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Definitions of Managed Objects for the SONET/SDH Interface Type

Status of this Memo

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

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing Synchronous Optical Network/Synchronous Digital Hierarchy (SONET/SDH) objects. This document is a companion document with Definitions of Managed Objects for the DS1/E1 and DS3/E3 Interface Types, RFC1406 [14] and RFC1407 [13].

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.

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1. The SNMPv2 Network Management Framework

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

RFC 1442 [1] which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.

STD 17, RFC 1213 [6] defines MIB-II, the core set of managed objects for the Internet suite of protocols. Reference [12] defines the evolution of the Interfaces Group of MIB II in terms of extensions and precise applications of the objects.

RFC 1445 [4] which defines the administrative and other architectural aspects of the framework.

RFC 1448 [5] which defines the protocol used for network access to managed objects.

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

This specification makes also use of:

RFC 1443 [2] which defines textual conventions for the specification of managed objects.

RFC 1444 [3] which defines conformance statements for the specification of managed objects.

2. 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 RFC 1442 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.

2.1. Format of Definitions

Section 4 contains contains the specification of all object types contained in this MIB module. The object types are defined using the conventions defined in the SMI, as amended by the extensions specified in the SNMPv2 SMI.

3. Overview

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

sonet (39), sonetPath (50), sonetVT (51)

The definitions contained herein are based on the SONET/SDH specifications in ANSI T1.105 and T1.106-1988 [9, 9a, 10] and CCITT G.707, 708, 709, and G.783 [15-18].

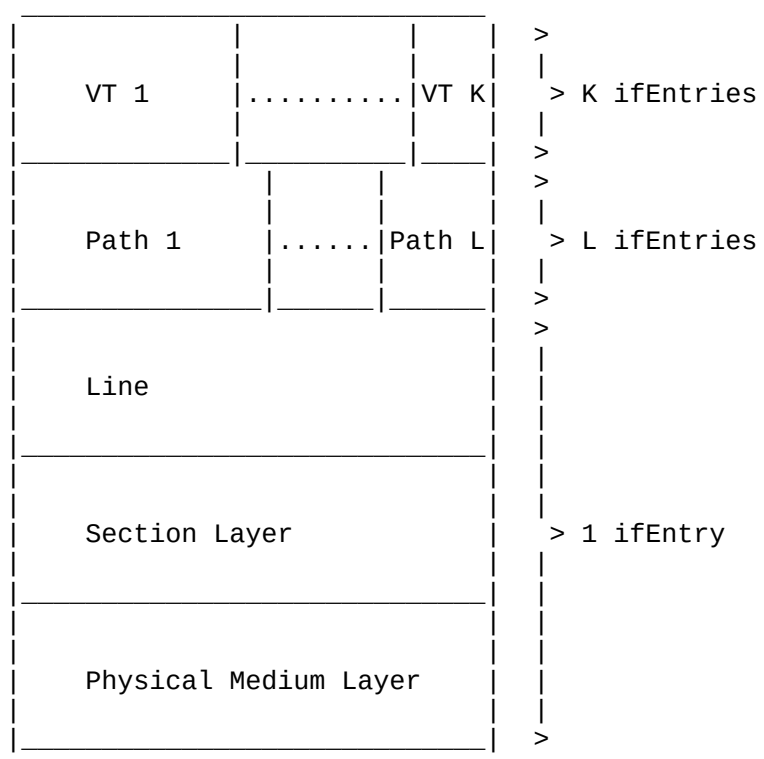
3.1. Use of the ifTable

This section specifies how the MIB II interfaces group, as defined in [12], is used for SONET/SDH interfaces. The SONET/SDH layers support several multiplexing possibilities.

For example in SONET, an Synchronous Transport Signal 3 (STS-3) has 3 SONET Paths, and a STS-3c has 1 SONET Path. Another example could be a STS-12 having 4 SONET STS-3c Paths. Similarly, a SONET Synchronous Payload Envelope (SPE) can carry many Virtual Tributaries (VTs), for example, one SONET SPE can carry 28 VT1.5s. It is important to note that an SPE and a VT in SONET is collectively referred to as a Virtual Container (VC) in SDH. Also, an STS is called Synchronous Transport Module (STM) in SDH.

Not all SONET/SDH equipment terminate all SONET/SDH layers. For example, an SONET/SDH STE regenerator terminates SONET/SDH Sections only, and is transparent for all layers above that. SONET/SDH Add-Drop multiplexers and Digital Cross Connect Systems terminate SONET/SDH Lines. SONET/SDH Terminal Multiplexers may also terminate SONET/SDH Paths and VTs/VCs.

MIB II [6], as extended by [12], accommodates these cases by appropriate use of the MIB II system group, and the interfaces group. The system group can name and describe the type of managed resource. The interfaces group defines which SONET/SDH layers apply, how these layers are configured and multiplexed. This is achieved by proper representation of SONET/SDH Layers by ifEntries as defined in [12], as follows:



Use of ifTable for a SONET/SDH port

The exact configuration and multiplexing of the layers is maintained in the ifStackTable [12].

3.2. Use of ifTable for SONET/SDH Medium/Section/Line Layer

Only the ifGeneralGroup needs to be supported.

ifTable Object	Use for combined SONET/SDH Medium/Section/Line Layer
ifIndex	Interface index.
ifDescr	SONET/SDH Medium/Section/Line
ifType	sonet(39)
ifSpeed	Speed of line rate for SONET/SDH, (e.g., 155520000 bps).
ifPhysAddress	The value of the Circuit Identifier. If no Circuit Identifier has been assigned this object should have an octet string with zero length.
ifAdminStatus	Supports read-only access. The desired administrative status of the interface.
ifOperStatus	The value testing(3) is not used. This object assumes the value down(2), if the objects sonetSectionCurrentStatus and sonetLineCurrentStatus have any other value than sonetSectionNoDefect(1) and sonetLineNoDefect(1), respectively.
ifLastChange	sysUpTime at the last change in ifOperStatus.
ifName	Textual name of the interface or an OCTET STRING of zero length.
ifLinkUpDownTrapEnable	Set to enabled(1). Supports read-only access.
ifHighSpeed	Speed of line in Mega-bits per second (e.g., 155 Mbps)
ifConnectorPresent	Set to true(1).

3.3. Use of ifTable for SONET/SDH Paths

Only the ifGeneralGroup needs to be supported.

ifTable Object	Use for SONET/SDH Paths
ifIndex	Interface index.
ifDescr	SONET/SDH Path
ifType	sonetPath(50)
ifSpeed	set to speed of SONET/SDH path (e.g., an STS-1 path has a rate of 50112000 bps.)
ifPhysAddress	Circuit Identifier or OCTET STRING of zero length.
ifAdminStatus	Supports read-only access. The desired administrative status of the interface.
ifOperStatus	This object assumes the value down(2), if the object sonetPathCurrentStatus has any other value than sonetPathNoDefect(1).
ifLastChange	sysUpTime at the last change in ifOperStatus.
ifName	Textual name of the interface or an OCTET STRING of zero length.
ifLinkUpDownTrapEnable	Default value is disabled(2). Just read-only access may be supported.
ifHighSpeed	Set to rate of SONET/SDH path in Mega-bits per second.
ifConnectorPresent	Set to false(2).

3.4. Use of ifTable for SONET/SDH VTs/VCs

Only the ifGeneralGroup needs to be supported.

ifTable Object	Use for SONET/SDH VTs/VCs
ifIndex	Interface index.
ifDescr	SONET/SDH VT/VC
ifType	sonetVT(51)
ifSpeed	Set to speed of VT/VC (e.g., a VT1.5 has a rate of 1728000 bps.)
ifPhysAddress	Circuit Identifier or OCTET STRING of zero length.
ifAdminStatus	Supports read-only access. The desired administrative status of the interface.
ifOperStatus	This object assumes the value down(2), if the object sonetVTCurrentStatus has any other value than sonetVTNoDefect(1).
ifLastChange	sysUpTime at the last change in ifOperStatus.
ifName	Textual name of the interface or an OCTET STRING of zero length.
ifLinkUpDownTrapEnable	Default value is disabled(2). Just read-only access may be supported.
ifHighSpeed	Set to rate of VT in Mega-bits per second.
ifConnectorPresent	Set to false(2).

3.5. SONET/SDH Terminology

The terminology used in this document to describe error conditions on a SONET circuit as monitored by a SONET system are from the ANSI T1M1.3/93-005R2 [11]. The terminology used in this document to describe error conditions on a SDH circuit as monitored by a SDH system are from the CCITT G.783 [18]. Only the SONET Performance Monitoring terminology is defined in this document. The definitions for SDH Performance Monitoring terms are similar but not identical, and they can be found in [18]. If the definition in this document does not match the definition in the ANSI T1M1.3/93-005R2 draft document, the implementer should follow the definition described in this document.

Section Loss Of Frame Failure (Out of Frame Event, Severely Errored Frame Defect)
: An Out of Frame (OOF) event (or Severely Errored Frame defect) is the occurrence of four contiguous errored frame alignment words. A frame alignment work occupies the A1 and A2 bytes of an STS frame, and is defined in T1.105. The SEF defect is terminated when two contiguous error-free frame words are detected. Any implementation of the frame recovery circuitry which achieves realignment following an OOF within the 250 microsecond (two frames) interval implied by this definition is acceptable.

  An Loss of Frame (LOF) defect is declared when an OOF/SEF defect persists for a period of 3 milliseconds. The LOF defect is terminated when the incoming signal remains continuously in-frame for a period of 1 ms to 3 ms.

  An LOF failure is declared when the LOF defect persists for a period of 2.5 +/- 0.5 seconds, except when an LOS defect or failure is present. The LOF failure is cleared when the LOS failure is declared, or when the LOF defect is absent for 10 +/- 0.5 seconds.

Loss of Signal
: The Loss of Signal (LOS) defect is declared when no transitions are detected on the incoming signal (before descrambling). The LOS defect is detected upon observing 2.3 to 100 microseconds of no transitions. The LOS defect is cleared after a 125 microsecond interval (one frame) during which no LOS defect is detected.

  The LOS failure is declared when the LOS defect persists for a period of 2.5 +/- 0.5 seconds, or if LOS defect is

present when the criteria for LOF failure declaration have been met. The LOS failure is cleared when the LOS defect is absent for a period of 10 +/- 0.5 seconds. Declaration of LOS failure clears any existing LOF failure. Clearing the LOS failure allows immediate declaration of the LOF failure if conditions warrant.

STS-Path Loss of Pointer

An Loss of Pointer (LOP) defect is declared when either a valid pointer is not detected in eight consecutive frames, or when eight consecutive frames are detected with the New Data Flag (NDF) set to "1001" without a valid concatenation indicator (see ANSI T1.105). A LOP defect is terminated when either a valid pointer with a normal NDF set to "0110", or a valid concatenation indicator is detected for three contiguous frames. Incoming STS-Path AIS shall not result in the declaration of a LOP defect.

A STS-Path LOP failure is declared when the STS-Path LOP defect persists for a period of 2.5 +/- 0.5 seconds. A STS-Path LOP failure is cleared when the STS-Path LOP defect is absent for 10 +/- 0.5 seconds.

VT Loss of Pointer

A VT LOP defect is declared when either a valid pointer is not detected in eight consecutive VT superframes, or when eight consecutive VT superframes are detected with the NDF set to "1001" without a valid concatenation indicator. A VT LOP defect is terminated when either a valid pointer with a normal NDF set to "0110", or a valid concatenation indicator is detected for three contiguous VT superframes. Incoming VT-Path AIS shall not result in declaring a VT LOP defect.

A VT LOP failure is declared when the VT LOP defect persists for 2.5 +/- 0.5 seconds. A VT LOP failure is cleared when the VT LOP defect is absent for 10 +/- 0.5 seconds.

Line Alarm Indication Signal

A Line Alarm Indication Signal (L-AIS) is defined in ANSI T1.105. The following criteria are specific to the L-AIS defect:

-- Line AIS defect is detected as a "111" pattern in bits 6, 7, and 8 of the K2 byte in five consecutive frames.

-- Line AIS defect is terminated when bits 6, 7, and 8 of the K2 byte do not contain the code "111" for five consecutive frames.

A Line AIS failure is declared when the Line AIS defect persists for a period of 20.5 +/- 0.5 seconds. A Line AIS failure is cleared when the Line AIS defect is absent for 10 +/- 0.5 seconds.

STS-Path Alarm Indication Signal

The STS-Path Alarm Indication Signal (AIS) is defined in ANSI T1.105 as all ones in bytes H1, H2, and H3 as well as all ones in the entire STS SPE. The following criteria are specific to the STS-Path AIS defect:

-- STS-Path AIS defect is detected as all ones in bytes H1 and H2 in three contiguous frames.

-- The STS-Path AIS defect is terminated when a valid STS Pointer is detected with the NDF set to "1001" (inverted) for one frame, or "0110" (normal) for three contiguous frames.

A STS-Path AIS failure is declared when the STS-Path AIS defect persists for 2.5 +/- 0.5 seconds. A STS-Path AIS failure is cleared when the STS-Path AIS defect is absent for 10 +/- 0.5 seconds.

VT-Path Alarm Indication Signal

The VT-Path Alarm Indication Signal (AIS) is only applicable for VTs in the floating mode of operation. VT-Path AIS is used to alert the downstream VT Path Terminating Entity (PTE) of an upstream failure. Upon detection of a failure, Line AIS, or STS-Path AIS, an STS PTE will generate downstream VT-Path AIS if the STS Synchronous Payload Envelope (SPE) is carrying floating VTs. VT-Path AIS is specified in ANSI T1.105 as all ones in bytes V1, V2, V3, and V4, as well as all ones in the entire VT SPE. The following criteria are specific to VT-Path AIS defect:

-- VT-Path AIS defect is detected by a VT PTE as all ones in bytes V1 and V2 in three contiguous VT superframes.

-- VT-Path AIS defect is terminated when valid VT pointer with a valid VT size is detected with the NDF set to "1001" (inverted) for one VT superframe, or "0110"

(normal) for three contiguous VT superframes are detected.

A VT-Path AIS failure is declared when the VT-Path AIS defect persists for 2.5 +/- 0.5 seconds. A VT-Path AIS failure is cleared when the VT-Path AIS defect is absent for 10 +/- 0.5 seconds.

Line Remote Defect Indication

Line Remote Defect Indication (RDI) (aka Line FERF) signal is the occurrence of a "110" pattern in bit positions 6, 7, and 8 of the K2 byte in STS-1 #1 of the STS-N signal. Line RDI is defined in ANSI T1.105. The following criteria are specific to Line RDI defect:

-- Line RDI defect is a "110" code in bits 6, 7, and 8 of the K2 byte of in STS-1 #1 in five consecutive frames.

-- Line RDI defect is terminated when any code other than "110" is detected in bits 6, 7, and 8 of the K2 byte in five consecutive frames.

A Line Remote Failure Indication (RFI) failure is declared when the incoming Line RDI defects lasts for 2.5 +/- 0.5 seconds. The Line RFI failure is cleared when no Line RDI defects are detected for 10 +/- 0.5 seconds.

STS-Path Remote Defect Indication

STS-Path RDI (aka STS-Path FERF) signal shall be generated within 100 milliseconds by the STS PTE upon detection of an AIS or LOP defect. Transmission of the STS-Path RDI signal shall cease within 100 milliseconds when the STS PTE no longer detects STS-Path AIS or STS-Path LOP defect. The STS-Path RDI shall accurately report the presence or absence of STS-Path AIS or STS-Path LOP defects. STS-Path RDI defect is defined in ANSI T1.105. The following requirements are specific to the STS-Path RDI defect:

-- STS-Path RDI is detected by all STS PTEs. STS-Path RDI is detected by the upstream STS PTE as a "1" in bit five of the Path Status byte (G1) for five contiguous frames.

-- Removal of STS-Path Remote Defect Indication is detected by a "0" in bit 5 of the G1 byte in five contiguous frames.

A STS-Path Remote Failure Indication (RFI) failure is declared when the incoming STS-Path RDI defects lasts for 2.5 +/- 0.5 seconds. The STS-Path RFI failure is cleared when no STS-Path RDI defects are detected for 10 +/- 0.5 seconds.

VT-Path Remote Defect Indication

VT Path RDI (aka VT Path FERF) signal shall be generated within 100 milliseconds by the VT PTE upon detection of a VT-Path AIS or LOP defect. Transmission of the VT-Path RDI signal shall cease within 100 milliseconds when the VT PTE no longer detects VT-Path AIS or VT-Path LOP defect. The VT-Path RDI shall accurately report the presence or absence of VT-Path AIS or VT-Path LOP defects. VT-Path RDI defect is defined in ANSI T1.105. The following requirements are specific to VT-Path RDI defect:

-- VT-Path RDI defect is the occurrence of a "1" in bit 4 of the VT-Path Overhead byte (V5) in five contiguous frames.

-- VT-Path RDI defect is terminated when a "0" is detected in bit 4 of the VT-Path Overhead byte (V5) for five contiguous frames.

A VT-Path Remote Failure Indication (RFI) (derived) failure is declared when the incoming VT-Path RDI defects lasts for 2.5 +/- 0.5 seconds. The VT-Path RFI failure is cleared when no VT-Path RDI defects are detected for 10 +/- 0.5 seconds.

VT-Path Remote Failure Indication

The VT-Path RFI signal is only required for the case of byte synch mapped DS1s where the DS1 frame bit is not mapped. The VT-Path RFI is specified in ANSI T1.105, where it is currently called VT path yellow. When provided, the VT-Path RFI signal is used to indicate the occurrence of far-end failures. When the VT-Path RFI is not provided, far-end failures are derived from local timing of the VT-Path RDI defect. The VT-Path RFI failure is declared within 5 ms of detecting the incoming VT-Path RFI Signal. The VT-Path Remote Failure Indication (RFI) failure is cleared within 50 ms of detecting the removal of the incoming VT-Path RFI signal.

Coding Violation

Coding Violations (CV) are Bit Interleaved Parity (BIP) errors that are detected in the incoming signal. CV counters are incremented for each BIP error detected. That is, each BIP-8 can detect up to eight errors per STS-N frame, with each error incrementing the CV counter. Section CVs shall be collected using the BIP-8 in the B1 byte located in the Section Overhead of STS-1 #1. Line CVs shall be collected using the BIP-8s in B2 bytes located in the Line Overhead of each STS-1 (since all CVs on an STS-N line are counted together, this is equivalent to counting each error in the BIP-8*N contained in the B2 bytes of the STS-N Line Overhead). Thus, on an STS-N signal, up to 8 x N CVs may occur in each frame. Path CVs shall be collected using the BIP-8 in the B3 byte of the STS-Path Overhead of the STS SPE. VT CVs shall be collected using the BIP-2 in the V5 overhead byte of the floating VT.

Errored Seconds

At each layer, an Errored Second (ES) is a second with one or more Coding Violations at that layer OR one or more incoming defects (e.g., SEF, LOS, AIS, LOP) at that layer has occurred.

Severely Errored Seconds

At each layer, an Severely Errored Second (SES) is a second with x or more CVs at that layer, or a second during which at least one or more incoming defects at that layer has occurred. Values of x vary depending on the line rate and the Bit Error Rate. See Section 3.4 for values for x.

Severely Errored Framing Seconds

A Severely Errored Framing Second (SEFS) is a seconds with containing one or more SEF events. This counter is only counted at the Section Layer.

Unavailable Seconds

At the Line, Path, and VT layers, an unavailable second is calculated by counting the number of seconds that the interface is unavailable. At each layer, the SONET/SDH interface is said to be unavailable at the onset of 10 contiguous SESs. The 10 SESs are included in unavailable time. Once unavailable, the SONET/SDH interface becomes available at the onset of 10 contiguous seconds with no SESs. The 10 seconds with no SESs are excluded from unavailable time. With respect to the SONET/SDH error

counts at each layer, all counters at that layer are incremented while the SONET/SDH interface is deemed available at that layer. While the interface is deemed unavailable at that layer, the only count that is incremented is UASs at that layer.

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 sonetPathIntervalSES and sonetPathIntervalUAS (for the Line and VT also) 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.

Unequipped

If a Path or VT connection is not provisioned (idle) the SONET equipment will signal this state by transmitting the Path or VT Signal Label as follows:
- byte C2 of the STS Path Overhead equal to 0 for an unequipped Path,
- byte V5 of the VT Path Overhead equal to 0 for an unequipped VT.

Signal Label Mismatch

A Path or VT connection is not correctly provisioned if a received Path or VT Signal Label mismatch occurs. A received Signal Label is considered mismatched if it does not equal either the locally provisioned value or the value 'equipped non-specific' (1 hex). Note that any received non-zero Signal Label is considered a locally provisioned value of 'equipped non-specific'. Only in-service, provisioned Path Terminating equipment can detect mismatched Signal labels. It is considered provisioned if it has been configured for a mapping and has been assigned signals to and from which the mapping takes place.

Circuit Identifier

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

3.6. Values for x for the Section, Line, Path, and VT Layers

Value for x for SONET/SDH Section SES Definition

Rate	x	Minimum Bit Error Rate
OC-1	9	1.5 x 10^-7
0C-3	16	1 x 10^-7
OC-9	47	1 x 10^-7
OC-12	63	1 x 10^-7
OC-18	94	1 x 10^-7
OC-24	125	1 x 10^-7
OC-36	187	1 x 10^-7
OC-48	249	1 x 10^-7

Value for x for SONET/SDH Line SES Definition

Rate	x	Minimum Bit Error Rate
OC-1	12	2 x 10^-7
0C-3	32	2 x 10^-7
OC-9	94	2 x 10^-7
OC-12	124	2 x 10^-7
OC-18	186	2 x 10^-7
OC-24	248	2 x 10^-7
OC-36	370	2 x 10^-7
OC-48	494	2 x 10^-7

Value for x for SONET/SDH STS-Path SES Definition

Rate	x	Minimum Bit Error Rate
STS-1	9	1.5 x 10^-7
STS-3	16	1 x 10^-7

Value for x for SONET/SDH VT-Path SES Definition

Rate	x	Minimum Bit Error Rate
VT1.5	4	2 x 10^-6
VT2	6	2 x 10^-6
VT3	8	2 x 10^-6
VT6	14	2 x 10^-6

4. Object Definitions

```
          SONET-MIB DEFINITIONS ::= BEGIN


          IMPORTS
              MODULE-IDENTITY, OBJECT-TYPE, Counter32, Gauge32,
              Integer32,
                    FROM SNMPv2-SMI
              TEXTUAL-CONVENTION, DisplayString
                    FROM SNMPv2-TC
              MODULE-COMPLIANCE, OBJECT-GROUP
                    FROM SNMPv2-CONF
              ifIndex, transmission
                    FROM RFC-1213;

          --  This is the MIB module for the SMDS Interface objects.


          sonetMIB MODULE-IDENTITY
              LAST-UPDATED "9401030000Z"
              ORGANIZATION "IETF AToM MIB Working Group"
              CONTACT-INFO
                "        Tracy Brown

                 Postal: Bell Communications Research
                         331 Newman Springs Road
                         P.O. Box 7020
                         Red Bank, NJ  07701-7020
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                         US

                    Tel: +1 908 758 5254
                    Fax: +1 908 758 4196
```

```
           E-mail: kaj@cc.bellcore.com"
        DESCRIPTION
             "The MIB module to describe
             SONET/SDH interfaces objects."
        ::= { transmission 39 }


    --  This is the MIB module for the SONET/SDH objects

    sonetObjects      OBJECT IDENTIFIER ::= { sonetMIB 1 }

    sonetObjectsPath  OBJECT IDENTIFIER ::= { sonetMIB 2 }

    sonetObjectsVT    OBJECT IDENTIFIER ::= { sonetMIB 3 }


    -- groups in the SONET/SDH MIB module

    sonetMedium       OBJECT IDENTIFIER ::= { sonetObjects 1 }

    sonetSection      OBJECT IDENTIFIER ::= { sonetObjects 2 }

    sonetLine         OBJECT IDENTIFIER ::= { sonetObjects 3 }

    sonetFarEndLine   OBJECT IDENTIFIER ::= { sonetObjects 4 }

    sonetPath         OBJECT IDENTIFIER ::= { sonetObjectsPath 1 }

    sonetFarEndPath   OBJECT IDENTIFIER ::= { sonetObjectsPath 2 }

    sonetVT           OBJECT IDENTIFIER ::= { sonetObjectsVT 1 }

    sonetFarEndVT     OBJECT IDENTIFIER ::= { sonetObjectsVT 2 }


    -- the SONET/SDH Medium group

    -- SONET/SDH interfaces for some applications may be
    -- electrical interfaces and not optical interfaces.
    -- This group handles the configuration information for
    -- both optical SONET/SDH interfaces and electrical
    -- SONET/SDH interfaces.

    sonetMediumTable OBJECT-TYPE
        SYNTAX  SEQUENCE OF SonetMediumEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
```

```
            "The SONET/SDH Medium table."
          ::= { sonetMedium 1 }

        sonetMediumEntry OBJECT-TYPE
            SYNTAX  SonetMediumEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
               "An entry in the SONET/SDH Medium table."
            INDEX   { ifIndex }
             ::= { sonetMediumTable 1 }

        SonetMediumEntry ::=
            SEQUENCE {
                 sonetMediumType               INTEGER,
                 sonetMediumTimeElapsed        Integer32,
                 sonetMediumValidIntervals     Integer32,
                 sonetMediumLineCoding         INTEGER,
                 sonetMediumLineType           INTEGER,
                 sonetMediumCircuitIdentifier  DisplayString
            }


        sonetMediumType OBJECT-TYPE
            SYNTAX  INTEGER  {
                       sonet(1),
                       sdh(2)
                    }
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "This variable identifies whether a SONET
               or a SDH signal is used across this interface."
            ::= { sonetMediumEntry 1 }

        sonetMediumTimeElapsed OBJECT-TYPE
            SYNTAX  Integer32 (1..900)
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The number of seconds, including partial
               seconds, that have elapsed since the beginning of
               the current error-measurement period."
            ::= { sonetMediumEntry 2 }

        sonetMediumValidIntervals OBJECT-TYPE
            SYNTAX  Integer32 (0..96)
            MAX-ACCESS  read-only
```

```
            STATUS  current
            DESCRIPTION
               "The number of previous intervals for which valid
               data has been stored.  A SONET device must support
               at least n intervals.
               The minimum value of n is 4.
               The default of n is 32.
               The maximum value of n is 96.
               The value of this object will be n unless
               the device was brought online within the last
               (nx15) minutes, in which case the value will be the
               number of complete 15 minute intervals the device has
               been online."
            ::= { sonetMediumEntry 3 }

        sonetMediumLineCoding OBJECT-TYPE
            SYNTAX  INTEGER {
                        sonetMediumOther(1),
                        sonetMediumB3ZS(2),
                        sonetMediumCMI(3),
                        sonetMediumNRZ(4),
                        sonetMediumRZ(5)
                    }
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "This variable describes the line coding for
               this interface. The B3ZS and CMI are used for
               electrical SONET/SDH signals (STS-1 and STS-3).
               The Non-Return to Zero (NRZ) and the Return
               to Zero are used for optical SONET/SDH signals."
            ::= { sonetMediumEntry 4 }

        sonetMediumLineType OBJECT-TYPE
            SYNTAX  INTEGER {
                        sonetOther(1),
                        sonetShortSingleMode(2),
                        sonetLongSingleMode(3),
                        sonetMultiMode(4),
                        sonetCoax(5),
                        sonetUTP(6)
                    }
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "This variable describes the line type for
               this interface. The line types are
               Short and Long Range
```

```
                Single Mode fiber or Multi-Mode fiber interfaces,
                and coax and UTP for electrical interfaces.  The
                value sonetOther should be used when the Line Type is
                not one of the listed values."
            ::= { sonetMediumEntry 5 }

        sonetMediumCircuitIdentifier OBJECT-TYPE
            SYNTAX  DisplayString (SIZE (0..255))
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                "This variable contains the transmission
                vendor's circuit identifier, for the
                purpose of facilitating troubleshooting."
            ::= { sonetMediumEntry 6 }


        -- the SONET/SDH Section group

        -- this group consists of 2 tables:
        -- - the SONET/SDH Section Current Table
        -- - the SONET/SDH Section Interval Table



        -- the SONET/SDH Section Current Table

        -- The SONET/SDH Section
        -- current table contains various statistics
        -- being collected for the current 15 minute interval.

        sonetSectionCurrentTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetSectionCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                "The SONET/SDH Section Current table."
             ::= { sonetSection 1 }

        sonetSectionCurrentEntry OBJECT-TYPE
            SYNTAX  SonetSectionCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                "An entry in the SONET/SDH Section Current table."
            INDEX   { ifIndex }
             ::= { sonetSectionCurrentTable 1 }
```

```
        SonetSectionCurrentEntry ::=
            SEQUENCE {
                sonetSectionCurrentStatus   Integer32,
                sonetSectionCurrentESs      Gauge32,
                sonetSectionCurrentSESs     Gauge32,
                sonetSectionCurrentSEFSs    Gauge32,
                sonetSectionCurrentCVs      Gauge32
            }


        sonetSectionCurrentStatus OBJECT-TYPE
            SYNTAX  Integer32 (1..6)
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "This variable indicates the
               status of the interface.
               The sonetSectionCurrentStatus
               is a bit map represented
               as a sum, therefore,
               it can represent multiple defects
               simultaneously.
               The sonetSectionNoDefect should be
               set if and only if
               no other flag is set.

               The various bit positions are:
                     1   sonetSectionNoDefect
                     2   sonetSectionLOS
                     4   sonetSectionLOF"
             ::= { sonetSectionCurrentEntry 1 }

        sonetSectionCurrentESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of Errored
               Seconds encountered by a SONET/SDH
               Section in the current 15 minute interval."
             ::= { sonetSectionCurrentEntry 2 }

        sonetSectionCurrentSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of
```

```
            Severely Errored Seconds
            encountered by a SONET/SDH Section in the current 15
            minute interval."
          ::= { sonetSectionCurrentEntry 3 }

      sonetSectionCurrentSEFSs OBJECT-TYPE
          SYNTAX  Gauge32
          MAX-ACCESS  read-only
          STATUS  current
          DESCRIPTION
             "The counter associated with the number of
             Severely Errored Framing Seconds
             encountered by a SONET/SDH Section in the current
             15 minute interval."
          ::= { sonetSectionCurrentEntry 4 }

      sonetSectionCurrentCVs OBJECT-TYPE
          SYNTAX  Gauge32
          MAX-ACCESS  read-only
          STATUS  current
          DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH Section in the current 15 minute interval."
           ::= { sonetSectionCurrentEntry 5 }


      -- the SONET/SDH Section Interval Table

      -- The SONET/SDH Section Interval Table
      -- contains various statistics
      -- collected by each system over a maximum
      -- of the previous 24 hours of
      -- operation.  The past 24 hours may be broken into 96
      -- completed 15 minute intervals.
      -- A system is required to store at
      -- least 4 completed 15 minute interval.
      -- The default value is 32 intervals.

      sonetSectionIntervalTable OBJECT-TYPE
          SYNTAX  SEQUENCE OF SonetSectionIntervalEntry
          MAX-ACCESS  not-accessible
          STATUS  current
          DESCRIPTION
             "The SONET/SDH Section Interval table."
           ::= { sonetSection 2 }

      sonetSectionIntervalEntry OBJECT-TYPE
```

```
        SYNTAX  SonetSectionIntervalEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
           "An entry in the SONET/SDH Section Interval table."
        INDEX   { ifIndex,
                  sonetSectionIntervalNumber }
         ::= { sonetSectionIntervalTable 1 }

    SonetSectionIntervalEntry ::=
        SEQUENCE {
             sonetSectionIntervalNumber  Integer32,
             sonetSectionIntervalESs     Gauge32,
             sonetSectionIntervalSESs    Gauge32,
             sonetSectionIntervalSEFSs   Gauge32,
             sonetSectionIntervalCVs     Gauge32
        }


    sonetSectionIntervalNumber OBJECT-TYPE
        SYNTAX  Integer32 (1..96)
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
          "A number between 1 and 96, which identifies the
          interval for which the set of statistics is available.
          The interval identified by 1 is the most recently
          completed 15 minute interval,
          and the interval identified
          by N is the interval immediately preceding the
          one identified
          by N-1."
         ::= { sonetSectionIntervalEntry 1 }

    sonetSectionIntervalESs OBJECT-TYPE
        SYNTAX  Gauge32
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
           "The counter associated with the number of
           Errored Seconds encountered
           by a SONET/SDH Section in a
           particular 15-minute interval
           in the past 24 hours."
         ::= { sonetSectionIntervalEntry 2 }

    sonetSectionIntervalSESs OBJECT-TYPE
        SYNTAX  Gauge32
```

```
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of
               Severely Errored Seconds
               encountered by a SONET/SDH Section in a
               particular 15-minute interval
               in the past 24 hours."
            ::= { sonetSectionIntervalEntry 3 }

        sonetSectionIntervalSEFSs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of
               Severely Errored Framing Seconds
               encountered by a SONET/SDH Section in a
               particular 15-minute interval
               in the past 24 hours."
            ::= { sonetSectionIntervalEntry 4 }

        sonetSectionIntervalCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of Coding
               Violations encountered by a
               SONET/SDH Section in a particular 15-minute interval
               in the past 24 hours."
            ::= { sonetSectionIntervalEntry 5 }


        -- the SONET/SDH Line group

        -- this group consists of 2 tables:
        -- - the SONET/SDH Line Current Table
        -- - the SONET/SDH Line Interval Table


        -- the SONET/SDH Line Current Table

        -- The SONET/SDH Line
        -- current table contains various statistics
        -- being collected for the current 15 minute interval.

        sonetLineCurrentTable OBJECT-TYPE
```

```
        SYNTAX  SEQUENCE OF SonetLineCurrentEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
          "The SONET/SDH Line Current table."
        ::= { sonetLine 1 }

    sonetLineCurrentEntry OBJECT-TYPE
        SYNTAX  SonetLineCurrentEntry
        MAX-ACCESS  not-accessible
        STATUS  current
        DESCRIPTION
          "An entry in the SONET/SDH Line Current table."
        INDEX   { ifIndex }
        ::= { sonetLineCurrentTable 1 }

    SonetLineCurrentEntry ::=
        SEQUENCE {
             sonetLineCurrentStatus    Integer32,
             sonetLineCurrentESs       Gauge32,
             sonetLineCurrentSESs      Gauge32,
             sonetLineCurrentCVs       Gauge32,
             sonetLineCurrentUASs      Gauge32
         }


    sonetLineCurrentStatus OBJECT-TYPE
        SYNTAX  Integer32 (1..6)
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
           "This variable indicates the
           status of the interface.
           The sonetLineCurrentStatus
           is a bit map represented
           as a sum, therefore,
           it can represent multiple defects
           simultaneously.
           The sonetLineNoDefect should be
           set if and only if
           no other flag is set.

           The various bit positions are:
            1   sonetLineNoDefect
            2   sonetLineAIS
            4   sonetLineRDI"
         ::= { sonetLineCurrentEntry 1 }
```

```
        sonetLineCurrentESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Errored
             Seconds encountered by a SONET/SDH
             Line in the current 15 minute interval."
            ::= { sonetLineCurrentEntry 2 }

        sonetLineCurrentSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Severely Errored Seconds
             encountered by a SONET/SDH Line in the current 15
             minute
             interval."
            ::= { sonetLineCurrentEntry 3 }

        sonetLineCurrentCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH Line in the current 15 minute interval."
            ::= { sonetLineCurrentEntry 4 }

        sonetLineCurrentUASs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Unavailable Seconds
             encountered by a SONET/SDH Line in the current 15
             minute
             interval."
            ::= { sonetLineCurrentEntry 5 }


        -- the SONET/SDH Line Interval Table

        -- The SONET/SDH Line Interval Table
```

```
        -- contains various statistics
        -- collected by each system over a maximum
        -- of the previous 24 hours of
        -- operation.  The past 24 hours may be broken into 96
        -- completed 15 minute intervals.
        -- A system is required to store at
        -- least 4 completed 15 minute interval.
        -- The default value is 32 intervals.

        sonetLineIntervalTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetLineIntervalEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
               "The SONET/SDH Line Interval table."
             ::= { sonetLine 2 }

        sonetLineIntervalEntry OBJECT-TYPE
            SYNTAX  SonetLineIntervalEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
               "An entry in the SONET/SDH Line Interval table."
           INDEX   { ifIndex,
                     sonetLineIntervalNumber }
           ::= { sonetLineIntervalTable 1 }

        SonetLineIntervalEntry ::=
            SEQUENCE {
                sonetLineIntervalNumber    Integer32,
                sonetLineIntervalESs       Gauge32,
                sonetLineIntervalSESs      Gauge32,
                sonetLineIntervalCVs       Gauge32,
                sonetLineIntervalUASs      Gauge32
            }


        sonetLineIntervalNumber OBJECT-TYPE
            SYNTAX  Integer32 (1..96)
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                "A number between 1 and 96, which identifies the
                interval for which the set of statistics is available.
                The interval identified by 1 is the most recently
                completed 15 minute interval,
                and the interval identified
                by N is the interval immediately preceding the
```

```
                one identified
                by N-1."
            ::= { sonetLineIntervalEntry 1 }

        sonetLineIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of
               Errored Seconds encountered
               by a SONET/SDH Line in a
               particular 15-minute interval
               in the past 24 hours."
             ::= { sonetLineIntervalEntry 2 }

        sonetLineIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
               "The counter associated with the number of
               Severely Errored Seconds
               encountered by a SONET/SDH Line in a
               particular 15-minute interval
               in the past 24 hours."
              ::= { sonetLineIntervalEntry 3 }

        sonetLineIntervalCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
              "The counter associated with the number of Coding
              Violations encountered by a
              SONET/SDH Line in a
              particular 15-minute interval
              in the past 24 hours."
            ::= { sonetLineIntervalEntry 4 }

        sonetLineIntervalUASs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
              "The counter associated with the
              number of Unavailable Seconds
              encountered by a SONET/SDH Line in
```

```
            a particular 15-minute interval
            in the past 24 hours."
          ::= { sonetLineIntervalEntry 5 }


      -- The SONET/SDH Far End Line group.
      -- This group may only be implemented by SONET/SDH (LTEs)
      -- systems that provide for a far end block error (FEBE)
      -- information at the SONET/SDH Line Layer.

      -- This group consists of two tables:
      --    SONET/SDH Far End Line Current Table
      --    SONET/SDH Far End Line Interval Table



      -- The SONET/SDH Far End Line Current Table

      -- The SONET/SDH Far End Line Current table contains
      -- various statistics being
      -- collected for the current 15 minute interval.
      -- The statistics are collected from the far end
      -- block error code (FEBE)
      -- within the third Z2 byte of the Line Overhead
      -- in Broadband ISDN applications.
      -- The definitions are the same as described for
      -- the near-end information.

      sonetFarEndLineCurrentTable OBJECT-TYPE
          SYNTAX  SEQUENCE OF SonetFarEndLineCurrentEntry
          MAX-ACCESS  not-accessible
          STATUS  current
          DESCRIPTION
            "The SONET/SDH Far End Line Current table."
          ::= { sonetFarEndLine 1 }

      sonetFarEndLineCurrentEntry OBJECT-TYPE
          SYNTAX  SonetFarEndLineCurrentEntry
          MAX-ACCESS  not-accessible
          STATUS  current
          DESCRIPTION
            "An entry in the SONET/SDH Far End Line Current table."
          INDEX   { ifIndex }
          ::= { sonetFarEndLineCurrentTable 1 }

      SonetFarEndLineCurrentEntry ::=
          SEQUENCE {
              sonetFarEndLineCurrentESs       Gauge32,
```

```
                 sonetFarEndLineCurrentSESs      Gauge32,
                 sonetFarEndLineCurrentCVs       Gauge32,
                 sonetFarEndLineCurrentUASs      Gauge32
                }


        sonetFarEndLineCurrentESs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of Far
               Far End Errored Seconds encountered by a SONET/SDH
               interface in the current 15 minute interval."
           ::= { sonetFarEndLineCurrentEntry 1 }

        sonetFarEndLineCurrentSESs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of
               Far End Severely Errored Seconds
               encountered by a SONET/SDH Medium/Section/Line
               interface in the current 15 minute
               interval."
           ::= { sonetFarEndLineCurrentEntry 2 }

        sonetFarEndLineCurrentCVs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of
               Far End Coding Violations reported via
               the far end block error count
               encountered by a
               SONET/SDH Medium/Section/Line
               interface in the current 15 minute interval."
           ::= { sonetFarEndLineCurrentEntry 3 }

        sonetFarEndLineCurrentUASs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of
               Far End Unavailable Seconds
```

```
            encountered by a
            SONET/SDH Medium/Section/Line
            interface in the current 15 minute interval."
         ::= { sonetFarEndLineCurrentEntry 4 }


      -- The SONET/SDH Far End Line Interval Table

      -- The SONET/SDH Far End Line Interval Table
      -- contains various statistics
      -- collected by each system over a maximum
      -- of the previous 24 hours of
      -- operation.  The past 24 hours may be broken into 96
      -- completed 15 minute intervals.
      -- A system is required to store at
      -- least 4 completed 15 minute interval.
      -- The default value is 32 intervals.

      sonetFarEndLineIntervalTable OBJECT-TYPE
         SYNTAX  SEQUENCE OF SonetFarEndLineIntervalEntry
         MAX-ACCESS  not-accessible
         STATUS  current
         DESCRIPTION
            "The SONET/SDH Far End Line Interval table."
         ::= { sonetFarEndLine 2 }

      sonetFarEndLineIntervalEntry OBJECT-TYPE
         SYNTAX  SonetFarEndLineIntervalEntry
         MAX-ACCESS  not-accessible
         STATUS  current
         DESCRIPTION
           "An entry in the SONET/SDH Far
           End Line Interval table."
         INDEX   { ifIndex,
                   sonetFarEndLineIntervalNumber }
         ::= { sonetFarEndLineIntervalTable 1 }

      SonetFarEndLineIntervalEntry ::=
          SEQUENCE {
               sonetFarEndLineIntervalNumber    Integer32,
               sonetFarEndLineIntervalESs       Gauge32,
               sonetFarEndLineIntervalSESs      Gauge32,
               sonetFarEndLineIntervalCVs       Gauge32,
               sonetFarEndLineIntervalUASs      Gauge32
          }


      sonetFarEndLineIntervalNumber OBJECT-TYPE
```

```
            SYNTAX  Integer32 (1..96)
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                  "A number between 1 and 96, which identifies the
                  interval for which the set of statistics is available.
                  The interval identified by 1 is the most recently
                  completed 15 minute interval,
                  and the interval identified
                  by N is the interval immediately preceding the
                  one identified
                  by N-1."
            ::= { sonetFarEndLineIntervalEntry 1 }

         sonetFarEndLineIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                 "The counter associated with the number of
                 Far End Errored Seconds encountered
                 by a SONET/SDH Line
                 interface in a particular 15-minute interval
                 in the past 24 hours."
           ::= { sonetFarEndLineIntervalEntry 2 }

         sonetFarEndLineIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                 "The counter associated with the number of
                 Far End Severely Errored Seconds
                 encountered by a SONET/SDH Line
                 interface in a particular 15-minute interval
                 in the past 24 hours."
           ::= { sonetFarEndLineIntervalEntry 3 }

         sonetFarEndLineIntervalCVs OBJECT-TYPE
             SYNTAX  Gauge32
             MAX-ACCESS  read-only
             STATUS  current
             DESCRIPTION
                  "The counter associated with the number of
                  Far End Coding Violations reported via
                  the far end block error count
                  encountered by a
                  SONET/SDH Line
```

```
                interface in a particular 15-minute interval
                in the past 24 hours."
            ::= { sonetFarEndLineIntervalEntry 4 }

        sonetFarEndLineIntervalUASs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of
               Far End Unavailable Seconds
               encountered by a
               SONET/SDH Line
               interface in a particular 15-minute interval
               in the past 24 hours."
           ::= { sonetFarEndLineIntervalEntry 5 }


        -- the SONET/SDH Path group

        -- this group consists of 2 tables:
        -- - the SONET/SDH Path Current Table
        -- - the SONET/SDH Path Interval Table


        -- the SONET/SDH Path Current Table

        -- The SONET/SDH Path
        -- current table contains various statistics
        -- being collected for the current 15 minute interval.

        sonetPathCurrentTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetPathCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
             "The SONET/SDH Path Current table."
        ::= { sonetPath 1 }

        sonetPathCurrentEntry OBJECT-TYPE
            SYNTAX  SonetPathCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
             "An entry in the SONET/SDH Path Current table."
            INDEX   { ifIndex }
        ::= { sonetPathCurrentTable 1 }
```

```
        SonetPathCurrentEntry ::=
            SEQUENCE {
                sonetPathCurrentWidth      INTEGER,
                sonetPathCurrentStatus     Integer32,
                sonetPathCurrentESs        Gauge32,
                sonetPathCurrentSESs       Gauge32,
                sonetPathCurrentCVs        Gauge32,
                sonetPathCurrentUASs       Gauge32
            }


        sonetPathCurrentWidth OBJECT-TYPE
            SYNTAX  INTEGER  {
                    sts1(1),
                    sts3cSTM1(2),
                    sts12cSTM4(3),
                    sts24c(4),
                    sts48cSTM16(5)
             }
            MAX-ACCESS  read-write
            STATUS  current
            DESCRIPTION
             "A value that indicates the type of the SONET/SDH
             Path.  For SONET, the assigned types are
             the STS-Nc SPEs, where N = 1, 3, 12, 24, and 48.
             STS-1 is equal to 51.84 Mbps.  For SDH, the assigned
             types are the STM-Nc VCs, where N = 1, 4, and 16."
        ::= { sonetPathCurrentEntry 1 }

        sonetPathCurrentStatus OBJECT-TYPE
            SYNTAX  Integer32 (1..14)
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
              "This variable indicates the
              status of the interface.
              The sonetPathCurrentStatus
              is a bit map represented
              as a sum, therefore,
              it can represent multiple defects
              simultaneously.
              The sonetPathNoDefect should be
              set if and only if
              no other flag is set.

              The various bit positions are:
                 1   sonetPathNoDefect
                 2   sonetPathSTSLOP
```

```
                4   sonetPathSTSAIS
                8   sonetPathSTSRDI
               16   sonetPathUnequipped
               32   sonetPathSignalLabelMismatch"
        ::= { sonetPathCurrentEntry 2 }

        sonetPathCurrentESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Errored
             Seconds encountered by a SONET/SDH
             Path in the current 15 minute interval."
        ::= { sonetPathCurrentEntry 3 }

        sonetPathCurrentSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Severely Errored Seconds
             encountered by a SONET/SDH Path in the current 15
             minute
             interval."
        ::= { sonetPathCurrentEntry 4 }

        sonetPathCurrentCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH Path in the current 15 minute interval."
        ::= { sonetPathCurrentEntry 5 }

        sonetPathCurrentUASs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Unavailable Seconds
             encountered by a Path in the current
             15 minute, interval."
        ::= { sonetPathCurrentEntry 6 }
```

```
-- the SONET/SDH Path Interval Table

-- The SONET/SDH Path Interval Table
-- contains various statistics
-- collected by each system over a maximum
-- of the previous 24 hours of
-- operation.  The past 24 hours may be broken into 96
-- completed 15 minute intervals.
-- A system is required to store at
-- least 4 completed 15 minute interval.
-- The default value is 32 intervals.

sonetPathIntervalTable OBJECT-TYPE
    SYNTAX  SEQUENCE OF SonetPathIntervalEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
     "The SONET/SDH Path Interval table."
::= { sonetPath 2 }

sonetPathIntervalEntry OBJECT-TYPE
    SYNTAX  SonetPathIntervalEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
     "An entry in the SONET/SDH Path Interval table."
    INDEX   { ifIndex,
              sonetPathIntervalNumber }
::= { sonetPathIntervalTable 1 }


SonetPathIntervalEntry ::=
    SEQUENCE {
         sonetPathIntervalNumber     Integer32,
         sonetPathIntervalESs        Gauge32,
         sonetPathIntervalSESs       Gauge32,
         sonetPathIntervalCVs        Gauge32,
         sonetPathIntervalUASs       Gauge32
    }


sonetPathIntervalNumber OBJECT-TYPE
    SYNTAX  Integer32 (1..96)
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
       "A number between 1 and 96, which identifies the
       interval for which the set of statistics is available.
```

```
               The interval identified by 1 is the most recently
               completed 15 minute interval,
               and the interval identified
               by N is the interval immediately preceding the
               one identified
               by N-1."
        ::= { sonetPathIntervalEntry 1 }

        sonetPathIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Errored Seconds encountered
             by a SONET/SDH Path in a
             particular 15-minute interval
             in the past 24 hours."
        ::= { sonetPathIntervalEntry 2 }

        sonetPathIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Severely Errored Seconds
             encountered by a SONET/SDH Path in
             a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetPathIntervalEntry 3 }

        sonetPathIntervalCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH Path in a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetPathIntervalEntry 4 }

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

```
             "The counter associated with the number of
             Unavailable Seconds
             encountered by a Path in a
             particular 15-minute interval
             in the past 24 hours."
        ::= { sonetPathIntervalEntry 5 }


        -- The SONET/SDH Far End Path group

        -- This group consists of two tables:
        --  - SONET/SDH Far End Path Current Table
        --  - SONET/SDH Far End Path Interval Table

        -- The SONET/SDH Far End Path Current Table

        -- The SONET/SDH Far End Path Current table
        -- contains various statistics
        -- being collected for the current 15 minute interval.
        -- The statistics are collected from
        -- the far end block error code
        -- (FEBE) within the G1 byte of the Path Overhead.
        -- The definitions are the same as described for
        -- the near-end information.

        sonetFarEndPathCurrentTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetFarEndPathCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                 "The SONET/SDH Far End Path Current table."
            ::= { sonetFarEndPath 1 }

        sonetFarEndPathCurrentEntry OBJECT-TYPE
            SYNTAX  SonetFarEndPathCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                 "An entry in the SONET/SDH Far End Path Current table."
            INDEX   { ifIndex }
            ::= { sonetFarEndPathCurrentTable 1 }

        SonetFarEndPathCurrentEntry ::=
            SEQUENCE {
                sonetFarEndPathCurrentESs       Gauge32,
                sonetFarEndPathCurrentSESs      Gauge32,
                sonetFarEndPathCurrentCVs       Gauge32,
                sonetFarEndPathCurrentUASs      Gauge32
```

```
    }


sonetFarEndPathCurrentESs OBJECT-TYPE
    SYNTAX  Gauge32
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
         "The counter associated with the number of Far
         Far End Errored Seconds encountered by a SONET/SDH
         interface in the current 15 minute interval."
    ::= { sonetFarEndPathCurrentEntry 1 }

sonetFarEndPathCurrentSESs OBJECT-TYPE
    SYNTAX  Gauge32
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
         "The counter associated with the number of
         Far End Severely Errored Seconds
         encountered by a SONET/SDH Path
         interface in the current 15 minute
         interval."
    ::= { sonetFarEndPathCurrentEntry 2 }

sonetFarEndPathCurrentCVs OBJECT-TYPE
    SYNTAX  Gauge32
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
         "The counter associated with the number of
         Far End Coding Violations reported via
         the far end block error count
         encountered by a
         SONET/SDH Path interface in
         the current 15 minute interval."
    ::= { sonetFarEndPathCurrentEntry 3 }

sonetFarEndPathCurrentUASs OBJECT-TYPE
   SYNTAX  Gauge32
   MAX-ACCESS  read-only
   STATUS  current
   DESCRIPTION
       "The counter associated with the number of
       Far End Unavailable Seconds
       encountered by a
       SONET/SDH Path interface in
       the current 15 minute interval."
```

```
   ::= { sonetFarEndPathCurrentEntry 4 }


-- The SONET/SDH Far End Path Interval Table

-- The SONET/SDH Far End Path Interval Table
-- contains various statistics
-- collected by each system over a maximum
-- of the previous 24 hours of
-- operation.  The past 24 hours may be broken into 96
-- completed 15 minute intervals.
-- A system is required to store at
-- least 4 completed 15 minute interval.
-- The default value is 32 intervals.

sonetFarEndPathIntervalTable OBJECT-TYPE
    SYNTAX  SEQUENCE OF SonetFarEndPathIntervalEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
        "The SONET/SDH Far End Path Interval table."
    ::= { sonetFarEndPath 2 }

sonetFarEndPathIntervalEntry OBJECT-TYPE
    SYNTAX  SonetFarEndPathIntervalEntry
    MAX-ACCESS  not-accessible
    STATUS  current
    DESCRIPTION
       "An entry in the SONET/SDH Far
       End Path Interval table."
    INDEX   { ifIndex,
              sonetFarEndPathIntervalNumber }
    ::= { sonetFarEndPathIntervalTable 1 }

SonetFarEndPathIntervalEntry ::=
    SEQUENCE {
         sonetFarEndPathIntervalNumber     Integer32,
         sonetFarEndPathIntervalESs        Gauge32,
         sonetFarEndPathIntervalSESs       Gauge32,
         sonetFarEndPathIntervalCVs        Gauge32,
         sonetFarEndPathIntervalUASs       Gauge32
    }


sonetFarEndPathIntervalNumber OBJECT-TYPE
   SYNTAX  Integer32 (1..96)
   MAX-ACCESS  not-accessible
   STATUS  current
```

```
            DESCRIPTION
                 "A number between 1 and 96, which identifies the
                 interval for which the set of statistics is available.
                 The interval identified by 1 is the most recently
                 completed 15 minute interval,
                 and the interval identified
                 by N is the interval immediately preceding the
                 one identified
                 by N-1."
            ::= { sonetFarEndPathIntervalEntry 1 }

         sonetFarEndPathIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                 "The counter associated with the number of
                 Far End Errored Seconds encountered
                 by a SONET/SDH Path interface in a
                 particular 15-minute interval
                 in the past 24 hours."
            ::= { sonetFarEndPathIntervalEntry 2 }

         sonetFarEndPathIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                 "The counter associated with the number of
                 Far End Severely Errored Seconds
                 encountered by a SONET/SDH Path interface
                 in a particular 15-minute interval
                 in the past 24 hours."
            ::= { sonetFarEndPathIntervalEntry 3 }

         sonetFarEndPathIntervalCVs OBJECT-TYPE
             SYNTAX  Gauge32
             MAX-ACCESS  read-only
             STATUS  current
             DESCRIPTION
                  "The counter associated with the number of
                  Far End Coding Violations reported via
                  the far end block error count
                  encountered by a
                  SONET/SDH Path interface
                  in a particular 15-minute interval
                  in the past 24 hours."
             ::= { sonetFarEndPathIntervalEntry 4 }
```

```
          sonetFarEndPathIntervalUASs OBJECT-TYPE
             SYNTAX  Gauge32
             MAX-ACCESS  read-only
             STATUS  current
             DESCRIPTION
                 "The counter associated with the number of
                 Far End Unavailable Seconds
                 encountered by a
                 SONET/SDH Path interface in
                 a particular 15-minute interval
                 in the past 24 hours."
             ::= { sonetFarEndPathIntervalEntry 5 }


          -- the SONET/SDH Virtual Tributary group

          -- this group consists of 2 tables:
          -- - the SONET/SDH VT Current Table
          -- - the SONET/SDH VT Interval Table

          -- For SDH signals, virtual tributaries are
          -- called VCs instead of VTs

          -- A VT1.5 = VC11
          -- A VT2 = VC12
          -- A VT3 = none
          -- A VT6 = VC3


          -- the SONET/SDH VT Current Table

          -- The SONET/SDH VT current table
          -- contains various statistics
          -- being collected for the
          -- current 15 minute interval.

          sonetVTCurrentTable OBJECT-TYPE
              SYNTAX  SEQUENCE OF SonetVTCurrentEntry
              MAX-ACCESS  not-accessible
              STATUS  current
              DESCRIPTION
               "The SONET/SDH VT Current table."
          ::= { sonetVT 1 }

          sonetVTCurrentEntry OBJECT-TYPE
              SYNTAX  SonetVTCurrentEntry
              MAX-ACCESS  not-accessible
              STATUS  current
```

```
    DESCRIPTION
     "An entry in the SONET/SDH VT Current table."
    INDEX   { ifIndex }
::= { sonetVTCurrentTable 1 }

SonetVTCurrentEntry ::=
    SEQUENCE {
        sonetVTCurrentWidth      INTEGER,
        sonetVTCurrentStatus     Integer32,
        sonetVTCurrentESs        Gauge32,
        sonetVTCurrentSESs       Gauge32,
        sonetVTCurrentCVs        Gauge32,
        sonetVTCurrentUASs       Gauge32
    }


sonetVTCurrentWidth OBJECT-TYPE
    SYNTAX  INTEGER {
            vtWidth15VC11(1),
            vtWidth2VC12(2),
            vtWidth3(3),
            vtWidth6VC2(4),
            vtWidth6c(5)
         }
    MAX-ACCESS  read-write
    STATUS  current
    DESCRIPTION
    "A value that indicates the type of the SONET
     VT and SDH VC.  Assigned widths are
     VT1.5/VC11, VT2/VC12, VT3, VT6/VC2, and VT6c."
::= { sonetVTCurrentEntry 1 }

sonetVTCurrentStatus OBJECT-TYPE
    SYNTAX  Integer32 (1..30)
    MAX-ACCESS  read-only
    STATUS  current
    DESCRIPTION
      "This variable indicates the
      status of the interface.
      The sonetVTCurrentStatus
      is a bit map represented
      as a sum, therefore,
      it can represent multiple defects
      and failures
      simultaneously.
      The sonetVTNoDefect should be
      set if and only if
      no other flag is set.
```

```
              The various bit positions are:
                 1   sonetVTNoDefect
                 2   sonetVTLOP
                 4   sonetVTPathAIS
                 8   sonetVTPathRDI
                16   sonetVTPathRFI
                32   sonetVTUnequipped
                64   sonetVTSignalLabelMismatch"
        ::= { sonetVTCurrentEntry 2 }

        sonetVTCurrentESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Errored
             Seconds encountered by a SONET/SDH
             VT in the current 15 minute interval."
        ::= { sonetVTCurrentEntry 3 }

        sonetVTCurrentSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Severely Errored Seconds
             encountered by a SONET/SDH VT in the current 15 minute
             interval."
        ::= { sonetVTCurrentEntry 4 }

        sonetVTCurrentCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH VT in the current 15 minute interval."
        ::= { sonetVTCurrentEntry 5 }

        sonetVTCurrentUASs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Unavailable Seconds
```

```
             encountered by a VT in the current
             15 minute, interval."
        ::= { sonetVTCurrentEntry 6 }


        -- the SONET/SDH VT Interval Table

        -- The SONET/SDH VT Interval Table
        -- contains various statistics
        -- collected by each system over a maximum
        -- of the previous 24 hours of
        -- operation.  The past 24 hours may be broken into 96
        -- completed 15 minute intervals.
        -- A system is required to store at
        -- least 4 completed 15 minute interval.
        -- The default value is 32 intervals.

        sonetVTIntervalTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetVTIntervalEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
             "The SONET/SDH VT Interval table."
        ::= { sonetVT 2 }

        sonetVTIntervalEntry OBJECT-TYPE
            SYNTAX  SonetVTIntervalEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
             "An entry in the SONET/SDH VT Interval table."
            INDEX   { ifIndex,
                      sonetVTIntervalNumber }
        ::= { sonetVTIntervalTable 1 }

        SonetVTIntervalEntry ::=
            SEQUENCE {
                sonetVTIntervalNumber     Integer32,
                sonetVTIntervalESs        Gauge32,
                sonetVTIntervalSESs       Gauge32,
                sonetVTIntervalCVs        Gauge32,
                sonetVTIntervalUASs       Gauge32
            }


        sonetVTIntervalNumber OBJECT-TYPE
            SYNTAX  Integer32 (1..96)
            MAX-ACCESS  not-accessible
```

```
            STATUS  current
            DESCRIPTION
              "A number between 1 and 96, which identifies the
              interval for which the set of statistics is available.
              The interval identified by 1 is the most recently
              completed 15 minute interval,
              and the interval identified
              by N is the interval immediately preceding the
              one identified
              by N-1."
        ::= { sonetVTIntervalEntry 1 }

        sonetVTIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Errored Seconds encountered
             by a SONET/SDH VT in a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetVTIntervalEntry 2 }

        sonetVTIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Severely Errored Seconds
             encountered by a SONET/SDH VT
             in a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetVTIntervalEntry 3 }

        sonetVTIntervalCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of Coding
             Violations encountered by a
             SONET/SDH VT in a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetVTIntervalEntry 4 }

        sonetVTIntervalUASs OBJECT-TYPE
            SYNTAX  Gauge32
```

```
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
             "The counter associated with the number of
             Unavailable Seconds
             encountered by a VT in a particular 15-minute interval
             in the past 24 hours."
        ::= { sonetVTIntervalEntry 5 }


        -- The SONET/SDH Far End VT group

        -- This group consists of two tables:
        --    SONET/SDH Far End VT Current Table
        --    SONET/SDH Far End VT Interval Table


        -- The SONET/SDH Far End VT Current

        -- The SONET/SDH Far End VT Current table
        -- contains various statistics
        -- being collected for the current 15 minute interval.
        -- The statistics are collected from
        -- the far end block error code
        -- (FEBE) within the G1 byte of the VT Overhead.
        -- The definitions are the same as described for
        -- the near-end information.

        sonetFarEndVTCurrentTable OBJECT-TYPE
            SYNTAX  SEQUENCE OF SonetFarEndVTCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                "The SONET/SDH Far End VT Current table."
            ::= { sonetFarEndVT 1 }

        sonetFarEndVTCurrentEntry OBJECT-TYPE
            SYNTAX  SonetFarEndVTCurrentEntry
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
                "An entry in the SONET/SDH Far End VT Current table."
            INDEX   { ifIndex }
            ::= { sonetFarEndVTCurrentTable 1 }

        SonetFarEndVTCurrentEntry ::=
            SEQUENCE {
                sonetFarEndVTCurrentESs       Gauge32,
```

```
            sonetFarEndVTCurrentSESs      Gauge32,
            sonetFarEndVTCurrentCVs       Gauge32,
            sonetFarEndVTCurrentUASs      Gauge32
        }


    sonetFarEndVTCurrentESs OBJECT-TYPE
        SYNTAX  Gauge32
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
            "The counter associated with the number of Far
            Far End Errored Seconds encountered by a SONET/SDH
            interface in the current 15 minute interval."
    ::= { sonetFarEndVTCurrentEntry 1 }

    sonetFarEndVTCurrentSESs OBJECT-TYPE
        SYNTAX  Gauge32
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
            "The counter associated with the number of
            Far End Severely Errored Seconds
            encountered by a SONET/SDH VT interface
            in the current 15 minute
            interval."
        ::= { sonetFarEndVTCurrentEntry 2 }

    sonetFarEndVTCurrentCVs OBJECT-TYPE
        SYNTAX  Gauge32
        MAX-ACCESS  read-only
        STATUS  current
        DESCRIPTION
            "The counter associated with the number of
            Far End Coding Violations reported via
            the far end block error count
            encountered by a
            SONET/SDH VT interface
            in the current 15 minute interval."
        ::= { sonetFarEndVTCurrentEntry 3 }

    sonetFarEndVTCurrentUASs OBJECT-TYPE
       SYNTAX  Gauge32
       MAX-ACCESS  read-only
       STATUS  current
       DESCRIPTION
          "The counter associated with the number of
          Far End Unavailable Seconds
```

```
            encountered by a
            SONET/SDH VT interface
            in the current 15 minute interval."
         ::= { sonetFarEndVTCurrentEntry 4 }


      -- The SONET/SDH Far End VT Interval Table

      -- The SONET/SDH Far End VT Interval Table
      -- contains various statistics
      -- collected by each system over a maximum
      -- of the previous 24 hours of
      -- operation.  The past 24 hours may be broken into 96
      -- completed 15 minute intervals.
      -- A system is required to store at
      -- least 4 completed 15 minute interval.
      -- The default value is 32 intervals.

      sonetFarEndVTIntervalTable OBJECT-TYPE
          SYNTAX  SEQUENCE OF SonetFarEndVTIntervalEntry
          MAX-ACCESS  not-accessible
          STATUS  current
          DESCRIPTION
             "The SONET/SDH Far End VT Interval table."
          ::= { sonetFarEndVT 2 }

      sonetFarEndVTIntervalEntry OBJECT-TYPE
          SYNTAX  SonetFarEndVTIntervalEntry
          MAX-ACCESS  not-accessible
          STATUS  current
          DESCRIPTION
            "An entry in the SONET/SDH Far
            End VT Interval table."
          INDEX   { ifIndex,
                    sonetFarEndVTIntervalNumber }
          ::= { sonetFarEndVTIntervalTable 1 }

      SonetFarEndVTIntervalEntry ::=
         SEQUENCE {
               sonetFarEndVTIntervalNumber     Integer32,
               sonetFarEndVTIntervalESs        Gauge32,
               sonetFarEndVTIntervalSESs       Gauge32,
               sonetFarEndVTIntervalCVs        Gauge32,
               sonetFarEndVTIntervalUASs       Gauge32
          }


      sonetFarEndVTIntervalNumber OBJECT-TYPE
```

```
            SYNTAX  Integer32 (1..96)
            MAX-ACCESS  not-accessible
            STATUS  current
            DESCRIPTION
               "A number between 1 and 96, which identifies the
               interval for which the set of statistics is available.
               The interval identified by 1 is the most recently
               completed 15 minute interval,
               and the interval identified
               by N is the interval immediately preceding the
               one identified
               by N-1."
            ::= { sonetFarEndVTIntervalEntry 1 }

        sonetFarEndVTIntervalESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                  "The counter associated with the number of
                  Far End Errored Seconds encountered
                  by a SONET/SDH VT interface
                  in a particular 15-minute interval
                  in the past 24 hours."
           ::= { sonetFarEndVTIntervalEntry 2 }

        sonetFarEndVTIntervalSESs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                  "The counter associated with the number of
                  Far End Severely Errored Seconds
                  encountered by a SONET/SDH VT interface
                  in a particular 15-minute interval
                  in the past 24 hours."
            ::= { sonetFarEndVTIntervalEntry 3 }

        sonetFarEndVTIntervalCVs OBJECT-TYPE
            SYNTAX  Gauge32
            MAX-ACCESS  read-only
            STATUS  current
            DESCRIPTION
                 "The counter associated with the number of
                 Far End Coding Violations reported via
                 the far end block error count
                 encountered by a
                 SONET/SDH VT interface in a
```

```
                particular 15-minute interval
                in the past 24 hours."
            ::= { sonetFarEndVTIntervalEntry 4 }

        sonetFarEndVTIntervalUASs OBJECT-TYPE
           SYNTAX  Gauge32
           MAX-ACCESS  read-only
           STATUS  current
           DESCRIPTION
               "The counter associated with the number of
               Far End Unavailable Seconds
               encountered by a
               SONET/SDH VT interface in a
               particular 15-minute interval
               in the past 24 hours."
           ::= { sonetFarEndVTIntervalEntry 5 }


        -- conformance information

        sonetConformance OBJECT IDENTIFIER ::= { sonetMIB 4 }

        sonetGroups      OBJECT IDENTIFIER ::= { sonetConformance 1 }
        sonetCompliances OBJECT IDENTIFIER ::= { sonetConformance 2 }


        -- compliance statements

        sonetCompliance MODULE-COMPLIANCE
            STATUS  current
            DESCRIPTION
                    "The compliance statement for SONET/SDH
                     interfaces."

            MODULE  -- this module
                MANDATORY-GROUPS { sonetMediumStuff, sonetSectionStuff }

                GROUP       sonetLineStuff
                DESCRIPTION
                    "Implementation of this group is mandatory for all
                     SONET/SDH systems that terminate SONET/SDH Lines,
                     Paths or Virtual Tributaries."

                GROUP       sonetFarEndLineStuff
                DESCRIPTION
                    "Implementation of this group is optional for all
                     SONET/SDH systems that terminate SONET/SDH Lines,
                     Paths or Virtual Tributaries, and that
```

```
                    provide for a far end block error (FEBE)
                    information at the SONET/SDH Line Layer."

                GROUP       sonetPathStuff
                DESCRIPTION
                    "Implementation of this group is mandatory for all
                     SONET/SDH systems that terminate SONET/SDH
                     Paths or Virtual
                     Tributaries."

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

                GROUP       sonetFarEndPathStuff
                DESCRIPTION
                    "Implementation of this group is optional for all
                     SONET/SDH systems that terminate SONET/SDH
                     Paths or Virtual
                     Tributaries, and that process
                     Far End information."

                GROUP       sonetVTStuff
                DESCRIPTION
                    "Implementation of this group is mandatory for all
                     SONET/SDH systems that terminate SONET/SDH
                     Virtual Tributaries."

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

                GROUP       sonetFarEndVTStuff
                DESCRIPTION
                    "Implementation of this group is optional for
                     all SONET/SDH systems that terminate the
                     SONET/SDH floating Virtual Tributaries, and
                     that process Far End information."

            ::= { sonetCompliances 1 }

        -- units of conformance

        sonetMediumStuff    OBJECT-GROUP
            OBJECTS { sonetMediumType,
                      sonetMediumTimeElapsed,
```

```
                    sonetMediumValidIntervals,
                    sonetMediumLineCoding,
                    sonetMediumLineType,
                    sonetMediumCircuitIdentifier }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing configuration
                information applicable to all SONET/SDH
                interfaces."
        ::= { sonetGroups 1 }

    sonetSectionStuff    OBJECT-GROUP
        OBJECTS { sonetSectionCurrentStatus,
                  sonetSectionCurrentESs,
                  sonetSectionCurrentSESs,
                  sonetSectionCurrentSEFSs,
                  sonetSectionCurrentCVs,
                  sonetSectionIntervalESs,
                  sonetSectionIntervalSESs,
                  sonetSectionIntervalSEFSs,
                  sonetSectionIntervalCVs
     }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing information
                specific to SONET/SDH Section interfaces."
        ::= { sonetGroups 2 }

    sonetLineStuff    OBJECT-GROUP
        OBJECTS { sonetLineCurrentStatus,
                  sonetLineCurrentESs,
                  sonetLineCurrentSESs,
                  sonetLineCurrentCVs,
                  sonetLineCurrentUASs,
                  sonetLineIntervalESs,
                  sonetLineIntervalSESs,
                  sonetLineIntervalCVs,
                  sonetLineIntervalUASs }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing information
                specific to SONET/SDH Line interfaces."
        ::= { sonetGroups 3 }

    sonetFarEndLineStuff    OBJECT-GROUP
        OBJECTS { sonetFarEndLineCurrentESs,
                  sonetFarEndLineCurrentSESs,
                  sonetFarEndLineCurrentCVs,
```

```
                    sonetFarEndLineCurrentUASs,
                    sonetFarEndLineIntervalESs,
                    sonetFarEndLineIntervalSESs,
                    sonetFarEndLineIntervalCVs,
                    sonetFarEndLineIntervalUASs }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing information
                specific to SONET/SDH Line interfaces,
                and maintaining Line Far End information."
        ::= { sonetGroups 4 }

    sonetPathStuff    OBJECT-GROUP
        OBJECTS { sonetPathCurrentWidth,
                  sonetPathCurrentStatus,
                  sonetPathCurrentESs,
                  sonetPathCurrentSESs,
                  sonetPathCurrentCVs,
                  sonetPathCurrentUASs,
                  sonetPathIntervalESs,
                  sonetPathIntervalSESs,
                  sonetPathIntervalCVs,
                  sonetPathIntervalUASs }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing information
                specific to SONET/SDH Path interfaces."
        ::= { sonetGroups 5 }

    sonetFarEndPathStuff    OBJECT-GROUP
        OBJECTS { sonetFarEndPathCurrentESs,
                  sonetFarEndPathCurrentSESs,
                  sonetFarEndPathCurrentCVs,
                  sonetFarEndPathCurrentUASs,
                  sonetFarEndPathIntervalESs,
                  sonetFarEndPathIntervalSESs,
                  sonetFarEndPathIntervalCVs,
                  sonetFarEndPathIntervalUASs }
        STATUS  current
        DESCRIPTION
                "A collection of objects providing information
                specific to SONET/SDH Path interfaces,
                and maintaining Path Far End information."
        ::= { sonetGroups 6 }

    sonetVTStuff    OBJECT-GROUP
        OBJECTS { sonetVTCurrentWidth,
                  sonetVTCurrentStatus,
```

```
                        sonetVTCurrentESs,
                        sonetVTCurrentSESs,
                        sonetVTCurrentCVs,
                        sonetVTCurrentUASs,
                        sonetVTIntervalESs,
                        sonetVTIntervalSESs,
                        sonetVTIntervalCVs,
                        sonetVTIntervalUASs }
                STATUS  current
                DESCRIPTION
                        "A collection of objects providing information
                        specific to SONET/SDH VT interfaces."
                ::= { sonetGroups 7 }

            sonetFarEndVTStuff    OBJECT-GROUP
                OBJECTS { sonetFarEndVTCurrentESs,
                          sonetFarEndVTCurrentSESs,
                          sonetFarEndVTCurrentCVs,
                          sonetFarEndVTCurrentUASs,
                          sonetFarEndVTIntervalESs,
                          sonetFarEndVTIntervalSESs,
                          sonetFarEndVTIntervalCVs,
                          sonetFarEndVTIntervalUASs }
                STATUS  current
                DESCRIPTION
                        "A collection of objects providing information
                        specific to SONET/SDH VT interfaces,
                        and maintaining VT Far End information."
                ::= { sonetGroups 8 }



            END
```

5. Acknowledgments

This specification is a product of the AToM MIB Working Group.

6. References

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7. Security Considerations

Security issues are not discussed in this memo.

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