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Definitions of Managed Objects for Very High
Speed Digital Subscriber Lines (VDSL)
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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 [T1E1311, T1E1011, T1E1013,
   ETSI2701, ETSI2702, ITU9931, ITU9971].

   This document specifies a MIB module in a manner that is compliant
   to the SMIv2 (STD 58 [RFC2578, RFC2579, RFC2580]).

Table of Contents

1. The SNMP Management Framework

The SNMP Management Framework presently consists of five major
components:

o   An overall architecture, described in RFC 2571 [RFC2571].

o   Mechanisms for describing and naming objects and events for the
     purpose of management. The first version of this Structure of
     Management Information (SMI) is called SMIv1 and described in
     STD 16 [RFC1155, RFC1212] and RFC 1215 [RFC1215]. The second
     version, called SMIv2, is described in STD 58 [RFC2578, RFC2579,
     RFC2580].

o   Message protocols for transferring management information. The
     first version of the SNMP message protocol is called SNMPv1 and
     described in STD 15 [RFC1157]. A second version of the SNMP
     message protocol, which is not an Internet standards track
     protocol, is called SNMPv2c and described in RFC 1901 [RFC1901]
     and RFC 1906 [RFC1906]. The third version of the message
     protocol is called SNMPv3 and described in RFC 1906 [RFC1906],
     RFC 2572 [RFC2572] and RFC 2574 [RFC2574].

o   Protocol operations for accessing management information. The
     first set of protocol operations and associated PDU formats is
     described in STD 15 [RFC1157]. A second set of protocol
     operations and associated PDU formats is described in RFC 1905

[RFC1905].

   o   A set of fundamental applications described in RFC 2573 [RFC2573]
       and the view-based access control mechanism described in RFC

   2575 [RFC2575].

   A more detailed introduction to the current SNMP Management Framework
   can be found in RFC 2570 [RFC2570].

   Managed objects are accessed via a virtual information store, termed
   the Management Information Base or MIB. Objects in the MIB are
   defined using the mechanisms defined in the SMI.

   This memo specifies a MIB module that is compliant to the SMIv2. The
   textual conventions used in this MIB module cannot be translated
   to SMIv1 since the Counter64 type does not exist in SMIv1.

   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 RFC 2119
   [RFC2119].

2. Overview

   This document describes an SNMP MIB 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 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 to other MIBs

   This section outlines the relationship of this MIB with other MIBs
   described in RFCs. Specifically, IF-MIB as presented 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 such 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),
                            interleaved(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

2.2.1 Naming Conventions

    A. Vtuc -- (VTUC) modem at near (Central) end of line
    B. Vtur -- (VTUR) modem 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 -- interval of Seconds in which xxx occurs
               (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 modem

vtur(2) -- remote site modem

2.3 **Structure**

The MIB is structured into 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
interleaved(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..1)

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

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

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

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

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

                 Figure 2: Table Relationships

[2.3.1](#) Line Topology

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

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

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

        +-------+                     +-------+
        |       |                     |       |
        | Vtuc  +------------------+  Vtur |
        |       |                     |       |
        +-------+                     +-------+
```
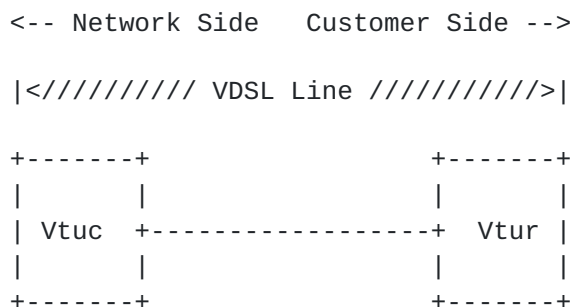
            Figure 3: General topology for a VDSL Line

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. The HC-PerfHist-TC-MIB is a work-in-progress,
   but simply defines 64-bit versions of the textual conventions
   found in RFC 2493 [RFC2493].

   There is no requirement for an agent to ensure a fixed relationship
   between the start of a fifteen minute 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 an Vtu is reinitialized, only when the
   agent is reset or reinitialized (or under specific request outside
   the scope of this MIB).

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:

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 modems. These profiles
     are defined in the vdslLineAlarmConfProfileTable.

One or more lines may be configured to share parameters of a single
profile by setting its 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.

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 [RFC2863]) 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) occurs. The corresponding linkUp notification MAY be
sent when all link failure conditions are cleared.

The vdslCurrStatus is a bitmask representing all outstanding error
conditions associated with a particular VDSL modem. Note that since

status of remote modems is obtained via the EOC, this information
may be unavailable for units that are unreachable via 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 counter 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 objects defined in this MIB which may be set (read-write or
read-create), should be stored persistently. Following is an
exhaustive list of these persistent objects:

        vdslLineConfProfile
        vdslLineAlarmConfProfile
        vdslLineConfProfileName
        vdslLineConfDownstreamRateMode
        vdslLineConfUpstreamRateMode
        vdslLineConfDownstreamMaxPwr
        vdslLineConfUpstreamMaxPwr
        vdslLineConfDownstreamMaxSnrMgn
        vdslLineConfDownstreamMinSnrMgn
        vdslLineConfDownstreamTargetSnrMgn
        vdslLineConfUpstreamMaxSnrMgn
        vdslLineConfUpstreamMinSnrMgn
        vdslLineConfUpstreamTargetSnrMgn
        vdslLineConfDownstreamFastMaxDataRate
        vdslLineConfDownstreamFastMinDataRate
        vdslLineConfDownstreamSlowMaxDataRate
        vdslLineConfDownstreamSlowMinDataRate
        vdslLineConfUpstreamFastMaxDataRate
        vdslLineConfUpstreamFastMinDataRate
        vdslLineConfUpstreamSlowMaxDataRate
        vdslLineConfUpstreamSlowMinDataRate
        vdslLineConfDownstreamRateRatio
        vdslLineConfUpstreamRateRatio
        vdslLineConfDownstreamMaxInterDelay

```
        vdslLineConfUpstreamMaxInterDelay
        vdslLineConfDownstreamPboControl
        vdslLineConfUpstreamPboControl
        vdslLineConfDownstreamPboLevel
        vdslLineConfUpstreamPboLevel
```

        vdslLineConfDeploymentScenario
        vdslLineConfAdslPresence
        vdslLineConfApplicableStandard
        vdslLineConfBandPlan
        vdslLineConfBandPlanFx
        vdslLineConfBandU0Usage
        vdslLineConfUpstreamPsdTemplate
        vdslLineConfDownstreamPsdTemplate
        vdslLineConfHamBandMask
        vdslLineConfCustomNotch1Start
        vdslLineConfCustomNotch1Stop
        vdslLineConfCustomNotch2Start
        vdslLineConfCustomNotch2Stop
        vdslLineConfDownstreamTargetSlowBurstProtection
        vdslLineConfUpstreamTargetSlowBurstProtection
        vdslLineConfDownstreamMaxFastFecOverhead
        vdslLineConfUpstreamMaxFastFecOverhead
        vdslLineConfProfileRowStatus
        vdslLineAlarmConfProfileName
        vdslThresh15MinLofs
        vdslThresh15MinLoss
        vdslThresh15MinLprs
        vdslThresh15MinLols
        vdslThresh15MinESs
        vdslThresh15MinSESs
        vdslThresh15MinUASs
        vdslInitFailureNotificationEnable
        vdslLineAlarmConfProfileRowStatus

   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.

3. Conformance and Compliance

   For VDSL lines, the following group is mandatory:

      - vdslGroup

4. Definitions

   VDSL-LINE-MIB DEFINITIONS ::= BEGIN

   IMPORTS

   MODULE-IDENTITY,
   OBJECT-TYPE,
   Counter64,
   Gauge32,

```
        Integer32,
        Unsigned32,
        NOTIFICATION-TYPE,
        transmission                    FROM SNMPv2-SMI
        TEXTUAL-CONVENTION,
```

```
    RowStatus,
    TruthValue                    FROM SNMPv2-TC
    HCPerfValidIntervals,
    HCPerfInvalidIntervals,
    HCPerfTimeElapsed,
    HCPerfIntervalThreshold,
    HCPerfCurrentCount,
    HCPerfIntervalCount           FROM HC-PerfHist-TC-MIB
    MODULE-COMPLIANCE,
    OBJECT-GROUP,
    NOTIFICATION-GROUP            FROM SNMPv2-CONF
    ifIndex                       FROM IF-MIB
    SnmpAdminString               FROM SNMP-FRAMEWORK-MIB;


vdslMIB MODULE-IDENTITY
    LAST-UPDATED "200305010000Z" -- May 1, 2003
    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 modems at each end of the VDSL line.  Each such line has
        an entry in an ifTable which may include multiple modem 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) modem at near (Central) end of line
            Vtur -- (VTUR) modem at Remote end of line
            Vtu -- One of either Vtuc or Vtur
            Curr -- Current
            Prev -- Previous
            Atn -- Attenuation
            ES   -- Errored Second.
            LCS -- Line Code Specific
            Lof -- Loss of Frame
            Lol -- Loss of Link
            Los -- Loss of Signal
            Lpr -- Loss of Power
            xxxs -- interval of Seconds in which xxx occurs
                    (e.g., xxx=Lof, Los, Lpr)
            Max -- Maximum
            Mgn -- Margin
            Min -- Minimum
            Psd -- Power Spectral Density
            Snr -- Signal to Noise Ratio
            Tx   -- Transmit
            Blks -- Blocks
            "
    REVISION "200111010000Z" -- November 1, 2001
    DESCRIPTION "Initial draft."

    REVISION "200203310000Z" -- March 31, 2002
    DESCRIPTION "Added R. Abbi as co-author."

    REVISION "200204090000Z" -- April 9, 2002
    DESCRIPTION "Removed use of IMPLIED profile indices."

    REVISION "200206160000Z" -- June 16, 2002
    DESCRIPTION "Revised per input from DSL Forum."

    REVISION "200209230000Z" -- September 23, 2002
    DESCRIPTION "Revised per more input from DSL Forum."

    REVISION "200210150000Z" -- October 15, 2002
    DESCRIPTION "Modified per input from Randy Presuhn and
                 Moti Morgenstern."

    REVISION "200210300000Z" -- October 30, 2002

```
    DESCRIPTION "Modified per input from Umberto Bonollo
                and Travis Levin."

    REVISION "200212300000Z" -- December 30, 2002
    DESCRIPTION "Changed profile indices to strings."
```

      REVISION "200304180000Z" -- April 18, 2003
      DESCRIPTION "Brought into conformance with DSLF TR-057."

      REVISION "200305010000Z" -- May 1, 2003
      DESCRIPTION "Added vdslLineConfDownstreamTargetSlowBurstProtection,
                   vdslLineConfUpstreamTargetSlowBurstProtection,
                   vdslLineConfDownstreamMaxFastFecOverhead,
                   vdslLineConfUpstreamMaxFastFecOverhead,
                   vdslChanCurrTxSlowBurstProtection,
                   vdslChanCurrTxFastFecOverhead.

                   Changed 1024 to 1000 (1kbps = 1000 bps) for objects
                   related to transmission speeds."
      ::= { transmission xxxx }

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

      VdslLineEntity ::= TEXTUAL-CONVENTION
          STATUS   current
          DESCRIPTION
              "Identifies a modem as being either Vtuc or Vtur. A
              VDSL line consists of two modems, a Vtuc and a Vtur."
          SYNTAX INTEGER
              {
              vtuc(1), -- central site modem
              vtur(2) -- remote site modem
              }

      --
      -- 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),         -- fast channel only
            slowOnly(3),         -- slow channel only
            either(4),           -- either fast or slow channel exist
            both(5)              -- both fast and slow 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.

In the case that the line is channelized, the manager can use the ifStackTable to determine the ifIndex for the associated channel(s).

            Note that slow and interleaved refer to the same
            channel."
        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."
        ::= { 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."
        ::= { 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,
            vdslInvSerialNumber                 SnmpAdminString,
            vdslInvVendorID                     SnmpAdminString,
```

```
            vdslInvVersionNumber                      SnmpAdminString,
            vdslCurrSnrMgn                            Integer32,
            vdslCurrAtn                               Gauge32,
            vdslCurrStatus                            BITS,
            vdslCurrOutputPwr                         Integer32,
            vdslCurrAttainableRate                    Gauge32,
            vdslCurrLineRate                          Gauge32
            }

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


    vdslInvSerialNumber OBJECT-TYPE
        SYNTAX        SnmpAdminString(SIZE (0..32))
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The vendor specific string that identifies the
            vendor equipment."
        REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdslPhysEntry 2 }


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


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

```
vdslCurrSnrMgn 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 +31.75dB."
         REFERENCE   "T1E1.4/2000-009R3"   -- Part 1, common spec
          ::= { vdslPhysEntry 5 }

    vdslCurrAtn 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 +63.75dB."
         REFERENCE   "T1E1.4/2000-009R3"   -- Part 1, common spec
          ::= { vdslPhysEntry 6 }

    vdslCurrStatus 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 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 }

   vdslCurrOutputPwr 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 }

   vdslCurrAttainableRate 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 vdslCurrLineRate.
         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 }

    vdslCurrLineRate 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 vdslCurrAttainableRate.  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,
              vdslChanCurrTxSlowBurstProtection      Gauge32,
              vdslChanCurrTxFastFecOverhead          Gauge32
              }

     vdslChanInterleaveDelay OBJECT-TYPE
          SYNTAX       Gauge32
          UNITS        "ms"
          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
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), use
        noSuchObject."
    REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
    ::= { vdslChanEntry 1 }


vdslChanCrcBlockLength OBJECT-TYPE
    SYNTAX        Gauge32
    UNITS         "byte"
    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 }


vdslChanCurrTxSlowBurstProtection 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 }


vdslChanCurrTxFastFecOverhead 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
            {
            vdslPerfValidIntervals            HCPerfValidIntervals,
            vdslPerfInvalidIntervals          HCPerfInvalidIntervals,
            vdslPerfLofs                      Counter64,
            vdslPerfLoss                      Counter64,
            vdslPerfLprs                      Counter64,
            vdslPerfLols                      Counter64,
            vdslPerfESs                       Counter64,
            vdslPerfSESs                      Counter64,
            vdslPerfUASs                      Counter64,
            vdslPerfInits                     Counter64,
            vdslPerfCurr15MinTimeElapsed      HCPerfTimeElapsed,
            vdslPerfCurr15MinLofs             HCPerfCurrentCount,
            vdslPerfCurr15MinLoss             HCPerfCurrentCount,
            vdslPerfCurr15MinLprs             HCPerfCurrentCount,
            vdslPerfCurr15MinLols             HCPerfCurrentCount,
            vdslPerfCurr15MinESs              HCPerfCurrentCount,
            vdslPerfCurr15MinSESs             HCPerfCurrentCount,
            vdslPerfCurr15MinUASs             HCPerfCurrentCount,
            vdslPerfCurr15MinInits            HCPerfCurrentCount,
            vdslPerf1DayValidIntervals        HCPerfValidIntervals,
            vdslPerf1DayInvalidIntervals      HCPerfInvalidIntervals,
            vdslPerfCurr1DayTimeElapsed       HCPerfTimeElapsed,
            vdslPerfCurr1DayLofs              Counter64,
```

```
        vdslPerfCurr1DayLoss              Counter64,
        vdslPerfCurr1DayLprs              Counter64,
        vdslPerfCurr1DayLols              Counter64,
        vdslPerfCurr1DayESs               Counter64,
        vdslPerfCurr1DaySESs              Counter64,
```

```
             vdslPerfCurr1DayUASs                Counter64,
             vdslPerfCurr1DayInits               Counter64
             }

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

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

     vdslPerfLofs OBJECT-TYPE
         SYNTAX       Counter64
         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 }

     vdslPerfLoss OBJECT-TYPE
         SYNTAX       Counter64
         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 }

     vdslPerfLprs OBJECT-TYPE
         SYNTAX       Counter64
         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 }
```

```
    vdslPerfLols OBJECT-TYPE
        SYNTAX        Counter64
        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 }

    vdslPerfESs OBJECT-TYPE
        SYNTAX        Counter64
        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 }

    vdslPerfSESs OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of Severely Errored Seconds since the unit was last
            reset."
        ::= { vdslPerfDataEntry 8 }

    vdslPerfUASs OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of Unavailable Seconds since the unit was last
            reset."
        ::= { vdslPerfDataEntry 9 }

    vdslPerfInits OBJECT-TYPE
        SYNTAX        Counter64
        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 }
```

```
vdslPerfCurr15MinTimeElapsed OBJECT-TYPE
    SYNTAX        HCPerfTimeElapsed
    UNITS         "seconds"
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "Total elapsed seconds in this interval."
    ::= { vdslPerfDataEntry 11 }

vdslPerfCurr15MinLofs 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 }

vdslPerfCurr15MinLoss 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 }

vdslPerfCurr15MinLprs 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 }

vdslPerfCurr15MinLols 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 }


 vdslPerfCurr15MinESs 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 }


     vdslPerfCurr15MinSESs OBJECT-TYPE
         SYNTAX       HCPerfCurrentCount
         UNITS        "seconds"
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
             "Count of Severely Errored Seconds during this interval."
         ::= { vdslPerfDataEntry 17 }


     vdslPerfCurr15MinUASs OBJECT-TYPE
         SYNTAX       HCPerfCurrentCount
         UNITS        "seconds"
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
             "Count of Unavailable Seconds during this interval."
         ::= { vdslPerfDataEntry 18 }


     vdslPerfCurr15MinInits OBJECT-TYPE
         SYNTAX       HCPerfCurrentCount
         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 }

     vdslPerf1DayValidIntervals OBJECT-TYPE
         SYNTAX       HCPerfValidIntervals
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
             "Valid Intervals per definition found in
             HC-PerfHist-TC-MIB."
         ::= { vdslPerfDataEntry 20 }


     vdslPerf1DayInvalidIntervals OBJECT-TYPE
```

```
        SYNTAX          HCPerfInvalidIntervals
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
            "Invalid Intervals per definition found in
```

```
             HC-PerfHist-TC-MIB."
        ::= { vdslPerfDataEntry 21 }


    vdslPerfCurr1DayTimeElapsed 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 }


    vdslPerfCurr1DayLofs OBJECT-TYPE
        SYNTAX        Counter64
        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 }


    vdslPerfCurr1DayLoss OBJECT-TYPE
        SYNTAX        Counter64
        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 }


    vdslPerfCurr1DayLprs OBJECT-TYPE
        SYNTAX        Counter64
        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 }


    vdslPerfCurr1DayLols OBJECT-TYPE
        SYNTAX        Counter64
        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 }


vdslPerfCurr1DayESs OBJECT-TYPE
```

```
     SYNTAX        Counter64
     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 }

vdslPerfCurr1DaySESs OBJECT-TYPE
     SYNTAX        Counter64
     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 }

vdslPerfCurr1DayUASs OBJECT-TYPE
     SYNTAX        Counter64
     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 }

vdslPerfCurr1DayInits OBJECT-TYPE
     SYNTAX        Counter64
     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,
                vdslIntervalNumber }
        ::= { vdslPerfIntervalTable 1 }

    VdslPerfIntervalEntry ::=
        SEQUENCE
            {
            vdslIntervalNumber                   Unsigned32,
            vdslIntervalLofs                 HCPerfIntervalCount,
            vdslIntervalLoss                 HCPerfIntervalCount,
            vdslIntervalLprs                 HCPerfIntervalCount,
            vdslIntervalLols                 HCPerfIntervalCount,
            vdslIntervalESs                  HCPerfIntervalCount,
            vdslIntervalSESs                 HCPerfIntervalCount,
            vdslIntervalUASs                 HCPerfIntervalCount,
            vdslIntervalInits                HCPerfIntervalCount
            }

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

    vdslIntervalLofs 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 }

    vdslIntervalLoss 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 }

        vdslIntervalLprs 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 }

    vdslIntervalLols 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 }

    vdslIntervalESs 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 }

    vdslIntervalSESs OBJECT-TYPE
        SYNTAX        HCPerfIntervalCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Count of Severely Errored Seconds in the interval."
        ::= { vdslPerfIntervalEntry 7 }

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

```
vdslIntervalInits 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 }


    vdsl1DayIntervalTable OBJECT-TYPE
        SYNTAX       SEQUENCE OF Vdsl1DayIntervalEntry
        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 }


    vdsl1DayIntervalEntry OBJECT-TYPE
        SYNTAX       Vdsl1DayIntervalEntry
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION
            "An entry in the vdsl1DayIntervalTable."
        INDEX { ifIndex,
                vdslPhysSide,
                vdsl1DayIntervalNumber }
        ::= { vdsl1DayIntervalTable 1 }


    Vdsl1DayIntervalEntry ::=
        SEQUENCE
        {
        vdsl1DayIntervalNumber                 Unsigned32,
        vdsl1DayIntervalMoniSecs               HCPerfTimeElapsed,
        vdsl1DayIntervalLofs                   Counter64,
        vdsl1DayIntervalLoss                   Counter64,
        vdsl1DayIntervalLprs                   Counter64,
        vdsl1DayIntervalLols                   Counter64,
        vdsl1DayIntervalESs                    Counter64,
        vdsl1DayIntervalSESs                   Counter64,
        vdsl1DayIntervalUASs                   Counter64,
        vdsl1DayIntervalInits                  Counter64
        }


    vdsl1DayIntervalNumber OBJECT-TYPE
        SYNTAX       Unsigned32 (1..30)
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION
            "History Data Interval number. Interval 1 is the the most
```

```
        recent previous day; interval 30 is 30 days ago. Intervals
        2..30 are optional."
    ::= { vdsl1DayIntervalEntry 1 }


 vdsl1DayIntervalMoniSecs 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."
        ::= { vdsl1DayIntervalEntry 2 }

    vdsl1DayIntervalLofs OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
             "Count of Loss of Frame (LOF) Seconds during the 1-day
              interval as measured by vdsl1DayIntervalMoniSecs."
        REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdsl1DayIntervalEntry 3 }

    vdsl1DayIntervalLoss OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
             "Count of Loss of Signal (LOS) Seconds during the 1-day
              interval as measured by vdsl1DayIntervalMoniSecs."
        REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdsl1DayIntervalEntry 4 }

    vdsl1DayIntervalLprs OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
             "Count of Loss of Power (LPR) Seconds during the 1-day
              interval as measured by vdsl1DayIntervalMoniSecs."
        REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdsl1DayIntervalEntry 5 }

    vdsl1DayIntervalLols OBJECT-TYPE
        SYNTAX        Counter64
        UNITS         "seconds"
        MAX-ACCESS    read-only
```

```
     STATUS          current
     DESCRIPTION
          "Count of Loss of Link (LOL) Seconds during the 1-day
          interval as measured by vdsl1DayIntervalMoniSecs."
     ::= { vdsl1DayIntervalEntry 6 }
```

```
    vdsl1DayIntervalESs OBJECT-TYPE
        SYNTAX       Counter64
        UNITS        "seconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Count of Errored Seconds (ES) during the 1-day
             interval as measured by vdsl1DayIntervalMoniSecs."
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdsl1DayIntervalEntry 7 }

    vdsl1DayIntervalSESs OBJECT-TYPE
        SYNTAX       Counter64
        UNITS        "seconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Count of Severely Errored Seconds (SES) during the 1-day
             interval as measured by vdsl1DayIntervalMoniSecs."
        ::= { vdsl1DayIntervalEntry 8 }

    vdsl1DayIntervalUASs OBJECT-TYPE
        SYNTAX       Counter64
        UNITS        "seconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Count of Unavailable Seconds (UAS) during the 1-day
             interval as measured by vdsl1DayIntervalMoniSecs."
        ::= { vdsl1DayIntervalEntry 9 }

    vdsl1DayIntervalInits OBJECT-TYPE
        SYNTAX       Counter64
        UNITS        "seconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Count of the line initialization attempts during the
            1-day interval as measured by vdsl1DayIntervalMoniSecs.
            This count includes both successful and failed attempts."
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdsl1DayIntervalEntry 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
            {
            vdslChanPerfValidIntervals          HCPerfValidIntervals,
            vdslChanPerfInvalidIntervals        HCPerfInvalidIntervals,
            vdslChanCorrectedOctets              Counter64,
            vdslChanUncorrectableBlks            Counter64,
            vdslChanPerfCurr15MinTimeElapsed    HCPerfTimeElapsed,
            vdslChanPerfCurr15MinCorrectedOctets   HCPerfCurrentCount,
            vdslChanPerfCurr15MinUncorrectableBlks HCPerfCurrentCount,
            vdslChanPerf1DayValidIntervals         HCPerfValidIntervals,
            vdslChanPerf1DayInvalidIntervals    HCPerfInvalidIntervals,
            vdslChanPerfCurr1DayTimeElapsed     HCPerfTimeElapsed,
            vdslChanPerfCurr1DayCorrectedOctets HCPerfCurrentCount,
            vdslChanPerfCurr1DayUncorrectableBlks   HCPerfCurrentCount
            }

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

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

    vdslChanCorrectedOctets OBJECT-TYPE
        SYNTAX          Counter64
        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 }
```

```
     vdslChanUncorrectableBlks OBJECT-TYPE
         SYNTAX         Counter64
         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 }


     vdslChanPerfCurr15MinTimeElapsed OBJECT-TYPE
         SYNTAX         HCPerfTimeElapsed
         UNITS          "seconds"
         MAX-ACCESS     read-only
         STATUS         current
         DESCRIPTION
             "Total elapsed seconds in this interval."
         ::= { vdslChanPerfDataEntry 5 }


     vdslChanPerfCurr15MinCorrectedOctets OBJECT-TYPE
         SYNTAX         HCPerfCurrentCount
         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 }


     vdslChanPerfCurr15MinUncorrectableBlks OBJECT-TYPE
         SYNTAX         HCPerfCurrentCount
         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 }


     vdslChanPerf1DayValidIntervals OBJECT-TYPE
         SYNTAX         HCPerfValidIntervals
         MAX-ACCESS     read-only
         STATUS         current
         DESCRIPTION
             "Valid Intervals per definition found in
             HC-PerfHist-TC-MIB."
         ::= { vdslChanPerfDataEntry 8 }


     vdslChanPerf1DayInvalidIntervals OBJECT-TYPE
         SYNTAX         HCPerfInvalidIntervals
         MAX-ACCESS     read-only
```

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

     vdslChanPerfCurr1DayTimeElapsed 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 }

     vdslChanPerfCurr1DayCorrectedOctets OBJECT-TYPE
         SYNTAX   HCPerfCurrentCount
         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 }

     vdslChanPerfCurr1DayUncorrectableBlks OBJECT-TYPE
         SYNTAX   HCPerfCurrentCount
         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,
         vdslChanIntervalCorrectedOctets       HCPerfIntervalCount,
         vdslChanIntervalUncorrectableBlks     HCPerfIntervalCount
         }

  vdslChanIntervalNumber OBJECT-TYPE
      SYNTAX        Unsigned32 (0..96)
      MAX-ACCESS    not-accessible
      STATUS        current
      DESCRIPTION
          "Performance Data Interval number 1 is the the most
          recent previous interval; interval 96 is 24 hours ago.
          Intervals 2..96 are optional."
      ::= { vdslChanIntervalEntry 1 }


  vdslChanIntervalCorrectedOctets OBJECT-TYPE
      SYNTAX        HCPerfIntervalCount
      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 }


  vdslChanIntervalUncorrectableBlks OBJECT-TYPE
      SYNTAX        HCPerfIntervalCount
      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,
        vdslChan1DayIntervalCorrectedOctets   HCPerfCurrentCount,
        vdslChan1DayIntervalUncorrectableBlks HCPerfCurrentCount
        }

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

    vdslChan1DayIntervalCorrectedOctets OBJECT-TYPE
        SYNTAX         HCPerfCurrentCount
        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 }

    vdslChan1DayIntervalUncorrectableBlks OBJECT-TYPE
        SYNTAX         HCPerfCurrentCount
        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."
         ::= { 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,
             vdslLineConfDownstreamRateMode          INTEGER,
             vdslLineConfUpstreamRateMode            INTEGER,
             vdslLineConfDownstreamMaxPwr            Unsigned32,
             vdslLineConfUpstreamMaxPwr              Unsigned32,
             vdslLineConfDownstreamMaxSnrMgn         Unsigned32,
             vdslLineConfDownstreamMinSnrMgn         Unsigned32,
             vdslLineConfDownstreamTargetSnrMgn      Unsigned32,
             vdslLineConfUpstreamMaxSnrMgn           Unsigned32,
             vdslLineConfUpstreamMinSnrMgn           Unsigned32,
             vdslLineConfUpstreamTargetSnrMgn        Unsigned32,
             vdslLineConfDownstreamFastMaxDataRate   Unsigned32,
             vdslLineConfDownstreamFastMinDataRate   Unsigned32,
             vdslLineConfDownstreamSlowMaxDataRate   Unsigned32,
             vdslLineConfDownstreamSlowMinDataRate   Unsigned32,
             vdslLineConfUpstreamFastMaxDataRate     Unsigned32,
             vdslLineConfUpstreamFastMinDataRate     Unsigned32,
             vdslLineConfUpstreamSlowMaxDataRate     Unsigned32,
```

```
            vdslLineConfUpstreamSlowMinDataRate    Unsigned32,
            vdslLineConfDownstreamRateRatio        Unsigned32,
            vdslLineConfUpstreamRateRatio          Unsigned32,
            vdslLineConfDownstreamMaxInterDelay    Unsigned32,
            vdslLineConfUpstreamMaxInterDelay      Unsigned32,
```

```
        vdslLineConfDownstreamPboControl         INTEGER,
        vdslLineConfUpstreamPboControl           INTEGER,
        vdslLineConfDownstreamPboLevel           Unsigned32,
        vdslLineConfUpstreamPboLevel             Unsigned32,
        vdslLineConfDeploymentScenario           INTEGER,
        vdslLineConfAdslPresence                 INTEGER,
        vdslLineConfApplicableStandard           INTEGER,
        vdslLineConfBandPlan                     INTEGER,
        vdslLineConfBandPlanFx                   Unsigned32,
        vdslLineConfBandU0Usage                  INTEGER,
        vdslLineConfUpstreamPsdTemplate          INTEGER,
        vdslLineConfDownstreamPsdTemplate        INTEGER,
        vdslLineConfHamBandMask                  BITS,
        vdslLineConfCustomNotch1Start            Unsigned32,
        vdslLineConfCustomNotch1Stop             Unsigned32,
        vdslLineConfCustomNotch2Start            Unsigned32,
        vdslLineConfCustomNotch2Stop             Unsigned32,
        vdslLineConfDownstreamTargetSlowBurstProtection
                                                 Unsigned32,
        vdslLineConfUpstreamTargetSlowBurstProtection
                                                 Unsigned32,
        vdslLineConfDownstreamMaxFastFecOverhead
                                                 Unsigned32,
        vdslLineConfUpstreamMaxFastFecOverhead
                                                 Unsigned32,
        vdslLineConfProfileRowStatus             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 }

vdslLineConfDownstreamRateMode OBJECT-TYPE
    SYNTAX       INTEGER
                 {
                 manual(1),
                 adaptAtInit(2)
                 }
    MAX-ACCESS   read-create
    STATUS       current
```

```
    DESCRIPTION
        "Specifies the rate selection behaviour for the line
        in the downstream direction."
    ::= { vdslLineConfProfileEntry 2 }
```

```
    vdslLineConfUpstreamRateMode OBJECT-TYPE
        SYNTAX       INTEGER
                     {
                     manual(1),
                     adaptAtInit(2)
                     }
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "Specifies the rate selection behaviour for the line
            in the upstream direction."
        ::= { vdslLineConfProfileEntry 3 }


    vdslLineConfDownstreamMaxPwr 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..14.5dBm."
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdslLineConfProfileEntry 4 }


    vdslLineConfUpstreamMaxPwr 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..14.5dBm."
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdslLineConfProfileEntry 5 }


    vdslLineConfDownstreamMaxSnrMgn 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..31.75 dB."
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdslLineConfProfileEntry 6 }


    vdslLineConfDownstreamMinSnrMgn 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..31.75 dB."
```

```
          REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
          ::= { vdslLineConfProfileEntry 7 }


     vdslLineConfDownstreamTargetSnrMgn 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..31.75 dB.
              This is the Noise Margin the modems must achieve with a
              BER of 10-7 or better to successfully complete
              initialization."
          REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
          ::= { vdslLineConfProfileEntry 8 }


     vdslLineConfUpstreamMaxSnrMgn 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..31.75 dB."
          REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
          ::= { vdslLineConfProfileEntry 9 }


     vdslLineConfUpstreamMinSnrMgn 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..31.75 dB."
          REFERENCE     "T1E1.4/2000-009R3"    -- Part 1, common spec
          ::= { vdslLineConfProfileEntry 10 }


     vdslLineConfUpstreamTargetSnrMgn 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..31.75 dB.  This
              is the Noise Margin the modems must achieve with a BER of
              10-7 or better to successfully complete initialization."
```

```
        REFERENCE    "T1E1.4/2000-009R3"    -- Part 1, common spec
        ::= { vdslLineConfProfileEntry 11 }

    vdslLineConfDownstreamFastMaxDataRate 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."
        ::= { vdslLineConfProfileEntry 12 }

    vdslLineConfDownstreamFastMinDataRate 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."
        ::= { vdslLineConfProfileEntry 13 }

    vdslLineConfDownstreamSlowMaxDataRate 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."
        ::= { vdslLineConfProfileEntry 14 }

    vdslLineConfDownstreamSlowMinDataRate 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."
        ::= { vdslLineConfProfileEntry 15 }

    vdslLineConfUpstreamFastMaxDataRate 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."
        ::= { vdslLineConfProfileEntry 16 }

    vdslLineConfUpstreamFastMinDataRate 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."
          ::= { vdslLineConfProfileEntry 17 }

      vdslLineConfUpstreamSlowMaxDataRate 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."
          ::= { vdslLineConfProfileEntry 18 }

      vdslLineConfUpstreamSlowMinDataRate 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."
          ::= { vdslLineConfProfileEntry 19 }

      vdslLineConfDownstreamRateRatio 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."
          ::= { vdslLineConfProfileEntry 20 }

      vdslLineConfUpstreamRateRatio 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."
        ::= { vdslLineConfProfileEntry 21 }

    vdslLineConfDownstreamMaxInterDelay OBJECT-TYPE

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

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

    vdslLineConfDownstreamPboControl 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 modems which do not support downstream
            PBO control, this object MUST be fixed at disabled(1)."
        ::= { vdslLineConfProfileEntry 24 }

    vdslLineConfUpstreamPboControl 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 modems which do not support upstream
            PBO control, this object MUST be fixed at disabled(1)."
        ::= { vdslLineConfProfileEntry 25 }
```

```
vdslLineConfDownstreamPboLevel 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 vdslLineConfDownstreamPboControl = manual(3)."
        ::= { vdslLineConfProfileEntry 26 }

    vdslLineConfUpstreamPboLevel 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 vdslLineConfUpstreamPboControl = manual(3)."
        ::= { 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."
        ::= { 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."
        ::= { 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."
        ::= { 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."
        ::= { 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)."
        ::= { vdslLineConfProfileEntry 32 }

    vdslLineConfBandU0Usage OBJECT-TYPE
```

```
        SYNTAX      INTEGER
                    {
                    unused(1),
                    upstream(2),
                    downstream(3)
```

```
                    }
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "Defines the VDSL link use of the frequency range
            [25kHz - 138kHz] (U0)."
        ::= { vdslLineConfProfileEntry 33 }

    vdslLineConfUpstreamPsdTemplate 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."
        ::= { vdslLineConfProfileEntry 34 }

    vdslLineConfDownstreamPsdTemplate 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."
        ::= { 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.

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

```
Band   Start Frequency      Stop Frequecy
----   ------------------   -------------------------------
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."
    ::= { vdslLineConfProfileEntry 36 }

vdslLineConfCustomNotch1Start OBJECT-TYPE
    SYNTAX       Unsigned32
    UNITS        "kHz"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the start frequency of amateur radio notch 1."
    ::= { vdslLineConfProfileEntry 37 }

vdslLineConfCustomNotch1Stop OBJECT-TYPE
    SYNTAX       Unsigned32
    UNITS        "kHz"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the stop frequency of amateur radio notch 1."
    ::= { vdslLineConfProfileEntry 38 }

vdslLineConfCustomNotch2Start OBJECT-TYPE
    SYNTAX       Unsigned32
    UNITS        "kHz"
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Specifies the start frequency of amateur radio notch 2."
    ::= { vdslLineConfProfileEntry 39 }

vdslLineConfCustomNotch2Stop OBJECT-TYPE
```

```
SYNTAX        Unsigned32
UNITS         "kHz"
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
```

```
             "Specifies the stop frequency of amateur radio notch 2."
         ::= { vdslLineConfProfileEntry 40 }


    vdslLineConfDownstreamTargetSlowBurstProtection 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
         ::= { vdslLineConfProfileEntry 41 }


    vdslLineConfUpstreamTargetSlowBurstProtection 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
         ::= { vdslLineConfProfileEntry 42 }


    vdslLineConfDownstreamMaxFastFecOverhead 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."
         ::= { vdslLineConfProfileEntry 43 }


    vdslLineConfUpstreamMaxFastFecOverhead 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."
         ::= { vdslLineConfProfileEntry 44 }


    vdslLineConfProfileRowStatus 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."
        ::= { vdslLineConfProfileEntry 45 }


    --
    -- 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."
        ::= { 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,
            vdslThresh15MinLofs                 HCPerfIntervalThreshold,
            vdslThresh15MinLoss                 HCPerfIntervalThreshold,
            vdslThresh15MinLprs                 HCPerfIntervalThreshold,
            vdslThresh15MinLols                 HCPerfIntervalThreshold,
```

```
        vdslThresh15MinESs                   HCPerfIntervalThreshold,
        vdslThresh15MinSESs                  HCPerfIntervalThreshold,
        vdslThresh15MinUASs                  HCPerfIntervalThreshold,
        vdslInitFailureNotificationEnable  TruthValue,
        vdslLineAlarmConfProfileRowStatus  RowStatus
```

```
           }

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

    vdslThresh15MinLofs 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."
        ::= { vdslLineAlarmConfProfileEntry 2 }

    vdslThresh15MinLoss 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."
        ::= { vdslLineAlarmConfProfileEntry 3 }

    vdslThresh15MinLprs 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."
        ::= { vdslLineAlarmConfProfileEntry 4 }


    vdslThresh15MinLols 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."
        ::= { vdslLineAlarmConfProfileEntry 5 }


    vdslThresh15MinESs 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."
        ::= { vdslLineAlarmConfProfileEntry 6 }


    vdslThresh15MinSESs 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."
        ::= { vdslLineAlarmConfProfileEntry 7 }

    vdslThresh15MinUASs 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."
        ::= { vdslLineAlarmConfProfileEntry 8 }

    vdslInitFailureNotificationEnable 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."
        ::= { vdslLineAlarmConfProfileEntry 9 }

    vdslLineAlarmConfProfileRowStatus 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."
        ::= { vdslLineAlarmConfProfileEntry 10 }

    -- Notification definitions

    vdslNotifications OBJECT IDENTIFIER ::= { vdslLineMib 0 }

    vdslPerfLofsThreshNotification NOTIFICATION-TYPE
        OBJECTS        {
                        vdslPerfCurr15MinLofs,
                        vdslThresh15MinLofs
                        }
```

```
    STATUS      current
    DESCRIPTION
        "Loss of Framing 15-minute interval threshold reached."
    ::= { vdslNotifications 1 }
```

```
    vdslPerfLossThreshNotification NOTIFICATION-TYPE
        OBJECTS         {
                        vdslPerfCurr15MinLoss,
                        vdslThresh15MinLoss
                        }
        STATUS          current
        DESCRIPTION
            "Loss of Signal 15-minute interval threshold reached."
        ::= { vdslNotifications 2 }

    vdslPerfLprsThreshNotification NOTIFICATION-TYPE
        OBJECTS         {
                        vdslPerfCurr15MinLprs,
                        vdslThresh15MinLprs
                        }
        STATUS          current
        DESCRIPTION
            "Loss of Power 15-minute interval threshold reached."
        ::= { vdslNotifications 3 }

    vdslPerfLolsThreshNotification NOTIFICATION-TYPE
        OBJECTS         {
                        vdslPerfCurr15MinLols,
                        vdslThresh15MinLols
                        }
        STATUS          current
        DESCRIPTION
            "Loss of Link 15-minute interval threshold reached."
        ::= { vdslNotifications 4 }

    vdslPerfESsThreshNotification NOTIFICATION-TYPE
        OBJECTS         {
                        vdslPerfCurr15MinESs,
                        vdslThresh15MinESs
                        }
        STATUS          current
        DESCRIPTION
            "Errored Seconds 15-minute interval threshold reached."
        ::= { vdslNotifications 5 }

    vdslPerfSESsThreshNotification NOTIFICATION-TYPE
        OBJECTS         {
                        vdslPerfCurr15MinSESs,
                        vdslThresh15MinSESs
                        }
        STATUS          current
        DESCRIPTION
            "Severely Errored Seconds 15-minute interval threshold
            reached."
```

```
        ::= { vdslNotifications 6 }


    vdslPerfUASsThreshNotification NOTIFICATION-TYPE
        OBJECTS        {
                    vdslPerfCurr15MinUASs,
```

```
                    vdslThresh15MinUASs
                    }
    STATUS          current
    DESCRIPTION
        "Unavailable Seconds 15-minute interval threshold reached."
    ::= { vdslNotifications 7 }

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

vdslDownMinSnrMgnExceededNotification NOTIFICATION-TYPE
    OBJECTS         {
                    vdslCurrSnrMgn,
                    vdslLineConfDownstreamMinSnrMgn
                    }
    STATUS          current
    DESCRIPTION
        "The downstream Signal to Noise Margin fell below
        vdslLineConfDownstreamMinSnrMgn.    The object
        vdslCurrSnrMgn will contain the Signal to Noise
        margin as measured by the VTU-R."
    ::= { vdslNotifications 9 }

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

vdslUpMinSnrMgnExceededNotification NOTIFICATION-TYPE
    OBJECTS         {
                    vdslCurrSnrMgn,
```

```
                     vdslLineConfUpstreamMinSnrMgn
                     }
        STATUS        current
        DESCRIPTION
           "The upstream Signal to Noise Margin fell below
```

```
          vdslLineConfDownstreamMinSnrMgn.    The object
          vdslCurrSnrMgn will contain the Signal to Noise
          margin as measured by the VTU-C."
      ::= { vdslNotifications 11 }

  vdslInitFailureNotification NOTIFICATION-TYPE
      OBJECTS        {
                     vdslCurrStatus
                     }
      STATUS       current
      DESCRIPTION
          "Vtu initialization failed.  See vdslCurrStatus 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
          }
      ::= { vdslCompliances 1 }

  -- units of conformance

     vdslGroup OBJECT-GROUP
         OBJECTS
             {
             vdslLineCoding,
             vdslLineType,
             vdslLineConfProfile,
             vdslLineAlarmConfProfile,
             vdslInvSerialNumber,
             vdslInvVendorID,
             vdslInvVersionNumber,
             vdslCurrSnrMgn,
             vdslCurrAtn,
             vdslCurrStatus,
```

```
                vdslCurrOutputPwr,
                vdslCurrAttainableRate,
                vdslCurrLineRate,
                vdslChanInterleaveDelay,
                vdslChanCrcBlockLength,
```

```
                    vdslChanCurrTxRate,
                    vdslChanCurrTxSlowBurstProtection,
                    vdslChanCurrTxFastFecOverhead,
                    vdslPerfValidIntervals,
                    vdslPerfInvalidIntervals,
                    vdslPerfLofs,
                    vdslPerfLoss,
                    vdslPerfLprs,
                    vdslPerfLols,
                    vdslPerfESs,
                    vdslPerfSESs,
                    vdslPerfUASs,
                    vdslPerfInits,
                    vdslPerfCurr15MinTimeElapsed,
                    vdslPerfCurr15MinLofs,
                    vdslPerfCurr15MinLoss,
                    vdslPerfCurr15MinLprs,
                    vdslPerfCurr15MinLols,
                    vdslPerfCurr15MinESs,
                    vdslPerfCurr15MinSESs,
                    vdslPerfCurr15MinUASs,
                    vdslPerfCurr15MinInits,
                    vdslPerf1DayValidIntervals,
                    vdslPerf1DayInvalidIntervals,
                    vdslPerfCurr1DayTimeElapsed,
                    vdslPerfCurr1DayLofs,
                    vdslPerfCurr1DayLoss,
                    vdslPerfCurr1DayLprs,
                    vdslPerfCurr1DayLols,
                    vdslPerfCurr1DayESs,
                    vdslPerfCurr1DaySESs,
                    vdslPerfCurr1DayUASs,
                    vdslPerfCurr1DayInits,
                    vdslIntervalLofs,
                    vdslIntervalLoss,
                    vdslIntervalLprs,
                    vdslIntervalLols,
                    vdslIntervalESs,
                    vdslIntervalSESs,
                    vdslIntervalUASs,
                    vdslIntervalInits,
                    vdsl1DayIntervalMoniSecs,
                    vdsl1DayIntervalLofs,
                    vdsl1DayIntervalLoss,
                    vdsl1DayIntervalLprs,
                    vdsl1DayIntervalLols,
                    vdsl1DayIntervalESs,
                    vdsl1DayIntervalSESs,
                    vdsl1DayIntervalUASs,
```

```
                    vdsl1DayIntervalInits,
                    vdslChanPerfValidIntervals,
                    vdslChanPerfInvalidIntervals,
                    vdslChanCorrectedOctets,
                    vdslChanUncorrectableBlks,
```

```
                vdslChanPerfCurr15MinTimeElapsed,
                vdslChanPerfCurr15MinCorrectedOctets,
                vdslChanPerfCurr15MinUncorrectableBlks,
                vdslChanPerf1DayValidIntervals,
                vdslChanPerf1DayInvalidIntervals,
                vdslChanPerfCurr1DayTimeElapsed,
                vdslChanPerfCurr1DayCorrectedOctets,
                vdslChanPerfCurr1DayUncorrectableBlks,
                vdslChanIntervalCorrectedOctets,
                vdslChanIntervalUncorrectableBlks,
                vdslChan1DayIntervalMoniSecs,
                vdslChan1DayIntervalCorrectedOctets,
                vdslChan1DayIntervalUncorrectableBlks,
                vdslLineConfDownstreamRateMode,
                vdslLineConfUpstreamRateMode,
                vdslLineConfDownstreamMaxPwr,
                vdslLineConfUpstreamMaxPwr,
                vdslLineConfDownstreamMaxSnrMgn,
                vdslLineConfDownstreamMinSnrMgn,
                vdslLineConfDownstreamTargetSnrMgn,
                vdslLineConfUpstreamMaxSnrMgn,
                vdslLineConfUpstreamMinSnrMgn,
                vdslLineConfUpstreamTargetSnrMgn,
                vdslLineConfDownstreamFastMaxDataRate,
                vdslLineConfDownstreamFastMinDataRate,
                vdslLineConfDownstreamSlowMaxDataRate,
                vdslLineConfDownstreamSlowMinDataRate,
                vdslLineConfUpstreamFastMaxDataRate,
                vdslLineConfUpstreamFastMinDataRate,
                vdslLineConfUpstreamSlowMaxDataRate,
                vdslLineConfUpstreamSlowMinDataRate,
                vdslLineConfDownstreamRateRatio,
                vdslLineConfUpstreamRateRatio,
                vdslLineConfDownstreamMaxInterDelay,
                vdslLineConfUpstreamMaxInterDelay,
                vdslLineConfDownstreamPboControl,
                vdslLineConfUpstreamPboControl,
                vdslLineConfDownstreamPboLevel,
                vdslLineConfUpstreamPboLevel,
                vdslLineConfDeploymentScenario,
                vdslLineConfAdslPresence,
                vdslLineConfApplicableStandard,
                vdslLineConfBandPlan,
                vdslLineConfBandPlanFx,
                vdslLineConfBandU0Usage,
                vdslLineConfUpstreamPsdTemplate,
                vdslLineConfDownstreamPsdTemplate,
                vdslLineConfHamBandMask,
                vdslLineConfCustomNotch1Start,
```

```
            vdslLineConfCustomNotch1Stop,
            vdslLineConfCustomNotch2Start,
            vdslLineConfCustomNotch2Stop,
            vdslLineConfDownstreamTargetSlowBurstProtection,
            vdslLineConfUpstreamTargetSlowBurstProtection,
```

```
                vdslLineConfDownstreamMaxFastFecOverhead,
                vdslLineConfUpstreamMaxFastFecOverhead,
                vdslLineConfProfileRowStatus,
                vdslThresh15MinLofs,
                vdslThresh15MinLoss,
                vdslThresh15MinLprs,
                vdslThresh15MinLols,
                vdslThresh15MinESs,
                vdslThresh15MinSESs,
                vdslThresh15MinUASs,
                vdslInitFailureNotificationEnable,
                vdslLineAlarmConfProfileRowStatus
                }
            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,
                vdslDownMaxSnrMgnExceededNotification,
                vdslDownMinSnrMgnExceededNotification,
                vdslUpMaxSnrMgnExceededNotification,
                vdslUpMinSnrMgnExceededNotification,
                vdslInitFailureNotification
                }
            STATUS      current
            DESCRIPTION
                "This group supports notifications of significant
                 conditions associated with VDSL Lines."
        ::= { vdslGroups 2 }

    END
```

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Security Considerations

   There are a number of management objects defined in this MIB that
   have 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.

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.

For this reason, there are a number of managed objects in this MIB
that may contain sensitive information. These are:

        vdslThresh15MinLofs
        vdslThresh15MinLoss
        vdslThresh15MinLprs
        vdslThresh15MinLols
        vdslThresh15MinESs
        vdslThresh15MinSESs
        vdslThresh15MinUASs

It is thus important to control even GET access to these objects 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.

Further, notifications generated by agents implementing this MIB
will contain the above threshold information.

SNMPv1 by itself is not a secure environment. 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.

It is recommended that the implementers consider the security
features as provided by the SNMPv3 framework. Specifically, the use
of the User-based Security Model RFC 2574 [12] and the View-
based Access Control Model RFC 2575 [15] is recommended.

It is then a customer/user responsibility to ensure that the SNMP
entity giving access to an instance of this MIB, 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.

IANA Considerations

The VDSL-LINE-MIB MIB module requires the allocation of a single
object identifier for its MODULE-IDENTITY. IANA should allocate
this object identifier in the transmission subtree.

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