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                        IEEE 802.5 Token Ring MIB

Status of this Memo

   This memo defines a MIB for 805.5 networks for use with the SNMP
   protocol.  This memo is a product of the Transmission Working Group
   of the Internet Engineering Task Force (IETF).  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.

Table of Contents

1.  Abstract

   This memo defines an experimental portion of the Management
   Information Base (MIB) for use with network management protocols in
   TCP/IP-based internets.  In particular, this memo defines 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.

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 [9,10].

4.  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.  Implementation of the 802.5
   Timer Table is optional.

   This memo also defines OBJECT IDENTIFIERs, some to identify 802.5
   tests, for use with the ifExtnsTestTable defined in [11], and some to
   identify Token Ring interface Chip Sets, for use with the
   ifExtnsChipSet object defined in [11].

4.1.  Scope of Definitions

   All objects defined in this memo are registered in a single subtree
   within the experimental namespace [3], and are for use with every
   interface which conforms to the IEEE 802.5 Token Ring Access Method
   and Physical Layer Specifications [10].  At present, this applies to
   interfaces for which the ifType variable in the Internet-standard MIB
   [4,6] has the value:

             iso88025-tokenRing(9)

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

              dot5    OBJECT IDENTIFIER ::= { experimental 4 }

   as defined below.

4.2.  Textual Conventions

   A new datatype, MacAddress, is introduced as a textual convention in
   this document.  This textual convention has NO effect on either the
   syntax nor the semantics of any managed object. Objects defined using
   this convention are always encoded by means of the rules that define
   their primitive type.  Hence, no changes to the SMI or the SNMP are

necessary to accommodate this textual convention which is adopted
merely for the convenience of readers.

5.  Definitions


        RFC1231-MIB DEFINITIONS ::= BEGIN

        --                    IEEE 802.5 Token Ring MIB

        IMPORTS
                experimental
                        FROM RFC1155-SMI
                OBJECT-TYPE
                        FROM RFC-1212;

        --  This MIB Module uses the extended OBJECT-TYPE macro as
        --  defined in [9].



        dot5    OBJECT IDENTIFIER ::= { experimental 4 }

        -- All representations of MAC addresses in this MIB Module
        -- use, as a textual convention (i.e. this convention does
        -- not affect their encoding), the data type:

        MacAddress ::= OCTET STRING (SIZE (6))    -- a 6 octet
                                                  -- address in the
                                                  -- "canonical" order
        -- defined by IEEE 802.1a, i.e., as if it were transmitted
        -- least significant bit first, even though 802.5 (in
        -- contrast to other 802.x protocols) 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 0's, i.e., AAFF would be
        -- represented as 00000000AAFF.



        -- The 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 generic interfaces table [4,6] and its
        -- generic extensions [11].

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

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

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

        dot5IfIndex  OBJECT-TYPE
                SYNTAX   INTEGER
                ACCESS   read-only
                STATUS   mandatory
                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 [4,6],
                              for the same interface."
                  ::= { dot5Entry 1 }

        dot5Commands  OBJECT-TYPE
                  SYNTAX  INTEGER {
                              no-op(1),
                              open(2),
                              reset(3),
                              close(4)
                          }
                  ACCESS  read-write
                  STATUS  mandatory
                  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
                           no-op(1) has no effect.
                               When read, this object always has a
                           value of no-op(1)."
                  ::= { dot5Entry 2 }

        dot5RingStatus OBJECT-TYPE
                  SYNTAX  INTEGER
                  ACCESS  read-only
                  STATUS  mandatory
                  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)
                }
        ACCESS  read-only
        STATUS  mandatory
        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
                    }
              ACCESS  read-only
              STATUS  mandatory
              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)
                    }
              ACCESS  read-write
              STATUS  mandatory
              DESCRIPTION
                    "The ring's bandwidth."
              ::= { dot5Entry 6 }

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

      dot5ActMonParticipate OBJECT-TYPE
              SYNTAX  INTEGER {
                            true(1),
                            false(2)
                    }
              ACCESS  read-write
              STATUS  mandatory
              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 might not have an
                        effect until the next time the interface
                        is opened."
                ::= { dot5Entry 8 }

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



        --    The 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
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION
                        "A table containing Token Ring statistics,
                        one entry per 802.5 interface.
                            All the statistics are defined using
                        the syntax Counter 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
                ACCESS  not-accessible
                STATUS  mandatory
                DESCRIPTION

```
                                "An entry contains the 802.5 statistics
                                 for a particular interface."
                        INDEX   { dot5StatsIfIndex }
                        ::= { dot5StatsTable 1 }

            Dot5StatsEntry
                ::= SEQUENCE {
                        dot5StatsIfIndex
                            INTEGER,
                        dot5StatsLineErrors
                            Counter,
                        dot5StatsBurstErrors
                            Counter,
                        dot5StatsACErrors
                            Counter,
                        dot5StatsAbortTransErrors
                            Counter,
                        dot5StatsInternalErrors
                            Counter,
                        dot5StatsLostFrameErrors
                            Counter,
                        dot5StatsReceiveCongestions
                            Counter,
                        dot5StatsFrameCopiedErrors
                            Counter,
                        dot5StatsTokenErrors
                            Counter,
                        dot5StatsSoftErrors
                            Counter,
                        dot5StatsHardErrors
                            Counter,
                        dot5StatsSignalLoss
                            Counter,
                        dot5StatsTransmitBeacons
                            Counter,
                        dot5StatsRecoverys
                            Counter,
                        dot5StatsLobeWires
                            Counter,
                        dot5StatsRemoves
                            Counter,
                        dot5StatsSingles
                            Counter,
                        dot5StatsFreqErrors
                            Counter
                    }
```

```
        dot5StatsIfIndex  OBJECT-TYPE
                SYNTAX   INTEGER
                ACCESS   read-only
                STATUS   mandatory
                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 [4,6], for
                        the same interface."
                ::= { dot5StatsEntry 1 }

        dot5StatsLineErrors OBJECT-TYPE
                SYNTAX   Counter
                ACCESS   read-only
                STATUS   mandatory
                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   Counter
                ACCESS   read-only
                STATUS   mandatory
                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   Counter
                ACCESS   read-only
                STATUS   mandatory
                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  Counter
        ACCESS  read-only
        STATUS  mandatory
        DESCRIPTION
                "This counter is incremented when a station
                transmits an abort delimiter while
                transmitting."
        ::= { dot5StatsEntry 5 }

dot5StatsInternalErrors OBJECT-TYPE
        SYNTAX  Counter
        ACCESS  read-only
        STATUS  mandatory
        DESCRIPTION
                "This counter is incremented when a station
                recognizes an internal error."
        ::= { dot5StatsEntry 6 }

dot5StatsLostFrameErrors OBJECT-TYPE
        SYNTAX  Counter
        ACCESS  read-only
        STATUS  mandatory
        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  Counter
        ACCESS  read-only
        STATUS  mandatory
        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  Counter
                ACCESS  read-only
                STATUS  mandatory
                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  Counter
                ACCESS  read-only
                STATUS  mandatory
                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  Counter
                ACCESS  read-only
                STATUS  mandatory
                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  Counter
                ACCESS  read-only
                STATUS  mandatory
                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   Counter
               ACCESS   read-only
               STATUS   mandatory
               DESCRIPTION
                       "The number of times this interface has
                       detected the loss of signal condition from
                       the ring."
               ::= { dot5StatsEntry 13 }

       dot5StatsTransmitBeacons OBJECT-TYPE
               SYNTAX   Counter
               ACCESS   read-only
               STATUS   mandatory
               DESCRIPTION
                       "The number of times this interface has
                       transmitted a beacon frame."
               ::= { dot5StatsEntry 14 }

       dot5StatsRecoverys OBJECT-TYPE
               SYNTAX   Counter
               ACCESS   read-only
               STATUS   mandatory
               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   Counter
               ACCESS   read-only
               STATUS   mandatory
               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   Counter
               ACCESS   read-only
               STATUS   mandatory
```

                    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  Counter
                    ACCESS  read-only
                    STATUS  mandatory
                    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  Counter
                    ACCESS  read-only
                    STATUS  optional
                    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, see chapter 7
                            in [10]."
                    ::= { dot5StatsEntry 19 }


            -- The Timer Table

            -- This group contains the values of the timers defined in
            -- [10] for 802.5 interfaces.  It is optional that systems
            -- having 802.5 interfaces implement this group.

            dot5TimerTable  OBJECT-TYPE
                    SYNTAX  SEQUENCE OF Dot5TimerEntry
                    ACCESS  not-accessible
                    STATUS  mandatory
                    DESCRIPTION
                            "This table contains Token Ring interface
                            timer values, one entry per 802.5

```
                            interface."
                 ::= { dot5 5 }

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

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

        dot5TimerIfIndex  OBJECT-TYPE
                SYNTAX  INTEGER
                ACCESS  read-only
                STATUS  mandatory
                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 the ifIndex
                                 object, defined in [4,6], for the same
                                 interface."
                        ::= { dot5TimerEntry 1 }

                dot5TimerReturnRepeat  OBJECT-TYPE
                        SYNTAX  INTEGER
                        ACCESS  read-only
                        STATUS  mandatory
                        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.
                                    Implementors are encouraged to provide
                                read-write access to this object if that is
                                possible/useful in their system, but giving
                                due consideration to the dangers of
                                write-able timers."
                        ::= { dot5TimerEntry 2 }

                dot5TimerHolding  OBJECT-TYPE
                        SYNTAX  INTEGER
                        ACCESS  read-only
                        STATUS  mandatory
                        DESCRIPTION
                                "Maximum period of time a station is
                                permitted to transmit frames after capturing
                                a token, in units of 100 micro-seconds.
                                    Implementors are encouraged to provide
                                read-write access to this object if that is
                                possible/useful in their system, but giving
                                due consideration to the dangers of
                                write-able timers."
                        ::= { dot5TimerEntry 3 }

                dot5TimerQueuePDU  OBJECT-TYPE
                        SYNTAX  INTEGER
                        ACCESS  read-only
                        STATUS  mandatory
                        DESCRIPTION
                                "The time-out value for enqueuing 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.
                                    Implementors are encouraged to provide

                              read-write access to this object if that is
                              possible/useful in their system, but giving
                              due consideration to the dangers of
                              write-able timers."
                      ::= { dot5TimerEntry 4 }

          dot5TimerValidTransmit OBJECT-TYPE
                  SYNTAX  INTEGER
                  ACCESS  read-only
                  STATUS  mandatory
                  DESCRIPTION
                              "The time-out value used by the active
                              monitor to detect the absence of valid
                              transmissions, in units of 100
                              micro-seconds.
                                   Implementors are encouraged to provide
                              read-write access to this object if that is
                              possible/useful in their system, but giving
                              due consideration to the dangers of
                              write-able timers."
                      ::= { dot5TimerEntry 5 }

          dot5TimerNoToken  OBJECT-TYPE
                  SYNTAX  INTEGER
                  ACCESS  read-only
                  STATUS  mandatory
                  DESCRIPTION
                              "The time-out value used to recover from
                              various-related error situations [9].
                              If N is the maximum number of stations on
                              the ring, the value of this timer is
                              normally:
                              dot5TimerReturnRepeat + N*dot5TimerHolding.
                                   Implementors are encouraged to provide
                              read-write access to this object if that is
                              possible/useful in their system, but giving
                              due consideration to the dangers of
                              write-able timers."
                      ::= { dot5TimerEntry 6 }

          dot5TimerActiveMon  OBJECT-TYPE
                  SYNTAX  INTEGER
                  ACCESS  read-only
                  STATUS  mandatory
                  DESCRIPTION
                              "The time-out value used by the active
                              monitor to stimulate the enqueuing of an
                              AMP PDU for transmission, in units of

                                100 micro-seconds.
                                     Implementors are encouraged to provide
                                read-write access to this object if that is
                                possible/useful in their system, but giving
                                due consideration to the dangers of
                                write-able timers."
                         ::= { dot5TimerEntry 7 }

                dot5TimerStandbyMon  OBJECT-TYPE
                         SYNTAX  INTEGER
                         ACCESS  read-only
                         STATUS  mandatory
                         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.
                                     Implementors are encouraged to provide
                                read-write access to this object if that is
                                possible/useful in their system, but giving
                                due consideration to the dangers of
                                write-able timers."
                         ::= { dot5TimerEntry 8 }

                dot5TimerErrorReport  OBJECT-TYPE
                         SYNTAX  INTEGER
                         ACCESS  read-only
                         STATUS  mandatory
                         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.
                                     Implementors are encouraged to provide
                                read-write access to this object if that is
                                possible/useful in their system, but giving
                                due consideration to the dangers of
                                write-able timers."
                         ::= { dot5TimerEntry 9 }

                dot5TimerBeaconTransmit  OBJECT-TYPE
                         SYNTAX  INTEGER
                         ACCESS  read-only
                         STATUS  mandatory
                         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.
                                   Implementors are encouraged to provide
                              read-write access to this object if that is
                              possible/useful in their system, but giving
                              due consideration to the dangers of
                              write-able timers."
                    ::= { dot5TimerEntry 10 }

          dot5TimerBeaconReceive  OBJECT-TYPE
                    SYNTAX  INTEGER
                    ACCESS  read-only
                    STATUS  mandatory
                    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.
                                   Implementors are encouraged to provide
                              read-write access to this object if that is
                              possible/useful in their system, but giving
                              due consideration to the dangers of
                              write-able timers."
                    ::= { dot5TimerEntry 11 }


          --                       802.5 Interface Tests

          dot5Tests          OBJECT IDENTIFIER ::= { dot5 3 }

          -- The extensions to the interfaces table proposed in [11]
          -- define a table object, ifExtnsTestTable, through which a
          -- network manager can instruct an agent to test an interface
          -- for various faults.  A test to be performed is identified
          -- (as the value of ifExtnsTestType) via an OBJECT IDENTIFIER.
          --
          -- The Full-Duplex Loop Back Test is a common test, defined
          -- in [11] as:
          --
          --    testFullDuplexLoopBack
          --
          -- 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 systems's
          -- interface to the chip set.

         -- The Insert Function test is defined by:

         testInsertFunc    OBJECT IDENTIFIER ::= { dot5Tests 1 }

         -- 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.


         --                   802.5 Hardware Chip Sets

         dot5ChipSets    OBJECT IDENTIFIER ::= { dot5 4 }

         -- The extensions to the interfaces table proposed in [11]
         -- define an object, ifExtnsChipSet, with the syntax of
         -- OBJECT IDENTIFIER, to identify the hardware chip set in
         -- use by an interface.  That definition specifies just
         -- one applicable object identifier:
         --
         --    unknownChipSet
         --
         -- for use as the value of ifExtnsChipSet when the specific
         -- chip set is unknown.
         --
         -- This MIB defines the following for use as values of
         -- ifExtnsChipSet:

             -- IBM 16/4 Mb/s
         chipSetIBM16       OBJECT IDENTIFIER ::= { dot5ChipSets 1 }

             -- TI 4Mb/s
         chipSetTItms380    OBJECT IDENTIFIER ::= { dot5ChipSets 2 }

             -- TI 16/4 Mb/s
         chipSetTItms380c16 OBJECT IDENTIFIER ::= { dot5ChipSets 3 }

         END

6.  Acknowledgements

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8.  Security Considerations

    Security issues are not discussed in this memo.

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