

Definitions of Managed Objects for the Ethernet-like Interface Types

Status of this Memo

This memo is an extension to the SNMP MIB. This RFC specifies an IAB standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "IAB Official Protocol Standards" for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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1. Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing ethernet-like objects.

2. The Network Management Framework

The Internet-standard Network Management Framework consists of three components. They are:

RFC 1155 which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management. RFC 1212

defines a more concise description mechanism, which is wholly consistent with the SMI.

RFC 1156 which defines MIB-I, the core set of managed objects for the Internet suite of protocols. RFC 1213, defines MIB-II, an evolution of MIB-I based on implementation experience and new operational requirements.

RFC 1157 which defines the SNMP, the protocol used for network access to managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

3. Objects

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) [7] defined in the SMI. In particular, each object has a name, a syntax, and an encoding. The name is an object identifier, an administratively assigned name, which specifies an object type. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the OBJECT DESCRIPTOR, to also refer to the object type.

The syntax of an object type defines the abstract data structure corresponding to that object type. The ASN.1 language is used for this purpose. However, the SMI [3] purposely restricts the ASN.1 constructs which may be used. These restrictions are explicitly made for simplicity.

The encoding of an object type is simply how that object type is represented using the object type's syntax. Implicitly tied to the notion of an object type's syntax and encoding is how the object type is represented when being transmitted on the network.

The SMI specifies the use of the basic encoding rules of ASN.1 [8], subject to the additional requirements imposed by the SNMP.

3.1. Format of Definitions

Section 5 contains contains the specification of all object types contained in this MIB module. The object types are defined using the conventions defined in the SMI, as amended by the extensions specified in [13].

4. Overview

Instances of these object types represent attributes of an interface to an ethernet-like communications medium. At present, ethernet-like media are identified by three values of the ifType object in the Internet-standard MIB:

```
ethernet-csmacd(6)
iso88023-csmacd(7)
starLan(11)
```

For these interfaces, the value of the ifSpecific variable in the MIB-II [6] has the OBJECT IDENTIFIER value:

```
dot3      OBJECT IDENTIFIER ::= { transmission 7 }
```

The definitions presented here are based on the IEEE 802.3 Layer Management Specification [9], as originally interpreted by Frank Kastenholz of Interlan in [10]. Implementors of these MIB objects should note that the IEEE document explicitly describes (in the form of Pascal pseudocode) when, where, and how various MAC attributes are measured. The IEEE document also describes the effects of MAC actions that may be invoked by manipulating instances of the MIB objects defined here.

To the extent that some of the attributes defined in [9] are represented by previously defined objects in the Internet-standard MIB or in the generic interface extensions MIB [11], such attributes are not redundantly represented by objects defined in this memo. Among the attributes represented by objects defined in other memos are the number of octets transmitted or received on a particular interface, the number of frames transmitted or received on a particular interface, the promiscuous status of an interface, the MAC address of an interface, and multicast information associated with an interface.

The relationship between an ethernet-like interface and an interface in the context of the Internet-standard MIB is one-to-one. As such, the value of an ifIndex object instance can be directly used to identify corresponding instances of the objects defined herein.

5. Definitions

```
RFC1284-MIB DEFINITIONS ::= BEGIN

IMPORTS
    Counter, Gauge
        FROM RFC1155-SMI
    transmission
        FROM RFC1213-MIB
    OBJECT-TYPE
        FROM RFC-1212;

-- This MIB module uses the extended OBJECT-TYPE macro as
-- defined in [13]

-- this is the MIB module for ethernet-like objects
dot3      OBJECT IDENTIFIER ::= { transmission 7 }

-- the Generic Ethernet-like group
-- Implementation of this group is mandatory for all systems
-- that attach to an ethernet-like medium.

dot3Table OBJECT-TYPE
    SYNTAX  SEQUENCE OF Dot3Entry
    ACCESS  not-accessible
    STATUS  mandatory
    DESCRIPTION
        "Status information and control variables for a
         collection of ethernet-like interfaces attached to
         a particular system."
    ::= { dot3 1 }

dot3Entry OBJECT-TYPE
    SYNTAX  Dot3Entry
    ACCESS  not-accessible
    STATUS  mandatory
    DESCRIPTION
        "Status information and control variables for a
         particular interface to an ethernet-like medium."
    INDEX   { dot3Index }
    ::= { dot3Table 1 }
```

```
Dot3Entry ::=
    SEQUENCE {
        dot3Index
            INTEGER,
        dot3InitializeMac
            INTEGER,
        dot3MacSubLayerStatus
            INTEGER,
        dot3MulticastReceiveStatus
            INTEGER,
        dot3TxEnabled
            INTEGER,
        dot3TestTdrValue
            Gauge
    }

dot3Index OBJECT-TYPE
    SYNTAX  INTEGER
    ACCESS  read-only
    STATUS  mandatory
    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."
    ::= { dot3Entry 1 }

dot3InitializeMac OBJECT-TYPE
    SYNTAX  INTEGER { initialized(1), uninitialized(2) }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The initialization status of the MAC and PLS
        (Physical Layer Signalling) subsystems for a
        particular interface. The value initialized(1)
        signifies that the subsystems for a particular
        interface have been previously initialized; the
        value uninitialized(2) signifies that they have
        not been previously initialized.

        Each alteration of an instance of this object to
        either of the values initialized(1) or
        uninitialized(2) is analogous to an invocation of
        the initializeMAC action defined in [9] and has
        the effect of (re-)initializing the MAC and PLS
        subsystems for the associated interface. In
        particular,
```

all management counters pertaining to the MAC and PLS subsystems for said interface are reset to zero;

the receive and transmit layer management state variables (receiveEnabled and transmitEnabled in [9]) are set to enable reception and transmission of frames;

the promiscuous receive function is disabled; and

multicast reception is disabled."

::= { dot3Entry 2 }

dot3MacSubLayerStatus OBJECT-TYPE

SYNTAX INTEGER { enabled(1), disabled(2) }

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The operational status of the MAC sublayer for a particular interface. The value enabled(1) signifies that the MAC sublayer for said interface is operational for both transmitting and receiving frames -- that is, that the value of both the receive and transmit layer management state variables (receiveEnabled and transmitEnabled in [9]) for said interface are true. The value disabled(2) signifies that the MAC sublayer for said interface is not operational for either transmitting or receiving frames. In particular, the value of an instance of this object is disabled(2) whenever the value of the corresponding instance of the dot3Enabled object is false(2).

Each alteration of an instance of this object to the value enabled(1) is analogous to an invocation of the enableMACSublayer action defined in [9] and has the effect of starting normal transmit and receive operations (from the "idle" state) on the associated interface. In particular, such an alteration has the effect of resetting the PLS for said interface and of setting the receive and transmit layer management state variables (receiveEnabled and transmitEnabled in [9]) to be true.

Each alteration of an instance of this object to the value disabled(2) is analogous to an invocation of the disableMACSublayer action defined in [9] and has the effect of terminating transmit and receive operations on the associated interface. In particular, such an alteration has the effect of setting the receive and transmit layer management state variables (receiveEnabled and transmitEnabled in [9]) to be false. Any transmissions/receptions in progress are completed before operation is terminated."

::= { dot3Entry 3 }

dot3MulticastReceiveStatus OBJECT-TYPE

SYNTAX INTEGER { enabled(1), disabled(2) }

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The multicast receive status for a particular interface. The value enabled(1) signifies that reception of multicast frames by the MAC sublayer is enabled on said interface. The value disabled(2) signifies that reception of multicast frames by the MAC sublayer is not enabled on said interface.

Each alteration of an instance of this object to the value enabled(1) is analogous to an invocation of the enableMulticastReceive action defined in [9] and has the effect of enabling multicast frame reception on the associated interface. Actual reception of multicast frames is only possible on an interface when the values for the associated instances of the dot3MulticastReceiveStatus and dot3MacSubLayerStatus objects are enabled(1) and enabled(1), respectively.

Each alteration of an instance of this object to the value disabled(2) is analogous to an invocation of the disableMulticastReceive action defined in [9] and has the effect of inhibiting multicast frame reception on the associated interface."

::= { dot3Entry 4 }

dot3TxEnabled OBJECT-TYPE

SYNTAX INTEGER { true(1), false(2) }

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The transmit layer management state variable (transmitEnabled as defined in [9]) for a particular interface. The value true(1) signifies that the MAC frame transmission is enabled on said interface. The value false(2) signifies that the MAC frame transmission is inhibited on said interface. In particular, the value of an instance of this object is false(2) whenever the value of the corresponding instance of the dot3MacSubLayerStatus object is disabled(2).

Each alteration of an instance of this object to the value true(1) is analogous to an invocation of the enableTransmit action defined in [9] and has the effect of enabling MAC sublayer frame transmission on the associated interface. In particular, such an alteration has the effect of setting the transmit layer management state variable (transmitEnabled in [9]) for said interface to be true.

Each alteration of an instance of this object to the value false(2) is analogous to an invocation of the disableTransmit action defined in [9] and has the effect of inhibiting MAC sublayer frame transmission on the associated interface. In particular, such an alteration has the effect of setting the transmit layer management state variable (transmitEnabled in [9]) for said interface to be false. Any transmissions in progress are completed before transmission is inhibited."

::= { dot3Entry 5 }

dot3TestTdrValue OBJECT-TYPE

SYNTAX Gauge

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The number of 10 MHz ticks which elapsed between the beginning of a TDR measurement and the collision which ended it, for the most recently executed TDR test. If no TDR test has been executed, or the last TDR value is not available, this object has the value 0."

::= { dot3Entry 6 }

- the Ethernet-like Statistics group
- Implementation of this group is mandatory
- Due to implementation restrictions (e.g. in the instrumentation provided by a chipset, or a device driver), some of the counters in this group may be difficult or impossible to implement.
- In such cases, an implementator should apply reasonable best effort to detect as many occurrences as possible.
- In any case, the value of a counter will be the number actually detected, which will always be less or equal to the number of actual occurrences. In the extreme case of a total inability to detect occurrences, the counter will always be zero.
- Vendors are strongly encouraged to document in user guides and other appropriate documentation the conditions under which the values of the counters in this group may represent an underestimate of the true count.

dot3StatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot3StatsEntry

ACCESS not-accessible

STATUS mandatory

DESCRIPTION

"Statistics for a collection of ethernet-like interfaces attached to a particular system."

::= { dot3 2 }

dot3StatsEntry OBJECT-TYPE

SYNTAX Dot3StatsEntry

ACCESS not-accessible

STATUS mandatory

DESCRIPTION

"Statistics for a particular interface to an ethernet-like medium."

INDEX { dot3StatsIndex }

::= { dot3StatsTable 1 }

Dot3StatsEntry ::=

SEQUENCE {

dot3StatsIndex

INTEGER,

dot3StatsAlignmentErrors

Counter,

dot3StatsFCSErrors

Counter,

```

dot3StatsSingleCollisionFrames
    Counter,
dot3StatsMultipleCollisionFrames
    Counter,
dot3StatsSQETestErrors
    Counter,
dot3StatsDeferredTransmissions
    Counter,
dot3StatsLateCollisions
    Counter,
dot3StatsExcessiveCollisions
    Counter,
dot3StatsInternalMacTransmitErrors
    Counter,
dot3StatsCarrierSenseErrors
    Counter,
dot3StatsExcessiveDeferrals
    Counter,
dot3StatsFrameTooLongs
    Counter,
dot3StatsInRangeLengthErrors
    Counter,
dot3StatsOutOfRangeLengthFields
    Counter,
dot3StatsInternalMacReceiveErrors
    Counter
}

```

dot3StatsIndex OBJECT-TYPE

SYNTAX INTEGER

ACCESS read-only

STATUS mandatory

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."

::= { dot3StatsEntry 1 }

dot3StatsAlignmentErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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 obtain are, according to the conventions of [9], counted exclusively according to the error status presented to the LLC."

::= { dot3StatsEntry 2 }

dot3StatsFCSErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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.

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 obtain are, according to the conventions of [9], counted exclusively according to the error status presented to the LLC."

::= { dot3StatsEntry 3 }

dot3StatsSingleCollisionFrames OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of successfully transmitted frames on a particular interface for which transmission is inhibited by exactly one collision.

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

::= { dot3StatsEntry 4 }

dot3StatsMultipleCollisionFrames OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of successfully transmitted frames on a particular interface for which transmission is inhibited by more than one collision.

A frame that is counted by an instance of this object is also counted by the corresponding instance of either the ifOutUcastPkts or ifOutNUcastPkts object and is not counted by the corresponding instance of the dot3StatsSingleCollisionFrames object."

::= { dot3StatsEntry 5 }

dot3StatsSQETestErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of times that the SQE TEST ERROR message is generated by the PLS sublayer for a particular interface. The SQE TEST ERROR message is defined in section 7.2.2.2.4 of [12] and its generation is described in section 7.2.4.6 of the same document."

::= { dot3StatsEntry 6 }

dot3StatsDeferredTransmissions OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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."

::= { dot3StatsEntry 7 }

dot3StatsLateCollisions OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The number of times that a collision is detected on a particular interface later than 512 bit-times into the transmission of a packet.

Five hundred and twelve bit-times corresponds to 51.2 microseconds on a 10 Mbit/s system. 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."

::= { dot3StatsEntry 8 }

dot3StatsExcessiveCollisions OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of frames for which transmission on a particular interface fails due to excessive collisions."

::= { dot3StatsEntry 9 }

dot3StatsInternalMacTransmitErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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, the dot3StatsCarrierSenseErrors object, or the dot3StatsExcessiveDeferrals 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."

::= { dot3StatsEntry 10 }

dot3StatsCarrierSenseErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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."

::= { dot3StatsEntry 11 }

dot3StatsExcessiveDeferrals OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of frames for which transmission on a particular interface is deferred for an excessive period of time."

::= { dot3StatsEntry 12 }

dot3StatsFrameTooLongs OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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 obtain are, according to the conventions of [9], counted exclusively according to the error status presented to the LLC."

::= { dot3StatsEntry 13 }

dot3StatsInRangeLengthErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of frames received on a particular interface with a length field value that falls between the minimum unpadded LLC data size and the maximum allowed LLC data size inclusive and that does not match the number of LLC data octets received.

The count represented by an instance of this object also includes frames for which the length field value is less than the minimum unpadded LLC data size."

::= { dot3StatsEntry 14 }

dot3StatsOutOfRangeLengthFields OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"A count of frames received on a particular interface for which the length field value exceeds the maximum allowed LLC data size.

The count represented by an instance of this object is not incremented in implementations that observe Ethernet encapsulation conventions (by which the IEEE 802.3 length field is interpreted as the Ethernet Type field)."

::= { dot3StatsEntry 15 }

dot3StatsInternalMacReceiveErrors OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

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, the dot3StatsFCSErrors object, the dot3StatsInRangeLengthErrors object, or the

dot3StatsOutOfRangeLengthFields 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."

::= { dot3StatsEntry 16 }

-- 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

ACCESS not-accessible

STATUS mandatory

DESCRIPTION

"A collection of collision histograms for a particular set of interfaces."

::= { dot3 5 }

dot3CollEntry OBJECT-TYPE

SYNTAX Dot3CollEntry

ACCESS not-accessible

STATUS mandatory

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 { dot3CollIndex, dot3CollCount }

::= { dot3CollTable 1 }

Dot3CollEntry ::=

SEQUENCE {

dot3CollIndex

INTEGER,

dot3CollCount

INTEGER,

dot3CollFrequencies

Counter

```
}
```

```
dot3CollIndex OBJECT-TYPE
```

```
SYNTAX  INTEGER
```

```
ACCESS  read-only
```

```
STATUS  mandatory
```

```
DESCRIPTION
```

```
"The index value that uniquely identifies the
interface to which a particular collision
histogram cell pertains.  The interface identified
by a particular value of this index is the same
interface as identified by the same value of
ifIndex."
```

```
::= { dot3CollEntry 1 }
```

```
dot3CollCount OBJECT-TYPE
```

```
SYNTAX  INTEGER (1..16)
```

```
ACCESS  read-only
```

```
STATUS  mandatory
```

```
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  Counter
```

```
ACCESS  read-only
```

```
STATUS  mandatory
```

```
DESCRIPTION
```

```
"A count of individual MAC frames for which the
transmission (successful or otherwise) on a
particular interface is accompanied by a
particular number of media collisions."
```

```
::= { dot3CollEntry 3 }
```

```
-- 802.3 Tests
```

```
-- The ifExtnsTestTable defined in [11] provides a common means
-- for a manager to test any interface corresponding to a value
-- of ifIndex.
```

```
-- At this time, one well known test (testFullDuplexLoopBack) is
-- defined in [11].  For ethernet-like interfaces, this test
-- configures the MAC chip and executes an internal loopback
-- test of memory and the MAC chip logic.  This loopback test can
```

```
-- only be executed if the interface is offline. Once the test
-- has completed, the MAC chip should be reinitialized for network
-- operation, but it should remain offline.
```

```
-- If an error occurs during a test, the object ifExtnsTestResult
-- (defined in [11]) will be set to failed(7). The following two
-- OBJECT IDENTIFIERS may be used to provide more information as
-- values for the object ifExtnsTestCode in [11]:
```

```
dot3Errors          OBJECT IDENTIFIER ::= { dot3 7 }
```

```
dot3ErrorInitError  OBJECT IDENTIFIER ::= { dot3Errors 1 }
```

```
dot3ErrorLoopbackError OBJECT IDENTIFIER ::= { dot3Errors 2 }
```

```
-- TDR Test
```

```
-- Another test, specific to ethernet-like interfaces,
-- is Time-domain Reflectometry (TDR) which is defined
-- as follows:
```

```
dot3Tests  OBJECT IDENTIFIER ::= { dot3 6 }
dot3TestTdr OBJECT IDENTIFIER ::= { dot3Tests 1 }
```

```
-- A TDR test returns as its result the time interval between the
-- most recent TDR test transmission and the subsequent detection
-- of a collision. This interval is based on a 10 MHz clock and
-- should be normalized if the time base is other than 10 MHz.
-- On successful completion of a TDR test, the result is stored
-- as the value of the appropriate instance of the MIB object
-- dot3TestTdrValue, and the OBJECT IDENTIFIER of that instance
-- is stored in the corresponding instance of ifExtnsTestResult
-- (thereby indicating where the result has been stored).
```

```
-- 802.3 Hardware Chipsets
```

```
-- The object ifExtnsChipSet is provided in [11] to identify the
-- MAC hardware used to communicate on an interface. The following
-- hardware chipsets are provided for 802.3:
```

```
dot3ChipSets      OBJECT IDENTIFIER ::= { dot3 8 }
dot3ChipSetAMD     OBJECT IDENTIFIER ::= { dot3ChipSets 1 }
dot3ChipSetAMD7990 OBJECT IDENTIFIER ::= { dot3ChipSetAMD 1 }
```

```

dot3ChipSetAMD79900    OBJECT IDENTIFIER ::= { dot3ChipSetAMD 2 }

dot3ChipSetIntel       OBJECT IDENTIFIER ::= { dot3ChipSets 2 }
dot3ChipSetIntel82586  OBJECT IDENTIFIER ::= { dot3ChipSetIntel 1 }
dot3ChipSetIntel82596  OBJECT IDENTIFIER ::= { dot3ChipSetIntel 2 }

dot3ChipSetSeeq        OBJECT IDENTIFIER ::= { dot3ChipSets 3 }
dot3ChipSetSeeq8003    OBJECT IDENTIFIER ::= { dot3ChipSetSeeq 1 }

dot3ChipSetNational    OBJECT IDENTIFIER ::= { dot3ChipSets 4 }
dot3ChipSetNational8390 OBJECT IDENTIFIER ::=
                                { dot3ChipSetNational 1 }
dot3ChipSetNationalSonic OBJECT IDENTIFIER ::=
                                { dot3ChipSetNational 2 }

dot3ChipSetFujitsu      OBJECT IDENTIFIER ::= { dot3ChipSets 5 }
dot3ChipSetFujitsu86950 OBJECT IDENTIFIER ::=
                                { dot3ChipSetFujitsu 1 }

-- For those chipsets not represented above, OBJECT IDENTIFIER
-- assignment is required in other documentation, e.g., assignment
-- within that part of the registration tree delegated to
-- individual enterprises (see [3]).

```

END

6. Acknowledgements

This document was produced by the Transmission MIB Working Group.

This document is based on a document written by Frank Kastenholz of Interlan entitled IEEE 802.3 Layer Management Draft M compatible MIB for TCP/IP Networks [10]. This document has been modestly reworked, initially by the SNMP Working Group, and then by the Transmission Working Group, to reflect the current conventions for defining objects for MIB interfaces. James Davin, of the MIT Laboratory for Computer Science, and Keith McCloghrie of Hughes LAN Systems, contributed to later drafts of this memo. Marshall Rose of Performance Systems International, Inc. converted the document into its current concise format. Thanks to Frank Kastenholz of Interlan and Louis Steinberg of IBM for their experimentation.

7. References

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Security Considerations

Security issues are not discussed in this memo.

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