Definitions of Supplemental Managed Objects for the DS1, E1, DS2 and E2 Interface Types

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Status of this Memo

Abstract

This memo defines an experimental portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes additional objects that supplement those defined in the Definitions of Managed Objects for the DS1, E1, DS2 and E2 Interface Types document, RFC<TBD> [1].

This memo specifies a MIB module in a manner that is both compliant to the SNMPv2 SMI, and semantically identical to the peer SNMPv1 definitions.

This memo does not specify a standard for the Internet community.

1. The SNMP Network Management Framework

The SNMP Network Management Framework presently consists of three major components. They are:

- the SMI, described in RFC 1902 [2] - the mechanisms used for describing and naming objects for the purpose of management.
- the MIB-II, STD 17, RFC 1213 [3] - the core set of managed objects for the Internet suite of protocols.
- the protocol, RFC 1157 [4] and/or RFC 1905 [5], - the protocol for accessing managed objects.

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

1.1. Object Definitions

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

2. Overview

The objects in this supplemental MIB apply to interfaces of types DS1, E1, DS2 and E2. The definitions in this MIB provide an SNMP-compatible interface to the features described in ANSI T1.231 [6] that are not in the existing DS1-MIB [1]. These features include:

- thesholding
- additional valid data flags
- a table for previous and recent day history
- objects for resetting parameters

In addition, this memo contains a short MIB module containing definitions that are anticipated to be common when similar supplemental MIBs are defined for the DS3/E3 and SONET interface types.

3. DS1-SUPP-MIB Definitions

```
DS1-SUPP-MIB DEFINITIONS ::= BEGIN

IMPORTS
    OBJECT-TYPE, MODULE-IDENTITY, Gauge32, Unsigned32,
    experimental
        FROM SNMPv2-SMI
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    TruthValue, VariablePointer
        FROM SNMPv2-TC
    dsx1LineIndex, dsx1ConfigEntry, dsx1FarEndIntervalEntry
        FROM DS1-MIB
    ResetAction, ThreshResetAction
        FROM WAN-MIB
    ;

ds1SupplementalMIB MODULE-IDENTITY
    LAST-UPDATED "9605171200Z"  -- May 17, 1996
    ORGANIZATION "IETF Trunk MIB Working Group"
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        "           Maria Greene
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    DESCRIPTION
        "The MIB module containing definitions for DS1, E1, DS2, and
        E2 interfaces that supplement those in the standard
        DS1-MIB. (DS1-like interfaces are refered to generically in
        this memo as 'DS1 interfaces'.)

        The objects defined in this MIB module were identified by
        examining ANSI T1.231-1993 and identifying functionality that
        was not specified in the standard DS1-MIB. In addition, the
        Bellcore GR-820-CORE document was consulted, specifically to
        determine the conformance statements.

        Implementing this MIB is optional in a managed device
        that has these types of interfaces because of the additional
        processing and storage capabilities that are required. The
        management functions described in this memo are particularly
        appropriate for 'mediation devices' associated with managed
        device. (See ANSI T1.231-1993, Section 9.1.2.)"
```

```
        ::= { experimental XX }

    -- Should be replaced with:
    --    ::= { ds1 16 }

    dsx1SuppObjects OBJECT IDENTIFIER ::= { ds1SupplementalMIB 1 }

    dsx1SuppConfigGroup  OBJECT IDENTIFIER ::= { dsx1SuppObjects 1 }

    --
    -- The DS1 Supplemental Configuration Table
    --

    dsx1SuppConfigTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1SuppConfigEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains additional configuration objects for a
            DS1 interface. Specifically, it contains flags indicating
            whether the associated data table entry contains valid
            data. The table will have as many rows as there are DS1
            interfaces in the system."
        REFERENCE
            "ANSI T1.231-1993, Section 9.1.2.2,
            Bellcore GR-820-CORE, Section 3.2.2, R3-10."
        ::= { dsx1SuppConfigGroup 1 }

    dsx1SuppConfigEntry OBJECT-TYPE
        SYNTAX      Dsx1SuppConfigEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Configuration objects for a particular DS1 interface. This
            entry augments, or extends, the dsx1ConfigEntry defined in the
            DS1-MIB."
        AUGMENTS    { dsx1ConfigEntry }
        ::= { dsx1SuppConfigTable 1 }

    Dsx1SuppConfigEntry ::= SEQUENCE {
        dsx1CurrentValidData        TruthValue,
        dsx1TotalValidData          TruthValue,
        dsx1FarEndCurrentValidData  TruthValue,
        dsx1FarEndTotalValidData    TruthValue
    }

    dsx1CurrentValidData OBJECT-TYPE
```

```
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data in the
            dsx1CurrentEntry for this DS1 interface."
        ::= { dsx1SuppConfigEntry 1 }

    dsx1TotalValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data in the
            dsx1TotalEntry for this DS1 interface."
        ::= { dsx1SuppConfigEntry 2 }

    dsx1FarEndCurrentValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data in the
            dsx1FarEndCurrentEntry for this DS1 interface."
        ::= { dsx1SuppConfigEntry 3 }

    dsx1FarEndTotalValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data in the
            dsx1FarEndTotalEntry for this DS1 interface."
        ::= { dsx1SuppConfigEntry 4 }

    --
    -- DS1 Supplemental Far End Interval Table
    --

    dsx1SuppFarEndIntervalTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1SuppFarEndIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The DS1 Supplemental Far End Interval Table contains a valid
            data flag for the statistics collected by each DS1 Interface
            over the previous 24 hours of operation.  The past 24 hours
```

```
            are broken into 96 completed 15 minute intervals."
        ::= { dsx1SuppConfigGroup 2 }

    dsx1SuppFarEndIntervalEntry OBJECT-TYPE
        SYNTAX      Dsx1SuppFarEndIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The valid data flag for a DS1 interface for a particular
            interval."
        AUGMENTS    { dsx1FarEndIntervalEntry }
        ::= { dsx1SuppFarEndIntervalTable 1 }

    Dsx1SuppFarEndIntervalEntry ::= SEQUENCE {
        dsx1FarEndIntervalValidData     TruthValue
    }

    dsx1FarEndIntervalValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data
             for this interval."
        ::= { dsx1SuppFarEndIntervalEntry 1 }

    --
    -- The Threshold Group
    --
    -- NOTE: threshold values do not need to be saved across
    --       resets/power-ups.

    dsx1ThresholdGroup OBJECT IDENTIFIER ::= { dsx1SuppObjects 2 }

    dsx1ResetAllParameters OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Setting this object to the value 'reset(2)' will have
            have the effect of initializing all parameter values in all
            entries in the following tables to 0:
                o dsx1CurrentTable
                o dsx1TotalTable
                o dsx1FarEndCurrentTable
                o dsx1FarEndTotalTable
```

```
            And will destroy all rows in the following tables:
                o dsx1IntervalTable
                o dsx1FarEndIntervalTable
                o dsx1DayIntervalTable
                o dsx1FarEndDayIntervalTable

            When read, this object always returns the value 'ready(1)'.

            In general, allowing objects that are statistics to be reset
            to 0 is highly discouraged in SNMP MIBs. This is primarily
            because there may be multiple managers monitoring a given
            agent. The physical layer performance parameters are already
            exceptional, however, because they are hybrid counter/gauges:
            they behave as counters within a given interval and then
            automatically reset to 0 after the interval is over. Unlike
            when polling counters, a manager would not get 'confused' by
            the value of a performance parameter going back to 0.

            Also, the ability to reset performance parameters is stated as
            a firm requirement in the reference documents and not allowing
            reset would make it difficult to implement the required
            thresholding behavior of only sending one Threshold Crossing
            Alert (TCA) message in a given interval unless the parameters
            are reset."
        REFERENCE
            "ANSI T1.231-1993, Section 9.1.5.1,
            Bellcore GR-820-CORE, Section 3.2.2, O3-3"
        ::= { dsx1ThresholdGroup 1 }

    dsx1ResetParameter OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Setting this object to the fully qualified OBJECT IDENTIFIER
            of a performance parameter will initialize that parameter to
            0. For example, setting the value to the OID corresponding to
            dsx1CurrentSESs.2 will reset that parameter for the DS1
            interface with ifIndex value 2. The OBJECT IDENTIFIER and the
            instance must correspond to a DS1 performance parameter and a
            DS1 interface in order for the set to succeed."
        REFERENCE
            "ANSI T1.231-1993, Section 9.1.5.1,
            Bellcore GR-820-CORE, Section 3.2.2, O3-3"
        ::= { dsx1ThresholdGroup 2 }

    dsx1SuppressAllTcas OBJECT-TYPE
```

```
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This object is used to suppress or enable the sending of
            Threshold Crossing Alerts (TCAs) for the entire agent. The
            value 'true(1)' supresses TCAs and the value 'false(2)'
            enables them. By default, agents should initialize this object
            to 'false(2)' (TCAs are enabled)."
        REFERENCE
            "ANSI T1.231-1993, 9.1.5.2"
        DEFVAL      { false }
        ::= { dsx1ThresholdGroup 3 }

    dsx1ResetAllThresholds OBJECT-TYPE
        SYNTAX      ThreshResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This object is used to reset all threshold values for all DS1
            interfaces to default or specific values in one action. When
            read, this object always returns the value 'ready(1)'. When
            set to 'resetToSpecific(2)', all values are set to the value
            specified in the 'specific values entry' in the same
            table. The 'specific values entry' is an entry in the table
            indexed by the maximum value of the index object. When set to
            'resetToDefault(3)', all threshold values are set back to
            their 'factory default' values, except those of the 'specific
            values entry'."
        REFERENCE
            "ANSI T1.231-1993, 9.1.5.2"
        ::= { dsx1ThresholdGroup 4 }

    dsx1ThresholdConfigTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1ThresholdConfigEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains additional configuration objects for a
            DS1 interface that control the over-all thresholding
            capability for the interface. The table will have as many rows
            as there are DS1 interfaces in the system."
        ::= { dsx1ThresholdGroup 5 }

    dsx1ThresholdConfigEntry OBJECT-TYPE
        SYNTAX      Dsx1ThresholdConfigEntry
        MAX-ACCESS  not-accessible
```

```
        STATUS      current
        DESCRIPTION
            "Threshold configuration objects for a particular DS1
            interface. This entry augments, or extends, the
            dsx1ConfigEntry defined in the DS1-MIB."
        AUGMENTS    { dsx1ConfigEntry }
        ::= { dsx1ThresholdConfigTable 1 }

    Dsx1ThresholdConfigEntry ::= SEQUENCE {
        dsx1ResetNearEndCurrent     ResetAction,
        dsx1ResetNearEndTotal       ResetAction,
        dsx1ResetNearEndAll         ResetAction,
        dsx1ResetFarEndCurrent      ResetAction,
        dsx1ResetFarEndTotal        ResetAction,
        dsx1ResetFarEndAll          ResetAction,
        dsx1SuppressTca             TruthValue,
        dsx1ResetThresholds         ThreshResetAction
    }

    dsx1ResetNearEndCurrent OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When set to the value 'reset(2)', the parameters in the
            dsx1CurrentTable for this interface are reset to 0. Resetting
            parameters will cause the corresponding instance of
            dsx1CurrentValidData to be set to 'false(2)'. Note that
            resetting parameters also resets the dsx1TimeElapsed object to
            0, but that it does not effect the total interval duration. In
            other words, dsx1TimeElapsed will only reach its maximum value
            of 899 seconds (15 minutes) if parameters were never reset in
            the interval.

            When read, this object always returns the value 'ready(1)'."
        ::= { dsx1ThresholdConfigEntry 1 }

    dsx1ResetNearEndTotal OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When set to the value 'reset(2)', the parameters in the
            dsx1TotalTable for this interface are reset to 0. Resetting
            parameters will cause the corresponding instance of
            dsx1TotalValidData to be set to 'false(2)'. When read, this
            object always returns the value 'ready(1)'."
```

```
        ::= { dsx1ThresholdConfigEntry 2 }

    dsx1ResetNearEndAll OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When this object is set to the value 'reset(2)', the
            parameters in the following tables are reset to 0:
                o dsx1CurrentTable
                o dsx1TotalTable

            And all rows this these tables are destroyed:
                o dsx1IntervalTable
                o dsx1DayIntervalTable.

            Resetting parameters using this object will cause the
            corresponding instance of dsx1CurrentValidData and
            dsx1TotalValidData to be set to 'false(2)' and will reset
            dsx1TimeElapsed.

            When read, this object always returns the value 'ready(1)'."
        ::= { dsx1ThresholdConfigEntry 3 }

    dsx1ResetFarEndCurrent OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When set to the value 'reset(2)', the parameters in the
            dsx1FarEndCurrentTotalTable for this interface are reset to
            0. Resetting parameters will cause the corresponding instance
            of dsx1FarEndCurrentValidData to be set to 'false(2)'. When
            read, this object always returns the value 'ready(1)'."
        ::= { dsx1ThresholdConfigEntry 4 }

    dsx1ResetFarEndTotal OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When set to the value 'reset(2)', the parameters in the
            dsx1FarEndTotalTotalTable for this interface are reset to
            0. Resetting parameters will cause the corresponding instance
            of dsx1FarEndTotalValidData to be set to 'false(2)'. When
            read, this object always returns the value 'ready(1)'."
        ::= { dsx1ThresholdConfigEntry 5 }
```

```
    dsx1ResetFarEndAll OBJECT-TYPE
        SYNTAX      ResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "When this object is set to the value 'reset(2)', the
            parameters in the following tables are reset to 0:
                o dsx1FarEndCurrentTable
                o dsx1FarEndTotalTable

            And all rows this these tables are destroyed:
                o dsx1FarEndIntervalTable
                o dsx1FarEndDayIntervalTable.

            Resetting parameters using this object will cause the
            corresponding instance of dsx1FarEndCurrentValidData and
            dsx1FarEndTotalValidData to be set to 'false(2)'.

            When read, this object always returns the value 'ready(1)'."
        ::= { dsx1ThresholdConfigEntry 6 }

    dsx1SuppressTca OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This object is used to suppress or enable the sending of
            Threshold Crossing Alerts (TCAs) for a particular DS1
            interface. The value 'true(1)' supresses TCAs and the value
            'false(2)' enables them. By default, agents should initialize
            this object to 'false(2)' (TCAs are enabled for this
            interface). Note that if the value of dsx1SuppressAllTcas is
            'true(1)', this per-interface object is ignored."
        REFERENCE
            "ANSI T1.231-1993, 9.1.5.2"
        DEFVAL      { false }
        ::= { dsx1ThresholdConfigEntry 7 }

    dsx1ResetThresholds OBJECT-TYPE
        SYNTAX      ThreshResetAction
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This object is used to reset all threshold values for this
            DS1 interface to default or specific values in one
            action. When read, this object always returns the value
            'ready(1)'. When set to 'resetToSpecific(2)', all values are
```

```
            set to the value specified in the 'specific values entry' in
            the same table. The 'specific values entry' is an entry in the
            table indexed by the maximum value of the index object. When
            set to 'resetToDefault(3)', all threshold values are set back
            to their 'factory default' values, except those of the
            'specific values entry'."
        REFERENCE
            "ANSI T1.231-1993, 9.1.5.2"
        ::= { dsx1ThresholdConfigEntry 8 }

    --
    -- Current 15 Minute Interval Thresholds
    --

    dsx1CurrentThresholdTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1CurrentThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on parameters for the current 15 minute
            interval per interface."
        REFERENCE
            "ANSI T1.231-1993, 9.1.5.2"
        ::= { dsx1ThresholdGroup 6 }

    dsx1CurrentThresholdEntry OBJECT-TYPE
        SYNTAX      Dsx1CurrentThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds for the current 15 minute interval for a
            particular interface. If thesholding is not supported on a
            particular parameter, the error 'noSuchObject' should be
            returned."
        INDEX       { dsx1CurrentThresholdLineIndex }
        ::= { dsx1CurrentThresholdTable 1 }

    Dsx1CurrentThresholdEntry ::= SEQUENCE {
        dsx1CurrentThresholdLineIndex   Unsigned32,
        dsx1CurrentThresholdESs         Gauge32,
        dsx1CurrentThresholdSESs        Gauge32,
        dsx1CurrentThresholdSEFSs       Gauge32,
        dsx1CurrentThresholdUASs        Gauge32,
        dsx1CurrentThresholdCSSs        Gauge32,
        dsx1CurrentThresholdPCVs        Gauge32,
        dsx1CurrentThresholdLESs        Gauge32,
        dsx1CurrentThresholdLCVs        Gauge32
```

```
    }

    dsx1CurrentThresholdLineIndex OBJECT-TYPE
        SYNTAX      Unsigned32 (0..2147483648)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The value of ifIndex for the DS1 interface, 0 or 2147483648
            (which is 1 greater than the maximum value of ifIndex). The
            threshold values associated with the row indexed by 2147483648
            are the default threshold values. Setting the threshold values
            associated with the row indexed by 0 updates all DS1
            interfaces threshold values to this value. Setting an object
            with any other value index sets the threshold for just the DS1
            interface with that value of ifIndex."
        ::= { dsx1CurrentThresholdEntry 1 }

    dsx1CurrentThresholdESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Errored Seconds encountered by a
            DS1 interface in the current 15 minute interval."
        DEFVAL      { 65 }
        ::= { dsx1CurrentThresholdEntry 2 }

    dsx1CurrentThresholdSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Seconds
            encountered by a DS1 interface in the current 15 minute
            interval."
        DEFVAL      { 10 }
        ::= { dsx1CurrentThresholdEntry 3 }

    dsx1CurrentThresholdSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Framing Seconds
            encountered by a DS1 interface in the current 15 minute
            interval."
        DEFVAL      { 2 }
```

```
        ::= { dsx1CurrentThresholdEntry 4 }

    dsx1CurrentThresholdUASs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Unavailable Seconds encountered
            by a DS1 interface in the current 15 minute interval."
        DEFVAL      { 10 }
        ::= { dsx1CurrentThresholdEntry 5 }

    dsx1CurrentThresholdCSSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Controlled Slip Seconds
            encountered by a DS1 interface in the current 15 minute
            interval."
        DEFVAL      { 1 }
        ::= { dsx1CurrentThresholdEntry 6 }

    dsx1CurrentThresholdPCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Path Coding Violations
            encountered by a DS1 interface in the current 15 minute
            interval."
        DEFVAL      { 13296 }
        ::= { dsx1CurrentThresholdEntry 7 }

    dsx1CurrentThresholdLESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Errored Seconds encountered
            by a DS1 interface in the current 15 minute interval."
        DEFVAL      { 65 }
        ::= { dsx1CurrentThresholdEntry 8 }

    dsx1CurrentThresholdLCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
```

```
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Code Violations (LCVs)
            encountered by a DS1 interface in the current 15 minute
            interval."
        DEFVAL      { 13340 }
        ::= { dsx1CurrentThresholdEntry 9 }

    --
    --  Far End, Current 15 Minute Interval Thresholds
    --

    dsx1FarEndCurrentThresholdTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1FarEndCurrentThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on far end parameters for the current 15
            minute interval per interface."
        ::= { dsx1ThresholdGroup 7 }

    dsx1FarEndCurrentThresholdEntry OBJECT-TYPE
        SYNTAX      Dsx1FarEndCurrentThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on far end parameters for the current 15 minute
            interval for a particular interface.  If thesholding is not
            supported on a particular parameter, the error 'noSuchObject'
            should be returned."
        INDEX       { dsx1FarEndCurrentThresholdLineIndex }
        ::= { dsx1FarEndCurrentThresholdTable 1 }

    Dsx1FarEndCurrentThresholdEntry ::= SEQUENCE {
        dsx1FarEndCurrentThresholdLineIndex Unsigned32,
        dsx1FarEndCurrentThresholdESs       Gauge32,
        dsx1FarEndCurrentThresholdSESs      Gauge32,
        dsx1FarEndCurrentThresholdSEFSs     Gauge32,
        dsx1FarEndCurrentThresholdUASs      Gauge32,
        dsx1FarEndCurrentThresholdCSSs      Gauge32,
        dsx1FarEndCurrentThresholdPCVs      Gauge32,
        dsx1FarEndCurrentThresholdLESs      Gauge32,
        dsx1FarEndCurrentThresholdLCVs      Gauge32
    }

    dsx1FarEndCurrentThresholdLineIndex OBJECT-TYPE
        SYNTAX      Unsigned32 (0..2147483648)
```

```
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The value of ifIndex for the DS1 interface, 0 or 2147483648
            (which is 1 greater than the maximum value of ifIndex). The
            threshold values associated with the row indexed by 2147483648
            are the default threshold values. The threshold values
            associated with the row indexed by 0 updates all DS1
            interfaces threshold values to this value. Setting an object
            with any other value index sets the threshold for just the DS1
            interface with that value of ifIndex."
        ::= { dsx1FarEndCurrentThresholdEntry 1 }

    dsx1FarEndCurrentThresholdESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Errored Seconds encountered by
            the far end of a DS1 interface in the current 15 minute interval."
        DEFVAL      { 65 }
        ::= { dsx1FarEndCurrentThresholdEntry 2 }

    dsx1FarEndCurrentThresholdSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Seconds
            encountered by the far end of a DS1 interface in the current 15
minute
            interval."
        DEFVAL      { 10 }
        ::= { dsx1FarEndCurrentThresholdEntry 3 }

    dsx1FarEndCurrentThresholdSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Framing Seconds
            encountered by the far end of a DS1 interface in the current 15
minute
            interval."
        DEFVAL      { 2 }
        ::= { dsx1FarEndCurrentThresholdEntry 4 }

    dsx1FarEndCurrentThresholdUASs OBJECT-TYPE
```

```
        SYNTAX      Gauge32
```

```
         MAX-ACCESS  read-write
         STATUS      current
         DESCRIPTION
             "A threshold on the number of Unavailable Seconds encountered
             by the far end of a DS1 interface in the current 15 minute
interval."
         DEFVAL      { 10 }
         ::= { dsx1FarEndCurrentThresholdEntry 5 }

     dsx1FarEndCurrentThresholdCSSs OBJECT-TYPE
         SYNTAX      Gauge32
         MAX-ACCESS  read-write
         STATUS      current
         DESCRIPTION
             "A threshold on the number of Controlled Slip Seconds
             encountered by the far end of a DS1 interface in the current 15
minute
             interval."
         DEFVAL      { 1 }
         ::= { dsx1FarEndCurrentThresholdEntry 6 }

     dsx1FarEndCurrentThresholdPCVs OBJECT-TYPE
         SYNTAX      Gauge32
         MAX-ACCESS  read-write
         STATUS      current
         DESCRIPTION
             "A threshold on the number of Path Coding Violations
             encountered by the far end of a DS1 interface in the current 15
minute
             interval."
         DEFVAL      { 13296 }
         ::= { dsx1FarEndCurrentThresholdEntry 7 }

     dsx1FarEndCurrentThresholdLESs OBJECT-TYPE
         SYNTAX      Gauge32
         MAX-ACCESS  read-write
         STATUS      current
         DESCRIPTION
             "A threshold on the number of Line Errored Seconds encountered
             by the far end of a DS1 interface in the current 15 minute
interval."
         DEFVAL      { 65 }
         ::= { dsx1FarEndCurrentThresholdEntry 8 }

     dsx1FarEndCurrentThresholdLCVs OBJECT-TYPE
         SYNTAX      Gauge32
         MAX-ACCESS  read-write
         STATUS      current
```

```
          DESCRIPTION
              "A threshold on the number of Line Code Violations (LCVs)
              encountered by the far end of a DS1 interface in the current 15
minute
```

```
            interval."
        DEFVAL      { 13340 }
        ::= { dsx1FarEndCurrentThresholdEntry 9 }

    --
    -- 24 Hour Interval Thresholds
    --

    dsx1TotalThresholdTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1TotalThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on parameters for the current 24 hour interval
            per interface."
        ::= { dsx1ThresholdGroup 8 }

    dsx1TotalThresholdEntry OBJECT-TYPE
        SYNTAX      Dsx1TotalThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on parameters for the current 24 hour interval for
            a particular interface.  If thesholding is not supported on a
            particular parameter, the error 'noSuchObject' should be
            returned."
        INDEX       { dsx1TotalThresholdLineIndex }
        ::= { dsx1TotalThresholdTable 1 }

    Dsx1TotalThresholdEntry ::= SEQUENCE {
        dsx1TotalThresholdLineIndex Unsigned32,
        dsx1TotalThresholdESs       Gauge32,
        dsx1TotalThresholdSESs      Gauge32,
        dsx1TotalThresholdSEFSs     Gauge32,
        dsx1TotalThresholdUASs      Gauge32,
        dsx1TotalThresholdCSSs      Gauge32,
        dsx1TotalThresholdPCVs      Gauge32,
        dsx1TotalThresholdLESs      Gauge32,
        dsx1TotalThresholdLCVs      Gauge32
    }

    dsx1TotalThresholdLineIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The value of ifIndex for the DS1 interface, 0 or 2147483648
```

```
            (which is 1 greater than the maximum value of ifIndex). The
            threshold values associated with the row indexed by 2147483648
            are the default threshold values. The threshold values
            associated with the row indexed by 0 updates all DS1
            interfaces threshold values to this value. Setting an object
            with any other value index sets the threshold for just the DS1
            interface with that value of ifIndex."
        ::= { dsx1TotalThresholdEntry 1 }

    dsx1TotalThresholdESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Errored Seconds encountered by
            a DS1 interface in the current 24 hour interval."
        DEFVAL      { 648 }
        ::= { dsx1TotalThresholdEntry 2 }

    dsx1TotalThresholdSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Seconds
            encountered by a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 100 }
        ::= { dsx1TotalThresholdEntry 3 }

    dsx1TotalThresholdSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Framing Seconds
            encountered by a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 17 }
        ::= { dsx1TotalThresholdEntry 4 }

    dsx1TotalThresholdUASs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Unavailable Seconds encountered
```

```
            by a DS1 interface in the current 24 hour interval."
        DEFVAL      { 10 }
        ::= { dsx1TotalThresholdEntry 5 }

    dsx1TotalThresholdCSSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Controlled Slip Seconds
            encountered by a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 4 }
        ::= { dsx1TotalThresholdEntry 6 }

    dsx1TotalThresholdPCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Path Coding Violations
            encountered by a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 132960 }
        ::= { dsx1TotalThresholdEntry 7 }

    dsx1TotalThresholdLESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Errored Seconds encountered
            by a DS1 interface in the current 24 hour interval."
        DEFVAL      { 648 }
        ::= { dsx1TotalThresholdEntry 8 }

    dsx1TotalThresholdLCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Code Violations (LCVs)
            encountered by a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 133400 }
        ::= { dsx1TotalThresholdEntry 9 }
```

```
    --
    -- Far End 24 Hour Interval Thresholds
    --

    dsx1FarEndTotalThresholdTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1FarEndTotalThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on far end parameters for the current 24 hour
            interval per interface."
        ::= { dsx1ThresholdGroup 9 }

    dsx1FarEndTotalThresholdEntry OBJECT-TYPE
        SYNTAX      Dsx1FarEndTotalThresholdEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Thresholds on far end parameters for the current 24 hour
            interval for a particular interface.  If thesholding is not
            supported on a particular parameter, the error 'noSuchObject'
            should be returned."
        INDEX       { dsx1FarEndTotalThresholdLineIndex }
        ::= { dsx1FarEndTotalThresholdTable 1 }

    Dsx1FarEndTotalThresholdEntry ::= SEQUENCE {
        dsx1FarEndTotalThresholdLineIndex   Unsigned32,
        dsx1FarEndTotalThresholdESs         Gauge32,
        dsx1FarEndTotalThresholdSESs        Gauge32,
        dsx1FarEndTotalThresholdSEFSs       Gauge32,
        dsx1FarEndTotalThresholdUASs        Gauge32,
        dsx1FarEndTotalThresholdCSSs        Gauge32,
        dsx1FarEndTotalThresholdPCVs        Gauge32,
        dsx1FarEndTotalThresholdLESs        Gauge32,
        dsx1FarEndTotalThresholdLCVs        Gauge32
    }

    dsx1FarEndTotalThresholdLineIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The value of ifIndex for the DS1 interface, 0 or 2147483648
            (which is 1 greater than the maximum value of ifIndex). The
            threshold values associated with the row indexed by 2147483648
            are the default threshold values. The threshold values
            associated with the row indexed by 0 updates all DS1
```

```
            interfaces threshold values to this value. Setting an object
            with any other value index sets the threshold for just the DS1
            interface with that value of ifIndex."
        ::= { dsx1FarEndTotalThresholdEntry 1 }

    dsx1FarEndTotalThresholdESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Errored Seconds encountered by
            the far end of a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 648 }
        ::= { dsx1FarEndTotalThresholdEntry 2 }

    dsx1FarEndTotalThresholdSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Seconds
            encountered by the far end of a DS1 interface in the current
            24 hour interval."
        DEFVAL      { 100 }
        ::= { dsx1FarEndTotalThresholdEntry 3 }

    dsx1FarEndTotalThresholdSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Severely Errored Framing Seconds
            encountered by the far end of a DS1 interface in the current
            24 hour interval."
        DEFVAL      { 17 }
        ::= { dsx1FarEndTotalThresholdEntry 4 }

    dsx1FarEndTotalThresholdUASs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Unavailable Seconds encountered
            by the far end of a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 10 }
```

```
        ::= { dsx1FarEndTotalThresholdEntry 5 }

    dsx1FarEndTotalThresholdCSSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Controlled Slip Seconds
            encountered by the far end of a DS1 interface in the current
            24 hour interval."
        DEFVAL      { 4 }
        ::= { dsx1FarEndTotalThresholdEntry 6 }

    dsx1FarEndTotalThresholdPCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Path Coding Violations
            encountered by the far end of a DS1 interface in the current
            24 hour interval."
        DEFVAL      { 132960 }
        ::= { dsx1FarEndTotalThresholdEntry 7 }

    dsx1FarEndTotalThresholdLESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Errored Seconds encountered
            by the far end of a DS1 interface in the current 24 hour
            interval."
        DEFVAL      { 648 }
        ::= { dsx1FarEndTotalThresholdEntry 8 }

    dsx1FarEndTotalThresholdLCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A threshold on the number of Line Code Violations (LCVs)
            encountered by the far end of a DS1 interface in the current
            24 hour interval."
        DEFVAL      { 133400 }
        ::= { dsx1FarEndTotalThresholdEntry 9 }

    --
```

```
    --  The Day Interval Group

    dsx1DayIntervalGroup OBJECT IDENTIFIER ::= { dsx1SuppObjects 3 }

    dsx1DayIntervalMax OBJECT-TYPE
        SYNTAX      INTEGER (1..7)
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "The number of entries that will be maintained in the
            dsx1DayIntervalTable and dsx1FarEndDayIntervalTable for each
            DS1 interface.  Setting the object to a value lower than the
            current number of entries in the tables causes the entries
            beyond the max value to be destroyed."
        REFERENCE
            "ANSI T1.231-1993, Section 9.2.1.2,
            Bellcore GR-820-CORE, Section 4.7.3."
        DEFVAL      { 1 }
        ::= { dsx1DayIntervalGroup 1 }

    dsx1DayIntervalStart OBJECT-TYPE
        SYNTAX      INTEGER (0..23)
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "For daily data, the hour when to begin measuring the daily
            period for the purpose of reporting data. Note that this
            object is optional because SNMP agents are not required to
            have an internal 'wall clock'."
        REFERENCE
            "ANSI T1.231-1993, Section 9.1.5.1
            Bellcore GR-820-CORE, Section 3.2.2, R3-16"
        DEFVAL      { 0 }
        ::= { dsx1DayIntervalGroup 2 }

    --
    -- DS1 Day Interval Table
    --

    dsx1DayIntervalTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1DayIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table of up to dsx1DayIntervalMax days DS1 statistic totals
            for each interface. These totals record up to one week's worth
            of cumulative statistics."
```

```
        ::= { dsx1DayIntervalGroup 3 }

    dsx1DayIntervalEntry OBJECT-TYPE
        SYNTAX      Dsx1DayIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "One recent day's worth of DS1 statistic totals for an
            interface."
        INDEX       { dsx1LineIndex, dsx1DayIntervalNumber }
        ::= { dsx1DayIntervalTable 1 }

    Dsx1DayIntervalEntry ::= SEQUENCE {
        dsx1DayIntervalNumber     INTEGER,
        dsx1DayIntervalESs        Gauge32,
        dsx1DayIntervalSESs       Gauge32,
        dsx1DayIntervalSEFSs      Gauge32,
        dsx1DayIntervalUASs       Gauge32,
        dsx1DayIntervalCSSs       Gauge32,
        dsx1DayIntervalPCVs       Gauge32,
        dsx1DayIntervalLESs       Gauge32,
        dsx1DayIntervalBESs       Gauge32,
        dsx1DayIntervalDMs        Gauge32,
        dsx1DayIntervalLCVs       Gauge32,
        dsx1DayIntervalValidData  TruthValue
    }

    dsx1DayIntervalNumber OBJECT-TYPE
        SYNTAX      INTEGER (1..6)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A number between 1 and 6, where 1 is the most recently
            completed 24 hour interval before the interval represented by
            the dsx1TotalTable."
        ::= { dsx1DayIntervalEntry 1 }

    dsx1DayIntervalESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Errored Seconds encountered by a DS1 interface
            in one of the individual 24 hour intervals. In the case where
            the agent is a proxy and valid data is not available, return
            noSuchInstance."
        ::= { dsx1DayIntervalEntry 2 }
```

```
    dsx1DayIntervalSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Severely Errored Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 3 }

    dsx1DayIntervalSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Severely Errored Framing Seconds encountered by
            a DS1 interface in one of the individual 24 hour intervals.
            In the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 4 }

    dsx1DayIntervalUASs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Unavailable Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance.  This object may decrease if
            the occurance of unavailable seconds occurs across an inteval
            boundary."
        ::= { dsx1DayIntervalEntry 5 }

    dsx1DayIntervalCSSs OBJECT-TYPE
        SYNTAX     Gauge32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
            "The number of Controlled Slip Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 6 }

    dsx1DayIntervalPCVs OBJECT-TYPE
```

```
        SYNTAX     Gauge32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
            "The number of Path Coding Violations encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 7 }

    dsx1DayIntervalLESs OBJECT-TYPE
        SYNTAX     Gauge32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
            "The number of Line Errored Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 8 }

    dsx1DayIntervalBESs OBJECT-TYPE
        SYNTAX     Gauge32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
            "The number of Bursty Errored Seconds (BESs) encountered by a
            DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 9 }

    dsx1DayIntervalDMs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Degraded Minutes (DMs) encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 10 }

    dsx1DayIntervalLCVs OBJECT-TYPE
        SYNTAX     Gauge32
        MAX-ACCESS read-only
        STATUS     current
```

```
        DESCRIPTION
            "The number of Line Code Violations (LCVs) encountered by a
            DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1DayIntervalEntry 11 }

    dsx1DayIntervalValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data for this
            interval."
        DEFVAL      { true }
        ::= { dsx1DayIntervalEntry 12 }

    --
    -- DS1 Far End Day Interval Table
    --

    dsx1FarEndDayIntervalTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dsx1FarEndDayIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table of up to dsx1DayIntervalMax days DS1 Far End
            statistic totals for each interface. These totals record up to
            one week's worth of cumulative statistics."
        ::= { dsx1DayIntervalGroup 4 }

    dsx1FarEndDayIntervalEntry OBJECT-TYPE
        SYNTAX      Dsx1FarEndDayIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "One recent day's worth of Far End statistic totals for an
            interface."
        INDEX       { dsx1LineIndex, dsx1FarEndDayIntervalNumber }
        ::= { dsx1FarEndDayIntervalTable 1 }

    Dsx1FarEndDayIntervalEntry ::= SEQUENCE {
        dsx1FarEndDayIntervalNumber     INTEGER,
        dsx1FarEndDayIntervalESs        Gauge32,
        dsx1FarEndDayIntervalSESs       Gauge32,
        dsx1FarEndDayIntervalSEFSs      Gauge32,
        dsx1FarEndDayIntervalUASs       Gauge32,
```

```
        dsx1FarEndDayIntervalCSSs       Gauge32,
        dsx1FarEndDayIntervalLESs       Gauge32,
        dsx1FarEndDayIntervalPCVs       Gauge32,
        dsx1FarEndDayIntervalBESs       Gauge32,
        dsx1FarEndDayIntervalDMs        Gauge32,
        dsx1FarEndDayIntervalValidData  TruthValue
    }

    dsx1FarEndDayIntervalNumber OBJECT-TYPE
        SYNTAX      INTEGER (1..6)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A number between 1 and 6, where 1 is the most recently
            completed 24 hour interval before the one represented by the
            dsx1FarEndTotalTable."
        ::= { dsx1FarEndDayIntervalEntry 1 }

    dsx1FarEndDayIntervalESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Errored Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 2 }

    dsx1FarEndDayIntervalSESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Severely Errored Seconds encountered by
            a DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 3 }

    dsx1FarEndDayIntervalSEFSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Severely Errored Framing Seconds
            encountered by a DS1 interface in one of the individual 24
```

```
            hour intervals.  In the case where the agent is a proxy and
            valid data is not available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 4 }

    dsx1FarEndDayIntervalUASs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Unavailable Seconds encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 5 }

    dsx1FarEndDayIntervalCSSs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Controlled Slip Seconds encountered by
            a DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 6 }

    dsx1FarEndDayIntervalLESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Line Errored Seconds encountered by a
            DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 7 }

    dsx1FarEndDayIntervalPCVs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Far End Path Coding Violations reported via the
            far end block error count encountered by a DS1 interface in
            one of the individual 24 hour intervals. In the case where the
            agent is a proxy and valid data is not available, return
            noSuchInstance."
```

```
        ::= { dsx1FarEndDayIntervalEntry 8 }

    dsx1FarEndDayIntervalBESs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Bursty Errored Seconds (BESs) encountered by a
            DS1 interface in one of the individual 24 hour intervals. In
            the case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 9 }

    dsx1FarEndDayIntervalDMs OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Degraded Minutes (DMs) encountered by a DS1
            interface in one of the individual 24 hour intervals. In the
            case where the agent is a proxy and valid data is not
            available, return noSuchInstance."
        ::= { dsx1FarEndDayIntervalEntry 10 }

    dsx1FarEndDayIntervalValidData OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object indicates if there is valid data for this
            interval."
        ::= { dsx1FarEndDayIntervalEntry 11 }

    --
    -- Module Compliance Statement
    --

    dsx1SuppConformance OBJECT IDENTIFIER ::= { ds1SupplementalMIB 2 }

    dsx1SuppCompliances
        OBJECT IDENTIFIER ::= { dsx1SuppConformance 1 }

    dsx1SuppGroups
        OBJECT IDENTIFIER ::= { dsx1SuppConformance 2 }

    dsx1SuppModuleCompliance MODULE-COMPLIANCE
        STATUS current
```

```
        DESCRIPTION
            "The compliance statement for the DS1 Supplemental MIB. Note
            that agents which implement the standard DS1 MIB are not
            required to implement this MIB as well."
        MODULE -- this module
            MANDATORY-GROUPS { dsx1SuppRequiredGroup }
            OBJECT dsx1DayIntervalMax
                MIN-ACCESS read-only
                DESCRIPTION
                    "An agent is not required to support more than one
                    entry in the dsx1DayIntervalTable, representing the
                    previous day's values."

            GROUP dsx1SuppOptionalGroup
            DESCRIPTION
                "Implementation is optional for systems that attach to one
                or more DS1 interfaces."
        ::= { dsx1SuppCompliances 1 }

    dsx1SuppRequiredGroup OBJECT-GROUP
        OBJECTS {
            dsx1CurrentValidData,
            dsx1TotalValidData,
            dsx1FarEndCurrentValidData,
            dsx1FarEndTotalValidData,
            dsx1FarEndIntervalValidData,
            dsx1SuppressAllTcas,
            dsx1ResetAllThresholds,
            dsx1ResetNearEndCurrent,
            dsx1ResetNearEndTotal,
            dsx1ResetNearEndAll,
            dsx1ResetFarEndCurrent,
            dsx1ResetFarEndTotal,
            dsx1ResetFarEndAll,
            dsx1SuppressTca,
            dsx1ResetThresholds,
            dsx1CurrentThresholdESs,
            dsx1CurrentThresholdSESs,
            dsx1CurrentThresholdSEFSs,
            dsx1CurrentThresholdUASs,
            dsx1CurrentThresholdCSSs,
            dsx1CurrentThresholdPCVs,
            dsx1CurrentThresholdLESs,
            dsx1CurrentThresholdLCVs,
            dsx1FarEndCurrentThresholdESs,
            dsx1FarEndCurrentThresholdSESs,
            dsx1FarEndCurrentThresholdSEFSs,
```

```
            dsx1FarEndCurrentThresholdUASs,
            dsx1FarEndCurrentThresholdCSSs,
            dsx1FarEndCurrentThresholdPCVs,
            dsx1FarEndCurrentThresholdLESs,
            dsx1FarEndCurrentThresholdLCVs,
            dsx1TotalThresholdESs,
            dsx1TotalThresholdSESs,
            dsx1TotalThresholdSEFSs,
            dsx1TotalThresholdUASs,
            dsx1TotalThresholdCSSs,
            dsx1TotalThresholdPCVs,
            dsx1TotalThresholdLESs,
            dsx1TotalThresholdLCVs,
            dsx1FarEndTotalThresholdESs,
            dsx1FarEndTotalThresholdSESs,
            dsx1FarEndTotalThresholdSEFSs,
            dsx1FarEndTotalThresholdUASs,
            dsx1FarEndTotalThresholdCSSs,
            dsx1FarEndTotalThresholdPCVs,
            dsx1FarEndTotalThresholdLESs,
            dsx1FarEndTotalThresholdLCVs,
            dsx1DayIntervalMax,
            dsx1DayIntervalESs,
            dsx1DayIntervalSESs,
            dsx1DayIntervalSEFSs,
            dsx1DayIntervalUASs,
            dsx1DayIntervalCSSs,
            dsx1DayIntervalPCVs,
            dsx1DayIntervalLESs,
            dsx1DayIntervalBESs,
            dsx1DayIntervalDMs,
            dsx1DayIntervalLCVs,
            dsx1DayIntervalValidData,
            dsx1FarEndDayIntervalESs,
            dsx1FarEndDayIntervalSESs,
            dsx1FarEndDayIntervalSEFSs,
            dsx1FarEndDayIntervalUASs,
            dsx1FarEndDayIntervalCSSs,
            dsx1FarEndDayIntervalLESs,
            dsx1FarEndDayIntervalPCVs,
            dsx1FarEndDayIntervalBESs,
            dsx1FarEndDayIntervalDMs,
            dsx1FarEndDayIntervalValidData
        }
        STATUS    current
        DESCRIPTION
            "The objects that must be supported by all agents which
```

```
            implement this supplemental MIB."
        ::= { dsx1SuppGroups 1 }

    dsx1SuppOptionalGroup OBJECT-GROUP
        OBJECTS {
            dsx1ResetAllParameters,
            dsx1ResetParameter,
            dsx1DayIntervalStart
        }
        STATUS    current
        DESCRIPTION
            "The objects that optionally may be supported by all agents
            which implement this supplemental MIB."
        ::= { dsx1SuppGroups 2 }

    END
```

4. WAN-MIB Definitions

```
WAN-MIB DEFINITIONS ::= BEGIN

IMPORTS
    OBJECT-TYPE, MODULE-IDENTITY, NOTIFICATION-TYPE, experimental
        FROM SNMPv2-SMI
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    TEXTUAL-CONVENTION
        FROM SNMPv2-TC
    ifIndex
        FROM IF-MIB
    ;

wanMIB MODULE-IDENTITY
    LAST-UPDATED "9605171200Z"  -- May 17, 1996
    ORGANIZATION "IETF Trunk MIB Working Group"
    CONTACT-INFO
        "           Maria Greene
                    Ascom Nexion
         Postal:    289 Great Road
                    Acton, MA 01721-4739
                    US
         Tel:       +1 508 266 4500
         Fax:       +1 508 266 2300
         E-mail:    greene@nexen.com"
    DESCRIPTION
        "This MIB contains common textual conventions used by the WAN
        MIBs and the thesholdCrossingAlert NOTIFICATION-TYPE."
    ::= { experimental 3002 }

-- Should be replaced with:
--    ::= { transmission xx }

ResetAction ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "A syntax used for objects that trigger a reset of some type.
        Setting the value to 'reset(2)' causes the action. When read,
        objects of this syntax will always return the value
        'ready(1)'."
    SYNTAX      INTEGER {
                    ready(1),
                    reset(2)
                }
```

```
ThreshResetAction ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "A syntax used for objects that reset a group of thresholds."
    SYNTAX      INTEGER {
                    ready(1),
                    resetToSpecific(2),
                    resetToDefault(3)
                }


wanObjects OBJECT IDENTIFIER ::= { wanMIB 1 }

wanAudibleAlarmCutOff OBJECT-TYPE
    SYNTAX      ResetAction
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This object is used to turn off an audible local alarm. When
        read, this object always returns the value 'ready(1)'. When
        set to the value 'reset(2)', the audible alarm is
        silenced. Note that resetting the audible alarm indicator does
        not keep the audible alarm from turning on again if the alarm
        state re-occurs."
    ::= { wanObjects 1 }

wanTraps OBJECT IDENTIFIER ::= { wanMIB 2 }

thresholdCrossingAlert NOTIFICATION-TYPE
    OBJECTS { ifIndex -- parameter value, threshold value
            }
    STATUS  current
    DESCRIPTION
        "The thresholdCrossingAlert (TCA) notification indicates that
        a threshold has been crossed for a particular performance
        parameter for a particular WAN interface. The ifIndex of the
        WAN interface is included in the variable bindings list of the
        Trap PDU along with the parameter and the threshold
        objects. Note that these last two vary based on the parameter
        and the interval and therefore are not specified explicitly in
        the OBJECTS list.

        Note that the sysUpTime and sysTrapOID objects are always
        included in every Trap PDU's variable bindings list.

        For each interface, Only one TCA is sent for a given interval
        (current 15 minutes or current day) per parameter per
```

```
            direction of transmission unless the parameter is reset."
        ::= { wanTraps 1 }

    --
    -- Module Compliance Statement
    --

    wanConformance OBJECT IDENTIFIER ::= { wanMIB 3 }

    wanCompliances
        OBJECT IDENTIFIER ::= { wanConformance 1 }

    wanGroups
        OBJECT IDENTIFIER ::= { wanConformance 2 }

    wanModuleCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
            "The compliance statement for the WAN MIB."
        MODULE -- this module
            GROUP wanOptionalGroup
            DESCRIPTION
                "This group is required only for agents that support an
                audible alarm."
        ::= { wanCompliances 1 }

    wanOptionalGroup OBJECT-GROUP
        OBJECTS {
            wanAudibleAlarmCutOff
        }
        STATUS    current
        DESCRIPTION
            "The only object in this MIB module."
        ::= { wanGroups 1 }

    END
```

5. Acknowledgments

This document is a product of the IETF's Trunk MIB Working Group.

6. References

[1] David Fowler, "Definitions of Managed Objects for the DS1, E1, DS2 and E2 Interface Types", RFC<TBD>, Newbridge Networks, March 1996.

[2] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Structure of Management Information for Version 2 of the Simple Network Management Protocol (SNMPv2)", RFC1902, SNMP Research,Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[3] McCloghrie, K., and M. Rose, Editors, "Management Information Base for Network Management of TCP/IP-based internets: MIB-II", STD 17, RFC 1213, Hughes LAN Systems, Performance Systems International, March 1991.

[4] 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.

[5] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", RFC1905, SNMP Research,Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[6] American National Standard for Telecommunications, "Digital Hierarchy -- Layer 1 In-Service Digital Transmission Performance Monitoring", T1.231, September 1993.

[7] Bellcore, "Generic Digital Transmission Surveillance, A Module of OTGR, FR-NWT-000439", GR-820-CORE, Issue 1, November 1994.

7. Security Considerations

Security issues are not discussed in this memo.

8. Author's Address

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