                  Definitions of Managed Objects for Very High
                   Speed Digital Subscriber Lines (VDSL)

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 document defines a Management Information Base (MIB) module for
   use with network management protocols in the Internet community. In
   particular, it describes objects used for managing Very High Speed
   Digital Subscriber Line (VDSL) interfaces.

Table of Contents

1. The Internet-Standard Management Framework

   For a detailed overview of the documents that describe the current
   Internet-Standard Management Framework, please refer to section 7 of
   RFC 3410 [RFC3410].

   Managed objects are accessed via a virtual information store, termed
   the Management Information Base or MIB. MIB objects are generally
   accessed through the Simple Network Management Protocol (SNMP).
   Objects in the MIB are defined using the mechanisms defined in the
   Structure of Management Information (SMI). This memo specifies a MIB
   module that is compliant to the SMIv2, which is described in STD 58,
   RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580
   [RFC2580].

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in [RFC2119].

2. Overview

   This document describes an SNMP MIB module for managing VDSL Lines.
   These definitions are based upon the specifications for VDSL as
   defined in T1E1, ETSI, and ITU documentation [T1E1311, T1E1011,
   T1E1013, ETSI2701, ETSI2702, ITU9931, ITU9971].

   The MIB module is located in the MIB tree under MIB 2 transmission,
   as discussed in the MIB-2 Integration (RFC 2863 [RFC2863]) section of
   this document.

2.1.   Relationship of the VDSL Line MIB Module to other MIB Modules

   This section outlines the relationship of this MIB with other MIBs
   described in RFCs. Specifically, IF-MIB as presented in RFC 2863
   [RFC2863] is discussed.

2.1.1.   General IF-MIB Integration (RFC 2863)

   The VDSL Line MIB specifies the detailed attributes of a data
   interface. As such, it needs to integrate with RFC 2863 [RFC2863].
   The IANA has assigned the following ifType to VDSL:

```
    IANAifType ::= TEXTUAL-CONVENTION
        ...

    SYNTAX INTEGER {
        ...
        vdsl(97), -- Very H-speed Digital Subscrib.  Loop
        ...
        }
```

Additionally, a VDSL line may contain an optional fast channel and an optional interleaved channel which also integrate into RFC 2863 [RFC2863]. The IANA has assigned the following ifTypes to these channels:

```
    IANAifType ::= TEXTUAL-CONVENTION
        ...
    SYNTAX INTEGER {
        ...
        interleave (124), -- Interleave channel
        fast (125),       -- Fast channel
        ...
        }
```

2.1.2. Usage of ifTable

The MIB branch identified by this ifType contains tables appropriate for this interface type. Most tables extend the ifEntry table, and are indexed by ifIndex. For interfaces in systems implementing this MIB, those table entries indexed by ifIndex MUST be persistent.

The following attributes are part of the mandatory ifGeneral group in RFC 2863 [RFC2863], and are not duplicated in the VDSL Line MIB.

```
    ==================================================================
        ifIndex               Interface index.

        ifDescr               See interfaces MIB [RFC2863].

        ifType                vdsl(97),
                              interleave(124), or
                              fast(125)

        ifSpeed               Set as appropriate.

        ifPhysAddress         This object MUST have an octet string
                              with zero length.

        ifAdminStatus         See interfaces MIB [RFC2863].
```

        ifOperStatus   See interfaces MIB [RFC2863].

        ifLastChange   See interfaces MIB [RFC2863].

        ifName   See interfaces MIB [RFC2863].

        ifHighSpeed   Set as appropriate.

        ifConnectorPresent   Set as appropriate.

        ifLinkUpDownTrapEnable Default to enabled(1).

   ==
                    Figure 1: Use of ifTable Objects

   Section 2.3, below, describes the structure of this MIB in relation
   to ifEntry in greater detail.

2.2. Conventions used in the MIB Module

2.2.1. Naming Conventions

   A. Vtuc -- (VTUC) transceiver at near (Central) end of line
   B. Vtur -- (VTUR) transceiver at Remote end of line
   C. Vtu -- One of either Vtuc or Vtur
   D. Curr -- Current
   E. Prev -- Previous
   F. Atn -- Attenuation
   G. ES   -- Errored Second
   H. SES -- Severely Errored Second
   I. UAS -- Unavailable Second
   J. LCS -- Line Code Specific
   K. Lof -- Loss of Frame
   L. Lol -- Loss of Link
   M. Los -- Loss of Signal
   N. Lpr -- Loss of Power
   O. xxxs -- Sum of Seconds in which xxx has occured
              (e.g., xxx = Lof, Los, Lpr, Lol)
   P. Max -- Maximum
   Q. Mgn -- Margin
   R. Min -- Minimum
   S. Psd -- Power Spectral Density
   T. Snr -- Signal to Noise Ratio
   U. Tx   -- Transmit
   V. Blks -- Blocks

2.2.2. Textual Conventions

   The following textual conventions are defined to reflect the line
   topology in the MIB (further discussed in the following section) and
   to define the behavior of the statistics to be maintained by an
   agent.

   o   VdslLineCodingType :

   Attributes with this syntax identify the line coding used. Specified
   as an INTEGER, the three values are:

   other(1) -- none of the following
   mcm(2)   -- Multiple Carrier Modulation
   scm(3)   -- Single Carrier Modulation

   o   VdslLineEntity :

   Attributes with this syntax reference the two sides of a line.
   Specified as an INTEGER, the two values are:

   vtuc(1) -- central site transceiver
   vtur(2) -- remote site transceiver

2.3 Structure

   The MIB is structured into the following MIB groups:

   o   vdslGroup :

   This group supports all line code independent MIB objects found in
   this MIB. The following tables contain objects permitted for ifType
   vdsl(97):

      - vdslLineTable
      - vdslPhysTable
      - vdslPerfDataTable
      - vdslPerfIntervalTable
      - vdslPerf1DayIntervalTable
      - vdslLineConfProfileTable
      - vdslLineAlarmConfProfileTable

   The following tables contain objects permitted for ifTypes
   interleave(124) and (fast):

      - vdslChanTable
      - vdslChanPerfDataTable
      - vdslChanPerfIntervalTable
      - vdslChanPerf1DayIntervalTable

   Figure 2, below, displays the relationship of the tables in the
   vdslGroup to ifEntry (and each other):

     ifEntry(ifType=97) ---> vdslLineTableEntry 1:(0 to 1)

     vdslLineTableEntry ---> vdslPhysTableEntry 1:(0 to 2)
                         ---> vdslPerfDataEntry 1:(0 to 2)
                         ---> vdslLineConfProfileEntry 1:(0 to 1)
                         ---> vdslLineAlarmConfProfileEntry 1:(0 to 1)

     vdslPhysTableEntry ---> vdslPerfIntervalEntry 1:(0 to 96)
                         ---> vdslPerf1DayIntervalEntry 1:(0 to 30)

     ifEntry(ifType=124) ---> vdslChanEntry 1:(0 to 2)
                         ---> vdslChanPerfDataEntry 1:(0 to 2)

     ifEntry(ifType=125) ---> vdslChanEntry 1:(0 to 2)
                         ---> vdslChanPerfDataEntry 1:(0 to 2)

     vdslChanEntry   ---> vdslchanPerfIntervalEntry 1:(0 to 96)
                         ---> vdslchan1DayPerfIntervalEntry 1:(0 to 30)

                   Figure 2: Table Relationships

   o   vdslNotificationGroup :

   This group contains definitions of VDSL line notifications. Section
   2.6, below, presents greater detail on the notifications defined
   within the MIB module.

2.3.1. Line Topology

   A VDSL Line consists of two units - a Vtuc (the central transceiver
   unit) and a Vtur (the remote transceiver unit).

```
           <-- Network Side    Customer Side -->

           |<////////// VDSL Line ///////////>|

           +-------+                  +-------+
           |       |                  |       |
           | Vtuc  +------------------+  Vtur |
           |       |                  |       |
           +-------+                  +-------+
```

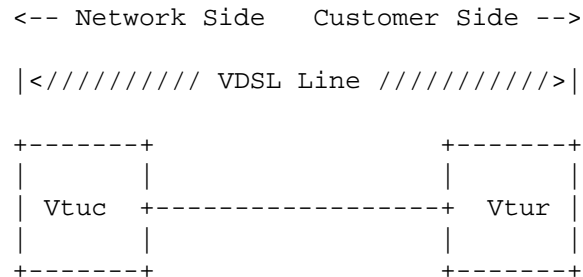   Figure 3: General topology for a VDSL Line

2.4. Counters, Interval Buckets and Thresholds

   For Loss of Frame (lof), Loss of Link (lol), Loss of Signal (los),
   and Loss of Power (lpr), Errored Seconds (ES), Severely Errored
   Seconds (SES), and Unavailable Seconds (UAS) there are event
   counters, current 15-minute, 0 to 96 15-minute history bucket(s), and
   0 to 30 1-day history bucket(s) of "interval-counters". Each current
   15-minute event bucket has an associated threshold notification.

   Each of these counters uses the textual conventions defined in the
   HC-PerfHist-TC-MIB [RFC3705]. The HC-PerfHist-TC-MIB defines 64-bit
   versions of the textual conventions found in RFC 3593 [RFC3593].

   There is no requirement for an agent to ensure a fixed relationship
   between the start of a fifteen minute interval and any wall clock;
   however, some implementations may align the fifteen minute intervals
   with quarter hours. Likewise, an implementation may choose to align
   one day intervals with the start of a day.

   Counters are not reset when a Vtu is reinitialized, only when the
   agent is reset or reinitialized (or under specific request outside
   the scope of this MIB module).

2.5. Profiles

   As a managed node can handle a large number of Vtus, (e.g., hundreds
   or perhaps thousands of lines), provisioning every parameter on every
   Vtu may become burdensome. Moreover, most lines are provisioned
   identically with the same set of parameters. To simplify the
   provisioning process, this MIB makes use of profiles. A profile is a
   set of parameters that can be shared by multiple lines using the same
   configuration.

   The following profiles are used in this MIB module:

   o   Line Configuration Profiles - Line configuration profiles contain
        parameters for configuring VDSL lines. They are defined in the
        vdslLineConfProfileTable.

   o   Alarm Configuration Profiles - These profiles contain parameters
        for configuring alarm thresholds for VDSL transceivers. These
        profiles are defined in the vdslLineAlarmConfProfileTable.

   One or more lines may be configured to share parameters of a single
   profile by setting their vdslLineConfProfile objects to the value of
   this profile. If a change is made to the profile, all lines that
   refer to it will be reconfigured to the changed parameters. Before a
   profile can be deleted or taken out of service it must be first
   unreferenced from all associated lines.

   Implementations MUST provide a default profile with an index value of
   'DEFVAL' for each profile type. The values of the associated
   parameters will be vendor specific unless otherwise indicated in this
   document. Before a line's profiles have been set, these profiles
   will be automatically used by setting vdslLineConfProfile and
   vdslLineAlarmConfProfile to 'DEFVAL' where appropriate. This default
   profile name, 'DEFVAL', is considered reserved in the context of
   profiles defined in this MIB module.

   Profiles are created, assigned, and deleted dynamically using the
   profile name and profile row status in each of the ten profile tables
   (nine line configuration tables and one alarm configuration table).

   Profile changes MUST take effect immediately. These changes MAY
   result in a restart (hard reset or soft restart) of the units on the
   line.

2.6. Notifications

   The ability to generate the SNMP notifications coldStart/WarmStart
   (per [RFC3418]) which are per agent (e.g., per Digital Subscriber
   Line Access Multiplexer, or DSLAM, in such a device), and
   linkUp/linkDown (per [RFC2863]) which are per interface (i.e., VDSL
   line) is required.

   The notifications defined in this MIB are for initialization failure
   and for the threshold crossings associated with the following events:
   lof, lol, los, lpr, ES, SES, and UAS. Each threshold has its own
   enable/threshold value. When that value is 0, the notification is
   disabled.

   A linkDown notification MAY be generated whenever any of lof, lol,
   los, lpr, ES, SES, or UAS threshold crossing event (as defined in
   this MIB module) occurs. The corresponding linkUp notification MAY
   be sent when all link failure conditions are cleared.

   The vdslPhysCurrStatus is a bitmask representing all outstanding
   error conditions associated with a particular VDSL transceiver. Note
   that since status of remote transceivers is obtained via the EOC,
   this information may be unavailable for units that are unreachable
   via the EOC during a line error condition. Therefore, not all
   conditions may always be included in its current status.
   Notifications corresponding to the bit fields in this object are
   defined.

   A threshold notification occurs whenever the corresponding current
   15-minute interval error counter becomes equal to, or exceeds the
   threshold value. One notification may be sent per interval per
   interface. Since the current 15-minute counters are reset to 0 every
   15 minutes, if the condition persists, the notification may recur as
   often as every 15 minutes. For example, to get a notification
   whenever a "loss of" event occurs (but at most once every 15
   minutes), set the corresponding threshold to 1. The agent will
   generate a notification when the event originally occurs.

   Note that the Network Management System, or NMS, may receive a
   linkDown notification, as well, if enabled (via
   ifLinkUpDownTrapEnable [RFC2863]). At the beginning of the next 15
   minute interval, the counter is reset. When the first second goes by
   and the event occurs, the current interval bucket will be 1, which
   equals the threshold and the notification will be sent again.

2.7. Persistence

   All read-write and read-create objects defined in this MIB module
   SHOULD be stored persistently. Following is an exhaustive list of
   these persistent objects:

      - vdslLineConfProfile
      - vdslLineAlarmConfProfile
      - vdslLineConfProfileName
      - vdslLineConfDownRateMode
      - vdslLineConfUpRateMode
      - vdslLineConfDownMaxPwr
      - vdslLineConfUpMaxPwr
      - vdslLineConfDownMaxSnrMgn
      - vdslLineConfDownMinSnrMgn
      - vdslLineConfDownTargetSnrMgn
      - vdslLineConfUpMaxSnrMgn
      - vdslLineConfUpMinSnrMgn
      - vdslLineConfUpTargetSnrMgn
      - vdslLineConfDownFastMaxDataRate
      - vdslLineConfDownFastMinDataRate
      - vdslLineConfDownSlowMaxDataRate
      - vdslLineConfDownSlowMinDataRate
      - vdslLineConfUpFastMaxDataRate
      - vdslLineConfUpFastMinDataRate
      - vdslLineConfUpSlowMaxDataRate
      - vdslLineConfUpSlowMinDataRate
      - vdslLineConfDownRateRatio
      - vdslLineConfUpRateRatio
      - vdslLineConfDownMaxInterDelay
      - vdslLineConfUpMaxInterDelay
      - vdslLineConfDownPboControl
      - vdslLineConfUpPboControl
      - vdslLineConfDownPboLevel
      - vdslLineConfUpPboLevel
      - vdslLineConfDeploymentScenario
      - vdslLineConfAdslPresence
      - vdslLineConfApplicableStandard
      - vdslLineConfBandPlan
      - vdslLineConfBandPlanFx
      - vdslLineConfBandOptUsage
      - vdslLineConfUpPsdTemplate
      - vdslLineConfDownPsdTemplate
      - vdslLineConfHamBandMask
      - vdslLineConfCustomNotch1Start
      - vdslLineConfCustomNotch1Stop
      - vdslLineConfCustomNotch2Start
      - vdslLineConfCustomNotch2Stop

```
        - vdslLineConfDownTargetSlowBurst
        - vdslLineConfUpTargetSlowBurst
        - vdslLineConfDownMaxFastFec
        - vdslLineConfUpMaxFastFec
        - vdslLineConfLineType
        - vdslLineConfProfRowStatus
        - vdslLineAlarmConfProfileName
        - vdslLineAlarmConfThresh15MinLofs
        - vdslLineAlarmConfThresh15MinLoss
        - vdslLineAlarmConfThresh15MinLprs
        - vdslLineAlarmConfThresh15MinLols
        - vdslLineAlarmConfThresh15MinESs
        - vdslLineAlarmConfThresh15MinSESs
        - vdslLineAlarmConfThresh15MinUASs
        - vdslLineAlarmConfInitFailure
        - vdslLineAlarmConfProfRowStatus
```

   It should also be noted that interface indices in this MIB are
   maintained persistently. VACM data relating to these SHOULD be
   stored persistently as well [RFC3415].

3. Conformance and Compliance

   For VDSL lines, the following groups are mandatory:

        - vdslGroup
        - vdslNotificationGroup

4. Definitions

   VDSL-LINE-MIB DEFINITIONS ::= BEGIN

   IMPORTS

   MODULE-IDENTITY,
   OBJECT-TYPE,
   Gauge32,
   Integer32,
   Unsigned32,
   NOTIFICATION-TYPE,
   transmission   FROM SNMPv2-SMI   -- [RFC2578]
   ZeroBasedCounter64   FROM HCNUM-TC   -- [RFC2856]
   TEXTUAL-CONVENTION,
   RowStatus,
   TruthValue   FROM SNMPv2-TC   -- [RFC2579]
   HCPerfValidIntervals,
   HCPerfInvalidIntervals,
   HCPerfTimeElapsed,
```

```
    HCPerfIntervalThreshold,
    HCPerfCurrentCount,
    HCPerfIntervalCount              FROM HC-PerfHist-TC-MIB  -- [RFC3705]
    MODULE-COMPLIANCE,
    OBJECT-GROUP,
    NOTIFICATION-GROUP               FROM SNMPv2-CONF         -- [RFC2580]
    ifIndex                          FROM IF-MIB              -- [RFC2863]
    SnmpAdminString                  FROM SNMP-FRAMEWORK-MIB; -- [RFC3411]

  vdslMIB MODULE-IDENTITY
      LAST-UPDATED "200402190000Z" -- February 19, 2004
      ORGANIZATION "ADSLMIB Working Group"
      CONTACT-INFO "WG-email:  adslmib@ietf.org
              Info:       https://www1.ietf.org/mailman/listinfo/adslmib

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            "
    DESCRIPTION
      "The MIB module defining objects for the management of a pair
      of VDSL transceivers at each end of the VDSL line.  Each such
      line has an entry in an ifTable which may include multiple
      transceiver lines.  An agent may reside at either end of the
      VDSL line.  However, the MIB is designed to require no
      management communication between them beyond that inherent in
      the low-level VDSL line protocol.  The agent may monitor and
      control this protocol for its needs.
```

VDSL lines may support optional Fast or Interleaved channels.
If these are supported, additional entries corresponding to the
supported channels must be created in the ifTable. Thus a VDSL
line that supports both channels will have three entries in the
ifTable, one for each physical, fast, and interleaved, whose
ifType values are equal to vdsl(97), fast(125), and
interleaved(124), respectively. The ifStackTable is used to
represent the relationship between the entries.

Naming Conventions:
    Vtuc -- (VTUC) transceiver at near (Central) end of line
    Vtur -- (VTUR) transceiver at Remote end of line
    Vtu -- One of either Vtuc or Vtur
    Curr -- Current
    Prev -- Previous
    Atn -- Attenuation
    ES   -- Errored Second.
    SES -- Severely Errored Second
    UAS -- Unavailable Second
    LCS -- Line Code Specific
    Lof -- Loss of Frame
    Lol -- Loss of Link
    Los -- Loss of Signal
    Lpr -- Loss of Power
    xxxs -- Sum of Seconds in which xxx has occured
            (e.g., xxx = Lof, Los, Lpr, Lol)
    Max -- Maximum
    Mgn -- Margin
    Min -- Minimum
    Psd -- Power Spectral Density
    Snr -- Signal to Noise Ratio
    Tx   -- Transmit
    Blks -- Blocks

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of this MIB module is part of RFC 3728: see the RFC
itself for full legal notices."
    REVISION "200402190000Z" -- February 19, 2004
    DESCRIPTION "Initial version, published as RFC 3728."
::= { transmission 97 }

vdslLineMib   OBJECT IDENTIFIER ::= { vdslMIB 1 }
vdslMibObjects OBJECT IDENTIFIER ::= { vdslLineMib 1 }

--
-- textual conventions used in this MIB
--

```
   VdslLineCodingType ::= TEXTUAL-CONVENTION
       STATUS         current
       DESCRIPTION
           "This data type is used as the syntax for the VDSL Line
           Code.  Attributes with this syntax identify the line coding
           used.  Specified as an INTEGER, the three values are:

           other(1)  -- none of the following
           mcm(2)    -- Multiple Carrier Modulation
           scm(3)    -- Single Carrier Modulation"
       SYNTAX  INTEGER
           {
           other(1),
           mcm(2),
           scm(3)
           }

   VdslLineEntity ::= TEXTUAL-CONVENTION
       STATUS         current
       DESCRIPTION
           "Identifies a transceiver as being either Vtuc or Vtur.
           A VDSL line consists of two transceivers, a Vtuc and a
           Vtur.  Attributes with this syntax reference the two sides
           of a line.  Specified as an INTEGER, the two values are:

           vtuc(1)  -- central site transceiver
           vtur(2)  -- remote site transceiver"
       SYNTAX  INTEGER
           {
           vtuc(1),
           vtur(2)
           }

   --
   -- objects
   --

   vdslLineTable OBJECT-TYPE
       SYNTAX         SEQUENCE OF VdslLineEntry
       MAX-ACCESS     not-accessible
       STATUS         current
       DESCRIPTION
           "This table includes common attributes describing
           both ends of the line.  It is required for all VDSL
           physical interfaces.  VDSL physical interfaces are
           those ifEntries where ifType is equal to vdsl(97)."
       ::= { vdslMibObjects 1 }
```

```
    vdslLineEntry OBJECT-TYPE
        SYNTAX       VdslLineEntry
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION  "An entry in the vdslLineTable."
        INDEX { ifIndex }
        ::= { vdslLineTable 1 }

    VdslLineEntry ::=
        SEQUENCE
            {
            vdslLineCoding               VdslLineCodingType,
            vdslLineType                 INTEGER,
            vdslLineConfProfile          SnmpAdminString,
            vdslLineAlarmConfProfile     SnmpAdminString
            }

    vdslLineCoding OBJECT-TYPE
        SYNTAX       VdslLineCodingType
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Specifies the VDSL coding type used on this line."
        REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslLineEntry 1 }

    vdslLineType OBJECT-TYPE
        SYNTAX       INTEGER
            {
            noChannel(1),         -- no channels exist
            fastOnly(2),          -- only fast channel exists
            interleavedOnly(3),   -- only interleaved channel exists
            fastOrInterleaved(4), -- either fast or interleaved channel
                                  -- exist, but only one at a time
            fastAndInterleaved(5) -- both fast and interleaved channels
                                  -- exist
            }
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Defines the type of VDSL physical line entity that exists,
            by defining whether and how the line is channelized.  If
```

```
        the line is channelized,  the value will be other than
        noChannel(1).  This object defines which channel type(s)
        are supported.  Defined values are:

        noChannel(1)          -- no channels exist
        fastOnly(2)           -- only fast channel exists
        interleavedOnly(3)    -- only interleaved channel exists
        fastOrInterleaved(4)  -- either fast or interleaved channel
                              -- exist, but only one at a time
        fastAndInterleaved(5) -- both fast and interleaved channels
                              -- exist

        Note that 'slow' and 'interleaved' refer to the same
        channel.  In the case that the line is channelized, the
        manager can use the ifStackTable to determine the ifIndex
        for the associated channel(s)."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslLineEntry 2 }

vdslLineConfProfile OBJECT-TYPE
    SYNTAX        SnmpAdminString (SIZE(1..32))
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
        "The value of this object identifies the row in the VDSL
        Line Configuration Profile Table, vdslLineConfProfileTable,
        which applies for this VDSL line, and channels if
        applicable.

        This object MUST be maintained in a persistent manner."
    DEFVAL        { "DEFVAL" }
    ::= { vdslLineEntry 3 }

vdslLineAlarmConfProfile OBJECT-TYPE
    SYNTAX        SnmpAdminString (SIZE(1..32))
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
        "The value of this object identifies the row in the VDSL
        Line Alarm Configuration Profile Table,
        vdslLineAlarmConfProfileTable, which applies to this
        VDSL line, and channels if applicable.

        This object MUST be maintained in a persistent manner."
    DEFVAL        { "DEFVAL" }
    ::= { vdslLineEntry 4 }

vdslPhysTable OBJECT-TYPE
```

```
        SYNTAX        SEQUENCE OF VdslPhysEntry
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
        "This table provides one row for each Vtu.  Each row
        contains the Physical Layer Parameters table for that
        Vtu.  VDSL physical interfaces are those ifEntries where
        ifType is equal to vdsl(97)."
    ::= { vdslMibObjects 2 }

vdslPhysEntry OBJECT-TYPE
    SYNTAX        VdslPhysEntry
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION   "An entry in the vdslPhysTable."
    INDEX { ifIndex,
            vdslPhysSide }
    ::= { vdslPhysTable 1 }

VdslPhysEntry ::=
    SEQUENCE
        {
        vdslPhysSide                VdslLineEntity,
        vdslPhysInvSerialNumber     SnmpAdminString,
        vdslPhysInvVendorID         SnmpAdminString,
        vdslPhysInvVersionNumber    SnmpAdminString,
        vdslPhysCurrSnrMgn          Integer32,
        vdslPhysCurrAtn             Gauge32,
        vdslPhysCurrStatus          BITS,
        vdslPhysCurrOutputPwr       Integer32,
        vdslPhysCurrAttainableRate  Gauge32,
        vdslPhysCurrLineRate        Gauge32
        }

vdslPhysSide OBJECT-TYPE
    SYNTAX        VdslLineEntity
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
        "Identifies whether the transceiver is the Vtuc or Vtur."
    ::= { vdslPhysEntry 1 }

vdslPhysInvSerialNumber OBJECT-TYPE
    SYNTAX        SnmpAdminString(SIZE (0..32))
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The vendor specific string that identifies the
```

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        vendor equipment."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPhysEntry 2 }

vdslPhysInvVendorID OBJECT-TYPE
    SYNTAX         SnmpAdminString (SIZE (0..16))
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "The vendor ID code is a copy of the binary vendor
        identification field expressed as readable characters
        in hexadecimal notation."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPhysEntry 3 }

vdslPhysInvVersionNumber OBJECT-TYPE
    SYNTAX         SnmpAdminString (SIZE (0..16))
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "The vendor specific version number sent by this Vtu
        as part of the initialization messages.  It is a copy
        of the binary version number field expressed as
        readable characters in hexadecimal notation."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPhysEntry 4 }

vdslPhysCurrSnrMgn OBJECT-TYPE
    SYNTAX         Integer32 (-127..127)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Noise Margin as seen by this Vtu with respect to its
        received signal in 0.25dB.  The effective range is
        -31.75 to +31.75 dB."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
     ::= { vdslPhysEntry 5 }

vdslPhysCurrAtn OBJECT-TYPE
    SYNTAX         Gauge32 (0..255)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Measured difference in the total power transmitted by
        the peer Vtu and the total power received by this Vtu.
        The effective range is 0 to +63.75 dB."
```

```
      REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPhysEntry 6 }

   vdslPhysCurrStatus OBJECT-TYPE
       SYNTAX        BITS
          {
          noDefect(0),
          lossOfFraming(1),
          lossOfSignal(2),
          lossOfPower(3),
          lossOfSignalQuality(4),
          lossOfLink(5),
          dataInitFailure(6),
          configInitFailure(7),
          protocolInitFailure(8),
          noPeerVtuPresent(9)
          }
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "Indicates current state of the Vtu line.  This is a
          bit-map of possible conditions.  The various bit
          positions are:

          0   noDefect          There are no defects on the line.

          1   lossOfFraming     Vtu failure due to not receiving
                                a valid frame.

          2   lossOfSignal      Vtu failure due to not receiving
                                signal.

          3   lossOfPower       Vtu failure due to loss of power.

          4   lossOfSignalQuality  Loss of Signal Quality is declared
                                when the Noise Margin falls below
                                the Minimum Noise Margin, or the
                                bit-error-rate exceeds 10^-7.

          5   lossOfLink        Vtu failure due to inability to
                                link with peer Vtu.  Set whenever
                                the transceiver is in the 'Warm
                                Start' state.

          6   dataInitFailure   Vtu failure during initialization
                                due to bit errors corrupting
                                startup exchange data.
```

```
           7   configInitFailure   Vtu failure during initialization
                                   due to peer Vtu not able to
                                   support requested configuration.

           8   protocolInitFailure Vtu failure during initialization
                                   due to incompatible protocol used
                                   by the peer Vtu.

           9   noPeerVtuPresent    Vtu failure during initialization
                                   due to no activation sequence
                                   detected from peer Vtu.

        This is intended to supplement ifOperStatus."
       REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPhysEntry 7 }

  vdslPhysCurrOutputPwr OBJECT-TYPE
       SYNTAX        Integer32 (0..160)
       UNITS         "0.1dBm"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
          "Measured total output power transmitted by this VTU.
          This is the measurement that was reported during
          the last activation sequence."
       REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPhysEntry 8 }

  vdslPhysCurrAttainableRate OBJECT-TYPE
       SYNTAX        Gauge32
       UNITS         "kbps"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
          "Indicates the maximum currently attainable data rate
          in steps of 1000 bits/second by the Vtu.  This value
          will be equal to or greater than vdslPhysCurrLineRate.
          Note that for SCM, the minimum and maximum data rates
          are equal.  Note: 1 kbps = 1000 bps."
       REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPhysEntry 9 }

  vdslPhysCurrLineRate OBJECT-TYPE
       SYNTAX        Gauge32
       UNITS         "kbps"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
```

```
            "Indicates the current data rate in steps of 1000
            bits/second by the Vtu.  This value will be less than
            or equal to vdslPhysCurrAttainableRate.  Note: 1 kbps =
            1000 bps."
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPhysEntry 10 }

    vdslChanTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF VdslChanEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This table provides one row for each Vtu channel.
            VDSL channel interfaces are those ifEntries where
            ifType is equal to interleave(124) or fast(125)."
        ::= { vdslMibObjects 3 }

    vdslChanEntry OBJECT-TYPE
        SYNTAX        VdslChanEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the vdslChanTable."
        INDEX { ifIndex,
                vdslPhysSide }
        ::= { vdslChanTable 1 }

    VdslChanEntry ::=
        SEQUENCE
            {
            vdslChanInterleaveDelay        Gauge32,
            vdslChanCrcBlockLength         Gauge32,
            vdslChanCurrTxRate             Gauge32,
            vdslChanCurrTxSlowBurstProtect Gauge32,
            vdslChanCurrTxFastFec          Gauge32
            }

    vdslChanInterleaveDelay OBJECT-TYPE
        SYNTAX        Gauge32
        UNITS         "milliseconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Interleave Delay for this channel.

            Interleave delay applies only to the interleave
            (slow) channel and defines the mapping (relative
            spacing) between subsequent input bytes at the
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        interleaver input and their placement in the bit
        stream at the interleaver output.  Larger numbers
        provide greater separation between consecutive
        input bytes in the output bit stream allowing for
        improved impulse noise immunity at the expense of
        payload latency.

        In the case where the ifType is fast(125), return
        a value of zero."
   REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
   ::= { vdslChanEntry 1 }

vdslChanCrcBlockLength OBJECT-TYPE
   SYNTAX        Gauge32
   UNITS         "bytes"
   MAX-ACCESS    read-only
   STATUS        current
   DESCRIPTION
       "Indicates the length of the channel data-block
        on which the CRC operates."
   REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
   ::= { vdslChanEntry 2 }

vdslChanCurrTxRate OBJECT-TYPE
   SYNTAX        Gauge32
   UNITS         "kbps"
   MAX-ACCESS    read-only
   STATUS        current
   DESCRIPTION
       "Actual transmit data rate on this channel.  Note: 1
        kbps = 1000 bps."
   ::= { vdslChanEntry 3 }

vdslChanCurrTxSlowBurstProtect OBJECT-TYPE
   SYNTAX        Gauge32 (0..1275)
   UNITS         "microseconds"
   MAX-ACCESS    read-only
   STATUS        current
   DESCRIPTION
       "Actual level of impulse noise (burst) protection
        for an interleaved (slow) channel.  This parameter is
        not applicable to fast channels.  For fast channels,
        a value of zero shall be returned."
   REFERENCE     "ITU-T G.997.1, section 7.3.2.3"
   ::= { vdslChanEntry 4 }

vdslChanCurrTxFastFec OBJECT-TYPE
   SYNTAX        Gauge32 (0..50)
```

```
    UNITS        "%"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Actual Forward Error Correction (FEC) redundancy
        related overhead for a fast channel.  This parameter
        is not applicable to an interleaved (slow) channel.
        For interleaved channels, a value of zero shall be
        returned."
    ::= { vdslChanEntry 5 }

vdslPerfDataTable         OBJECT-TYPE
    SYNTAX        SEQUENCE OF VdslPerfDataEntry
    MAX-ACCESS   not-accessible
    STATUS        current
    DESCRIPTION
        "This table provides one row for each VDSL physical
        interface.  VDSL physical interfaces are those ifEntries
        where ifType is equal to vdsl(97)."
    ::= { vdslMibObjects 4 }

vdslPerfDataEntry         OBJECT-TYPE
    SYNTAX        VdslPerfDataEntry
    MAX-ACCESS   not-accessible
    STATUS        current
    DESCRIPTION
        "An entry in the vdslPerfDataTable."
    INDEX { ifIndex,
            vdslPhysSide }
    ::= { vdslPerfDataTable 1 }

VdslPerfDataEntry ::=
    SEQUENCE
        {
        vdslPerfDataValidIntervals         HCPerfValidIntervals,
        vdslPerfDataInvalidIntervals       HCPerfInvalidIntervals,
        vdslPerfDataLofs                   Unsigned32,
        vdslPerfDataLoss                   Unsigned32,
        vdslPerfDataLprs                   Unsigned32,
        vdslPerfDataLols                   Unsigned32,
        vdslPerfDataESs                    Unsigned32,
        vdslPerfDataSESs                   Unsigned32,
        vdslPerfDataUASs                   Unsigned32,
        vdslPerfDataInits                  Unsigned32,
        vdslPerfDataCurr15MinTimeElapsed   HCPerfTimeElapsed,
        vdslPerfDataCurr15MinLofs          HCPerfCurrentCount,
        vdslPerfDataCurr15MinLoss          HCPerfCurrentCount,
        vdslPerfDataCurr15MinLprs          HCPerfCurrentCount,
```

```
        vdslPerfDataCurr15MinLols           HCPerfCurrentCount,
        vdslPerfDataCurr15MinESs            HCPerfCurrentCount,
        vdslPerfDataCurr15MinSESs           HCPerfCurrentCount,
        vdslPerfDataCurr15MinUASs           HCPerfCurrentCount,
        vdslPerfDataCurr15MinInits          HCPerfCurrentCount,
        vdslPerfData1DayValidIntervals      HCPerfValidIntervals,
        vdslPerfData1DayInvalidIntervals    HCPerfInvalidIntervals,
        vdslPerfDataCurr1DayTimeElapsed     HCPerfTimeElapsed,
        vdslPerfDataCurr1DayLofs            Unsigned32,
        vdslPerfDataCurr1DayLoss            Unsigned32,
        vdslPerfDataCurr1DayLprs            Unsigned32,
        vdslPerfDataCurr1DayLols            Unsigned32,
        vdslPerfDataCurr1DayESs             Unsigned32,
        vdslPerfDataCurr1DaySESs            Unsigned32,
        vdslPerfDataCurr1DayUASs            Unsigned32,
        vdslPerfDataCurr1DayInits           Unsigned32
        }

vdslPerfDataValidIntervals OBJECT-TYPE
    SYNTAX       HCPerfValidIntervals
    UNITS        "intervals"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Valid Intervals per definition found in
        HC-PerfHist-TC-MIB."
    ::= { vdslPerfDataEntry 1 }

vdslPerfDataInvalidIntervals OBJECT-TYPE
    SYNTAX       HCPerfInvalidIntervals
    UNITS        "intervals"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Invalid Intervals per definition found in
        HC-PerfHist-TC-MIB."
    ::= { vdslPerfDataEntry 2 }

vdslPerfDataLofs OBJECT-TYPE
    SYNTAX       Unsigned32
    UNITS        "seconds"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Count of seconds since the unit was last reset that there
        was Loss of Framing."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerfDataEntry 3 }
```

   vdslPerfDataLoss OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "seconds"
       MAX-ACCESS   read-only
       STATUS   current
       DESCRIPTION
           "Count of seconds since the unit was last reset that there
           was Loss of Signal."
       REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerfDataEntry 4 }

   vdslPerfDataLprs OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "seconds"
       MAX-ACCESS   read-only
       STATUS   current
       DESCRIPTION
           "Count of seconds since the unit was last reset that there
           was Loss of Power."

       REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerfDataEntry 5 }

   vdslPerfDataLols OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "seconds"
       MAX-ACCESS   read-only
       STATUS   current
       DESCRIPTION
           "Count of seconds since the unit was last reset that there
           was Loss of Link."
       ::= { vdslPerfDataEntry 6 }

   vdslPerfDataESs OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "seconds"
       MAX-ACCESS   read-only
       STATUS   current
       DESCRIPTION
           "Count of Errored Seconds since the unit was last reset.
           An Errored Second is a one-second interval containing one
           or more CRC anomalies, or one or more LOS or LOF defects."
       REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerfDataEntry 7 }

   vdslPerfDataSESs OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "seconds"

```
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
           "Count of Severely Errored Seconds since the unit was last
           reset."
       ::= { vdslPerfDataEntry 8 }

   vdslPerfDataUASs OBJECT-TYPE
       SYNTAX       Unsigned32
       UNITS        "seconds"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
           "Count of Unavailable Seconds since the unit was last
           reset."
       ::= { vdslPerfDataEntry 9 }

   vdslPerfDataInits OBJECT-TYPE
       SYNTAX       Unsigned32
       UNITS        "occurrences"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
           "Count of the line initialization attempts since the unit
           was last reset.  This count includes both successful and
           failed attempts."
       REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerfDataEntry 10 }

   vdslPerfDataCurr15MinTimeElapsed OBJECT-TYPE
       SYNTAX       HCPerfTimeElapsed
       UNITS        "seconds"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
           "Total elapsed seconds in this interval."
       ::= { vdslPerfDataEntry 11 }

   vdslPerfDataCurr15MinLofs OBJECT-TYPE
       SYNTAX       HCPerfCurrentCount
       UNITS        "seconds"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
           "Count of seconds during this interval that there
           was Loss of Framing."
       REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerfDataEntry 12 }
```

```
vdslPerfDataCurr15MinLoss OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of seconds during this interval that there
        was Loss of Signal."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerfDataEntry 13 }

vdslPerfDataCurr15MinLprs OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of seconds during this interval that there
        was Loss of Power."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerfDataEntry 14 }

vdslPerfDataCurr15MinLols OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of seconds during this interval that there
        was Loss of Link."
    ::= { vdslPerfDataEntry 15 }

vdslPerfDataCurr15MinESs OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of Errored Seconds during this interval.  An Errored
        Second is a one-second interval containing one or more CRC
        anomalies, or one or more LOS or LOF defects."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerfDataEntry 16 }

vdslPerfDataCurr15MinSESs OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "seconds"
    MAX-ACCESS    read-only
```

```
         STATUS        current
         DESCRIPTION
             "Count of Severely Errored Seconds during this interval."
         ::= { vdslPerfDataEntry 17 }

      vdslPerfDataCurr15MinUASs OBJECT-TYPE
         SYNTAX        HCPerfCurrentCount
         UNITS         "seconds"
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "Count of Unavailable Seconds during this interval."
         ::= { vdslPerfDataEntry 18 }

      vdslPerfDataCurr15MinInits OBJECT-TYPE
         SYNTAX        HCPerfCurrentCount
         UNITS         "occurrences"
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "Count of the line initialization attempts during this
             interval.  This count includes both successful and
             failed attempts."
         REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
         ::= { vdslPerfDataEntry 19 }

      vdslPerfData1DayValidIntervals OBJECT-TYPE
         SYNTAX        HCPerfValidIntervals
         UNITS         "intervals"
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "Valid Intervals per definition found in
             HC-PerfHist-TC-MIB."
         ::= { vdslPerfDataEntry 20 }

      vdslPerfData1DayInvalidIntervals OBJECT-TYPE
         SYNTAX        HCPerfInvalidIntervals
         UNITS         "intervals"
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "Invalid Intervals per definition found in
             HC-PerfHist-TC-MIB."
         ::= { vdslPerfDataEntry 21 }

      vdslPerfDataCurr1DayTimeElapsed OBJECT-TYPE
         SYNTAX        HCPerfTimeElapsed
```

```
    UNITS          "seconds"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
         "Number of seconds that have elapsed since the beginning
          of the current 1-day interval."
    ::= { vdslPerfDataEntry 22 }

vdslPerfDataCurr1DayLofs OBJECT-TYPE
    SYNTAX         Unsigned32
    UNITS          "seconds"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Count of Loss of Framing (LOF) Seconds since the
        beginning of the current 1-day interval."
    ::= { vdslPerfDataEntry 23 }

vdslPerfDataCurr1DayLoss OBJECT-TYPE
    SYNTAX         Unsigned32
    UNITS          "seconds"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Count of Loss of Signal (LOS) Seconds since the beginning
        of the current 1-day interval."
    ::= { vdslPerfDataEntry 24 }

vdslPerfDataCurr1DayLprs OBJECT-TYPE
    SYNTAX         Unsigned32
    UNITS          "seconds"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Count of Loss of Power (LPR) Seconds since the beginning
        of the current 1-day interval."
    ::= { vdslPerfDataEntry 25 }

vdslPerfDataCurr1DayLols OBJECT-TYPE
    SYNTAX         Unsigned32
    UNITS          "seconds"
    MAX-ACCESS     read-only
    STATUS         current
    DESCRIPTION
        "Count of Loss of Link (LOL) Seconds since the beginning
        of the current 1-day interval."
    ::= { vdslPerfDataEntry 26 }
```

```
   vdslPerfDataCurr1DayESs OBJECT-TYPE
       SYNTAX        Unsigned32
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of Errored Seconds (ES) since the beginning
           of the current 1-day interval."
       ::= { vdslPerfDataEntry 27 }

   vdslPerfDataCurr1DaySESs OBJECT-TYPE
       SYNTAX        Unsigned32
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of Severely Errored Seconds (SES) since the
           beginning of the current 1-day interval."
       ::= { vdslPerfDataEntry 28 }

   vdslPerfDataCurr1DayUASs OBJECT-TYPE
       SYNTAX        Unsigned32
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of Unavailable Seconds (UAS) since the beginning
           of the current 1-day interval."
       ::= { vdslPerfDataEntry 29 }

   vdslPerfDataCurr1DayInits OBJECT-TYPE
       SYNTAX        Unsigned32
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of the line initialization attempts since the
           beginning of the current 1-day interval.  This count
           includes both successful and failed attempts."
       ::= { vdslPerfDataEntry 30 }

   vdslPerfIntervalTable       OBJECT-TYPE
       SYNTAX        SEQUENCE OF VdslPerfIntervalEntry
       MAX-ACCESS    not-accessible
       STATUS        current
       DESCRIPTION
           "This table provides one row for each Vtu performance
           data collection interval.  VDSL physical interfaces are
```

```
         those ifEntries where ifType is equal to vdsl(97)."
     ::= { vdslMibObjects 5 }

vdslPerfIntervalEntry       OBJECT-TYPE
    SYNTAX          VdslPerfIntervalEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in the vdslPerfIntervalTable."
    INDEX { ifIndex,
            vdslPhysSide,
            vdslPerfIntervalNumber }
    ::= { vdslPerfIntervalTable 1 }

VdslPerfIntervalEntry ::=
    SEQUENCE
        {
        vdslPerfIntervalNumber              Unsigned32,
        vdslPerfIntervalLofs                HCPerfIntervalCount,
        vdslPerfIntervalLoss                HCPerfIntervalCount,
        vdslPerfIntervalLprs                HCPerfIntervalCount,
        vdslPerfIntervalLols                HCPerfIntervalCount,
        vdslPerfIntervalESs                 HCPerfIntervalCount,
        vdslPerfIntervalSESs                HCPerfIntervalCount,
        vdslPerfIntervalUASs                HCPerfIntervalCount,
        vdslPerfIntervalInits               HCPerfIntervalCount
        }

vdslPerfIntervalNumber OBJECT-TYPE
    SYNTAX      Unsigned32 (1..96)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Performance Data Interval number 1 is the most recent
        previous interval; interval 96 is 24 hours ago.
        Intervals 2 to 96 are optional."
    ::= { vdslPerfIntervalEntry 1 }

vdslPerfIntervalLofs OBJECT-TYPE
    SYNTAX      HCPerfIntervalCount
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Count of seconds in the interval when there was Loss
        of Framing."
    REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerfIntervalEntry 2 }
```

```
    vdslPerfIntervalLoss OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of seconds in the interval when there was Loss
            of Signal."
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPerfIntervalEntry 3 }

    vdslPerfIntervalLprs OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of seconds in the interval when there was Loss
            of Power."
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPerfIntervalEntry 4 }

    vdslPerfIntervalLols OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of seconds in the interval when there was Loss
            of Link."
        ::= { vdslPerfIntervalEntry 5 }

    vdslPerfIntervalESs OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of Errored Seconds (ES) in the interval.  An Errored
            Second is a one-second interval containing one or more CRC
            anomalies, one or more LOS or LOF defects."
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPerfIntervalEntry 6 }

    vdslPerfIntervalSESs OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
```

```
        STATUS        current
        DESCRIPTION
            "Count of Severely Errored Seconds in the interval."
        ::= { vdslPerfIntervalEntry 7 }

    vdslPerfIntervalUASs OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of Unavailable Seconds in the interval."
        ::= { vdslPerfIntervalEntry 8 }

    vdslPerfIntervalInits OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of the line initialization attempts during this
            interval.  This count includes both successful and
            failed attempts."
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslPerfIntervalEntry 9 }

    vdslPerf1DayIntervalTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF VdslPerf1DayIntervalEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This table provides one row for each VDSL performance
            data collection interval.  This table contains live data
            from equipment.  As such, it is NOT persistent."
        ::= { vdslMibObjects 6 }

    vdslPerf1DayIntervalEntry OBJECT-TYPE
        SYNTAX        VdslPerf1DayIntervalEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the vdslPerf1DayIntervalTable."
        INDEX { ifIndex,
                vdslPhysSide,
                vdslPerf1DayIntervalNumber }
        ::= { vdslPerf1DayIntervalTable 1 }

    VdslPerf1DayIntervalEntry ::=
        SEQUENCE
```

```
       {
       vdslPerf1DayIntervalNumber               Unsigned32,
       vdslPerf1DayIntervalMoniSecs             HCPerfTimeElapsed,
       vdslPerf1DayIntervalLofs                 Unsigned32,
       vdslPerf1DayIntervalLoss                 Unsigned32,
       vdslPerf1DayIntervalLprs                 Unsigned32,
       vdslPerf1DayIntervalLols                 Unsigned32,
       vdslPerf1DayIntervalESs                  Unsigned32,
       vdslPerf1DayIntervalSESs                 Unsigned32,
       vdslPerf1DayIntervalUASs                 Unsigned32,
       vdslPerf1DayIntervalInits                Unsigned32
       }

   vdslPerf1DayIntervalNumber OBJECT-TYPE
       SYNTAX        Unsigned32 (1..30)
       MAX-ACCESS    not-accessible
       STATUS        current
       DESCRIPTION
           "History Data Interval number.  Interval 1 is the most
           recent previous day; interval 30 is 30 days ago.  Intervals
           2 to 30 are optional."
       ::= { vdslPerf1DayIntervalEntry 1 }

   vdslPerf1DayIntervalMoniSecs OBJECT-TYPE
       SYNTAX        HCPerfTimeElapsed
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "The amount of time in the 1-day interval over which the
           performance monitoring information is actually counted.
           This value will be the same as the interval duration except
           in a situation where performance monitoring data could not
           be collected for any reason."
       ::= { vdslPerf1DayIntervalEntry 2 }

   vdslPerf1DayIntervalLofs OBJECT-TYPE
       SYNTAX        Unsigned32
       UNITS         "seconds"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
            "Count of Loss of Frame (LOF) Seconds during the 1-day
             interval as measured by vdslPerf1DayIntervalMoniSecs."
       REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslPerf1DayIntervalEntry 3 }

   vdslPerf1DayIntervalLoss OBJECT-TYPE
```

```
    SYNTAX        Unsigned32
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of Loss of Signal (LOS) Seconds during the 1-day
        interval as measured by vdslPerf1DayIntervalMoniSecs."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerf1DayIntervalEntry 4 }

vdslPerf1DayIntervalLprs OBJECT-TYPE
    SYNTAX        Unsigned32
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of Loss of Power (LPR) Seconds during the 1-day
        interval as measured by vdslPerf1DayIntervalMoniSecs."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerf1DayIntervalEntry 5 }

vdslPerf1DayIntervalLols OBJECT-TYPE
    SYNTAX        Unsigned32
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of Loss of Link (LOL) Seconds during the 1-day
        interval as measured by vdslPerf1DayIntervalMoniSecs."
    ::= { vdslPerf1DayIntervalEntry 6 }

vdslPerf1DayIntervalESs OBJECT-TYPE
    SYNTAX        Unsigned32
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of Errored Seconds (ES) during the 1-day
        interval as measured by vdslPerf1DayIntervalMoniSecs."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslPerf1DayIntervalEntry 7 }

vdslPerf1DayIntervalSESs OBJECT-TYPE
    SYNTAX        Unsigned32
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
```

```
         "Count of Severely Errored Seconds (SES) during the 1-day
          interval as measured by vdslPerf1DayIntervalMoniSecs."
      ::= { vdslPerf1DayIntervalEntry 8 }

   vdslPerf1DayIntervalUASs OBJECT-TYPE
      SYNTAX        Unsigned32
      UNITS         "seconds"
      MAX-ACCESS    read-only
      STATUS        current
      DESCRIPTION
          "Count of Unavailable Seconds (UAS) during the 1-day
           interval as measured by vdslPerf1DayIntervalMoniSecs."
      ::= { vdslPerf1DayIntervalEntry 9 }

   vdslPerf1DayIntervalInits OBJECT-TYPE
      SYNTAX        Unsigned32
      UNITS         "seconds"
      MAX-ACCESS    read-only
      STATUS        current
      DESCRIPTION
          "Count of the line initialization attempts during the
          1-day interval as measured by vdslPerf1DayIntervalMoniSecs.
          This count includes both successful and failed attempts."
      REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
      ::= { vdslPerf1DayIntervalEntry 10 }

   vdslChanPerfDataTable        OBJECT-TYPE
      SYNTAX        SEQUENCE OF VdslChanPerfDataEntry
      MAX-ACCESS    not-accessible
      STATUS        current
      DESCRIPTION
          "This table provides one row for each Vtu channel.
          VDSL channel interfaces are those ifEntries where
          ifType is equal to interleave(124) or fast(125)."
      ::= { vdslMibObjects 7 }

   vdslChanPerfDataEntry OBJECT-TYPE
      SYNTAX        VdslChanPerfDataEntry
      MAX-ACCESS    not-accessible
      STATUS        current
      DESCRIPTION
          "An entry in the vdslChanPerfDataTable."
      INDEX { ifIndex,
            vdslPhysSide }
      ::= { vdslChanPerfDataTable 1 }

   VdslChanPerfDataEntry ::=
      SEQUENCE
```

```
        {
        vdslChanValidIntervals        HCPerfValidIntervals,
        vdslChanInvalidIntervals      HCPerfInvalidIntervals,
        vdslChanFixedOctets           ZeroBasedCounter64,
        vdslChanBadBlks               ZeroBasedCounter64,
        vdslChanCurr15MinTimeElapsed  HCPerfTimeElapsed,
        vdslChanCurr15MinFixedOctets  HCPerfCurrentCount,
        vdslChanCurr15MinBadBlks      HCPerfCurrentCount,
        vdslChan1DayValidIntervals    HCPerfValidIntervals,
        vdslChan1DayInvalidIntervals  HCPerfInvalidIntervals,
        vdslChanCurr1DayTimeElapsed   HCPerfTimeElapsed,
        vdslChanCurr1DayFixedOctets   HCPerfCurrentCount,
        vdslChanCurr1DayBadBlks       HCPerfCurrentCount
        }

vdslChanValidIntervals OBJECT-TYPE
    SYNTAX        HCPerfValidIntervals
    UNITS         "intervals"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Valid Intervals per definition found in
        HC-PerfHist-TC-MIB."
    ::= { vdslChanPerfDataEntry 1 }

vdslChanInvalidIntervals OBJECT-TYPE
    SYNTAX        HCPerfInvalidIntervals
    UNITS         "intervals"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Invalid Intervals per definition found in
        HC-PerfHist-TC-MIB."
    ::= { vdslChanPerfDataEntry 2 }

vdslChanFixedOctets OBJECT-TYPE
    SYNTAX        ZeroBasedCounter64
    UNITS         "octets"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of corrected octets since the unit was last reset."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChanPerfDataEntry 3 }

vdslChanBadBlks OBJECT-TYPE
    SYNTAX        ZeroBasedCounter64
    UNITS         "blocks"
```

```
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of uncorrectable blocks since the unit was last
        reset."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChanPerfDataEntry 4 }

vdslChanCurr15MinTimeElapsed OBJECT-TYPE
    SYNTAX        HCPerfTimeElapsed
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Total elapsed seconds in this interval."
    ::= { vdslChanPerfDataEntry 5 }

vdslChanCurr15MinFixedOctets OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "octets"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of corrected octets in this interval."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChanPerfDataEntry 6 }

vdslChanCurr15MinBadBlks OBJECT-TYPE
    SYNTAX        HCPerfCurrentCount
    UNITS         "blocks"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Count of uncorrectable blocks in this interval."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChanPerfDataEntry 7 }

vdslChan1DayValidIntervals OBJECT-TYPE
    SYNTAX        HCPerfValidIntervals
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Valid Intervals per definition found in
        HC-PerfHist-TC-MIB."
    ::= { vdslChanPerfDataEntry 8 }

vdslChan1DayInvalidIntervals OBJECT-TYPE
    SYNTAX        HCPerfInvalidIntervals
```

        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "Invalid Intervals per definition found in
            HC-PerfHist-TC-MIB."
        ::= { vdslChanPerfDataEntry 9 }

    vdslChanCurr1DayTimeElapsed OBJECT-TYPE
        SYNTAX   HCPerfTimeElapsed
        UNITS   "seconds"
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
             "Number of seconds that have elapsed since the beginning
             of the current 1-day interval."
        ::= { vdslChanPerfDataEntry 10 }

    vdslChanCurr1DayFixedOctets OBJECT-TYPE
        SYNTAX   HCPerfCurrentCount
        UNITS   "octets"
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "Count of corrected octets since the beginning of the
            current 1-day interval."
        REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslChanPerfDataEntry 11 }

    vdslChanCurr1DayBadBlks OBJECT-TYPE
        SYNTAX   HCPerfCurrentCount
        UNITS   "blocks"
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "Count of uncorrectable blocks since the beginning of the
            current 1-day interval."
        REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslChanPerfDataEntry 12 }

    vdslChanIntervalTable   OBJECT-TYPE
        SYNTAX   SEQUENCE OF VdslChanIntervalEntry
        MAX-ACCESS   not-accessible
        STATUS   current
        DESCRIPTION
            "This table provides one row for each Vtu channel data
            collection interval. VDSL channel interfaces are those
            ifEntries where ifType is equal to interleave(124) or
            fast(125)."

```
      ::= { vdslMibObjects 8 }

   vdslChanIntervalEntry OBJECT-TYPE
       SYNTAX        VdslChanIntervalEntry
       MAX-ACCESS    not-accessible
       STATUS        current
       DESCRIPTION
           "An entry in the vdslChanIntervalTable."
       INDEX { ifIndex,
               vdslPhysSide,
               vdslChanIntervalNumber }
       ::= { vdslChanIntervalTable 1 }

   VdslChanIntervalEntry ::=
       SEQUENCE
           {
           vdslChanIntervalNumber        Unsigned32,
           vdslChanIntervalFixedOctets   HCPerfIntervalCount,
           vdslChanIntervalBadBlks       HCPerfIntervalCount
           }

   vdslChanIntervalNumber OBJECT-TYPE
       SYNTAX        Unsigned32 (1..96)
       MAX-ACCESS    not-accessible
       STATUS        current
       DESCRIPTION
           "Performance Data Interval number 1 is the most recent
           previous interval; interval 96 is 24 hours ago.
           Intervals 2 to 96 are optional."
       ::= { vdslChanIntervalEntry 1 }

   vdslChanIntervalFixedOctets OBJECT-TYPE
       SYNTAX        HCPerfIntervalCount
       UNITS         "octets"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of corrected octets in this interval."
       REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
       ::= { vdslChanIntervalEntry 2 }

   vdslChanIntervalBadBlks OBJECT-TYPE
       SYNTAX        HCPerfIntervalCount
       UNITS         "blocks"
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION
           "Count of uncorrectable blocks in this interval."
```

```
        REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
        ::= { vdslChanIntervalEntry 3 }

    vdslChan1DayIntervalTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF VdslChan1DayIntervalEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This table provides one row for each VDSL performance
            data collection interval.  This table contains live data
            from equipment.  As such, it is NOT persistent."
        ::= { vdslMibObjects 9 }

    vdslChan1DayIntervalEntry OBJECT-TYPE
        SYNTAX        VdslChan1DayIntervalEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the vdslChan1DayIntervalTable."
        INDEX { ifIndex,
                vdslPhysSide,
                vdslChan1DayIntervalNumber }
        ::= { vdslChan1DayIntervalTable 1 }

    VdslChan1DayIntervalEntry ::=
        SEQUENCE
        {
        vdslChan1DayIntervalNumber        Unsigned32,
        vdslChan1DayIntervalMoniSecs      HCPerfTimeElapsed,
        vdslChan1DayIntervalFixedOctets   HCPerfCurrentCount,
        vdslChan1DayIntervalBadBlks       HCPerfCurrentCount
        }

    vdslChan1DayIntervalNumber OBJECT-TYPE
        SYNTAX        Unsigned32 (1..30)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "History Data Interval number.  Interval 1 is the most
            recent previous day; interval 30 is 30 days ago.  Intervals
            2 to 30 are optional."
        ::= { vdslChan1DayIntervalEntry 1 }

    vdslChan1DayIntervalMoniSecs OBJECT-TYPE
        SYNTAX        HCPerfTimeElapsed
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
```

```
    DESCRIPTION
        "The amount of time in the 1-day interval over which the
        performance monitoring information is actually counted.
        This value will be the same as the interval duration except
        in a situation where performance monitoring data could not
        be collected for any reason."
    ::= { vdslChan1DayIntervalEntry 2 }

vdslChan1DayIntervalFixedOctets OBJECT-TYPE
    SYNTAX          HCPerfCurrentCount
    UNITS          "octets"
    MAX-ACCESS     read-only
    STATUS          current
    DESCRIPTION
        "Count of corrected octets in this interval."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChan1DayIntervalEntry 3 }

vdslChan1DayIntervalBadBlks OBJECT-TYPE
    SYNTAX          HCPerfCurrentCount
    UNITS          "blocks"
    MAX-ACCESS     read-only
    STATUS          current
    DESCRIPTION
        "Count of uncorrectable blocks in this interval."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    ::= { vdslChan1DayIntervalEntry 4 }

--
-- profile tables
--

vdslLineConfProfileTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VdslLineConfProfileEntry
    MAX-ACCESS     not-accessible
    STATUS          current
    DESCRIPTION
        "This table contains information on the VDSL line
        configuration.  One entry in this table reflects a
        profile defined by a manager which can be used to
        configure the VDSL line.

        Entries in this table MUST be maintained in a
        persistent manner."
    ::= { vdslMibObjects 11 }

vdslLineConfProfileEntry OBJECT-TYPE
    SYNTAX          VdslLineConfProfileEntry
```

```
     MAX-ACCESS      not-accessible
     STATUS          current
     DESCRIPTION
         "Each entry consists of a list of parameters that
         represents the configuration of a VDSL line.

         A default profile with an index of 'DEFVAL', will
         always exist and its parameters will be set to vendor
         specific values, unless otherwise specified in this
         document."
     INDEX { vdslLineConfProfileName }
     ::= { vdslLineConfProfileTable 1 }

 VdslLineConfProfileEntry ::=
     SEQUENCE
         {
         vdslLineConfProfileName            SnmpAdminString,
         vdslLineConfDownRateMode           INTEGER,
         vdslLineConfUpRateMode             INTEGER,
         vdslLineConfDownMaxPwr             Unsigned32,
         vdslLineConfUpMaxPwr               Unsigned32,
         vdslLineConfDownMaxSnrMgn          Unsigned32,
         vdslLineConfDownMinSnrMgn          Unsigned32,
         vdslLineConfDownTargetSnrMgn       Unsigned32,
         vdslLineConfUpMaxSnrMgn            Unsigned32,
         vdslLineConfUpMinSnrMgn            Unsigned32,
         vdslLineConfUpTargetSnrMgn         Unsigned32,
         vdslLineConfDownFastMaxDataRate    Unsigned32,
         vdslLineConfDownFastMinDataRate    Unsigned32,
         vdslLineConfDownSlowMaxDataRate    Unsigned32,
         vdslLineConfDownSlowMinDataRate    Unsigned32,
         vdslLineConfUpFastMaxDataRate      Unsigned32,
         vdslLineConfUpFastMinDataRate      Unsigned32,
         vdslLineConfUpSlowMaxDataRate      Unsigned32,
         vdslLineConfUpSlowMinDataRate      Unsigned32,
         vdslLineConfDownRateRatio          Unsigned32,
         vdslLineConfUpRateRatio            Unsigned32,
         vdslLineConfDownMaxInterDelay      Unsigned32,
         vdslLineConfUpMaxInterDelay        Unsigned32,
         vdslLineConfDownPboControl         INTEGER,
         vdslLineConfUpPboControl           INTEGER,
         vdslLineConfDownPboLevel           Unsigned32,
         vdslLineConfUpPboLevel             Unsigned32,
         vdslLineConfDeploymentScenario     INTEGER,
         vdslLineConfAdslPresence           INTEGER,
         vdslLineConfApplicableStandard     INTEGER,
         vdslLineConfBandPlan               INTEGER,
         vdslLineConfBandPlanFx             Unsigned32,
```

```
        vdslLineConfBandOptUsage            INTEGER,
        vdslLineConfUpPsdTemplate           INTEGER,
        vdslLineConfDownPsdTemplate         INTEGER,
        vdslLineConfHamBandMask             BITS,
        vdslLineConfCustomNotch1Start       Unsigned32,
        vdslLineConfCustomNotch1Stop        Unsigned32,
        vdslLineConfCustomNotch2Start       Unsigned32,
        vdslLineConfCustomNotch2Stop        Unsigned32,
        vdslLineConfDownTargetSlowBurst     Unsigned32,
        vdslLineConfUpTargetSlowBurst       Unsigned32,
        vdslLineConfDownMaxFastFec          Unsigned32,
        vdslLineConfUpMaxFastFec            Unsigned32,
        vdslLineConfLineType                INTEGER,
        vdslLineConfProfRowStatus           RowStatus
        }

vdslLineConfProfileName OBJECT-TYPE
    SYNTAX       SnmpAdminString (SIZE (1..32))
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This object identifies a row in this table.

        A default profile with an index of 'DEFVAL', will
        always exist and its parameters will be set to vendor
        specific values, unless otherwise specified in this
        document."
    ::= { vdslLineConfProfileEntry 1 }

vdslLineConfDownRateMode OBJECT-TYPE
    SYNTAX       INTEGER
                 {
                 manual(1),
                 adaptAtInit(2)
                 }
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the rate selection behavior for the line
        in the downstream direction.

        manual(1)       forces the rate to the configured rate
        adaptAtInit(2)  adapts the line based upon line quality."
    DEFVAL       { adaptAtInit }
    ::= { vdslLineConfProfileEntry 2 }

vdslLineConfUpRateMode OBJECT-TYPE
    SYNTAX       INTEGER
```

```
                {
                manual(1),
                adaptAtInit(2)
                }
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the rate selection behavior for the line
        in the upstream direction.

        manual(1)       forces the rate to the configured rate
        adaptAtInit(2)  adapts the line based upon line quality."
    DEFVAL       { adaptAtInit }
    ::= { vdslLineConfProfileEntry 3 }

vdslLineConfDownMaxPwr OBJECT-TYPE
    SYNTAX       Unsigned32 (0..58)
    UNITS        "0.25dBm"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the maximum aggregate downstream power
        level in the range 0 to 14.5 dBm."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL       { 0 }
    ::= { vdslLineConfProfileEntry 4 }

vdslLineConfUpMaxPwr OBJECT-TYPE
    SYNTAX       Unsigned32 (0..58)
    UNITS        "0.25dBm"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the maximum aggregate upstream power
        level in the range 0 to 14.5 dBm."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL       { 0 }
    ::= { vdslLineConfProfileEntry 5 }

vdslLineConfDownMaxSnrMgn OBJECT-TYPE
    SYNTAX       Unsigned32 (0..127)
    UNITS        "0.25dBm"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the maximum downstream Signal/Noise Margin
        in units of 0.25 dB, for a range of 0 to 31.75 dB."
    REFERENCE    "T1E1.4/2000-009R3, Part 1, common spec"
```

```
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 6 }

vdslLineConfDownMinSnrMgn OBJECT-TYPE
    SYNTAX         Unsigned32 (0..127)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Specifies the minimum downstream Signal/Noise Margin
        in units of 0.25 dB, for a range of 0 to 31.75 dB."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 7 }

vdslLineConfDownTargetSnrMgn OBJECT-TYPE
    SYNTAX         Unsigned32 (0..127)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Specifies the target downstream Signal/Noise Margin
        in units of 0.25 dB, for a range of 0 to 31.75 dB.
        This is the Noise Margin the transceivers must achieve
        with a BER of 10^-7 or better to successfully complete
        initialization."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 8 }

vdslLineConfUpMaxSnrMgn OBJECT-TYPE
    SYNTAX         Unsigned32 (0..127)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Specifies the maximum upstream Signal/Noise Margin
        in units of 0.25 dB, for a range of 0 to 31.75 dB."
    REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 9 }

vdslLineConfUpMinSnrMgn OBJECT-TYPE
    SYNTAX         Unsigned32 (0..127)
    UNITS          "0.25dBm"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
```

          "Specifies the minimum upstream Signal/Noise Margin
          in units of 0.25 dB, for a range of 0 to 31.75 dB."
       REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
       DEFVAL   { 0 }
       ::= { vdslLineConfProfileEntry 10 }

   vdslLineConfUpTargetSnrMgn OBJECT-TYPE
       SYNTAX   Unsigned32 (0..127)
       UNITS   "0.25dBm"
       MAX-ACCESS   read-create
       STATUS   current
       DESCRIPTION
          "Specifies the target upstream Signal/Noise Margin in
          units of 0.25 dB, for a range of 0 to 31.75 dB. This
          is the Noise Margin the transceivers must achieve with
          a BER of 10^-7 or better to successfully complete
          initialization."
       REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
       DEFVAL   { 0 }
       ::= { vdslLineConfProfileEntry 11 }

   vdslLineConfDownFastMaxDataRate OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "kbps"
       MAX-ACCESS   read-create
       STATUS   current
       DESCRIPTION
          "Specifies the maximum downstream fast channel
          data rate in steps of 1000 bits/second."
       DEFVAL   { 0 }
       ::= { vdslLineConfProfileEntry 12 }

   vdslLineConfDownFastMinDataRate OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "kbps"
       MAX-ACCESS   read-create
       STATUS   current
       DESCRIPTION
          "Specifies the minimum downstream fast channel
          data rate in steps of 1000 bits/second."
       DEFVAL   { 0 }
       ::= { vdslLineConfProfileEntry 13 }

   vdslLineConfDownSlowMaxDataRate OBJECT-TYPE
       SYNTAX   Unsigned32
       UNITS   "kbps"
       MAX-ACCESS   read-create
       STATUS   current

        DESCRIPTION
            "Specifies the maximum downstream slow channel
            data rate in steps of 1000 bits/second.

            The maximum aggregate downstream transmit speed
            of the line can be derived from the sum of maximum
            downstream fast and slow channel data rates."
        DEFVAL   { 0 }
        ::= { vdslLineConfProfileEntry 14 }

    vdslLineConfDownSlowMinDataRate OBJECT-TYPE
        SYNTAX   Unsigned32
        UNITS   "kbps"
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
            "Specifies the minimum downstream slow channel
            data rate in steps of 1000 bits/second.

            The minimum aggregate downstream transmit speed
            of the line can be derived from the sum of minimum
            downstream fast and slow channel data rates."
        DEFVAL   { 0 }
        ::= { vdslLineConfProfileEntry 15 }

    vdslLineConfUpFastMaxDataRate OBJECT-TYPE
        SYNTAX   Unsigned32
        UNITS   "kbps"
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
            "Specifies the maximum upstream fast channel
            data rate in steps of 1000 bits/second.

            The maximum aggregate upstream transmit speed
            of the line can be derived from the sum of maximum
            upstream fast and slow channel data rates."
        DEFVAL   { 0 }
        ::= { vdslLineConfProfileEntry 16 }

    vdslLineConfUpFastMinDataRate OBJECT-TYPE
        SYNTAX   Unsigned32
        UNITS   "kbps"
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
            "Specifies the minimum upstream fast channel
            data rate in steps of 1000 bits/second.

          The minimum aggregate upstream transmit speed
          of the line can be derived from the sum of minimum
          upstream fast and slow channel data rates."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 17 }

   vdslLineConfUpSlowMaxDataRate OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "kbps"
      MAX-ACCESS   read-create
      STATUS   current
      DESCRIPTION
          "Specifies the maximum upstream slow channel
          data rate in steps of 1000 bits/second."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 18 }

   vdslLineConfUpSlowMinDataRate OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "kbps"
      MAX-ACCESS   read-create
      STATUS   current
      DESCRIPTION
          "Specifies the minimum upstream slow channel
          data rate in steps of 1000 bits/second."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 19 }

   vdslLineConfDownRateRatio OBJECT-TYPE
      SYNTAX   Unsigned32 (0..100)
      UNITS   "percent"
      MAX-ACCESS   read-create
      STATUS   current
      DESCRIPTION
          "For dynamic rate adaptation at startup, the allocation
          of data rate in excess of the minimum data rate for each
          channel is controlled by the object. This object specifies
          the ratio of the allocation of the excess data rate between
          the fast and the slow channels. This allocation represents
          downstream Fast Channel Allocation / Slow Channel
          Allocation."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 20 }

   vdslLineConfUpRateRatio OBJECT-TYPE
      SYNTAX   Unsigned32 (0..100)
      UNITS   "percent"
      MAX-ACCESS   read-create

```
        STATUS        current
        DESCRIPTION
            "For dynamic rate adaptation at startup, the allocation
            of data rate in excess of the minimum data rate for each
            channel is controlled by the object.  This object specifies
            the ratio of the allocation of the excess data rate between
            the fast and the slow channels.  This allocation represents
            upstream Fast Channel Allocation/Slow Channel Allocation."
        DEFVAL        { 0 }
        ::= { vdslLineConfProfileEntry 21 }

    vdslLineConfDownMaxInterDelay OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "milliseconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Specifies the maximum interleave delay for the
            downstream slow channel."
        DEFVAL        { 0 }
        ::= { vdslLineConfProfileEntry 22 }

    vdslLineConfUpMaxInterDelay OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "milliseconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Specifies the maximum interleave delay for the
            upstream slow channel."
        DEFVAL        { 0 }
        ::= { vdslLineConfProfileEntry 23 }

    vdslLineConfDownPboControl OBJECT-TYPE
        SYNTAX        INTEGER
                        {
                      disabled(1),
                      auto(2),
                      manual(3)
                      }
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Downstream power backoff (PBO) control for this
            line.  For transceivers which do not support downstream
            PBO control, this object MUST be fixed at disabled(1).
            If auto(2) is selected, the transceiver will automatically
            adjust the power backoff.  If manual(3) is selected,
```

```
        then the transceiver will use the value from
        vdslLineConfDownPboLevel."
    DEFVAL         { disabled }
    ::= { vdslLineConfProfileEntry 24 }

vdslLineConfUpPboControl OBJECT-TYPE
    SYNTAX         INTEGER
                   {
                   disabled(1),
                   auto(2),
                   manual(3)
                   }
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Upstream power backoff (PBO) control for this
        line.  For transceivers which do not support upstream
        PBO control, this object MUST be fixed at disabled(1).
        If auto(2) is selected, the transceiver will automatically
        adjust the power backoff.  If manual(3) is selected,
        then the transceiver will use the value from
        vdslLineConfUpPboLevel."
    DEFVAL         { disabled }
    ::= { vdslLineConfProfileEntry 25 }

vdslLineConfDownPboLevel OBJECT-TYPE
    SYNTAX         Unsigned32 (0..160)
    UNITS          "0.25dB"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Specifies the downstream backoff level to be used
        when vdslLineConfDownPboControl = manual(3)."
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 26 }

vdslLineConfUpPboLevel OBJECT-TYPE
    SYNTAX         Unsigned32 (0..160)
    UNITS          "0.25dB"
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "Specifies the upstream backoff level to be used
        when vdslLineConfUpPboControl = manual(3)."
    DEFVAL         { 0 }
    ::= { vdslLineConfProfileEntry 27 }

vdslLineConfDeploymentScenario OBJECT-TYPE
```

```
     SYNTAX        INTEGER
                   {
                   fttCab(1),
                   fttEx(2),
                   other(3)
                   }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "The VDSL line deployment scenario.  When using
         fttCab(1), the VTU-C is located in a street cabinet.
         When using fttEx(2), the VTU-C is located at the
         central office.  Changes to this value will have
         no effect on the transceiver."
     REFERENCE     "DSL Forum TR-057"
     DEFVAL        { fttCab }
     ::= { vdslLineConfProfileEntry 28 }

  vdslLineConfAdslPresence OBJECT-TYPE
     SYNTAX        INTEGER
                   {
                   none(1),
                   adslOverPots(2),
                   adslOverISDN(3)
                   }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "Indicates presence of ADSL service in the associated
         cable bundle/binder.

         none(1)         indicates no ADSL service in the bundle
         adslOverPots(2) indicates ADSL service over POTS is
                         present in the bundle
         adslOverISDN(3) indicates ADSL service over ISDN is
                         present in the bundle"
     DEFVAL        { none }
     ::= { vdslLineConfProfileEntry 29 }

  vdslLineConfApplicableStandard OBJECT-TYPE
     SYNTAX        INTEGER
                   {
                   ansi(1),
                   etsi(2),
                   itu(3),
                   other(4)
                   }
     MAX-ACCESS    read-create
```

```
     STATUS        current
     DESCRIPTION
         "The VDSL standard to be used for the line.

             ansi(1)     indicates ANSI standard
             etsi(2)     indicates ETSI standard
             itu(3)      indicates ITU standard
             other(4)    indicates a standard other than the above."
     DEFVAL        { ansi }
     ::= { vdslLineConfProfileEntry 30 }

 vdslLineConfBandPlan OBJECT-TYPE
     SYNTAX        INTEGER
                   {
                   bandPlan997(1),
                   bandPlan998(2),
                   bandPlanFx(3),
                   other(4)
                   }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "The VDSL band plan to be used for the line.

            bandPlan997(1) is to be used for
                  ITU-T G.993.1 Bandplan-B
                  ETSI Bandplan
                  ANSI Plan 997

            bandPlan998(2) is to be used for
                  ITU-T G.993.1 Bandplan-A
                  ANSI Plan 998

            bandPlanFx(3) is to be used for
                  ITU-T G.993.1 Bandplan-C.

            other(4) is to be used for
                  non-standard bandplans.

            If this object is set to bandPlanFx(3), then the
            object vdslLineConfBandPlanFx MUST also be set."
     DEFVAL        { bandPlan997 }
     ::= { vdslLineConfProfileEntry 31 }

 vdslLineConfBandPlanFx OBJECT-TYPE
     SYNTAX        Unsigned32 (3750..12000)
     UNITS         "kHz"
     MAX-ACCESS    read-create
```

```
     STATUS        current
     DESCRIPTION
         "The frequency limit between bands D2 and U2 when
         vdslLineConfBandPlan is set to bandPlanFx(3)."
     DEFVAL        { 3750 }
     ::= { vdslLineConfProfileEntry 32 }

  vdslLineConfBandOptUsage OBJECT-TYPE
     SYNTAX        INTEGER
                   {
                   unused(1),
                   upstream(2),
                   downstream(3)
                   }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "Defines the VDSL link use of the optional frequency
         range [25kHz - 138kHz] (Opt).

         unused(1)     indicates Opt is unused
         upstream(2)   indicates Opt usage is for upstream
         downstream(3) indicates Opt usage is for downstream."
     REFERENCE     "ITU-T G.993.1, section 6.1"
     DEFVAL        { unused }
     ::= { vdslLineConfProfileEntry 33 }

vdslLineConfUpPsdTemplate OBJECT-TYPE
     SYNTAX        INTEGER
                   {
                   templateMask1(1),
                   templateMask2(2)
                   }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "The upstream PSD template to be used for the line.
         Here, templateMask1(1) refers to a notched mask that
         limits the transmitted PSD within the internationally
         standardized HAM (Handheld Amateur Radio) radio bands,
         while templateMask2(2) refers to an unnotched mask.

         The masks themselves depend upon the applicable
         standard being used (vdslLineConfApplicableStandard)."
     REFERENCE     "DSL TR-057"
     DEFVAL        { templateMask1 }
     ::= { vdslLineConfProfileEntry 34 }
```

    vdslLineConfDownPsdTemplate OBJECT-TYPE
        SYNTAX   INTEGER
                      {
                      templateMask1(1),
                      templateMask2(2)
                      }
        MAX-ACCESS   read-create
        STATUS   current
        DESCRIPTION
            "The downstream PSD template to be used for the line.
            Here, templateMask1(1) refers to a notched mask that
            limits the transmitted PSD within the internationally
            standardized HAM (Handheld Amateur Radio) radio bands,
            while templateMask2(2) refers to an unnotched mask.

            The masks themselves depend upon the applicable
            standard being used (vdslLineConfApplicableStandard)."
        REFERENCE   "DSL TR-057"
        DEFVAL   { templateMask1 }
        ::= { vdslLineConfProfileEntry 35 }

    vdslLineConfHamBandMask OBJECT-TYPE
        SYNTAX   BITS
            {
            customNotch1(0),   -- custom (region-specific) notch
            customNotch2(1),   -- custom (region-specific) notch
            amateurBand30m(2), -- amateur radio band notch
            amateurBand40m(3), -- amateur radio band notch
            amateurBand80m(4), -- amateur radio band notch
            amateurBand160m(5) -- amateur radio band notch
            }
        MAX-ACCESS   read-create
        STATUS   current
        DESCRIPTION
            "The transmit power spectral density mask code, used
            to avoid interference with HAM (Handheld Amateur Radio)
            radio bands by introducing power control (notching) in one
            or more of these bands.

            Amateur radio band notching is defined in the VDSL
            spectrum as follows:

            Band   Start Frequency   Stop Frequency
            ----   -----------------   -------------------------------
            30m   1810 kHz   2000 kHz
            40m   3500 kHz   3800 kHz (ETSI); 4000 kHz (ANSI)
            80m   7000 kHz   7100 kHz (ETSI); 7300 kHz (ANSI)
            160m   10100 kHz   10150 kHz

         Notching for each standard band can be enabled or disabled
         via the bit mask.

         Two custom notches may be specified. If either of these
         are enabled via the bit mask, then the following objects
         MUST be specified:

         If customNotch1 is enabled, then both
             vdslLineConfCustomNotch1Start
             vdslLineConfCustomNotch1Stop
         MUST be specified.

         If customNotch2 is enabled, then both
             vdslLineConfCustomNotch2Start
             vdslLineConfCustomNotch2Stop
         MUST be specified."
      REFERENCE   "DSLF TR-057, section 2.6"
      DEFVAL   { { } }
      ::= { vdslLineConfProfileEntry 36 }

   vdslLineConfCustomNotch1Start OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "kHz"
      MAX-ACCESS   read-create
      STATUS   current
      DESCRIPTION
          "Specifies the start frequency of custom HAM (Handheld
          Amateur Radio) notch 1. vdslLineConfCustomNotch1Start MUST
          be less than or equal to vdslLineConfCustomNotch1Stop."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 37 }

   vdslLineConfCustomNotch1Stop OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "kHz"
      MAX-ACCESS   read-create
      STATUS   current
      DESCRIPTION
          "Specifies the stop frequency of custom HAM (Handheld
          Amateur Radio) notch 1. vdslLineConfCustomNotch1Stop MUST
          be greater than or equal to vdslLineConfCustomNotch1Start."
      DEFVAL   { 0 }
      ::= { vdslLineConfProfileEntry 38 }

   vdslLineConfCustomNotch2Start OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "kHz"
      MAX-ACCESS   read-create

```
     STATUS          current
     DESCRIPTION
         "Specifies the start frequency of custom HAM (Handheld
         Amateur Radio) notch 2.  vdslLineConfCustomNotch2Start MUST
         be less than or equal to vdslLineConfCustomNotch2Stop."
     DEFVAL         { 0 }
     ::= { vdslLineConfProfileEntry 39 }

 vdslLineConfCustomNotch2Stop OBJECT-TYPE
     SYNTAX          Unsigned32
     UNITS           "kHz"
     MAX-ACCESS      read-create
     STATUS          current
     DESCRIPTION
         "Specifies the stop frequency of custom HAM (Handheld
         Amateur Radio) notch 2.  vdslLineConfCustomNotch2Stop MUST
         be greater than or equal to vdslLineConfCustomNotch2Start."
     DEFVAL         { 0 }
     ::= { vdslLineConfProfileEntry 40 }

 vdslLineConfDownTargetSlowBurst OBJECT-TYPE
     SYNTAX          Unsigned32 (0..1275)
     UNITS           "microseconds"
     MAX-ACCESS      read-create
     STATUS          current
     DESCRIPTION
         "Specifies the target level of impulse noise (burst)
         protection for an interleaved (slow) channel."
     REFERENCE      "ITU-T G.997.1, section 7.3.2.3"
     DEFVAL         { 0 }
     ::= { vdslLineConfProfileEntry 41 }

 vdslLineConfUpTargetSlowBurst OBJECT-TYPE
     SYNTAX          Unsigned32 (0..1275)
     UNITS           "microseconds"
     MAX-ACCESS      read-create
     STATUS          current
     DESCRIPTION
         "Specifies the target level of impulse noise (burst)
         protection for an interleaved (slow) channel."
     REFERENCE      "ITU-T G.997.1, section 7.3.2.3"
     DEFVAL         { 0 }
     ::= { vdslLineConfProfileEntry 42 }

 vdslLineConfDownMaxFastFec OBJECT-TYPE
     SYNTAX          Unsigned32 (0..50)
     UNITS           "%"
     MAX-ACCESS      read-create
```

```
     STATUS        current
     DESCRIPTION
         "This parameter provisions the maximum level of Forward
         Error Correction (FEC) redundancy related overhead to
         be maintained for a fast channel."
     DEFVAL        { 0 }
     ::= { vdslLineConfProfileEntry 43 }

 vdslLineConfUpMaxFastFec OBJECT-TYPE
     SYNTAX        Unsigned32 (0..50)
     UNITS         "%"
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "This parameter provisions the maximum level of Forward
         Error Correction (FEC) redundancy related overhead to
         be maintained for a fast channel."
     DEFVAL        { 0 }
     ::= { vdslLineConfProfileEntry 44 }

 vdslLineConfLineType OBJECT-TYPE
     SYNTAX        INTEGER
         {
         noChannel(1),          -- no channels exist
         fastOnly(2),           -- only fast channel exists
         interleavedOnly(3),    -- only interleaved channel exists
         fastOrInterleaved(4),  -- either fast or interleaved channel
                                -- exist, but only one at a time
         fastAndInterleaved(5)  -- both fast and interleaved channels
                                -- exist
         }
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "This parameter provisions the VDSL physical entity at
         start-up by defining whether and how the line will be
         channelized, i.e., which channel type(s) are supported.
         If the line is to be channelized, the value will be other
         than noChannel(1).

         This configuration can be activated only during start-up.
         Afterwards, the value of vdslLineType coincides with the
         value of vdslLineConfLineType.  Depending on this value,
         the corresponding entries in the ifTable for the
         interleaved and the fast channels are enabled or disabled
         according to the value of their ifOperStatus.

         Defined values are:
```

```
        noChannel(1)          -- no channels exist
        fastOnly(2)           -- only fast channel exists
        interleavedOnly(3)    -- only interleaved channel exists
        fastOrInterleaved(4)  -- either fast or interleaved channel
                              -- exists, but only one at a time
        fastAndInterleaved(5) -- both fast and interleaved channels
                              -- exist

        Note that 'slow' and 'interleaved' refer to the same
        channel."
    REFERENCE     "T1E1.4/2000-009R3, Part 1, common spec"
    DEFVAL        { noChannel }
    ::= { vdslLineConfProfileEntry 45 }

vdslLineConfProfRowStatus OBJECT-TYPE
    SYNTAX        RowStatus
    MAX-ACCESS    read-create
    STATUS        current
    DESCRIPTION
        "This object is used to create a new row or modify or
        delete an existing row in this table.

        A profile activated by setting this object to 'active'.
        When 'active' is set, the system will validate the profile.

        Before a profile can be deleted or taken out of service
        (by setting this object to 'destroy' or 'outOfService'),
        it must be first unreferenced from all associated lines.

        An 'active' profile may be modified at any time.  Note
        that some changes may require that any referenced lines be
        restarted (e.g., vdslLineConfLineType)."
    ::= { vdslLineConfProfileEntry 46 }

--
-- Alarm configuration profile table
--

vdslLineAlarmConfProfileTable OBJECT-TYPE
    SYNTAX        SEQUENCE OF VdslLineAlarmConfProfileEntry
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
        "This table contains information on the VDSL line alarm
        configuration.  One entry in this table reflects a profile
        defined by a manager which can be used to configure the
        VDSL line alarm thresholds.
```

```
        Entries in this table MUST be maintained in a
        persistent manner."
     ::= { vdslMibObjects 20 }

  vdslLineAlarmConfProfileEntry OBJECT-TYPE
     SYNTAX        VdslLineAlarmConfProfileEntry
     MAX-ACCESS    not-accessible
     STATUS        current
     DESCRIPTION
         "Each entry consists of a list of parameters that
         represents the configuration of a VDSL line alarm
         profile.

         A default profile with an index of 'DEFVAL', will
         always exist and its parameters will be set to vendor
         specific values, unless otherwise specified in this
         document."
     INDEX { vdslLineAlarmConfProfileName }
     ::= { vdslLineAlarmConfProfileTable 1 }

  VdslLineAlarmConfProfileEntry ::=
     SEQUENCE
         {
         vdslLineAlarmConfProfileName      SnmpAdminString,
         vdslLineAlarmConfThresh15MinLofs  HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinLoss  HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinLprs  HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinLols  HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinESs   HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinSESs  HCPerfIntervalThreshold,
         vdslLineAlarmConfThresh15MinUASs  HCPerfIntervalThreshold,
         vdslLineAlarmConfInitFailure      TruthValue,
         vdslLineAlarmConfProfRowStatus    RowStatus
         }

  vdslLineAlarmConfProfileName OBJECT-TYPE
     SYNTAX        SnmpAdminString (SIZE (1..32))
     MAX-ACCESS    not-accessible
     STATUS        current
     DESCRIPTION
         "The name for this profile as specified by an
         administrator."
     ::= { vdslLineAlarmConfProfileEntry 1 }

  vdslLineAlarmConfThresh15MinLofs OBJECT-TYPE
     SYNTAX        HCPerfIntervalThreshold
     UNITS         "seconds"
     MAX-ACCESS    read-create
```

```
        STATUS      current
        DESCRIPTION
            "This object configures the threshold for the number of
             loss of frame seconds (lofs) within any given 15-minute
             performance data collection interval.  If the value of
             loss of frame seconds in a particular 15-minute collection
             interval reaches/exceeds this value, a
             vdslPerfLofsThreshNotification notification will be
             generated.  No more than one notification will be sent
             per interval."
        DEFVAL      { 0 }
        ::= { vdslLineAlarmConfProfileEntry 2 }

    vdslLineAlarmConfThresh15MinLoss OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This object configures the threshold for the number of
             loss of signal seconds (loss) within any given 15-minute
             performance data collection interval.  If the value of
             loss of signal seconds in a particular 15-minute
             collection interval reaches/exceeds this value, a
             vdslPerfLossThreshNotification notification will be
             generated.  One notification will be sent per interval
             per endpoint."
        DEFVAL      { 0 }
        ::= { vdslLineAlarmConfProfileEntry 3 }

    vdslLineAlarmConfThresh15MinLprs OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "This object configures the threshold for the number of
             loss of power seconds (lprs) within any given 15-minute
             performance data collection interval.  If the value of
             loss of power seconds in a particular 15-minute collection
             interval reaches/exceeds this value, a
             vdslPerfLprsThreshNotification notification will be
             generated.  No more than one notification will be sent
             per interval."
        DEFVAL      { 0 }
        ::= { vdslLineAlarmConfProfileEntry 4 }

    vdslLineAlarmConfThresh15MinLols OBJECT-TYPE
```

```
     SYNTAX        HCPerfIntervalThreshold
     UNITS         "seconds"
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "This object configures the threshold for the number of
          loss of link seconds (lols) within any given 15-minute
          performance data collection interval.  If the value of
          loss of power seconds in a particular 15-minute collection
          interval reaches/exceeds this value, a
          vdslPerfLolsThreshNotification notification will be
          generated.  No more than one notification will be sent
          per interval."
     DEFVAL        { 0 }
     ::= { vdslLineAlarmConfProfileEntry 5 }

 vdslLineAlarmConfThresh15MinESs OBJECT-TYPE
     SYNTAX        HCPerfIntervalThreshold
     UNITS         "seconds"
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "This object configures the threshold for the number of
          errored seconds (ESs) within any given 15-minute
          performance data collection interval.  If the value of
          errored seconds in a particular 15-minute collection
          interval reaches/exceeds this value, a
          vdslPerfESsThreshNotification notification will be
          generated.  No more than one notification will be sent
          per interval."
     DEFVAL        { 0 }
     ::= { vdslLineAlarmConfProfileEntry 6 }

 vdslLineAlarmConfThresh15MinSESs OBJECT-TYPE
     SYNTAX        HCPerfIntervalThreshold
     UNITS         "seconds"
     MAX-ACCESS    read-create
     STATUS        current
     DESCRIPTION
         "This object configures the threshold for the number of
          severely errored seconds (SESs) within any given 15-minute
          performance data collection interval.  If the value of
          severely errored seconds in a particular 15-minute
          collection interval reaches/exceeds this value, a
          vdslPerfSESsThreshNotification notification will be
          generated.  No more than one notification will be sent
          per interval."
     DEFVAL        { 0 }
```

```
       ::= { vdslLineAlarmConfProfileEntry 7 }

   vdslLineAlarmConfThresh15MinUASs OBJECT-TYPE
       SYNTAX        HCPerfIntervalThreshold
       UNITS         "seconds"
       MAX-ACCESS    read-create
       STATUS        current
       DESCRIPTION
           "This object configures the threshold for the number of
            unavailable seconds (UASs) within any given 15-minute
            performance data collection interval.  If the value of
            unavailable seconds in a particular 15-minute collection
            interval reaches/exceeds this value, a
            vdslPerfUASsThreshNotification notification will be
            generated.  No more than one notification will be sent
            per interval."
       DEFVAL        { 0 }
       ::= { vdslLineAlarmConfProfileEntry 8 }

   vdslLineAlarmConfInitFailure OBJECT-TYPE
       SYNTAX        TruthValue
       MAX-ACCESS    read-create
       STATUS        current
       DESCRIPTION
           "This object specifies if a vdslInitFailureNotification
           notification will be generated if an initialization
           failure occurs."
       DEFVAL        { false }
       ::= { vdslLineAlarmConfProfileEntry 9 }

   vdslLineAlarmConfProfRowStatus OBJECT-TYPE
       SYNTAX        RowStatus
       MAX-ACCESS    read-create
       STATUS        current
       DESCRIPTION
           "This object is used to create a new row or modify or
           delete an existing row in this table.

           A profile activated by setting this object to 'active'.
           When 'active' is set, the system will validate the profile.

           Before a profile can be deleted or taken out of service,
           (by setting this object to 'destroy' or 'outOfService') it
           must be first unreferenced from all associated lines.

           An 'active' profile may be modified at any time."
       ::= { vdslLineAlarmConfProfileEntry 10 }
```

   -- Notification definitions

   vdslNotifications OBJECT IDENTIFIER ::= { vdslLineMib 0 }

   vdslPerfLofsThreshNotification NOTIFICATION-TYPE
       OBJECTS   {
                      vdslPerfDataCurr15MinLofs
                      }
       STATUS   current
       DESCRIPTION
           "Loss of Framing 15-minute interval threshold
            (vdslLineAlarmConfThresh15MinLofs) reached."
       ::= { vdslNotifications 1 }

   vdslPerfLossThreshNotification NOTIFICATION-TYPE
       OBJECTS   {
                      vdslPerfDataCurr15MinLoss
                      }
       STATUS   current
       DESCRIPTION
           "Loss of Signal 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinLoss) reached."
       ::= { vdslNotifications 2 }

   vdslPerfLprsThreshNotification NOTIFICATION-TYPE
       OBJECTS   {
                      vdslPerfDataCurr15MinLprs
                      }
       STATUS   current
       DESCRIPTION
           "Loss of Power 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinLprs) reached."
       ::= { vdslNotifications 3 }

   vdslPerfLolsThreshNotification NOTIFICATION-TYPE
       OBJECTS   {
                      vdslPerfDataCurr15MinLols
                      }
       STATUS   current
       DESCRIPTION
           "Loss of Link 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinLols) reached."
       ::= { vdslNotifications 4 }

   vdslPerfESsThreshNotification NOTIFICATION-TYPE
       OBJECTS   {
                      vdslPerfDataCurr15MinESs
                      }

```
       STATUS         current
       DESCRIPTION
           "Errored Seconds 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinESs) reached."
       ::= { vdslNotifications 5 }

   vdslPerfSESsThreshNotification NOTIFICATION-TYPE
       OBJECTS        {
                       vdslPerfDataCurr15MinSESs
                       }
       STATUS         current
       DESCRIPTION
           "Severely Errored Seconds 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinSESs) reached."
       ::= { vdslNotifications 6 }

   vdslPerfUASsThreshNotification NOTIFICATION-TYPE
       OBJECTS        {
                       vdslPerfDataCurr15MinUASs
                       }
       STATUS         current
       DESCRIPTION
           "Unavailable Seconds 15-minute interval threshold
           (vdslLineAlarmConfThresh15MinUASs) reached."
       ::= { vdslNotifications 7 }

   vdslDownMaxSnrMgnNotification NOTIFICATION-TYPE
       OBJECTS        {
                       vdslPhysCurrSnrMgn
                       }
       STATUS         current
       DESCRIPTION
           "The downstream Signal to Noise Margin exceeded
           vdslLineConfDownMaxSnrMgn.  The object
           vdslPhysCurrSnrMgn will contain the Signal to Noise
           margin as measured by the VTU-R."
       ::= { vdslNotifications 8 }

   vdslDownMinSnrMgnNotification NOTIFICATION-TYPE
       OBJECTS        {
                       vdslPhysCurrSnrMgn
                       }
       STATUS         current
       DESCRIPTION
           "The downstream Signal to Noise Margin fell below
           vdslLineConfDownMinSnrMgn.  The object vdslPhysCurrSnrMgn
           will contain the Signal to Noise margin as measured by
           the VTU-R."
```

```
    ::= { vdslNotifications 9 }

vdslUpMaxSnrMgnNotification NOTIFICATION-TYPE
    OBJECTS         {
                    vdslPhysCurrSnrMgn
                    }
    STATUS          current
    DESCRIPTION
        "The upstream Signal to Noise Margin exceeded
        vdslLineConfUpMaxSnrMgn.  The object vdslPhysCurrSnrMgn
        will contain the Signal to Noise margin as measured
        by the VTU-C."
    ::= { vdslNotifications 10 }

vdslUpMinSnrMgnNotification NOTIFICATION-TYPE
    OBJECTS         {
                    vdslPhysCurrSnrMgn
                    }
    STATUS          current
    DESCRIPTION
        "The upstream Signal to Noise Margin fell below
        vdslLineConfUpMinSnrMgn.  The object vdslPhysCurrSnrMgn
        will contain the Signal to Noise margin as measured
        by the VTU-C."
    ::= { vdslNotifications 11 }

vdslInitFailureNotification NOTIFICATION-TYPE
    OBJECTS         {
                    vdslPhysCurrStatus
                    }
    STATUS          current
    DESCRIPTION
        "Vtu initialization failed.  See vdslPhysCurrStatus for
        potential reasons."
    ::= { vdslNotifications 12 }

-- conformance information

vdslConformance OBJECT IDENTIFIER ::= { vdslLineMib 3 }
vdslGroups OBJECT IDENTIFIER ::= { vdslConformance 1 }
vdslCompliances OBJECT IDENTIFIER ::= { vdslConformance 2 }

vdslLineMibCompliance MODULE-COMPLIANCE
    STATUS  current
    DESCRIPTION
        "The compliance statement for SNMP entities which
        manage VDSL interfaces."
```

         MODULE -- this module
         MANDATORY-GROUPS
             {
             vdslGroup,
             vdslNotificationGroup
             }
         ::= { vdslCompliances 1 }

    -- units of conformance

         vdslGroup OBJECT-GROUP
             OBJECTS
                 {
                 vdslLineCoding,
                 vdslLineType,
                 vdslLineConfProfile,
                 vdslLineAlarmConfProfile,
                 vdslPhysInvSerialNumber,
                 vdslPhysInvVendorID,
                 vdslPhysInvVersionNumber,
                 vdslPhysCurrSnrMgn,
                 vdslPhysCurrAtn,
                 vdslPhysCurrStatus,
                 vdslPhysCurrOutputPwr,
                 vdslPhysCurrAttainableRate,
                 vdslPhysCurrLineRate,
                 vdslChanInterleaveDelay,
                 vdslChanCrcBlockLength,
                 vdslChanCurrTxRate,
                 vdslChanCurrTxSlowBurstProtect,
                 vdslChanCurrTxFastFec,
                 vdslPerfDataValidIntervals,
                 vdslPerfDataInvalidIntervals,
                 vdslPerfDataLofs,
                 vdslPerfDataLoss,
                 vdslPerfDataLprs,
                 vdslPerfDataLols,
                 vdslPerfDataESs,
                 vdslPerfDataSESs,
                 vdslPerfDataUASs,
                 vdslPerfDataInits,
                 vdslPerfDataCurr15MinTimeElapsed,
                 vdslPerfDataCurr15MinLofs,
                 vdslPerfDataCurr15MinLoss,
                 vdslPerfDataCurr15MinLprs,
                 vdslPerfDataCurr15MinLols,
                 vdslPerfDataCurr15MinESs,
                 vdslPerfDataCurr15MinSESs,

```
                vdslPerfDataCurr15MinUASs,
                vdslPerfDataCurr15MinInits,
                vdslPerfData1DayValidIntervals,
                vdslPerfData1DayInvalidIntervals,
                vdslPerfDataCurr1DayTimeElapsed,
                vdslPerfDataCurr1DayLofs,
                vdslPerfDataCurr1DayLoss,
                vdslPerfDataCurr1DayLprs,
                vdslPerfDataCurr1DayLols,
                vdslPerfDataCurr1DayESs,
                vdslPerfDataCurr1DaySESs,
                vdslPerfDataCurr1DayUASs,
                vdslPerfDataCurr1DayInits,
                vdslPerfIntervalLofs,
                vdslPerfIntervalLoss,
                vdslPerfIntervalLprs,
                vdslPerfIntervalLols,
                vdslPerfIntervalESs,
                vdslPerfIntervalSESs,
                vdslPerfIntervalUASs,
                vdslPerfIntervalInits,
                vdslPerf1DayIntervalMoniSecs,
                vdslPerf1DayIntervalLofs,
                vdslPerf1DayIntervalLoss,
                vdslPerf1DayIntervalLprs,
                vdslPerf1DayIntervalLols,
                vdslPerf1DayIntervalESs,
                vdslPerf1DayIntervalSESs,
                vdslPerf1DayIntervalUASs,
                vdslPerf1DayIntervalInits,
                vdslChanValidIntervals,
                vdslChanInvalidIntervals,
                vdslChanFixedOctets,
                vdslChanBadBlks,
                vdslChanCurr15MinTimeElapsed,
                vdslChanCurr15MinFixedOctets,
                vdslChanCurr15MinBadBlks,
                vdslChan1DayValidIntervals,
                vdslChan1DayInvalidIntervals,
                vdslChanCurr1DayTimeElapsed,
                vdslChanCurr1DayFixedOctets,
                vdslChanCurr1DayBadBlks,
                vdslChanIntervalFixedOctets,
                vdslChanIntervalBadBlks,
                vdslChan1DayIntervalMoniSecs,
                vdslChan1DayIntervalFixedOctets,
                vdslChan1DayIntervalBadBlks,
                vdslLineConfDownRateMode,
```

```
                vdslLineConfUpRateMode,
                vdslLineConfDownMaxPwr,
                vdslLineConfUpMaxPwr,
                vdslLineConfDownMaxSnrMgn,
                vdslLineConfDownMinSnrMgn,
                vdslLineConfDownTargetSnrMgn,
                vdslLineConfUpMaxSnrMgn,
                vdslLineConfUpMinSnrMgn,
                vdslLineConfUpTargetSnrMgn,
                vdslLineConfDownFastMaxDataRate,
                vdslLineConfDownFastMinDataRate,
                vdslLineConfDownSlowMaxDataRate,
                vdslLineConfDownSlowMinDataRate,
                vdslLineConfUpFastMaxDataRate,
                vdslLineConfUpFastMinDataRate,
                vdslLineConfUpSlowMaxDataRate,
                vdslLineConfUpSlowMinDataRate,
                vdslLineConfDownRateRatio,
                vdslLineConfUpRateRatio,
                vdslLineConfDownMaxInterDelay,
                vdslLineConfUpMaxInterDelay,
                vdslLineConfDownPboControl,
                vdslLineConfUpPboControl,
                vdslLineConfDownPboLevel,
                vdslLineConfUpPboLevel,
                vdslLineConfDeploymentScenario,
                vdslLineConfAdslPresence,
                vdslLineConfApplicableStandard,
                vdslLineConfBandPlan,
                vdslLineConfBandPlanFx,
                vdslLineConfBandOptUsage,
                vdslLineConfUpPsdTemplate,
                vdslLineConfDownPsdTemplate,
                vdslLineConfHamBandMask,
                vdslLineConfCustomNotch1Start,
                vdslLineConfCustomNotch1Stop,
                vdslLineConfCustomNotch2Start,
                vdslLineConfCustomNotch2Stop,
                vdslLineConfDownTargetSlowBurst,
                vdslLineConfUpTargetSlowBurst,
                vdslLineConfDownMaxFastFec,
                vdslLineConfUpMaxFastFec,
                vdslLineConfLineType,
                vdslLineConfProfRowStatus,
                vdslLineAlarmConfThresh15MinLofs,
                vdslLineAlarmConfThresh15MinLoss,
                vdslLineAlarmConfThresh15MinLprs,
                vdslLineAlarmConfThresh15MinLols,
```

```
             vdslLineAlarmConfThresh15MinESs,
             vdslLineAlarmConfThresh15MinSESs,
             vdslLineAlarmConfThresh15MinUASs,
             vdslLineAlarmConfInitFailure,
             vdslLineAlarmConfProfRowStatus
             }
         STATUS     current
         DESCRIPTION
             "A collection of objects providing information about
              a VDSL Line."
         ::= { vdslGroups 1 }

     vdslNotificationGroup     NOTIFICATION-GROUP
         NOTIFICATIONS
             {
             vdslPerfLofsThreshNotification,
             vdslPerfLossThreshNotification,
             vdslPerfLprsThreshNotification,
             vdslPerfLolsThreshNotification,
             vdslPerfESsThreshNotification,
             vdslPerfSESsThreshNotification,
             vdslPerfUASsThreshNotification,
             vdslDownMaxSnrMgnNotification,
             vdslDownMinSnrMgnNotification,
             vdslUpMaxSnrMgnNotification,
             vdslUpMinSnrMgnNotification,
             vdslInitFailureNotification
             }
         STATUS     current
         DESCRIPTION
             "This group supports notifications of significant
              conditions associated with VDSL Lines."
     ::= { vdslGroups 2 }

   END
```

5. Security Considerations

   There are a number of management objects defined in this MIB module
   with a MAX-ACCESS clause of read-write and/or read-create. Such
   objects may be considered sensitive or vulnerable in some network
   environments. The support for SET operations in a non-secure
   environment without proper protection can have a negative effect on
   network operations.

   Some of the readable objects in this MIB module (i.e., objects with a
   MAX-ACCESS other than not-accessible) may be considered sensitive or
   vulnerable in some network environments. It is thus important to
   control even GET and/or NOTIFY access to these objects and possibly
   to even encrypt the values of these objects when sending them over
   the network via SNMP.

   VDSL layer connectivity from the Vtur will permit the subscriber to
   manipulate both the VDSL link directly and the VDSL embedded
   operations channel (EOC) for their own loop. For example, unchecked
   or unfiltered fluctuations initiated by the subscriber could generate
   sufficient notifications to potentially overwhelm either the
   management interface to the network or the element manager.

   Additionally, allowing write access to configuration data may allow
   an end-user to increase their service levels or affect other end-
   users in either a positive or negative manner. For this reason, the
   following tables should be considered to contain sensitive
   information:

      - vdslLineTable
      - vdslLineConfProfileTable
      - vdslLineAlarmConfProfileTable

   Individual line utilization information, available via the
   performance tables, may be considered sensitive. For example, if an
   end-user has a far lower line utilization during certain periods of
   the day, it may indicate an empty office or residence. For these
   reasons, the following tables should be considered to contain
   sensitive information:

      - vdslPerfDataTable
      - vdslPerfIntervalTable
      - vdslPerf1DayIntervalTable

   Further, notifications generated by agents implementing this MIB will
   contain threshold and performance information.

It is thus important to control even GET access to the objects within
these tables and possibly to even encrypt the values of these objects
when sending them over the network via SNMP. Not all versions of
SNMP provide features for such a secure environment.

SNMP versions prior to SNMPv3 did not include adequate security.
Even if the network itself is secure (for example by using IPSec),
even then, there is no control as to who on the secure network is
allowed to access and GET/SET (read/change/create/delete) the objects
in this MIB module.

It is RECOMMENDED that implementers consider the security features as
provided by the SNMPv3 framework (see [RFC3410], section 8),
including full support for the SNMPv3 cryptographic mechanisms (for
authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT
RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to
enable cryptographic security. It is then a customer/operator
responsibility to ensure that the SNMP entity giving access to an
instance of this MIB module is properly configured to give access to
the objects only to those principals (users) that have legitimate
rights to indeed GET or SET (change/create/delete) them.

6. References

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6.2. Informative References

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7. Acknowledgements

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