

Ethernet Interfaces and Hub MIB Working Group  
INTERNET DRAFT

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**Definitions of Managed Objects for  
IEEE 802.3 Medium Attachment Units (MAUs)**

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## Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. This memo obsoletes [RFC 2668](#), "'Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)'. This memo extends that specification by including management information useful for the management of 10 gigabit per second (Gb/s) MAUs. This memo also obsoletes [RFC 1515](#), "'Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)'".

Ethernet technology, as defined by the 802.3 Working Group of the IEEE, continues to evolve, with scalable increases in speed, new types of cabling and interfaces, and new features. This evolution may require changes in the managed objects in order to reflect this new functionality. This document, as with other documents issued by this working group, reflects a certain stage in the evolution of Ethernet technology. In the future, this document might be revised, or new documents might be issued by the Ethernet Interfaces and Hub MIB Working Group, in order to reflect the evolution of Ethernet technology.

Distribution of this memo is unlimited. Please forward comments to [hubmib@ietf.org](mailto:hubmib@ietf.org).

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## [1.](#) Introduction

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for managing IEEE 802.3 Medium Attachment Units (MAUs).

This memo also includes a MIB module. This MIB module extends the list of managed objects specified in the earlier version of this MIB: [RFC 2668](#) [[RFC2668](#)].

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

## [2.](#) The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [[RFC2571](#)].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in STD 16, [RFC 1155](#) [[RFC1155](#)], STD 16, [RFC 1212](#) [[RFC1212](#)] and [RFC 1215](#) [[RFC1215](#)]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [[RFC1901](#)] and [RFC 1906](#) [[RFC1906](#)]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [[RFC1906](#)], [RFC 2572](#) [[RFC2572](#)] and [RFC 2574](#) [[RFC2574](#)].
- o Protocol operations for accessing management information. The

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first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [[RFC1905](#)].

- o A set of fundamental applications described in [RFC 2573](#) [[RFC2573](#)] and the view-based access control mechanism described in [RFC 2575](#) [[RFC2575](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[RFC2570](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

### **[3.](#) Overview**

Instances of these object types represent attributes of an IEEE 802.3 MAU. Several types of MAUs are defined in the IEEE 802.3 CSMA/CD standard [[IEEE802.3](#)]. These MAUs may be connected to IEEE 802.3 repeaters or to 802.3 (Ethernet-like) interfaces. For convenience this document refers to these devices as "repeater MAUs" and "interface MAUs."

The definitions presented here are based on [Section 30.5](#), "Layer Management for 10 Mb/s, 100 Mb/s, 1000 Mb/s and 10 Gb/s Medium Attachment Units (MAUs)", [Section 30.6](#), "Management for link Auto-Negotiation", and Annex 30A, "GDMO Specifications for 802.3 managed object classes" of IEEE Std. 802.3, 2000 edition [[IEEE802.3](#)], as amended by IEEE Draft P802.3ae/D4.01 [[P802.3ae](#)]. That specification includes definitions for 10 Mb/s, 100 Mb/s, 1000 Mb/s and 10 Gb/s devices. This specification is intended to serve the same purpose: to provide for management of all types of Ethernet/802.3 MAUs.

#### **[3.1.](#) Relationship to [RFC 2668](#)**

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This MIB is intended to be a superset of that defined by [RFC 2668](#) [[RFC2668](#)], which will go to historic status. This MIB includes all of the objects contained in that MIB, with new and updated definitions which provide support for additional capabilities. Implementors are encouraged to support all applicable conformance groups in order to make the best use of the new functionality provided by this MIB. The new and updated definitions provide management support for 10 Gb/s devices.

### **[3.2.](#) Relationship to [RFC 2239](#)**

[RFC 2668](#) was a replacement for [RFC 2239](#) [[RFC2239](#)], which is now historic. [RFC 2668](#) defined a superset of that defined by [RFC 2239](#) [[RFC2239](#)], which contained all of the objects defined in [RFC 2239](#), plus several new ones which provide additional capabilities. The new objects provided management support for:

- o management of 1000 Mb/s devices
- o management of PAUSE negotiation
- o management of remote fault status

### **[3.3.](#) Relationship to [RFC 1515](#)**

[RFC 2239](#) was a replacement for [RFC 1515](#) [[RFC1515](#)], which is now historic. [RFC 2239](#) defined a superset of [RFC 1515](#) which contained all of the objects defined in [RFC 1515](#), plus several new ones which provided additional capabilities. The new objects in [RFC 2239](#) provided management support for:

- o management of 100 Mb/s devices
- o auto-negotiation on interface MAUs
- o jack management

### **[3.5.](#) Relationship to Other MIBs**

It is assumed that an agent implementing this MIB will also implement (at least) the 'system' group defined in the SNMPv2 MIB [[RFC1907](#)]. The following sections identify other MIBs that such an agent should implement.

#### **[3.5.1.](#) Relationship to the Interfaces MIB.**

The sections of this document that define interface MAU-related





objects specify an extension to the Interfaces MIB [[RFC2863](#)]. An agent implementing these interface-MAU related objects MUST also implement the relevant groups of Interface MIB. The value of the object ifMauIfIndex is the same as the value of 'ifIndex' used to instantiate the interface to which the given MAU is connected.

It is REQUIRED that an agent implementing the interface-MAU related objects in this MIB will also implement the Ethernet-like Interfaces MIB, [[ETHERIF](#)]. Furthermore, when the interface-MAU related objects are used to manage a 10GBASE-W PHY -- e.e., when ifMauType is equal to dot2MauType10GigBaseW or any other 10GBASE-W variant -- then the agent MUST also support the Ethernet WAN Interface Sublayer (WIS) MIB [[ETHERWIS](#)] and must follow the interface layering model specified therein. In that case the value of the object ifMauIfIndex is the same as the value of 'ifIndex' for the layer at the top of the stack, i.e., for the ifTable entry that has 'ifType' equal to ethernetCsmacd(6). If the interface-MAU related objects are used to manage a PHY that allows the MAU type to be changed dynamically, then the agent SHALL create ifTable, ifStackTable, and ifInvStackTable entries that pertain to the WIS when ifMauDefaultType is changed to a 10GBASEW variant (i.e., one of dot3MauType10GigBaseW, dot3MauType10GigBaseEW, dot3MauType10GigBaseLW, or dot3MauType10GigBaseSW) from any other type, and shall destroy the WIS-related entries when ifMauDefaultType is changed to a non-10GBASE-W type. The agent SHALL also change the values of 'ifConnectorPresent' and 'ifHighSpeed' in the ifTable entry indexed by ifMauIfIndex as specified in [[ETHERIF](#)] and [[ETHERWIS](#)] when ifMauDefaultType is manipulated in this way but SHALL NOT otherwise alter that entry.

(Note that repeater ports are not represented as interfaces in the Interface MIB.)

### **3.5.2. Relationship to the 802.3 Repeater MIB**

The section of this document that defines repeater MAU-related objects specifies an extension to the 802.3 Repeater MIB defined in [[RFC2108](#)]. An agent implementing these repeater-MAU related objects MUST also implement the 802.3 Repeater MIB.

The values of 'rpMauGroupIndex' and 'rpMauPortIndex' used to instantiate a repeater MAU variable SHALL be the same as the values of 'rptrPortGroupIndex' and 'rptrPortIndex' used to instantiate the port to which the given MAU is connected.

### **3.6. Management of Internal MAUs**

In some situations, a MAU can be "internal" -- i.e., its



functionality is implemented entirely within a device. For example, a managed repeater may contain an internal repeater-MAU and/or an internal interface-MAU through which management communications originating on one of the repeater's external ports pass in order to reach the management agent associated with the repeater. Such internal MAUs may or may not be managed. If they are managed, objects describing their attributes should appear in the appropriate MIB subtree: dot3RpMauBasicGroup for internal repeater-MAUs and dot3IfMauBasicGroup for internal interface-MAUs.

### **3.7. Mapping of IEEE 802.3 Managed Objects**

IEEE 802.3 Managed Object	Corresponding SNMP Object
oMAU	
.aMAUID	rpMauIndex or ifMauIndex or broadMauIndex
.aMAUType	rpMauType or ifMauType
.aMAUTypeList	ifMauTypeListBits
.aMediaAvailable	rpMauMediaAvailable or ifMauMediaAvailable
.aLoseMediaCounter	rpMauMediaAvailableStateExits or ifMauMediaAvailableStateExits
.aJabber	rpMauJabberState and rpMauJabberingStateEnters or ifMauJabberState and ifMauJabberingStateEnters
.aMAUAdminState	rpMauStatus or ifMauStatus
.aBbMAUXmitRcvSplitType	broadMauXmtRcvSplitType
.aBroadbandFrequencies	broadMauXmtCarrierFreq and broadMauTranslationFreq
.aFalseCarriers	rpMauFalseCarriers or ifMauFalseCarriers
.acResetMAU	rpMauStatus or ifMauStatus
.acMAUAdminControl	rpMauStatus or ifMauStatus
.nJabber	rpMauJabberTrap or ifMauJabberTrap
oAutoNegotiation	
.aAutoNegID	ifMauIndex
.aAutoNegAdminState	ifMauAutoNegAdminStatus

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.aAutoNegRemoteSignalling	ifMauAutoNegRemoteSignalling
.aAutoNegAutoConfig	ifMauAutoNegConfig
.aAutoNegLocalTechnologyAbility	ifMauAutoNegCapabilityBits
.aAutoNegAdvertisedTechnologyAbility	ifMauAutoNegAdvertisedBits and ifMauAutoNegRemoteFaultAdvertised
.aAutoNegReceivedTechnologyAbility	ifMauAutoNegReceivedBits and ifMauAutoNegRemoteFaultReceived
.acAutoNegRestartAutoConfig	ifMauAutoNegRestart
.acAutoNegAdminControl	ifMauAutoNegAdminStatus

The following IEEE 802.3 managed objects have not been included in this MIB for the following reasons.

IEEE 802.3 Managed Object	Corresponding SNMP Object
oMAU	
.aIdleErrorCount	Only useful for 100BaseT2, which is not widely implemented.
oAutoNegotiation	
.aAutoNegLocalSelectorAbility	Only needed for support of
.aAutoNegAdvertisedSelectorAbility	isoethernet (802.9a), which is
.aAutoNegReceivedSelectorAbility	not supported by this MIB.

#### 4. Definitions

MAU-MIB DEFINITIONS ::= BEGIN

##### IMPORTS

```

Counter32, Integer32, Counter64,
OBJECT-TYPE, MODULE-IDENTITY, NOTIFICATION-TYPE,
OBJECT-IDENTITY, mib-2
    FROM SNMPv2-SMI
TruthValue, TEXTUAL-CONVENTION
    FROM SNMPv2-TC
OBJECT-GROUP, MODULE-COMPLIANCE, NOTIFICATION-GROUP
    FROM SNMPv2-CONF
InterfaceIndex
    FROM IF-MIB;
```

##### mauMod MODULE-IDENTITY

```

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              Working Group"
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DESCRIPTION "Management information for 802.3 MAUs.

The following reference is used throughout  
this MIB module:

[IEEE 802.3 Std] refers to  
IEEE Std 802.3, 2000 Edition: 'IEEE Standard  
for Information technology -  
Telecommunications and information exchange  
between systems - Local and metropolitan  
area networks - Specific requirements -  
Part 3: Carrier sense multiple access with  
collision detection (CSMA/CD) access method  
and physical layer specifications', as  
ammended by IEEE Draft P802.3ae/D4.01:  
'Supplement to Carrier Sense Multiple Access  
with Collision Detection (CSMA/CD) Access  
Method & Physica Layer Specifications -  
Media Access Control (MAC) Parameters,  
Physical Layer, and Management Parameters  
for 10 Gb/s Operation', February 2002.

Of particular interest is Clause 30, '10Mb/s,  
100Mb/s, 1000Mb/s and 10 Gb/s Management'."

REVISION "200202280000Z" -- February 28, 2002  
DESCRIPTION "This version published as RFC XXXX. Updated  
to include support for 10 Gb/s MAUs."  
  
REVISION "9908240400Z" -- August 24, 1999





DESCRIPTION "This version published as [RFC 2668](#). Updated to include support for 1000 Mb/sec MAUs and flow control negotiation."

REVISION "9710310000Z" -- October 31, 1997  
DESCRIPTION "Version published as [RFC 2239](#)."

REVISION "9309300000Z" -- September 30, 1993  
DESCRIPTION "Initial version, published as [RFC 1515](#)."

::= { snmpDot3MauMgt 6 }

snmpDot3MauMgt OBJECT IDENTIFIER ::= { mib-2 26 }

-- textual conventions

JackType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION "Common enumeration values for repeater and interface MAU jack types."

SYNTAX INTEGER {  
    other(1),  
    rj45(2),  
    rj45S(3), -- rj45 shielded  
    db9(4),  
    bnc(5),  
    fAUI(6), -- female aui  
    mAUI(7), -- male aui  
    fiberSC(8),  
    fiberMIC(9),  
    fiberST(10),  
    telco(11),  
    mtrj(12), -- fiber MT-RJ  
    hssdc(13), -- fiber channel style-2  
    fiberLC(14)  
}

dot3RpMauBasicGroup

OBJECT IDENTIFIER ::= { snmpDot3MauMgt 1 }

dot3IfMauBasicGroup

OBJECT IDENTIFIER ::= { snmpDot3MauMgt 2 }

dot3BroadMauBasicGroup

OBJECT IDENTIFIER ::= { snmpDot3MauMgt 3 }

dot3IfMauAutoNegGroup

OBJECT IDENTIFIER ::= { snmpDot3MauMgt 5 }



```
-- object identities for MAU types
-- (see rpMauType and ifMauType for usage)

dot3MauType
    OBJECT IDENTIFIER ::= { snmpDot3MauMgt 4 }

dot3MauTypeAUI OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "no internal MAU, view from AUI"
    ::= { dot3MauType 1 }

dot3MauType10Base5 OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "thick coax MAU (per 802.3 section 8)"
    ::= { dot3MauType 2 }

dot3MauTypeFoir1 OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "FOIRL MAU (per 802.3 section 9.9)"
    ::= { dot3MauType 3 }

dot3MauType10Base2 OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "thin coax MAU (per 802.3 section 10)"
    ::= { dot3MauType 4 }

dot3MauType10BaseT OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "UTP MAU (per 802.3 section 14).
        Note that it is strongly recommended that
        agents return either dot3MauType10BaseTHD or
        dot3MauType10BaseTFD if the duplex mode is
        known. However, management applications should
        be prepared to receive this MAU type value from
        older agent implementations."
    ::= { dot3MauType 5 }

dot3MauType10BaseFP OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "passive fiber MAU (per 802.3 section 16)"
    ::= { dot3MauType 6 }

dot3MauType10BaseFB OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "sync fiber MAU (per 802.3 section 17)"
    ::= { dot3MauType 7 }

dot3MauType10BaseFL OBJECT-IDENTITY
```



STATUS current  
DESCRIPTION "async fiber MAU (per 802.3 [section 18](#))  
Note that it is strongly recommended that  
agents return either dot3MauType10BaseFLHD or  
dot3MauType10BaseFLFD if the duplex mode is  
known. However, management applications should  
be prepared to receive this MAU type value from  
older agent implementations."  
::= { dot3MauType 8 }

dot3MauType10Broad36 OBJECT-IDENTITY

STATUS current  
DESCRIPTION "broadband DTE MAU (per 802.3 [section 11](#)).  
Note that 10BROAD36 MAUs can be attached to  
interfaces but not to repeaters."  
::= { dot3MauType 9 }

----- new since [RFC 1515](#):

dot3MauType10BaseTHD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "UTP MAU (per 802.3 [section 14](#)), half duplex  
mode"  
::= { dot3MauType 10 }

dot3MauType10BaseTFD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "UTP MAU (per 802.3 [section 14](#)), full duplex  
mode"  
::= { dot3MauType 11 }

dot3MauType10BaseFLHD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "async fiber MAU (per 802.3 [section 18](#)), half  
duplex mode"  
::= { dot3MauType 12 }

dot3MauType10BaseFLFD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "async fiber MAU (per 802.3 [section 18](#)), full  
duplex mode"  
::= { dot3MauType 13 }

dot3MauType10BaseT4 OBJECT-IDENTITY

STATUS current  
DESCRIPTION "4 pair categ. 3 UTP (per 802.3 [section 23](#))"  
::= { dot3MauType 14 }



## dot3MauType100BaseTXHD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "2 pair categ. 5 UTP (per 802.3 [section 25](#)),  
half duplex mode"  
::= { dot3MauType 15 }

## dot3MauType100BaseTXFD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "2 pair categ. 5 UTP (per 802.3 [section 25](#)),  
full duplex mode"  
::= { dot3MauType 16 }

## dot3MauType100BaseFXHD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "X fiber over PMT (per 802.3 [section 26](#)), half  
duplex mode"  
::= { dot3MauType 17 }

## dot3MauType100BaseFXFD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "X fiber over PMT (per 802.3 [section 26](#)), full  
duplex mode"  
::= { dot3MauType 18 }

## dot3MauType100BaseT2HD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "2 pair categ. 3 UTP (per 802.3 [section 32](#)),  
half duplex mode"  
::= { dot3MauType 19 }

## dot3MauType100BaseT2FD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "2 pair categ. 3 UTP (per 802.3 [section 32](#)),  
full duplex mode"  
::= { dot3MauType 20 }

----- new since [RFC 2239](#):

## dot3MauType1000BaseXHD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "PCS/PMA (per 802.3 [section 36](#)), unknown PMD,  
half duplex mode"  
::= { dot3MauType 21 }

## dot3MauType1000BaseXFD OBJECT-IDENTITY

STATUS current  
DESCRIPTION "PCS/PMA (per 802.3 [section 36](#)), unknown PMD,  
full duplex mode"





```
 ::= { dot3MauType 22 }

dot3MauType1000BaseLXHD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Fiber over long-wavelength laser (per 802.3
                section 38), half duplex mode"
    ::= { dot3MauType 23 }

dot3MauType1000BaseLXFD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Fiber over long-wavelength laser (per 802.3
                section 38), full duplex mode"
    ::= { dot3MauType 24 }

dot3MauType1000BaseSXHD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Fiber over short-wavelength laser (per 802.3
                section 38), half duplex mode"
    ::= { dot3MauType 25 }

dot3MauType1000BaseSXFD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Fiber over short-wavelength laser (per 802.3
                section 38), full duplex mode"
    ::= { dot3MauType 26 }

dot3MauType1000BaseCXHD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Copper over 150-Ohm balanced cable (per 802.3
                section 39), half duplex mode"
    ::= { dot3MauType 27 }

dot3MauType1000BaseCXFD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Copper over 150-Ohm balanced cable (per 802.3
                section 39), full duplex mode"
    ::= { dot3MauType 28 }

dot3MauType1000BaseTHD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Four-pair Category 5 UTP (per 802.3 section
                40), half duplex mode"
    ::= { dot3MauType 29 }

dot3MauType1000BaseTFD OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "Four-pair Category 5 UTP (per 802.3 section
                40), full duplex mode"
```

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```
 ::= { dot3MauType 30 }

----- new since RFC 2668:

dot3MauType10GigBaseX OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "X PCS/PMA (per 802.3 section 48), unknown PMD."
    ::= { dot3MauType 31 }

dot3MauType10GigBaseLX4 OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "X fiber over WDM optics (per 802.3 section 53)"
    ::= { dot3MauType 32 }

dot3MauType10GigBaseR OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "R PCS/PMA (per 802.3 section 49), unknown PMD."
    ::= { dot3MauType 33 }

dot3MauType10GigBaseER OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "R fiber over 1550 nm optics (per 802.3 section 52)"
    ::= { dot3MauType 34 }

dot3MauType10GigBaseLR OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "R fiber over 1310 nm optics (per 802.3 section 52)"
    ::= { dot3MauType 35 }

dot3MauType10GigBaseSR OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "R fiber over 850 nm optics (per 802.3 section 52)"
    ::= { dot3MauType 36 }

dot3MauType10GigBaseW OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "W PCS/PMA (per 802.3 section 49 and 50),
                unknown PMD."
    ::= { dot3MauType 37 }

dot3MauType10GigBaseEW OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "W fiber over 1550 nm optics (per 802.3 section 52)"
```



```

 ::= { dot3MauType 38 }

dot3MauType10GigBaseLW OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "W fiber over 1310 nm optics (per 802.3 section 52)"
 ::= { dot3MauType 39 }

dot3MauType10GigBaseSW OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION "W fiber over 850 nm optics (per 802.3 section 52)"
 ::= { dot3MauType 40 }

--
-- The Basic Repeater MAU Table
--

rpMauTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RpMauEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "Table of descriptive and status information
                 about the MAU(s) attached to the ports of a
                 repeater."
 ::= { dot3RpMauBasicGroup 1 }

rpMauEntry OBJECT-TYPE
    SYNTAX      RpMauEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An entry in the table, containing information
                 about a single MAU."
    INDEX       { rpMauGroupIndex,
                  rpMauPortIndex,
                  rpMauIndex
                }
 ::= { rpMauTable 1 }

RpMauEntry ::=
    SEQUENCE {
        rpMauGroupIndex      Integer32,
        rpMauPortIndex       Integer32,
        rpMauIndex           Integer32,
        rpMauType            OBJECT IDENTIFIER,
        rpMauStatus          INTEGER,
        rpMauMediaAvailable  INTEGER,

```



```
        rpMauMediaAvailableStateExits      Counter32,  
        rpMauJabberState                   INTEGER,  
        rpMauJabberingStateEnters          Counter32,  
        rpMauFalseCarriers                 Counter32  
    }
```

rpMauGroupIndex OBJECT-TYPE

```
    SYNTAX      Integer32 (1..2147483647)  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION "This variable uniquely identifies the group  
                containing the port to which the MAU described  
                by this entry is connected."
```

Note: In practice, a group will generally be a field-replaceable unit (i.e., module, card, or board) that can fit in the physical system enclosure, and the group number will correspond to a number marked on the physical enclosure.

The group denoted by a particular value of this object is the same as the group denoted by the same value of rpPtrGroupIndex."

```
    REFERENCE   "Reference RFC 2108, rpPtrGroupIndex."  
    ::= { rpMauEntry 1 }
```

rpMauPortIndex OBJECT-TYPE

```
    SYNTAX      Integer32 (1..2147483647)  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION "This variable uniquely identifies the repeater  
                port within group rpMauGroupIndex to which the  
                MAU described by this entry is connected."  
    REFERENCE   "Reference RFC 2108, rpPtrPortIndex."  
    ::= { rpMauEntry 2 }
```

rpMauIndex OBJECT-TYPE

```
    SYNTAX      Integer32 (1..2147483647)  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION "This variable uniquely identifies the MAU  
                described by this entry from among other  
                MAUs connected to the same port  
                (rpMauPortIndex)."  
    REFERENCE   "[IEEE 802.3 Std], 30.5.1.1.1, aMAUID."  
    ::= { rpMauEntry 3 }
```

rpMauType OBJECT-TYPE



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SYNTAX        OBJECT IDENTIFIER  
MAX-ACCESS    read-only  
STATUS        current  
DESCRIPTION   "This object identifies the MAU type. An  
              initial set of MAU types are defined above. The  
              assignment of OBJECT IDENTIFIERS to new types of  
              MAUs is managed by the IANA. If the MAU type is  
              unknown, the object identifier

unknownMauType OBJECT IDENTIFIER ::= { 0 0 }

is returned. Note that unknownMauType is a  
syntactically valid object identifier, and any  
conformant implementation of ASN.1 and the BER  
must be able to generate and recognize this  
value."

REFERENCE    "[IEEE 802.3 Std], 30.5.1.1.2, aMAUType."  
              ::= { rpMauEntry 4 }

rpMauStatus OBJECT-TYPE

SYNTAX        INTEGER {  
                  other(1),  
                  unknown(2),  
                  operational(3),  
                  standby(4),  
                  shutdown(5),  
                  reset(6)  
              }  
MAX-ACCESS    read-write  
STATUS        current  
DESCRIPTION   "The current state of the MAU. This object MAY  
              be implemented as a read-only object by those  
              agents and MAUs that do not implement software  
              control of the MAU state. Some agents may not  
              support setting the value of this object to some  
              of the enumerated values.

The value other(1) is returned if the MAU is in  
a state other than one of the states 2 through  
6.

The value unknown(2) is returned when the MAU's  
true state is unknown; for example, when it is  
being initialized.

A MAU in the operational(3) state is fully  
functional, operates, and passes signals to its  
attached DTE or repeater port in accordance to



its specification.

A MAU in standby(4) state forces DI and CI to idle and the media transmitter to idle or fault, if supported. Standby(4) mode only applies to link type MAUs. The state of rpMauMediaAvailable is unaffected.

A MAU in shutdown(5) state assumes the same condition on DI, CI, and the media transmitter as though it were powered down or not connected. The MAU MAY return other(1) value for the rpMauJabberState and rpMauMediaAvailable objects when it is in this state. For an AUI, this state will remove power from the AUI.

Setting this variable to the value reset(6) resets the MAU in the same manner as a power-off, power-on cycle of at least one-half second would. The agent is not required to return the value reset (6).

Setting this variable to the value operational(3), standby(4), or shutdown(5) causes the MAU to assume the respective state except that setting a mixing-type MAU or an AUI to standby(4) will cause the MAU to enter the shutdown state."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.7, aMAUAdminState, 30.5.1.2.2, acMAUAdminControl, and 30.5.1.2.1, acResetMAU."  
 ::= { rpMauEntry 5 }

rpMauMediaAvailable OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    unknown(2),  
    available(3),  
    notAvailable(4),  
    remoteFault(5),  
    invalidSignal(6),  
    remoteJabber(7),  
    remoteLinkLoss(8),  
    remoteTest(9),  
    offline(10),  
    autoNegError(11)  
}

MAX-ACCESS read-only

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STATUS           current  
DESCRIPTION "If the MAU is a link or fiber type (FOIRL, 10BASE-T, 10BASE-F) then this is equivalent to the link test fail state/low light function. For an AUI or a coax (including broadband) MAU this indicates whether or not loopback is detected on the DI circuit. The value of this attribute persists between packets for MAU types AUI, 10BASE5, 10BASE2, 10BROAD36, and 10BASE-FP.

The value other(1) is returned if the mediaAvailable state is not one of 2 through 11.

The value unknown(2) is returned when the MAU's true state is unknown; for example, when it is being initialized. At power-up or following a reset, the value of this attribute will be unknown for AUI, coax, and 10BASE-FP MAUs. For these MAUs loopback will be tested on each transmission during which no collision is detected. If DI is receiving input when DO returns to IDL after a transmission and there has been no collision during the transmission then loopback will be detected. The value of this attribute will only change during non-collided transmissions for AUI, coax, and 10BASE-FP MAUs.

For 100Mbps and 1000Mbps MAUs, the enumerations match the states within the respective link integrity state diagrams, fig 32-16, 23-12 and 24-15 of sections [32](#), [23](#) and [24](#) of [16]. Any MAU which implements management of auto-negotiation will map remote fault indication to remote fault.

The value available(3) indicates that the link, light, or loopback is normal. The value notAvailable(4) indicates link loss, low light, or no loopback.

The value remoteFault(5) indicates that a fault has been detected at the remote end of the link. This value applies to 10BASE-FB, 100BASE-T4 Far End Fault Indication and non-specified remote faults from a system running auto-negotiation. The values remoteJabber(7), remoteLinkLoss(8), and remoteTest(9) SHOULD be used instead of

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remoteFault(5) where the reason for remote fault is identified in the remote signaling protocol.

The value invalidSignal(6) indicates that an invalid signal has been received from the other end of the link. InvalidSignal(6) applies only to MAUs of type 10BASE-FB.

Where an IEEE Std 802.3u-1995 clause 22 MII is present, a logic one in the remote fault bit (reference [section 22.2.4.2.8](#) of that document) maps to the value remoteFault(5), and a logic zero in the link status bit (reference [section 22.2.4.2.10](#) of that document) maps to the value notAvailable(4). The value notAvailable(4) takes precedence over the value remoteFault(5).

Any MAU that implements management of clause 37 Auto-Negotiation will map the received Remote Fault (RF1 and RF2) bit values for Offline to offline(10), Link Failure to remoteFault(5) and Auto-Negotiation Error to autoNegError(11)."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.4, aMediaAvailable."  
::= { rpMauEntry 6 }

rpMauMediaAvailableStateExits OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "A count of the number of times that  
rpMauMediaAvailable for this MAU instance leaves  
the state available(3).

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 rpPtrMonitorPortLastChange."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.5,  
aLoseMediaCounter.  
[RFC 2108](#), rpPtrMonitorPortLastChange"  
::= { rpMauEntry 7 }

rpMauJabberState OBJECT-TYPE

SYNTAX INTEGER {  
other(1),  
unknown(2),  
noJabber(3),





```
        jabbering(4)
    }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value other(1) is returned if the jabber
state is not 2, 3, or 4. The agent MUST always
return other(1) for MAU type dot3MauTypeAUI.
```

The value unknown(2) is returned when the MAU's true state is unknown; for example, when it is being initialized.

If the MAU is not jabbering the agent returns noJabber(3). This is the 'normal' state.

If the MAU is in jabber state the agent returns the jabbering(4) value."

```
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.6,
aJabber.jabberFlag."
::= { rpMauEntry 8 }
```

#### rpMauJabberingStateEnters OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "A count of the number of times that
mauJabberState for this MAU instance enters the
state jabbering(4). For MAUs of type
dot3MauTypeAUI, dot3MauType100BaseT4,
dot3MauType100BaseTX, dot3MauType100BaseFX and
all 100Mbps types, this counter will always
indicate zero.
```

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 rpPtrMonitorPortLastChange."

```
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.6,
aJabber.jabberCounter.
RFC 2108, rpPtrMonitorPortLastChange"
::= { rpMauEntry 9 }
```

#### rpMauFalseCarriers OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "A count of the number of false carrier events
during IDLE in 100BASE-X links. This counter
```

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does not increment at the symbol rate. It can increment after a valid carrier completion at a maximum rate of once per 100 ms until the next carrier event.

This counter increments only for MAUs of type dot3MauType100BaseT4, dot3MauType100BaseTX, and dot3MauType100BaseFX and all 1000Mbps types. For all other MAU types, this counter will always indicate zero.

The approximate minimum time for rollover of this counter is 7.4 hours.

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 rpPtrMonitorPortLastChange."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.10, aFalseCarriers.  
[RFC 2108](#), rpPtrMonitorPortLastChange"  
::= { rpMauEntry 10 }

-- The rpJackTable applies to MAUs attached to repeaters  
-- which have one or more external jacks (connectors).

rpJackTable OBJECT-TYPE

SYNTAX SEQUENCE OF RpJackEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION "Information about the external jacks attached  
to MAUs attached to the ports of a repeater."  
::= { dot3RpMauBasicGroup 2 }

rpJackEntry OBJECT-TYPE

SYNTAX RpJackEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION "An entry in the table, containing information  
about a particular jack."  
INDEX { rpMauGroupIndex,  
rpMauPortIndex,  
rpMauIndex,  
rpJackIndex  
}  
::= { rpJackTable 1 }

RpJackEntry ::=



```
SEQUENCE {
    rpJackIndex          Integer32,
    rpJackType           JackType
}

rpJackIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "This variable uniquely identifies the jack
                 described by this entry from among other jacks
                 attached to the same MAU (rpMauIndex)."
```

```
 ::= { rpJackEntry 1 }
```

```
rpJackType OBJECT-TYPE
    SYNTAX      JackType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "The jack connector type, as it appears on the
                 outside of the system."
```

```
 ::= { rpJackEntry 2 }
```

```
--
-- The Basic Interface MAU Table
--
```

```
ifMauTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF IfMauEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "Table of descriptive and status information
                 about MAU(s) attached to an interface."
```

```
 ::= { dot3IfMauBasicGroup 1 }
```

```
ifMauEntry OBJECT-TYPE
    SYNTAX      IfMauEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An entry in the table, containing information
                 about a single MAU."
```

```
INDEX          { ifMauIfIndex,
                  ifMauIndex
                }
 ::= { ifMauTable 1 }
```

```
IfMauEntry ::=
    SEQUENCE {
```



ifMauIfIndex	InterfaceIndex,
ifMauIndex	Integer32,
ifMauType	OBJECT IDENTIFIER,
ifMauStatus	INTEGER,
ifMauMediaAvailable	INTEGER,
ifMauMediaAvailableStateExits	Counter32,
ifMauJabberState	INTEGER,
ifMauJabberingStateEnters	Counter32,
ifMauFalseCarriers	Counter32,
ifMauTypeList	Integer32,
ifMauDefaultType	OBJECT IDENTIFIER,
ifMauAutoNegSupported	TruthValue,
ifMauTypeListBits	BITS,
ifMauHCFALSECarriers	Counter64

}

## ifMauIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION "This variable uniquely identifies the interface to which the MAU described by this entry is connected."  
 REFERENCE "[RFC 2863](#), ifIndex"  
 ::= { ifMauEntry 1 }

## ifMauIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION "This variable uniquely identifies the MAU described by this entry from among other MAUs connected to the same interface (ifMauIfIndex)."  
 REFERENCE "[IEEE 802.3 Std], 30.5.1.1.1, aMAUID."  
 ::= { ifMauEntry 2 }

## ifMauType OBJECT-TYPE

SYNTAX OBJECT IDENTIFIER  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION "This object identifies the MAU type. An initial set of MAU types are defined above. The assignment of OBJECT IDENTIFIERS to new types of MAUs is managed by the IANA. If the MAU type is unknown, the object identifier

unknownMauType OBJECT IDENTIFIER ::= { 0 0 }





is returned. Note that unknownMauType is a syntactically valid object identifier, and any conformant implementation of ASN.1 and the BER must be able to generate and recognize this value.

This object represents the operational type of the MAU, 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 this MAU, by the value of the object ifMauDefaultType. In case (2), a set to the object ifMauDefaultType will force the MAU into the new operating mode."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.2, aMAUType."  
::= { ifMauEntry 3 }

ifMauStatus OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    unknown(2),  
    operational(3),  
    standby(4),  
    shutdown(5),  
    reset(6)  
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION "The current state of the MAU. This object MAY be implemented as a read-only object by those agents and MAUs that do not implement software control of the MAU state. Some agents may not support setting the value of this object to some of the enumerated values.

The value other(1) is returned if the MAU is in a state other than one of the states 2 through 6.

The value unknown(2) is returned when the MAU's true state is unknown; for example, when it is being initialized.

A MAU in the operational(3) state is fully functional, operates, and passes signals to its attached DTE or repeater port in accordance to its specification.



A MAU in standby(4) state forces DI and CI to idle and the media transmitter to idle or fault, if supported. Standby(4) mode only applies to link type MAUs. The state of ifMauMediaAvailable is unaffected.

A MAU in shutdown(5) state assumes the same condition on DI, CI, and the media transmitter as though it were powered down or not connected. The MAU MAY return other(1) value for the ifMauJabberState and ifMauMediaAvailable objects when it is in this state. For an AUI, this state will remove power from the AUI.

Setting this variable to the value reset(6) resets the MAU in the same manner as a power-off, power-on cycle of at least one-half second would. The agent is not required to return the value reset (6).

Setting this variable to the value operational(3), standby(4), or shutdown(5) causes the MAU to assume the respective state except that setting a mixing-type MAU or an AUI to standby(4) will cause the MAU to enter the shutdown state."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.7, aMAUAdminState, 30.5.1.2.2, acMAUAdminControl, and 30.5.1.2.1, acResetMAU."

::= { ifMauEntry 4 }

ifMauMediaAvailable OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    unknown(2),  
    available(3),  
    notAvailable(4),  
    remoteFault(5),  
    invalidSignal(6),  
    remoteJabber(7),  
    remoteLinkLoss(8),  
    remoteTest(9),  
    offline(10),  
    autoNegError(11),  
    pmdLinkFault(12),  
    wisFrameLoss(13),  
    wisSignalLoss(14),  
    pcsLinkFault(15),



```
        excessiveBER(16),
        dxsLinkFault(17),
        pxsLinkFault(18)
    }
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION     "If the MAU is a link or fiber type (FOIRL,
                10BASE-T, 10BASE-F) then this is equivalent to
                the link test fail state/low light function.
                For an AUI or a coax (including broadband) MAU
                this indicates whether or not loopback is
                detected on the DI circuit. The value of this
                attribute persists between packets for MAU types
                AUI, 10BASE5, 10BASE2, 10BROAD36, and 10BASE-FP.
```

The value other(1) is returned if the mediaAvailable state is not one of 2 through 18.

The value unknown(2) is returned when the MAU's true state is unknown; for example, when it is being initialized. At power-up or following a reset, the value of this attribute will be unknown for AUI, coax, and 10BASE-FP MAUs. For these MAUs loopback will be tested on each transmission during which no collision is detected. If DI is receiving input when DO returns to IDL after a transmission and there has been no collision during the transmission then loopback will be detected. The value of this attribute will only change during non-collided transmissions for AUI, coax, and 10BASE-FP MAUs.

For 100Mbps and 1000Mbps MAUs, the enumerations match the states within the respective link integrity state diagrams, fig 32-16, 23-12 and 24-15 of sections [32](#), [23](#) and [24](#) of [16]. Any MAU which implements management of auto-negotiation will map remote fault indication to remote fault.

The value available(3) indicates that the link, light, or loopback is normal. The value notAvailable(4) indicates link loss, low light, or no loopback.

The value remoteFault(5) indicates that a fault has been detected at the remote end of the link.



This value applies to 10BASE-FB, 100BASE-T4 Far End Fault Indication and non-specified remote faults from a system running auto-negotiation. The values remoteJabber(7), remoteLinkLoss(8), and remoteTest(9) SHOULD be used instead of remoteFault(5) where the reason for remote fault is identified in the remote signaling protocol.

The value invalidSignal(6) indicates that an invalid signal has been received from the other end of the link. InvalidSignal(6) applies only to MAUs of type 10BASE-FB.

Where an IEEE Std 802.3u-1995 clause 22 MII is present, a logic one in the remote fault bit (reference [section 22.2.4.2.8](#) of that document) maps to the value remoteFault(5), and a logic zero in the link status bit (reference [section 22.2.4.2.10](#) of that document) maps to the value notAvailable(4). The value notAvailable(4) takes precedence over the value remoteFault(5).

Any MAU that implements management of clause 37 Auto-Negotiation will map the received RF1 and RF2 bit values for Offline to offline(10), Link Failure to remoteFault(5) and Auto-Negotiation Error to autoNegError(11).

For 10 Gb/s, the enumerations map to the states within the Reconciliation Sublayer state diagram as follows:

NoFault maps to the enumeration 'available(3)'

LocalFault maps to the enumeration

'notAvailable(4)'

RemoteFault maps to the enumeration

'remoteFault(5)'

The enumerations 'pmdLinkFault(12)', 'wisFrameLoss(13)', 'wisSignalLoss(14)', 'pcsLinkFault(15)', 'excessiveBER(16)', and 'dxsLinkFault(17)' and 'pxsLinkFault(18)' should be used instead of the enumeration 'notAvailable(4)' where the reason for the local fault can be identified through the use of the MDIO Interface. Where multiple reasons for the local fault state can be identified only the highest precedence error should be reported. The precedence in descending order is as follows:





pxsLinkFault  
pmdLinkFault  
wisFrameLoss  
wisSignalLoss  
pcsLinkFault  
excessiveBER  
dxsLinkFault"

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.4, aMediaAvailable."  
::= { ifMauEntry 5 }

ifMauMediaAvailableStateExits OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "A count of the number of times that  
ifMauMediaAvailable for this MAU instance leaves  
the state available(3).

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 802.3 Std], 30.5.1.1.5,  
aLoseMediaCounter.  
[RFC 2863](#), ifCounterDiscontinuityTime."  
::= { ifMauEntry 6 }

ifMauJabberState OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    unknown(2),  
    noJabber(3),  
    jabbering(4)  
}

MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "The value other(1) is returned if the jabber  
state is not 2, 3, or 4. The agent MUST always  
return other(1) for MAU type dot3MauTypeAUI.

The value unknown(2) is returned when the MAU's  
true state is unknown; for example, when it is  
being initialized.

If the MAU is not jabbering the agent returns  
noJabber(3). This is the 'normal' state.

If the MAU is in jabber state the agent returns



the jabbering(4) value."  
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.6,  
aJabber.jabberFlag."  
::= { ifMauEntry 7 }

ifMauJabberingStateEnters OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "A count of the number of times that  
mauJabberState for this MAU instance enters the  
state jabbering(4). This counter will always  
indicate zero for MAUs of type dot1MauTypeAUI  
and those of speeds above 10Mbps.  
  
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 802.3 Std], 30.5.1.1.6,  
aJabber.jabberCounter.  
[RFC 2863](#), ifCounterDiscontinuityTime."  
::= { ifMauEntry 8 }

ifMauFalseCarriers OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "A count of the number of false carrier events  
during IDLE in 100BASE-X and 1000BASE-X links.

For all other MAU types, this counter will  
always indicate zero. This counter does not  
increment at the symbol rate.

It can increment after a valid carrier  
completion at a maximum rate of once per 100 ms  
for 100BASE-X and once per 10us for 1000BASE-X  
until the next CarrierEvent.

This counter can roll over very quickly. A  
management station is advised to poll the  
ifMauHCFALSECarriers instead of this counter in  
order to avoid loss of information.

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 802.3 Std], 30.5.1.1.10, aFalseCarriers.  
[RFC 2863](#), ifCounterDiscontinuityTime."  
 ::= { ifMauEntry 9 }

#### ifMauTypeList OBJECT-TYPE

SYNTAX Integer32  
 MAX-ACCESS read-only  
 STATUS deprecated  
 DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

A value that uniquely identifies the set of possible IEEE 802.3 types that the MAU could be. The value is a sum which initially takes the value zero. Then, for each type capability of this MAU, 2 raised to the power noted below is added to the sum. For example, a MAU which has the capability to be only 10BASE-T would have a value of 512 ( $2^{*9}$ ). In contrast, a MAU which supports both 10Base-T (full duplex) and 100BASE-TX (full duplex) would have a value of  $((2^{*11}) + (2^{*16}))$  or 67584.

The powers of 2 assigned to the capabilities are these:

Power	Capability
0	other or unknown
1	AUI
2	10BASE-5
3	FOIRL
4	10BASE-2
5	10BASE-T duplex mode unknown
6	10BASE-FP
7	10BASE-FB
8	10BASE-FL duplex mode unknown
9	10BROAD36
10	10BASE-T half duplex mode
11	10BASE-T full duplex mode
12	10BASE-FL half duplex mode
13	10BASE-FL full duplex mode
14	100BASE-T4
15	100BASE-TX half duplex mode
16	100BASE-TX full duplex mode
17	100BASE-FX half duplex mode
18	100BASE-FX full duplex mode
19	100BASE-T2 half duplex mode
20	100BASE-T2 full duplex mode



If auto-negotiation is present on this MAU, this object will map to ifMauAutoNegCapability.

This object has been deprecated in favour of ifMauTypeListBits."

::= { ifMauEntry 10 }

ifMauDefaultType OBJECT-TYPE

SYNTAX OBJECT IDENTIFIER

MAX-ACCESS read-write

STATUS current

DESCRIPTION "This object identifies the default administrative baseband MAU type, to be used in conjunction with the operational MAU type denoted by ifMauType.

The set of possible values for this object is the same as the set defined for the ifMauType object.

This object represents the administratively-configured type of the MAU. If auto-negotiation is not enabled or is not implemented for this MAU, the value of this object determines the operational type of the MAU. In this case, a set to this object will force the MAU into the specified operating mode.

If auto-negotiation is implemented and enabled for this MAU, the operational type of the MAU is determined by auto-negotiation, and the value of this object denotes the type to which the MAU will automatically revert if/when auto-negotiation is later disabled.

NOTE TO IMPLEMENTORS: It may be necessary to provide for underlying hardware implementations which do not follow the exact behavior specified above. In particular, when ifMauAutoNegAdminStatus transitions from enabled to disabled, the agent implementation MUST ensure that the operational type of the MAU (as reported by ifMauType) correctly transitions to the value specified by this object, rather than continuing to operate at the value earlier determined by the auto-negotiation function."

REFERENCE "[IEEE 802.3 Std], 30.5.1.1.1, aMAUID, and 22.2.4.1.4."





```
::= { ifMauEntry 11 }
```

ifMauAutoNegSupported OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION "This object indicates whether or not  
auto-negotiation is supported on this MAU."

```
::= { ifMauEntry 12 }
```

ifMauTypeListBits OBJECT-TYPE

SYNTAX BITS {

bOther(0),	-- other or unknown
bAUI(1),	-- AUI
b10base5(2),	-- 10BASE-5
bFoirl(3),	-- FOIRL
b10base2(4),	-- 10BASE-2
b10baseT(5),	-- 10BASE-T duplex mode unknown
b10baseFP(6),	-- 10BASE-FP
b10baseFB(7),	-- 10BASE-FB
b10baseFL(8),	-- 10BASE-FL duplex mode unknown
b10broad36(9),	-- 10BROAD36
b10baseTHD(10),	-- 10BASE-T half duplex mode
b10baseTFD(11),	-- 10BASE-T full duplex mode
b10baseFLHD(12),	-- 10BASE-FL half duplex mode
b10baseFLFD(13),	-- 10BASE-FL full duplex mode
b100baseT4(14),	-- 100BASE-T4
b100baseTXHD(15),	-- 100BASE-TX half duplex mode
b100baseTXFD(16),	-- 100BASE-TX full duplex mode
b100baseFXHD(17),	-- 100BASE-FX half duplex mode
b100baseFXFD(18),	-- 100BASE-FX full duplex mode
b100baseT2HD(19),	-- 100BASE-T2 half duplex mode
b100baseT2FD(20),	-- 100BASE-T2 full duplex mode
b1000baseXHD(21),	-- 1000BASE-X half duplex mode
b1000baseXFD(22),	-- 1000BASE-X full duplex mode
b1000baseLXHD(23),	-- 1000BASE-LX half duplex mode
b1000baseLXFD(24),	-- 1000BASE-LX full duplex mode
b1000baseSXHD(25),	-- 1000BASE-SX half duplex mode
b1000baseSXFD(26),	-- 1000BASE-SX full duplex mode
b1000baseCXHD(27),	-- 1000BASE-CX half duplex mode
b1000baseCXFD(28),	-- 1000BASE-CX full duplex mode
b1000baseTHD(29),	-- 1000BASE-T half duplex mode
b1000baseTFD(30),	-- 1000BASE-T full duplex mode
b10GbaseX(31),	-- 10GBASE-X



```

    b10GbaseLX4(32),    -- 10GBASE-LX4
    b10GbaseR(33),      -- 10GBASE-R
    b10GbaseER(34),     -- 10GBASE-ER
    b10GbaseLR(35),     -- 10GBASE-LR
    b10GbaseSR(36),     -- 10GBASE-SR
    b10GbaseW(37),      -- 10GBASE-W
    b10GbaseEW(38),     -- 10GBASE-EW
    b10GbaseLW(39),     -- 10GBASE-LW
    b10GbaseSW(40)      -- 10GBASE-SW
}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "A value that uniquely identifies the set of
               possible IEEE 802.3 types that the MAU could be.
               If auto-negotiation is present on this MAU, this
               object will map to ifMauAutoNegCapability.

```

Note that this MAU may be capable of operating as a MAU type that is beyond the scope of this MIB. This is indicated by returning the bit value b0ther in addition to any bit values for capabilities that are listed above."

```
 ::= { ifMauEntry 13 }
```

#### ifMauHCFALSECarriers OBJECT-TYPE

```

SYNTAX        Counter64
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "A count of the number of false carrier events
               during IDLE in 100BASE-X and 1000BASE-X links.

```

For all other MAU types, this counter will always indicate zero. This counter does not increment at the symbol rate.

This counter is a 64 bit version of ifMauFalseCarriers. Since the 32 bit version of this counter can roll over very quickly, management stations are advised to poll the 64 bit version instead in order to avoid loss of information.

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 802.3 Std], 30.5.1.1.10, aFalseCarriers.
               RFC 2863, ifCounterDiscontinuityTime."

```



```
 ::= { ifMauEntry 14 }

-- The ifJackTable applies to MAUs attached to interfaces
-- which have one or more external jacks (connectors).

ifJackTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF IfJackEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  "Information about the external jacks attached
                  to MAUs attached to an interface."
    ::= { dot3IfMauBasicGroup 2 }

ifJackEntry OBJECT-TYPE
    SYNTAX      IfJackEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  "An entry in the table, containing information
                  about a particular jack."
    INDEX       { ifMauIfIndex,
                  ifMauIndex,
                  ifJackIndex
                }
    ::= { ifJackTable 1 }

IfJackEntry ::=
    SEQUENCE {
        ifJackIndex      Integer32,
        ifJackType       JackType
    }

ifJackIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  "This variable uniquely identifies the jack
                  described by this entry from among other jacks
                  attached to the same MAU."
    ::= { ifJackEntry 1 }

ifJackType OBJECT-TYPE
    SYNTAX      JackType
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION  "The jack connector type, as it appears on the
                  outside of the system."
```



```

 ::= { ifJackEntry 2 }

-- The ifMauAutoNegTable applies to systems in which
-- auto-negotiation is supported on one or more MAUs
-- attached to interfaces. Note that if auto-negotiation
-- is present and enabled, the ifMauType object reflects
-- the result of the auto-negotiation function.

ifMauAutoNegTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF IfMauAutoNegEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  "Configuration and status objects for the
                  auto-negotiation function of MAUs attached to
                  interfaces."
    ::= { dot3IfMauAutoNegGroup 1 }

ifMauAutoNegEntry OBJECT-TYPE
    SYNTAX      IfMauAutoNegEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  "An entry in the table, containing configuration
                  and status information for the auto-negotiation
                  function of a particular MAU."
    INDEX        { ifMauIfIndex,
                  ifMauIndex
                  }
    ::= { ifMauAutoNegTable 1 }

IfMauAutoNegEntry ::=
    SEQUENCE {
        ifMauAutoNegAdminStatus      INTEGER,
        ifMauAutoNegRemoteSignaling   INTEGER,
        ifMauAutoNegConfig            INTEGER,
        ifMauAutoNegCapability        Integer32,
        ifMauAutoNegCapAdvertised     Integer32,
        ifMauAutoNegCapReceived       Integer32,
        ifMauAutoNegRestart           INTEGER,
        ifMauAutoNegCapabilityBits    BITS,
        ifMauAutoNegCapAdvertisedBits BITS,
        ifMauAutoNegCapReceivedBits   BITS,
        ifMauAutoNegRemoteFaultAdvertised INTEGER,
        ifMauAutoNegRemoteFaultReceived INTEGER
    }

```

```

ifMauAutoNegAdminStatus OBJECT-TYPE

```





SYNTAX        INTEGER {  
                  enabled(1),  
                  disabled(2)  
              }  
MAX-ACCESS    read-write  
STATUS        current  
DESCRIPTION   "Setting this object to enabled(1) will cause  
              the interface which has the auto-negotiation  
              signaling ability to be enabled.  
  
              If the value of this object is disabled(2) then  
              the interface will act as it would if it had no  
              auto-negotiation signaling. Under these  
              conditions, an IEEE 802.3 MAU will immediately  
              be forced to the state indicated by the value of  
              the object ifMauDefaultType.  
  
              NOTE TO IMPLEMENTORS: When  
              ifMauAutoNegAdminStatus transitions from enabled  
              to disabled, the agent implementation MUST  
              ensure that the operational type of the MAU (as  
              reported by ifMauType) correctly transitions to  
              the value specified by the ifMauDefaultType  
              object, rather than continuing to operate at the  
              value earlier determined by the auto-negotiation  
              function."  
REFERENCE     "[IEEE 802.3 Std], 30.6.1.1.2,  
              aAutoNegAdminState and 30.6.1.2.2,  
              acAutoNegAdminControl."  
::= { ifMauAutoNegEntry 1 }

## ifMauAutoNegRemoteSignaling OBJECT-TYPE

SYNTAX        INTEGER {  
                  detected(1),  
                  notdetected(2)  
              }  
MAX-ACCESS    read-only  
STATUS        current  
DESCRIPTION   "A value indicating whether the remote end of  
              the link is using auto-negotiation signaling. It  
              takes the value detected(1) if and only if,  
              during the previous link negotiation, FLP Bursts  
              were received."  
REFERENCE     "[IEEE 802.3 Std], 30.6.1.1.3,  
              aAutoNegRemoteSignaling."  
::= { ifMauAutoNegEntry 2 }

## ifMauAutoNegConfig OBJECT-TYPE

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```

SYNTAX      INTEGER {
                other(1),
                configuring(2),
                complete(3),
                disabled(4),
                parallelDetectFail(5)
            }
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION  "A value indicating the current status of the
              auto-negotiation process.  The enumeration
              parallelDetectFail(5) maps to a failure in
              parallel detection as defined in 28.2.3.1 of
              [IEEE 802.3 Std]."
```

REFERENCE   "[IEEE 802.3 Std], 30.6.1.1.4,  
              aAutoNegAutoConfig."

```
 ::= { ifMauAutoNegEntry 4 }
```

#### ifMauAutoNegCapability OBJECT-TYPE

```

SYNTAX      Integer32
MAX-ACCESS   read-only
STATUS       deprecated
DESCRIPTION  "***** THIS OBJECT IS DEPRECATED *****"
```

A value that uniquely identifies the set of capabilities of the local auto-negotiation entity. The value is a sum which initially takes the value zero. Then, for each capability of this interface, 2 raised to the power noted below is added to the sum. For example, an interface which has the capability to support only 100Base-TX half duplex would have a value of 32768 ( $2^{15}$ ). In contrast, an interface which supports both 100Base-TX half duplex and 100Base-TX full duplex would have a value of 98304 ( $(2^{15}) + (2^{16})$ ).

The powers of 2 assigned to the capabilities are these:

Power	Capability
0	other or unknown
(1-9)	(reserved)
10	10BASE-T half duplex mode
11	10BASE-T full duplex mode
12	(reserved)
13	(reserved)
14	100BASE-T4



15	100BASE-TX half duplex mode
16	100BASE-TX full duplex mode
17	(reserved)
18	(reserved)
19	100BASE-T2 half duplex mode
20	100BASE-T2 full duplex mode

Note that interfaces that support this MIB may have capabilities that extend beyond the scope of this MIB.

This object has been deprecated in favour of ifMauAutoNegCapabilityBits"

REFERENCE "[IEEE 802.3 Std], 30.6.1.1.5,  
aAutoNegLocalTechnologyAbility."  
::= { ifMauAutoNegEntry 5 }

#### ifMauAutoNegCapAdvertised OBJECT-TYPE

SYNTAX Integer32  
MAX-ACCESS read-write  
STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

A value that uniquely identifies the set of capabilities advertised by the local auto-negotiation entity. Refer to ifMauAutoNegCapability for a description of the possible values of this object.

Capabilities in this object that are not available in ifMauAutoNegCapability cannot be enabled.

This object has been deprecated in favour of ifMauAutoNegCapAdvertisedBits"

REFERENCE "[IEEE 802.3 Std], 30.6.1.1.6,  
aAutoNegAdvertisedTechnologyAbility."  
::= { ifMauAutoNegEntry 6 }

#### ifMauAutoNegCapReceived OBJECT-TYPE

SYNTAX Integer32  
MAX-ACCESS read-only  
STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

A value that uniquely identifies the set of capabilities received from the remote auto-negotiation entity. Refer to



ifMauAutoNegCapability for a description of the possible values of this object.

Note that interfaces that support this MIB may be attached to remote auto-negotiation entities which have capabilities beyond the scope of this MIB.

This object has been deprecated in favour of ifMauAutoNegCapReceivedBits"

REFERENCE "[IEEE 802.3 Std], 30.6.1.1.7,  
aAutoNegReceivedTechnologyAbility."  
::= { ifMauAutoNegEntry 7 }

ifMauAutoNegRestart OBJECT-TYPE

SYNTAX INTEGER {  
restart(1),  
norestart(2)  
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION "If the value of this object is set to restart(1) then this will force auto-negotiation to begin link renegotiation. If auto-negotiation signaling is disabled, a write to this object has no effect.

Setting the value of this object to norestart(2) has no effect."

REFERENCE "[IEEE 802.3 Std], 30.6.1.2.1,  
acAutoNegRestartAutoConfig."  
::= { ifMauAutoNegEntry 8 }

ifMauAutoNegCapabilityBits OBJECT-TYPE

SYNTAX BITS {  
bOther(0), -- other or unknown  
b10baseT(1), -- 10BASE-T half duplex mode  
b10baseTFD(2), -- 10BASE-T full duplex mode  
b100baseT4(3), -- 100BASE-T4  
b100baseTX(4), -- 100BASE-TX half duplex mode  
b100baseTXFD(5), -- 100BASE-TX full duplex mode  
b100baseT2(6), -- 100BASE-T2 half duplex mode  
b100baseT2FD(7), -- 100BASE-T2 full duplex mode  
bfdxPause(8), -- PAUSE for full-duplex links  
bfdxAPause(9), -- Asymmetric PAUSE for full-duplex  
-- links  
bfdxSPause(10), -- Symmetric PAUSE for full-duplex  
-- links



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```

    bFdxBPAuse(11),    -- Asymmetric and Symmetric PAUSE for
                        --      full-duplex links
    b1000baseX(12),    -- 1000BASE-X, -LX, -SX, -CX half
                        --      duplex mode
    b1000baseXFD(13),  -- 1000BASE-X, -LX, -SX, -CX full
                        --      duplex mode
    b1000baseT(14),    -- 1000BASE-T half duplex mode
    b1000baseTFD(15)   -- 1000BASE-T full duplex mode
}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "A value that uniquely identifies the set of
               capabilities of the local auto-negotiation
               entity. Note that interfaces that support this
               MIB may have capabilities that extend beyond the
               scope of this MIB.

               Note that the local auto-negotiation entity may
               support some capabilities beyond the scope of
               this MIB. This is indicated by returning the
               bit value bOther in addition to any bit values
               for capabilities that are listed above."
REFERENCE     "[IEEE 802.3 Std], 30.6.1.1.5,
               aAutoNegLocalTechnologyAbility."
 ::= { ifMauAutoNegEntry 9 }

```

ifMauAutoNegCapAdvertisedBits OBJECT-TYPE

```

SYNTAX        BITS {
    bOther(0),        -- other or unknown
    b10baseT(1),      -- 10BASE-T half duplex mode
    b10baseTFD(2),    -- 10BASE-T full duplex mode
    b100baseT4(3),    -- 100BASE-T4
    b100baseTX(4),    -- 100BASE-TX half duplex mode
    b100baseTXFD(5),  -- 100BASE-TX full duplex mode
    b100baseT2(6),    -- 100BASE-T2 half duplex mode
    b100baseT2FD(7),  -- 100BASE-T2 full duplex mode
    bFdxPause(8),     -- PAUSE for full-duplex links
    bFdxAPause(9),    -- Asymmetric PAUSE for full-duplex
                        --      links
    bFdxSPause(10),   -- Symmetric PAUSE for full-duplex
                        --      links
    bFdxBPAuse(11),   -- Asymmetric and Symmetric PAUSE for
                        --      full-duplex links
    b1000baseX(12),   -- 1000BASE-X, -LX, -SX, -CX half
                        --      duplex mode
    b1000baseXFD(13), -- 1000BASE-X, -LX, -SX, -CX full
                        --      duplex mode
    b1000baseT(14),   -- 1000BASE-T half duplex mode

```

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```

        b1000baseTFD(15) -- 1000BASE-T full duplex mode
    }
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION   "A value that uniquely identifies the set of
                  capabilities advertised by the local
                  auto-negotiation entity."

```

Capabilities in this object that are not available in ifMauAutoNegCapabilityBits cannot be enabled.

Note that the local auto-negotiation entity may advertise some capabilities beyond the scope of this MIB. This is indicated by returning the bit value b0ther in addition to any bit values for capabilities that are listed above."

```

REFERENCE      "[IEEE 802.3 Std], 30.6.1.1.6,
                aAutoNegAdvertisedTechnologyAbility."
::= { ifMauAutoNegEntry 10 }

```

#### ifMauAutoNegCapReceivedBits OBJECT-TYPE

```

SYNTAX        BITS {
    b0ther(0),          -- other or unknown
    b10baseT(1),        -- 10BASE-T half duplex mode
    b10baseTFD(2),      -- 10BASE-T full duplex mode
    b100baseT4(3),      -- 100BASE-T4
    b100baseTX(4),      -- 100BASE-TX half duplex mode
    b100baseTXFD(5),    -- 100BASE-TX full duplex mode
    b100baseT2(6),      -- 100BASE-T2 half duplex mode
    b100baseT2FD(7),    -- 100BASE-T2 full duplex mode
    bFdxPause(8),       -- PAUSE for full-duplex links
    bFdxAPause(9),      -- Asymmetric PAUSE for full-duplex
                        -- links
    bFdxSPause(10),     -- Symmetric PAUSE for full-duplex
                        -- links
    bFdxBPAuse(11),     -- Asymmetric and Symmetric PAUSE for
                        -- full-duplex links
    b1000baseX(12),     -- 1000BASE-X, -LX, -SX, -CX half
                        -- duplex mode
    b1000baseXFD(13),   -- 1000BASE-X, -LX, -SX, -CX full
                        -- duplex mode
    b1000baseT(14),     -- 1000BASE-T half duplex mode
    b1000baseTFD(15)    -- 1000BASE-T full duplex mode
}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "A value that uniquely identifies the set of

```



capabilities received from the remote auto-negotiation entity.

Note that interfaces that support this MIB may be attached to remote auto-negotiation entities which have capabilities beyond the scope of this MIB. This is indicated by returning the bit value `bOther` in addition to any bit values for capabilities that are listed above."

REFERENCE "[IEEE 802.3 Std], 30.6.1.1.7,  
aAutoNegReceivedTechnologyAbility."  
::= { ifMauAutoNegEntry 11 }

ifMauAutoNegRemoteFaultAdvertised OBJECT-TYPE

SYNTAX INTEGER {  
noError(1),  
offline(2),  
linkFailure(3),  
autoNegError(4)  
}  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION "A value that identifies any local fault indications that this MAU has detected and will advertise at the next auto-negotiation interaction for 1000Mbps MAUs."  
REFERENCE "[IEEE 802.3 Std], 30.6.1.1.6,  
aAutoNegAdvertisedTechnologyAbility."  
::= { ifMauAutoNegEntry 12 }

ifMauAutoNegRemoteFaultReceived OBJECT-TYPE

SYNTAX INTEGER {  
noError(1),  
offline(2),  
linkFailure(3),  
autoNegError(4)  
}  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION "A value that identifies any fault indications received from the far end of a link by the local auto-negotiation entity for 1000Mbps MAUs."  
REFERENCE "[IEEE 802.3 Std], 30.6.1.1.7,  
aAutoNegReceivedTechnologyAbility."  
::= { ifMauAutoNegEntry 13 }

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--

-- The Basic Broadband MAU Table

--

broadMauBasicTable OBJECT-TYPE

SYNTAX SEQUENCE OF BroadMauBasicEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

Table of descriptive and status information  
about the broadband MAUs connected to  
interfaces."

::= { dot3BroadMauBasicGroup 1 }

broadMauBasicEntry OBJECT-TYPE

SYNTAX BroadMauBasicEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

An entry in the table, containing information  
about a single broadband MAU."

INDEX { broadMauIfIndex,  
broadMauIndex  
}

::= { broadMauBasicTable 1 }

BroadMauBasicEntry ::=

SEQUENCE {	
broadMauIfIndex	InterfaceIndex,
broadMauIndex	Integer32,
broadMauXmtRcvSplitType	INTEGER,
broadMauXmtCarrierFreq	Integer32,
broadMauTranslationFreq	Integer32
}	

broadMauIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"

This variable uniquely identifies the interface  
to which the MAU described by this entry is  
connected."

REFERENCE "Reference [RFC 2863](#), ifIndex."

::= { broadMauBasicEntry 1 }





## broadMauIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)  
MAX-ACCESS read-only  
STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"  
  
This variable uniquely identifies the MAU  
connected to interface broadMauIfIndex that is  
described by this entry."  
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.1, aMAUID."  
::= { broadMauBasicEntry 2 }

## broadMauXmtRcvSplitType OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    single(2),  
    dual(3)  
}  
MAX-ACCESS read-only  
STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"  
  
This object indicates the type of frequency  
multiplexing/cabling system used to separate the  
transmit and receive paths for the 10BROAD36  
MAU.  
  
The value other(1) is returned if the split type  
is not either single or dual.  
  
The value single(2) indicates a single cable  
system. The value dual(3) indicates a dual  
cable system, offset normally zero."  
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.8,  
aBbMAUXmitRcvSplitType."  
::= { broadMauBasicEntry 3 }

## broadMauXmtCarrierFreq OBJECT-TYPE

SYNTAX Integer32  
MAX-ACCESS read-only  
STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS OBJECT IS DEPRECATED \*\*\*\*\*"  
  
This variable indicates the transmit carrier  
frequency of the 10BROAD36 MAU in MHz/4; that  
is, in units of 250 kHz."  
REFERENCE "[IEEE 802.3 Std], 30.5.1.1.9,  
aBroadbandFrequencies.xmitCarrierFrequency."



```
 ::= { broadMauBasicEntry 4 }

broadMauTranslationFreq OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       deprecated
    DESCRIPTION  "***** THIS OBJECT IS DEPRECATED *****

                This variable indicates the translation offset
                frequency of the 10BROAD36 MAU in MHz/4; that
                is, in units of 250 kHz."
    REFERENCE    "[IEEE 802.3 Std], 30.5.1.1.9,
                aBroadbandFrequencies.translationFrequency."
    ::= { broadMauBasicEntry 5 }

-- Notifications for use by 802.3 MAUs

snmpDot3MauTraps OBJECT IDENTIFIER ::= { snmpDot3MauMgt 0 }

rpMauJabberTrap NOTIFICATION-TYPE
    OBJECTS      { rpMauJabberState }
    STATUS       current
    DESCRIPTION  "This trap is sent whenever a managed repeater
                MAU enters the jabber state.

                The agent MUST throttle the generation of
                consecutive rpMauJabberTraps so that there is at
                least a five-second gap between them."
    REFERENCE    "[IEEE 802.3 Mgt], 30.5.1.3.1, nJabber
                notification."
    ::= { snmpDot3MauTraps 1 }

ifMauJabberTrap NOTIFICATION-TYPE
    OBJECTS      { ifMauJabberState }
    STATUS       current
    DESCRIPTION  "This trap is sent whenever a managed interface
                MAU enters the jabber state.

                The agent MUST throttle the generation of
                consecutive ifMauJabberTraps so that there is at
                least a five-second gap between them."
    REFERENCE    "[IEEE 802.3 Mgt], 30.5.1.3.1, nJabber
                notification."
    ::= { snmpDot3MauTraps 2 }
```



-- Conformance information

mauModConf

OBJECT IDENTIFIER ::= { mauMod 1 }

mauModCompls

OBJECT IDENTIFIER ::= { mauModConf 1 }

mauModObjGrps

OBJECT IDENTIFIER ::= { mauModConf 2 }

mauModNotGrps

OBJECT IDENTIFIER ::= { mauModConf 3 }

-- Object groups

mauRpGrpBasic OBJECT-GROUP

OBJECTS { rpMauGroupIndex,  
rpMauPortIndex,  
rpMauIndex,  
rpMauType,  
rpMauStatus,  
rpMauMediaAvailable,  
rpMauMediaAvailableStateExits,  
rpMauJabberState,  
rpMauJabberingStateEnters  
}

STATUS current

DESCRIPTION "Basic conformance group for MAUs attached to  
repeater ports. This group is also the  
conformance specification for [RFC 1515](#)  
implementations."

::= { mauModObjGrps 1 }

mauRpGrp100Mbs OBJECT-GROUP

OBJECTS { rpMauFalseCarriers }

STATUS current

DESCRIPTION "Conformance group for MAUs attached to  
repeater ports with 100 Mb/s or greater  
capability."

::= { mauModObjGrps 2 }

mauRpGrpJack OBJECT-GROUP

OBJECTS { rpJackType }

STATUS current

DESCRIPTION "Conformance group for MAUs attached to  
repeater ports with managed jacks."

::= { mauModObjGrps 3 }

mauIfGrpBasic OBJECT-GROUP



```
OBJECTS      { ifMauIfIndex,
                ifMauIndex,
                ifMauType,
                ifMauStatus,
                ifMauMediaAvailable,
                ifMauMediaAvailableStateExits,
                ifMauJabberState,
                ifMauJabberingStateEnters
              }
STATUS       current
DESCRIPTION  "Basic conformance group for MAUs attached to
              interfaces.  This group also provides a
              conformance specification for RFC 1515
              implementations."
 ::= { mauModObjGrps 4 }

mauIfGrp100Mbs OBJECT-GROUP
OBJECTS      { ifMauFalseCarriers,
                ifMauTypeList,
                ifMauDefaultType,
                ifMauAutoNegSupported
              }
STATUS       deprecated
DESCRIPTION  "***** THIS GROUP IS DEPRECATED *****

              Conformance group for MAUs attached to
              interfaces with 100 Mb/s capability.

              This object group has been deprecated in favor
              of mauIfGrpHighCapacity."
 ::= { mauModObjGrps 5 }

mauIfGrpJack OBJECT-GROUP
OBJECTS      { ifJackType }
STATUS       current
DESCRIPTION  "Conformance group for MAUs attached to
              interfaces with managed jacks."
 ::= { mauModObjGrps 6 }

mauIfGrpAutoNeg OBJECT-GROUP
OBJECTS      { ifMauAutoNegAdminStatus,
                ifMauAutoNegRemoteSignaling,
                ifMauAutoNegConfig,
                ifMauAutoNegCapability,
                ifMauAutoNegCapAdvertised,
                ifMauAutoNegCapReceived,
                ifMauAutoNegRestart
              }
```





STATUS deprecated  
DESCRIPTION "\*\*\*\*\* THIS GROUP IS DEPRECATED \*\*\*\*\*"

Conformance group for MAUs attached to  
interfaces with managed auto-negotiation.

This object group has been deprecated in favor  
of mauIfGrpAutoNeg2."

::= { mauModObjGrps 7 }

mauBroadBasic OBJECT-GROUP

OBJECTS { broadMauIfIndex,  
broadMauIndex,  
broadMauXmtRcvSplitType,  
broadMauXmtCarrierFreq,  
broadMauTranslationFreq  
}

STATUS deprecated

DESCRIPTION "\*\*\*\*\* THIS GROUP IS DEPRECATED \*\*\*\*\*"

Conformance group for broadband MAUs attached  
to interfaces.

This object group is deprecated. There have  
been no reported implementations of this group,  
and it was felt to be unlikely that there will  
be any future implementations."

::= { mauModObjGrps 8 }

mauIfGrpHighCapacity OBJECT-GROUP

OBJECTS { ifMauFalseCarriers,  
ifMauTypeListBits,  
ifMauDefaultType,  
ifMauAutoNegSupported  
}

STATUS current

DESCRIPTION "Conformance group for MAUs attached to  
interfaces with 100 Mb/s or greater capability."

::= { mauModObjGrps 9 }

mauIfGrpAutoNeg2 OBJECT-GROUP

OBJECTS { ifMauAutoNegAdminStatus,  
ifMauAutoNegRemoteSignaling,  
ifMauAutoNegConfig,  
ifMauAutoNegCapabilityBits,  
ifMauAutoNegCapAdvertisedBits,  
ifMauAutoNegCapReceivedBits,  
ifMauAutoNegRestart



```
    }
    STATUS      current
    DESCRIPTION  "Conformance group for MAUs attached to
                  interfaces with managed auto-negotiation."
    ::= { mauModObjGrps 10 }

mauIfGrpAutoNeg1000Mbps OBJECT-GROUP
    OBJECTS      { ifMauAutoNegRemoteFaultAdvertised,
                    ifMauAutoNegRemoteFaultReceived
                  }
    STATUS      current
    DESCRIPTION  "Conformance group for 1000Mbps MAUs attached to
                  interfaces with managed auto-negotiation."
    ::= { mauModObjGrps 11 }

mauIfGrpHCStats OBJECT-GROUP
    OBJECTS      { ifMauHCFALSECarriers }
    STATUS      current
    DESCRIPTION  "Conformance for high capacity statistics for
                  MAUs attached to interfaces"
    ::= { mauModObjGrps 12 }

-- Notification groups

rpMauNotifications NOTIFICATION-GROUP
    NOTIFICATIONS { rpMauJabberTrap }
    STATUS      current
    DESCRIPTION  "Notifications for repeater MAUs."
    ::= { mauModNotGrps 1 }

ifMauNotifications NOTIFICATION-GROUP
    NOTIFICATIONS { ifMauJabberTrap }
    STATUS      current
    DESCRIPTION  "Notifications for interface MAUs."
    ::= { mauModNotGrps 2 }

-- Compliances

mauModRpCompl MODULE-COMPLIANCE
    STATUS      deprecated
    DESCRIPTION  "***** THIS COMPLIANCE IS DEPRECATED *****

                  Compliance for MAUs attached to repeater
                  ports.

                  This compliance is deprecated and replaced by
```



mauModRpCompl2, which corrects an oversight by allowing rpMauStatus to be implemented read-only."

```
MODULE -- this module
  MANDATORY-GROUPS { mauRpGrpBasic }

  GROUP      mauRpGrp100Mbs
  DESCRIPTION "Implementation of this optional group is
               recommended for MAUs which have 100Mb/s or
               greater capability."

  GROUP      mauRpGrpJack
  DESCRIPTION "Implementation of this optional group is
               recommended for MAUs which have one or more
               external jacks."

  GROUP      rpMauNotifications
  DESCRIPTION "Implementation of this group is recommended
               for MAUs attached to repeater ports."
 ::= { mauModCompls 1 }
```

```
mauModIfCompl MODULE-COMPLIANCE
  STATUS      deprecated
  DESCRIPTION "***** THIS COMPLIANCE IS DEPRECATED *****

               Compliance for MAUs attached to interfaces.

               This compliance is deprecated and replaced by
               mauModIfCompl2."
```

```
MODULE -- this module
  MANDATORY-GROUPS { mauIfGrpBasic }

  GROUP      mauIfGrp100Mbs
  DESCRIPTION "Implementation of this optional group is
               recommended for MAUs which have 100Mb/s
               capability."

  GROUP      mauIfGrpJack
  DESCRIPTION "Implementation of this optional group is
               recommended for MAUs which have one or more
               external jacks."

  GROUP      mauIfGrpAutoNeg
  DESCRIPTION "Implementation of this group is mandatory
               for MAUs which support managed
```



auto-negotiation."

GROUP mauBroadBasic  
DESCRIPTION "Implementation of this group is mandatory  
for broadband MAUs."

GROUP ifMauNotifications  
DESCRIPTION "Implementation of this group is recommended  
for MAUs attached to interfaces."

::= { mauModCompls 2 }

mauModIfCompl2 MODULE-COMPLIANCE

STATUS deprecated

DESCRIPTION "\*\*\*\*\* THIS COMPLIANCE IS DEPRECATED \*\*\*\*\*"

Compliance for MAUs attached to interfaces."

MODULE -- this module

MANDATORY-GROUPS { mauIfGrpBasic }

GROUP mauIfGrpHighCapacity  
DESCRIPTION "Implementation of this optional group is  
recommended for MAUs which have 100Mb/s  
or greater capability."

GROUP mauIfGrpJack  
DESCRIPTION "Implementation of this optional group is  
recommended for MAUs which have one or more  
external jacks."

GROUP mauIfGrpAutoNeg2  
DESCRIPTION "Implementation of this group is mandatory  
for MAUs which support managed  
auto-negotiation."

GROUP mauIfGrpAutoNeg1000Mbps  
DESCRIPTION "Implementation of this group is mandatory  
for MAUs which have 1000Mb/s or greater  
capability and support managed  
auto-negotiation."

GROUP ifMauNotifications  
DESCRIPTION "Implementation of this group is recommended  
for MAUs attached to interfaces."

OBJECT ifMauStatus  
MIN-ACCESS read-only  
DESCRIPTION "Write access is not required."





```
 ::= { mauModCompls 3 }

mauModRpCompl2 MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION "Compliance for MAUs attached to repeater
                ports."

    MODULE -- this module
        MANDATORY-GROUPS { mauRpGrpBasic }

        GROUP      mauRpGrp100Mbps
        DESCRIPTION "Implementation of this optional group is
                    recommended for MAUs which have 100Mb/s or
                    greater capability."

        GROUP      mauRpGrpJack
        DESCRIPTION "Implementation of this optional group is
                    recommended for MAUs which have one or more
                    external jacks."

        GROUP      rpMauNotifications
        DESCRIPTION "Implementation of this group is recommended
                    for MAUs attached to repeater ports."

        OBJECT      rpMauStatus
        MIN-ACCESS   read-only
        DESCRIPTION "Write access is not required."
    ::= { mauModCompls 4 }

mauModIfCompl3 MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION "Compliance for MAUs attached to interfaces."

    MODULE -- this module
        MANDATORY-GROUPS { mauIfGrpBasic }

        GROUP      mauIfGrpHighCapacity
        DESCRIPTION "Implementation of this optional group is
                    recommended for MAUs which have 100Mb/s
                    or greater capability."

        GROUP      mauIfGrpHCStats
        DESCRIPTION "Implementation of this group is mandatory
                    for MAUs which have 1000Mb/s capacity, and
                    is recommended for MAUs which have 100Mb/s
                    capacity."

        GROUP      mauIfGrpJack
```



```
DESCRIPTION "Implementation of this optional group is
             recommended for MAUs which have one or more
             external jacks."

GROUP      mauIfGrpAutoNeg2
DESCRIPTION "Implementation of this group is mandatory
             for MAUs which support managed
             auto-negotiation."

GROUP      mauIfGrpAutoNeg1000Mbps
DESCRIPTION "Implementation of this group is mandatory
             for MAUs which have 1000Mb/s or greater
             capability and support managed
             auto-negotiation."

GROUP      ifMauNotifications
DESCRIPTION "Implementation of this group is recommended
             for MAUs attached to interfaces."

OBJECT     ifMauStatus
MIN-ACCESS read-only
DESCRIPTION "Write access is not required."
::= { mauModCompls 5 }
```

END

## 5. Intellectual Property

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## **6. Acknowledgements**

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## **8. Security Considerations**

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write. Setting these objects can have a serious effect on the operation of the network, including:

- enabling or disabling a MAU
- changing a MAU's default type
- enabling, disabling or restarting autonegotiation
- modifying the capabilities that a MAU advertizes during autonegotiation.

Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

SNMPv1 by itself is such an insecure environment. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 2574](#) [[RFC2574](#)] and the View-based Access Control Model [RFC 2575](#) [[RFC2575](#)] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, is properly configured to give access to those objects only to those principals (users) that have legitimate rights to access them.

## **9. Authors' Addresses**

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## **A. Change Log**

### **A.1. Changes since [RFC 2668](#)**



This section enumerates changes made to [RFC 2668](#) to produce this document.

- (1) Updated references to the IEEE 802.3 standard to refer to the 2000 edition.
- (2) Added reference to 802.3ae.
- (3) Updated WG e-mail address.
- (4) The following DESCRIPTION clauses have been updated to reflect behaviour on 10 Gb/s interfaces:  
ifMauMediaAvailable.
- (5) OBJECT-IDENTITY definitions have been added for 10 gigabit MAU types.
- (6) Enumerations for 'pmdLinkFault', 'wisFrameLoss', 'wisSignalLoss', 'pcsLinkFault', 'excessiveBER', 'dxsLinkFault' and 'pxsLinkFault' have been added for the ifMauMediaAvailable object.
- (7) ifMauTypeListBits has been extended with bits for the 10 Gb/s MAU types.
- (8) The MODULE-IDENTITY clause has been updated to reflect the changes in the MIB module.
- (9) MIB boilerplate in [section 2](#) has been updated to the latest approved text.
- (10) Added 64-bit version of ifMauFalseCarriers, and updated compliances accordingly.
- (11) Added section on mapping of IEEE managed objects to the objects in this MIB module.

#### **[A.2.](#) Changes between [RFC 2239](#) and [RFC 2668](#)**

This section enumerates the changes made to [RFC 2239](#) to produce [RFC 2668](#).

- (1) The MODULE-IDENTITY has been updated to reflect the changes in the MIB.
- (2) OBJECT-IDENTITY definitions have been added for gigabit MAU



types.

- (3) The ifMauTypeList, ifMauAutoNegCapability, ifMauAutoNegCapAdvertised and ifMauAutoNegCapReceived objects have been deprecated and replaced by ifMauTypeListBits, ifMauAutoNegCapabilityBits, ifMauAutoNegCapAdvertisedBits and ifMauAutoNegCapReceivedBits.
- (4) Two new objects, ifMauAutoNegRemoteFaultAdvertised and ifMauAutoNegRemoteFaultReceived have been added.
- (5) Enumerations for 'offline' and 'autoNegError' have been added for the rpMauMediaAvailable and ifMauMediaAvailable objects.
- (6) The broadMauBasicTable and mauBroadBasic object group have been deprecated.
- (7) The mauIfGrp100Mbps and mauIfGrpAutoNeg object groups have been deprecated and replaced by mauIfGrpHighCapacity and mauIfGrpAutoNeg2.
- (8) A new object group, mauIfGrpAutoNeg1000Mbps, has been added.
- (9) The mauModIfCompl and mauModRpCompl compliances have been deprecated and replaced by mauModIfCompl2 and mauModRpCompl2.
- (10) Added section on relationship to [RFC 2239](#).
- (11) Updated the SNMP Network Management Framework boilerplate.
- (12) Refer to the Interfaces MIB, rather than the interfaces group of MIB-II.
- (13) Updated references to refer to latest edition of IEEE 802.3.
- (14) An intellectual property notice was added, as required by [RFC 2026](#).

## **B. Full Copyright Statement**

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