

Network Working Group
Request for Comments: 1748
Obsoletes: 1743, 1231
Category: Standards Track

K. McCloghrie
E. Decker
cisco Systems, Inc.
December 1994

IEEE 802.5 MIB using SMIV2

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Table of Contents

1. Introduction	1
2. The SNMPv2 Network Management Framework	2
2.1 Object Definitions	2
3. Overview	2
3.1 MAC Addresses	3
3.2 Relationship to RFC 1213	3
3.3 Relationship to RFC 1573	3
3.3.1 Layering Model	3
3.3.2 Virtual Circuits	3
3.3.3 ifTestTable	3
3.3.4 ifRcvAddressTable	4
3.3.5 ifPhysAddress	4
3.3.6 ifType	4
4. Definitions	4
5. Acknowledgements	23
6. References	23
Appendix A. Changes from RFC 1231	24
Security Considerations	24
Authors' Addresses	25

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 describes managed objects used for managing subnetworks which use the IEEE 802.5 Token Ring technology described in 802.5 Token Ring Access Method and Physical Layer Specifications, IEEE Standard 802.5-1989 [7]. This memo is a replacement for RFC 1231.

2. The SNMPv2 Network Management Framework

The SNMPv2 Network Management Framework consists of four major components. They are:

- o RFC 1442 [1] which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- o STD 17, RFC 1213 [2] defines MIB-II, the core set of managed objects for the Internet suite of protocols.
- o RFC 1445 [3] which defines the administrative and other architectural aspects of the framework.
- o RFC 1448 [4] which defines the protocol used for network access to managed objects.

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

2.1. Object Definitions

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) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. 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 descriptor, to refer to the object type.

3. Overview

This memo defines three tables: the 802.5 Interface Table, which contains state and parameter information which is specific to 802.5 interfaces, the 802.5 Statistics Table, which contains 802.5 interface statistics, and the 802.5 Timer Table, which contains the values of 802.5-defined timers. A managed system will have one entry in the 802.5 Interface Table and one entry in the 802.5 Statistics Table for each of its 802.5 interfaces. The 802.5 Timer Table is obsolete, but its definition has been retained in this memo for backward compatibility.

This memo also defines OBJECT IDENTIFIERS, some to identify interface tests for use with the ifTestTable [6], and some to identify Token Ring interface Chip Sets.

3.1. MAC Addresses

All representations of MAC addresses in this MIB Module use the MacAddress textual convention [5] for which the address is in the "canonical" order defined by IEEE 802.1a, i.e., as if it were transmitted least significant bit first, even though 802.5 requires MAC addresses to be transmitted most significant bit first.

16-bit addresses, if needed, are represented by setting their upper 4 octets to all zeros, i.e., AAFF would be represented as 00000000AAFF.

3.2. Relationship to RFC 1213

When this MIB module is used in conjunction with the "old" (i.e., pre-RFC 1573) interfaces group, the relationship between an 802.5 interface and an interface in the context of the RFC 1213 is one-to-one. That is, the value of an ifIndex object instance for an 802.5 interface can be directly used to identify corresponding instances of the objects defined in this memo.

3.3. Relationship to RFC 1573

RFC 1573, the Interface MIB Evolution, requires that any MIB module which is an adjunct of the Interface MIB, clarify specific areas within the Interface MIB. These areas were intentionally left vague in RFC 1573 to avoid over constraining the MIB module, thereby precluding management of certain media-types.

Section 3.3 of RFC 1573 enumerates several areas which a media-specific MIB module must clarify. Each of these areas is addressed in a following subsection. The implementor is referred to RFC 1573 in order to understand the general intent of these areas.

3.3.1. Layering Model

For the typical usage of this IEEE 802.5 MIB module, there will be no sub-layers "above" or "below" the 802.5 interface. However, this MIB module does not preclude such layering.

3.3.2. Virtual Circuits

802.5 does not support virtual circuits.

3.3.3. ifTestTable

This MIB module defines two tests for 802.5 interfaces: Insertion and Loopback. Implementation of these tests is not required.

3.3.4. ifRcvAddressTable

The ifRcvAddressTable is defined to contains all MAC addresses, unicast, multicast (group) and broadcast, for which an interface will receive packets. For 802.5 interfaces, its use includes functional addresses. The format of the address, contained in ifRcvAddressAddress, is the same as for ifPhysAddress.

For functional addresses on a particular 802.5 interface, only one ifRcvAddressTable entry is required. That entry is the one for the address which has the functional address bit ANDed with the bit mask of all functional addresses for which the interface will accept frames.

3.3.5. ifPhysAddress

For an 802.5 interface, ifPhysAddress contains the interface's IEEE MAC address, stored as an octet string of length 6, in IEEE 802.1a "canonical" order, i.e., the Group Bit is positioned as the low-order bit (0x01) of the first octet.

3.3.6. ifType

The objects defined in this memo apply to each interface for which the ifType has the value:

iso88025-tokenRing(9)

4. Definitions

TOKENRING-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, OBJECT-IDENTITY,	
Counter32, Integer32	FROM SNMPv2-SMI
transmission	FROM RFC1213-MIB
MacAddress,TimeStamp	FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP	FROM SNMPv2-CONF;

dot5 MODULE-IDENTITY

LAST-UPDATED "9410231150Z"
 ORGANIZATION "IETF Interfaces MIB Working Group"
 CONTACT-INFO
 " Keith McCloghrie

Postal: cisco Systems, Inc.
 170 West Tasman Drive,
 San Jose, CA 95134-1706

US

Phone: +1 408 526 5260

EMail: kzm@cisco.com"

DESCRIPTION

"The MIB module for IEEE Token Ring entities."

::= { transmission 9 }

-- The 802.5 Interface Table

-- This table contains state and parameter information which
 -- is specific to 802.5 interfaces. It is mandatory that
 -- systems having 802.5 interfaces implement this table in
 -- addition to the ifTable (see RFCs 1213 and 1573).

dot5Table OBJECT-TYPE
 SYNTAX SEQUENCE OF Dot5Entry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "This table contains Token Ring interface
 parameters and state variables, one entry
 per 802.5 interface."
 ::= { dot5 1 }

dot5Entry OBJECT-TYPE
 SYNTAX Dot5Entry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "A list of Token Ring status and parameter
 values for an 802.5 interface."
 INDEX { dot5IfIndex }
 ::= { dot5Table 1 }

Dot5Entry ::= SEQUENCE {
 dot5IfIndex Integer32,
 dot5Commands INTEGER,
 dot5RingStatus INTEGER,
 dot5RingState INTEGER,
 dot5RingOpenStatus INTEGER,
 dot5RingSpeed INTEGER,
 dot5UpStream MacAddress,
 dot5ActMonParticipate INTEGER,
 dot5Functional MacAddress,
 dot5LastBeaconSent TimeStamp
 }

```

dot5IfIndex      OBJECT-TYPE
    SYNTAX        Integer32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION   "The value of this object identifies the
                    802.5 interface for which this entry
                    contains management information.  The
                    value of this object for a particular
                    interface has the same value as the
                    ifIndex object, defined in MIB-II for
                    the same interface."
 ::= { dot5Entry 1 }

dot5Commands      OBJECT-TYPE
    SYNTAX        INTEGER {
                        noop(1),
                        open(2),
                        reset(3),
                        close(4)
                    }
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION   "When this object is set to the value of
                    open(2), the station should go into the
                    open state.  The progress and success of
                    the open is given by the values of the
                    objects dot5RingState and
                    dot5RingOpenStatus.

                    When this object is set to the value
                    of reset(3), then the station should do
                    a reset.  On a reset, all MIB counters
                    should retain their values, if possible.
                    Other side affects are dependent on the
                    hardware chip set.

                    When this object is set to the value
                    of close(4), the station should go into
                    the stopped state by removing itself
                    from the ring.

                    Setting this object to a value of
                    noop(1) has no effect.

                    When read, this object always has a
                    value of noop(1).

                    The open(2) and close(4) values
                    correspond to the up(1) and down(2) values
                    of MIB-II's ifAdminStatus and ifOperStatus,
                    i.e., the setting of ifAdminStatus and

```

dot5Commands affects the values of both
dot5Commands and ifOperStatus."

::= { dot5Entry 2 }

dot5RingStatus OBJECT-TYPE
SYNTAX INTEGER (0..262143)
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The current interface status which can be used to diagnose fluctuating problems that can occur on token rings, after a station has successfully been added to the ring.

Before an open is completed, this object has the value for the 'no status' condition. The dot5RingState and dot5RingOpenStatus objects provide for debugging problems when the station can not even enter the ring.

The object's value is a sum of values, one for each currently applicable condition. The following values are defined for various conditions:

0 = No Problems detected
32 = Ring Recovery
64 = Single Station
256 = Remove Received
512 = reserved
1024 = Auto-Removal Error
2048 = Lobe Wire Fault
4096 = Transmit Beacon
8192 = Soft Error
16384 = Hard Error
32768 = Signal Loss
131072 = no status, open not completed."

::= { dot5Entry 3 }

dot5RingState OBJECT-TYPE
SYNTAX INTEGER {
opened(1),
closed(2),
opening(3),
closing(4),
openFailure(5),
ringFailure(6)
}

```

MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The current interface state with respect
    to entering or leaving the ring."
 ::= { dot5Entry 4 }

```

```

dot5RingOpenStatus  OBJECT-TYPE
SYNTAX             INTEGER {
                    noOpen(1),      -- no open attempted
                    badParam(2),
                    lobeFailed(3),
                    signalLoss(4),
                    insertionTimeout(5),
                    ringFailed(6),
                    beaconing(7),
                    duplicateMAC(8),
                    requestFailed(9),
                    removeReceived(10),
                    open(11)       -- last open successful
                    }
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This object indicates the success, or the
    reason for failure, of the station's most
    recent attempt to enter the ring."
 ::= { dot5Entry 5 }

```

```

dot5RingSpeed  OBJECT-TYPE
SYNTAX         INTEGER {
                unknown(1),
                oneMegabit(2),
                fourMegabit(3),
                sixteenMegabit(4)
                }
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION
    "The ring-speed at the next insertion into
    the ring. Note that this may or may not be
    different to the current ring-speed which is
    given by MIB-II's ifSpeed. For interfaces
    which do not support changing ring-speed,
    dot5RingSpeed can only be set to its current
    value. When dot5RingSpeed has the value
    unknown(1), the ring's actual ring-speed is
    to be used."

```



```
::= { dot5Entry 6 }
```

```
dot5UpStream      OBJECT-TYPE
    SYNTAX         MacAddress
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "The MAC-address of the up stream neighbor
         station in the ring."
 ::= { dot5Entry 7 }
```

```
dot5ActMonParticipate OBJECT-TYPE
    SYNTAX         INTEGER {
                        true(1),
                        false(2)
                    }
    MAX-ACCESS     read-write
    STATUS         current
    DESCRIPTION
        "If this object has a value of true(1) then
         this interface will participate in the
         active monitor selection process.  If the
         value is false(2) then it will not.
         Setting this object does not take effect
         until the next Active Monitor election, and
         might not take effect until the next time
         the interface is opened."
 ::= { dot5Entry 8 }
```

```
dot5Functional    OBJECT-TYPE
    SYNTAX         MacAddress
    MAX-ACCESS     read-write
    STATUS         current
    DESCRIPTION
        "The bit mask of all Token Ring functional
         addresses for which this interface will
         accept frames."
 ::= { dot5Entry 9 }
```

```
dot5LastBeaconSent OBJECT-TYPE
    SYNTAX         TimeStamp
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "The value of MIB-II's sysUpTime object at which
         the local system last transmitted a Beacon frame
         on this interface."
 ::= { dot5Entry 10 }
```

-- The 802.5 Statistics Table

-- This table contains statistics and error counter which are
 -- specific to 802.5 interfaces. It is mandatory that systems
 -- having 802.5 interfaces implement this table.

```
dot5StatsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot5StatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing Token Ring statistics,
        one entry per 802.5 interface.
        All the statistics are defined using
        the syntax Counter32 as 32-bit wrap around
        counters. Thus, if an interface's
        hardware maintains these statistics in
        16-bit counters, then the agent must read
        the hardware's counters frequently enough
        to prevent loss of significance, in order
        to maintain 32-bit counters in software."
    ::= { dot5 2 }
```

```
dot5StatsEntry OBJECT-TYPE
    SYNTAX      Dot5StatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry contains the 802.5 statistics
        for a particular interface."
    INDEX       { dot5StatsIfIndex }
    ::= { dot5StatsTable 1 }
```

```
Dot5StatsEntry ::= SEQUENCE {
    dot5StatsIfIndex      Integer32,
    dot5StatsLineErrors   Counter32,
    dot5StatsBurstErrors  Counter32,
    dot5StatsACErrors     Counter32,
    dot5StatsAbortTransErrors Counter32,
    dot5StatsInternalErrors Counter32,
    dot5StatsLostFrameErrors Counter32,
    dot5StatsReceiveCongestions Counter32,
    dot5StatsFrameCopiedErrors Counter32,
    dot5StatsTokenErrors  Counter32,
    dot5StatsSoftErrors   Counter32,
    dot5StatsHardErrors   Counter32,
    dot5StatsSignalLoss   Counter32,
```

```

dot5StatsTransmitBeacons      Counter32,
dot5StatsRecoverys            Counter32,
dot5StatsLobeWires            Counter32,
dot5StatsRemoves              Counter32,
dot5StatsSingles              Counter32,
dot5StatsFreqErrors           Counter32
}

```

```

dot5StatsIfIndex OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The value of this object identifies the
        802.5 interface for which this entry
        contains management information. The
        value of this object for a particular
        interface has the same value as MIB-II's
        ifIndex object for the same interface."
    ::= { dot5StatsEntry 1 }

```

```

dot5StatsLineErrors OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This counter is incremented when a frame
        or token is copied or repeated by a
        station, the E bit is zero in the frame
        or token and one of the following
        conditions exists: 1) there is a
        non-data bit (J or K bit) between the SD
        and the ED of the frame or token, or
        2) there is an FCS error in the frame."
    ::= { dot5StatsEntry 2 }

```

```

dot5StatsBurstErrors OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This counter is incremented when a station
        detects the absence of transitions for five
        half-bit timers (burst-five error)."
    ::= { dot5StatsEntry 3 }

```

dot5StatsACErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This counter is incremented when a station receives an AMP or SMP frame in which A is equal to C is equal to 0, and then receives another SMP frame with A is equal to C is equal to 0 without first receiving an AMP frame. It denotes a station that cannot set the AC bits properly."

::= { dot5StatsEntry 4 }

dot5StatsAbortTransErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This counter is incremented when a station transmits an abort delimiter while transmitting."

::= { dot5StatsEntry 5 }

dot5StatsInternalErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This counter is incremented when a station recognizes an internal error."

::= { dot5StatsEntry 6 }

dot5StatsLostFrameErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This counter is incremented when a station is transmitting and its TRR timer expires. This condition denotes a condition where a transmitting station in strip mode does not receive the trailer of the frame before the TRR timer goes off."

::= { dot5StatsEntry 7 }

dot5StatsReceiveCongestions OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented when a station recognizes a frame addressed to its specific address, but has no available buffer space indicating that the station is congested."

::= { dot5StatsEntry 8 }

dot5StatsFrameCopiedErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented when a station recognizes a frame addressed to its specific address and detects that the FS field A bits are set to 1 indicating a possible line hit or duplicate address."

::= { dot5StatsEntry 9 }

dot5StatsTokenErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented when a station acting as the active monitor recognizes an error condition that needs a token transmitted."

::= { dot5StatsEntry 10 }

dot5StatsSoftErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Soft Errors the interface has detected. It directly corresponds to the number of Report Error MAC frames that this interface has transmitted. Soft Errors are those which are recoverable by the MAC layer protocols."

::= { dot5StatsEntry 11 }

dot5StatsHardErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times this interface has detected an immediately recoverable fatal error. It denotes the number of times this interface is either transmitting or receiving beacon MAC frames."

::= { dot5StatsEntry 12 }

dot5StatsSignalLoss OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times this interface has detected the loss of signal condition from the ring."

::= { dot5StatsEntry 13 }

dot5StatsTransmitBeacons OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times this interface has transmitted a beacon frame."

::= { dot5StatsEntry 14 }

dot5StatsRecoverys OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Claim Token MAC frames received or transmitted after the interface has received a Ring Purge MAC frame. This counter signifies the number of times the ring has been purged and is being recovered back into a normal operating state."

::= { dot5StatsEntry 15 }

dot5StatsLobeWires OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current
DESCRIPTION
 "The number of times the interface has
 detected an open or short circuit in the
 lobe data path. The adapter will be closed
 and dot5RingState will signify this
 condition."
 ::= { dot5StatsEntry 16 }

dot5StatsRemoves OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of times the interface has
 received a Remove Ring Station MAC frame
 request. When this frame is received
 the interface will enter the close state
 and dot5RingState will signify this
 condition."
 ::= { dot5StatsEntry 17 }

dot5StatsSingles OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of times the interface has
 sensed that it is the only station on the
 ring. This will happen if the interface
 is the first one up on a ring, or if
 there is a hardware problem."
 ::= { dot5StatsEntry 18 }

dot5StatsFreqErrors OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of times the interface has
 detected that the frequency of the
 incoming signal differs from the expected
 frequency by more than that specified by
 the IEEE 802.5 standard."
 ::= { dot5StatsEntry 19 }

-- The Timer Table

-- This group contains the values of timers for 802.5
 -- interfaces. This table is obsolete, but its definition
 -- is retained here for backwards compatibility.

```
dot5TimerTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot5TimerEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    DESCRIPTION
        "This table contains Token Ring interface
        timer values, one entry per 802.5
        interface."
    ::= { dot5 5 }
```

```
dot5TimerEntry OBJECT-TYPE
    SYNTAX      Dot5TimerEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    DESCRIPTION
        "A list of Token Ring timer values for an
        802.5 interface."
    INDEX       { dot5TimerIfIndex }
    ::= { dot5TimerTable 1 }
```

```
Dot5TimerEntry ::= SEQUENCE {
    dot5TimerIfIndex      Integer32,
    dot5TimerReturnRepeat Integer32,
    dot5TimerHolding      Integer32,
    dot5TimerQueuePDU     Integer32,
    dot5TimerValidTransmit Integer32,
    dot5TimerNoToken      Integer32,
    dot5TimerActiveMon    Integer32,
    dot5TimerStandbyMon   Integer32,
    dot5TimerErrorReport  Integer32,
    dot5TimerBeaconTransmit Integer32,
    dot5TimerBeaconReceive Integer32
}
```

```
dot5TimerIfIndex OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      obsolete
    DESCRIPTION
        "The value of this object identifies the
        802.5 interface for which this entry
        contains timer values. The value of
```


this object for a particular interface
 has the same value as MIB-II's ifIndex
 object for the same interface."

::= { dot5TimerEntry 1 }

dot5TimerReturnRepeat OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS obsolete

DESCRIPTION

 "The time-out value used to ensure the
 interface will return to Repeat State, in
 units of 100 micro-seconds. The value
 should be greater than the maximum ring
 latency."

::= { dot5TimerEntry 2 }

dot5TimerHolding OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS obsolete

DESCRIPTION

 "Maximum period of time a station is
 permitted to transmit frames after capturing
 a token, in units of 100 micro-seconds."

::= { dot5TimerEntry 3 }

dot5TimerQueuePDU OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS obsolete

DESCRIPTION

 "The time-out value for enqueueing of an SMP
 PDU after reception of an AMP or SMP
 frame in which the A and C bits were
 equal to 0, in units of 100
 micro-seconds."

::= { dot5TimerEntry 4 }

dot5TimerValidTransmit OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS obsolete

DESCRIPTION

 "The time-out value used by the active
 monitor to detect the absence of valid
 transmissions, in units of 100
 micro-seconds."

```
::= { dot5TimerEntry 5 }
```

```
dot5TimerNoToken OBJECT-TYPE
```

```
SYNTAX      Integer32
```

```
MAX-ACCESS  read-only
```

```
STATUS      obsolete
```

```
DESCRIPTION
```

```
    "The time-out value used to recover from  
    various-related error situations.
```

```
    If N is the maximum number of stations on  
    the ring, the value of this timer is  
    normally:
```

```
    dot5TimerReturnRepeat + N*dot5TimerHolding."
```

```
::= { dot5TimerEntry 6 }
```

```
dot5TimerActiveMon OBJECT-TYPE
```

```
SYNTAX      Integer32
```

```
MAX-ACCESS  read-only
```

```
STATUS      obsolete
```

```
DESCRIPTION
```

```
    "The time-out value used by the active  
    monitor to stimulate the enqueueing of an  
    AMP PDU for transmission, in units of  
    100 micro-seconds."
```

```
::= { dot5TimerEntry 7 }
```

```
dot5TimerStandbyMon OBJECT-TYPE
```

```
SYNTAX      Integer32
```

```
MAX-ACCESS  read-only
```

```
STATUS      obsolete
```

```
DESCRIPTION
```

```
    "The time-out value used by the stand-by  
    monitors to ensure that there is an active  
    monitor on the ring and to detect a  
    continuous stream of tokens, in units of  
    100 micro-seconds."
```

```
::= { dot5TimerEntry 8 }
```

```
dot5TimerErrorReport OBJECT-TYPE
```

```
SYNTAX      Integer32
```

```
MAX-ACCESS  read-only
```

```
STATUS      obsolete
```

```
DESCRIPTION
```

```
    "The time-out value which determines how  
    often a station shall send a Report Error  
    MAC frame to report its error counters,  
    in units of 100 micro-seconds."
```

```
::= { dot5TimerEntry 9 }
```

```
dot5TimerBeaconTransmit OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      obsolete
    DESCRIPTION
        "The time-out value which determines how
        long a station shall remain in the state
        of transmitting Beacon frames before
        entering the Bypass state, in units of
        100 micro-seconds."
    ::= { dot5TimerEntry 10 }
```

```
dot5TimerBeaconReceive OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      obsolete
    DESCRIPTION
        "The time-out value which determines how
        long a station shall receive Beacon
        frames from its downstream neighbor
        before entering the Bypass state, in
        units of 100 micro-seconds."
    ::= { dot5TimerEntry 11 }
```

```
--                               802.5 Interface Tests
```

```
dot5Tests OBJECT IDENTIFIER ::= { dot5 3 }
```

```
-- RFC 1573 defines the ifTestTable, through which a
-- network manager can instruct an agent to test an interface
-- for various faults. A test to be performed is identified
-- as an OBJECT IDENTIFIER.
```

```
-- The Insert Function test
```

```
dot5TestInsertFunc OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "Invoking this test causes the station to test the insert
        ring logic of the hardware if the station's lobe media
        cable is connected to a wiring concentrator. Note that
        this command inserts the station into the network, and
        thus, could cause problems if the station is connected
        to a operational network."
    ::= { dot5Tests 1 }
```

-- The Full-Duplex Loop Back test

dot5TestFullDuplexLoopBack OBJECT-IDENTITY

STATUS current

DESCRIPTION

"Invoking this test on a 802.5 interface causes the interface to check the path from memory through the chip set's internal logic and back to memory, thus checking the proper functioning of the system's interface to the chip set."

::= { dot5Tests 2 }

-- 802.5 Hardware Chip Sets

-- RFC 1229 specified an object, ifExtnsChipSet, with the
-- syntax of OBJECT IDENTIFIER, to identify the hardware
-- chip set in use by an interface. RFC 1573 obsoletes
-- the use of ifExtnsChipSet. However, the following
-- definitions are retained for backwards compatibility.

dot5ChipSets OBJECT IDENTIFIER ::= { dot5 4 }

dot5ChipSetIBM16 OBJECT-IDENTITY

STATUS current

DESCRIPTION

"IBM's 16/4 Mbs chip set."

::= { dot5ChipSets 1 }

dot5ChipSetTItms380 OBJECT-IDENTITY

STATUS current

DESCRIPTION

"Texas Instruments' TMS 380 4Mbs chip-set"

::= { dot5ChipSets 2 }

dot5ChipSetTItms380c16 OBJECT-IDENTITY

STATUS current

DESCRIPTION

"Texas Instruments' TMS 380C16 16/4 Mbs chip-set"

::= { dot5ChipSets 3 }

```
-- conformance information

dot5Conformance OBJECT IDENTIFIER ::= { dot5 6 }

dot5Groups      OBJECT IDENTIFIER ::= { dot5Conformance 1 }
dot5Compliances OBJECT IDENTIFIER ::= { dot5Conformance 2 }

-- compliance statements

dot5Compliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for SNMPv2 entities
        which implement the IEEE 802.5 MIB."

    MODULE      -- this module
        MANDATORY-GROUPS { dot5StateGroup, dot5StatsGroup }

        OBJECT      dot5ActMonParticipate
        MIN-ACCESS   read-only
        DESCRIPTION
            "Write access is not required."

        OBJECT      dot5Functional
        MIN-ACCESS   read-only
        DESCRIPTION
            "Write access is not required."

    ::= { dot5Compliances 1 }

-- units of conformance

dot5StateGroup OBJECT-GROUP
    OBJECTS      { dot5Commands, dot5RingStatus, dot5RingState,
                    dot5RingOpenStatus, dot5RingSpeed, dot5UpStream,
                    dot5ActMonParticipate, dot5Functional,
                    dot5LastBeaconSent
                  }
    STATUS        current
    DESCRIPTION
        "A collection of objects providing state information
        and parameters for IEEE 802.5 interfaces."
    ::= { dot5Groups 1 }

dot5StatsGroup OBJECT-GROUP
    OBJECTS      { dot5StatsLineErrors, dot5StatsBurstErrors,
```

```
dot5StatsACErrors, dot5StatsAbortTransErrors,
dot5StatsInternalErrors, dot5StatsLostFrameErrors,
dot5StatsReceiveCongestions,
dot5StatsFrameCopiedErrors, dot5StatsTokenErrors,
dot5StatsSoftErrors, dot5StatsHardErrors,
dot5StatsSignalLoss, dot5StatsTransmitBeacons,
dot5StatsRecoverys, dot5StatsLobeWires,
dot5StatsRemoves, dot5StatsSingles,
dot5StatsFreqErrors
    }
STATUS      current
DESCRIPTION
    "A collection of objects providing statistics for
    IEEE 802.5 interfaces."
::= { dot5Groups 2 }
```

END

5. Acknowledgements

The changes from RFC 1231 are the result of discussions on the IETF's snmp mailing-list and in the Interfaces MIB Working Group.

6. References

- [1] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Structure of Management Information for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1442, SNMP Research, Inc., Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon University, April 1993.
- [2] McCloghrie, K., and M. Rose, Editors, "Management Information Base for Network Management of TCP/IP-based internets: MIB-II", STD 17, RFC 1213, Hughes LAN Systems, Performance Systems International, March 1991.
- [3] Galvin, J., and K. McCloghrie, "Administrative Model for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1445, Trusted Information Systems, Hughes LAN Systems, April 1993.
- [4] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1448, SNMP Research, Inc., Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon University, April 1993.
- [5] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Textual Conventions for version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1443, SNMP Research, Inc., Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon University, April 1993.
- [6] McCloghrie, K., and F. Kastenholtz, "Evolution of the Interfaces Group of MIB-II", RFC 1573, Hughes LAN Systems, FTP Software, Jan 1994
- [7] Institute of Electrical and Electronic Engineers, "Token Ring Access Method and Physical Layer Specifications", IEEE Standard 802.5-1989, 1989.

APPENDIX A - Changes from RFC 1231

This memo has the following differences from RFC 1231:

- (1) This memo is formatted using the SNMPv2 SMI.
- (2) The relationship of the "open" and "close" states of dot5Commands to the value of ifAdminStatus has been clarified. In particular, the setting of one affects the value of the other.
- (3) The relationship dot5RingSpeed and ifSpeed has been clarified. In particular, ifSpeed indicates the current ring-speed; dot5RingSpeed indicates the ring-speed at the next insertion into the ring. If the interface doesn't support changing ring-speed, then dot5RingSpeed can only be set to its current value. When dot5RingSpeed has the value 'unknown(1)', the ring-speed is to be set to the ring's actual ring-speed.
- (4) Write-access to dot5ActMonParticipate is not required, and a change to the value of dot5ActMonParticipate does not take effect until the next Active Monitor election.
- (5) Write-access to dot5Functional is not required.
- (6) A new object, dot5LastBeaconSent has been defined to contain the timestamp of the last beacon frame sent.
- (7) The dot5TimerTable has been designated as obsolete.
- (8) Text has been added describing the applicability of RFC 1573 [6] to 802.5 interfaces.
- (9) Other minor editorial changes.

Security Considerations

Security issues are not discussed in this memo.

Authors' Addresses

Keith McCloghrie
cisco Systems, Inc.
170 West Tasman Drive,
San Jose, CA 95134-1706

Phone: (408) 526-5260
EMail: kzm@cisco.com

Eric B. Decker
cisco Systems, Inc.
1525 O'Brien Dr.
Menlo Park, CA 94025

Phone: (415) 688-8241
EMail: cire@cisco.com

