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

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

Expires February 2, 2003

[Page 1]

Table of Contents

1.	The Internet-Standard Management Framework	2
2.	Overview	2
2.1	Relationship of the VDSL Line MIB Module to other MIB Modules .	3
2.2	Conventions used in the MIB Module	4
2.3	Structure	5
2.4	Counters, Interval Buckets and Thresholds	6
2.5	Profiles	7
2.6	Notifications	8
2.7	Persistence	9
3.	Conformance and Compliance	10
4.	Definitions	10
5.	Intellectual Property	64
6.	Normative References	64
7.	Informative References	65
8.	Security Considerations	65
9.	Acknowledgements	67
10.	Authors' Addresses	67
11.	Full Copyright Statement	68

[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.

Expires February 2, 2003

[Page 2]

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 such tables extend the ifEntry table, and are indexed by ifIndex. For interfaces in systems implementing this MIB, those table entries indexed by ifIndex MUST be persistent.

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

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

ifDescr          See interfaces MIB [RFC2863].
```

ifType

vds1(97),
interleave(124), or
fast(125)

Expires February 2, 2003

[Page 3]

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

Expires February 2, 2003

[Page 4]

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):

Expires February 2, 2003

[Page 5]

```

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).

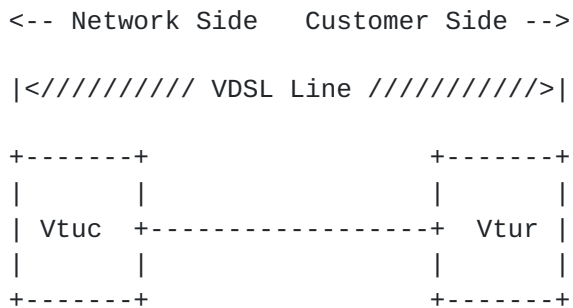


Figure 3: General topology for a VDSL Line

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), Errorred Seconds (ES), Severely Errorred 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

Expires February 2, 2003

[Page 6]

notification.

Each of these counters uses the textual conventions defined in the HC-PerfHist-TC-MIB [[RFCXXXX](#)]. The HC-PerfHist-TC-MIB defines 64-

--- RFC Ed: please replace XXXX with the RFC number assigned to the
--- accompanying HC-TC MIB
bit versions of the textual conventions found in [RFC 2493](#) [[RFC2493](#)].

There is no requirement for an agent to ensure a fixed relationship between the start of a fifteen minute 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.

Expires February 2, 2003

[Page 7]

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

Expires February 2, 2003

[Page 9]

```
vdslLineConfUpMaxFastFec
vdslLineConfLineType
vdslLineConfProfRowStatus
vdslLineAlarmConfProfileName
vdslThresh15MinLofs
vdslThresh15MinLoss
vdslThresh15MinLprs
vdslThresh15MinLols
vdslThresh15MinESs
vdslThresh15MinSESs
vdslThresh15MinUASs
vdslInitFailureNotifyEnable
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
ZeroBasedCounter64                FROM HCNM-TC
TEXTUAL-CONVENTION,
RowStatus,
TruthValue                        FROM SNMPv2-TC
HCPperfValidIntervals,
HCPperfInvalidIntervals,
HCPperfTimeElapsed,
HCPperfIntervalThreshold,
HCPperfCurrentCount,
HCPperfIntervalCount              FROM HC-PerfHist-TC-MIB
MODULE-COMPLIANCE,
```

OBJECT-GROUP,
NOTIFICATION-GROUP
ifIndex
SnmAdminString

FROM SNMPv2-CONF
FROM IF-MIB
FROM SNMP-FRAMEWORK-MIB;

Expires February 2, 2003

[Page 10]

vdsLMIB MODULE-IDENTITY

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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

Expires February 2, 2003

[Page 11]

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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of this MIB module is part of RFC XXXX: see the RFC
itself for full legal notices."

-- RFC Ed.: replace XXXX with assigned number & remove this note
REVISION "200309020000Z" -- September 2, 2003
DESCRIPTION "Initial version, published as RFC XXXX."
-- RFC Ed.: replace XXXX with assigned number & remove this note
::= { transmission YYYY } -- To be assigned by IANA
-- RFC Ed.: we suggest to put it under { transmission 97 } because
-- 97 is the value of the main ifType for the MIB objects
-- defined in this MIB module.

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
{
```

Expires February 2, 2003

[Page 12]


```
    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  
vdsllineAlarmConfProfile  
}
```

```
SnmpAdminString,  
SnmpAdminString
```

Expires February 2, 2003

[Page 13]

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 timefastAndInterleaved(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 timefastAndInterleaved(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,

vds1PhysCurrOutputPwr	Integer32,
vds1PhysCurrAttainableRate	Gauge32,
vds1PhysCurrLineRate	Gauge32
}	

Expires February 2, 2003

[Page 15]

vds1PhysSide OBJECT-TYPE

SYNTAX Vds1LineEntity

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Identifies whether the transceiver is the Vtuc or Vtur."

::= { vds1PhysEntry 1 }

vds1PhysInvSerialNumber 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"

::= { vds1PhysEntry 2 }

vds1PhysInvVendorID 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"

::= { vds1PhysEntry 3 }

vds1PhysInvVersionNumber 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"

::= { vds1PhysEntry 4 }

vds1PhysCurrSnrMgn 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"
::= { vds1PhysEntry 5 }

Expires February 2, 2003

[Page 16]

vds1PhysCurrAtn 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"

::= { vds1PhysEntry 6 }

vds1PhysCurrStatus 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.

Expires February 2, 2003

[Page 17]

- | | | |
|---|---------------------|--|
| 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	

Expires February 2, 2003

[Page 18]

"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,
```

vds1PerfDataCurr1DayLols
vds1PerfDataCurr1DayESs
vds1PerfDataCurr1DaySESSs
vds1PerfDataCurr1DayUASs

Unsigned32,
Unsigned32,
Unsigned32,
Unsigned32,

Expires February 2, 2003

[Page 21]

```
        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."

Expires February 2, 2003

[Page 22]

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

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

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

vdslPerfDataSESS OBJECT-TYPE
 SYNTAX Unsigned32
 UNITS "seconds"
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Count of Severely Errored Seconds since the unit was last
 reset."
 ::= { vdslPerfDataEntry 8 }

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

vdslPerfDataInits OBJECT-TYPE
 SYNTAX Unsigned32
 UNITS "occurrences"
 MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of the line initialization attempts since the unit
was last reset. This count includes both successful and

Expires February 2, 2003

[Page 23]

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

vdslPerfDataCurr15MinTimeElapsed OBJECT-TYPE

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

vdslPerfDataCurr15MinLofs OBJECT-TYPE

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

vdslPerfDataCurr15MinLoss OBJECT-TYPE

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

vdslPerfDataCurr15MinLprs OBJECT-TYPE

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

vdslPerfDataCurr15MinLols OBJECT-TYPE

SYNTAX HCPerfCurrentCount
UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of seconds during this interval that there

Expires February 2, 2003

[Page 24]

was Loss of Link."
 ::= { vdslPerfDataEntry 15 }

vdslPerfDataCurr15MinESs OBJECT-TYPE

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

vdslPerfDataCurr15MinSESSs OBJECT-TYPE

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

vdslPerfDataCurr15MinUASSs OBJECT-TYPE

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

vdslPerfDataCurr15MinInits OBJECT-TYPE

SYNTAX HCPperfCurrentCount
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 HCPperfValidIntervals
UNITS "intervals"
MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

Expires February 2, 2003

[Page 25]

```
::= { vdslPerfDataEntry 20 }
```

vdslPerfData1DayInvalidIntervals OBJECT-TYPE

```
SYNTAX      HCPperfInvalidIntervals
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      HCPperfTimeElapsed
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."
::= { vds1PerfDataEntry 25 }

vds1PerfDataCurr1DayLols OBJECT-TYPE

Expires February 2, 2003

[Page 26]

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

vdslPerfDataCurr1DayESs OBJECT-TYPE

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

vdslPerfDataCurr1DaySEss OBJECT-TYPE

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

vdslPerfDataCurr1DayUASs OBJECT-TYPE

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

vdslPerfDataCurr1DayInits OBJECT-TYPE

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

vdslPerfIntervalTable	OBJECT-TYPE
SYNTAX	SEQUENCE OF VdslPerfIntervalEntry
MAX-ACCESS	not-accessible

Expires February 2, 2003

[Page 27]

STATUS current

DESCRIPTION

"This table provides one row for each Vtu performance data collection interval. VDSL physical interfaces are those ifEntries where ifType is equal to vdsl(97)."

::= { vdslMibObjects 5 }

vdslPerfIntervalEntry OBJECT-TYPE

SYNTAX VdslPerfIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the vdslPerfIntervalTable."

INDEX { ifIndex,
vdslPhysSide,
vdslPerfIntervalNumber }

::= { vdslPerfIntervalTable 1 }

VdslPerfIntervalEntry ::=

SEQUENCE

{	
vdslPerfIntervalNumber	Unsigned32,
vdslPerfIntervalLofs	HCPperfIntervalCount,
vdslPerfIntervalLoss	HCPperfIntervalCount,
vdslPerfIntervalLprs	HCPperfIntervalCount,
vdslPerfIntervalLols	HCPperfIntervalCount,
vdslPerfIntervalESS	HCPperfIntervalCount,
vdslPerfIntervalSESS	HCPperfIntervalCount,
vdslPerfIntervalUASS	HCPperfIntervalCount,
vdslPerfIntervalInits	HCPperfIntervalCount
}	

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 HCPperfIntervalCount

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 }

Expires February 2, 2003

[Page 28]

vds1PerfIntervalLoss 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"

::= { vds1PerfIntervalEntry 3 }

vds1PerfIntervalLprs 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"

::= { vds1PerfIntervalEntry 4 }

vds1PerfIntervalLols 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."

::= { vds1PerfIntervalEntry 5 }

vds1PerfIntervalESSs 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"

::= { vds1PerfIntervalEntry 6 }

vds1PerfIntervalSESSs OBJECT-TYPE

SYNTAX HCPerfIntervalCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

Expires February 2, 2003

[Page 29]

vdslPerfIntervalUASs OBJECT-TYPE

SYNTAX HCPerfIntervalCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Unavailable Seconds in the interval."

::= { vdslPerfIntervalEntry 8 }

vdslPerfIntervalInits OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of the line initialization attempts during this interval. This count includes both successful and failed attempts."

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

::= { vdslPerfIntervalEntry 9 }

vdslPerf1DayIntervalTable OBJECT-TYPE

SYNTAX SEQUENCE OF VdslPerf1DayIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

::= { vdslMibObjects 6 }

vdslPerf1DayIntervalEntry OBJECT-TYPE

SYNTAX VdslPerf1DayIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the vdslPerf1DayIntervalTable."

INDEX { ifIndex,
vdslPhysSide,
vdslPerf1DayIntervalNumber }

::= { vdslPerf1DayIntervalTable 1 }

VdslPerf1DayIntervalEntry ::=

SEQUENCE

{

vdslPerf1DayIntervalNumber

Unsigned32,

vdslPerf1DayIntervalMoniSecs

HCPerfTimeElapsed,

vdslPerf1DayIntervalLofs

Unsigned32,

vdslPerf1DayIntervalLoss

Unsigned32,

vdslPerf1DayIntervalLprs

Unsigned32,

vds1Perf1DayIntervalLols
vds1Perf1DayIntervalESs
vds1Perf1DayIntervalSESS
vds1Perf1DayIntervalUASs

Unsigned32,
Unsigned32,
Unsigned32,
Unsigned32,

Expires February 2, 2003

[Page 30]

```
    vdslPerf1DayIntervalInits          Unsigned32
  }
```

vdslPerf1DayIntervalNumber OBJECT-TYPE

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

vdslPerf1DayIntervalMoniSecs OBJECT-TYPE

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

vdslPerf1DayIntervalLofs OBJECT-TYPE

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

vdslPerf1DayIntervalLoss OBJECT-TYPE

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

vdslPerf1DayIntervalLprs OBJECT-TYPE

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

Expires February 2, 2003

[Page 31]

DESCRIPTION

"Count of Loss of Power (LPR) Seconds during the 1-day interval as measured by vdslPerf1DayIntervalMoniSecs."

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

::= { vdslPerf1DayIntervalEntry 5 }

vdslPerf1DayIntervalLols OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Loss of Link (LOL) Seconds during the 1-day interval as measured by vdslPerf1DayIntervalMoniSecs."

::= { vdslPerf1DayIntervalEntry 6 }

vdslPerf1DayIntervalESs OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

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

::= { vdslPerf1DayIntervalEntry 7 }

vdslPerf1DayIntervalSEss OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of Severely Errored Seconds (SES) during the 1-day interval as measured by vdslPerf1DayIntervalMoniSecs."

::= { vdslPerf1DayIntervalEntry 8 }

vdslPerf1DayIntervalUAss OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

::= { vdslPerf1DayIntervalEntry 9 }

vdslPerf1DayIntervalInits OBJECT-TYPE

SYNTAX Unsigned32

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

Expires February 2, 2003

[Page 32]

"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 }
```

Expires February 2, 2003

[Page 33]

vds1ChanInvalidIntervals OBJECT-TYPE

SYNTAX HCPerfInvalidIntervals

UNITS "intervals"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

::= { vds1ChanPerfDataEntry 2 }

vds1ChanFixedOctets 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"

::= { vds1ChanPerfDataEntry 3 }

vds1ChanBadBlks 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"

::= { vds1ChanPerfDataEntry 4 }

vds1ChanCurr15MinTimeElapsed OBJECT-TYPE

SYNTAX HCPerfTimeElapsed

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total elapsed seconds in this interval."

::= { vds1ChanPerfDataEntry 5 }

vds1ChanCurr15MinFixedOctets OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "octets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of corrected octets in this interval."

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

::= { vds1ChanPerfDataEntry 6 }

vds1ChanCurr15MinBadBlks OBJECT-TYPE
SYNTAX HCPperfCurrentCount
UNITS "blocks"

Expires February 2, 2003

[Page 34]

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 HCPperfTimeElapsed
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 HCPperfCurrentCount
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 HCPperfCurrentCount
UNITS "blocks"

MAX-ACCESS read-only
STATUS current
DESCRIPTION

"Count of uncorrectable blocks since the beginning of the

Expires February 2, 2003

[Page 35]

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	HCPperfIntervalCount,
vdslChanIntervalBadBlks	HCPperfIntervalCount
}	

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 HCPperfIntervalCount

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 }

Expires February 2, 2003

[Page 36]

vdslChanIntervalBadBlks OBJECT-TYPE

SYNTAX HCPperfIntervalCount

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      HCPerfTimeElapsed
```

Expires February 2, 2003

[Page 37]

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

Expires February 2, 2003

[Page 38]

DESCRIPTION

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

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

```
INDEX { vdslLineConfProfileName }  
 ::= { vdslLineConfProfileTable 1 }
```

VdslLineConfProfileEntry ::=

SEQUENCE

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

vdsllineConfHamBandMask	BITS,
vdsllineConfCustomNotch1Start	Unsigned32,
vdsllineConfCustomNotch1Stop	Unsigned32,
vdsllineConfCustomNotch2Start	Unsigned32,

Expires February 2, 2003

[Page 39]

vdslLineConfCustomNotch2Stop	Unsigned32,
vdslLineConfDownTargetSlowBurst	Unsigned32,
vdslLineConfUpTargetSlowBurst	Unsigned32,
vdslLineConfDownMaxFastFec	Unsigned32,
vdslLineConfUpMaxFastFec	Unsigned32,
vdslLineConfLineType	INTEGER,
vdslLineConfProfRowStatus	RowStatus
}	

vdslLineConfProfileName OBJECT-TYPE

SYNTAX SnmpAdminString (SIZE (1..32))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This object identifies a row in this table.

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

::= { vdslLineConfProfileEntry 1 }

vdslLineConfDownRateMode OBJECT-TYPE

SYNTAX INTEGER

{
manual(1),
adaptAtInit(2)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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

manual(1) forces the rate to the configured rate
adaptAtInit(2) adapts the line based upon line quality."

DEFVAL { adaptAtInit }

::= { vdslLineConfProfileEntry 2 }

vdslLineConfUpRateMode OBJECT-TYPE

SYNTAX INTEGER

{
manual(1),
adaptAtInit(2)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Specifies the rate selection behavior for the line

in the upstream direction.

manual(1) forces the rate to the configured rate
adaptAtInit(2) adapts the line based upon line quality."

Expires February 2, 2003

[Page 40]


```
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 }
```

```
::= { vdsLineConfProfileEntry 7 }
```

```
vdsLineConfDownTargetSnrMgn OBJECT-TYPE  
    SYNTAX      Unsigned32 (0..127)
```

Expires February 2, 2003

[Page 41]

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

Expires February 2, 2003

[Page 42]

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
```

Expires February 2, 2003

[Page 43]

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"

Expires February 2, 2003

[Page 44]

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 }

vds1LineConfDownPboControl OBJECT-TYPE

SYNTAX INTEGER
 {

Expires February 2, 2003

[Page 45]

```
        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

Expires February 2, 2003

[Page 46]

DESCRIPTION

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

DEFVAL { 0 }

::= { vdsLineConfProfileEntry 27 }

vdsLineConfDeploymentScenario 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 }

::= { vdsLineConfProfileEntry 28 }

vdsLineConfAdslPresence 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 }

::= { vdsLineConfProfileEntry 29 }

vdsLineConfApplicableStandard OBJECT-TYPE

SYNTAX INTEGER

{

ansi(1),
etsi(2),
itu(3),
other(4)

Expires February 2, 2003

[Page 47]

```
    }
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

Expires February 2, 2003

[Page 48]

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
```

Expires February 2, 2003

[Page 49]

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

```
vdsLineConfCustomNotch1Start  
vdsLineConfCustomNotch1Stop  
MUST be specified.
```

Expires February 2, 2003

[Page 50]

If customNotch2 is enabled, then both
vdsLineConfCustomNotch2Start
vdsLineConfCustomNotch2Stop
MUST be specified."

REFERENCE "DSL TR-057, [section 2.6](#)"

DEFVAL { { } }

::= { vdsLineConfProfileEntry 36 }

vdsLineConfCustomNotch1Start 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. vdsLineConfCustomNotch1Start MUST
be less than or equal to vdsLineConfCustomNotch1Stop."

DEFVAL { 0 }

::= { vdsLineConfProfileEntry 37 }

vdsLineConfCustomNotch1Stop 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. vdsLineConfCustomNotch1Stop MUST
be greater than or equal to vdsLineConfCustomNotch1Start."

DEFVAL { 0 }

::= { vdsLineConfProfileEntry 38 }

vdsLineConfCustomNotch2Start 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. vdsLineConfCustomNotch2Start MUST
be less than or equal to vdsLineConfCustomNotch2Stop."

DEFVAL { 0 }

::= { vdsLineConfProfileEntry 39 }

vdsLineConfCustomNotch2Stop 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."

Expires February 2, 2003

[Page 51]

```
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
```

Expires February 2, 2003

[Page 52]


```
{
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.

Expires February 2, 2003

[Page 53]

Before a profile can be deleted or taken out of service,
 (by setting this object to 'destroy' or 'outOfService')
 it must be first unreferenced from all associated lines."
 ::= { vdslLineConfProfileEntry 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,
vdslThresh15MinLofs	HCPperfIntervalThreshold,
vdslThresh15MinLoss	HCPperfIntervalThreshold,
vdslThresh15MinLprs	HCPperfIntervalThreshold,
vdslThresh15MinLols	HCPperfIntervalThreshold,
vdslThresh15MinESS	HCPperfIntervalThreshold,
vdslThresh15MinSESS	HCPperfIntervalThreshold,

vdslThresh15MinUASs	HCPperfIntervalThreshold,
vdslInitFailureNotifyEnable	TruthValue,
vdslLineAlarmConfProfRowStatus	RowStatus
}	

Expires February 2, 2003

[Page 54]

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 }

vdslThresh15MinLofs OBJECT-TYPE

SYNTAX HCPperfIntervalThreshold

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 }

vdslThresh15MinLoss OBJECT-TYPE

SYNTAX HCPperfIntervalThreshold

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 }

vdslThresh15MinLprs OBJECT-TYPE

SYNTAX HCPperfIntervalThreshold

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

Expires February 2, 2003

[Page 55]

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 }

vdslThresh15MinLols OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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

DEFVAL { 0 }

::= { vdslLineAlarmConfProfileEntry 5 }

vdslThresh15MinESs OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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

DEFVAL { 0 }

::= { vdslLineAlarmConfProfileEntry 6 }

vdslThresh15MinSESSs OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object configures the threshold for the number of

severely errored seconds (SEs) 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 }

vdslThresh15MinUASSs OBJECT-TYPE

SYNTAX HCPerfIntervalThreshold

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object configures the threshold for the number of unavailable seconds (UASSs) 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 vdslPerfUASSsThreshNotification notification will be generated. No more than one notification will be sent per interval."

DEFVAL { 0 }

::= { vdslLineAlarmConfProfileEntry 8 }

vdslInitFailureNotifyEnable 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."

::= { vdslLineAlarmConfProfileEntry 10 }

-- Notification definitions

vdslNotifications OBJECT IDENTIFIER ::= { vdslLineMib 0 }

Expires February 2, 2003

[Page 57]

vdslPerfLofsThreshNotification NOTIFICATION-TYPE

```
OBJECTS      {
                vdslPerfDataCurr15MinLofs
            }
STATUS       current
DESCRIPTION
    "Loss of Framing 15-minute interval threshold
     (vdslThresh15MinLofs) reached."
 ::= { vdslNotifications 1 }
```

vdslPerfLossThreshNotification NOTIFICATION-TYPE

```
OBJECTS      {
                vdslPerfDataCurr15MinLoss
            }
STATUS       current
DESCRIPTION
    "Loss of Signal 15-minute interval threshold
     (vdslThresh15MinLoss) reached."
 ::= { vdslNotifications 2 }
```

vdslPerfLprsThreshNotification NOTIFICATION-TYPE

```
OBJECTS      {
                vdslPerfDataCurr15MinLprs
            }
STATUS       current
DESCRIPTION
    "Loss of Power 15-minute interval threshold
     (vdslThresh15MinLprs) reached."
 ::= { vdslNotifications 3 }
```

vdslPerfLolsThreshNotification NOTIFICATION-TYPE

```
OBJECTS      {
                vdslPerfDataCurr15MinLols
            }
STATUS       current
DESCRIPTION
    "Loss of Link 15-minute interval threshold
     (vdslThresh15MinLols) reached."
 ::= { vdslNotifications 4 }
```

vdslPerfESsThreshNotification NOTIFICATION-TYPE

```
OBJECTS      {
                vdslPerfDataCurr15MinESs
            }
STATUS       current
DESCRIPTION
    "Errored Seconds 15-minute interval threshold
     (vdslThresh15MinESs) reached."
```

```
::= { vdslNotifications 5 }
```

```
vdslPerfSESSthreshNotification NOTIFICATION-TYPE  
OBJECTS      {
```

Expires February 2, 2003

[Page 58]

```
        vdslPerfDataCurr15MinSESSs
    }
    STATUS          current
    DESCRIPTION
        "Severely Errored Seconds 15-minute interval threshold
        (vdslThresh15MinSESSs) reached."
    ::= { vdslNotifications 6 }

vdslPerfUASsThreshNotification NOTIFICATION-TYPE
    OBJECTS          {
        vdslPerfDataCurr15MinUASs
    }
    STATUS          current
    DESCRIPTION
        "Unavailable Seconds 15-minute interval threshold
        (vdslThresh15MinUASs) 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,

Expires February 2, 2003

[Page 60]

vds1PhysInvVendorID,
vds1PhysInvVersionNumber,
vds1PhysCurrSnrMgn,
vds1PhysCurrAtn,
vds1PhysCurrStatus,
vds1PhysCurrOutputPwr,
vds1PhysCurrAttainableRate,
vds1PhysCurrLineRate,
vds1ChanInterleaveDelay,
vds1ChanCrcBlockLength,
vds1ChanCurrTxRate,
vds1ChanCurrTxSlowBurstProtect,
vds1ChanCurrTxFastFec,
vds1PerfDataValidIntervals,
vds1PerfDataInvalidIntervals,
vds1PerfDataLofs,
vds1PerfDataLoss,
vds1PerfDataLprs,
vds1PerfDataLols,
vds1PerfDataESS,
vds1PerfDataSESS,
vds1PerfDataUASS,
vds1PerfDataInits,
vds1PerfDataCurr15MinTimeElapsed,
vds1PerfDataCurr15MinLofs,
vds1PerfDataCurr15MinLoss,
vds1PerfDataCurr15MinLprs,
vds1PerfDataCurr15MinLols,
vds1PerfDataCurr15MinESS,
vds1PerfDataCurr15MinSESS,
vds1PerfDataCurr15MinUASS,
vds1PerfDataCurr15MinInits,
vds1PerfData1DayValidIntervals,
vds1PerfData1DayInvalidIntervals,
vds1PerfDataCurr1DayTimeElapsed,
vds1PerfDataCurr1DayLofs,
vds1PerfDataCurr1DayLoss,
vds1PerfDataCurr1DayLprs,
vds1PerfDataCurr1DayLols,
vds1PerfDataCurr1DayESS,
vds1PerfDataCurr1DaySESS,
vds1PerfDataCurr1DayUASS,
vds1PerfDataCurr1DayInits,
vds1PerfIntervalLofs,
vds1PerfIntervalLoss,
vds1PerfIntervalLprs,
vds1PerfIntervalLols,
vds1PerfIntervalESS,
vds1PerfIntervalSESS,

```
vds1PerfIntervalUASs,  
vds1PerfIntervalInits,  
vds1Perf1DayIntervalMoniSecs,  
vds1Perf1DayIntervalLofs,
```

Expires February 2, 2003

[Page 61]

vds1Perf1DayIntervalLoss,
vds1Perf1DayIntervalLprs,
vds1Perf1DayIntervalLols,
vds1Perf1DayIntervalESs,
vds1Perf1DayIntervalSESSs,
vds1Perf1DayIntervalUASs,
vds1Perf1DayIntervalInits,
vds1ChanValidIntervals,
vds1ChanInvalidIntervals,
vds1ChanFixedOctets,
vds1ChanBadBlks,
vds1ChanCurr15MinTimeElapsed,
vds1ChanCurr15MinFixedOctets,
vds1ChanCurr15MinBadBlks,
vds1Chan1DayValidIntervals,
vds1Chan1DayInvalidIntervals,
vds1ChanCurr1DayTimeElapsed,
vds1ChanCurr1DayFixedOctets,
vds1ChanCurr1DayBadBlks,
vds1ChanIntervalFixedOctets,
vds1ChanIntervalBadBlks,
vds1Chan1DayIntervalMoniSecs,
vds1Chan1DayIntervalFixedOctets,
vds1Chan1DayIntervalBadBlks,
vds1LineConfDownRateMode,
vds1LineConfUpRateMode,
vds1LineConfDownMaxPwr,
vds1LineConfUpMaxPwr,
vds1LineConfDownMaxSnrMgn,
vds1LineConfDownMinSnrMgn,
vds1LineConfDownTargetSnrMgn,
vds1LineConfUpMaxSnrMgn,
vds1LineConfUpMinSnrMgn,
vds1LineConfUpTargetSnrMgn,
vds1LineConfDownFastMaxDataRate,
vds1LineConfDownFastMinDataRate,
vds1LineConfDownSlowMaxDataRate,
vds1LineConfDownSlowMinDataRate,
vds1LineConfUpFastMaxDataRate,
vds1LineConfUpFastMinDataRate,
vds1LineConfUpSlowMaxDataRate,
vds1LineConfUpSlowMinDataRate,
vds1LineConfDownRateRatio,
vds1LineConfUpRateRatio,
vds1LineConfDownMaxInterDelay,
vds1LineConfUpMaxInterDelay,
vds1LineConfDownPboControl,
vds1LineConfUpPboControl,
vds1LineConfDownPboLevel,

vdslLineConfUpPboLevel,
vdslLineConfDeploymentScenario,
vdslLineConfAdslPresence,
vdslLineConfApplicableStandard,

Expires February 2, 2003

[Page 62]

```
vdslLineConfBandPlan,  
vdslLineConfBandPlanFx,  
vdslLineConfBandOptUsage,  
vdslLineConfUpPsdTemplate,  
vdslLineConfDownPsdTemplate,  
vdslLineConfHamBandMask,  
vdslLineConfCustomNotch1Start,  
vdslLineConfCustomNotch1Stop,  
vdslLineConfCustomNotch2Start,  
vdslLineConfCustomNotch2Stop,  
vdslLineConfDownTargetSlowBurst,  
vdslLineConfUpTargetSlowBurst,  
vdslLineConfDownMaxFastFec,  
vdslLineConfUpMaxFastFec,  
vdslLineConfLineType,  
vdslLineConfProfRowStatus,  
vdslThresh15MinLofs,  
vdslThresh15MinLoss,  
vdslThresh15MinLprs,  
vdslThresh15MinLols,  
vdslThresh15MinESs,  
vdslThresh15MinSESSs,  
vdslThresh15MinUASs,  
vdslInitFailureNotifyEnable,  
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,  
vdslPerfSESSsThreshNotification,  
vdslPerfUASsThreshNotification,  
vdslDownMaxSnrMgnNotification,  
vdslDownMinSnrMgnNotification,  
vdslUpMaxSnrMgnNotification,  
vdslUpMinSnrMgnNotification,  
vdslInitFailureNotification  
}
```

STATUS current

DESCRIPTION

"This group supports notifications of significant
conditions associated with VDSL Lines."

::= { vdslGroups 2 }

Expires February 2, 2003

[Page 63]

END

5. Intellectual Property Notice

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Expires February 2, 2003

[Page 64]

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8. 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

Expires February 2, 2003

[Page 65]

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. These are the tables and objects and their sensitivity/vulnerability:

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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Expires February 2, 2003

[Page 67]

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Expires February 2, 2003

[Page 68]