

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

Status of this Memo

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

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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.

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## 1. The Internet-Standard Management Framework

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

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

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

## 2. Overview

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

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

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

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

#### 2.1.1. General IF-MIB Integration (RFC 2863)

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

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

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

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

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

#### 2.1.2. Usage of ifTable

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

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

```
=====
```

ifIndex	Interface index.
ifDescr	See interfaces MIB [RFC2863].
ifType	vdsl(97), interleave(124), or fast(125)
ifSpeed	Set as appropriate.
ifPhysAddress	This object MUST have an octet string with zero length.
ifAdminStatus	See interfaces MIB [RFC2863].

ifOperStatus	See interfaces MIB [RFC2863].
ifLastChange	See interfaces MIB [RFC2863].
ifName	See interfaces MIB [RFC2863].
ifHighSpeed	Set as appropriate.
ifConnectorPresent	Set as appropriate.
ifLinkUpDownTrapEnable	Default to enabled(1).

=====

Figure 1: Use of ifTable Objects

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

## 2.2. Conventions used in the MIB Module

### 2.2.1. Naming Conventions

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

### 2.2.2. Textual Conventions

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

- o VdslLineCodingType :

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

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

- o VdslLineEntity :

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

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

### 2.3 Structure

The MIB is structured into the following MIB groups:

- o vdslGroup :

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

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

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

- vdslChanTable
- vdslChanPerfDataTable
- vdslChanPerfIntervalTable
- vdslChanPerf1DayIntervalTable

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

```

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

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

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

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

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

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

```

Figure 2: Table Relationships

o vdslNotificationGroup :

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

### 2.3.1. Line Topology

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

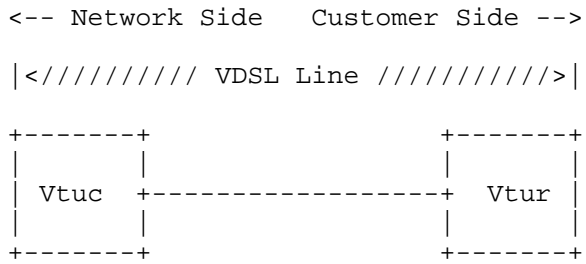


Figure 3: General topology for a VDSL Line

### 2.4. Counters, Interval Buckets and Thresholds

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

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

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

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

## 2.5. Profiles

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

The following profiles are used in this MIB module:

- o Line Configuration Profiles - Line configuration profiles contain parameters for configuring VDSL lines. They are defined in the `vdslLineConfProfileTable`.
- o Alarm Configuration Profiles - These profiles contain parameters for configuring alarm thresholds for VDSL transceivers. These profiles are defined in the `vdslLineAlarmConfProfileTable`.

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

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

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

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



## 2.6. Notifications

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

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

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

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

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

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

## 2.7. Persistence

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

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

- vdslLineConfDownTargetSlowBurst
- vdslLineConfUpTargetSlowBurst
- vdslLineConfDownMaxFastFec
- vdslLineConfUpMaxFastFec
- vdslLineConfLineType
- vdslLineConfProfRowStatus
- vdslLineAlarmConfProfileName
- vdslLineAlarmConfThresh15MinLofs
- vdslLineAlarmConfThresh15MinLoss
- vdslLineAlarmConfThresh15MinLprs
- vdslLineAlarmConfThresh15MinLols
- vdslLineAlarmConfThresh15MinESs
- vdslLineAlarmConfThresh15MinSEsS
- vdslLineAlarmConfThresh15MinUASs
- vdslLineAlarmConfInitFailure
- vdslLineAlarmConfProfRowStatus

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

### 3. Conformance and Compliance

For VDSL lines, the following groups are mandatory:

- vdslGroup
- vdslNotificationGroup

### 4. Definitions

VDSL-LINE-MIB DEFINITIONS ::= BEGIN

IMPORTS

```

MODULE-IDENTITY,
OBJECT-TYPE,
Gauge32,
Integer32,
Unsigned32,
NOTIFICATION-TYPE,
transmission          FROM SNMPv2-SMI          -- [RFC2578]
ZeroBasedCounter64   FROM HCNM-TC              -- [RFC2856]
TEXTUAL-CONVENTION,
RowStatus,
TruthValue            FROM SNMPv2-TC          -- [RFC2579]
HCPperfValidIntervals,
HCPperfInvalidIntervals,
HCPperfTimeElapsed,

```

HCPperfIntervalThreshold,  
 HCPperfCurrentCount,  
 HCPperfIntervalCount FROM HC-PerfHist-TC-MIB -- [RFC3705]  
 MODULE-COMPLIANCE,  
 OBJECT-GROUP,  
 NOTIFICATION-GROUP FROM SNMPv2-CONF -- [RFC2580]  
 ifIndex FROM IF-MIB -- [RFC2863]  
 SnmpAdminString FROM SNMP-FRAMEWORK-MIB; -- [RFC3411]

vdslMIB MODULE-IDENTITY

LAST-UPDATED "200402190000Z" -- February 19, 2004  
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"

DESCRIPTION

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

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

Naming Conventions:

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

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REVISION "200402190000Z" -- February 19, 2004

DESCRIPTION "Initial version, published as RFC 3728."

::= { transmission 97 }

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

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

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

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

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

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

```
--
-- objects
--
```

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

```
::= { vdslMibObjects 1 }
```

```

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

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

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

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

```

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

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

Note that 'slow' and 'interleaved' refer to the same channel. In the case that the line is channelized, the manager can use the ifStackTable to determine the ifIndex for the associated channel(s)."

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

#### vdslLineConfProfile OBJECT-TYPE

```
SYNTAX          SnmpAdminString (SIZE(1..32))
MAX-ACCESS      read-write
STATUS          current
```

#### DESCRIPTION

"The value of this object identifies the row in the VDSL Line Configuration Profile Table, vdslLineConfProfileTable, which applies for this VDSL line, and channels if applicable.

This object MUST be maintained in a persistent manner."

```
DEFVAL          { "DEFVAL" }
::= { vdslLineEntry 3 }
```

#### vdslLineAlarmConfProfile OBJECT-TYPE

```
SYNTAX          SnmpAdminString (SIZE(1..32))
MAX-ACCESS      read-write
STATUS          current
```

#### DESCRIPTION

"The value of this object identifies the row in the VDSL Line Alarm Configuration Profile Table, vdslLineAlarmConfProfileTable, which applies to this VDSL line, and channels if applicable.

This object MUST be maintained in a persistent manner."

```
DEFVAL          { "DEFVAL" }
::= { vdslLineEntry 4 }
```

#### vdslPhysTable OBJECT-TYPE



```
SYNTAX      SEQUENCE OF VdslPhysEntry
MAX-ACCESS  not-accessible
STATUS      current
```

## DESCRIPTION

"This table provides one row for each Vtu. Each row contains the Physical Layer Parameters table for that Vtu. VDSL physical interfaces are those ifEntries where ifType is equal to vdsl(97)."

```
::= { vdslMibObjects 2 }
```

## vdslPhysEntry OBJECT-TYPE

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

## VdslPhysEntry ::=

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

## vdslPhysSide OBJECT-TYPE

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

## vdslPhysInvSerialNumber OBJECT-TYPE

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

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

vdslPhysInvVendorID OBJECT-TYPE

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

vdslPhysInvVersionNumber OBJECT-TYPE

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

vdslPhysCurrSnrMgn OBJECT-TYPE

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

vdslPhysCurrAtn OBJECT-TYPE

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

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

vdslPhysCurrStatus OBJECT-TYPE

```
SYNTAX          BITS
{
  noDefect(0),
  lossOfFraming(1),
  lossOfSignal(2),
  lossOfPower(3),
  lossOfSignalQuality(4),
  lossOfLink(5),
  dataInitFailure(6),
  configInitFailure(7),
  protocolInitFailure(8),
  noPeerVtuPresent(9)
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates current state of the Vtu line. This is a bit-map of possible conditions. The various bit positions are:

0	noDefect	There are no defects on the line.
1	lossOfFraming	Vtu failure due to not receiving a valid frame.
2	lossOfSignal	Vtu failure due to not receiving signal.
3	lossOfPower	Vtu failure due to loss of power.
4	lossOfSignalQuality	Loss of Signal Quality is declared when the Noise Margin falls below the Minimum Noise Margin, or the bit-error-rate exceeds $10^{-7}$ .
5	lossOfLink	Vtu failure due to inability to link with peer Vtu. Set whenever the transceiver is in the 'Warm Start' state.
6	dataInitFailure	Vtu failure during initialization due to bit errors corrupting startup exchange data.

- |   |                     |  |
|---|---------------------|--|
| 7 | configInitFailure   | Vtu failure during initialization due to peer Vtu not able to support requested configuration. |
| 8 | protocolInitFailure | Vtu failure during initialization due to incompatible protocol used by the peer Vtu.           |
| 9 | noPeerVtuPresent    | Vtu failure during initialization due to no activation sequence detected from peer Vtu.        |

This is intended to supplement ifOperStatus."

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

vdslPhysCurrOutputPwr OBJECT-TYPE

SYNTAX Integer32 (0..160)  
 UNITS "0.1dBm"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Measured total output power transmitted by this VTU. This is the measurement that was reported during the last activation sequence."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"  
 ::= { vdslPhysEntry 8 }

vdslPhysCurrAttainableRate OBJECT-TYPE

SYNTAX Gauge32  
 UNITS "kbps"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Indicates the maximum currently attainable data rate in steps of 1000 bits/second by the Vtu. This value will be equal to or greater than vdslPhysCurrLineRate. Note that for SCM, the minimum and maximum data rates are equal. Note: 1 kbps = 1000 bps."

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

vdslPhysCurrLineRate OBJECT-TYPE

SYNTAX Gauge32  
 UNITS "kbps"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Indicates the current data rate in steps of 1000 bits/second by the Vtu. This value will be less than or equal to vdslPhysCurrAttainableRate. Note: 1 kbps = 1000 bps."

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

vdslChanTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslChanEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides one row for each Vtu channel. VDSL channel interfaces are those ifEntries where ifType is equal to interleave(124) or fast(125)."

::= { vdslMibObjects 3 }

vdslChanEntry OBJECT-TYPE

SYNTAX VdslChanEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the vdslChanTable."

INDEX { ifIndex,  
           vdslPhysSide }

::= { vdslChanTable 1 }

VdslChanEntry ::=

SEQUENCE

```
{
  vdslChanInterleaveDelay      Gauge32,
  vdslChanCrcBlockLength      Gauge32,
  vdslChanCurrTxRate          Gauge32,
  vdslChanCurrTxSlowBurstProtect Gauge32,
  vdslChanCurrTxFastFec       Gauge32
}
```

vdslChanInterleaveDelay OBJECT-TYPE

SYNTAX Gauge32

UNITS "milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Interleave Delay for this channel.

Interleave delay applies only to the interleave (slow) channel and defines the mapping (relative spacing) between subsequent input bytes at the

interleaver input and their placement in the bit stream at the interleaver output. Larger numbers provide greater separation between consecutive input bytes in the output bit stream allowing for improved impulse noise immunity at the expense of payload latency.

In the case where the ifType is fast(125), return a value of zero."

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

vdslChanCrcBlockLength OBJECT-TYPE

SYNTAX Gauge32  
 UNITS "bytes"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Indicates the length of the channel data-block on which the CRC operates."

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

vdslChanCurrTxRate OBJECT-TYPE

SYNTAX Gauge32  
 UNITS "kbps"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Actual transmit data rate on this channel. Note: 1 kbps = 1000 bps."

::= { vdslChanEntry 3 }

vdslChanCurrTxSlowBurstProtect OBJECT-TYPE

SYNTAX Gauge32 (0..1275)  
 UNITS "microseconds"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION

"Actual level of impulse noise (burst) protection for an interleaved (slow) channel. This parameter is not applicable to fast channels. For fast channels, a value of zero shall be returned."

REFERENCE "ITU-T G.997.1, section 7.3.2.3"  
 ::= { vdslChanEntry 4 }

vdslChanCurrTxFastFec OBJECT-TYPE

SYNTAX Gauge32 (0..50)

```

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

```

```

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

```

```

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

```

```

VdslPerfDataEntry ::=
SEQUENCE
{
  vdslPerfDataValidIntervals      HCPperfValidIntervals,
  vdslPerfDataInvalidIntervals    HCPperfInvalidIntervals,
  vdslPerfDataLofs                 Unsigned32,
  vdslPerfDataLoss                 Unsigned32,
  vdslPerfDataLprs                 Unsigned32,
  vdslPerfDataLols                 Unsigned32,
  vdslPerfDataESS                 Unsigned32,
  vdslPerfDataSESS                 Unsigned32,
  vdslPerfDataUASS                 Unsigned32,
  vdslPerfDataInits                Unsigned32,
  vdslPerfDataCurr15MinTimeElapsed HCPperfTimeElapsed,
  vdslPerfDataCurr15MinLofs        HCPperfCurrentCount,
  vdslPerfDataCurr15MinLoss        HCPperfCurrentCount,
  vdslPerfDataCurr15MinLprs        HCPperfCurrentCount,

```

vdslPerfDataCurr15MinLols	HCPperfCurrentCount,
vdslPerfDataCurr15MinESs	HCPperfCurrentCount,
vdslPerfDataCurr15MinSESS	HCPperfCurrentCount,
vdslPerfDataCurr15MinUASs	HCPperfCurrentCount,
vdslPerfDataCurr15MinInits	HCPperfCurrentCount,
vdslPerfData1DayValidIntervals	HCPperfValidIntervals,
vdslPerfData1DayInvalidIntervals	HCPperfInvalidIntervals,
vdslPerfDataCurr1DayTimeElapsed	HCPperfTimeElapsed,
vdslPerfDataCurr1DayLofs	Unsigned32,
vdslPerfDataCurr1DayLoss	Unsigned32,
vdslPerfDataCurr1DayLprs	Unsigned32,
vdslPerfDataCurr1DayLols	Unsigned32,
vdslPerfDataCurr1DayESs	Unsigned32,
vdslPerfDataCurr1DaySESS	Unsigned32,
vdslPerfDataCurr1DayUASs	Unsigned32,
vdslPerfDataCurr1DayInits	Unsigned32
}	

vdslPerfDataValidIntervals OBJECT-TYPE

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

vdslPerfDataInvalidIntervals OBJECT-TYPE

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

vdslPerfDataLofs OBJECT-TYPE

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



```

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

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

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

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

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

vdslPerfDataSESSs OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

vds1PerfDataCurr15MinLoss 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"
    ::= { vds1PerfDataEntry 13 }

vds1PerfDataCurr15MinLprs 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"
    ::= { vds1PerfDataEntry 14 }

vds1PerfDataCurr15MinLols 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."
    ::= { vds1PerfDataEntry 15 }

vds1PerfDataCurr15MinESs 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"
    ::= { vds1PerfDataEntry 16 }

vds1PerfDataCurr15MinSESSs OBJECT-TYPE
    SYNTAX      HCPerfCurrentCount
    UNITS       "seconds"
    MAX-ACCESS  read-only

```

```

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

```

```

vdslPerfDataCurr15MinUASS OBJECT-TYPE
SYNTAX      HCPerfCurrentCount
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Count of Unavailable Seconds during this interval."
 ::= { vdslPerfDataEntry 18 }

```

```

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

```

```

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

```

```

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

```

```

vdslPerfDataCurr1DayTimeElapsed OBJECT-TYPE
SYNTAX      HCPerfTimeElapsed

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

## vdslPerfDataCurr1DayESs OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of Errored Seconds (ES) since the beginning of the current 1-day interval."

::= { vdslPerfDataEntry 27 }

## vdslPerfDataCurr1DaySESSs OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of Severely Errored Seconds (SES) since the beginning of the current 1-day interval."

::= { vdslPerfDataEntry 28 }

## vdslPerfDataCurr1DayUASs OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of Unavailable Seconds (UAS) since the beginning of the current 1-day interval."

::= { vdslPerfDataEntry 29 }

## vdslPerfDataCurr1DayInits OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of the line initialization attempts since the beginning of the current 1-day interval. This count includes both successful and failed attempts."

::= { vdslPerfDataEntry 30 }

## vdslPerfIntervalTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslPerfIntervalEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"This table provides one row for each Vtu performance data collection interval. VDSL physical interfaces are

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

```

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

```

VdslPerfIntervalEntry ::=
    SEQUENCE
    {
        vdslPerfIntervalNumber      Unsigned32,
        vdslPerfIntervalLoss        HCPerfIntervalCount,
        vdslPerfIntervalLofs        HCPerfIntervalCount,
        vdslPerfIntervalLprs        HCPerfIntervalCount,
        vdslPerfIntervalLols        HCPerfIntervalCount,
        vdslPerfIntervalESS        HCPerfIntervalCount,
        vdslPerfIntervalSESS        HCPerfIntervalCount,
        vdslPerfIntervalUASS        HCPerfIntervalCount,
        vdslPerfIntervalInits       HCPerfIntervalCount
    }
  
```

```

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

```

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

```

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

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

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

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

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

```



```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

VdslPerf1DayIntervalEntry ::=
SEQUENCE

```

```

{
vds1Perf1DayIntervalNumber      Unsigned32,
vds1Perf1DayIntervalMoniSecs    HCPerfTimeElapsed,
vds1Perf1DayIntervalLofs        Unsigned32,
vds1Perf1DayIntervalLoss        Unsigned32,
vds1Perf1DayIntervalLprs        Unsigned32,
vds1Perf1DayIntervalLols        Unsigned32,
vds1Perf1DayIntervalESs         Unsigned32,
vds1Perf1DayIntervalSESSs       Unsigned32,
vds1Perf1DayIntervalUASS        Unsigned32,
vds1Perf1DayIntervalInits       Unsigned32
}

```

vds1Perf1DayIntervalNumber OBJECT-TYPE

```

SYNTAX      Unsigned32 (1..30)
MAX-ACCESS  not-accessible
STATUS      current

```

DESCRIPTION

"History Data Interval number. Interval 1 is the most recent previous day; interval 30 is 30 days ago. Intervals 2 to 30 are optional."

```
 ::= { vds1Perf1DayIntervalEntry 1 }
```

vds1Perf1DayIntervalMoniSecs 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."

```
 ::= { vds1Perf1DayIntervalEntry 2 }
```

vds1Perf1DayIntervalLofs OBJECT-TYPE

```

SYNTAX      Unsigned32
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"Count of Loss of Frame (LOF) Seconds during the 1-day interval as measured by vds1Perf1DayIntervalMoniSecs."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"

```
 ::= { vds1Perf1DayIntervalEntry 3 }
```

vds1Perf1DayIntervalLoss OBJECT-TYPE

```

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

```

vdslPerf1DayIntervalLprs OBJECT-TYPE

```

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

```

vdslPerf1DayIntervalLols OBJECT-TYPE

```

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

```

vdslPerf1DayIntervaleESs OBJECT-TYPE

```

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

```

vdslPerf1DayIntervalSESSs OBJECT-TYPE

```

SYNTAX      Unsigned32
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION

```

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

vdslPerf1DayIntervalUASs OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Unavailable Seconds (UAS) during the 1-day interval as measured by vdslPerf1DayIntervalMoniSecs."

::= { vdslPerf1DayIntervalEntry 9 }

vdslPerf1DayIntervalInits OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of the line initialization attempts during the 1-day interval as measured by vdslPerf1DayIntervalMoniSecs. This count includes both successful and failed attempts."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"

::= { vdslPerf1DayIntervalEntry 10 }

vdslChanPerfDataTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslChanPerfDataEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides one row for each Vtu channel. VDSL channel interfaces are those ifEntries where ifType is equal to interleave(124) or fast(125)."

::= { vdslMibObjects 7 }

vdslChanPerfDataEntry OBJECT-TYPE

SYNTAX VdslChanPerfDataEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the vdslChanPerfDataTable."

INDEX { ifIndex,  
           vdslPhysSide }

::= { vdslChanPerfDataTable 1 }

VdslChanPerfDataEntry ::=

SEQUENCE

```

{
vdslChanValidIntervals      HCPperfValidIntervals,
vdslChanInvalidIntervals   HCPperfInvalidIntervals,
vdslChanFixedOctets        ZeroBasedCounter64,
vdslChanBadBlks            ZeroBasedCounter64,
vdslChanCurr15MinTimeElapsed HCPperfTimeElapsed,
vdslChanCurr15MinFixedOctets HCPperfCurrentCount,
vdslChanCurr15MinBadBlks   HCPperfCurrentCount,
vdslChan1DayValidIntervals HCPperfValidIntervals,
vdslChan1DayInvalidIntervals HCPperfInvalidIntervals,
vdslChanCurr1DayTimeElapsed HCPperfTimeElapsed,
vdslChanCurr1DayFixedOctets HCPperfCurrentCount,
vdslChanCurr1DayBadBlks    HCPperfCurrentCount
}

```

vdslChanValidIntervals OBJECT-TYPE

```

SYNTAX      HCPperfValidIntervals
UNITS       "intervals"
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"Valid Intervals per definition found in  
HC-PerfHist-TC-MIB."

```
 ::= { vdslChanPerfDataEntry 1 }
```

vdslChanInvalidIntervals OBJECT-TYPE

```

SYNTAX      HCPperfInvalidIntervals
UNITS       "intervals"
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"Invalid Intervals per definition found in  
HC-PerfHist-TC-MIB."

```
 ::= { vdslChanPerfDataEntry 2 }
```

vdslChanFixedOctets OBJECT-TYPE

```

SYNTAX      ZeroBasedCounter64
UNITS       "octets"
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"Count of corrected octets since the unit was last reset."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"

```
 ::= { vdslChanPerfDataEntry 3 }
```

vdslChanBadBlks OBJECT-TYPE

```

SYNTAX      ZeroBasedCounter64
UNITS       "blocks"

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

vdslChan1DayInvalidIntervals OBJECT-TYPE
SYNTAX          HCPperfInvalidIntervals

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```
::= { vdslMibObjects 8 }
```

```
vdslChanIntervalEntry OBJECT-TYPE
```

```
SYNTAX      VdslChanIntervalEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"An entry in the vdslChanIntervalTable."
```

```
INDEX { ifIndex,
        vdslPhysSide,
        vdslChanIntervalNumber }
```

```
::= { vdslChanIntervalTable 1 }
```

```
VdslChanIntervalEntry ::=
```

```
SEQUENCE
```

```
{
    vdslChanIntervalNumber      Unsigned32,
    vdslChanIntervalFixedOctets HCPeIntervalCount,
    vdslChanIntervalBadBlks    HCPeIntervalCount
}
```

```
vdslChanIntervalNumber OBJECT-TYPE
```

```
SYNTAX      Unsigned32 (1..96)
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"Performance Data Interval number 1 is the most recent
previous interval; interval 96 is 24 hours ago.
Intervals 2 to 96 are optional."
```

```
::= { vdslChanIntervalEntry 1 }
```

```
vdslChanIntervalFixedOctets OBJECT-TYPE
```

```
SYNTAX      HCPeIntervalCount
```

```
UNITS       "octets"
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"Count of corrected octets in this interval."
```

```
REFERENCE   "T1E1.4/2000-009R3, Part 1, common spec"
```

```
::= { vdslChanIntervalEntry 2 }
```

```
vdslChanIntervalBadBlks OBJECT-TYPE
```

```
SYNTAX      HCPeIntervalCount
```

```
UNITS       "blocks"
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"Count of uncorrectable blocks in this interval."
```



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

vdslChan1DayIntervalTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslChan1DayIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides one row for each VDSL performance data collection interval. This table contains live data from equipment. As such, it is NOT persistent."

::= { vdslMibObjects 9 }

vdslChan1DayIntervalEntry OBJECT-TYPE

SYNTAX VdslChan1DayIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the vdslChan1DayIntervalTable."

INDEX { ifIndex,  
         vdslPhysSide,  
         vdslChan1DayIntervalNumber }

::= { vdslChan1DayIntervalTable 1 }

VdslChan1DayIntervalEntry ::=

SEQUENCE

```
{
  vdslChan1DayIntervalNumber      Unsigned32,
  vdslChan1DayIntervalMoniSecs    HCPperfTimeElapsed,
  vdslChan1DayIntervalFixedOctets HCPperfCurrentCount,
  vdslChan1DayIntervalBadBlks     HCPperfCurrentCount
}
```

vdslChan1DayIntervalNumber OBJECT-TYPE

SYNTAX Unsigned32 (1..30)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"History Data Interval number. Interval 1 is the most recent previous day; interval 30 is 30 days ago. Intervals 2 to 30 are optional."

::= { vdslChan1DayIntervalEntry 1 }

vdslChan1DayIntervalMoniSecs OBJECT-TYPE

SYNTAX HCPperfTimeElapsed

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

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

```
::= { vdslChan1DayIntervalEntry 2 }
```

## vdslChan1DayIntervalFixedOctets OBJECT-TYPE

SYNTAX HCPperfCurrentCount

UNITS "octets"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of corrected octets in this interval."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"

```
::= { vdslChan1DayIntervalEntry 3 }
```

## vdslChan1DayIntervalBadBlks OBJECT-TYPE

SYNTAX HCPperfCurrentCount

UNITS "blocks"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Count of uncorrectable blocks in this interval."

REFERENCE "T1E1.4/2000-009R3, Part 1, common spec"

```
::= { vdslChan1DayIntervalEntry 4 }
```

```
--
```

```
-- profile tables
```

```
--
```

## vdslLineConfProfileTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslLineConfProfileEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"This table contains information on the VDSL line configuration. One entry in this table reflects a profile defined by a manager which can be used to configure the VDSL line.

Entries in this table MUST be maintained in a persistent manner."

```
::= { vdslMibObjects 11 }
```

## vdslLineConfProfileEntry OBJECT-TYPE

SYNTAX VdslLineConfProfileEntry

MAX-ACCESS not-accessible  
 STATUS current

## DESCRIPTION

"Each entry consists of a list of parameters that represents the configuration of a VDSL line.

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

INDEX { vdslLineConfProfileName }  
 ::= { vdslLineConfProfileTable 1 }

VdslLineConfProfileEntry ::=

## SEQUENCE

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

```

vdsLineConfBandOptUsage      INTEGER,
vdsLineConfUpPsdTemplate     INTEGER,
vdsLineConfDownPsdTemplate   INTEGER,
vdsLineConfHamBandMask       BITS,
vdsLineConfCustomNotch1Start Unsigned32,
vdsLineConfCustomNotch1Stop  Unsigned32,
vdsLineConfCustomNotch2Start Unsigned32,
vdsLineConfCustomNotch2Stop  Unsigned32,
vdsLineConfDownTargetSlowBurst Unsigned32,
vdsLineConfUpTargetSlowBurst Unsigned32,
vdsLineConfDownMaxFastFec    Unsigned32,
vdsLineConfUpMaxFastFec      Unsigned32,
vdsLineConfLineType          INTEGER,
vdsLineConfProfRowStatus     RowStatus
}

```

vdsLineConfProfileName 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."

::= { vdsLineConfProfileEntry 1 }

vdsLineConfDownRateMode OBJECT-TYPE

SYNTAX INTEGER

```

{
  manual(1),
  adaptAtInit(2)
}

```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Specifies the rate selection behavior for the line in the downstream direction.

manual(1) forces the rate to the configured rate

adaptAtInit(2) adapts the line based upon line quality."

DEFVAL { adaptAtInit }

::= { vdsLineConfProfileEntry 2 }

vdsLineConfUpRateMode OBJECT-TYPE

SYNTAX INTEGER

```

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

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

```

```

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

```

```

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

```

```

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

```

```

DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 6 }

```

vdslLineConfDownMinSnrMgn OBJECT-TYPE

```

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

```

vdslLineConfDownTargetSnrMgn OBJECT-TYPE

```

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

```

vdslLineConfUpMaxSnrMgn OBJECT-TYPE

```

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

```

vdslLineConfUpMinSnrMgn OBJECT-TYPE

```

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

```

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

vdslLineConfUpTargetSnrMgn OBJECT-TYPE

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

vdslLineConfDownFastMaxDataRate OBJECT-TYPE

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

vdslLineConfDownFastMinDataRate OBJECT-TYPE

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

vdslLineConfDownSlowMaxDataRate OBJECT-TYPE

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

## DESCRIPTION

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

The maximum aggregate downstream transmit speed of the line can be derived from the sum of maximum downstream fast and slow channel data rates."

```
DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 14 }
```

## vdslLineConfDownSlowMinDataRate OBJECT-TYPE

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

## DESCRIPTION

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

The minimum aggregate downstream transmit speed of the line can be derived from the sum of minimum downstream fast and slow channel data rates."

```
DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 15 }
```

## vdslLineConfUpFastMaxDataRate OBJECT-TYPE

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

## DESCRIPTION

"Specifies the maximum upstream fast channel data rate in steps of 1000 bits/second.

The maximum aggregate upstream transmit speed of the line can be derived from the sum of maximum upstream fast and slow channel data rates."

```
DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 16 }
```

## vdslLineConfUpFastMinDataRate OBJECT-TYPE

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

## DESCRIPTION

"Specifies the minimum upstream fast channel data rate in steps of 1000 bits/second.



The minimum aggregate upstream transmit speed of the line can be derived from the sum of minimum upstream fast and slow channel data rates."

```
DEFVAL      { 0 }  
 ::= { vdslLineConfProfileEntry 17 }
```

vdslLineConfUpSlowMaxDataRate OBJECT-TYPE

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

vdslLineConfUpSlowMinDataRate OBJECT-TYPE

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

vdslLineConfDownRateRatio OBJECT-TYPE

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

vdslLineConfUpRateRatio OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..100)  
UNITS       "percent"  
MAX-ACCESS  read-create
```

```

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

```

```

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

```

```

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

```

```

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

```

then the transceiver will use the value from  
vdslLineConfDownPboLevel."

```
DEFVAL      { disabled }
 ::= { vdslLineConfProfileEntry 24 }
```

vdslLineConfUpPboControl OBJECT-TYPE

```
SYNTAX      INTEGER
           {
             disabled(1),
             auto(2),
             manual(3)
           }
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

DESCRIPTION

"Upstream power backoff (PBO) control for this line. For transceivers which do not support upstream PBO control, this object MUST be fixed at disabled(1). If auto(2) is selected, the transceiver will automatically adjust the power backoff. If manual(3) is selected, then the transceiver will use the value from vdslLineConfUpPboLevel."

```
DEFVAL      { disabled }
 ::= { vdslLineConfProfileEntry 25 }
```

vdslLineConfDownPboLevel OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..160)
```

```
UNITS       "0.25dB"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

DESCRIPTION

"Specifies the downstream backoff level to be used when vdslLineConfDownPboControl = manual(3)."

```
DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 26 }
```

vdslLineConfUpPboLevel OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..160)
```

```
UNITS       "0.25dB"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

DESCRIPTION

"Specifies the upstream backoff level to be used when vdslLineConfUpPboControl = manual(3)."

```
DEFVAL      { 0 }
 ::= { vdslLineConfProfileEntry 27 }
```

vdslLineConfDeploymentScenario OBJECT-TYPE

```

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

```

vdslLineConfAdslPresence OBJECT-TYPE

```

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

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

```

vdslLineConfApplicableStandard OBJECT-TYPE

```

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

```

```

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

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

```

```

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

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

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

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

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

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

```

```

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

```

```

STATUS          current
DESCRIPTION
  "The frequency limit between bands D2 and U2 when
  vdslLineConfBandPlan is set to bandPlanFx(3)."
```

DEFVAL { 3750 }

```
 ::= { vdslLineConfProfileEntry 32 }
```

vdslLineConfBandOptUsage OBJECT-TYPE

```

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

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

vdslLineConfUpPsdTemplate OBJECT-TYPE

```

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

  The masks themselves depend upon the applicable
  standard being used (vdslLineConfApplicableStandard)."
```

REFERENCE "DSL TR-057"

```

DEFVAL          { templateMask1 }
 ::= { vdslLineConfProfileEntry 34 }
```

## vdslLineConfDownPsdTemplate OBJECT-TYPE

```

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

  The masks themselves depend upon the applicable
  standard being used (vdslLineConfApplicableStandard)."
```

REFERENCE "DSL TR-057"

```

DEFVAL      { templateMask1 }
 ::= { vdslLineConfProfileEntry 35 }
```

## vdslLineConfHamBandMask OBJECT-TYPE

```

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

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

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

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

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

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

If customNotch2 is enabled, then both  
     vdslLineConfCustomNotch2Start  
     vdslLineConfCustomNotch2Stop  
 MUST be specified."

REFERENCE "DSLIF TR-057, section 2.6"  
 DEFVAL { { } }  
 ::= { vdslLineConfProfileEntry 36 }

vdslLineConfCustomNotch1Start OBJECT-TYPE

SYNTAX Unsigned32

UNITS "kHz"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Specifies the start frequency of custom HAM (Handheld Amateur Radio) notch 1. vdslLineConfCustomNotch1Start MUST be less than or equal to vdslLineConfCustomNotch1Stop."

DEFVAL { 0 }

::= { vdslLineConfProfileEntry 37 }

vdslLineConfCustomNotch1Stop OBJECT-TYPE

SYNTAX Unsigned32

UNITS "kHz"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Specifies the stop frequency of custom HAM (Handheld Amateur Radio) notch 1. vdslLineConfCustomNotch1Stop MUST be greater than or equal to vdslLineConfCustomNotch1Start."

DEFVAL { 0 }

::= { vdslLineConfProfileEntry 38 }

vdslLineConfCustomNotch2Start OBJECT-TYPE

SYNTAX Unsigned32

UNITS "kHz"

MAX-ACCESS read-create



```

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

```

vdslLineConfCustomNotch2Stop OBJECT-TYPE

```

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

```

vdslLineConfDownTargetSlowBurst OBJECT-TYPE

```

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

```

vdslLineConfUpTargetSlowBurst OBJECT-TYPE

```

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

```

vdslLineConfDownMaxFastFec OBJECT-TYPE

```

SYNTAX          Unsigned32 (0..50)
UNITS           "%"
MAX-ACCESS     read-create

```

```

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

```

vdslLineConfUpMaxFastFec OBJECT-TYPE

```

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

```

vdslLineConfLineType OBJECT-TYPE

```

SYNTAX          INTEGER
{
  noChannel(1),      -- no channels exist
  fastOnly(2),       -- only fast channel exists
  interleavedOnly(3), -- only interleaved channel exists
  fastOrInterleaved(4), -- either fast or interleaved channel
                      -- exist, but only one at a time
  fastAndInterleaved(5) -- both fast and interleaved channels
                      -- exist
}
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION

```

"This parameter provisions the VDSL physical entity at start-up by defining whether and how the line will be channelized, i.e., which channel type(s) are supported. If the line is to be channelized, the value will be other than noChannel(1).

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

Defined values are:

```

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

```

Note that 'slow' and 'interleaved' refer to the same channel."

```

REFERENCE      "T1E1.4/2000-009R3, Part 1, common spec"
DEFVAL         { noChannel }
::= { vdslLineConfProfileEntry 45 }

```

#### vdslLineConfProfRowStatus OBJECT-TYPE

```

SYNTAX          RowStatus
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION

```

"This object is used to create a new row or modify or delete an existing row in this table.

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

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

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

```

::= { vdslLineConfProfileEntry 46 }

```

```

--
-- Alarm configuration profile table
--

```

#### vdslLineAlarmConfProfileTable OBJECT-TYPE

```

SYNTAX          SEQUENCE OF VdslLineAlarmConfProfileEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION

```

"This table contains information on the VDSL line alarm configuration. One entry in this table reflects a profile defined by a manager which can be used to configure the VDSL line alarm thresholds.

Entries in this table MUST be maintained in a persistent manner."

```
::= { vdslMibObjects 20 }
```

vdslLineAlarmConfProfileEntry OBJECT-TYPE

SYNTAX VdslLineAlarmConfProfileEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry consists of a list of parameters that represents the configuration of a VDSL line alarm profile.

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

INDEX { vdslLineAlarmConfProfileName }

```
::= { vdslLineAlarmConfProfileTable 1 }
```

VdslLineAlarmConfProfileEntry ::=

SEQUENCE

```
{
  vdslLineAlarmConfProfileName      SnmpAdminString,
  vdslLineAlarmConfThresh15MinLofs  HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinLoss  HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinLprs  HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinLols  HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinESS   HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinSESS  HCPerfIntervalThreshold,
  vdslLineAlarmConfThresh15MinUASS  HCPerfIntervalThreshold,
  vdslLineAlarmConfInitFailure      TruthValue,
  vdslLineAlarmConfProfRowStatus    RowStatus
}
```

vdslLineAlarmConfProfileName OBJECT-TYPE

SYNTAX SnmpAdminString (SIZE (1..32))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The name for this profile as specified by an administrator."

```
::= { vdslLineAlarmConfProfileEntry 1 }
```

vdslLineAlarmConfThresh15MinLofs OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current  
DESCRIPTION

"This object configures the threshold for the number of loss of frame seconds (lofs) within any given 15-minute performance data collection interval. If the value of loss of frame seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfLofsThreshNotification notification will be generated. No more than one notification will be sent per interval."

DEFVAL { 0 }  
 ::= { vdslLineAlarmConfProfileEntry 2 }

vdslLineAlarmConfThresh15MinLoss OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold  
UNITS "seconds"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION

"This object configures the threshold for the number of loss of signal seconds (loss) within any given 15-minute performance data collection interval. If the value of loss of signal seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfLossThreshNotification notification will be generated. One notification will be sent per interval per endpoint."

DEFVAL { 0 }  
 ::= { vdslLineAlarmConfProfileEntry 3 }

vdslLineAlarmConfThresh15MinLprs OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold  
UNITS "seconds"  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION

"This object configures the threshold for the number of loss of power seconds (lprs) within any given 15-minute performance data collection interval. If the value of loss of power seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfLprsThreshNotification notification will be generated. No more than one notification will be sent per interval."

DEFVAL { 0 }  
 ::= { vdslLineAlarmConfProfileEntry 4 }

vdslLineAlarmConfThresh15MinLols OBJECT-TYPE

```
SYNTAX      HCPperfIntervalThreshold
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
```

## DESCRIPTION

"This object configures the threshold for the number of loss of link seconds (lols) within any given 15-minute performance data collection interval. If the value of loss of power seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfLolsThreshNotification notification will be generated. No more than one notification will be sent per interval."

```
DEFVAL      { 0 }
 ::= { vdslLineAlarmConfProfileEntry 5 }
```

## vdslLineAlarmConfThresh15MinESs OBJECT-TYPE

```
SYNTAX      HCPperfIntervalThreshold
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
```

## DESCRIPTION

"This object configures the threshold for the number of errored seconds (ESs) within any given 15-minute performance data collection interval. If the value of errored seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfESsThreshNotification notification will be generated. No more than one notification will be sent per interval."

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

## vdslLineAlarmConfThresh15MinSESSs OBJECT-TYPE

```
SYNTAX      HCPperfIntervalThreshold
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
```

## DESCRIPTION

"This object configures the threshold for the number of severely errored seconds (SESSs) 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 vdslPerfSESSsThreshNotification notification will be generated. No more than one notification will be sent per interval."

```
DEFVAL      { 0 }
```

```
::= { vdslLineAlarmConfProfileEntry 7 }
```

```
vdslLineAlarmConfThresh15MinUASs OBJECT-TYPE
```

```
SYNTAX      HCPeIntervalThreshold
```

```
UNITS       "seconds"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"This object configures the threshold for the number of unavailable seconds (UASs) within any given 15-minute performance data collection interval. If the value of unavailable seconds in a particular 15-minute collection interval reaches/exceeds this value, a vdslPerfUASsThreshNotification notification will be generated. No more than one notification will be sent per interval."

```
DEFVAL      { 0 }
```

```
::= { vdslLineAlarmConfProfileEntry 8 }
```

```
vdslLineAlarmConfInitFailure OBJECT-TYPE
```

```
SYNTAX      TruthValue
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"This object specifies if a vdslInitFailureNotification notification will be generated if an initialization failure occurs."

```
DEFVAL      { false }
```

```
::= { vdslLineAlarmConfProfileEntry 9 }
```

```
vdslLineAlarmConfProfRowStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"This object is used to create a new row or modify or delete an existing row in this table.

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

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

An 'active' profile may be modified at any time."

```
::= { vdslLineAlarmConfProfileEntry 10 }
```

-- Notification definitions

vdslNotifications OBJECT IDENTIFIER ::= { vdslLineMib 0 }

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

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

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

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

```
vdslPerfESsThreshNotification NOTIFICATION-TYPE
  OBJECTS      {
                vdslPerfDataCurr15MinESs
              }
```



```

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

```

```

vdslPerfSESSsThreshNotification NOTIFICATION-TYPE
OBJECTS          {
                  vdslPerfDataCurr15MinSESSs
                }
STATUS          current
DESCRIPTION
  "Severely Errored Seconds 15-minute interval threshold
  (vdslLineAlarmConfThresh15MinSESSs) reached."
 ::= { vdslNotifications 6 }

```

```

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

```

```

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

```

```

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

```

```
::= { vdslNotifications 9 }
```

```
vdslUpMaxSnrMgnNotification NOTIFICATION-TYPE
```

```
OBJECTS      {
                vdslPhysCurrSnrMgn
            }
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"The upstream Signal to Noise Margin exceeded
vdslLineConfUpMaxSnrMgn.  The object vdslPhysCurrSnrMgn
will contain the Signal to Noise margin as measured
by the VTU-C."
```

```
::= { vdslNotifications 10 }
```

```
vdslUpMinSnrMgnNotification NOTIFICATION-TYPE
```

```
OBJECTS      {
                vdslPhysCurrSnrMgn
            }
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"The upstream Signal to Noise Margin fell below
vdslLineConfUpMinSnrMgn.  The object vdslPhysCurrSnrMgn
will contain the Signal to Noise margin as measured
by the VTU-C."
```

```
::= { vdslNotifications 11 }
```

```
vdslInitFailureNotification NOTIFICATION-TYPE
```

```
OBJECTS      {
                vdslPhysCurrStatus
            }
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"Vtu initialization failed.  See vdslPhysCurrStatus for
potential reasons."
```

```
::= { vdslNotifications 12 }
```

```
-- conformance information
```

```
vdslConformance OBJECT IDENTIFIER ::= { vdslLineMib 3 }
```

```
vdslGroups OBJECT IDENTIFIER ::= { vdslConformance 1 }
```

```
vdslCompliances OBJECT IDENTIFIER ::= { vdslConformance 2 }
```

```
vdslLineMibCompliance MODULE-COMPLIANCE
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"The compliance statement for SNMP entities which
manage VDSL interfaces."
```

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

-- units of conformance

vdslGroup OBJECT-GROUP
OBJECTS
{
    vdslLineCoding,
    vdslLineType,
    vdslLineConfProfile,
    vdslLineAlarmConfProfile,
    vdslPhysInvSerialNumber,
    vdslPhysInvVendorID,
    vdslPhysInvVersionNumber,
    vdslPhysCurrSnrMgn,
    vdslPhysCurrAtn,
    vdslPhysCurrStatus,
    vdslPhysCurrOutputPwr,
    vdslPhysCurrAttainableRate,
    vdslPhysCurrLineRate,
    vdslChanInterleaveDelay,
    vdslChanCrcBlockLength,
    vdslChanCurrTxRate,
    vdslChanCurrTxSlowBurstProtect,
    vdslChanCurrTxFastFec,
    vdslPerfDataValidIntervals,
    vdslPerfDataInvalidIntervals,
    vdslPerfDataLofs,
    vdslPerfDataLoss,
    vdslPerfDataLprs,
    vdslPerfDataLols,
    vdslPerfDataESs,
    vdslPerfDataSESSs,
    vdslPerfDataUASs,
    vdslPerfDataInits,
    vdslPerfDataCurr15MinTimeElapsed,
    vdslPerfDataCurr15MinLofs,
    vdslPerfDataCurr15MinLoss,
    vdslPerfDataCurr15MinLprs,
    vdslPerfDataCurr15MinLols,
    vdslPerfDataCurr15MinESs,
    vdslPerfDataCurr15MinSESSs,

```

vds1PerfDataCurr15MinUASS,  
vds1PerfDataCurr15MinInits,  
vds1PerfData1DayValidIntervals,  
vds1PerfData1DayInvalidIntervals,  
vds1PerfDataCurr1DayTimeElapsed,  
vds1PerfDataCurr1DayLofs,  
vds1PerfDataCurr1DayLoss,  
vds1PerfDataCurr1DayLprs,  
vds1PerfDataCurr1DayLols,  
vds1PerfDataCurr1DayESS,  
vds1PerfDataCurr1DaySESS,  
vds1PerfDataCurr1DayUASS,  
vds1PerfDataCurr1DayInits,  
vds1PerfIntervalLofs,  
vds1PerfIntervalLoss,  
vds1PerfIntervalLprs,  
vds1PerfIntervalLols,  
vds1PerfIntervalESS,  
vds1PerfIntervalSESS,  
vds1PerfIntervalUASS,  
vds1PerfIntervalInits,  
vds1Perf1DayIntervalMoniSecs,  
vds1Perf1DayIntervalLofs,  
vds1Perf1DayIntervalLoss,  
vds1Perf1DayIntervalLprs,  
vds1Perf1DayIntervalLols,  
vds1Perf1DayIntervalESS,  
vds1Perf1DayIntervalSESS,  
vds1Perf1DayIntervalUASS,  
vds1Perf1DayIntervalInits,  
vds1ChanValidIntervals,  
vds1ChanInvalidIntervals,  
vds1ChanFixedOctets,  
vds1ChanBadBlks,  
vds1ChanCurr15MinTimeElapsed,  
vds1ChanCurr15MinFixedOctets,  
vds1ChanCurr15MinBadBlks,  
vds1Chan1DayValidIntervals,  
vds1Chan1DayInvalidIntervals,  
vds1ChanCurr1DayTimeElapsed,  
vds1ChanCurr1DayFixedOctets,  
vds1ChanCurr1DayBadBlks,  
vds1ChanIntervalFixedOctets,  
vds1ChanIntervalBadBlks,  
vds1Chan1DayIntervalMoniSecs,  
vds1Chan1DayIntervalFixedOctets,  
vds1Chan1DayIntervalBadBlks,  
vds1LineConfDownRateMode,

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

```

    vdslLineAlarmConfThresh15MinESs,
    vdslLineAlarmConfThresh15MinSEs,
    vdslLineAlarmConfThresh15MinUASs,
    vdslLineAlarmConfInitFailure,
    vdslLineAlarmConfProfRowStatus
  }
STATUS      current
DESCRIPTION
  "A collection of objects providing information about
  a VDSL Line."
 ::= { vdslGroups 1 }

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

END

```

## 5. Security Considerations

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

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

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

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

- vdslLineTable
- vdslLineConfProfileTable
- vdslLineAlarmConfProfileTable

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

- vdslPerfDataTable
- vdslPerfIntervalTable
- vdslPerf1DayIntervalTable

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

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

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

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

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

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