023etherMIB 2 }

etherGroups      OBJECT IDENTIFIER ::= { etherConformance 1 }
etherCompliances OBJECT IDENTIFIER ::= { etherConformance 2 }

-- Compliance statements

    dot3Compliance2 MODULE-COMPLIANCE
        STATUS      current
        DESCRIPTION "The compliance statement for managed network
                    entities which have Ethernet-like network
                    interfaces.

                    Note that compliance with this MIB module
                    requires compliance with the ifCompliance3
                    MODULE-COMPLIANCE statement of the IF-MIB
                    (IETF RFC 2863). In addition, compliance with this
                    MIB module requires compliance  with the
                    mauModIfCompl3 MODULE-COMPLIANCE statement of
                    the MAU-MIB module defined in Clause 13."

    MODULE  -- this module
        MANDATORY-GROUPS { etherStatsBaseGroup2 }

        GROUP       etherDuplexGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating in full-duplex mode.
                    It is highly recommended for all
                    Ethernet-like network interfaces."

        GROUP       etherRateControlGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating at speeds faster than
                    1000 Mb/s. It is highly recommended for all
                    Ethernet-like network interfaces."

        GROUP       etherStatsLowSpeedGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating at 10 Mb/s or slower in
                    half-duplex mode."

        GROUP       etherStatsHighSpeedGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating at 100 Mb/s or faster."

        GROUP       etherStatsHalfDuplexGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating in half-duplex mode."

        GROUP       etherHCStatsGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces which are
                    capable of operating at 10 Gb/s or faster.
                    It is recommended for all Ethernet-like
                    network interfaces which are capable of
                    operating at 1000 Mb/s or faster."

        GROUP       etherControlGroup
        DESCRIPTION "This group is mandatory for all
                    Ethernet-like network interfaces that
                    support the MAC Control sublayer."
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        GROUP          etherHCControlGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that
                       support the MAC Control sublayer and are
                       capable of operating at 10 Gb/s or faster."

        GROUP          etherControlPauseGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that
                       support the MAC Control PAUSE function."

        GROUP          etherHCControlPauseGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that
                       support the MAC Control PAUSE function and
                       are capable of operating at 10 Gb/s or
                       faster."

        GROUP          etherCollisionTableGroup
        DESCRIPTION "This group is optional. It is appropriate
                       for all Ethernet-like network interfaces
                       which are capable of operating in
                       half-duplex mode and have the necessary
                       metering. Implementation in systems with
                       such interfaces is highly recommended."

        GROUP          etherHCStatsLpiGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that
                       support the Low Power Idle function."

        GROUP          etherSlowProtocolsGroup
        DESCRIPTION "This group is optional. It is appropriate for
                       Ethernet-like network interfaces that implement OAM
                       as defined in Clause 57 of IEEE Std 802.3."

        GROUP          etherExtensionMacCtrlGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that implement
                       Extension MAC Control."

        GROUP          etherPfcGroup
        DESCRIPTION "This group is mandatory for all
                       Ethernet-like network interfaces that implement
                       Priority Flow Control."

    ::= { etherCompliances 1 }

-- units of conformance

etherCollisionTableGroup OBJECT-GROUP
    OBJECTS      { dot3CollFrequencies
                   }
    STATUS       current
    DESCRIPTION "A collection of objects providing a histogram
                   of packets successfully transmitted after
                   experiencing exactly N collisions."
    ::= { etherGroups 1 }

etherStatsLowSpeedGroup OBJECT-GROUP
    OBJECTS      { dot3StatsSQETestErrors }
    STATUS       current
    DESCRIPTION "A collection of objects providing information
                   applicable to Ethernet-like network interfaces
                   capable of operating at 10 Mb/s or slower in
                   half-duplex mode."
    ::= { etherGroups 2 }

etherStatsHighSpeedGroup OBJECT-GROUP
    OBJECTS      { dot3StatsSymbolErrors }
    STATUS       current
    DESCRIPTION "A collection of objects providing information
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                     applicable to Ethernet-like network interfaces
                     capable of operating at 100 Mb/s or faster."
        ::= { etherGroups 3 }

etherDuplexGroup OBJECT-GROUP
    OBJECTS     { dot3StatsDuplexStatus }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                     about the duplex mode of an Ethernet-like
                     network interface."
        ::= { etherGroups 4 }

etherControlGroup OBJECT-GROUP
    OBJECTS     { dot3ControlFunctionsSupported,
                  dot3ControlInUnknownOpcodes
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                     about the MAC Control sublayer on Ethernet-like
                     network interfaces."
        ::= { etherGroups 5 }

etherControlPauseGroup OBJECT-GROUP
    OBJECTS     { dot3PauseAdminMode,
                  dot3PauseOperMode,
                  dot3InPauseFrames,
                  dot3OutPauseFrames
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                     about and control of the MAC Control PAUSE
                     function on Ethernet-like network interfaces."
        ::= { etherGroups 6 }

etherStatsBaseGroup2 OBJECT-GROUP
    OBJECTS     { dot3StatsAlignmentErrors,
                  dot3StatsFCSErrors,
                  dot3StatsInternalMacTransmitErrors,
                  dot3StatsFrameTooLongs,
                  dot3StatsInternalMacReceiveErrors,
                  dot3StatsMaxFrameLength
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                     applicable to all Ethernet-like network
                     interfaces."
        ::= { etherGroups 7 }

etherStatsHalfDuplexGroup OBJECT-GROUP
    OBJECTS     { dot3StatsSingleCollisionFrames,
                  dot3StatsMultipleCollisionFrames,
                  dot3StatsDeferredTransmissions,
                  dot3StatsLateCollisions,
                  dot3StatsExcessiveCollisions,
                  dot3StatsCarrierSenseErrors
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                     applicable only to half-duplex Ethernet-like
                     network interfaces."
        ::= { etherGroups 8 }

etherHCStatsGroup OBJECT-GROUP
    OBJECTS     { dot3HCStatsAlignmentErrors,
                  dot3HCStatsFCSErrors,
                  dot3HCStatsInternalMacTransmitErrors,
                  dot3HCStatsFrameTooLongs,
                  dot3HCStatsInternalMacReceiveErrors,
                  dot3HCStatsSymbolErrors
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing high-capacity
                     statistics applicable to higher-speed
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                    Ethernet-like network interfaces."
        ::= { etherGroups 9 }

etherHCControlGroup OBJECT-GROUP
    OBJECTS     { dot3HCControlInUnknownOpcodes }
    STATUS      current
    DESCRIPTION "A collection of objects providing high-capacity
                 statistics for the MAC Control sublayer on
                 higher-speed Ethernet-like network interfaces."
        ::= { etherGroups 10 }

etherHCControlPauseGroup OBJECT-GROUP
    OBJECTS     { dot3HCInPauseFrames,
                  dot3HCOutPauseFrames


                }
    STATUS      current
    DESCRIPTION "A collection of objects providing high-capacity
                 statistics for the MAC Control PAUSE function on
                 higher-speed Ethernet-like network interfaces."
        ::= { etherGroups 11 }

etherRateControlGroup OBJECT-GROUP
    OBJECTS     { dot3StatsRateControlAbility,
                  dot3StatsRateControlStatus
                }
    STATUS      current
    DESCRIPTION "A collection of objects providing information
                 about the Rate Control function on Ethernet-like
                 interfaces."
        ::= { etherGroups 12 }

etherHCStatsLpiGroup OBJECT-GROUP
     OBJECTS    { dot3HCStatsTransmitLPIMicroseconds,
                  dot3HCStatsReceiveLPIMicroseconds,
                  dot3HCStatsTransmitLPITransitions,
                  dot3HCStatsReceiveLPITransitions
                }
     STATUS     current
     DESCRIPTION "A collection of objects providing information
                  about the Low Power Idle function on Ethernet-like
                  interfaces."
        ::= { etherGroups 13 }


etherSlowProtocolsGroup OBJECT-GROUP
     OBJECTS     { dot3SlowProtocolFrameLimit }
     STATUS      current
     DESCRIPTION  "An object providing control and information
                   about the frame transmission rate limit for
                   Slow Protocols on Ethernet-like interfaces."
        ::= { etherGroups 14 }

etherExtensionMacCtrlGroup OBJECT-GROUP
     OBJECTS     { dot3HCInExtensionFrames,
                   dot3HCOutExtensionFrames,
                   dot3ExtensionMacCtrlStatus
                 }
     STATUS      current
     DESCRIPTION  "A collection of objects providing information
                   about the Extension MAC Control function on
                   Ethernet-like interfaces."
        ::= { etherGroups 15 }

 etherPfcGroup OBJECT-GROUP
      OBJECTS     { dot3PFCAdminMode,
                    dot3PFCOperMode,
                    dot3HCInPFCFrames,
                    dot3HCOutPFCFrames
                  }
      STATUS       current
      DESCRIPTION  "A collection of objects providing information
                    about the Priority Flow Control function on
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                    Ethernet-like interfaces."
        ::= { etherGroups 16 }


END
```