

## 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 .....	1
2. The Network Management Framework.....	2
3. Objects .....	2
3.1 Format of Definitions .....	3
4. Overview .....	3
4.1 Binding between Interfaces and CSUs .....	3
4.2 Objectives of this MIB Module .....	3
4.3 DS3 Terminology .....	3
5. Object Definitions .....	5
5.1 The DS3 Configuration Group .....	6
5.2 The DS3 Interval Group .....	11
5.3 The DS3 Current Group .....	14
5.4 The DS3 Total Group .....	17
6. Acknowledgments .....	20
7. References .....	22
8. Security Considerations.....	23
9. Authors' Addresses.....	23

### 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 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 SESSs 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,
        ds3CurrentSESSs
            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 }

ds3CurrentSESSs 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 }

## ds3TotalSESSs 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 }

## ds3TotalSEFSSs 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 }

## ds3TotalUASSs 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 }

## ds3TotalCSSSs 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

## 6. Acknowledgments

This document was produced by the SNMP and the Transmission MIB Working Groups:

Anne Ambler, Spider  
Karl Auerbach, Sun  
Fred Baker, ACC  
Ken Brinkerhoff  
Ron Broersma, NOSC  
Jack Brown, US Army  
Theodore Brunner, Bellcore  
Jeffrey Buffum, HP  
Jeffrey D. Case, UTK  
Chris Chiptasso, Spartacus  
Paul Ciarfella, DEC

Bob Collet  
Tracy Cox, Bellcore  
James R. Davin, MIT-LCS  
Kurt Dobbins, Cabletron  
Nadya El-Afandi, Network Systems  
Gary Ellis, HP  
Fred Engle  
Mike Erlinger  
Richard Fox, Synoptics  
Karen Frisa, CMU  
Chris Gunner, DEC  
Ken Hibbard, Xylogics  
Ole Jacobsen, Interop  
Ken Jones  
Satish Joshi, Synoptics  
Frank Kastenholz, Racal-Interlan  
Shimshon Kaufman, Spartacus  
Jim Kinder, Fibercom  
Alex Koifman, BBN  
Christopher Kolb, PSI  
Cheryl Krupczak, NCR  
Peter Lin, Vitalink  
John Lunny, TWG  
Carl Malamud  
Keith McCloghrie, HLS  
Donna McMaster, David Systems  
Lynn Monsanto, Sun  
Dave Perkins, 3COM  
Jim Reinstedler, Ungerman Bass  
Anil Rijsinghani, DEC  
Kary Robertson  
Marshall T. Rose, PSI (chair)  
L. Michael Sabo, NCSC  
Jon Saperia, DEC  
John Seligson  
Fei Shu, NEC  
Sam Sjogren, TGV  
Mark Sleeper, Sparta  
Lance Sprung  
Mike St.Johns  
Bob Stewart, Xyplex  
Emil Sturniold  
Kaj Tesink, Bellcore  
Dean Throop, Data General  
Bill Townsend, Xylogics  
Maurice Turcotte  
Kannan Varadhou  
Sudhanshu Verma, HP

Warren Vik, Interactive Systems  
David Waitzman, BBN  
Steve Waldbusser, CMU  
Dan Wintringham  
David Wood  
Jeff Young, Cray Research

## 7. References

- [1] Cerf, V., "IAB Recommendations for the Development of Internet Network Management Standards", RFC 1052, NRI, April 1988.
- [2] Cerf, V., "Report of the Second Ad Hoc Network Management Review Group", RFC 1109, NRI, August 1989.
- [3] Rose M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based internets", RFC 1155, Performance Systems International, Hughes LAN Systems, May 1990.
- [4] McCloghrie K., and M. Rose, "Management Information Base for Network Management of TCP/IP-based internets", RFC 1156, Hughes LAN Systems, Performance Systems International, May 1990.
- [5] Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", RFC 1157, SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.
- [6] McCloghrie K., and M. Rose, Editors, "Management Information Base for Network Management of TCP/IP-based internets", RFC 1213, Performance Systems International, March 1991.
- [7] Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1), International Organization for Standardization, International Standard 8824, December 1987.
- [8] Information processing systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Notation One (ASN.1), International Organization for Standardization, International Standard 8825, December 1987.
- [9] American National Standard for telecommunications - digital hierarchy - electrical interfaces, ANSI T1.102- 1987.
- [10] American National Standard for telecommunications - digital hierarchy - formats specification, ANSI T1.107- 1988.

[10a] ANSI T1.107a-1989.

[11] American National Standard for telecommunications - Carrier-to-Customer Installation - DS3 Metallic Interface, ANSI T1.404-1989.

[12] In-Service Digital Transmission Performance Monitoring Draft Standard, T1M1.3/90 - 027R2.

[13] Rose, M., and K. McCloghrie, Editors, "Concise MIB Definitions", RFC 1212, Performance Systems International, Hughes LAN Systems, March 1991.

## 8. Security Considerations

Security issues are not discussed in this memo.

## 9. Authors' Addresses

Tracy A. Cox  
Bell Communications Research  
331 Newman Springs Road  
P.O. Box 7020  
Red Bank, NJ 07701-7020

Phone: (908) 758-2107

E-Mail: [tacox@sabre.bellcore.com](mailto:tacox@sabre.bellcore.com)

Kaj Tesink  
Bell Communications Research  
331 Newman Springs Road  
P.O. Box 7020  
Red Bank, NJ 07701-7020

Phone: (908) 758-5254

E-Mail: [kaj@nvuxr.cc.bellcore.com](mailto:kaj@nvuxr.cc.bellcore.com)