                    Definitions of Managed Objects
                      for the DS3 Interface Type

Status of this Memo

   This memo defines objects for managing DS3 Interface objects for use
   with the SNMP protocol. This memo is a product of the SNMP and
   Transmission MIB 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 MIB objects
   for representing DS3 physical interfaces. Implementors should
   consult in addition to this memo the companion document that

describes that DS1 managed 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

   These objects are used when the particular media being used to
   realize an interface is a DS3 interface. At present, this applies to
   these values of the ifType variable in the Internet-standard MIB:

          ds3 (30)

   The definitions contained herein are based on the DS3 specifications
   in ANSI T1.102-1987, ANSI T1.107-1988, and ANSI T1.404-1989
   [9,10,11].

4.1. Binding between Interfaces and CSUs

   Each agent which resides on a host which uses DS3 interfaces is
   required to assign a small, positive integer uniquely to each CSU.
   This is known as the "CSUIndex", and is used to distinguish between
   different CSUs attached to a node. The CSUIndex is also used as the
   "key" when accessing tabular information about DS3 interfaces.

   The ds3Index column of the DS3 Configuration table relates each CSU
   to its corresponding interface in the Internet-standard MIB.

4.2. Objectives of this MIB Module

   There are numerous things that could be included in a MIB for DS3
   signals: the management of multiplexors, CSUs, DSUs, and the like.
   The intent of this document is to facilitate the common management of
   CSUs, both in-chassis and external via proxy. As such, a design
   decision was made up front to very closely align the MIB with the set
   of objects that can generally be read from CSUs that are currently
   deployed.

4.3. DS3 Terminology

   The terminology used in this document to describe error conditions on
   a DS3 circuit as monitored by a DS3 CSU are from the ANSI T1M1.3/90
   draft standard [12].

          Out of Frame (OOF) event
               An OOF event is detected when any three or more errors in

sixteen or fewer consecutive F-bits occur within a DS3
M-frame. An OOF event is cleared when reframe occurs.

Loss of Signal (LOS)
     This state is declared upon observing 175 +/- 75
     contiguous pulse positions with no pulses of either
     positive or negative polarity.

Coding Violation (CV)
     For all DS3 applications, a coding violation is a P-bit
     Parity Error event. A P-bit Parity Error event is the
     occurrence of a received P-bit code on the DS3 M-frame
     that is not identical to the corresponding locally-
     calculated code. For C-Bit Parity applications, it is
     also the occurrence of a received CP-Bit parity
     violation. For SYNTRAN applications, it is also the
     occurrence of a received CRC-9 code that is not identical
     to the corresponding locally calculated code.

Bipolar Violation (BPV)
     A bipolar violation, for B3ZS-coded signals, is the
     occurrence of a received bipolar violation that is not
     part of a zero-substitution code. For B3ZS-coded
     signals, a bipolar violation may also include other error
     patterns such as: three or more consecutive zeros and
     incorrect parity.

Errored Seconds (ES)
     An ES is a second with one or more Coding Violation OR
     one or more Out of Frame events OR an AIS.

Severely Errored Seconds (SES)
     A SES is a second with 44 or more Coding Violations OR
     one or more Out of Frame events OR an AIS.

Severely Errored Framing Seconds (SEFS)
     A SEFS is a second with one or more Out of Frame events.

Unavailable Seconds (UAS)
     UAS are calculated by counting the number of seconds that
     the CSU is in the Unavailable signal state (i.e.,
     declared a Red Alarm or a Yellow Alarm), including the
     initial 10 seconds to enter the state but not including
     the 10 seconds to exit the state.

     Note that any second that may be counted as an UAS may
     not be counted as an ES or a SES. Since the 10 SESs that
     comprise the transition from the available to unavailable

signal state may also be counted as ESs and SESs previous
to entering the state, these three counters are adjusted
so that any second counted during this transition is then
subtracted. The 10 seconds in the transition from
unavailable to available may be counted as ESs.

A special case exists when the 10 or more second period
crosses the 900 second statistics window boundary, as the
foregoing description implies that the SES and UAS
counters must be adjusted when the Unavailable Signal
State is entered. Clearly, successive GETs of the
affected ds3IntervalSES and ds3IntervalUAS objects will
return differing values if the first GET occurs during
the first few seconds of the window. This is viewed as
an unavoidable side-effect of selecting the presently
defined managed objects as a basis for this memo.

Yellow Alarm
    The Yellow Alarm is declared after detecting the Yellow
    Signal. See ANSI T1.107-1989 [10].

Red Alarm
    The Red Alarm is declared after detecting a Loss of
    Signal, a Loss of Frame (a persistent OOF event), or an
    Alarm Indication Signal, see [10] for at least 2-10
    seconds. The Red Alarm is cleared at the onset of 10
    consecutive seconds with no SES.

Circuit Identifier
    This is a character string specified by the circuit
    vendor, and is useful when communicating with the vendor
    during the troubleshooting process.

5. Object Definitions

        RFC1233-MIB DEFINITIONS ::= BEGIN

        IMPORTS
                experimental, Counter
                        FROM RFC1155-SMI
                DisplayString
                        FROM RFC1158-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 the DS3 objects

            ds3     OBJECT IDENTIFIER ::= { experimental 15 }

            -- the DS3 Configuration group

            -- Although the objects in this group are read-only, at
            -- the agent's discretion they may be made read-write
            -- so that the management station, when appropriately
            -- authorized, may change the behavior of the CSU,
            -- e.g., to place the device into a loopback state.

            -- Implementation of this group is mandatory for all
            -- systems that attach to a DS3 Interface.

            ds3ConfigTable OBJECT-TYPE
                SYNTAX   SEQUENCE OF DS3ConfigEntry
                ACCESS   not-accessible
                STATUS   mandatory
                DESCRIPTION
                        "The DS3 Configuration table."
                ::= { ds3 1 }

             ds3ConfigEntry OBJECT-TYPE
                SYNTAX   DS3ConfigEntry
                ACCESS   not-accessible
                STATUS   mandatory
                DESCRIPTION
                        "An entry in the DS3 Configuration table."
                INDEX    { ds3CSUIndex }
                ::= { ds3ConfigTable 1 }

            DS3ConfigEntry ::=
                SEQUENCE {
                    ds3CSUIndex
                        INTEGER,
                    ds3Index
                        INTEGER,
                    ds3TimeElapsed
                        INTEGER (1..900),
                    ds3ValidIntervals
                        INTEGER (0..96),
                    ds3LineType
                        INTEGER,
                    ds3ZeroCoding
                        INTEGER,
                    ds3Loopback
                        INTEGER,
```

```
                    ds3SendCode
                        INTEGER,
                    ds3YellowAlarm
                        INTEGER,
                    ds3RedAlarm
                        INTEGER,
                    ds3CircuitIdentifier
                        DisplayString (SIZE (0..255))
          }

       ds3CSUIndex OBJECT-TYPE
           SYNTAX  INTEGER
           ACCESS  read-only
           STATUS  mandatory
           DESCRIPTION
                   "The index value which uniquely identifies the
                   CSU to which this entry is applicable."
           ::= { ds3ConfigEntry 1 }

       ds3Index OBJECT-TYPE
           SYNTAX  INTEGER
           ACCESS  read-only
           STATUS  mandatory
           DESCRIPTION
                   "An index value that uniquely identifies a DS3
                   Interface.  The interface identified by a
                   particular value of this index is the same
                   interface as identified by the same value an
                   ifIndex object instance."
           ::= { ds3ConfigEntry 2 }

       ds3TimeElapsed OBJECT-TYPE
           SYNTAX  INTEGER (1..900)
           ACCESS  read-only
           STATUS  mandatory
           DESCRIPTION
                   "The number of seconds, including partial
                   seconds, that have elapsed since the beginning of
                   the current error-measurement period."
           ::= { ds3ConfigEntry 3 }

       ds3ValidIntervals OBJECT-TYPE
           SYNTAX  INTEGER (0..96)
           ACCESS  read-only
           STATUS  mandatory
           DESCRIPTION
                   "The number of previous intervals for which valid
                   data was collected.  The value will be 96 unless
```

```
                        the CSU device was brought online within the last
                        24 hours, in which case the value will be the
                        number of complete 15 minute intervals the CSU has
                        been online."
                ::= { ds3ConfigEntry 4 }

        ds3LineType OBJECT-TYPE
            SYNTAX  INTEGER {
                        other(1),
                        ds3M23(2),
                        ds3SYNTRAN(3),
                        ds3CbitParity(4),
                        ds3ClearChannel(5)
                    }
            ACCESS  read-only
            STATUS  mandatory
            DESCRIPTION
                    "This variable indicates the variety of DS3 C-bit
                    application implementing this circuit.  The type
                    of circuit affects the interpretation of the usage
                    and error statistics.  The rate of all of them is
                    44.736 Mbps.

                    The values, in sequence, describe:
                    TITLE:              SPECIFICATION:
                    ds3M23              ANSI T1.107-1988 [10]
                    ds3SYNTRAN          ANSI T1.107-1988 [10]
                    ds3C-bitParity      ANSI T1.107a-1989 [10a]
                    ds3ClearChannel     ANSI T1.102-1987 [9]
                    "
                ::= { ds3ConfigEntry 5 }

        ds3ZeroCoding OBJECT-TYPE
            SYNTAX  INTEGER {
                        ds3other(1),
                        ds3B3ZS(2)
                    }
            ACCESS  read-only
            STATUS  mandatory
            DESCRIPTION
                    "This variable describes the variety of Zero Code
                    Suppression used on the link, which in turn
                    affects a number of its characteristics.
                    ds3B3ZS refers to the use of specified patterns of
                    normal bits and bipolar violations which are used
                    to replace sequences of zero bits of a specified
                    length."
                ::= { ds3ConfigEntry 6 }
```

```
        ds3Loopback OBJECT-TYPE
            SYNTAX  INTEGER {
                    ds3NoLoop(1),
                    ds3LocalLoopbackLocalSide(2),
                    ds3LocalLoopbackRemoteSide(3),
                    ds3RemoteLoopbackLocalSide(4),
                    ds3RemoteLoopbackRemoteSide(5)
                }
            ACCESS  read-only
            STATUS  mandatory
            DESCRIPTION
                    "This variable represents the loopback state of
                    the CSU.  Devices supporting read/write access
                    should return badValue in response to a requested
                    loopback state that the CSU does not support.  The
                    values mean:

                      ds3NoLoop
                        Not in the loopback state.  A device that is
                        not capable of performing a loopback on
                        either interface shall always return this as
                        it's value.

                      ds3LocalLoopbackLocalSide
                        Signal received from the local side of the
                        device is looped back at the local connector
                        (eg, without involving the CSU).

                      ds3LocalLoopbackRemoteSide
                        Signal received from the local side of the
                        device is looped back at the remote connector
                        (eg, through the CSU).

                      ds3RemoteLoopbackLocalSide
                        Signal received from the remote side of the
                        device is looped back at the local connector
                        (eg, through the CSU).

                      ds3RemoteLoopbackRemoteSide
                        Signal received from the remote side of the
                        device is looped back at the remote connector
                        (eg, without involving the CSU).

                    Note that M23 and ClearChannel interfaces do not
                    support the Loopback managed object."
            ::= { ds3ConfigEntry 7 }
```

```
        ds3SendCode OBJECT-TYPE
            SYNTAX  INTEGER {
                    ds3SendTestMessage(1),
                    ds3SendNoCode(2),
                    ds3SendSetCode(3),
                    ds3SendLoopbackCode(4),
                    ds3SendResetCode(5)
                    }
            ACCESS  read-only
            STATUS  mandatory
            DESCRIPTION
                    "This variable indicates what type of code is
                    being sent across the DS1 circuit by the CSU.  The
                    values mean:

                      ds3SendNoCode
                         sending looped or normal data

                      ds3SendSetCode
                         sending a loopback request

                      ds3SendLoopbackCode
                         sending the code to choose a specific
                         loopback

                      ds3SendResetCode
                         sending a loopback termination request

                      ds3SendTestMessage
                         sending a Test pattern as defined in
                         T1.107a-1989 [10a].
                    "
                     ::= { ds3ConfigEntry 8 }

          ds3YellowAlarm OBJECT-TYPE
              SYNTAX  INTEGER {
                      ds3YellowAlarm(1),
                      ds3NoYellowAlarm(2)
                      }
              ACCESS  read-only
              STATUS  mandatory
              DESCRIPTION
                      "This variable indicates if a Yellow
                      Alarm condition exists."
              ::= { ds3ConfigEntry 9 }

        ds3RedAlarm OBJECT-TYPE
            SYNTAX  INTEGER {
```

```
                            ds3RedAlarm(1),
                            ds3NoRedAlarm(2)
                         }
               ACCESS  read-only
               STATUS  mandatory
               DESCRIPTION
                       "This variable indicates if a Red Alarm
                       condition exists."
             ::= { ds3ConfigEntry 10 }

      ds3CircuitIdentifier OBJECT-TYPE
          SYNTAX  DisplayString (SIZE (0..255))
          ACCESS  read-only
          STATUS  mandatory
          DESCRIPTION
                  "This variable contains the transmission
                  vendor's circuit identifier, for the
                  purpose of facilitating troubleshooting."
           ::= { ds3ConfigEntry 11 }


     -- the DS3 Interval group

     -- Implementation of this group is mandatory for all
     -- systems that attach to a DS3 interface.

     -- The DS3 Interval Table contains various statistics
     -- collected by each CSU over the previous 24 hours of
     -- operation.  The past 24 hours are broken into 96
     -- completed 15 minute intervals.

     ds3IntervalTable OBJECT-TYPE
         SYNTAX  SEQUENCE OF DS3IntervalEntry
         ACCESS  not-accessible
         STATUS  mandatory
         DESCRIPTION
                 "The DS3 Interval table."
        ::= { ds3 2 }

    ds3IntervalEntry OBJECT-TYPE
        SYNTAX  DS3IntervalEntry
        ACCESS  not-accessible
        STATUS  mandatory
        DESCRIPTION
                "An entry in the DS3 Interval table."
       INDEX   { ds3IntervalIndex, ds3IntervalNumber }
       ::= { ds3IntervalTable 1 }
```

```
                    DS3IntervalEntry ::=
                        SEQUENCE {
                            ds3IntervalIndex
                                INTEGER,
                            ds3IntervalNumber
                                INTEGER (1..96),
                            ds3IntervalESs
                                Counter,
                            ds3IntervalSESs
                                Counter,
                            ds3IntervalSEFSs
                                Counter,
                            ds3IntervalUASs
                                Counter,
                            ds3IntervalCSSs
                                Counter,
                            ds3IntervalBPVs
                                Counter,
                            ds3IntervalCVs
                                Counter
                        }

                ds3IntervalIndex OBJECT-TYPE
                    SYNTAX   INTEGER
                    ACCESS   read-only
                    STATUS   mandatory
                    DESCRIPTION
                            "The index value which uniquely identifies the
                            CSU to which this entry is applicable.  The
                            interface identified by a particular value of
                            this index is the same interface as identified
                            by the same value an DS3CSUIndex object
                            instance."
                    ::= { ds3IntervalEntry 1 }

                ds3IntervalNumber OBJECT-TYPE
                    SYNTAX   INTEGER (1..96)
                    ACCESS   read-only
                    STATUS   mandatory
                    DESCRIPTION
                            "A number between 1 and 96, where 1 is the most
                            recently completed 15 minute interval and 96 is
                            the least recently completed 15 minutes
                            interval (assuming that all 96 intervals are
                            valid)."
                    ::= { ds3IntervalEntry 2 }
```

```
                ds3IntervalESs OBJECT-TYPE
                    SYNTAX  Counter
                    ACCESS  read-only
                    STATUS  mandatory
                    DESCRIPTION
                            "The counter associated with the number of
                            Errored Seconds, as defined by [12], encountered
                            by a DS3 CSU in one of the previous 96,
                            individual 15 minute, intervals."
                    ::= { ds3IntervalEntry 3 }

               ds3IntervalSESs OBJECT-TYPE
                    SYNTAX  Counter
                    ACCESS  read-only
                    STATUS  mandatory
                    DESCRIPTION
                            "The counter associated with the number of
                            Severely Errored Seconds, as defined by [12],
                            encountered by a DS3 CSU in one of the previous
                            96, individual 15 minute, intervals."
                    ::= { ds3IntervalEntry 4 }

              ds3IntervalSEFSs OBJECT-TYPE
                  SYNTAX  Counter
                  ACCESS  read-only
                  STATUS  mandatory
                  DESCRIPTION
                          "The counter associated with the number of
                          Severely Errored Framing Seconds, as defined by
                          [12], encountered by a DS3 CSU in one of the
                          previous 96, individual 15 minute, intervals."
                  ::= { ds3IntervalEntry 5 }

              ds3IntervalUASs OBJECT-TYPE
                  SYNTAX  Counter
                  ACCESS  read-only
                  STATUS  mandatory
                  DESCRIPTION
                          "The counter associated with the number of
                          Unavailable Seconds, as defined by [12],
                          encountered by a DS3 CSU in one of the previous
                          96, individual 15 minute, intervals."
                  ::= { ds3IntervalEntry 6 }

              ds3IntervalCSSs OBJECT-TYPE
                  SYNTAX  Counter
                  ACCESS  read-only
                  STATUS  mandatory
```

               DESCRIPTION
                       "The counter associated with the number of
                       Controlled Slip Seconds, as defined by [12],
                       encountered by a DS3 CSU in one of the previous
                       96, individual 15 minute, intervals.

                       Note that SYNTRAN interfaces are the only
                       interfaces that support the Controlled Slip
                       Seconds managed object. Accordingly, agents
                       configured with non-SYNTRAN interfaces may treat
                       this object as having an ACCESS clause value of
                       not-accessible."
               ::= { ds3IntervalEntry 7}

       ds3IntervalBPVs OBJECT-TYPE
           SYNTAX Counter
           ACCESS read-only
           STATUS mandatory
           DESCRIPTION
                   "The counter associated with the number of Bipolar
                   Violations, as defined by [12], encountered by a
                   DS3 CSU in one of the previous 96, individual 15
                   minute, intervals."
           ::= { ds3IntervalEntry 8 }

       ds3IntervalCVs OBJECT-TYPE
           SYNTAX Counter
           ACCESS read-only
           STATUS mandatory
           DESCRIPTION
                   "The counter associated with the number of Coding
                   Violations, as defined by [12], encountered by a
                   DS3 CSU in one of the previous 96, individual 15
                   minute, intervals."
            ::= { ds3IntervalEntry 9 }

       -- the DS3 Current group

       -- Implementation of this group is mandatory for all systems
       -- that attach to a DS3 Interface.

       -- The DS3 current table contains various statistics being
       -- collected for the current 15 minute interval.

```
         ds3CurrentTable OBJECT-TYPE
             SYNTAX   SEQUENCE OF DS3CurrentEntry
             ACCESS   not-accessible
             STATUS   mandatory
             DESCRIPTION
                     "The DS3 Current table."
             ::= { ds3 3 }

         ds3CurrentEntry OBJECT-TYPE
             SYNTAX   DS3CurrentEntry
             ACCESS   not-accessible
             STATUS   mandatory
             DESCRIPTION
                     "An entry in the DS3 Current table."
             INDEX    { ds3CurrentIndex }
             ::= { ds3CurrentTable 1 }

         DS3CurrentEntry ::=
             SEQUENCE {
                 ds3CurrentIndex
                     INTEGER,
                 ds3CurrentESs
                     Counter,
                 ds3CurrentSESs
                     Counter,
                 ds3CurrentSEFSs
                     Counter,
                 ds3CurrentUASs
                     Counter,
                 ds3CurrentCSSs
                     Counter,
                 ds3CurrentBPVs
                     Counter,
                 ds3CurrentCVs
                     Counter
             }

         ds3CurrentIndex OBJECT-TYPE
             SYNTAX   INTEGER
             ACCESS   read-only
             STATUS   mandatory
             DESCRIPTION
                     "The index value which uniquely identifies the CSU
                     to which this entry is applicable.  The interface
                     identified by a particular value of this index is
                     the same interface as identified by the same value
                     an DS3CSUIndex object instance."
             ::= { ds3CurrentEntry 1 }
```

```
        ds3CurrentESs OBJECT-TYPE
            SYNTAX   Counter
            ACCESS   read-only
            STATUS   mandatory
            DESCRIPTION
                    "The counter associated with the number of Errored
                    Seconds, as defined by [12], encountered by a DS3
                    CSU in the current 15 minute interval."
            ::= { ds3CurrentEntry 2 }

        ds3CurrentSESs OBJECT-TYPE
            SYNTAX   Counter
            ACCESS   read-only
            STATUS   mandatory
            DESCRIPTION
                    "The counter associated with the number of
                    Severely Errored Seconds, as defined by [12],
                    encountered by a DS3 CSU in the current 15 minute
                    interval."
            ::= { ds3CurrentEntry 3 }

        ds3CurrentSEFSs OBJECT-TYPE
            SYNTAX   Counter
            ACCESS   read-only
            STATUS   mandatory
            DESCRIPTION
                    "The counter associated with the number of
                    Severely Errored Framing Seconds, as defined by
                    [12], encountered by a DS3 CSU in the current 15
                    minute interval."
            ::= { ds3CurrentEntry 4 }

        ds3CurrentUASs OBJECT-TYPE
            SYNTAX   Counter
            ACCESS   read-only
            STATUS   mandatory
            DESCRIPTION
                    "The counter associated with the number of
                    Unavailable Seconds, as defined by [12],
                    encountered by a DS3 CSU in the current 15 minute
                    interval."
            ::= { ds3CurrentEntry 5 }

        ds3CurrentCSSs OBJECT-TYPE
            SYNTAX   Counter
            ACCESS   read-only
            STATUS   mandatory
            DESCRIPTION
```

                        "The counter associated with the number of
                        Controlled Slip Seconds, as defined by [12],
                        encountered by a DS3 CSU in the current 15 minute
                        interval.

                        Note that SYNTRAN interfaces are the only
                        interfaces that support the Controlled Slip
                        Seconds managed object. Accordingly, agents
                        configured with non-SYNTRAN interfaces may treat
                        this object as having an ACCESS clause value of
                        not-accessible."
                    ::= { ds3CurrentEntry 6 }

            ds3CurrentBPVs OBJECT-TYPE
                SYNTAX Counter
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION
                        "The counter associated with the number of Bipolar
                        Violations, as defined by [12], encountered by a
                        DS3 CSU in the current 15 minute interval."
                    ::= { ds3CurrentEntry 7}

            ds3CurrentCVs OBJECT-TYPE
                SYNTAX Counter
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION
                        "The counter associated with the number of Coding
                        Violations, as defined by [12], encountered by a
                        DS3 CSU in the current 15 minute interval."
                    ::= { ds3CurrentEntry 8 }

            -- the DS3 Total group

            -- Implementation of this group is mandatory for all systems
            -- that attach to a DS3.

            -- The DS3 Total Table contains the cumulative sum of the
            -- various statistics for the 24 hour interval preceding the
            -- first valid interval in the DS3CurrentTable.

            ds3TotalTable OBJECT-TYPE
                SYNTAX SEQUENCE OF DS3TotalEntry
                ACCESS not-accessible
                STATUS mandatory
                DESCRIPTION

```
                    "The DS3 Total table.  24 hour interval."
            ::= { ds3 4 }

        ds3TotalEntry OBJECT-TYPE
            SYNTAX  DS3TotalEntry
            ACCESS  not-accessible
            STATUS  mandatory
            DESCRIPTION
                    "An entry in the DS3 Total table."
            INDEX   { ds3TotalIndex }
            ::= { ds3TotalTable 1 }

        DS3TotalEntry ::=
            SEQUENCE {
                ds3TotalIndex
                    INTEGER,
                ds3TotalESs
                    Counter,
                ds3TotalSESs
                    Counter,
                ds3TotalSEFSs
                    Counter,
                ds3TotalUASs
                    Counter,
                ds3TotalCSSs
                    Counter,
                ds3TotalBPVs
                    Counter,
                ds3TotalCVs
                    Counter
            }

        ds3TotalIndex OBJECT-TYPE
            SYNTAX  INTEGER
            ACCESS  read-only
            STATUS  mandatory
            DESCRIPTION
                    "The index value which uniquely identifies the CSU
                    to which this entry is applicable.  The interface
                    identified by a particular value of this index is
                    the same interface as identified by the same value
                    an DS3CSUIndex object instance."
            ::= { ds3TotalEntry 1 }

        ds3TotalESs OBJECT-TYPE
            SYNTAX  Counter
            ACCESS  read-only
            STATUS  mandatory
```

              DESCRIPTION
                      "The counter associated with the number of Errored
                      Seconds, as defined by [12], encountered by a DS3
                      CSU in the previous 24 hour interval."
              ::= { ds3TotalEntry 2 }

          ds3TotalSESs OBJECT-TYPE
              SYNTAX Counter
              ACCESS read-only
              STATUS mandatory
              DESCRIPTION
                      "The counter associated with the number of
                      Severely Errored Seconds, as defined by [12],
                      encountered by a DS3 CSU in the previous 24 hour
                      interval."
              ::= { ds3TotalEntry 3 }

          ds3TotalSEFSs OBJECT-TYPE
              SYNTAX Counter
              ACCESS read-only
              STATUS mandatory
              DESCRIPTION
                      "The counter associated with the number of
                      Severely Errored Framing Seconds, as defined by
                      [12], encountered by a DS3 CSU in the previous 24
                      hour interval."
              ::= { ds3TotalEntry 4 }

          ds3TotalUASs OBJECT-TYPE
              SYNTAX Counter
              ACCESS read-only
              STATUS mandatory
              DESCRIPTION
                      "The counter associated with the number of
                      Unavailable Seconds, as defined by [12],
                      encountered by a DS3 CSU in the previous 24 hour
                      interval."
              ::= { ds3TotalEntry 5 }

          ds3TotalCSSs OBJECT-TYPE
              SYNTAX Counter
              ACCESS read-only
              STATUS mandatory
              DESCRIPTION
                      "The counter associated with the number of
                      Controlled Slip Seconds, as defined by [12],
                      encountered by a DS3 CSU in the previous 24 hour
                      interval.

                    Note that SYNTRAN interfaces are the only
                    interfaces that support the Controlled Slip
                    Seconds managed object. Accordingly, agents
                    configured with non-SYNTRAN interfaces may treat
                    this object as having an ACCESS clause value of
                    not-accessible."
            ::= { ds3TotalEntry 6 }

        ds3TotalBPVs OBJECT-TYPE
            SYNTAX Counter
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    "The counter associated with the number of Bipolar
                    Violations, as defined by [12], encountered by a
                    DS3 CSU in the previous 24 hour interval."
            ::= { ds3TotalEntry 7 }

        ds3TotalCVs OBJECT-TYPE
            SYNTAX Counter
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION
                    "The counter associated with the number of Coding
                    Violations, as defined by [12], encountered by a
                    DS3 CSU in the previous 24 hour interval."
            ::= { ds3TotalEntry 8 }

        END

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8. Security Considerations

    Security issues are not discussed in this memo.

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