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Definitions of Managed Object Extensions
for Very High Speed Digital Subscriber Lines (VDSL) Using
Single Carrier Modulation (SCM) Line Coding

Status of This Memo

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

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This document defines a portion of the Management Information Base (MIB) module for use with network management protocols in the Internet community. In particular, it describes objects used for managing the Line Code Specific parameters of Very High Speed Digital Subscriber Line (VDSL) interfaces using Single Carrier Modulation (SCM) Line Coding. It is an optional extension to the VDSL-LINE-MIB, RFC 3728, which handles line code independent objects.

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1. The Internet-Standard Management Framework

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

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

2. Overview

This document describes an SNMP MIB module for managing the Line Code Dependent, Physical Medium Dependent (PMD) Layer of SCM VDSL Lines. These definitions are based upon the specifications for VDSL as defined in T1E1, European Telecommunications Standards Institute (ETSI), and International Telecommunication Union (ITU) documentation [T1E1311, T1E1011, T1E1013, ETSI2701, ETSI2702, ITU9931, ITU9971]. Additionally the protocol-dependent (and line-code dependent) management framework for VDSL lines specified by the Digital Subscriber Line Forum (DSL Forum) has been taken into consideration [DSLFR57] and [DSLFWT96].

The MIB module is located in the MIB tree under MIB-2 transmission.

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

2.1. Relationship of this MIB Module to Other MIB Modules

The relationship of the VDSL Line MIB module to other MIB modules, in particular to the IF-MIB presented in RFC 2863 [RFC2863], is discussed in the VDSL-LINE-MIB, RFC 3728 [RFC3728]. This section outlines the relationship of this VDSL Line Extension MIB to the VDSL-LINE-MIB, RFC 3728 [RFC3728].

2.2. Conventions Used in the MIB Module

2.2.1. Naming Conventions

- A. Vtuc -- VDSL transceiver unit at near (Central) end of line
- B. Vtur -- VDSL transceiver unit at Remote end of line
- C. Vtu -- One of either Vtuc or Vtur
- D. Curr -- Current
- F. Atn -- Attenuation
- J. LCS -- Line Code Specific
- K. Max -- Maximum
- Q. Mgn -- Margin
- S. PSD -- Power Spectral Density
- T. Rx -- Receive
- T. Snr -- Signal to Noise Ratio
- U. Tx -- Transmit

2.3. Structure

The SCM VDSL Line Extension MIB contains the following MIB group:

- o vdslSCMGroup :

This group supports MIB objects for defining configuration profiles and for monitoring individual bands of Single Carrier Modulation (SCM) VDSL modems. It contains the following tables:

- vdslLineSCMConfProfileTxBandTable
- vdslSCMPhysBandTable

If the SCM VDSL Line Extension MIB is implemented then all objects in this group MUST be implemented.

Figure 1 below displays the relationship of the tables in the vdslSCMGroup to the vdslGroup and to the ifEntry:

```

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

    vdslLineTableEntry (vdslLineCoding=SCM)
        ----> vdslPhysTableEntry 1:(0..2)
            ----> vdslSCMPhysBandTable 1:(0..5)

    vdslLineConfProfileEntry(vdslLineConfProfileName)
        ----> vdslLineSCMConfProfileBandTable 1:(0..5)

```

Figure 1: Table Relationships

When the object `vdslLineCoding` is set to `SCM`, `vdslLineConfProfileName` is used as the index to `vdslLineSCMConfProfileBandTable`. The existence of an entry in any of the tables of the `vdslSCMGroup` is optional.

2.4. Persistence

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

```

vdslLineSCMConfProfileBandId
vdslLineSCMConfProfileBandUsage
vdslLineSCMConfProfileBandCenterFrequency
vdslLineSCMConfProfileBandSymbolRate
vdslLineSCMConfProfileBandConstellationSize
vdslLineSCMConfProfileBandTransmitPSDLevel
vdslLineSCMConfProfileBandRowStatus
vdslLineSCMPhysBandId
vdslLineSCMPhysBandUsage
vdslLineSCMPhysBandCurrPSDLevel
vdslLineSCMPhysBandCurrSymbolRate
vdslLineSCMPhysBandCurrConstellationSize
vdslLineSCMPhysBandCurrCenterFrequency
vdslLineSCMPhysBandPerformanceBandId
vdslLineSCMPhysBandPerformanceBandUsage
vdslLineSCMPhysBandPerformanceBandSnrMgn
vdslLineSCMPhysBandPerformanceBandAtn

```

Note also that the interface indices in this MIB are maintained persistently. View-based Access Control Model (VACM) data relating to these SHOULD be stored persistently as well [RFC3415].

3. Conformance and Compliance

An SCM based VDSL agent does not have to implement this MIB to be compliant with RFC 3728 [RFC3728]. If the SCM VDSL Line Extension MIB is implemented then the following group is mandatory:

- vdslSCMGroup

4. Definitions

VDSL-LINE-EXT-SCM-MIB DEFINITIONS ::= BEGIN

IMPORTS

```

MODULE-IDENTITY,
OBJECT-TYPE,
Integer32,
transmission,
Unsigned32                FROM SNMPv2-SMI                -- [RFC2578]
TEXTUAL-CONVENTION,
TruthValue,
RowStatus                FROM SNMPv2-TC                -- [RFC2579]
MODULE-COMPLIANCE,
OBJECT-GROUP              FROM SNMPv2-CONF              -- [RFC2580]
ifIndex                  FROM IF-MIB                    -- [RFC2863]
vdslLineConfProfileName  FROM VDSL-LINE-MIB;             -- [RFC3728]

```

vdslExtSCMMIB MODULE-IDENTITY

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DESCRIPTION

"The VDSL-LINE-MIB found in RFC 3728 defines objects for the management of a pair of VDSL transceivers at each end of the VDSL line. The VDSL-LINE-MIB configures and monitors the line code independent parameters (TC layer) of the VDSL line. This MIB module is an optional extension of the VDSL-LINE-MIB and defines objects for configuration and monitoring of the line code specific (LCS) elements (PMD layer) for VDSL lines using SCM coding. The objects in this extension MIB MUST NOT be used for VDSL lines using Multiple Carrier Modulation (MCM) line coding. If an object in this extension MIB is referenced by a line which does not use SCM, it has no effect on the operation of that line.

Naming Conventions:

Vtuc -- VDSL transceiver at near (Central) end of line
 Vtur -- VDSL transceiver at Remote end of line
 Vtu -- One of either Vtuc or Vtur
 Curr -- Current
 Atn -- Attenuation
 LCS -- Line Code Specific
 Max -- Maximum
 Mgn -- Margin
 PSD -- Power Spectral Density
 Rx -- Receive
 Snr -- Signal to Noise Ratio
 Tx -- Transmit

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::= { transmission 228 }

vdslLineExtSCMMib OBJECT IDENTIFIER ::= { vdsExtSCMMIB 1 }
 vdsLineExtSCMMibObjects OBJECT IDENTIFIER ::=
 { vdsLineExtSCMMib 1 }

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