Network Working Group
Request for Comments: 4706
Category: Standards Track

M. Morgenstern
M. Dodge
ECI Telecom Ltd.
S. Baillie
U. Bonollo
NEC Australia

November 2006

Definitions of Managed Objects for Asymmetric Digital Subscriber Line 2 (ADSL2)

Status of This Memo

Copyright Notice

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 parameters of the "Asymmetric Digital Subscriber Line" family of interface types: ADSL, ADSL2, ADSL2+, and their variants.

Table of Contents

1. The Internet-Standard Management Framework

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

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

2. Overview

This document defines a Management Information Base (MIB) module for use with network management protocols in the Internet community for the purpose of managing ADSL, ADSL2, and ADSL2+ lines.

The MIB module described in RFC 2662 [RFC2662] describes objects used for managing Asymmetric Bit-Rate DSL (ADSL) interfaces per [T1E1.413], [G.992.1], and [G.992.2]. These object descriptions are based upon the specifications for the ADSL Embedded Operations Channel (EOC) as defined in American National Standards Institute (ANSI) T1E1.413/1995 [T1E1.413] and International Telecommunication Union (ITU-T) G.992.1 [G.992.1] and G.992.2 [G.992.2].

This document does not obsolete RFC 2662 [RFC2662], but rather provides a more comprehensive management model that includes the ADSL2 and ADSL2+ technologies per G.992.3, G.992.4, and G.992.5 ([G.992.3], [G.992.4], and [G.992.5] respectively). In addition, objects have been added to improve the management of ADSL, ADSL2, and ADSL2+ lines.

Additionally, the management framework for New Generation ADSL lines specified [TR-90] by the Digital Subscriber Line Forum (DSLF) has been taken into consideration. That framework is based on ITU-T G.997.1 standard [G.997.1] as well as on two amendments: ([G.997.1am1] and [G.997.1am2]). This document refers to all three documents as G.997.1. That is, a MIB attribute whose REFERENCE section provides a paragraph number in ITU-T G.997.1 is actually originated from either G.997.1 [G.997.1] or one of its amendment documents.

Note that the revised ITU-T G.997.1 standard also refers to the next generation of VDSL technology, known as VDSL2, as per ITU-T G.993.2 [G.993.2]. However, managing VDSL2 lines is currently beyond the scope of this document.

The MIB module is located in the MIB tree under MIB 2 transmission, as discussed in the IANA Considerations section of this document.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

2.1. Relationship to Other MIBs

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

2.1.1. General IF-MIB Integration (RFC 2863)

The ADSL2 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 ifTypes, which may be applicable for ADSL lines:

```
IANAifType ::= TEXTUAL-CONVENTION
    ...
SYNTAX INTEGER {
    ...
    channel(70),     -- Channel
    adsl(94),        -- Asymmetric Digital Subscriber Loop
    ...
    interleave(124), -- Interleaved Channel
    fast(125),       -- Fast Channel
    ...
    adsl2plus(238),  -- Asymmetric Digital Subscriber Loop Version 2,
                        Version 2 Plus, and all variants
    ...
    }
```

ADSL lines that are identified with ifType=adsl(94) MUST be managed with the MIB specified by RFC 2662. ADSL, ADSL2, and ADSL2+ lines identified with ifType=adsl2plus(238) MUST be managed with the MIB specified by this document.

In any case, the SNMP agent may use either ifType=interleave(124) or fast(125) for each channel, e.g., depending on whether or not it is capable of using an interleaver on that channel. It may use the ifType=channel(70) when all channels are capable of using an interleaver (e.g., for ADSL2 XTUs).

Note that the ifFixedLengthGroup from RFC 2863 [RFC2863] MUST be supported and that the ifRcvAddressGroup does not apply to this MIB module.

2.1.2. Usage of ifTable

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

The following attributes are part of the mandatory ifGeneralInformationGroup in the Interfaces MIB [RFC2863] and are not duplicated in the ADSL2 Line MIB.

ifIndex	Interface index.
ifDescr	See interfaces MIB.
ifType	adsl2plus(238) or channel(70) or interleave(124) or fast(125).
ifSpeed	Set as appropriate.
ifPhysAddress	This object MUST have an octet string with zero length.
ifAdminStatus	See interfaces MIB.
ifOperStatus	See interfaces MIB.
ifLastChange	See interfaces MIB.
ifName	See interfaces MIB.
ifAlias	See interfaces MIB.

ifLinkUpDownTrapEnable	Default to enabled(1).
ifHighSpeed	Set as appropriate.
ifConnectorPresent	Set as appropriate.

Figure 1: Use of ifTable Objects

2.2. IANA Considerations

The IANA has allocated ifType=adsl2plus(238) for Asymmetric Digital Subscriber Loop Version 2. A separate ifType number was necessary to distinguish between ADSL lines that are managed with the RFC 2662 management model and ADSL/ADSL2 and ADSL2+ lines managed with the model defined in this document.

Also, the IANA has assigned transmission number 238 to the ADSL2-LINE-MIB module.

An assignment was in fact done when RFC 2662 was published, but as this MIB does not obsolete RFC 2662, it required a new assignment from IANA.

2.3. Conventions Used in the MIB Module

2.3.1. Naming Conventions

ATU	ADSL Transceiver Unit
ATU-C	ATU at the Central office end (i.e., network operator).
ATU-R	ATU at the Remote end (i.e., subscriber end of the loop).
XTU	A terminal unit; either an ATU-C or an ATU-R.
CRC	Cyclic Redundancy Check
DELT	Dual Ended Loop Test
ES	Errored Second
FEC	Forward Error Correction
LOF	Loss Of Frame
LOS	Loss Of Signal
LOSS	LOS Seconds
SES	Severely-Errored Second
SNR	Signal-to-Noise Ratio
UAS	Unavailable Seconds

2.3.2. Textual Conventions

The following textual conventions are defined to reflect the line topology in the MIB module (further discussed in the following section), the various transmission modes, power states, synchronization states, possible values for various configuration parameters, status parameters, and other parameter types.

- Adsl2Unit:

  Attributes with this syntax uniquely identify each unit in the ADSL/ADSL2/ADSL2+ link. It mirrors the EOC addressing mechanism:

  atuc(1) - Central office ADSL transceiver unit (ATU-C).
  atur(2) - Remote ADSL transceiver unit (ATU-R).

- Adsl2Direction:

  Attributes with this syntax uniquely identify a transmission direction in an ADSL/ADSL2/ADSL2+ link. Upstream direction is a transmission from the remote end (ATU-R) towards the central office end (ATU-C), while downstream direction is a transmission from the ATU-C towards the ATU-R.

  upstream(1) - Transmission from the ATU-R to the ATU-C.
  downstream(2) - Transmission from the ATU-C to the ATU-R.

- Adsl2TransmissionModeType:

  Attributes with this syntax reference the list of possible transmission modes for ADSL/ADSL2 or ADSL2+.

  Specified as a BITS construct, there are currently a few dozen transmission modes in the list.

- Adsl2RaMode:

  Attributes with this syntax reference if and how Rate-Adaptive synchronization is being used on the respective ADSL/ADSL2 or ADSL2+ link:

  manual(1) - No Rate-Adaptation. The initialization process attempts to synchronize to a specified rate.
  raInit(2) - Rate-Adaptation during initialization process only, which attempts to synchronize to a rate between minimum and maximum specified values.

dynamicRa(3) - Dynamic Rate-Adaptation during initialization process as well as during SHOWTIME.

- Adsl2InitResult:

  Attributes with this syntax reference the recent result of a full initialization attempt:

```
noFail(0)              - Successful initialization.
configError(1)         - Configuration failure.
configNotFeasible(2)   - Configuration details not supported.
commFail(3)            - Communication failure.
noPeerAtu(4)           - Peer ADSL Transceiver Unit (ATU) not
                         detected.
otherCause(5)          - Other initialization failure reason.
```

- Adsl2OperationModes:

  Attributes with this syntax uniquely identify an ADSL mode, which is a category associated with each transmission mode defined for the ADSL/ADSL2 or ADSL2+ link. Part of the line configuration profile depends on the ADSL Mode:

  Specified as an enumeration construct, there are currently a few dozen transmission modes in the list.

- Adsl2PowerMngState:

  Attributes with this syntax uniquely identify each power management state defined for the ADSL/ADSL2 or ADSL2+ link:

```
l0(1)       - L0 - Full power management state.
l1(2)       - L1 - Low power management state (for G.992.2).
l2(3)       - L2 - Low power management state (for G.992.3,
                   G.992.4, and G.992.5).
l3(4)       - L3 - Idle power management state.
```

- Adsl2ConfPmsForce:

  Attributes with this syntax are configuration parameters that reference the desired power management state for the ADSL/ADSL2 or ADSL2+ link:

```
l3toL0(0)        - Perform a transition from L3 to L0 (Full
                   power management state).
l0toL2(2)        - Perform a transition from L0 to L2 (Low
                   power management state).
```

```
      l0orL2toL3(3)    - Perform a transition into L3 (Idle power
                         management state).
```

o Adsl2LConfProfPmMode:

Attributes with this syntax are configuration parameters that reference the power modes/states into which the ATU-C or ATU-R may autonomously transit.

This is a BITS structure that allows control of the following transit options:

```
   allowTransitionsToIdle(0)     - XTU may autonomously transit
                                   to idle (L3) state.
   allowTransitionsToLowPower(1) - XTU may autonomously transit
                                   to low-power (L2) state.
```

o Adsl2LineLdsf:

Attributes with this syntax are configuration parameters that control the Loop Diagnostic mode for the ADSL/ADSL2 or ADSL2+ link:

```
   inhibit(0)        - Inhibit Loop Diagnostic mode.
   force(1)          - Force/Initiate Loop Diagnostic mode.
```

o Adsl2LdsfResult:

Attributes with this syntax are status parameters that report the result of the recent Loop Diagnostic mode issued for the ADSL/ADSL2 or ADSL2+ link:

```
   none(1)           - The default value, in case loop diagnostics
                       mode forced (LDSF) was never requested for
                       the associated line.
   success(2)        - The recent command completed
                       successfully.
   inProgress(3)     - The Loop Diagnostics process is in
                       progress.
   unsupported(4)    - The NE or the line card doesn't support
                       LDSF.
   cannotRun(5)      - The NE cannot initiate the command, due
                       to a nonspecific reason.
   aborted(6)        - The Loop Diagnostics process aborted.
   failed(7)         - The Loop Diagnostics process failed.
   illegalMode(8)    - The NE cannot initiate the command, due
                       to the specific mode of the relevant
                       line.
```

```
      adminUp(9)        - The NE cannot initiate the command because
                          the relevant line is administratively 'Up'.
      tableFull(10)     - The NE cannot initiate the command, due
                          to reaching the maximum number of rows
                          in the results table.
      noResources(11)   - The NE cannot initiate the command, due
                          to lack of internal memory resources.
```

- Adsl2SymbolProtection:

  Attributes with this syntax are configuration parameters that reference the minimum-length impulse noise protection (INP) in terms of number of symbols:

```
      noProtection(1)     - INP not required.
      halfSymbol(2)       - INP length = 1/2 symbol.
      singleSymbol(3)     - INP length = 1 symbol.
      twoSymbols(4)       - INP length = 2 symbols.
      threeSymbols(5)     - INP length = 3 symbols.
      fourSymbols(6)      - INP length = 4 symbols.
      fiveSymbols(7)      - INP length = 5 symbols.
      sixSymbols(8)       - INP length = 6 symbols.
      sevenSymbols(9)     - INP length = 7 symbols.
      eightSymbols(10)    - INP length = 8 symbols.
      nineSymbols(11)     - INP length = 9 symbols.
      tenSymbols(12)      - INP length = 10 symbols.
      elevenSymbols(13)   - INP length = 11 symbols.
      twelveSymbols(14)   - INP length = 12 symbols.
      thirteeSymbols(15)  - INP length = 13 symbols.
      fourteenSymbols(16) - INP length = 14 symbols.
      fifteenSymbols(17)  - INP length = 15 symbols.
      sixteenSymbols(18)  - INP length = 16 symbols.
```

- Adsl2MaxBer:

  Attributes with this syntax are configuration parameters that reference the maximum Bit Error Rate (BER):

```
      eminus3(1)  - Maximum BER=E^-3.
      eminus5(2)  - Maximum BER=E^-5.
      eminus7(3)  - Maximum BER=E^-7.
```

- Adsl2ScMaskDs:

  Attributes with this syntax are configuration parameters that reference the downstream sub-carrier mask. It is a bitmap of up to 512 bits.

- Adsl2ScMaskUs:

  Attributes with this syntax are configuration parameters that reference the upstream sub-carrier mask. It is a bitmap of up to 64 bits.

- Adsl2RfiDs:

  Attributes with this syntax are configuration parameters that reference the downstream notch filters. It is a bitmap of up to 512 bits.

- Adsl2PsdMaskDs:

  Attributes with this syntax are configuration parameters that reference the downstream power spectrum density (PSD) mask. It is a structure of up to 32 breakpoints, where each breakpoint occupies 3 octets.

- Adsl2PsdMaskUs:

  Attributes with this syntax are configuration parameters that reference the upstream power spectrum density (PSD) mask. It is a structure of up to 4 breakpoints, where each breakpoint occupies 3 octets.

- Adsl2Tssi:

  Attributes with this syntax are status parameters that reference the transmit spectrum shaping (TSSi). It is a structure of up to 32 breakpoints, where each breakpoint occupies 3 octets.

- Adsl2LastTransmittedState:

  Attributes with this syntax reference the list of initialization states for ADSL/ADSL2 or ADSL2+ modems. The list of states for CO side modems (ATU-Cs) is different from the list of states for the remote side modems (ATU-Rs).

  Specified as an enumeration type, there are currently a few dozen states in the list per each unit side (i.e., ATU-C or ATU-R).

- Adsl2LineStatus:

  Attributes with this syntax are status parameters that reflect the failure status for a given endpoint of ADSL/ADSL2 or ADSL2+ link.

This is a BITS structure that can report the following failures:

```
noDefect(0)       - This bit position positively reports that
                    no defect or failure exists.
lossOfFrame(1)    - Loss of frame synchronization.
lossOfSignal(2)   - Loss of signal.
lossOfPower(3)    - Loss of power.  Usually this failure may
                    be reported for ATU-Rs only.
initFailure(4)    - Recent initialization process failed.
                    Never active on ATU-R.
```

- Adsl2ChAtmStatus:

  Attributes with this syntax are status parameters that reflect the failure status for Transmission Convergence (TC) layer of a given ATM interface (data path over an ADSL/ADSL2 or ADSL2+ link).

  This is a BITS structure that can report the following failures:

```
noDefect(0)              - This bit position positively reports
                           that no defect or failure exists.
noCellDelineation(1)     - The link was successfully
                           initialized but cell delineation
                           was never acquired on the
                           associated ATM data path.
lossOfCellDelineation(2) - Loss of cell delineation on the
                           associated ATM data path.
```

- Adsl2ChPtmStatus:

  Attributes with this syntax are status parameters that reflect the failure status for a given PTM interface (packet data path over an ADSL/ADSL2 or ADSL2+ link).

  This is a BITS structure that can report the following failures:

```
noDefect(0)     -  This bit position positively reports that no
                   defect or failure exists.
outOfSync(1)    -  Out of synchronization.
```

2.4. Structure

The MIB module is structured into following MIB groups:

- Line Configuration, Maintenance, and Status Group:

  This group supports MIB objects for configuring parameters for the ADSL/ADSL2 or ADSL2+ line and retrieving line status information.

It also supports MIB objects for configuring a requested power state or initiating a Dual Ended Loop Test (DELT) process in the ADSL/ADSL2 or ADSL2+ line. It contains the following table:

- adsl2LineTable

o Channel Status Group:

This group supports MIB objects for retrieving channel layer status information. It contains the following table:

- adsl2ChannelStatusTable

o Subcarrier Status Group:

This group supports MIB objects for retrieving the sub-carrier layer status information, mostly collected by a Dual Ended Loop Test (DELT) process. It contains the following table:

- adsl2SCStatusTable

o Unit Inventory Group:

This group supports MIB objects for retrieving Unit inventory information about units in ADSL/ADSL2 or ADSL2+ lines via the EOC. It contains the following table:

- adsl2LineInventoryTable

o Current Performance Group:

This group supports MIB objects that provide the current performance information relating to ADSL/ADSL2 and ADSL2+ line, units and channels level. It contains the following tables:

- adsl2PMLineCurrTable
- adsl2PMLineCurrInitTable
- adsl2PMChCurrTable

o 15-Minute Interval Performance Group:

This group supports MIB objects that provide historic performance information relating to ADSL/ADSL2 and ADSL2+ line, units and channels level in 15-minute intervals. It contains the following tables:

- adsl2PMLineHist15MinTable
- adsl2PMLineInitHist15MinTable
- adsl2PMChHist15MinTable

o 1-Day Interval Performance Group:

This group supports MIB objects that provide historic performance information relating to ADSL/ADSL2 and ADSL2+ line, units and channels level in 1-day intervals. It contains the following tables:

- adsl2PMLineHist1DayTable
- adsl2PMLineInitHist1DayTable
- adsl2PMChHist1DTable

o Configuration Template and Profile Group:

This group supports MIB objects for defining configuration profiles for ADSL/ADSL2 and ADSL2+ lines and channels, as well as configuration templates. Each configuration template is comprised of one line configuration profile and one or more channel configuration profiles. This group contains the following tables:

- adsl2LineConfTemplateTable
- adsl2LineConfProfTable
- adsl2LineConfProfModeSpecTable
- adsl2ChConfProfileTable

o Alarm Configuration Template and Profile Group:

This group supports MIB objects for defining alarm profiles for ADSL/ADSL2 and ADSL2+ lines and channels, as well as alarm templates. Each alarm template is comprised of one line alarm profile and one or more channel alarm profiles. This group contains the following tables:

- adsl2LineAlarmConfTemplateTable
- adsl2LineAlarmConfProfileTable
- adsl2ChAlarmConfProfileTable

o Notifications Group:

This group defines the notifications supported for ADSL/ADSL2 and ADSL2+ lines:

- adsl2LinePerfFECSThreshAtuc
- adsl2LinePerfFECSThreshAtur
- adsl2LinePerfESThreshAtuc

- adsl2LinePerfESThreshAtur
- adsl2LinePerfSESThreshAtuc
- adsl2LinePerfSESThreshAtur
- adsl2LinePerfLOSSThreshAtuc
- adsl2LinePerfLOSSThreshAtur
- adsl2LinePerfUASThreshAtuc
- adsl2LinePerfUASThreshAtur
- adsl2LinePerfCodingViolationsThreshAtuc
- adsl2LinePerfCodingViolationsThreshAtur
- adsl2LinePerfCorrectedThreshAtuc
- adsl2LinePerfCorrectedThreshAtur
- adsl2LinePerfFailedFullInitThresh
- adsl2LinePerfFailedShortInitThresh
- adsl2LineStatusChangeAtuc
- adsl2LineStatusChangeAtur

2.5. Persistence

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

adsl2LineCnfgTemplate
adsl2LineAlarmCnfgTemplate
adsl2LineCmndConfPmsf
adsl2LineCmndConfLdsf
adsl2LineCmndAutomodeColdStart
adsl2LConfTempTemplateName
adsl2LConfTempLineProfile
adsl2LConfTempChan1ConfProfile
adsl2LConfTempChan1RaRatioDs
adsl2LConfTempChan1RaRatioUs
adsl2LConfTempChan2ConfProfile
adsl2LConfTempChan2RaRatioDs
adsl2LConfTempChan2RaRatioUs
adsl2LConfTempChan3ConfProfile
adsl2LConfTempChan3RaRatioDs
adsl2LConfTempChan3RaRatioUs
adsl2LConfTempChan4ConfProfile
adsl2LConfTempChan4RaRatioDs
adsl2LConfTempChan4RaRatioUs
adsl2LConfTempRowStatus
adsl2LConfProfProfileName
adsl2LConfProfScMaskDs
adsl2LConfProfScMaskUs
adsl2LConfProfRfiBandsDs
adsl2LConfProfRaModeDs
adsl2LConfProfRaModeUs

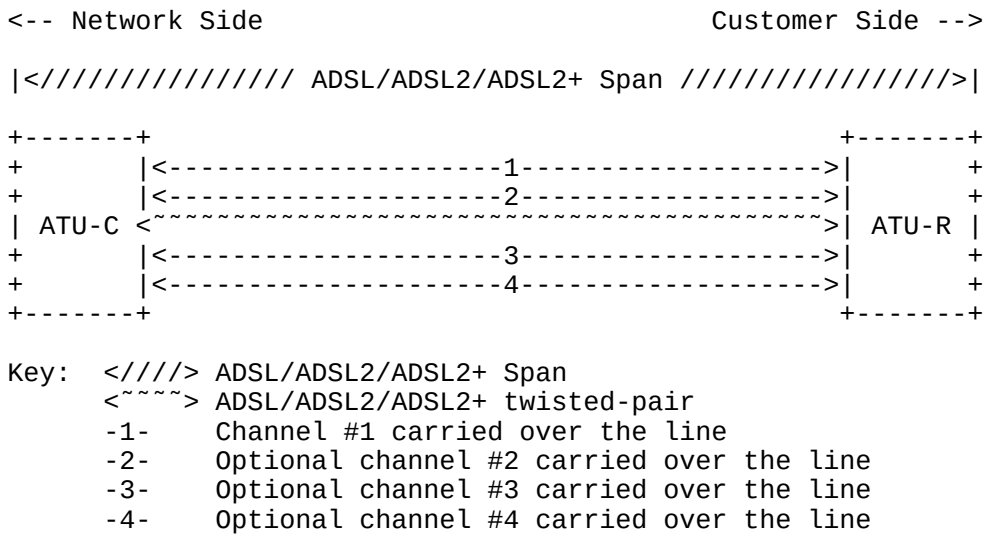
adsl2LConfProfRaUsNrmDs
adsl2LConfProfRaUsNrmUs
adsl2LConfProfRaUsTimeDs
adsl2LConfProfRaUsTimeUs
adsl2LConfProfRaDsNrmsDs
adsl2LConfProfRaDsNrmsUs
adsl2LConfProfRaDsTimeDs
adsl2LConfProfRaDsTimeUs
adsl2LConfProfTargetSnrmDs
adsl2LConfProfTargetSnrmUs
adsl2LConfProfMaxSnrmDs
adsl2LConfProfMaxSnrmUs
adsl2LConfProfMinSnrmDs
adsl2LConfProfMinSnrmUs
adsl2LConfProfMsgMinUs
adsl2LConfProfMsgMinDs
adsl2LConfProfAtuTransSysEna
adsl2LConfProfPmMode
adsl2LConfProfL0Time
adsl2LConfProfL2Time
adsl2LConfProfL2Atpr
adsl2LConfProfL2Atprt
adsl2LConfProfRowStatus
adsl2LConfProfAdslMode
adsl2LConfProfMaxNomPsdDs
adsl2LConfProfMaxNomPsdUs
adsl2LConfProfMaxNomAtpDs
adsl2LConfProfMaxNomAtpUs
adsl2LConfProfMaxAggRxPwrUs
adsl2LConfProfPsdMaskDs
adsl2LConfProfPsdMaskUs
adsl2LConfProfPsdMaskSelectUs
adsl2LConfProfModeSpecRowStatus
adsl2ChConfProfProfileName
adsl2ChConfProfMinDataRateDs
adsl2ChConfProfMinDataRateUs
adsl2ChConfProfMinResDataRateDs
adsl2ChConfProfMinResDataRateUs
adsl2ChConfProfMaxDataRateDs
adsl2ChConfProfMaxDataRateUs
adsl2ChConfProfMinDataRateLowPwrDs
adsl2ChConfProfMaxDelayDs
adsl2ChConfProfMaxDelayUs
adsl2ChConfProfMinProtectionDs
adsl2ChConfProfMinProtectionUs
adsl2ChConfProfMaxBerDs
adsl2ChConfProfMaxBerUs
adsl2ChConfProfUsDataRateDs

```
adsl2ChConfProfDsDataRateDs
adsl2ChConfProfUsDataRateUs
adsl2ChConfProfDsDataRateUs
adsl2ChConfProfImaEnabled
adsl2ChConfProfRowStatus
adsl2LAlarmConfTempTemplateName
adsl2LAlarmConfTempLineProfile
adsl2LAlarmConfTempChan1ConfProfile
adsl2LAlarmConfTempChan2ConfProfile
adsl2LAlarmConfTempChan3ConfProfile
adsl2LAlarmConfTempChan4ConfProfile
adsl2LAlarmConfTempRowStatus
adsl2LineAlarmConfProfileName
adsl2LineAlarmConfProfileAtucThresh15MinFecs
adsl2LineAlarmConfProfileAtucThresh15MinEs
adsl2LineAlarmConfProfileAtucThresh15MinSes
adsl2LineAlarmConfProfileAtucThresh15MinLoss
adsl2LineAlarmConfProfileAtucThresh15MinUas
adsl2LineAlarmConfProfileAturThresh15MinFecs
adsl2LineAlarmConfProfileAturThresh15MinEs
adsl2LineAlarmConfProfileAturThresh15MinSes
adsl2LineAlarmConfProfileAturThresh15MinLoss
adsl2LineAlarmConfProfileAturThresh15MinUas
adsl2LineAlarmConfProfileThresh15MinFailedFullInt
adsl2LineAlarmConfProfileThresh15MinFailedShrtInt
adsl2LineAlarmConfProfileRowStatus
adsl2ChAlarmConfProfileName
adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations
adsl2ChAlarmConfProfileAtucThresh15MinCorrected
adsl2ChAlarmConfProfileAturThresh15MinCodingViolations
adsl2ChAlarmConfProfileAturThresh15MinCorrected
adsl2ChAlarmConfProfileRowStatus
```

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 [RFC3410].

2.6. Line Topology

An ADSL/ADSL2 and ADSL2+ Line consists of two units: ATU-C (the central office termination unit) and ATU-R (the remote termination unit). There are up to 4 channels, each carrying an independent information flow, as shown in the figure below.



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

    |<//////////////// ADSL/ADSL2/ADSL2+ Span /////////////////>|

    +-------+                                           +-------+
    +       |<---------------------1------------------->|       +
    +       |<---------------------2------------------->|       +
    | ATU-C <~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~>| ATU-R |
    +       |<---------------------3------------------->|       +
    +       |<---------------------4------------------->|       +
    +-------+                                           +-------+

    Key:  <////> ADSL/ADSL2/ADSL2+ Span
          <~~~~> ADSL/ADSL2/ADSL2+ twisted-pair
          -1-    Channel #1 carried over the line
          -2-    Optional channel #2 carried over the line
          -3-    Optional channel #3 carried over the line
          -4-    Optional channel #4 carried over the line
```

Figure 2: General topology for an ADSL/ADSL2/ADSL2+ Line

2.7. Counters, Interval Buckets, and Thresholds

2.7.1. Counters Managed

There are various types of counters specified in this MIB. Each counter refers either to the whole ADSL/ADSL2/ADSL2+ line, to one of the XTU entities, or to one of the bearer channels.

- On the whole line level

For full initializations, failed full initializations, short initializations, and failed short initializations, there are event counters, current 15-minute and 0 to 96 15-minute history bucket(s) of "interval-counters", as well as current and 0 to 30 previous 1-day interval-counter(s). Each current 15-minute "failed" event bucket has an associated threshold notification.

- On the XTU level

For the LOS Seconds, ES, SES, FEC seconds, and UAS, there are event counters, current 15-minute and 0 to 96 15-minute history bucket(s) of "interval-counters", as well as current and 0 to 30 previous 1-day interval-counter(s). Each current 15-minute event bucket has an associated threshold notification.

o On the bearer channel level

For the coding violations (CRC anomalies) and corrected blocks (i.e., FEC events), there are event counters, current 15-minute and 0 to 96 15-minute history bucket(s) of "interval-counters", as well as current and 0 to 30 previous 1-day interval-counter(s). Each current 15-minute event bucket has an associated threshold notification.

2.7.2. Minimum Number of Buckets

Although it is possible to support up to 96 15-minute history buckets of "interval-counters", systems implementing this MIB module SHOULD practically support at least 16 buckets, as specified in ITU-T G.997.1, paragraph 7.2.7.2.

Similarly, it is possible to support up to 30 previous 1-day "interval-counters", but systems implementing this MIB module SHOULD support at least 1 previous-day bucket.

2.7.3. Interval Buckets Initialization

There is no requirement for an agent to ensure a fixed relationship between the start of a 15-minute interval and any wall clock; however, some implementations may align the 15-minute intervals with quarter hours. Likewise, an implementation may choose to align one day intervals with the start of a day.

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

2.7.4. Interval Buckets Validity

As in RFC 3593 [RFC3593] and RFC 2662 [RFC2662], in case the data for an interval is suspect or known to be invalid, the agent MUST report the interval as invalid. If the current 15-minute event bucket is determined to be invalid, the element management system SHOULD ignore its content, and the agent MUST NOT generate notifications based upon the value of the event bucket.

A valid 15-minute event bucket SHOULD usually count the events for exactly 15 minutes. Similarly, a valid 1-day event bucket SHOULD usually count the events for exactly 24 hours. However, the following scenarios are exceptional:

1) For implementations that align the 15-minute intervals with quarter hours, and the 1-day intervals with start of a day, the management system may still start the PM process not aligned with the wall clock. Such a management system may wish to retrieve even partial information for the first event buckets, rather than declaring them all as invalid.

2) For an event bucket that suffered relatively short outages, the management system may wish to retrieve the available PM outcomes, rather than declare the whole event bucket as invalid. This is more important for 1-day event buckets.

3) An event bucket may be shorter or longer than the formal duration if a clock adjustment was performed during the interval.

This MIB allows supporting the exceptional scenarios described above by reporting the actual Monitoring Time of a monitoring interval. This parameter is relevant only for Valid intervals, but is useful for these exceptional scenarios:

a) The management system MAY still declare a partial PM interval as Valid and report the actual number of seconds the interval lasted.

b) If the interval was shortened or extended due to clock corrections, the management system SHOULD report the actual number of seconds the interval lasted, besides reporting that the interval is Valid.

2.8. Profiles

As a managed node can handle a large number of XTUs, (e.g., hundreds or perhaps thousands of lines), provisioning every parameter on every XTU may become burdensome. Moreover, most lines are provisioned identically with the same set of parameters. To simplify the provisioning process, this MIB module makes use of profiles and templates.

A configuration profile is a set of parameters that can be shared by multiple entities. There are configuration profiles to address the line-level provisioning, and another type of profile that addresses the channel-level provisioning parameters.

A configuration template is actually a profile-of-profiles. That is, a template is comprised of one line configuration profile and one or more channel configuration profiles. A template provides the complete configuration of a line. The same configuration can be shared by multiple lines.

Similarly to the configuration profiles and templates, this MIB module makes use of templates and profiles for specifying the alarm thresholds associated with performance parameters. This allows provisioning multiple lines with the same criteria for generating threshold crossing notifications.

The following paragraphs describe templates and profiles used in this MIB module

2.8.1. Configuration Profiles and Templates

- Line Configuration Profiles - Line configuration profiles contain parameters for configuring the low layer of ADSL/ADSL2 and ADSL2+ lines. They are defined in the adsl2LineConfProfTable.

  The line configuration includes issues such as the specific ADSL/ADSL2 or ADSL2+ modes to enable on the respective line, power spectrum parameters, rate adaptation criteria, and SNR margin-related parameters. A subset of the line configuration parameters depends upon the specific ADSL Mode allowed (i.e., Does the profile allow ADSL, ADSL2, and/or ADSL2+) as well as what annex/annexes of the standard are allowed. This is the reason a line profile MUST include one or more mode-specific extensions.

- Channel Configuration Profiles - Channel configuration profiles contain parameters for configuring bearer channels over the ADSL/ADSL2 and ADSL2+ lines. They are sometimes considered the service layer configuration of the ADSL/ADSL2 and ADSL2+ lines. They are defined in the adsl2ChConfProfTable.

  The channel configuration includes issues such as the desired minimum and maximum rate on each traffic flow direction and impulse noise protection parameters.

- Line Configuration Templates - Line configuration templates allow combining line configuration profiles and channel configuration profiles to a comprehensive configuration of the ADSL/ADSL2 and ADSL2+ line. They are defined in the adsl2LineConfTemplateTable.

  The line configuration template includes one index (OID) of a line configuration profile and one to four indexes of channel configuration profiles. The template also addresses the issue of distributing the excess available data rate on each traffic flow direction (i.e., the data rate left after each channel is allocated a data rate to satisfy its minimum requested data rate) among the various channels.

2.8.2. Alarm Configuration Profiles and Templates

- Line Alarm Configuration Profiles - Line-level Alarm configuration profiles contain the threshold values for Performance Monitoring (PM) parameters, counted either on the whole line level or on an XTU level. Thresholds are required only for failures and anomalies, e.g., there are thresholds for failed initializations and LOS seconds, but not for the aggregate number of full initializations. These profiles are defined in the adsl2LineAlarmConfProfileTable.

- Channel Alarm Configuration Profiles - Channel-level Alarm configuration profiles contain the threshold values for PM parameters counted on a bearer channel level. Thresholds are defined for two types of anomalies: corrected blocks and coding violations. These profiles are defined in the adsl2ChAlarmConfProfileTable.

- Line Alarm Configuration Templates - Line Alarm configuration templates allow combining line-level alarm configuration profiles and channel-level alarm configuration profiles to a comprehensive configuration of the PM thresholds for ADSL/ADSL2 and ADSL2+ line. They are defined in the adsl2LineAlarmConfTemplateTable.

  The line alarm configuration template includes one index (OID) of a line-level alarm configuration profile and one to four indexes of channel-level alarm configuration profiles.

2.8.3. Managing Profiles and Templates

The index value for each profile and template is a locally-unique, administratively assigned name having the textual convention 'SnmpAdminString' (RFC 3411 [RFC3411]).

One or more lines may be configured to share parameters of a single configuration template (e.g., adsl2LConfTempTemplateName = 'silver') by setting its adsl2LineCnfgTemplate objects to the value of this template.

One or more lines may be configured to share parameters of a single Alarm configuration template (e.g., adsl2LAlarmConfTempTemplateName = 'silver') by setting its adsl2LineAlarmCnfgTemplate objects to the value of this template.

Before a template can be deleted or taken out of service, it MUST first be unreferenced from all associated lines. Implementations MAY also reject template modification while it is associated with any line.

Before a profile can be deleted or taken out of service, it MUST first be unreferenced from all associated templates. Implementations MAY also reject profile modification while it is referenced by any template.

Implementations MUST provide a default profile whose name is 'DEFVAL' for each profile and template type. The values of the associated parameters will be vendor-specific unless otherwise indicated in this document. Before a line's templates have been set, these templates will be automatically used by setting adsl2LineCnfgTemplate and adsl2LineAlarmCnfgTemplate to 'DEFVAL' where appropriate. This default profile name, 'DEFVAL', is considered reserved in the context of profiles and templates defined in this MIB module.

Profiles and templates are created, assigned, and deleted dynamically using the profile name and profile row status in each of the profile tables.

If the implementation allows modifying a profile or template while it is associated with a line, then such changes MUST take effect immediately. These changes MAY result in a restart (hard reset or soft restart) of the units on the line.

2.8.4. Managing Multiple Bearer Channels

The number of bearer channels is configured by setting the template attributes adsl2LConfTempChan1ConfProfile, adsl2LConfTempChan2ConfProfile, adsl2LConfTempChan3ConfProfile, and adsl2LConfTempChan4ConfProfile and then assigning that template to a DSL line using the adsl2LineCnfgTemplate attribute. When the number of bearer channels for a DSL line changes, the SNMP agent will automatically create or destroy rows in channel-related tables associated with that line. For example, when a DSL line is operating with one bearer channel, there will be zero rows in channel-related tables for channels two, three, and four. The SNMP agent MUST create and destroy channel-related rows as follows:

- When the number of bearer channels for a DSL line changes to a higher number, the SNMP agent will automatically create rows in the adsl2ChannelStatusTable, and adsl2PMChCurrTable tables for that line.

- When the number of bearer channels for a DSL line changes to a lower number, the SNMP agent will automatically destroy rows in the adsl2ChannelStatusTable, adsl2PMChCurrTable, adsl2PMChHist15MinTable, and adsl2PMChHist1DTable tables for that line.

2.9. 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., ADSL/ADSL2 or ADSL2+ line), is REQUIRED.

A linkDown notification MAY be generated whenever any of ES, SES, CRC Anomaly, LOS, LOF, or UAS event occurs. The corresponding linkUp notification MAY be sent when all link failure conditions are cleared.

The notifications defined in this MIB module are for status change (e.g., initialization failure) and for the threshold crossings associated with the following events: full initialization failures, short initialization failures, ES, SES, FEC Seconds, LOS Seconds, UAS, FEC Seconds, FEC events, and CRC anomalies. Each threshold has its own enable/threshold value. When that value is 0, the notification is disabled.

The adsl2LineStatusAtur and adsl2LineStatusAtuc are bitmasks representing all outstanding error conditions associated with the ATU-R and ATU-C (respectively). Note that since the ATU-R status is obtained via the EOC, this information may be unavailable in case the ATU-R is unreachable via EOC during a line error condition. Therefore, not all conditions may always be included in its current status. Notifications corresponding to the bit fields in those two status objects are defined.

Note that there are other status parameters that refer to the ATU-R (e.g., downstream line attenuation). Those parameters also depend on the availability of EOC between the ATU-C and the ATU-R.

A threshold notification occurs whenever the corresponding current 15-minute interval error counter becomes equal to or exceeds the threshold value. Only one notification SHOULD be sent per interval per interface. Since the current 15-minute counter is 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.

Notifications, other than the threshold notifications listed above, SHOULD be rate-limited (throttled) such that there is an implementation-specific gap between the generation of consecutive notifications of the same event. When notifications are rate-

limited, they are dropped and not queued for sending at a future time. This is intended to be a general rate-limiting statement for notifications that otherwise have no explicit rate-limiting assertions in this document.

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.

3. Definitions

```
ADSL2-LINE-TC-MIB DEFINITIONS ::= BEGIN

IMPORTS
   MODULE-IDENTITY,
   transmission
      FROM SNMPv2-SMI

   TEXTUAL-CONVENTION
      FROM SNMPv2-TC;

adsl2TCMIB MODULE-IDENTITY
   LAST-UPDATED "200610040000Z" -- October 4th, 2006
   ORGANIZATION "ADSLMIB Working Group"
   CONTACT-INFO "WG-email:  adslmib@ietf.org
   Info:      https://www1.ietf.org/mailman/listinfo/adslmib

              Chair:     Mike Sneed
                         Sand Channel Systems
              Postal:    P.O. Box 37324
                         Raleigh NC 27627-732
              Email:     sneedmike@hotmail.com
              Phone:     +1 206 600 7022

              Co-Chair & Co-editor:
                         Menachem Dodge
                         ECI Telecom Ltd.
              Postal:    30 Hasivim St.
                         Petach Tikva 49517,
                         Israel.
              Email:     mbdodge@ieee.org
              Phone:     +972 3 926 8421
```

```
                Co-editor: Moti Morgenstern
                           ECI Telecom Ltd.
                Postal:    30 Hasivim St.
                           Petach Tikva 49517,
                           Israel.
                Email:     moti.morgenstern@ecitele.com
                Phone:     +972 3 926 6258

                Co-editor: Scott Baillie
                           NEC Australia
                Postal:    649-655 Springvale Road,
                           Mulgrave, Victoria 3170,
                           Australia.
                Email:     scott.baillie@nec.com.au
                Phone:     +61 3 9264 3986

                Co-editor: Umberto Bonollo
                           NEC Australia
                Postal:    649-655 Springvale Road,
                           Mulgrave, Victoria 3170,
                           Australia.
                Email:     umberto.bonollo@nec.com.au
                Phone:     +61 3 9264 3385
               "
      DESCRIPTION
           "This MIB Module provides Textual Conventions to be
            used by the ADSL2-LINE-MIB module for the purpose of
            managing ADSL, ADSL2, and ADSL2+ lines.

           Copyright (C) The Internet Society (2006).  This version of
           this MIB module is part of RFC 4706: see the RFC itself for
           full legal notices."

      REVISION "200610040000Z" -- October 4th, 2006
      DESCRIPTION "Initial version, published as RFC 4706."
         ::= { transmission 238 2 } -- adsl2MIB 2

   ------------------------------------------------
   --          Textual Conventions               --
   ------------------------------------------------

   Adsl2Unit ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Identifies a transceiver as being either an ATU-C or
          an ATU-R.  An ADSL line consists of two transceivers, an ATU-C
          and an ATU-R.  Attributes with this syntax reference the two
          sides of a line.  Specified as an INTEGER, the two values
```

```
          are:

           atuc(1)  -- Central office ADSL terminal unit (ATU-C).
           atur(2)  -- Remote ADSL terminal unit (ATU-R)."
      SYNTAX      INTEGER {
                     atuc(1),
                     atur(2)
                  }

   Adsl2Direction ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
           "Identifies the direction of a band as being
            either upstream or downstream.  Specified as an INTEGER,
            the two values are:
             upstream(1), and
             downstream(2)."
        SYNTAX INTEGER {
          upstream(1),
          downstream(2)
       }



   Adsl2TransmissionModeType ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "A set of ADSL2 line transmission modes, with one bit
          per mode.  The notes (F) and (L) denote Full-Rate
          and Lite/splitterless, respectively:
             Bit 00 : Regional Std. (ANSI T1.413) (F)
             Bit 01 : Regional Std. (ETSI DTS/TM06006) (F)
             Bit 02 : G.992.1 POTS non-overlapped (F)
             Bit 03 : G.992.1 POTS overlapped (F)
             Bit 04 : G.992.1 ISDN non-overlapped (F)
             Bit 05 : G.992.1 ISDN overlapped (F)
             Bit 06 : G.992.1 TCM-ISDN non-overlapped (F)
             Bit 07 : G.992.1 TCM-ISDN overlapped (F)
             Bit 08 : G.992.2 POTS non-overlapped (L)
             Bit 09 : G.992.2 POTS overlapped (L)
             Bit 10 : G.992.2 with TCM-ISDN non-overlapped (L)
             Bit 11 : G.992.2 with TCM-ISDN overlapped (L)
             Bit 12 : G.992.1 TCM-ISDN symmetric (F) -- not in G.997.1
             Bit 13-17: Reserved
             Bit 18 : G.992.3 POTS non-overlapped (F)
             Bit 19 : G.992.3 POTS overlapped (F)
             Bit 20 : G.992.3 ISDN non-overlapped (F)
             Bit 21 : G.992.3 ISDN overlapped (F)
```

```
            Bit 22-23: Reserved
            Bit 24 : G.992.4 POTS non-overlapped (L)
            Bit 25 : G.992.4 POTS overlapped (L)
            Bit 26-27: Reserved
            Bit 28 : G.992.3 Annex I All-Digital non-overlapped (F)
            Bit 29 : G.992.3 Annex I All-Digital overlapped (F)
            Bit 30 : G.992.3 Annex J All-Digital non-overlapped (F)
            Bit 31 : G.992.3 Annex J All-Digital overlapped (F)
            Bit 32 : G.992.4 Annex I All-Digital non-overlapped (L)
            Bit 33 : G.992.4 Annex I All-Digital overlapped (L)
            Bit 34 : G.992.3 Annex L POTS non-overlapped, mode 1,
                                     wide U/S (F)
            Bit 35 : G.992.3 Annex L POTS non-overlapped, mode 2,
                                     narrow U/S(F)
            Bit 36 : G.992.3 Annex L POTS overlapped, mode 3,
                                     wide U/S (F)
            Bit 37 : G.992.3 Annex L POTS overlapped, mode 4,
                                     narrow U/S (F)
            Bit 38 : G.992.3 Annex M POTS non-overlapped (F)
            Bit 39 : G.992.3 Annex M POTS overlapped (F)
            Bit 40 : G.992.5 POTS non-overlapped (F)
            Bit 41 : G.992.5 POTS overlapped (F)
            Bit 42 : G.992.5 ISDN non-overlapped (F)
            Bit 43 : G.992.5 ISDN overlapped (F)
            Bit 44-45: Reserved
            Bit 46 : G.992.5 Annex I All-Digital non-overlapped (F)
            Bit 47 : G.992.5 Annex I All-Digital overlapped (F)
            Bit 48 : G.992.5 Annex J All-Digital non-overlapped (F)
            Bit 49 : G.992.5 Annex J All-Digital overlapped (F)
            Bit 50 : G.992.5 Annex M POTS non-overlapped (F)
            Bit 51 : G.992.5 Annex M POTS overlapped (F)
            Bit 52-55: Reserved"
        SYNTAX      BITS {
                       ansit1413(0),
                       etsi(1),
                       g9921PotsNonOverlapped(2),
                       g9921PotsOverlapped(3),
                       g9921IsdnNonOverlapped(4),
                       g9921isdnOverlapped(5),
                       g9921tcmIsdnNonOverlapped(6),
                       g9921tcmIsdnOverlapped(7),
                       g9922potsNonOverlapped(8),
                       g9922potsOverlapped(9),
                       g9922tcmIsdnNonOverlapped(10),
                       g9922tcmIsdnOverlapped(11),
                       g9921tcmIsdnSymmetric(12),
                       reserved1(13),
                       reserved2(14),
```

```
                    reserved3(15),
                    reserved4(16),
                    reserved5(17),
                    g9923PotsNonOverlapped(18),
                    g9923PotsOverlapped(19),
                    g9923IsdnNonOverlapped(20),
                    g9923isdnOverlapped(21),
                    reserved6(22),
                    reserved7(23),
                    g9924potsNonOverlapped(24),
                    g9924potsOverlapped(25),
                    reserved8(26),
                    reserved9(27),
                    g9923AnnexIAllDigNonOverlapped(28),
                    g9923AnnexIAllDigOverlapped(29),
                    g9923AnnexJAllDigNonOverlapped(30),
                    g9923AnnexJAllDigOverlapped(31),
                    g9924AnnexIAllDigNonOverlapped(32),
                    g9924AnnexIAllDigOverlapped(33),
                    g9923AnnexLMode1NonOverlapped(34),
                    g9923AnnexLMode2NonOverlapped(35),
                    g9923AnnexLMode3Overlapped(36),
                    g9923AnnexLMode4Overlapped(37),
                    g9923AnnexMPotsNonOverlapped(38),
                    g9923AnnexMPotsOverlapped(39),
                    g9925PotsNonOverlapped(40),
                    g9925PotsOverlapped(41),
                    g9925IsdnNonOverlapped(42),
                    g9925isdnOverlapped(43),
                    reserved10(44),
                    reserved11(45),
                    g9925AnnexIAllDigNonOverlapped(46),
                    g9925AnnexIAllDigOverlapped(47),
                    g9925AnnexJAllDigNonOverlapped(48),
                    g9925AnnexJAllDigOverlapped(49),
                    g9925AnnexMPotsNonOverlapped(50),
                    g9925AnnexMPotsOverlapped(51),
                    reserved12(52),
                    reserved13(53),
                    reserved14(54),
                    reserved15(55)
                }

   Adsl2RaMode ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Specifies the rate adaptation behavior for the line.
          The three possible behaviors are:
```

```
           manual(1)    - No Rate-Adaptation.  The initialization
                          process attempts to synchronize to a
                          specified rate.
           raInit(2)    - Rate-Adaptation during initialization process
                          only, which attempts to synchronize to a rate
                          between minimum and maximum specified values.
           dynamicRa(3) - Dynamic Rate-Adaptation during initialization
                          process as well as during SHOWTIME."
       SYNTAX      INTEGER {
                      manual(1),
                      raInit(2),
                      dynamicRa(3)
                   }

   Adsl2InitResult ::= TEXTUAL-CONVENTION
       STATUS      current
       DESCRIPTION
          "Specifies the result of a full initialization attempt; the
           six possible result values are:
            noFail(0)            - Successful initialization.
            configError(1)       - Configuration failure.
            configNotFeasible(2) - Configuration details not supported.
            commFail(3)          - Communication failure.
            noPeerAtu(4)         - Peer ATU not detected.
            otherCause(5)        - Other initialization failure reason.

           The values used are as defined in ITU-T G.997.1,
           paragraph 7.5.1.3"

       SYNTAX      INTEGER {
                      noFail(0),
                      configError(1),
                      configNotFeasible(2),
                      commFail(3),
                      noPeerAtu(4),
                      otherCause(5)
                   }

   Adsl2OperationModes ::= TEXTUAL-CONVENTION
       STATUS      current
       DESCRIPTION
          "The ADSL2 management model specified includes an ADSL Mode
           attribute that identifies an instance of ADSL Mode-Specific
           PSD Configuration object in the ADSL Line Profile.  The
           following classes of ADSL operating mode are defined.
           The notes (F) and (L) denote Full-Rate and Lite/splitterless
           respectively:
```

Value	ADSL operation mode description
1	The default/generic PSD configuration. Default configuration will be used when no other matching mode-specific configuration can be found.
2	ADSL family. The attributes included in the Mode-Specific PSD Configuration are irrelevant for ITU-T G.992.1 and G.992.2 ADSL modes. Hence, it is possible to map those modes to this generic class.
3-7	Unused. Reserved for future ITU-T specification.
8	G.992.3 POTS non-overlapped (F)
9	G.992.3 POTS overlapped (F)
10	G.992.3 ISDN non-overlapped (F)
11	G.992.3 ISDN overlapped (F)
12-13	Unused. Reserved for future ITU-T specification.
14	G.992.4 POTS non-overlapped (L)
15	G.992.4 POTS overlapped (L)
16-17	Unused. Reserved for future ITU-T specification.
18	G.992.3 Annex I All-Digital non-overlapped (F)
19	G.992.3 Annex I All-Digital overlapped (F)
20	G.992.3 Annex J All-Digital non-overlapped (F)
21	G.992.3 Annex J All-Digital overlapped (F)
22	G.992.4 Annex I All-Digital non-overlapped (L)
23	G.992.4 Annex I All-Digital overlapped (L)
24	G.992.3 Annex L POTS non-overlapped, mode 1, wide U/S (F)
25	G.992.3 Annex L POTS non-overlapped, mode 2, narrow U/S(F)
26	G.992.3 Annex L POTS overlapped, mode 3, wide U/S (F)
27	G.992.3 Annex L POTS overlapped, mode 4, narrow U/S (F)
28	G.992.3 Annex M POTS non-overlapped (F)
29	G.992.3 Annex M POTS overlapped (F)
30	G.992.5 POTS non-overlapped (F)
31	G.992.5 POTS overlapped (F)
32	G.992.5 ISDN non-overlapped (F)
33	G.992.5 ISDN overlapped (F)
34-35	Unused. Reserved for future ITU-T specification.
36	G.992.5 Annex I All-Digital non-overlapped (F)
37	G.992.5 Annex I All-Digital overlapped (F)
38	G.992.5 Annex J All-Digital non-overlapped (F)
39	G.992.5 Annex J All-Digital overlapped (F)
40	G.992.5 Annex M POTS non-overlapped (F)
41	G.992.5 Annex M POTS overlapped (F)

```
         "
      SYNTAX      INTEGER {
                     defMode (1),
                     adsl(2),
                     g9923PotsNonOverlapped(8),
                     g9923PotsOverlapped(9),
                     g9923IsdnNonOverlapped(10),
                     g9923isdnOverlapped(11),
                     g9924potsNonOverlapped(14),
                     g9924potsOverlapped(15),
                     g9923AnnexIAllDigNonOverlapped(18),
                     g9923AnnexIAllDigOverlapped(19),
                     g9923AnnexJAllDigNonOverlapped(20),
                     g9923AnnexJAllDigOverlapped(21),
                     g9924AnnexIAllDigNonOverlapped(22),
                     g9924AnnexIAllDigOverlapped(23),
                     g9923AnnexLMode1NonOverlapped(24),
                     g9923AnnexLMode2NonOverlapped(25),
                     g9923AnnexLMode3Overlapped(26),
                     g9923AnnexLMode4Overlapped(27),
                     g9923AnnexMPotsNonOverlapped(28),
                     g9923AnnexMPotsOverlapped(29),
                     g9925PotsNonOverlapped(30),
                     g9925PotsOverlapped(31),
                     g9925IsdnNonOverlapped(32),
                     g9925isdnOverlapped(33),
                     g9925AnnexIAllDigNonOverlapped(36),
                     g9925AnnexIAllDigOverlapped(37),
                     g9925AnnexJAllDigNonOverlapped(38),
                     g9925AnnexJAllDigOverlapped(39),
                     g9925AnnexMPotsNonOverlapped(40),
                     g9925AnnexMPotsOverlapped(41)
                  }


   Adsl2PowerMngState ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Attributes with this syntax uniquely identify each power
          management state defined for the ADSL/ADSL2 or ADSL2+ link.
          The possible values are:
            l0(1) - L0 - Full power management state.
            l1(2) - L1 - Low power management state (for G.992.2).
            l2(3) - L2 - Low power management state (for G.992.3,
                         G.992.4, and G.992.5).
            l3(4) - L3 - Idle power management state."

      SYNTAX      INTEGER {
```

```
                    l0(1),
                    l1(2),
                    l2(3),
                    l3(4)
                }

   Adsl2ConfPmsForce ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Attributes with this syntax are configuration parameters
          that reference the desired power management state for the
          ADSL/ADSL2 or ADSL2+ link:
            l3toL0(0)          - Perform a transition from L3 to L0
                                 (Full power management state).
            l0toL2(2)          - Perform a transition from L0 to L2
                                 (Low power management state).
            l0orL2toL3(3)      - Perform a transition into L3 (Idle
                                 power management state).

          The values used are as defined in ITU-T G.997.1,
          paragraph 7.3.1.1.3"

      SYNTAX      INTEGER {
                     l3toL0(0),
                     l0toL2(2),
                     l0orL2toL3(3)
                  }

   Adsl2LConfProfPmMode ::= TEXTUAL-CONVENTION
      STATUS current
      DESCRIPTION
         "Attributes with this syntax are configuration parameters
          that reference the power modes/states into which the ATU-C or
          ATU-R may autonomously transit.

          It is a BITS structure that allows control of the following
          transit options:
           allowTransitionsToIdle(0)     - XTU may autonomously transit
                                           to idle (L3) state.
           allowTransitionsToLowPower(1) - XTU may autonomously transit
                                           to low-power (L2) state."

      SYNTAX BITS {
          allowTransitionsToIdle(0),
          allowTransitionsToLowPower(1)
        }

   Adsl2LineLdsf ::= TEXTUAL-CONVENTION
```

```
      STATUS current
      DESCRIPTION
         "Attributes with this syntax are configuration parameters
          that control the Loop Diagnostic mode for the ADSL/ADSL2 or
          ADSL2+ link.  The possible values are:
            inhibit(0)  - Inhibit Loop Diagnostic mode.
            force(1)    - Force/Initiate Loop Diagnostic mode.

          The values used are as defined in ITU-T G.997.1,
          paragraph 7.3.1.1.8"

      SYNTAX INTEGER {
          inhibit(0),
          force(1)
        }

   Adsl2LdsfResult ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
           "Possible failure reasons associated with performing
            a Dual Ended Loop Test (DELT) on a DSL line.
            Possible values are:
             none(1)         - The default value in case LDSF was never
                               requested for the associated line.
             success(2)      - The recent command completed
                               successfully.
             inProgress(3)   - The Loop Diagnostics process is in
                               progress.
             unsupported(4)  - The NE or the line card doesn't support
                               LDSF.
             cannotRun(5)    - The NE cannot initiate the command, due
                               to a nonspecific reason.
             aborted(6)      - The Loop Diagnostics process aborted.
             failed(7)       - The Loop Diagnostics process failed.
             illegalMode(8)  - The NE cannot initiate the command, due
                               to the specific mode of the relevant
                               line.
             adminUp(9)      - The NE cannot initiate the command, as
                               the relevant line is administratively
                               'Up'.
             tableFull(10)   - The NE cannot initiate the command, due
                               to reaching the maximum number of rows
                               in the results table.
             noResources(11) - The NE cannot initiate the command, due
                               to lack of internal memory resources."
        SYNTAX INTEGER {
             none(1),
             success(2),
```

```
            inProgress(3),
            unsupported(4),
            cannotRun(5),
            aborted(6),
            failed(7),
            illegalMode(8),
            adminUp(9),
            tableFull(10),
            noResources(11)
        }

   Adsl2SymbolProtection ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Attributes with this syntax are configuration parameters
          that reference the minimum-length impulse noise protection
          (INP) in terms of number of symbols.  The possible values are:
          noProtection (i.e., INP not required), halfSymbol (i.e., INP
          length is 1/2 symbol), and 1-16 symbols in steps of 1 symbol."

      SYNTAX      INTEGER {
                  noProtection(1),
                  halfSymbol(2),
                  singleSymbol(3),
                  twoSymbols(4),
                  threeSymbols(5),
                  fourSymbols(6),
                  fiveSymbols(7),
                  sixSymbols(8),
                  sevenSymbols(9),
                  eightSymbols(10),
                  nineSymbols(11),
                  tenSymbols(12),
                  elevenSymbols(13),
                  twelveSymbols(14),
                  thirteeSymbols(15),
                  fourteenSymbols(16),
                  fifteenSymbols(17),
                  sixteenSymbols(18)
                }
   Adsl2MaxBer ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Attributes with this syntax are configuration parameters
          that reference the maximum Bit Error Rate (BER).
          The possible values are:

            eminus3(1)   - Maximum BER=E^-3
```

```
            eminus5(2)   - Maximum BER=E^-5
            eminus7(3)   - Maximum BER=E^-7"
      SYNTAX      INTEGER {
                     eminus3(1),
                     eminus5(2),
                     eminus7(3)
                  }

   Adsl2ScMaskDs ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Each one of the 512 bits in this OCTET
          STRING array represents the corresponding bin
          in the downstream direction.  A value of one
          indicates that the bin is not in use."
      SYNTAX      OCTET STRING (SIZE(0..64))

   Adsl2ScMaskUs ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Each one of the 64 bits in this OCTET
         STRING array represents the corresponding bin
         in the upstream direction.  A value of one
         indicates that the bin is not in use."
      SYNTAX      OCTET STRING (SIZE(0..8))

   Adsl2RfiDs ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "Each one of the 512 bits in this OCTET
         STRING array represents the corresponding bin
         in the downstream direction.  A value of one
         indicates that the bin is part of a notch
         filter."
      SYNTAX      OCTET STRING (SIZE(0..64))

   Adsl2PsdMaskDs ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "This is a structure that represents up to
         32 PSD Mask breakpoints.
         Each breakpoint occupies 3 octets: The first
         two octets hold the index of the sub-carrier
         associated with the breakpoint.  The third octet
         holds the PSD reduction at the breakpoint from 0
         (0 dBm/Hz) to 255 (-127.5 dBm/Hz) using units of
         0.5 dBm/Hz."
      SYNTAX      OCTET STRING (SIZE(0..96))
```

```
   Adsl2PsdMaskUs ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "This is a structure that represents up to
         4 PSD Mask breakpoints.
         Each breakpoint occupies 3 octets: The first
         two octets hold the index of the sub-carrier
         associated with the breakpoint.  The third octet
         holds the PSD reduction at the breakpoint from 0
         (0 dBm/Hz) to 255 (-127.5 dBm/Hz) using units of
         0.5 dBm/Hz."
      SYNTAX      OCTET STRING (SIZE(0..12))

   Adsl2Tssi ::= TEXTUAL-CONVENTION
      STATUS      current
      DESCRIPTION
         "This is a structure that represents up to
         32 transmit spectrum shaping (TSSi) breakpoints.
         Each breakpoint occupies 3 octets: The first
         two octets hold the index of the sub-carrier
         associated with the breakpoint.  The third octet
         holds the shaping parameter at the breakpoint.  It
         is a value from 0 to 127 (units of -0.5 dB).  The
         special value 127 indicates that the sub-carrier
         is not transmitted."
      SYNTAX      OCTET STRING (SIZE(0..96))

   Adsl2LastTransmittedState ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
           "This parameter represents the last successfully
            transmitted initialization state in the last full
            initialization performed on the line.  States are
            per the specific xDSL technology and are numbered
            from 0 (if G.994.1 is used) or 1 (if G.994.1 is
            not used) up to Showtime."
        SYNTAX      INTEGER {
          atucG9941(0),
          atucQuiet1(1),
          atucComb1(2),
          atucQuiet2(3),
          atucComb2(4),
          atucIcomb1(5),
          atucLineprob(6),
          atucQuiet3(7),
          atucComb3(8),
          atucIComb2(9),
          atucMsgfmt(10),
```

```
            atucMsgpcb(11),
            atucQuiet4(12),
            atucReverb1(13),
            atucTref1(14),
            atucReverb2(15),
            atucEct(16),
            atucReverb3(17),
            atucTref2(18),
            atucReverb4(19),
            atucSegue1(20),
            atucMsg1(21),
            atucReverb5(22),
            atucSegue2(23),
            atucMedley(24),
            atucExchmarker(25),
            atucMsg2(26),
            atucReverb6(27),
            atucSegue3(28),
            atucParams(29),
            atucReverb7(30),
            atucSegue4(31),
            atucShowtime(32),
            --
            aturG9941(100),
            aturQuiet1(101),
            aturComb1(102),
            aturQuiet2(103),
            aturComb2(104),
            aturIcomb1(105),
            aturLineprob(106),
            aturQuiet3(107),
            aturComb3(108),
            aturIcomb2(109),
            aturMsgfmt(110),
            aturMsgpcb(111),
            aturReverb1(112),
            aturQuiet4(113),
            aturReverb2(114),
            aturQuiet5(115),
            aturReverb3(116),
            aturEct(117),
            aturReverb4(118),
            aturSegue1(119),
            aturReverb5(120),
            aturSegue2(121),
            aturMsg1(122),
            aturMedley(123),
            aturExchmarker(124),
```

```
          aturMsg2(125),
          aturReverb6(126),
          aturSegue3(127),
          aturParams(128),
          aturReverb7(129),
          aturSegue4(130),
          aturShowtime(131)
        }

   Adsl2LineStatus ::= TEXTUAL-CONVENTION
      STATUS current
      DESCRIPTION
         "Attributes with this syntax are status parameters
          that reflect the failure status for a given endpoint of
          ADSL/ADSL2 or ADSL2+ link.

          This BITS structure can report the following failures:

           noDefect(0)       - This bit position positively reports
                               that no defect or failure exists.
           lossOfFrame(1)    - Loss of frame synchronization.
           lossOfSignal(2)   - Loss of signal.
           lossOfPower(3)    - Loss of power.  Usually this failure may
                               be reported for ATU-Rs only.
           initFailure(4)    - Recent initialization process failed.
                               Never active on ATU-R."

      SYNTAX BITS {
          noDefect(0),
          lossOfFrame(1),
          lossOfSignal(2),
          lossOfPower(3),
          initFailure(4)
        }

   Adsl2ChAtmStatus ::= TEXTUAL-CONVENTION
      STATUS current
      DESCRIPTION
        "Attributes with this syntax are status parameters that
         reflect the failure status for Transmission Convergence (TC)
         layer of a given ATM interface (data path over an ADSL/ADSL2
         or ADSL2+ link).

         This BITS structure can report the following failures:
          noDefect(0)              - This bit position positively
                                     reports that no defect or failure
                                     exists.
          noCellDelineation(1)     - The link was successfully
```

```
                                    initialized, but cell delineation
                                    was never acquired on the
                                    associated ATM data path.
          lossOfCellDelineation(2) - Loss of cell delineation on the
                                    associated ATM data path."

      SYNTAX BITS {
          noDefect(0),
          noCellDelineation(1),
          lossOfCellDelineation(2)
        }

   Adsl2ChPtmStatus ::= TEXTUAL-CONVENTION
      STATUS current
      DESCRIPTION
        "Attributes with this syntax are status parameters that
         reflect the failure status for a given PTM interface (packet
         data path over an ADSL/ADSL2 or ADSL2+ link).

         This BITS structure can report the following failures:
             noDefect(0)     - This bit position positively
                               reports that no defect or failure exists.
             outOfSync(1)    - Out of synchronization."

         SYNTAX BITS {
             noDefect(0),
             outOfSync(1)
         }

   END
```

```
   ADSL2-LINE-MIB DEFINITIONS ::= BEGIN

   IMPORTS
      MODULE-IDENTITY,
      OBJECT-TYPE,
      transmission,
      Unsigned32,
      NOTIFICATION-TYPE,
      Integer32,
      Counter32
         FROM SNMPv2-SMI

      ifIndex
         FROM IF-MIB

      TruthValue,
      RowStatus
         FROM SNMPv2-TC

      SnmpAdminString
         FROM SNMP-FRAMEWORK-MIB

      HCPerfIntervalThreshold,
      HCPerfTimeElapsed
         FROM  HC-PerfHist-TC-MIB   -- [RFC3705]

      Adsl2Unit,
      Adsl2Direction,
      Adsl2TransmissionModeType,
      Adsl2RaMode,
      Adsl2InitResult,
      Adsl2OperationModes,
      Adsl2PowerMngState,
      Adsl2ConfPmsForce,
      Adsl2LConfProfPmMode,
      Adsl2LineLdsf,
      Adsl2LdsfResult,
      Adsl2SymbolProtection,
      Adsl2MaxBer,
      Adsl2ScMaskDs,
      Adsl2ScMaskUs,
      Adsl2RfiDs,
      Adsl2PsdMaskDs,
      Adsl2PsdMaskUs,
      Adsl2Tssi,
      Adsl2LastTransmittedState,
      Adsl2LineStatus,
      Adsl2ChAtmStatus,
```

```
      Adsl2ChPtmStatus
             FROM   ADSL2-LINE-TC-MIB       -- [This document]

      MODULE-COMPLIANCE,
      OBJECT-GROUP,
      NOTIFICATION-GROUP
         FROM SNMPv2-CONF;

   adsl2MIB MODULE-IDENTITY
      LAST-UPDATED "200610040000Z" -- October 4th, 2006
      ORGANIZATION "ADSLMIB Working Group"
      CONTACT-INFO "WG-email:  adslmib@ietf.org
      Info:      https://www1.ietf.org/mailman/listinfo/adslmib


                   Chair:     Mike Sneed
                              Sand Channel Systems
                   Postal:    P.O. Box 37324
                              Raleigh NC 27627-732
                   Email:     sneedmike@hotmail.com
                   Phone:     +1 206 600 7022

                   Co-Chair & Co-editor:
                              Menachem Dodge
                              ECI Telecom Ltd.
                   Postal:    30 Hasivim St.
                              Petach Tikva 49517,
                              Israel.
                   Email:     mbdodge@ieee.org
                   Phone:     +972 3 926 8421

                   Co-editor: Moti Morgenstern
                              ECI Telecom Ltd.
                   Postal:    30 Hasivim St.
                              Petach Tikva 49517,
                              Israel.
                   Email:     moti.morgenstern@ecitele.com
                   Phone:     +972 3 926 6258

                   Co-editor: Scott Baillie
                              NEC Australia
                   Postal:    649-655 Springvale Road,
                              Mulgrave, Victoria 3170,
                              Australia.
                   Email:     scott.baillie@nec.com.au
                   Phone:     +61 3 9264 3986

                   Co-editor: Umberto Bonollo
```

NEC Australia
Postal: 649-655 Springvale Road,
Mulgrave, Victoria 3170,
Australia.
Email: umberto.bonollo@nec.com.au
Phone: +61 3 9264 3385

"

DESCRIPTION

"

This document defines a Management Information Base (MIB) module for use with network management protocols in the Internet community for the purpose of managing ADSL, ADSL2, and ADSL2+ lines. The MIB module described in RFC 2662 [RFC2662] describes objects used for managing Asymmetric Bit-Rate DSL (ADSL) interfaces per [T1E1.413], [G.992.1], and [G.992.2]. These object descriptions are based upon the specifications for the ADSL Embedded Operations Channel (EOC) as defined in American National Standards Institute (ANSI) T1E1.413/1995 [T1E1.413] and International Telecommunication Union (ITU-T) G.992.1 [G.992.1] and G.992.2 [G.992.2].

This document does not obsolete RFC 2662 [RFC2662], but rather provides a more comprehensive management model that includes the ADSL2 and ADSL2+ technologies per G.992.3, G.992.4, and G.992.5 ([G.992.3], [G.992.4], and [G.992.5], respectively). In addition, objects have been added to improve the management of ADSL, ADSL2, and ADSL2+ lines.

Additionally, the management framework for New Generation ADSL lines specified by the Digital Subscriber Line Forum (DSLF) has been taken into consideration [TR-90]. That framework is based on ITU-T G.997.1 standard [G.997.1] as well as two amendments: [G.997.1am1] and [G.997.1am2].

Note that the revised ITU-T G.997.1 standard also refers to the next generation of VDSL technology, known as VDSL2, per ITU-T G.993.2 [G.993.2]. However, managing VDSL2 lines is currently beyond the scope of this document.

The MIB module is located in the MIB tree under MIB 2 transmission, as discussed in the IANA Considerations section of this document.

```
      REVISION "200610040000Z" -- October 4th, 2006
      DESCRIPTION "Initial version, published as RFC 4706."
         ::= { transmission 238 }

     adsl2            OBJECT IDENTIFIER ::= { adsl2MIB 1 }
     -------------------------------------------------
     adsl2Line          OBJECT IDENTIFIER ::= { adsl2 1 }
     adsl2Status        OBJECT IDENTIFIER ::= { adsl2 2 }
     adsl2Inventory     OBJECT IDENTIFIER ::= { adsl2 3 }
     adsl2PM            OBJECT IDENTIFIER ::= { adsl2 4 }
     adsl2Profile       OBJECT IDENTIFIER ::= { adsl2 5 }
     adsl2Scalar        OBJECT IDENTIFIER ::= { adsl2 6 }
     adsl2Notifications OBJECT IDENTIFIER ::= { adsl2 0 }
     adsl2Conformance   OBJECT IDENTIFIER ::= { adsl2 7 }
     -------------------------------------------------
     adsl2PMLine      OBJECT IDENTIFIER ::= { adsl2PM 1 }
     adsl2PMChannel   OBJECT IDENTIFIER ::= { adsl2PM 2 }
     -------------------------------------------------
     adsl2ProfileLine      OBJECT IDENTIFIER ::= { adsl2Profile 1 }
     adsl2ProfileChannel   OBJECT IDENTIFIER ::= { adsl2Profile 2 }
     adsl2ProfileAlarmConf OBJECT IDENTIFIER ::= { adsl2Profile 3 }
     -------------------------------------------------
     adsl2ScalarSC         OBJECT IDENTIFIER ::= { adsl2Scalar 1 }
     -------------------------------------------------


   -------------------------------------------------
   --          adsl2LineTable                     --
   -------------------------------------------------
   adsl2LineTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2LineEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineTable contains configuration,
          command, and status parameters of the ADSL2 line.
          The index of this table is an interface index where the
          interface has an ifType of adsl2plus(238).

          Several objects in this table MUST be maintained in a
          persistent manner."
      ::= { adsl2Line 1 }

   adsl2LineEntry  OBJECT-TYPE
      SYNTAX      Adsl2LineEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
```

```
         "The table adsl2LineTable contains configuration,
         commands, and status parameters of the ADSL2 line"
      INDEX  { ifIndex }
      ::= { adsl2LineTable 1 }

   Adsl2LineEntry  ::=
      SEQUENCE {
         adsl2LineCnfgTemplate            SnmpAdminString,
         adsl2LineAlarmCnfgTemplate       SnmpAdminString,
         adsl2LineCmndConfPmsf            Adsl2ConfPmsForce,
         adsl2LineCmndConfLdsf            Adsl2LineLdsf,
         adsl2LineCmndConfLdsfFailReason  Adsl2LdsfResult,
         adsl2LineCmndAutomodeColdStart   TruthValue,
         adsl2LineStatusAtuTransSys       Adsl2TransmissionModeType,
         adsl2LineStatusPwrMngState       Adsl2PowerMngState,
         adsl2LineStatusInitResult        Adsl2InitResult,
         adsl2LineStatusLastStateDs       Adsl2LastTransmittedState,
         adsl2LineStatusLastStateUs       Adsl2LastTransmittedState,
         adsl2LineStatusAtur              Adsl2LineStatus,
         adsl2LineStatusAtuc              Adsl2LineStatus,
         adsl2LineStatusLnAttenDs         Unsigned32,
         adsl2LineStatusLnAttenUs         Unsigned32,
         adsl2LineStatusSigAttenDs        Unsigned32,
         adsl2LineStatusSigAttenUs        Unsigned32,
         adsl2LineStatusSnrMarginDs       Integer32,
         adsl2LineStatusSnrMarginUs       Integer32,
         adsl2LineStatusAttainableRateDs  Unsigned32,
         adsl2LineStatusAttainableRateUs  Unsigned32,
         adsl2LineStatusActPsdDs          Integer32,
         adsl2LineStatusActPsdUs          Integer32,
         adsl2LineStatusActAtpDs          Integer32,
         adsl2LineStatusActAtpUs          Integer32
      }

   adsl2LineCnfgTemplate  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2 Line
          Configuration Templates Table, (adsl2LineConfTemplateTable),
          which applies for this ADSL2 line.

          This object MUST be maintained in a persistent manner."
      REFERENCE    "DSL Forum TR-90, paragraph 5.1.1"
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineEntry 1 }
```

```
   adsl2LineAlarmCnfgTemplate  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2 Line
         Alarm Configuration Template Table,
         (adsl2LineAlarmConfTemplateTable), which applies to this ADSL2
         line.

         This object MUST be maintained in a persistent manner."
      REFERENCE    "DSL Forum TR-90, paragraph 5.1.1"
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineEntry 2 }

   adsl2LineCmndConfPmsf  OBJECT-TYPE
      SYNTAX      Adsl2ConfPmsForce
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
         "Power management state forced.  Defines the line states to be
          forced by the near-end ATU on this line.  The various possible
          values are:
             l3toL0(0),
             l0toL2(2), or
             l0orL2toL3(3).

          This object MUST be maintained in a persistent manner."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.3"
      DEFVAL       { l3toL0 }
      ::= { adsl2LineEntry 3 }

   adsl2LineCmndConfLdsf  OBJECT-TYPE
      SYNTAX      Adsl2LineLdsf
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
         "Loop diagnostics mode forced (LDSF).  Defines whether the line
          should be forced into the loop diagnostics mode by the
          near-end ATU on this line or only be responsive to loop
          diagnostics initiated by the far-end ATU.

          This object MUST be maintained in a persistent manner.
          However, in case the operator forces loop diagnostics mode
          then the access node should reset the object (inhibit) when
          loop diagnostics mode procedures are completed."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.8"
      DEFVAL       { inhibit }
```

```
      ::= { adsl2LineEntry 4 }

   adsl2LineCmndConfLdsfFailReason  OBJECT-TYPE
      SYNTAX      Adsl2LdsfResult
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The status of the recent occasion the Loop diagnostics mode
          forced (LDSF) was issued for the associated line.  Possible
          values are:
             none(1)         - The default value in case LDSF was never
                               requested for the associated line.
             success(2)      - The recent command completed
                               successfully.
             inProgress(3)   - The Loop Diagnostics process is in
                               progress.
             unsupported(4)  - The NE or the line card doesn't support
                               LDSF.
             cannotRun(5)    - The NE cannot initiate the command, due
                               to a nonspecific reason.
             aborted(6)      - The Loop Diagnostics process aborted.
             failed(7)       - The Loop Diagnostics process failed.
             illegalMode(8)  - The NE cannot initiate the command, due
                               to the specific mode of the relevant
                               line.
             adminUp(9)      - The NE cannot initiate the command, as
                               the relevant line is administratively
                               'Up'.
             tableFull(10)   - The NE cannot initiate the command, due
                               to reaching the maximum number of rows
                               in the results table.
             noResources(11) - The NE cannot initiate the command, due
                               to lack of internal memory resources."
      DEFVAL       { none }
      ::= { adsl2LineEntry 5 }

      adsl2LineCmndAutomodeColdStart   OBJECT-TYPE
         SYNTAX      TruthValue
         MAX-ACCESS  read-write
         STATUS      current
         DESCRIPTION
            "Automode cold start forced.  This parameter is defined
             in order to improve testing of the performance of ATUs
             supporting automode when it is enabled in the MIB.
             Change the value of this parameter to 'true' indicates
             a change in loop conditions applied to the devices under
             test.  The ATUs shall reset any historical information
             used for automode and for shortening G.994.1 handshake
```

```
            and initialization.

            Automode is the case where multiple operation-modes are
            enabled through the adsl2LConfProfAtuTransSysEna object
            in the line configuration profile being used for the
            ADSL line, and where the selection of the actual
            operation-mode depends not only on the common
            capabilities of both ATUs (as exchanged in G.994.1), but
            also on achievable data rates under given loop
            conditions.

            This object MUST be maintained in a persistent manner."

         REFERENCE    "ITU-T G.997.1 (amendment 1), 7.3.1.1.10"
         DEFVAL       { false }
         ::= { adsl2LineEntry 6 }


   adsl2LineStatusAtuTransSys  OBJECT-TYPE
      SYNTAX      Adsl2TransmissionModeType
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The ATU Transmission System (ATS) in use.
          It is coded in a bit-map representation with only a single bit
          set to '1' (the selected coding for the ADSL line).  This
          parameter may be derived from the handshaking procedures
          defined in Recommendation G.994.1.  A set of ADSL2 line
          transmission modes, with one bit per mode."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.1"
      ::= { adsl2LineEntry 7 }

   adsl2LineStatusPwrMngState  OBJECT-TYPE
      SYNTAX      Adsl2PowerMngState
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The current power management state.  One of four possible
          power management states:
             L0 - Synchronized and full transmission (i.e., Showtime).
             L1 - Low Power with reduced net data rate (G.992.2 only).
             L2 - Low Power with reduced net data rate (G.992.3 and
                  G.992.4 only).
             L3 - No power.
         The various possible values are: l0(1), l1(2), l2(3), or
         l3(4)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.2"
         ::= { adsl2LineEntry 8 }
```

```
   adsl2LineStatusInitResult  OBJECT-TYPE
      SYNTAX      Adsl2InitResult
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Indicates the result of the last full initialization performed
          on the line.  It is an enumeration type with the following
          values: noFail(0), configError(1), configNotFeasible(2),
          commFail(3), noPeerAtu(4), or otherCause(5)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.3"
      ::= { adsl2LineEntry 9 }

   adsl2LineStatusLastStateDs  OBJECT-TYPE
      SYNTAX      Adsl2LastTransmittedState
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The last successful transmitted initialization state in
          the downstream direction in the last full initialization
          performed on the line."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.4"
      ::= { adsl2LineEntry 10 }

   adsl2LineStatusLastStateUs  OBJECT-TYPE
      SYNTAX      Adsl2LastTransmittedState
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The last successful transmitted initialization state in the
          upstream direction in the last full initialization performed
          on the line."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.5"
      ::= { adsl2LineEntry 11 }

   adsl2LineStatusAtur  OBJECT-TYPE
      SYNTAX      Adsl2LineStatus
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Indicates current state (existing failures) of the ATU-R.
          This is a bit-map of possible conditions."
      REFERENCE    "ITU-T G.997.1, paragraph 7.1.1.2"
      ::= { adsl2LineEntry 12 }

   adsl2LineStatusAtuc  OBJECT-TYPE
      SYNTAX      Adsl2LineStatus
      MAX-ACCESS  read-only
      STATUS      current
```

```
      DESCRIPTION
         "Indicates current state (existing failures) of the ATU-C.
          This is a bit-map of possible conditions."
      REFERENCE    "ITU-T G.997.1, paragraph 7.1.1.1"
      ::= { adsl2LineEntry 13 }

   adsl2LineStatusLnAttenDs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The measured difference in the total power transmitted by the
          ATU-C and the total power received by the ATU-R over all sub-
          carriers during diagnostics mode and initialization.  It
          ranges from 0 to 1270 units of 0.1 dB (physical values
          are 0 to 127 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the line
          attenuation is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the line
          attenuation measurement is currently unavailable."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.6"
      ::= { adsl2LineEntry 14 }

   adsl2LineStatusLnAttenUs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The measured difference in the total power transmitted by the
          ATU-R and the total power received by the ATU-C over all sub-
          carriers during diagnostics mode and initialization.
          It ranges from 0 to 1270 units of 0.1 dB (physical values are
          0 to 127 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the line
          attenuation is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the line
          attenuation measurement is currently unavailable."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.7"
      ::= { adsl2LineEntry 15 }

   adsl2LineStatusSigAttenDs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
```

```
          "The measured difference in the total power transmitted by the
           ATU-C and the total power received by the ATU-R over all sub-
           carriers during Showtime.  It ranges from 0 to 1270 units of
           0.1 dB (physical values are 0 to 127 dB).
           A special value of 0x7FFFFFFF (2147483647) indicates the
           signal attenuation is out of range to be represented.
           A special value of 0x7FFFFFFE (2147483646) indicates the
           signal attenuation measurement is currently unavailable."
       REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.8"
       ::= { adsl2LineEntry 16 }

   adsl2LineStatusSigAttenUs  OBJECT-TYPE
       SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
       UNITS       "0.1 dB"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "The measured difference in the total power transmitted by the
           ATU-R and the total power received by the ATU-C over all sub-
           carriers during Showtime.  It ranges from 0 to 1270 units of
           0.1 dB (physical values are 0 to 127 dB).
           A special value of 0x7FFFFFFF (2147483647) indicates the
           signal attenuation is out of range to be represented.
           A special value of 0x7FFFFFFE (2147483646) indicates the
           signal attenuation measurement is currently unavailable."
       REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.9"
       ::= { adsl2LineEntry 17 }

   adsl2LineStatusSnrMarginDs  OBJECT-TYPE
       SYNTAX      Integer32 (-640..630 | 2147483646 | 2147483647)
       UNITS       "0.1 dB"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "Downstream SNR Margin is the maximum increase in dB of the
           noise power received at the ATU-R, such that the BER
           requirements are met for all downstream bearer channels.  It
           ranges from -640 to 630 units of 0.1 dB (physical values are
           -64 to 63 dB).
           A special value of 0x7FFFFFFF (2147483647) indicates the
           SNR Margin is out of range to be represented.
           A special value of 0x7FFFFFFE (2147483646) indicates the
           SNR Margin measurement is currently unavailable."
       REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.10"
       ::= { adsl2LineEntry 18 }

   adsl2LineStatusSnrMarginUs  OBJECT-TYPE
       SYNTAX      Integer32 (-640..630 | 2147483646 | 2147483647)
```

```
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Upstream SNR Margin is the maximum increase in dB of the noise
          power received at the ATU-C, such that the BER requirements
          are met for all downstream bearer channels.  It ranges from
          -640 to 630 units of 0.1 dB (physical values are -64 to
          63 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the
          SNR Margin is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the
          SNR Margin measurement is currently unavailable."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.11"
      ::= { adsl2LineEntry 19 }

   adsl2LineStatusAttainableRateDs  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "bits/second"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Maximum Attainable Data Rate Downstream.
          The maximum downstream net data rate currently attainable by
          the ATU-C transmitter and the ATU-R receiver, coded in
          bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.12"
      ::= { adsl2LineEntry 20 }

   adsl2LineStatusAttainableRateUs  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "bits/second"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Maximum Attainable Data Rate Upstream.
          The maximum upstream net data rate currently attainable by the
          ATU-R transmitter and the ATU-C receiver, coded in
          bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.13"
      ::= { adsl2LineEntry 21 }

   adsl2LineStatusActPsdDs OBJECT-TYPE
      SYNTAX      Integer32 (-900..0 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
```

```
         "Actual Power Spectrum Density (PSD) Downstream.  The average
          downstream transmit PSD over the sub-carriers used for
          downstream.  It ranges from -900 to 0 units of 0.1 dB
          (physical values are -90 to 0 dBm/Hz).
          A value of 0x7FFFFFFF (2147483647) indicates the measurement
          is out of range to be represented."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.14"
      ::= { adsl2LineEntry 22 }

   adsl2LineStatusActPsdUs OBJECT-TYPE
      SYNTAX      Integer32 (-900..0 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Actual Power Spectrum Density (PSD) Upstream.  The average
          upstream transmit PSD over the sub-carriers used for upstream.
          It ranges from -900 to 0 units of 0.1 dB (physical values
          are -90 to 0 dBm/Hz).
          A value of 0x7FFFFFFF (2147483647) indicates the measurement
          is out of range to be represented."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.15"
      ::= { adsl2LineEntry 23 }

   adsl2LineStatusActAtpDs  OBJECT-TYPE
      SYNTAX      Integer32 (-310..310 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Actual Aggregate Transmit Power Downstream.  The total amount
          of transmit power delivered by the ATU-C at the U-C reference
          point, at the instant of measurement.  It ranges from -310 to
          310 units of 0.1 dB (physical values are -31 to 31 dBm).
          A value of 0x7FFFFFFF (2147483647) indicates the measurement
          is out of range to be represented."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.16"
      ::= { adsl2LineEntry 24 }

   adsl2LineStatusActAtpUs  OBJECT-TYPE
      SYNTAX      Integer32 (-310..310 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Actual Aggregate Transmit Power Upstream.  The total amount of
          transmit power delivered by the ATU-R at the U-R
          reference point, at the instant of measurement.  It ranges
```

```
          from -310 to 310 units of 0.1 dB (physical values are -31
          to 31 dBm).
          A value of 0x7FFFFFFF (2147483647) indicates the measurement
          is out of range to be represented."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.17"
      ::= { adsl2LineEntry 25 }


   -------------------------------------------------
   --        adsl2ChannelStatusTable              --
   -------------------------------------------------
   adsl2ChannelStatusTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2ChannelStatusEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2ChannelStatusTable contains status
          parameters of the ADSL2 channel.  This table contains live
          data from equipment."
      ::= { adsl2Status 1 }

   adsl2ChannelStatusEntry  OBJECT-TYPE
      SYNTAX      Adsl2ChannelStatusEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2ChannelStatusTable contains status
          parameters of the ADSL2 channel.
          The index of this table consists of an interface index, where
          the interface has an ifType value that is applicable
          for a DSL channel, along with a termination unit."
      INDEX  { ifIndex, adsl2ChStatusUnit }
      ::= { adsl2ChannelStatusTable 1 }

   Adsl2ChannelStatusEntry  ::=
      SEQUENCE {
         adsl2ChStatusUnit               Adsl2Unit,
         adsl2ChStatusChannelNum         Unsigned32,
         adsl2ChStatusActDataRate        Unsigned32,
         adsl2ChStatusPrevDataRate       Unsigned32,
         adsl2ChStatusActDelay           Unsigned32,
         adsl2ChStatusAtmStatus          Adsl2ChAtmStatus,
         adsl2ChStatusPtmStatus          Adsl2ChPtmStatus
      }

   adsl2ChStatusUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
```

```
      STATUS      current
      DESCRIPTION
         "The termination unit atuc(1) or atur(2)."
      ::= { adsl2ChannelStatusEntry 1 }

   adsl2ChStatusChannelNum  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Provides the bearer channel number associated with this
          row (i.e., the channel ifIndex).
          This enables determining the channel configuration profile
          and the channel thresholds profile applicable for this
          bearer channel."
      ::= { adsl2ChannelStatusEntry 2 }

   adsl2ChStatusActDataRate  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The actual net data rate that the bearer channel is operating
          at, if in L0 power management state.  In L1 or L2 states, it
          relates to the previous L0 state.  The data rate is coded in
          bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.2.1"
      ::= { adsl2ChannelStatusEntry 3 }

   adsl2ChStatusPrevDataRate  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The previous net data rate that the bearer channel was
          operating at just before the latest rate change event.  This
          could be a full or short initialization, fast retrain, DRA or
          power management transitions, excluding transitions between L0
          state and L1 or L2 states.  The data rate is coded in
          bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.2.2"
      ::= { adsl2ChannelStatusEntry 4 }

   adsl2ChStatusActDelay  OBJECT-TYPE
      SYNTAX      Unsigned32(0..8176)
      UNITS       "milliseconds"
```

```
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The actual one-way interleaving delay introduced by the
          PMS-TC in the direction of the bearer channel, if in L0
          power management state.  In L1 or L2 states, it relates to
          the previous L0 state.  It is coded in ms (rounded to the
          nearest ms)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.2.3"
      ::= { adsl2ChannelStatusEntry 5 }

   adsl2ChStatusAtmStatus  OBJECT-TYPE
      SYNTAX      Adsl2ChAtmStatus
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Indicates the current state (existing failures) of the ADSL
          channel in case its Data Path is ATM.  This is a bit-map of
          possible conditions.  The various bit positions are:
             noDefect(0),
             noCellDelineation(1), or
             lossOfCellDelineation(2).
         In the case where the channel is not an ATM Data Path, the
         object is set to '0'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.1.4"
      ::= { adsl2ChannelStatusEntry 6 }

   adsl2ChStatusPtmStatus  OBJECT-TYPE
      SYNTAX      Adsl2ChPtmStatus
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Indicates the current state (existing failures) of the ADSL
          channel in case its Data Path is PTM.  This is a bit-map of
          possible conditions.  The various bit positions are:
             noDefect(0), or
             outOfSync(1).
         In the case where the channel is not a PTM Data Path, the
         object is set to '0'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.1.5"
      ::= { adsl2ChannelStatusEntry 7 }


   ------------------------------------------------
   --        Scalars that relate to the adsl2SCStatusTable.
   ------------------------------------------------

   adsl2ScalarSCMaxInterfaces  OBJECT-TYPE
```

```
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This value determines the upper size of adsl2SCStatusTable.
          The maximum number of entries in adsl2SCStatusTable is equal
          to two times the value of this attribute."
      ::= { adsl2ScalarSC 1 }

   adsl2ScalarSCAvailInterfaces  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This value determines the amount of space that is
          currently available in adsl2SCStatusTable.
          The number of entries available in adsl2SCStatusTable is equal
          to two times the value of this attribute."
      ::= { adsl2ScalarSC 2 }

   -----------------------------------------------
   --        adsl2SCStatusTable                 --
   -----------------------------------------------

   adsl2SCStatusTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2SCStatusEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2SCStatusTable contains status parameters
          of the ADSL2 sub-carriers.  The following points apply to this
          table:
          1.  The main purpose of this table is to hold the results
              of a DELT.
          2.  This table also holds parameters obtained at line
              initialization time.
          3.  The rows in this table are volatile; that is, they are
              lost if the SNMP agent is rebooted.
          4.  Due to the large OCTET STRING attributes in this table,
              the worst case memory requirements for this table are
              very high.  The manager may use the row status attribute
              of this table to delete rows in order to reclaim memory.
          5.  The manager may create rows in this table.  The SNMP
              agent may create rows in this table.  Only the manager
              may delete rows in this table.
          6.  The maximum number of rows allowable in this table is
              indicated by the scalar attribute
              adsl2ScalarSCMaxInterfaces.
```

The number of rows available in this table is indicated by the scalar attribute adsl2ScalarSCAvailInterfaces.

7. The SNMP agent is permitted to create rows in this table when a DELT completes successfully or when line initialization occurs. It is not mandatory for the SNMP agent to create rows in this table; hence, it may be necessary for the manager to create rows in this table before any results can be stored.
8. If the manager attempts to create a row in this table and there are no more rows available, the creation attempt will fail, and the response to the SNMP SET PDU will contain the error noCreation(11).
9. If the SNMP agent attempts to create a row in this table and there are no more rows available, the creation attempt will fail, and the attribute adsl2LineCmndConfLdsfFailReason will indicate the reason for the failure. The failure reason will be either tableFull(10) or noResources(11).
10. An example of use of this table is as follows:
    Step 1. : The DELT is started by setting the
            : adsl2LineCmndConfLdsf from inhibit to force.
    Step 2. : The DELT completes, and valid data is
            : available.
    Step 3. : The row in the adsl2SCStatusTable where the
            : results will be stored does not yet exist so
            : the SNMP agent attempts to create the row.
    Step 4. : Due to a low memory condition, a row in the
            : adsl2SCStatusTable table cannot be created at
            : this time.
    Step 5. : The reason for the failure, tableFull(10), is
            : indicated in the adsl2LineCmndConfLdsfFailReason
            : attribute.
11. Another example of use of this table is as follows :
    Step 1. : The DELT is started by setting the
            : adsl2LineCmndConfLdsf from inhibit to force.
    Step 2. : The DELT completes and valid data is
            : available.
    Step 3. : The row in the adsl2SCStatusTable where the
            : results will be stored does not yet exist so
            : the SNMP agent attempts to create the row.
    Step 4. : The row creation is successful.
    Step 5. : The value of the attribute
            : adsl2LineCmndConfLdsfFailReasonreason is set
            : to success(2).
12. Another example of use of this table is as follows:
    Step 1. : The manager creates a row in adsl2SCStatusTable
            : for a particular ADSL2 line.
    Step 2. : The DELT is started on the above-mentioned

```
                    : line by setting the adsl2LineCmndConfLdsf from
                    : inhibit to force.
             Step 3. : The DELT completes, and valid data is
                    : available.
             Step 4. : The value of the attribute
                    : adsl2LineCmndConfLdsfFailReasonreason is set
                    : to success(2)."
      ::= { adsl2Status 2 }

   adsl2SCStatusEntry  OBJECT-TYPE
      SYNTAX      Adsl2SCStatusEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table Adsl2SCStatusEntry contains status parameters
          of the ADSL2 sub-carriers.
          The index of this table is an interface index where the
          interface has an ifType of adsl2plus(238)."
      INDEX  { ifIndex, adsl2SCStatusDirection }
      ::= { adsl2SCStatusTable 1 }

   Adsl2SCStatusEntry  ::=
      SEQUENCE {
         adsl2SCStatusDirection         Adsl2Direction,
         adsl2SCStatusMtime             Unsigned32,
         adsl2SCStatusSnr               OCTET STRING,
         adsl2SCStatusBitsAlloc         OCTET STRING,
         adsl2SCStatusGainAlloc         OCTET STRING,
         adsl2SCStatusTssi              Adsl2Tssi,
         adsl2SCStatusLinScale          Unsigned32,
         adsl2SCStatusLinReal           OCTET STRING,
         adsl2SCStatusLinImg            OCTET STRING,
         adsl2SCStatusLogMt             Unsigned32,
         adsl2SCStatusLog               OCTET STRING,
         adsl2SCStatusQlnMt             Unsigned32,
         adsl2SCStatusQln               OCTET STRING,
         adsl2SCStatusLnAtten           Unsigned32,
         adsl2SCStatusSigAtten          Unsigned32,
         adsl2SCStatusSnrMargin         Integer32,
         adsl2SCStatusAttainableRate    Unsigned32,
         adsl2SCStatusActAtp            Integer32,
         adsl2SCStatusRowStatus         RowStatus
      }

   adsl2SCStatusDirection  OBJECT-TYPE
      SYNTAX      Adsl2Direction
      MAX-ACCESS  not-accessible
      STATUS      current
```

```
      DESCRIPTION
        "The direction of the sub-carrier is either
        upstream or downstream."
        ::= { adsl2SCStatusEntry 1 }

   adsl2SCStatusMtime  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "symbols"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "SNR Measurement Time.  The number of symbols used to
         measure the SNR values on the respective transmission
         direction.  It should correspond to the value specified in the
         recommendation (e.g., the number of symbols in 1 second
         time interval for G.992.3).  This parameter corresponds to
         1 second in loop diagnostic procedure and should be updated
         otherwise."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.20.1 (SNRMTds)
                    and paragraph 7.5.1.20.3 (SNRMTus)"
        ::= { adsl2SCStatusEntry 2 }

   adsl2SCStatusSnr  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..512))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The SNR Margin per sub-carrier, expressing the ratio between
         the received signal power and received noise power per
         subscriber.  It is an array of 512 octets, designed for
         supporting up to 512 (downstream) sub-carriers.
         The number of utilized octets on downstream direction depends
         on NSCds, and on upstream direction it depends on NSCus.  This
         value is referred to here as NSC.
         Octet i (0 <= i < NSC) is set to a value in the range 0 to
         254 to indicate that the respective downstream or upstream sub-
         carrier i has SNR of: (-32 + Adsl2SubcarrierSnr(i)/2) in dB
         (i.e., -32 to 95dB).
         The special value 255 means that no measurement could be done
         for the subcarrier because it is out of the PSD mask passband
         or that the noise PSD is out of range to be represented.
         Each value in this array is 8 bits wide."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.20.2 (SNRpsds)
                    and paragraph 7.5.1.20.4 (SNRpsus)"
        ::= { adsl2SCStatusEntry 3 }

   adsl2SCStatusBitsAlloc  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..256))
```

```
      UNITS       "bits"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The bits allocation per sub-carrier.  An array of 256 octets
         (512 nibbles), designed for supporting up to 512 (downstream)
         sub-carriers.
         The number of utilized nibbles on downstream direction depends
         on NSCds, and on upstream direction it depends on NSCus.  This
         value is referred to here as NSC.
         Nibble i (0 <= i < NSC) is set to a value in the range 0
         to 15 to indicate that the respective downstream or upstream
         sub-carrier i has the same amount of bits allocation."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.21.1 (BITSpsds)
                    and paragraph 7.5.1.21.2 (BITSpsus)"
        ::= { adsl2SCStatusEntry 4 }

   adsl2SCStatusGainAlloc  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..1024))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The gain allocation per sub-carrier.  An array of 512 16-bits
        values, designed for supporting up to 512 (downstream) sub-
        carriers.
        The number of utilized octets on downstream direction depends
        on NSCds, and on upstream direction it depends on NSCus.  This
        value is referred to here as NSC.
        Value i (0 <= i < NSC) is in the range 0 to 4093 to indicate
        that the respective downstream or upstream sub-carrier i has the
        same amount of gain value.
        The gain value is represented as a multiple of 1/512 on a
        linear scale.  Each value in this array is 16 bits wide and is
        stored in big endian format."
      REFERENCE    "ITU-T G.997.1, paragraph 7.5.1.21.3 (GAINSpsds)
                    and paragraph 7.5.1.21.4 (GAINSpsus)"
        ::= { adsl2SCStatusEntry 5 }

   adsl2SCStatusTssi  OBJECT-TYPE
      SYNTAX      Adsl2Tssi
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The transmit spectrum shaping (TSSi) breakpoints expressed
        as the set of breakpoints exchanged during G.994.1.
        Each breakpoint is a pair of values occupying 3 octets with the
        following structure:
        First 2 octets - Index of the subcarrier used in the context of
```

```
                        the breakpoint.
          Third octet    - The shaping parameter at the breakpoint.
          Subcarrier index is an unsigned number in the range 1 to either
          NSCds (downstream direction) or NSCus (upstream direction).
          The shaping parameter value is in the range 0 to 127 (units of
          -0.5dB).  The special value 127 indicates that the subcarrier
          is not transmitted."
       REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.21.5 (TSSpsds)
                   and paragraph 7.5.1.21.6 (TSSpsus)"
       ::= { adsl2SCStatusEntry 6 }

   adsl2SCStatusLinScale  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The scale factor to be applied to the H(f) linear
        representation values for the respective transmission direction.
        This parameter is only available after a loop diagnostic
        procedure."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.18.1 (HLINSCds)
                  and paragraph 7.5.1.18.5 (HLINSCus)"
        ::= { adsl2SCStatusEntry 7 }

   adsl2SCStatusLinReal  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..1024))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "An array of up to 512 complex H(f) linear representation
        values in linear scale for the respective transmission
        direction.  It is designed to support up to 512 (downstream)
        sub-carriers.
        The number of utilized values on downstream direction depends
        on NSCds, and on upstream direction it depends on NSCus.  This
        value is referred to here as NSC.
        Each array entry represents the real component [referred to here
        as a(i)] of Hlin(f = i*Df) value for a particular sub-carrier
        index i (0 <= i < NSC).
        Hlin(f) is represented as ((scale/2^15)*((a(i)+j*b(i))/2^15)),
        where scale is Adsl2SubcarrierLinScale and a(i) and b(i)
        [provided by the Adsl2SubcarrierLinImg object] are in the range
        (-2^15+1) to (+2^15-1).
        A special value a(i)=b(i)= -2^15 indicates that no measurement
        could be done for the subcarrier because it is out of the
        passband or that the attenuation is out of range to be
        represented.  This parameter is only available after a loop
        diagnostic procedure.
```

```
        Each value in this array is 16 bits wide and is stored in big
        endian format."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.18.2 (HLINpsds)
                  and paragraph 7.5.1.18.6 (HLINpsds)"
        ::= { adsl2SCStatusEntry 8 }

   adsl2SCStatusLinImg  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..1024))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "An array of up to 512 complex H(f) linear representation
        values in linear scale for the respective transmission
        direction.  It is designed to support up to 512 (downstream)
        sub-carriers.
        The number of utilized values on downstream direction depends
        on NSCds, and on upstream direction it depends on NSCus.  This
        value is referred to here as NSC.
        Each array entry represents the imaginary component [referred
        to here as b(i)] of Hlin(f = i*Df) value for a particular sub-
        carrier index i (0 <= i < NSC).
        Hlin(f) is represented as ((scale/2^15)*((a(i)+j*b(i))/2^15)),
        where scale is Adsl2SubcarrierLinScale and a(i) [provided by
        the Adsl2SubcarrierLinReal object] and b(i) are in the range
        (-2^15+1) to (+2^15-1).
        A special value a(i)=b(i)= -2^15 indicates that no measurement
        could be done for the subcarrier because it is out of the
        passband or that the attenuation is out of range to be
        represented.  This parameter is only available after a loop
        diagnostic procedure.
        Each value in this array is 16 bits wide and is stored in big
        endian format."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.18.2 (HLINpsds)
                  and paragraph 7.5.1.18.6 (HLINpsds)"
        ::= { adsl2SCStatusEntry 9 }

   adsl2SCStatusLogMt  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The number of symbols used to measure the H(f) logarithmic
        measurement values for the respective transmission direction.
        This parameter should correspond to the value specified in the
        recommendation (e.g., the number of symbols in 1 second
        time interval for G.992.3).  This parameter corresponds to 1
        second in loop diagnostic procedure and should be updated in
        initialization"
```

```
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.18.3 (HLOGMTds)
                  and paragraph 7.5.1.18.7 (HLOGMTus)"
        ::= { adsl2SCStatusEntry 10 }

   adsl2SCStatusLog  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..1024))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "An array of up to 512 real H(f) logarithmic representation
         values in dB for the respective transmission direction.  It is
         designed to support up to 512 (downstream) sub-carriers.
         The number of utilized values on downstream direction depends
         on NSCds, and on upstream direction it depends on NSCus.  This
         value is referred to here as NSC.
         Each array entry represents the real Hlog(f = i*Df) value for a
         particular sub-carrier index i, (0 <= i < NSC).
         The real Hlog(f) value is represented as (6-m(i)/10), with m(i)
         in the range 0 to 1022.  A special value m=1023 indicates that
         no measurement could be done for the subcarrier because it is
         out of the passband or that the attenuation is out of range to
         be represented.  This parameter is applicable in loop
         diagnostic procedure and initialization.
         Each value in this array is 16 bits wide and is stored
         in big endian format."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.18.4 (HLOGpsds)
                  and paragraph 7.5.1.18.8 (HLOGpsus)"
        ::= { adsl2SCStatusEntry 11 }

   adsl2SCStatusQlnMt  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "The number of symbols used to measure the Quiet Line Noise
         values on the respective transmission direction.  This
         parameter should correspond to the value specified in the
         recommendation (e.g., the number of symbols in 1 second time
         interval for G.992.3).  This parameter corresponds to 1 second
         in loop diagnostic procedure and should be updated in
         initialization "
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.19.1 (QLNMTds)
                  and paragraph 7.5.1.19.3 (QLNMTus)"
        ::= { adsl2SCStatusEntry 12 }

   adsl2SCStatusQln  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..512))
      UNITS       "dBm/Hz"
```

```
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "An array of up to 512 real Quiet Line Noise values in dBm/Hz
        for the respective transmission direction.  It is designed for
        up to 512 (downstream) sub-carriers.
        The number of utilized values on downstream direction depends
        on NSCds, and on upstream direction it depends on NSCus.  This
        value is referred to here as NSC.
        Each array entry represents the QLN(f = i*Df) value for a
        particular sub-carrier index i, (0 <= i < NSC).
        The QLN(f) is represented as ( -23-n(i)/2), with n(i) in the
        range 0 to 254.  A special value n(i)=255 indicates that no
        measurement could be done for the subcarrier because it is out
        of the passband or that the noise PSD is out of range to be
        represented.
        This parameter is applicable in loop diagnostic procedure and
        initialization.  Each value in this array is 8 bits wide."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.19.2 (QLNpsds)
                  and paragraph 7.5.1.19.4 (QLNpsus)"
        ::= { adsl2SCStatusEntry 13 }

   adsl2SCStatusLnAtten  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "When referring to the downstream direction, it is the measured
          difference in the total power transmitted by the ATU-C and the
          total power received by the ATU-R over all sub-carriers during
          diagnostics mode.
          When referring to the upstream direction, it is the measured
          difference in the total power transmitted by the ATU-R and the
          total power received by the ATU-C over all sub-carriers during
          diagnostics mode.
          It ranges from 0 to 1270 units of 0.1 dB (physical values are
          0 to 127 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the line
          attenuation is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the line
          attenuation measurement is unavailable.
          This object reflects the value of the parameter following the
          most recent DELT performed on the associated line.  Once
          the DELT process is over, the parameter no longer changes
          until the row is deleted or a new DELT process is initiated."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.6 (LATNds)
                  and paragraph 7.5.1.7 (LATNus)"
```

```
      ::= { adsl2SCStatusEntry 14 }

   adsl2SCStatusSigAtten  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..1270 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "When referring to the downstream direction, it is the measured
          difference in the total power transmitted by the
          ATU-C and the total power received by the ATU-R over all sub-
          carriers during Showtime after the diagnostics mode.
          When referring to the upstream direction, it is the measured
          difference in the total power transmitted by the
          ATU-R and the total power received by the ATU-C over all sub-
          carriers during Showtime after the diagnostics mode.
          It ranges from 0 to 1270 units of 0.1 dB (physical values
          are 0 to 127 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the
          signal attenuation is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the
          signal attenuation measurement is unavailable.
          This object reflects the value of the parameter following the
          most recent DELT performed on the associated line.  Once
          the DELT process is over, the parameter no longer changes
          until the row is deleted or a new DELT process is initiated."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.8 (SATNds)
                  and paragraph 7.5.1.9 (SATNus)"
      ::= { adsl2SCStatusEntry 15 }

   adsl2SCStatusSnrMargin  OBJECT-TYPE
      SYNTAX      Integer32 (-640..630 | 2147483646 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "SNR Margin is the maximum increase in dB of the noise power
          received at the ATU (ATU-R on downstream direction and ATU-C
          on upstream direction), such that the BER requirements are met
          for all bearer channels received at the ATU.  It ranges from
          -640 to 630 units of 0.1 dB (physical values are -64 to
          63 dB).
          A special value of 0x7FFFFFFF (2147483647) indicates the
          SNR Margin is out of range to be represented.
          A special value of 0x7FFFFFFE (2147483646) indicates the
          SNR Margin measurement is currently unavailable.
          This object reflects the value of the parameter following the
          most recent DELT performed on the associated line.  Once
```

```
          the DELT process is over, the parameter no longer changes
          until the row is deleted or a new DELT process is initiated."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.10 (SNRMds)
                  and paragraph 7.5.1.11 (SNRMus)"
      ::= { adsl2SCStatusEntry 16 }

   adsl2SCStatusAttainableRate  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "bits/second"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Maximum Attainable Data Rate.  The maximum net data rate
          currently attainable by the ATU-C transmitter and ATU-R
          receiver (when referring to downstream direction) or by the
          ATU-R transmitter and ATU-C receiver (when referring to
          upstream direction).  Value is coded in bits/second.
          This object reflects the value of the parameter following the
          most recent DELT performed on the associated line.  Once
          the DELT process is over, the parameter no longer changes
          until the row is deleted or a new DELT process is initiated."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.12 (ATTNDRds)
                  and paragraph 7.5.1.13 (ATTNDRus)"
      ::= { adsl2SCStatusEntry 17 }

   adsl2SCStatusActAtp  OBJECT-TYPE
      SYNTAX      Integer32
      UNITS       "0.1 dB"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Actual Aggregate Transmit Power from the ATU (ATU-R on
          downstream direction and ATU-C on upstream direction), at the
          instant of measurement.  It ranges from -310 to 310 units of
          0.1 dB (physical values are -31 to 31 dBm).  A value of all
          1's indicates the measurement is out of range to be
          represented.
          This object reflects the value of the parameter following the
          most recent DELT performed on the associated line.  Once
          the DELT process is over, the parameter no longer changes
          until the row is deleted or a new DELT process is initiated."
      REFERENCE  "ITU-T G.997.1, paragraph 7.5.1.16 (ACTATPds)
                  and paragraph 7.5.1.17 (ACTATPus)"
      ::= { adsl2SCStatusEntry 18 }

   adsl2SCStatusRowStatus  OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
```

```
      STATUS      current
      DESCRIPTION
         "Row Status.  The manager may create and delete rows
          of this table.  Please see the description of
          adsl2SCStatusTable above for more details."
      ::= { adsl2SCStatusEntry 19 }

   -----------------------------------------------
   --        adsl2LineInventoryTable             --
   -----------------------------------------------
   adsl2LineInventoryTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2LineInventoryEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineInventoryTable contains inventory of the
          ADSL2 units."
      ::= { adsl2Inventory 1 }

   adsl2LineInventoryEntry  OBJECT-TYPE
      SYNTAX      Adsl2LineInventoryEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineInventoryTable contains inventory of the
          ADSL2 units.
          The index of this table is an interface index where the
          interface has an ifType of adsl2plus(238)."
      INDEX  { ifIndex, adsl2LInvUnit }
      ::= { adsl2LineInventoryTable 1 }

   Adsl2LineInventoryEntry  ::=
      SEQUENCE {
         adsl2LInvUnit                      Adsl2Unit,
         adsl2LInvG994VendorId              OCTET STRING,
         adsl2LInvSystemVendorId            OCTET STRING,
         adsl2LInvVersionNumber             OCTET STRING,
         adsl2LInvSerialNumber              OCTET STRING,
         adsl2LInvSelfTestResult            Unsigned32,
         adsl2LInvTransmissionCapabilities  Adsl2TransmissionModeType
      }

   adsl2LInvUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The termination unit atuc(1) or atur(2)."
```

```
      ::= { adsl2LineInventoryEntry 1 }

   adsl2LInvG994VendorId  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(8))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The ATU G.994.1 Vendor ID as inserted in the G.994.1 CL/CLR
          message.  It consists of 8 binary octets, including a country
          code followed by a (regionally allocated) provider code, as
          defined in Recommendation T.35."
      REFERENCE    "ITU-T G.997.1, paragraph 7.4"
      ::= { adsl2LineInventoryEntry 2 }

   adsl2LInvSystemVendorId  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(8))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The ATU System Vendor ID (identifies the ATU system
          integrator) as inserted in the Overhead Messages (both ATUs
          for G.992.3 and G.992.4) or in the Embedded Operations
          Channel (only ATU-R in G.992.1 and G.992.2).  It consists of
          8 binary octets, with the same format as used for
          Adsl2InvG994VendorId."
      REFERENCE    "ITU-T G.997.1, paragraph 7.4"
      ::= { adsl2LineInventoryEntry 3 }

   adsl2LInvVersionNumber  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..16))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The ATU version number (vendor-specific information) as
          inserted in the Overhead Messages (both ATUs for G.992.3 and
          G.992.4) or in the Embedded Operations Channel (only ATU-R in
          G.992.1 and G.992.2).  It consists of up to 16 binary octets."
      REFERENCE    "ITU-T G.997.1, paragraph 7.4"
      ::= { adsl2LineInventoryEntry 4 }

   adsl2LInvSerialNumber  OBJECT-TYPE
      SYNTAX      OCTET STRING  (SIZE(0..32))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The ATU serial number (vendor-specific information) as
          inserted in the Overhead Messages (both ATUs for G.992.3 and
          G.992.4) or in the Embedded Operations Channel (only ATU-R in
```

```
          G.992.1 and G.992.2).  It is vendor-specific information.  It
          consists of up to 32 ASCII characters."
       REFERENCE    "ITU-T G.997.1, paragraph 7.4"
       ::= { adsl2LineInventoryEntry 5 }

   adsl2LInvSelfTestResult  OBJECT-TYPE
       SYNTAX      Unsigned32
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "The ATU self-test result, coded as a 32-bit value.  The
          most significant octet of the result is '0' if the self-test
          passed, and '1' if the self-test failed.  The interpretation
          of the other octets is vendor discretionary."
       REFERENCE    "ITU-T G.997.1, paragraph 7.4"
       ::= { adsl2LineInventoryEntry 6 }

   adsl2LInvTransmissionCapabilities  OBJECT-TYPE
       SYNTAX      Adsl2TransmissionModeType
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "The ATU transmission system capability list of the different
          coding types.  It is coded in a bit-map representation with 1
          or more bits set.  A bit set to '1' means that the ATU
          supports the respective coding.  The value may be derived
          from the handshaking procedures defined in G.994.1.  A set
          of ADSL2 line transmission modes, with one bit per mode."
       REFERENCE    "ITU-T G.997.1, paragraph 7.4"
       ::= { adsl2LineInventoryEntry 7 }


   -----------------------------------------------
   --        adsl2LineConfTemplateTable          --
   -----------------------------------------------
   adsl2LineConfTemplateTable  OBJECT-TYPE
       SYNTAX      SEQUENCE  OF  Adsl2LineConfTemplateEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
          "The table adsl2LineConfTemplateTable contains ADSL2 line
          configuration templates.

          Entries in this table MUST be maintained in a
          persistent manner."
       ::= { adsl2ProfileLine 1 }

   adsl2LineConfTemplateEntry  OBJECT-TYPE
```

```
      SYNTAX      Adsl2LineConfTemplateEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineConfTemplateTable contains the ADSL2 line
          configuration template.
          A default template 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  { adsl2LConfTempTemplateName }
      ::= { adsl2LineConfTemplateTable 1 }

   Adsl2LineConfTemplateEntry  ::=
      SEQUENCE {
         adsl2LConfTempTemplateName      SnmpAdminString,
         adsl2LConfTempLineProfile       SnmpAdminString,
         adsl2LConfTempChan1ConfProfile  SnmpAdminString,
         adsl2LConfTempChan1RaRatioDs    Unsigned32,
         adsl2LConfTempChan1RaRatioUs    Unsigned32,
         adsl2LConfTempChan2ConfProfile  SnmpAdminString,
         adsl2LConfTempChan2RaRatioDs    Unsigned32,
         adsl2LConfTempChan2RaRatioUs    Unsigned32,
         adsl2LConfTempChan3ConfProfile  SnmpAdminString,
         adsl2LConfTempChan3RaRatioDs    Unsigned32,
         adsl2LConfTempChan3RaRatioUs    Unsigned32,
         adsl2LConfTempChan4ConfProfile  SnmpAdminString,
         adsl2LConfTempChan4RaRatioDs    Unsigned32,
         adsl2LConfTempChan4RaRatioUs    Unsigned32,
         adsl2LConfTempRowStatus         RowStatus
      }

   adsl2LConfTempTemplateName  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "This object identifies a row in this table."
      REFERENCE    "DSL Forum TR-90, paragraph 5.1.4"
      ::= { adsl2LineConfTemplateEntry 1 }

   adsl2LConfTempLineProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2 Line
          Configuration Profile Table, (adsl2LineConfProfTable),
          which applies for this ADSL2 line."
```

```
      REFERENCE    "DSL Forum TR-90, paragraph 5.1.4"
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineConfTemplateEntry 2 }

   adsl2LConfTempChan1ConfProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Configuration Profile Table,
          (adsl2ChConfProfileTable) that applies to ADSL2 bearer
          channel #1.  The channel profile name specified here must
          match the name of an existing row in the
          adsl2ChConfProfileTable table."
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineConfTemplateEntry 3 }

   adsl2LConfTempChan1RaRatioDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..100)
      UNITS       "percent"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Rate Adaptation Ratio.  The ratio (in %) that should be taken
          into account for the bearer channel #1 when performing rate
          adaptation on Downstream.  The ratio refers to the available
          data rate in excess of the Minimum Data Rate, summed over all
          bearer channels.  Also, the 100 -
          adsl2LConfTempChan1RaRatioDs is the ratio of excess data
          rate to be assigned to all other bearer channels on Downstream
          direction.  The sum of rate adaptation ratios over all bearers
          on the same direction shall be equal to 100%."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
      DEFVAL       { 100 }
      ::= { adsl2LineConfTemplateEntry 4 }

   adsl2LConfTempChan1RaRatioUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..100)
      UNITS       "percent"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Rate Adaptation Ratio.  The ratio (in %) that should be taken
          into account for the bearer channel #1 when performing rate
          adaptation on Upstream.  The ratio refers to the available
          data rate in excess of the Minimum Data Rate, summed over all
          bearer channels.  Also, the
```

```
          100 - adsl2LConfTempChan1RaRatioUs is the ratio of excess
          data rate to be assigned to all other bearer channels on
          Upstream direction.  The sum of rate adaptation ratios over
          all bearers on the same direction shall be equal to 100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 100 }
       ::= { adsl2LineConfTemplateEntry 5 }

   adsl2LConfTempChan2ConfProfile  OBJECT-TYPE
       SYNTAX      SnmpAdminString (SIZE(0..32))
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "The value of this object identifies the row in the ADSL2
           Channel Configuration Profile Table
           (adsl2ChConfProfileTable) that applies to ADSL2 bearer
           channel #2.  If the channel is unused, then the object is set
           to a zero-length string.
           This object may be set to a zero-length string only if
           adsl2LConfTempChan3ConfProfile contains a zero-length
           string."

       DEFVAL       { "" }
       ::= { adsl2LineConfTemplateEntry 6 }

   adsl2LConfTempChan2RaRatioDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..100)
       UNITS       "percent"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Rate Adaptation Ratio.  The ratio (in %) that should be taken
           into account for the bearer channel #2 when performing rate
           adaptation on Downstream.  The ratio refers to the available
           data rate in excess of the Minimum Data Rate, summed over all
           bearer channels.  Also, the
           100 - adsl2LConfTempChan2RaRatioDs is the ratio of excess
           data rate to be assigned to all other bearer channels on
           Downstream direction.  The sum of rate adaptation ratios
           over all bearers on the same direction shall be equal to
           100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 0 }
       ::= { adsl2LineConfTemplateEntry 7 }

   adsl2LConfTempChan2RaRatioUs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..100)
       UNITS       "percent"
```

```
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Rate Adaptation Ratio.  The ratio (in %) that should be taken
          into account for the bearer channel #2 when performing rate
          adaptation on Upstream.  The ratio refers to the available
          data rate in excess of the Minimum Data Rate, summed over all
          bearer channels.  Also, the
          100 - adsl2LConfTempChan2RaRatioUs is the ratio of excess
          data rate to be assigned to all other bearer channels on
          Upstream direction.  The sum of rate adaptation ratios over
          all bearers on the same direction shall be equal to 100%."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
      DEFVAL       { 0 }
      ::= { adsl2LineConfTemplateEntry 8 }

   adsl2LConfTempChan3ConfProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(0..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Configuration Profile Table
          (adsl2ChConfProfileTable) that applies to ADSL2 bearer
          channel #3.  If the channel is unused, then the object is set
          to a zero-length string.
          This object may be set to a zero-length string only if
          adsl2LConfTempChan4ConfProfile contains a zero-length
          string.
          This object may be set to a non-zero-length string only if
          adsl2LConfTempChan2ConfProfile contains a non-zero-length
          string."
      DEFVAL       { "" }
      ::= { adsl2LineConfTemplateEntry 9 }

   adsl2LConfTempChan3RaRatioDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..100)
      UNITS       "percent"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Rate Adaptation Ratio.  The ratio (in %) that should be taken
          into account for the bearer channel #3 when performing rate
          adaptation on Downstream.  The ratio refers to the available
          data rate in excess of the Minimum Data Rate, summed over all
          bearer channels.  Also, the 100 -
          adsl2LConfTempChan3RaRatioDs is the ratio of excess data
          rate to be assigned to all other bearer channels on Downstream
```

```
          direction.  The sum of rate adaptation ratios over all bearers
          on the same direction shall be equal to 100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 0 }
       ::= { adsl2LineConfTemplateEntry 10 }

   adsl2LConfTempChan3RaRatioUs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..100)
       UNITS       "percent"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Rate Adaptation Ratio.  The ratio (in %) that should be taken
           into account for the bearer channel #3 when performing rate
           adaptation on Upstream.  The ratio refers to the available
           data rate in excess of the Minimum Data Rate, summed over all
           bearer channels.  Also, the
           100 - adsl2LConfTempChan3RaRatioUs is the ratio of excess
           data rate to be assigned to all other bearer channels on
           Upstream direction.  The sum of rate adaptation ratios over
           all bearers on the same direction shall be equal to 100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 0 }
       ::= { adsl2LineConfTemplateEntry 11 }

   adsl2LConfTempChan4ConfProfile  OBJECT-TYPE
       SYNTAX      SnmpAdminString (SIZE(0..32))
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "The value of this object identifies the row in the ADSL2
           Channel Configuration Profile Table
           (adsl2ChConfProfileTable) that applies to ADSL2 bearer
           channel #4.  If the channel is unused, then the object is set
           to a zero-length string.
           This object may be set to a non-zero-length string only if
           adsl2LConfTempChan3ConfProfile contains a non-zero-length
           string."
       DEFVAL       { "" }
       ::= { adsl2LineConfTemplateEntry 12 }

   adsl2LConfTempChan4RaRatioDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..100)
       UNITS       "percent"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Rate Adaptation Ratio.  The ratio (in %) that should be taken
```

```
          into account for the bearer channel #4 when performing rate
          adaptation on Downstream.  The ratio refers to the available
          data rate in excess of the Minimum Data Rate, summed over all
          bearer channels.  Also, the 100 -
          adsl2LConfTempChan4RaRatioDs is the ratio of
          excess data rate to be assigned to all other bearer channels.
          The sum of rate adaptation ratios over all bearers on the same
          direction shall sum to 100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 0 }
       ::= { adsl2LineConfTemplateEntry 13 }

   adsl2LConfTempChan4RaRatioUs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..100)
       UNITS       "percent"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Rate Adaptation Ratio.  The ratio (in %) that should be taken
           into account for the bearer channel #4 when performing rate
           adaptation on Upstream.  The ratio refers to the available
           data rate in excess of the Minimum Data Rate, summed over
           all bearer channels.  Also, the 100 -
           adsl2LConfTempChan4RaRatioUs is the
           ratio of excess data rate to be assigned to all other bearer
           channels.  The sum of rate adaptation ratios over all bearers
           on the same direction shall sum to 100%."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       DEFVAL       { 0 }
       ::= { adsl2LineConfTemplateEntry 14 }

   adsl2LConfTempRowStatus  OBJECT-TYPE
       SYNTAX      RowStatus
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "This object is used to create a new row or to modify or
          delete an existing row in this table.

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

          Before a template can be deleted or taken out of service
          (by setting this object to 'destroy' or 'notInService'),
          it must first be unreferenced from all associated
          lines."
       ::= { adsl2LineConfTemplateEntry 15 }
```

```
   ----------------------------------------
   --        adsl2LineConfProfTable        --
   ----------------------------------------
   adsl2LineConfProfTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2LineConfProfEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineConfProfTable contains ADSL2 line profile
          configuration.

          Entries in this table MUST be maintained in a
          persistent manner."
      ::= { adsl2ProfileLine 2 }

   adsl2LineConfProfEntry  OBJECT-TYPE
      SYNTAX      Adsl2LineConfProfEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineConfProfTable contains ADSL2 line profile
          configuration.

          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  { adsl2LConfProfProfileName }
      ::= { adsl2LineConfProfTable 1 }

   Adsl2LineConfProfEntry  ::=
      SEQUENCE {
         adsl2LConfProfProfileName          SnmpAdminString,
         adsl2LConfProfScMaskDs             Adsl2ScMaskDs,
         adsl2LConfProfScMaskUs             Adsl2ScMaskUs,
         adsl2LConfProfRfiBandsDs           Adsl2RfiDs,
         adsl2LConfProfRaModeDs             Adsl2RaMode,
         adsl2LConfProfRaModeUs             Adsl2RaMode,
         adsl2LConfProfRaUsNrmDs            Unsigned32,
         adsl2LConfProfRaUsNrmUs            Unsigned32,
         adsl2LConfProfRaUsTimeDs           Unsigned32,
         adsl2LConfProfRaUsTimeUs           Unsigned32,
         adsl2LConfProfRaDsNrmsDs           Unsigned32,
         adsl2LConfProfRaDsNrmsUs           Unsigned32,
         adsl2LConfProfRaDsTimeDs           Unsigned32,
         adsl2LConfProfRaDsTimeUs           Unsigned32,
         adsl2LConfProfTargetSnrmDs         Unsigned32,
         adsl2LConfProfTargetSnrmUs         Unsigned32,
         adsl2LConfProfMaxSnrmDs            Unsigned32,
```

```
         adsl2LConfProfMaxSnrmUs            Unsigned32,
         adsl2LConfProfMinSnrmDs            Unsigned32,
         adsl2LConfProfMinSnrmUs            Unsigned32,
         adsl2LConfProfMsgMinUs             Unsigned32,
         adsl2LConfProfMsgMinDs             Unsigned32,
         adsl2LConfProfAtuTransSysEna       Adsl2TransmissionModeType,
         adsl2LConfProfPmMode               Adsl2LConfProfPmMode,
         adsl2LConfProfL0Time               Unsigned32,
         adsl2LConfProfL2Time               Unsigned32,
         adsl2LConfProfL2Atpr               Unsigned32,
         adsl2LConfProfL2Atprt              Unsigned32,
         adsl2LConfProfRowStatus            RowStatus
      }

   adsl2LConfProfProfileName  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "This object identifies a row in this table."
        ::= { adsl2LineConfProfEntry 1 }

   adsl2LConfProfScMaskDs  OBJECT-TYPE
      SYNTAX      Adsl2ScMaskDs
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Sub-carriers mask.  A bitmap of 512 bits that allows masking
          up to 512 downstream sub-carriers, depending on NSCds.  If bit
          i (0 <= i < NSCds) is set to '1', the respective
          downstream sub-carrier i is masked, and if set to '0', the
          respective sub-carrier is unmasked.  Note that there should
          always be unmasked sub-carriers (i.e., the object cannot be
          all 1's).  Also note that if NSCds < 512, all bits
          i (NSCds < i <= 512) should be set to '1'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2.6"
      ::= { adsl2LineConfProfEntry 2 }

   adsl2LConfProfScMaskUs  OBJECT-TYPE
      SYNTAX      Adsl2ScMaskUs
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Sub-carriers mask.  A bitmap of 64 bits that allows masking
          up to 64 downstream sub-carriers, depending on NSCds.  If
          bit i (0 <= i < NSCus) is set to '1', the respective
          upstream sub-carrier i is masked, and if set to '0', the
          respective sub-carrier is unmasked.  Note that there
```

```
          should always be unmasked sub-carriers (i.e., the object
          cannot be all 1's).  Also note that if NSCus <
          64, all bits i (NSCus < i <= 64) should be set to '1'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2.7"
      ::= { adsl2LineConfProfEntry 3 }

   adsl2LConfProfRfiBandsDs  OBJECT-TYPE
      SYNTAX      Adsl2RfiDs
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
          "The subset of downstream PSD mask breakpoints that shall be
          used to notch an RFI band.
          The specific interpolation around these points is defined in
          G.992.5.  It is a bitmap of 512 bits that allows referring to
          up to 512 downstream sub-carriers, depending on NSCds.  If bit
          i (0 <= i < NSCds) is set to '1', the respective downstream
          sub-carrier i is part of a notch filter, and if set to '0',
          the respective sub-carrier is not part of a notch filter.
          This information complements the specification provided by
          adsl2LConfProfPsdMaskDs.
          Note that if NSCds < 512, all bits i (NSCds<i<512)
          should be set to '0'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2.9"
      ::= { adsl2LineConfProfEntry 4 }

   adsl2LConfProfRaModeDs  OBJECT-TYPE
      SYNTAX      Adsl2RaMode
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The mode of operation of a rate-adaptive ATU-C in the transmit
          direction.  The parameter can take three values:
             manual(1),
             raInit(2), or
             dynamicRa(3)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.1"
      DEFVAL       { manual }
      ::= { adsl2LineConfProfEntry 5 }

   adsl2LConfProfRaModeUs  OBJECT-TYPE
      SYNTAX      Adsl2RaMode
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The mode of operation of a rate-adaptive ATU-R in the transmit
          direction.  The parameter can take three values:
             manual(1),
```

```
            raInit(2), or
            dynamicRa(3)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.2"
      DEFVAL       { manual }
      ::= { adsl2LineConfProfEntry 6 }

   adsl2LConfProfRaUsNrmDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..310)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The Downstream Up-Shift Noise Margin value, to be used when
          adsl2LConfProfRaModeDs is set to dynamicRa.  If the downstream
          noise margin is above this value and stays above it for
          more than the time specified by the adsl2LConfProfRaUsTimeDs,
          the ATU-R shall attempt to increase the downstream net data
          rate.  The Downstream Up-Shift Noise Margin ranges from 0 to
          310 units of 0.1 dB (physical values are 0 to 31 dB)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.3"
      DEFVAL       { 10 }
      ::= { adsl2LineConfProfEntry 7 }

   adsl2LConfProfRaUsNrmUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..310)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The Upstream Up-Shift Noise Margin value, to be used when
          adsl2LConfProfRaModeUs is set to dynamicRa.  If the upstream
          noise margin is above this value and stays above it for more
          than the time specified by the adsl2LConfProfRaUsTimeUs, the
          ATU-C shall attempt to increase the upstream net data rate.
          The Upstream Up-Shift Noise Margin ranges from 0 to 310 units
          of 0.1 dB (physical values are 0 to 31 dB)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.4"
      DEFVAL       { 10 }
      ::= { adsl2LineConfProfEntry 8 }

   adsl2LConfProfRaUsTimeDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..16383)
      UNITS       "seconds"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The Downstream Up-Shift Time Interval, to be used when
          adsl2LConfProfRaModeDs is set to dynamicRa.  The interval of
```

```
            time that the downstream noise margin should stay above the
            Downstream Up-Shift Noise Margin before the ATU-R shall
            attempt to increase the downstream net data rate.  The time
            interval ranges from 0 to 16383 seconds."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.5"
         DEFVAL       { 3600 }
         ::= { adsl2LineConfProfEntry 9 }

      adsl2LConfProfRaUsTimeUs  OBJECT-TYPE
         SYNTAX      Unsigned32(0..16383)
         UNITS       "seconds"
         MAX-ACCESS  read-create
         STATUS      current
         DESCRIPTION
            "The Upstream Up-Shift Time Interval, to be used when
             adsl2LConfProfRaModeUs is set to dynamicRa.  The interval of
             time the upstream noise margin should stay above the
             Upstream Up-Shift Noise Margin before the ATU-C shall
             attempt to increase the upstream net data rate.  The time
             interval ranges from 0 to 16383 seconds."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.6"
         DEFVAL       { 3600 }
         ::= { adsl2LineConfProfEntry 10 }

      adsl2LConfProfRaDsNrmsDs  OBJECT-TYPE
         SYNTAX      Unsigned32(0..310)
         UNITS       "0.1 dB"
         MAX-ACCESS  read-create
         STATUS      current
         DESCRIPTION
            "The Downstream Down-Shift Noise Margin value, to be used when
             adsl2LConfProfRaModeDs is set to dynamicRa.  If the downstream
             noise margin is below this value and stays below that for more
             than the time specified by the adsl2LConfProfRaDsTimeDs, the
             ATU-R shall attempt to decrease the downstream net data rate.
             The Downstream Down-Shift Noise Margin ranges from 0 to 310
             units of 0.1 dB (physical values are 0 to 31 dB)."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.7"
         DEFVAL       { 10 }
         ::= { adsl2LineConfProfEntry 11 }

      adsl2LConfProfRaDsNrmsUs  OBJECT-TYPE
         SYNTAX      Unsigned32(0..310)
         UNITS       "0.1 dB"
         MAX-ACCESS  read-create
         STATUS      current
         DESCRIPTION
            "The Upstream Down-Shift Noise Margin value, to be used when
```

```
          adsl2LConfProfRaModeUs is set to dynamicRa.  If the upstream
          noise margin is below this value and stays below that for more
          than the time specified by the adsl2LConfProfRaDsTimeUs, the
          ATU-C shall attempt to decrease the upstream net data rate.
          The Upstream Down-Shift Noise Margin ranges from 0 to 310
          units of 0.1 dB (physical values are 0 to 31 dB)."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.8"
       DEFVAL       { 10 }
       ::= { adsl2LineConfProfEntry 12 }

   adsl2LConfProfRaDsTimeDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..16383)
       UNITS       "seconds"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "The Downstream Down-Shift Time Interval, to be used when
          adsl2LConfProfRaModeDs is set to dynamicRa.  The interval of
          time the downstream noise margin should stay below the
          Downstream Down-Shift Noise Margin before the ATU-R shall
          attempt to decrease the downstream net data rate.  The time
          interval ranges from 0 to 16383 seconds."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.9"
       DEFVAL       { 3600 }
       ::= { adsl2LineConfProfEntry 13 }

   adsl2LConfProfRaDsTimeUs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..16383)
       UNITS       "seconds"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "The Upstream Down-Shift Time Interval, to be used when
          adsl2LConfProfRaModeUs is set to dynamicRa.  The interval of
          time the upstream noise margin should stay below the Upstream
          Down-Shift Noise Margin before the ATU-C shall attempt to
          decrease the upstream net data rate.  The time interval ranges
          from 0 to 16383 seconds."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.4.10"
       DEFVAL       { 3600 }
       ::= { adsl2LineConfProfEntry 14 }

   adsl2LConfProfTargetSnrmDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..310)
       UNITS       "0.1 dB"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
```

```
         "The minimum Noise Margin the ATU-R receiver shall achieve,
          relative to the BER requirement for each of the downstream
          bearer channels, to successfully complete initialization.
          The target noise margin ranges from 0 to 310 units of 0.1 dB
          (physical values are 0 to 31 dB)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.1"
      DEFVAL       { 60 }
      ::= { adsl2LineConfProfEntry 15 }

   adsl2LConfProfTargetSnrmUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..310)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The minimum Noise Margin the ATU-C receiver shall achieve,
          relative to the BER requirement for each of the upstream
          bearer channels, to successfully complete initialization.
          The target noise margin ranges from 0 to 310 units of 0.1 dB
          (physical values are 0 to 31 dB)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.2"
      DEFVAL       { 60 }
      ::= { adsl2LineConfProfEntry 16 }

   adsl2LConfProfMaxSnrmDs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..310 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum Noise Margin the ATU-R receiver shall try to
          sustain.  If the Noise Margin is above this level, the ATU-R
          shall request that the ATU-C reduce the ATU-C transmit power
          to get a noise margin below this limit (if this functionality
          is supported).  The maximum noise margin ranges from 0 to 310
          units of 0.1 dB (physical values are 0 to 31 dB).  A value of
          0x7FFFFFFF (2147483647) means that there is no maximum."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.3"
      DEFVAL       { 310 }
      ::= { adsl2LineConfProfEntry 17 }

   adsl2LConfProfMaxSnrmUs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..310 | 2147483647)
      UNITS       "0.1 dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum Noise Margin the ATU-C receiver shall try to
```

```
            sustain.  If the Noise Margin is above this level, the ATU-C
            shall request that the ATU-R reduce the ATU-R transmit power
            to get a noise margin below this limit (if this functionality
            is supported).  The maximum noise margin ranges from 0 to 310
            units of 0.1 dB (physical values are 0 to 31 dB).  A value of
            0x7FFFFFFF (2147483647) means that there is no maximum."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.4"
         DEFVAL       { 310 }
         ::= { adsl2LineConfProfEntry 18 }

      adsl2LConfProfMinSnrmDs  OBJECT-TYPE
         SYNTAX      Unsigned32(0..310)
         UNITS       "0.1 dB"
         MAX-ACCESS  read-create
         STATUS      current
         DESCRIPTION
            "The minimum Noise Margin the ATU-R receiver shall tolerate.
            If the noise margin falls below this level, the ATU-R shall
            request that the ATU-C increase the ATU-C transmit power.
            If an increase to ATU-C transmit power is not possible, a
            loss-of-margin (LOM) defect occurs, the ATU-R shall fail and
            attempt to reinitialize, and the NMS shall be notified.  The
            minimum noise margin ranges from 0 to 310 units of
            0.1 dB (physical values are 0 to 31 dB).  A value of 0 means
            that there is no minimum."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.5"
         DEFVAL       { 10 }
         ::= { adsl2LineConfProfEntry 19 }

      adsl2LConfProfMinSnrmUs  OBJECT-TYPE
         SYNTAX      Unsigned32(0..310)
         UNITS       "0.1 dB"
         MAX-ACCESS  read-create
         STATUS      current
         DESCRIPTION
            "The minimum Noise Margin the ATU-C receiver shall tolerate.
            If the noise margin falls below this level, the ATU-C shall
            request that the ATU-R increase the ATU-R transmit power.
            If an increase of ATU-R transmit power is not possible, a
            loss-of-margin (LOM) defect occurs, the ATU-C shall fail and
            attempt to reinitialize, and the NMS shall be notified.  The
            minimum noise margin ranges from 0 to 310 units of
            0.1 dB (physical values are 0 to 31 dB).  A value of 0 means
            that there is no minimum."
         REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.3.6"
         DEFVAL       { 10 }
         ::= { adsl2LineConfProfEntry 20 }
```

```
   adsl2LConfProfMsgMinUs  OBJECT-TYPE
      SYNTAX      Unsigned32(4000..63000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Overhead Rate Upstream.  Defines the minimum rate of
          the message-based overhead that shall be maintained by the ATU
          in upstream direction.  Expressed in bits per second and
          ranges from 4000 to 63000 bps."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.5.1"
      DEFVAL       { 4000 }
     ::= { adsl2LineConfProfEntry 21 }

   adsl2LConfProfMsgMinDs  OBJECT-TYPE
      SYNTAX      Unsigned32(4000..63000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Overhead Rate Downstream.  Defines the minimum rate of
          the message-based overhead that shall be maintained by the ATU
          in downstream direction.  Expressed in bits per second and
          ranges from 4000 to 63000 bps."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.5.2"
      DEFVAL       { 4000 }
      ::= { adsl2LineConfProfEntry 22 }

   adsl2LConfProfAtuTransSysEna  OBJECT-TYPE
      SYNTAX      Adsl2TransmissionModeType
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "ATU Transmission System Enabling (ATSE).  A list of the
          different coding types enabled in this profile.  It is coded
          in a bit-map representation with 1 or more bits set.  A bit
          set to  '1' means that the ATUs may apply the respective
          coding for the ADSL line.  A bit set to '0' means that
          the ATUs cannot apply the respective coding for the ADSL
          line.  All 'reserved' bits should be set to '0'."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.1"
      ::= { adsl2LineConfProfEntry 23 }

   adsl2LConfProfPmMode  OBJECT-TYPE
      SYNTAX      Adsl2LConfProfPmMode
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
```

```
          "Power management state Enabling.  Defines the power states the
           ATU-C or ATU-R may autonomously transition to on this line.
           The various bit positions are: allowTransitionsToIdle(0) and
           allowTransitionsToLowPower(1).  A bit with a '1' value means
           that the ATU is allowed to transit into the respective state,
           and a '0' value means that the ATU is not allowed
           to transit into the respective state."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.4"
       DEFVAL  { { allowTransitionsToIdle, allowTransitionsToLowPower } }
       ::= { adsl2LineConfProfEntry 24 }

   adsl2LConfProfL0Time  OBJECT-TYPE
       SYNTAX      Unsigned32 (0..255)
       UNITS       "seconds"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "This minimum time (in seconds) between an Exit from the L2
           state and the next Entry into the L2 state.  It ranges from 0
           to 255 seconds."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.5"
       DEFVAL       { 255 }
       ::= { adsl2LineConfProfEntry 25 }

   adsl2LConfProfL2Time  OBJECT-TYPE
       SYNTAX      Unsigned32 (0..255)
       UNITS       "seconds"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "This minimum time (in seconds) between an Entry into the
          L2 state and the first Power Trim in the L2 state and between
          two consecutive Power Trims in the L2 State.
          It ranges from 0 to 255 seconds."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.1.6"
       DEFVAL       { 255 }
       ::= { adsl2LineConfProfEntry 26 }

   adsl2LConfProfL2Atpr  OBJECT-TYPE
       SYNTAX      Unsigned32 (0..31)
       UNITS       "dB"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "The maximum aggregate transmit power reduction (in dB) that
           can be performed at transition of L0 to L2 state or through a
           single Power Trim in the L2 state.
           It ranges from 0 dB to 31 dB."
```

```
      REFERENCE    "ITU-T G.997.1 (amendment 1), 7.3.1.1.7"
      DEFVAL       { 10 }
      ::= { adsl2LineConfProfEntry 27 }

   adsl2LConfProfL2Atprt  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..31)
      UNITS       "dB"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The total maximum aggregate transmit power reduction
         (in dB) that can be performed in an L2 state.  This is the
         sum of all reductions of L2 Request (i.e., at transition of
         L0 to L2 state) and Power Trims."
      REFERENCE    "ITU-T G.997.1 (amendment 1), 7.3.1.1.9"
      DEFVAL       { 31 }
      ::= { adsl2LineConfProfEntry 28 }

   adsl2LConfProfRowStatus  OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "This object is used to create a new row or to modify or
         delete an existing row in this table.

         A profile is 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 'notInService'),
         it must first be unreferenced from all associated
         templates."
      ::= { adsl2LineConfProfEntry 29 }


   ----------------------------------------
   --    adsl2LineConfProfModeSpecTable    --
   ----------------------------------------
   adsl2LineConfProfModeSpecTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2LineConfProfModeSpecEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineConfProfModeSpecTable extends the
          ADSL2 line configuration profile by ADSL Mode Specific
          parameters.
          A row in this table that has an index of
```

```
          adsl2LConfProfAdslMode == defMode(1) is called a
          'mandatory' row.
          A row in this table that has an index such that
          adsl2LConfProfAdslMode is not equal to defMode(1)
          is called an 'optional' row.
          When a row in the adsl2LineConfProfTable table
          (the parent row) is created, the SNMP agent will
          automatically create a 'mandatory' row in this table.
          When the parent row is deleted, the SNMP agent will
          automatically delete all associated rows in this table.
          Any attempt to delete the 'mandatory' row using the
          adsl2LConfProfModeSpecRowStatus attribute will be
          rejected by the SNMP agent.
          The manager MAY create an 'optional' row in this table
          using the adsl2LConfProfModeSpecRowStatus attribute if
          the parent row exists.
          The manager MAY delete an 'optional' row in this table
          using the adsl2LConfProfModeSpecRowStatus attribute at
          any time.
          If the actual transmission mode of a DSL line does not
          match one of the 'optional' rows in this table, then
          the line will use the PSD configuration from the
          'mandatory' row.

          Entries in this table MUST be maintained in a
          persistent manner."
      ::= { adsl2ProfileLine 3 }

   adsl2LineConfProfModeSpecEntry  OBJECT-TYPE
      SYNTAX      Adsl2LineConfProfModeSpecEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineConfProfModeSpecTable extends the
          ADSL2 line configuration profile by ADSL Mode Specific
          parameters."
      INDEX  { adsl2LConfProfProfileName, adsl2LConfProfAdslMode }
      ::= { adsl2LineConfProfModeSpecTable 1 }

   Adsl2LineConfProfModeSpecEntry  ::=
      SEQUENCE {
         adsl2LConfProfAdslMode             Adsl2OperationModes,
         adsl2LConfProfMaxNomPsdDs          Integer32,
         adsl2LConfProfMaxNomPsdUs          Integer32,
         adsl2LConfProfMaxNomAtpDs          Unsigned32,
         adsl2LConfProfMaxNomAtpUs          Unsigned32,
         adsl2LConfProfMaxAggRxPwrUs        Integer32,
         adsl2LConfProfPsdMaskDs            Adsl2PsdMaskDs,
```

```
         adsl2LConfProfPsdMaskUs            Adsl2PsdMaskUs,
         adsl2LConfProfPsdMaskSelectUs      Unsigned32,
         adsl2LConfProfModeSpecRowStatus    RowStatus
      }

   adsl2LConfProfAdslMode    OBJECT-TYPE
      SYNTAX      Adsl2OperationModes
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The ADSL Mode is a way of categorizing the various ADSL
          transmission modes into groups; each group (ADSL Mode) shares
          the same PSD configuration.
          There should be multiple entries in this table for a given
          line profile in case multiple bits are set in
          adsl2LConfProfAtuTransSysEna for that profile."
      REFERENCE    "DSL Forum TR-90, paragraph 5.1.8"
      ::= { adsl2LineConfProfModeSpecEntry 1 }

   adsl2LConfProfMaxNomPsdDs  OBJECT-TYPE
      SYNTAX      Integer32(-600..-300)
      UNITS       "0.1 dBm/Hz"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum nominal transmit PSD in the downstream
          direction during initialization and Showtime.  It ranges from
          -600 to -300 units of 0.1 dBm/Hz (physical values are -60 to
          -30 dBm/Hz)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
      DEFVAL       { -300 }
     ::= { adsl2LineConfProfModeSpecEntry 2 }

   adsl2LConfProfMaxNomPsdUs  OBJECT-TYPE
      SYNTAX      Integer32(-600..-300)
      UNITS       "0.1 dBm/Hz"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum nominal transmit PSD in the upstream direction
          during initialization and Showtime.  It ranges from -600 to
          -300 units of 0.1 dBm/Hz (physical values are -60 to
          -30 dBm/Hz)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
      DEFVAL       { -300 }
      ::= { adsl2LineConfProfModeSpecEntry 3 }

   adsl2LConfProfMaxNomAtpDs  OBJECT-TYPE
```

```
      SYNTAX      Unsigned32 (0..255)
      UNITS       "0.1 dBm"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum nominal aggregate transmit power in the
          downstream direction during initialization and Showtime.  It
          ranges from 0 to 255 units of 0.1 dBm (physical values are 0
          to 25.5 dBm)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
      DEFVAL       { 255 }
      ::= { adsl2LineConfProfModeSpecEntry 4 }

   adsl2LConfProfMaxNomAtpUs  OBJECT-TYPE
      SYNTAX      Unsigned32 (0..255)
      UNITS       "0.1 dBm"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum nominal aggregate transmit power in the upstream
          direction during initialization and Showtime.  It ranges from
          0 to 255 units of 0.1 dBm (physical values are 0 to 25.5
          dBm)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
      DEFVAL       { 255 }
      ::= { adsl2LineConfProfModeSpecEntry 5 }

   adsl2LConfProfMaxAggRxPwrUs  OBJECT-TYPE
      SYNTAX      Integer32(-255..255 | 2147483647)
      UNITS       "0.1 dBm"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The maximum upstream aggregate receive power over the relevant
          set of sub-carriers.  The ATU-C should verify that the
          upstream power cutback is such that this maximum aggregate
          receive power value is honored.  It ranges from -255 to 255
          units of 0.1 dBm (physical values are -25.5 to 25.5 dBm).
          A value of 0x7FFFFFFF (2147483647) means that there is no
          limit."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
      DEFVAL       { 255 }
      ::= { adsl2LineConfProfModeSpecEntry 6 }

   adsl2LConfProfPsdMaskDs   OBJECT-TYPE
      SYNTAX      Adsl2PsdMaskDs
      MAX-ACCESS  read-create
      STATUS      current
```

```
      DESCRIPTION
        "The downstream PSD mask applicable at the U-C2 reference
         point.
        This parameter is used only for G.992.5, and it may impose PSD
        restrictions (breakpoints) in addition to the Limit PSD mask
        defined in G.992.5.
        This is a string of 32 pairs of values in the following
        structure:
        Octets 0+1 - Index of 1st sub-carrier used in the context
                     of a first breakpoint.
        Octet 2    - The PSD reduction for the sub-carrier indicated in
                     octets 0 and 1.
        Octets 3-5 - Same, for a 2nd breakpoint.
        Octets 6-8 - Same, for a 3rd breakpoint.
        This architecture continues until octets 94-95, which are
        associated with a 32nd breakpoint.
        Each subcarrier index is an unsigned number in the range 1 to
        NSCds.  Each PSD reduction value is in the range 0 (0dBm/Hz) to
        255 (-127.5dBm/Hz) with steps of 0.5dBm/Hz.  Valid values are
        in the range 0 to 190 (0 to -95dBm/Hz).
        When the number of breakpoints is less than 32, all remaining
        octets are set to the value 0.  Note that the content of this
        object should be correlated with the sub-carriers mask and with
        the RFI setup."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
        ::= { adsl2LineConfProfModeSpecEntry 7 }

   adsl2LConfProfPsdMaskUs   OBJECT-TYPE
      SYNTAX      Adsl2PsdMaskUs
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
        "The upstream PSD mask applicable at the U-R2 reference
         point.
        This parameter is used only for G.992.5, and it may impose PSD
        restrictions (breakpoints) in addition to the Limit PSD mask
        defined in G.992.5.
        This is a string of 4 pairs of values in the following
        structure:
        Octets 0+1 - Index of 1st sub-carrier used in the context
                     of a first breakpoint.
        Octet 2    - The PSD reduction for the sub-carrier indicated in
                     octets 0 and 1.
        Octets 3-5 - Same, for a 2nd breakpoint.
        Octets 6-8 - Same, for a 3rd breakpoint.
        This architecture continues until octets 9-11, which are
        associated with a 4th breakpoint.
        Each subcarrier index is an unsigned number in the range 1 to
```

```
        NSCus.  Each PSD reduction value is in the range 0 (0dBm/Hz) to
        255 (-127.5dBm/Hz) with steps of 0.5dBm/Hz.  Valid values are
        in the range 0 to 190 (0 to -95dBm/Hz).
        When the number of breakpoints is less than 4, all remaining
        octets are set to the value 0.  Note that the content of this
        object should be correlated with the sub-carriers mask and with
        the RFI setup."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1.2"
        ::= { adsl2LineConfProfModeSpecEntry 8 }

   adsl2LConfProfPsdMaskSelectUs  OBJECT-TYPE
      SYNTAX      Unsigned32(1..9)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
        "The selected upstream PSD mask.  This parameter is used only
         for annexes J and M of G.992.3 and G.992.5, and the same
         selection is used for all relevant enabled bits in
         adsl2LConfProfAtuTransSysEna."
      REFERENCE    "ITU-T G.997.1 (amendment 1), 7.3.1.2.10"
      DEFVAL       { 1 }
       ::= { adsl2LineConfProfModeSpecEntry 9 }

   adsl2LConfProfModeSpecRowStatus  OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION

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

         A profile is 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 'notInService'),
         it must first be unreferenced from all associated
         templates."

      ::= { adsl2LineConfProfModeSpecEntry 10 }

   ----------------------------------------------
   --          adsl2ChConfProfileTable          --
   ----------------------------------------------
   adsl2ChConfProfileTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2ChConfProfileEntry
      MAX-ACCESS  not-accessible
```

```
      STATUS      current
      DESCRIPTION
         "The table adsl2ChConfProfileTable contains ADSL2 channel
          profile configuration.

          Entries in this table MUST be maintained in a
          persistent manner."
      ::= { adsl2ProfileChannel 1 }

   adsl2ChConfProfileEntry  OBJECT-TYPE
      SYNTAX      Adsl2ChConfProfileEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2ChConfProfileTable contains ADSL2 channel
          profile configuration.
          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  { adsl2ChConfProfProfileName }
      ::= { adsl2ChConfProfileTable 1 }

   Adsl2ChConfProfileEntry  ::=
      SEQUENCE {
         adsl2ChConfProfProfileName          SnmpAdminString,
         adsl2ChConfProfMinDataRateDs        Unsigned32,
         adsl2ChConfProfMinDataRateUs        Unsigned32,
         adsl2ChConfProfMinResDataRateDs     Unsigned32,
         adsl2ChConfProfMinResDataRateUs     Unsigned32,
         adsl2ChConfProfMaxDataRateDs        Unsigned32,
         adsl2ChConfProfMaxDataRateUs        Unsigned32,
         adsl2ChConfProfMinDataRateLowPwrDs  Unsigned32,
         adsl2ChConfProfMaxDelayDs           Unsigned32,
         adsl2ChConfProfMaxDelayUs           Unsigned32,
         adsl2ChConfProfMinProtectionDs      Adsl2SymbolProtection,
         adsl2ChConfProfMinProtectionUs      Adsl2SymbolProtection,
         adsl2ChConfProfMaxBerDs             Adsl2MaxBer,
         adsl2ChConfProfMaxBerUs             Adsl2MaxBer,
         adsl2ChConfProfUsDataRateDs         Unsigned32,
         adsl2ChConfProfDsDataRateDs         Unsigned32,
         adsl2ChConfProfUsDataRateUs         Unsigned32,
         adsl2ChConfProfDsDataRateUs         Unsigned32,
         adsl2ChConfProfImaEnabled           TruthValue,
         adsl2ChConfProfRowStatus            RowStatus
      }

   adsl2ChConfProfProfileName  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
```

```
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "This object identifies a row in this table."
      ::= { adsl2ChConfProfileEntry 1 }

   adsl2ChConfProfMinDataRateDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Data Rate on Downstream direction.  The minimum net
          data rate for the bearer channel, coded in bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
      ::= { adsl2ChConfProfileEntry 2 }

   adsl2ChConfProfMinDataRateUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Data Rate on Upstream direction.  The minimum net data
          rate for the bearer channel, coded in bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
      ::= { adsl2ChConfProfileEntry 3 }

   adsl2ChConfProfMinResDataRateDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Reserved Data Rate on Downstream direction.  The
          minimum reserved net data rate for the bearer channel, coded
          in bits/second.  This parameter is used only if the Rate
          Adaptation Mode in the direction of the bearer channel (i.e.,
          adsl2LConfProfRaModeDs) is set to dynamicRa."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
      ::= { adsl2ChConfProfileEntry 4 }

   adsl2ChConfProfMinResDataRateUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
```

```
          "Minimum Reserved Data Rate on Upstream direction.  The minimum
           reserved net data rate for the bearer channel, coded in
           bits/second.  This parameter is used only if the Rate
           Adaptation Mode in the direction of the bearer channel (i.e.,
           adsl2LConfProfRaModeUs) is set to dynamicRa."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       ::= { adsl2ChConfProfileEntry 5 }

   adsl2ChConfProfMaxDataRateDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..200000000)
       UNITS       "bits/second"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Maximum Data Rate on Downstream direction.  The maximum net
           data rate for the bearer channel, coded in bits/second."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       ::= { adsl2ChConfProfileEntry 6 }

   adsl2ChConfProfMaxDataRateUs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..200000000)
       UNITS       "bits/second"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Maximum Data Rate on Upstream direction.  The maximum net data
           rate for the bearer channel, coded in bits/second."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       ::= { adsl2ChConfProfileEntry 7 }

   adsl2ChConfProfMinDataRateLowPwrDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..200000000)
       UNITS       "bits/second"
       MAX-ACCESS  read-create
       STATUS      current
       DESCRIPTION
          "Minimum Data Rate in Low Power state on Downstream direction.
           The minimum net data rate for the bearer channel, coded in
           bits/second, during the low power state (L1 in G.992.2, L2 in
           G.992.3)."
       REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.1"
       ::= { adsl2ChConfProfileEntry 8 }

   adsl2ChConfProfMaxDelayDs  OBJECT-TYPE
       SYNTAX      Unsigned32(0..63)
       UNITS       "milliseconds"
       MAX-ACCESS  read-create
       STATUS      current
```

```
      DESCRIPTION
         "Maximum Interleave Delay on Downstream direction.  The maximum
          one-way interleaving delay introduced by the PMS-TC on
          Downstream direction.  The ATUs shall choose the S (factor)
          and D (depth) values such that the actual one-way interleaving
          delay (adsl2ChStatusActDelay) is as close as possible to,
          but less than or equal to, adsl2ChConfProfMaxDelayDs.  The
          delay is coded in ms, with the value 0 indicating no delay
          bound is being imposed."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.2"
      ::= { adsl2ChConfProfileEntry 9 }

   adsl2ChConfProfMaxDelayUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..63)
      UNITS       "milliseconds"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Maximum Interleave Delay on Upstream direction.  The maximum
          one-way interleaving delay introduced by the PMS-TC on
          Upstream direction.  The ATUs shall choose the S (factor) and
          D (depth) values such that the actual one-way interleaving
          delay (adsl2ChStatusActDelay) is as close as possible to,
          but less than or equal to, adsl2ChConfProfMaxDelayUs.  The
          delay is coded in ms, with the value 0 indicating no delay
          bound is being imposed."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.2"
      ::= { adsl2ChConfProfileEntry 10 }

   adsl2ChConfProfMinProtectionDs  OBJECT-TYPE
      SYNTAX      Adsl2SymbolProtection
      UNITS       "symbols"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Impulse Noise Protection on Downstream direction.  The
          minimum impulse noise protection for the bearer channel,
          expressed in symbols.  The parameter can take the following
          values: noProtection (i.e., INP not required), halfSymbol
          (i.e., INP length is 1/2 symbol), and 1-16 symbols in steps
          of 1 symbol."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.3"
      DEFVAL       { noProtection }
      ::= { adsl2ChConfProfileEntry 11 }

   adsl2ChConfProfMinProtectionUs  OBJECT-TYPE
      SYNTAX      Adsl2SymbolProtection
      UNITS       "symbols"
```

```
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Minimum Impulse Noise Protection on Upstream direction.  The
          minimum impulse noise protection for the bearer channel,
          expressed in symbols.  The parameter can take the following
          values: noProtection (i.e., INP not required), halfSymbol
          (i.e., INP length is 1/2 symbol), and 1-16 symbols in steps
          of 1 symbol."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.3"
      DEFVAL       { noProtection }
      ::= { adsl2ChConfProfileEntry 12 }

   adsl2ChConfProfMaxBerDs  OBJECT-TYPE
      SYNTAX      Adsl2MaxBer
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Maximum Bit Error Ratio on Downstream direction.  The maximum
          bit error ratio for the bearer channel.  The parameter can
          take the following values (for 1E-3, 1E-5 or 1E-7):
             eminus3(1),
             eminus5(2), or
             eminus7(3)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.4"
      DEFVAL       { eminus5 }
     ::= { adsl2ChConfProfileEntry 13 }

   adsl2ChConfProfMaxBerUs  OBJECT-TYPE
      SYNTAX      Adsl2MaxBer
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Maximum Bit Error Ratio on Upstream direction.  The maximum
          bit error ratio for the bearer channel.  The parameter can
          take the following values (for 1E-3, 1E-5 or 1E-7):
             eminus3(1),
             eminus5(2), or
             eminus7(3)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.4"
      DEFVAL       { eminus5 }
      ::= { adsl2ChConfProfileEntry 14 }

   adsl2ChConfProfUsDataRateDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
```

```
      DESCRIPTION
         "Data Rate Threshold Up shift for downstream direction.  An
          'Up-shift rate change' event is triggered when the actual
          downstream data rate exceeds, by more than the threshold, the
          data rate at the last entry into Showtime.  The parameter is
          coded in bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.6"
      ::= { adsl2ChConfProfileEntry 15 }

   adsl2ChConfProfDsDataRateDs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Data Rate Threshold Down-shift for downstream direction.  A
          'Down-shift rate change' event is triggered when the actual
          downstream data rate is below the data rate at the last entry
          into Showtime, by more than the threshold.  The parameter is
          coded in bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.6"
      ::= { adsl2ChConfProfileEntry 16 }

   adsl2ChConfProfUsDataRateUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Data Rate Threshold Up shift for upstream direction.  An
          'Up-shift rate change' event is triggered when the actual
          upstream data rate exceeds, by more than the threshold, the
          data rate at the last entry into Showtime.  The parameter is
          coded in bits/second."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.6"
      ::= { adsl2ChConfProfileEntry 17 }

   adsl2ChConfProfDsDataRateUs  OBJECT-TYPE
      SYNTAX      Unsigned32(0..200000000)
      UNITS       "bits/second"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "Data Rate Threshold Down-shift for upstream direction.  A
          'Down-shift rate change' event is triggered when the actual
          upstream data rate is below the data rate at the last entry
          into Showtime, by more than the threshold.  The parameter is
          coded in bits/second."
```

```
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2.6"
      ::= { adsl2ChConfProfileEntry 18 }

   adsl2ChConfProfImaEnabled  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "IMA Mode Enable.  The parameter enables the IMA operation mode
          in the ATM Data Path.  Relevant only if the channel is an ATM
          Data Path.  When in 'enable' state, the ATM data path should
          comply with the requirements for IMA transmission."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.4.1"
      DEFVAL       { false }
    ::= { adsl2ChConfProfileEntry 19 }

   adsl2ChConfProfRowStatus  OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "This object is used to create a new row or to modify or
         delete an existing row in this table.

         A profile is 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 'notInService'),
         it must first be unreferenced from all associated
         templates."
      ::= { adsl2ChConfProfileEntry 20 }

   ----------------------------------------------
   --        adsl2LineAlarmConfTemplateTable          --
   ----------------------------------------------
   adsl2LineAlarmConfTemplateTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2LineAlarmConfTemplateEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineAlarmConfTemplateTable contains
          ADSL2 line configuration templates.

          Entries in this table MUST be maintained in a
          persistent manner."
      ::= { adsl2ProfileAlarmConf 1 }
```

```
   adsl2LineAlarmConfTemplateEntry  OBJECT-TYPE
      SYNTAX      Adsl2LineAlarmConfTemplateEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2LineAlarmConfTemplateTable contains ADSL2
         line PM thresholds templates.
         A default template 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  { adsl2LAlarmConfTempTemplateName }
      ::= { adsl2LineAlarmConfTemplateTable 1 }

   Adsl2LineAlarmConfTemplateEntry  ::=
      SEQUENCE {
         adsl2LAlarmConfTempTemplateName      SnmpAdminString,
         adsl2LAlarmConfTempLineProfile       SnmpAdminString,
         adsl2LAlarmConfTempChan1ConfProfile  SnmpAdminString,
         adsl2LAlarmConfTempChan2ConfProfile  SnmpAdminString,
         adsl2LAlarmConfTempChan3ConfProfile  SnmpAdminString,
         adsl2LAlarmConfTempChan4ConfProfile  SnmpAdminString,
         adsl2LAlarmConfTempRowStatus         RowStatus
      }

   adsl2LAlarmConfTempTemplateName  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "This object identifies a row in this table."
      ::= { adsl2LineAlarmConfTemplateEntry 1 }

   adsl2LAlarmConfTempLineProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2 Line
          Thresholds Configuration Profile Table
          (adsl2LineAlarmConfProfileTable) that applies to this ADSL2
          line."
      REFERENCE    "DSL Forum TR-90, paragraph 5.4.1"
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineAlarmConfTemplateEntry 2 }

   adsl2LAlarmConfTempChan1ConfProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(1..32))
```

```
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Thresholds Configuration Profile Table
          (adsl2ChAlarmConfProfileTable) that applies for ADSL2
          bearer channel #1.  The channel profile name specified here
          must match the name of an existing row in the
          adsl2ChAlarmConfProfileTable table."
      REFERENCE    "DSL Forum TR-90, paragraph 5.4.1"
      DEFVAL       { "DEFVAL" }
      ::= { adsl2LineAlarmConfTemplateEntry 3 }

   adsl2LAlarmConfTempChan2ConfProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(0..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Thresholds Configuration Profile Table
          (adsl2ChAlarmConfProfileTable) that applies for ADSL2
          bearer channel #2.  The channel profile name specified here
          must match the name of an existing row in the
          adsl2ChAlarmConfProfileTable table.  If the channel is unused,
          then the object is set to a zero-length string."
      REFERENCE    "DSL Forum TR-90, paragraph 5.4.1"
      DEFVAL       { "" }
      ::= { adsl2LineAlarmConfTemplateEntry 4 }

   adsl2LAlarmConfTempChan3ConfProfile  OBJECT-TYPE
      SYNTAX      SnmpAdminString (SIZE(0..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Thresholds Configuration Profile Table
          (adsl2ChAlarmConfProfileTable) that applies for ADSL2
          bearer channel #3.  The channel profile name specified here
          must match the name of an existing row in the
          adsl2ChAlarmConfProfileTable table.
          This object may be set to a non-zero-length string only if
          adsl2LAlarmConfTempChan2ConfProfile contains a non-zero-
          length string."
      REFERENCE    "DSL Forum TR-90, paragraph 5.4.1"
      DEFVAL       { "" }
      ::= { adsl2LineAlarmConfTemplateEntry 5 }

   adsl2LAlarmConfTempChan4ConfProfile  OBJECT-TYPE
```

```
      SYNTAX      SnmpAdminString (SIZE(0..32))
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "The value of this object identifies the row in the ADSL2
          Channel Thresholds Configuration Profile Table
          (adsl2ChAlarmConfProfileTable) that applies for ADSL2
          bearer channel #4.  The channel profile name specified here
          must match the name of an existing row in the
          adsl2ChAlarmConfProfileTable table.
          This object may be set to a non-zero-length string only if
          adsl2LAlarmConfTempChan3ConfProfile contains a non-zero-
          length string."
      REFERENCE    "DSL Forum TR-90, paragraph 5.4.1"
      DEFVAL       { "" }
      ::= { adsl2LineAlarmConfTemplateEntry 6 }

   adsl2LAlarmConfTempRowStatus  OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
         "This object is used to create a new row or to modify or
         delete an existing row in this table.

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

         Before a template can be deleted or taken out of service
         (by setting this object to 'destroy' or 'notInService'),
         it must first be unreferenced from all associated
         lines."
      ::= { adsl2LineAlarmConfTemplateEntry 7 }

   ---------------------------------------------
   --      adsl2LineAlarmConfProfileTable       --
   ---------------------------------------------

   adsl2LineAlarmConfProfileTable  OBJECT-TYPE
        SYNTAX      SEQUENCE  OF  Adsl2LineAlarmConfProfileEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
         "The table adsl2LineAlarmConfProfileTable contains ADSL2
         line PM thresholds profiles.

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

```
        ::= { adsl2ProfileAlarmConf 2 }

   adsl2LineAlarmConfProfileEntry  OBJECT-TYPE
        SYNTAX      Adsl2LineAlarmConfProfileEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
         "The table adsl2LineAlarmConfProfileTable contains ADSL2
         line PM thresholds profiles.
         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  { adsl2LineAlarmConfProfileName }
        ::= { adsl2LineAlarmConfProfileTable 1 }

   Adsl2LineAlarmConfProfileEntry ::=
        SEQUENCE {
        adsl2LineAlarmConfProfileName                SnmpAdminString,
        adsl2LineAlarmConfProfileAtucThresh15MinFecs
                                                   HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAtucThresh15MinEs
                                                   HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAtucThresh15MinSes
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAtucThresh15MinLoss
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAtucThresh15MinUas
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAturThresh15MinFecs
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAturThresh15MinEs
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAturThresh15MinSes
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAturThresh15MinLoss
                                                    HCPerfIntervalThreshold,
        adsl2LineAlarmConfProfileAturThresh15MinUas
                                                    HCPerfIntervalThreshold,

        adsl2LineAlarmConfProfileThresh15MinFailedFullInt   Unsigned32,
        adsl2LineAlarmConfProfileThresh15MinFailedShrtInt   Unsigned32,

        adsl2LineAlarmConfProfileRowStatus                   RowStatus
        }

   adsl2LineAlarmConfProfileName  OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE(1..32))
```

```
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
        "This object identifies a row in this table."
        ::= { adsl2LineAlarmConfProfileEntry 1 }

   adsl2LineAlarmConfProfileAtucThresh15MinFecs  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MFecs counter,
        when adsl2PMLCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 2 }

   adsl2LineAlarmConfProfileAtucThresh15MinEs  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MEs counter,
        when adsl2PMLCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 3 }

   adsl2LineAlarmConfProfileAtucThresh15MinSes  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MSes counter,
        when adsl2PMLCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 4 }
```

```
   adsl2LineAlarmConfProfileAtucThresh15MinLoss  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MLoss counter,
        when adsl2PMLCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 5 }

   adsl2LineAlarmConfProfileAtucThresh15MinUas  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MUas counter,
        when adsl2PMLCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 6 }

   adsl2LineAlarmConfProfileAturThresh15MinFecs  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MFecs counter,
        when adsl2PMLCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 7 }

   adsl2LineAlarmConfProfileAturThresh15MinEs  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
```

```
        "A threshold for the adsl2PMLCurr15MEs counter,
        when adsl2PMLCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 8 }

   adsl2LineAlarmConfProfileAturThresh15MinSes  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MSes counter,
        when adsl2PMLCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 9 }

   adsl2LineAlarmConfProfileAturThresh15MinLoss  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MLoss counter,
        when adsl2PMLCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 10 }

   adsl2LineAlarmConfProfileAturThresh15MinUas  OBJECT-TYPE
        SYNTAX      HCPerfIntervalThreshold
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurr15MUas counter,
        when adsl2PMLCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
```

```
        ::= { adsl2LineAlarmConfProfileEntry 11 }

   adsl2LineAlarmConfProfileThresh15MinFailedFullInt  OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurrInit15MfailedFullInits
        counter.
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 12 }

   adsl2LineAlarmConfProfileThresh15MinFailedShrtInt  OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMLCurrInit15MFailedShortInits
        counter.
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.1"
      DEFVAL       { 0 }
        ::= { adsl2LineAlarmConfProfileEntry 13 }

   adsl2LineAlarmConfProfileRowStatus  OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
         "This object is used to create a new row or to modify or
         delete an existing row in this table.

         A profile is 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 'notInService'),
         it must first be unreferenced from all associated
         templates."
        ::= { adsl2LineAlarmConfProfileEntry 14 }


   ------------------------------------------------
   --      adsl2ChAlarmConfProfileTable        --
```

```
   ------------------------------------------------

   adsl2ChAlarmConfProfileTable  OBJECT-TYPE
        SYNTAX      SEQUENCE  OF  Adsl2ChAlarmConfProfileEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
         "The table adsl2ChAlarmConfProfileTable contains ADSL2
         channel PM thresholds profiles.

          Entries in this table MUST be maintained in a
          persistent manner."
        ::= { adsl2ProfileAlarmConf 3 }

   adsl2ChAlarmConfProfileEntry  OBJECT-TYPE
        SYNTAX      Adsl2ChAlarmConfProfileEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
         "The table adsl2ChAlarmConfProfileTable contains ADSL2
         channel PM thresholds profiles.
         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  { adsl2ChAlarmConfProfileName }
        ::= { adsl2ChAlarmConfProfileTable 1 }

   Adsl2ChAlarmConfProfileEntry ::=
        SEQUENCE {
        adsl2ChAlarmConfProfileName
                                                    SnmpAdminString,
        adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations
                                                    Unsigned32,
        adsl2ChAlarmConfProfileAtucThresh15MinCorrected Unsigned32,
        adsl2ChAlarmConfProfileAturThresh15MinCodingViolations
                                                    Unsigned32,
        adsl2ChAlarmConfProfileAturThresh15MinCorrected Unsigned32,
        adsl2ChAlarmConfProfileRowStatus            RowStatus
        }

   adsl2ChAlarmConfProfileName  OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE(1..32))
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
        "This object identifies a row in this table."
        ::= { adsl2ChAlarmConfProfileEntry 1 }
```

```
   adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMChCurr15MCodingViolations
        counter, when adsl2PMChCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2"
      DEFVAL       { 0 }
        ::= { adsl2ChAlarmConfProfileEntry 2 }

   adsl2ChAlarmConfProfileAtucThresh15MinCorrected  OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMChCurr15MCorrectedBlocks
        counter, when adsl2PMChCurrUnit is atuc(1).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2"
      DEFVAL       { 0 }
        ::= { adsl2ChAlarmConfProfileEntry 3 }

   adsl2ChAlarmConfProfileAturThresh15MinCodingViolations  OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMChCurr15MCodingViolations
        counter, when adsl2PMChCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2"
      DEFVAL       { 0 }
        ::= { adsl2ChAlarmConfProfileEntry 4 }

   adsl2ChAlarmConfProfileAturThresh15MinCorrected  OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
        "A threshold for the adsl2PMChCurr15MCorrectedBlocks
        counter, when adsl2PMChCurrUnit is atur(2).
        The value 0 means that no threshold is specified for the
        associated counter."
```

```
      REFERENCE    "ITU-T G.997.1, paragraph 7.3.2"
      DEFVAL       { 0 }
        ::= { adsl2ChAlarmConfProfileEntry 5 }

   adsl2ChAlarmConfProfileRowStatus  OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
         "This object is used to create a new row or to modify or
         delete an existing row in this table.

         A profile is 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 'notInService'),
         it must first be unreferenced from all associated
         templates."
        ::= { adsl2ChAlarmConfProfileEntry 6 }

   -----------------------------------------------
   --          PM line current counters          --
   -----------------------------------------------
   adsl2PMLineCurrTable  OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineCurrEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineCurrTable contains current Performance
          Monitoring results of ADSL2 lines."
      ::= { adsl2PMLine 1 }

   adsl2PMLineCurrEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineCurrEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineCurrTable contains current Performance
          Monitoring results of ADSL2 lines.
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), along with a
          termination unit.
          The PM counters in the table are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      INDEX  { ifIndex, adsl2PMLCurrUnit }
      ::= { adsl2PMLineCurrTable 1 }
```

```
   Adsl2PMLineCurrEntry  ::=
      SEQUENCE {
         adsl2PMLCurrUnit                    Adsl2Unit,
         adsl2PMLCurrValidIntervals          Unsigned32,
         adsl2PMLCurrInvalidIntervals        Unsigned32,
         adsl2PMLCurr15MTimeElapsed          HCPerfTimeElapsed,
         adsl2PMLCurr15MFecs                 Counter32,
         adsl2PMLCurr15MEs                   Counter32,
         adsl2PMLCurr15MSes                  Counter32,
         adsl2PMLCurr15MLoss                 Counter32,
         adsl2PMLCurr15MUas                  Counter32,
         adsl2PMLCurr1DayValidIntervals      Unsigned32,
         adsl2PMLCurr1DayInvalidIntervals    Unsigned32,
         adsl2PMLCurr1DayTimeElapsed         HCPerfTimeElapsed,
         adsl2PMLCurr1DayFecs                Counter32,
         adsl2PMLCurr1DayEs                  Counter32,
         adsl2PMLCurr1DaySes                 Counter32,
         adsl2PMLCurr1DayLoss                Counter32,
         adsl2PMLCurr1DayUas                 Counter32
      }

   adsl2PMLCurrUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The termination unit atuc(1) or atur(2)."
      ::= { adsl2PMLineCurrEntry 1 }

   adsl2PMLCurrValidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Valid intervals."
      ::= { adsl2PMLineCurrEntry 2 }

   adsl2PMLCurrInvalidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Invalid intervals."
      ::= { adsl2PMLineCurrEntry 3 }

   adsl2PMLCurr15MTimeElapsed  OBJECT-TYPE
      SYNTAX      HCPerfTimeElapsed
      UNITS       "seconds"
```

```
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMLineCurrEntry 4 }

   adsl2PMLCurr15MFecs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was at least
          one FEC correction event for one or more bearer channels in
          this line.  This parameter is inhibited during UAS or SES."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 5 }

   adsl2PMLCurr15MEs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: CRC-8 >= 1 for one or more bearer channels OR
                    LOS >= 1 OR SEF >=1 OR LPR >= 1
             ATU-R: FEBE >= 1 for one or more bearer channels OR
                    LOS-FE >=1 OR RDI >=1 OR LPR-FE >=1 .
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 6 }

   adsl2PMLCurr15MSes  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: (CRC-8 summed over all bearer channels) >= 18 OR
                    LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: (FEBE summed over all bearer channels) >= 18 OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1 .
          This parameter is inhibited during UAS."
```

```
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 7 }

   adsl2PMLCurr15MLoss  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was LOS (or
          LOS-FE for ATU-R)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 8 }

   adsl2PMLCurr15MUas  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds in Unavailability State during this
          interval.  Unavailability begins at the onset of 10
          contiguous severely-errored seconds, and ends at the
          onset of 10 contiguous seconds with no severely-errored
          seconds."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 9 }

   adsl2PMLCurr1DayValidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Valid intervals."
      ::= { adsl2PMLineCurrEntry 10 }

   adsl2PMLCurr1DayInvalidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Invalid intervals."
      ::= { adsl2PMLineCurrEntry 11 }

   adsl2PMLCurr1DayTimeElapsed  OBJECT-TYPE
      SYNTAX      HCPerfTimeElapsed
      UNITS       "seconds"
      MAX-ACCESS  read-only
```

```
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMLineCurrEntry 12 }

   adsl2PMLCurr1DayFecs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was at least
          one FEC correction event for one or more bearer channels in
          this line.  This parameter is inhibited during UAS or SES."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 13 }

   adsl2PMLCurr1DayEs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: CRC-8 >= 1 for one or more bearer channels OR
                    LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: FEBE >= 1 for one or more bearer channels OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1.
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 14 }

   adsl2PMLCurr1DaySes  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: (CRC-8 summed over all bearer channels) >= 18 OR
                     LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: (FEBE summed over all bearer channels) >= 18 OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
```

```
      ::= { adsl2PMLineCurrEntry 15 }

   adsl2PMLCurr1DayLoss  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was LOS (or
          LOS-FE for ATU-R)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 16 }

   adsl2PMLCurr1DayUas  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds in Unavailability State during this interval.
          Unavailability begins at the onset of 10 contiguous severely-
          errored seconds, and ends at the onset of 10 contiguous
          seconds with no severely-errored seconds."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrEntry 17 }


   -----------------------------------------------
   --          PM line init current counters     --
   -----------------------------------------------

   adsl2PMLineCurrInitTable   OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineCurrInitEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineCurrInitTable contains current
          initialization counters of the ADSL2 line.
          The PM counters in the table are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMLine 2 }

   adsl2PMLineCurrInitEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineCurrInitEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
```

```
         "The table adsl2PMLineCurrInitTable contains current
          initialization counters of the ADSL2 line.
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), and a
          termination unit."
      INDEX  { ifIndex }
      ::= { adsl2PMLineCurrInitTable 1 }

   Adsl2PMLineCurrInitEntry  ::=
      SEQUENCE {
         adsl2PMLCurrInit15MTimeElapsed          Unsigned32,
         adsl2PMLCurrInit15MFullInits            Unsigned32,
         adsl2PMLCurrInit15MFailedFullInits      Unsigned32,
         adsl2PMLCurrInit15MShortInits           Unsigned32,
         adsl2PMLCurrInit15MFailedShortInits     Unsigned32,
         adsl2PMLCurrInit1DayTimeElapsed         Unsigned32,
         adsl2PMLCurrInit1DayFullInits           Unsigned32,
         adsl2PMLCurrInit1DayFailedFullInits     Unsigned32,
         adsl2PMLCurrInit1DayShortInits          Unsigned32,
         adsl2PMLCurrInit1DayFailedShortInits    Unsigned32
      }

   adsl2PMLCurrInit15MTimeElapsed  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMLineCurrInitEntry 1 }

   adsl2PMLCurrInit15MFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of full initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 2 }

   adsl2PMLCurrInit15MFailedFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
```

```
      DESCRIPTION
         "Count of failed full initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 3 }

   adsl2PMLCurrInit15MShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of short initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 4 }

   adsl2PMLCurrInit15MFailedShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed short initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 5 }

   adsl2PMLCurrInit1DayTimeElapsed  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized.  They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMLineCurrInitEntry 6 }

   adsl2PMLCurrInit1DayFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of full initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 7 }
```

```
   adsl2PMLCurrInit1DayFailedFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed full initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 8 }

   adsl2PMLCurrInit1DayShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of short initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 9 }

   adsl2PMLCurrInit1DayFailedShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed short initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineCurrInitEntry 10 }



   ------------------------------------------
   --       PM line history 15 Minutes      --
   ------------------------------------------
   adsl2PMLineHist15MinTable    OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineHist15MinTable contains PM line history
         for 15min intervals of the ADSL2 line."
      ::= { adsl2PMLine 3 }

   adsl2PMLineHist15MinEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
```

```
      DESCRIPTION
         "The table adsl2PMLineHist15MinTable contains PM line history
          for 15min intervals of the ADSL2 line.
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), along with a
          termination unit, and an interval number."
      INDEX  { ifIndex,
               adsl2PMLHist15MUnit,
               adsl2PMLHist15MInterval }
      ::= { adsl2PMLineHist15MinTable 1 }

   Adsl2PMLineHist15MinEntry  ::=
      SEQUENCE {
         adsl2PMLHist15MUnit                Adsl2Unit,
         adsl2PMLHist15MInterval            Unsigned32,
         adsl2PMLHist15MMonitoredTime       Unsigned32,
         adsl2PMLHist15MFecs                Counter32,
         adsl2PMLHist15MEs                  Counter32,
         adsl2PMLHist15MSes                 Counter32,
         adsl2PMLHist15MLoss                Counter32,
         adsl2PMLHist15MUas                 Counter32,
         adsl2PMLHist15MValidInterval       TruthValue
      }

   adsl2PMLHist15MUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The termination unit atuc(1) or atur(2)."
      ::= { adsl2PMLineHist15MinEntry 1 }

   adsl2PMLHist15MInterval  OBJECT-TYPE
      SYNTAX      Unsigned32 (1..96)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The interval number."
      ::= { adsl2PMLineHist15MinEntry 2 }

   adsl2PMLHist15MMonitoredTime  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total seconds monitored in this interval."
      ::= { adsl2PMLineHist15MinEntry 3 }
```

```
   adsl2PMLHist15MFecs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was at least
          one FEC correction event for one or more bearer channels in
          this line.  This parameter is inhibited during UAS or SES."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist15MinEntry 4 }

   adsl2PMLHist15MEs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: CRC-8 >= 1 for one or more bearer channels OR
                    LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: FEBE >= 1 for one or more bearer channels OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1.
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist15MinEntry 5 }

   adsl2PMLHist15MSes  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: (CRC-8 summed over all bearer channels) >= 18 OR
                    LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: (FEBE summed over all bearer channels) >= 18 OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1.
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist15MinEntry 6 }

   adsl2PMLHist15MLoss  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
```

```
         "Count of seconds during this interval where there was LOS (or
          LOS-FE for ATU-R)."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist15MinEntry 7 }

   adsl2PMLHist15MUas  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds in Unavailability State during this interval.
          Unavailability begins at the onset of 10 contiguous severely-
          errored seconds, and ends at the onset of 10 contiguous
          seconds with no severely-errored seconds."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist15MinEntry 8 }

   adsl2PMLHist15MValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMLineHist15MinEntry 9 }



   ---------------------------------------
   --       PM line history 1 Day       --
   ---------------------------------------
   adsl2PMLineHist1DayTable     OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineHist1DayEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineHist1DayTable contains PM line history
          for 24-hour intervals of the ADSL2 line."
      ::= { adsl2PMLine 4 }

   adsl2PMLineHist1DayEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineHist1DayEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineHist1DayTable contains PM line history
          for 24-hour intervals of the ADSL2 line.
```

```
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), along with a
          termination unit, and an interval number."
       INDEX  { ifIndex,
                adsl2PMLHist1DUnit,
                adsl2PMLHist1DInterval }
       ::= { adsl2PMLineHist1DayTable 1 }

   Adsl2PMLineHist1DayEntry  ::=
       SEQUENCE {
          adsl2PMLHist1DUnit              Adsl2Unit,
          adsl2PMLHist1DInterval          Unsigned32,
          adsl2PMLHist1DMonitoredTime     Unsigned32,
          adsl2PMLHist1DFecs              Counter32,
          adsl2PMLHist1DEs                Counter32,
          adsl2PMLHist1DSes               Counter32,
          adsl2PMLHist1DLoss              Counter32,
          adsl2PMLHist1DUas               Counter32,
          adsl2PMLHist1DValidInterval     TruthValue
       }

   adsl2PMLHist1DUnit  OBJECT-TYPE
       SYNTAX      Adsl2Unit
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
          "The termination unit."
       ::= { adsl2PMLineHist1DayEntry 1 }

   adsl2PMLHist1DInterval  OBJECT-TYPE
       SYNTAX      Unsigned32 (1..30)
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
          "The interval number."
       ::= { adsl2PMLineHist1DayEntry 2 }

   adsl2PMLHist1DMonitoredTime  OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "seconds"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "Total seconds monitored in this interval."
       ::= { adsl2PMLineHist1DayEntry 3 }

   adsl2PMLHist1DFecs  OBJECT-TYPE
       SYNTAX      Counter32
```

```
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was at least
          one FEC correction event for one or more bearer channels in
          this line.  This parameter is inhibited during UAS or SES."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist1DayEntry 4 }

   adsl2PMLHist1DEs  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: CRC-8 >= 1 for one or more bearer channels OR
                    LOS >= 1 OR SEF >= 1 OR LPR >= 1
             ATU-R: FEBE >= 1 for one or more bearer channels OR
                    LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1.
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist1DayEntry 5 }

   adsl2PMLHist1DSes  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was:
             ATU-C: (CRC-8 summed over all bearer channels) >= 18 OR
                     LOS >= 1 OR SEF >> 1 OR LPR >= 1
             ATU-R: (FEBE summed over all bearer channels) >= 18 OR
                     LOS-FE >= 1 OR RDI >= 1 OR LPR-FE >= 1.
          This parameter is inhibited during UAS."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist1DayEntry 6 }

   adsl2PMLHist1DLoss  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds during this interval where there was LOS (or
          LOS-FE for ATU-R)."
```

```
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist1DayEntry 7 }

   adsl2PMLHist1DUas  OBJECT-TYPE
      SYNTAX      Counter32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of seconds in Unavailability State during this interval.
          Unavailability begins at the onset of 10 contiguous severely-
          errored seconds, and ends at the onset of 10 contiguous
          seconds with no severely-errored seconds."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineHist1DayEntry 8 }

   adsl2PMLHist1DValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMLineHist1DayEntry 9 }




   ------------------------------------------
   --     PM line init history 15 Minutes   --
   ------------------------------------------

   adsl2PMLineInitHist15MinTable      OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineInitHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineInitHist15MinTable contains PM line
          initialization history for 15-minute intervals of the ADSL2
          line."
      ::= { adsl2PMLine 5 }

   adsl2PMLineInitHist15MinEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineInitHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineInitHist15MinTable contains PM line
```

```
          initialization history for 15 minutes intervals of the ADSL2
          line.
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), and an interval
          number."
       INDEX  { ifIndex,
                adsl2PMLHistInit15MInterval }
       ::= { adsl2PMLineInitHist15MinTable 1 }

   Adsl2PMLineInitHist15MinEntry  ::=
       SEQUENCE {
          adsl2PMLHistInit15MInterval             Unsigned32,
          adsl2PMLHistInit15MMonitoredTime        Unsigned32,
          adsl2PMLHistInit15MFullInits            Unsigned32,
          adsl2PMLHistInit15MFailedFullInits      Unsigned32,
          adsl2PMLHistInit15MShortInits           Unsigned32,
          adsl2PMLHistInit15MFailedShortInits     Unsigned32,
          adsl2PMLHistInit15MValidInterval        TruthValue
       }

   adsl2PMLHistInit15MInterval  OBJECT-TYPE
       SYNTAX      Unsigned32 (1..96)
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
          "The interval number."
       ::= { adsl2PMLineInitHist15MinEntry 1 }

   adsl2PMLHistInit15MMonitoredTime  OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "seconds"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "Total seconds monitored in this interval."
       ::= { adsl2PMLineInitHist15MinEntry 2 }

   adsl2PMLHistInit15MFullInits  OBJECT-TYPE
       SYNTAX      Unsigned32
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
          "Count of full initializations attempted on the line
           (successful and failed) during this interval."
       REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
       ::= { adsl2PMLineInitHist15MinEntry 3 }

   adsl2PMLHistInit15MFailedFullInits  OBJECT-TYPE
```

```
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed full initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist15MinEntry 4 }

   adsl2PMLHistInit15MShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of short initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist15MinEntry 5 }

   adsl2PMLHistInit15MFailedShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed short initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist15MinEntry 6 }

   adsl2PMLHistInit15MValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMLineInitHist15MinEntry 7 }



   ------------------------------------------
   --       PM line init history 1 Day      --
   ------------------------------------------
   adsl2PMLineInitHist1DayTable       OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMLineInitHist1DayEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
```

```
         "The table adsl2PMLineInitHist1DayTable contains PM line
          initialization history for 24-hour intervals of the ADSL2
          line."
      ::= { adsl2PMLine 6 }

   adsl2PMLineInitHist1DayEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMLineInitHist1DayEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMLineInitHist1DayTable contains PM line
          initialization history for 24-hour intervals of the ADSL2
          line.
          The index of this table consists of an interface index, where
          the interface has an ifType of adsl2plus(238), and an interval
          number."
      INDEX  { ifIndex,
               adsl2PMLHistinit1DInterval }
      ::= { adsl2PMLineInitHist1DayTable 1 }

   Adsl2PMLineInitHist1DayEntry  ::=
      SEQUENCE {
         adsl2PMLHistinit1DInterval             Unsigned32,
         adsl2PMLHistinit1DMonitoredTime        Unsigned32,
         adsl2PMLHistinit1DFullInits            Unsigned32,
         adsl2PMLHistinit1DFailedFullInits      Unsigned32,
         adsl2PMLHistinit1DShortInits           Unsigned32,
         adsl2PMLHistinit1DFailedShortInits     Unsigned32,
         adsl2PMLHistinit1DValidInterval        TruthValue
      }

   adsl2PMLHistinit1DInterval  OBJECT-TYPE
      SYNTAX      Unsigned32 (1..30)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The interval number."
      ::= { adsl2PMLineInitHist1DayEntry 1 }

   adsl2PMLHistinit1DMonitoredTime  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total seconds monitored in this interval."
      ::= { adsl2PMLineInitHist1DayEntry 2 }
```

```
   adsl2PMLHistinit1DFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of full initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
       ::= { adsl2PMLineInitHist1DayEntry 3 }

   adsl2PMLHistinit1DFailedFullInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed full initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist1DayEntry 4 }

   adsl2PMLHistinit1DShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of short initializations attempted on the line
          (successful and failed) during this interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist1DayEntry 5 }

   adsl2PMLHistinit1DFailedShortInits  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of failed short initializations on the line during this
          interval."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.1"
      ::= { adsl2PMLineInitHist1DayEntry 6 }

   adsl2PMLHistinit1DValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMLineInitHist1DayEntry 7 }
```

```
   -------------------------------------------------
   --          PM channel current counters          --
   -------------------------------------------------
   adsl2PMChCurrTable        OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMChCurrEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChCurrTable contains current Performance
          Monitoring results of the ADSL2 channel.
          The PM counters in the table are not reset even when the XTU
          is reinitialized. They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMChannel 1 }

   adsl2PMChCurrEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMChCurrEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChCurrTable contains current Performance
          Monitoring results of the ADSL2 channel.
          The index of this table consists of an interface index, where
          the interface has an ifType value that is applicable
          for a DSL channel, along with a termination unit."
      INDEX  { ifIndex, adsl2PMChCurrUnit }
      ::= { adsl2PMChCurrTable 1 }

   Adsl2PMChCurrEntry  ::=
      SEQUENCE {
         adsl2PMChCurrUnit                    Adsl2Unit,
         adsl2PMChCurrValidIntervals          Unsigned32,
         adsl2PMChCurrInvalidIntervals        Unsigned32,
         adsl2PMChCurr15MTimeElapsed          HCPerfTimeElapsed,
         adsl2PMChCurr15MCodingViolations     Unsigned32,
         adsl2PMChCurr15MCorrectedBlocks      Unsigned32,
         adsl2PMChCurr1DayValidIntervals      Unsigned32,
         adsl2PMChCurr1DayInvalidIntervals    Unsigned32,
         adsl2PMChCurr1DayTimeElapsed         HCPerfTimeElapsed,
         adsl2PMChCurr1DayCodingViolations    Unsigned32,
         adsl2PMChCurr1DayCorrectedBlocks     Unsigned32
      }

   adsl2PMChCurrUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
```

```
      "The termination unit."
      ::= { adsl2PMChCurrEntry 1 }

   adsl2PMChCurrValidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Valid intervals."
      ::= { adsl2PMChCurrEntry 2 }

   adsl2PMChCurrInvalidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Invalid intervals."
       ::= { adsl2PMChCurrEntry 3 }

   adsl2PMChCurr15MTimeElapsed  OBJECT-TYPE
      SYNTAX      HCPerfTimeElapsed
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized. They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMChCurrEntry 4 }

   adsl2PMChCurr15MCodingViolations  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of CRC-8 (FEBE for ATU-R) anomalies occurring in the
          channel during the interval.  This parameter is inhibited
          during UAS or SES.  If the CRC is applied over multiple
          channels, then each related CRC-8 (or FEBE) anomaly should
          increment each of the counters related to the individual
          channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
     ::= { adsl2PMChCurrEntry 5 }

   adsl2PMChCurr15MCorrectedBlocks  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
```

```
      STATUS      current
      DESCRIPTION
         "Count of FEC (FFEC for ATU-R) anomalies (corrected code words)
          occurring in the channel during the interval.  This parameter
          is inhibited during UAS or SES.  If the FEC is applied over
          multiple channels, then each related FEC (or FFEC) anomaly
          should increment each of the counters related to the
          individual channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChCurrEntry 6 }

   adsl2PMChCurr1DayValidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Valid intervals."
      ::= { adsl2PMChCurrEntry 7 }

   adsl2PMChCurr1DayInvalidIntervals  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Invalid intervals."
      ::= { adsl2PMChCurrEntry 8 }

   adsl2PMChCurr1DayTimeElapsed  OBJECT-TYPE
      SYNTAX      HCPerfTimeElapsed
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total elapsed seconds since this PM interval began.
          Note that the PM counters are not reset even when the XTU
          is reinitialized. They are reinitialized only when the
          agent itself is reset or reinitialized."
      ::= { adsl2PMChCurrEntry 9 }

   adsl2PMChCurr1DayCodingViolations  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of CRC-8 (FEBE for ATU-R) anomalies occurring in the
          channel during the interval.  This parameter is inhibited
          during UAS or SES.  If the CRC is applied over multiple
          channels, then each related CRC-8 (or FEBE) anomaly should
```

```
          increment each of the counters related to the individual
          channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChCurrEntry 10 }

   adsl2PMChCurr1DayCorrectedBlocks  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of FEC (FFEC for ATU-R) anomalies (corrected code words)
          occurring in the channel during the interval.  This parameter
          is inhibited during UAS or SES.  If the FEC is applied over
          multiple channels, then each related FEC (or FFEC) anomaly
          should increment each of the counters related to the
          individual channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChCurrEntry 11 }



   -----------------------------------------
   --    PM channel history 15 Minutes      --
   -----------------------------------------
   adsl2PMChHist15MinTable         OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMChHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChCurrTable contains current Performance
          Monitoring results of the ADSL2 channel."
      ::= { adsl2PMChannel 2 }

   adsl2PMChHist15MinEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMChHist15MinEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChCurrTable contains current Performance
          Monitoring results of the ADSL2 channel.
          The index of this table consists of an interface index, where
          the interface has an ifType value that is applicable
          for a DSL channel, along with a termination unit, and the
          interval number."
      INDEX  { ifIndex,
               adsl2PMChHist15MUnit,
               adsl2PMChHist15MInterval }
      ::= { adsl2PMChHist15MinTable 1 }
```

```
   Adsl2PMChHist15MinEntry  ::=
      SEQUENCE {
         adsl2PMChHist15MUnit                    Adsl2Unit,
         adsl2PMChHist15MInterval                Unsigned32,
         adsl2PMChHist15MMonitoredTime           Unsigned32,
         adsl2PMChHist15MCodingViolations        Unsigned32,
         adsl2PMChHist15MCorrectedBlocks         Unsigned32,
         adsl2PMChHist15MValidInterval           TruthValue
      }

   adsl2PMChHist15MUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The termination unit."
      ::= { adsl2PMChHist15MinEntry 1 }

   adsl2PMChHist15MInterval  OBJECT-TYPE
      SYNTAX      Unsigned32 (1..96)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The interval number."
      ::= { adsl2PMChHist15MinEntry 2 }

   adsl2PMChHist15MMonitoredTime  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total seconds monitored in this interval."
      ::= { adsl2PMChHist15MinEntry 3 }

   adsl2PMChHist15MCodingViolations  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of CRC-8 (FEBE for ATU-R) anomalies occurring in the
          channel during the interval.  This parameter is inhibited
          during UAS or SES.  If the CRC is applied over multiple
          channels, then each related CRC-8 (or FEBE) anomaly should
          increment each of the counters related to the individual
          channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChHist15MinEntry 4 }
```

```
   adsl2PMChHist15MCorrectedBlocks  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of FEC (FFEC for ATU-R) anomalies (corrected code words)
          occurring in the channel during the interval.  This parameter
          is inhibited during UAS or SES.  If the FEC is applied over
          multiple channels, then each related FEC (or FFEC) anomaly
          should increment each of the counters related to the
          individual channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChHist15MinEntry 5 }

   adsl2PMChHist15MValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMChHist15MinEntry 6 }



   ----------------------------------------
   --        PM channel history 1 Day      --
   ----------------------------------------
   adsl2PMChHist1DTable         OBJECT-TYPE
      SYNTAX      SEQUENCE  OF  Adsl2PMChHist1DEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChHist1DayTable contains PM channel history
          for 1-day intervals of ADSL2."
      ::= { adsl2PMChannel 3 }

   adsl2PMChHist1DEntry  OBJECT-TYPE
      SYNTAX      Adsl2PMChHist1DEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The table adsl2PMChHist1DayTable contains PM channel history
          for 1-day intervals of ADSL2.
          The index of this table consists of an interface index, where
          the interface has an ifType value that is applicable
          for a DSL channel, along with a termination unit, and the
          interval number."
```

```
      INDEX  { ifIndex,
               adsl2PMChHist1DUnit,
               adsl2PMChHist1DInterval }
      ::= { adsl2PMChHist1DTable 1 }

   Adsl2PMChHist1DEntry  ::=
      SEQUENCE {
         adsl2PMChHist1DUnit                     Adsl2Unit,
         adsl2PMChHist1DInterval                 Unsigned32,
         adsl2PMChHist1DMonitoredTime            Unsigned32,
         adsl2PMChHist1DCodingViolations         Unsigned32,
         adsl2PMChHist1DCorrectedBlocks          Unsigned32,
         adsl2PMChHist1DValidInterval            TruthValue
      }

   adsl2PMChHist1DUnit  OBJECT-TYPE
      SYNTAX      Adsl2Unit
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The termination unit."
       ::= { adsl2PMChHist1DEntry 1 }

   adsl2PMChHist1DInterval  OBJECT-TYPE
      SYNTAX      Unsigned32 (1..30)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
         "The interval number."
      ::= { adsl2PMChHist1DEntry 2 }

   adsl2PMChHist1DMonitoredTime  OBJECT-TYPE
      SYNTAX      Unsigned32
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Total seconds monitored in this interval."
      ::= { adsl2PMChHist1DEntry 3 }

   adsl2PMChHist1DCodingViolations  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of CRC-8 (FEBE for ATU-R) anomalies occurring in the
          channel during the interval.  This parameter is inhibited
          during UAS or SES.  If the CRC is applied over multiple
```

```
          channels, then each related CRC-8 (or FEBE) anomaly should
          increment each of the counters related to the individual
          channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChHist1DEntry 4 }

   adsl2PMChHist1DCorrectedBlocks  OBJECT-TYPE
      SYNTAX      Unsigned32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "Count of FEC (FFEC for ATU-R) anomalies (corrected code words)
          occurring in the channel during the interval.  This parameter
          is inhibited during UAS or SES.  If the FEC is applied over
          multiple channels, then each related FEC (or FFEC) anomaly
          should increment each of the counters related to the
          individual channels."
      REFERENCE    "ITU-T G.997.1, paragraph 7.2.2"
      ::= { adsl2PMChHist1DEntry 5 }

   adsl2PMChHist1DValidInterval  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This variable indicates if the data for this interval is
          valid."
      ::= { adsl2PMChHist1DEntry 6 }

   --------------------------------------------
   --          Notifications Group           --
   --------------------------------------------

   adsl2LinePerfFECSThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MFecs,
      adsl2LineAlarmConfProfileAtucThresh15MinFecs
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the FEC seconds threshold
         has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 1 }

   adsl2LinePerfFECSThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
```

```
      adsl2PMLCurr15MFecs,
      adsl2LineAlarmConfProfileAturThresh15MinFecs
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the FEC seconds threshold
         has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 2 }

   adsl2LinePerfESThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MEs,
      adsl2LineAlarmConfProfileAtucThresh15MinEs
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the errored seconds threshold
         has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 3 }

   adsl2LinePerfESThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MEs,
      adsl2LineAlarmConfProfileAturThresh15MinEs
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the errored seconds threshold
         has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 4 }

   adsl2LinePerfSESThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MSes,
      adsl2LineAlarmConfProfileAtucThresh15MinSes
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the severely-errored seconds
         threshold has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 5 }

   adsl2LinePerfSESThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
```

```
      adsl2PMLCurr15MSes,
      adsl2LineAlarmConfProfileAturThresh15MinSes
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the severely-errored seconds
         threshold has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 6 }

   adsl2LinePerfLOSSThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MLoss,
      adsl2LineAlarmConfProfileAtucThresh15MinLoss
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the LOS seconds
         threshold has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 7 }

   adsl2LinePerfLOSSThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MLoss,
      adsl2LineAlarmConfProfileAturThresh15MinLoss
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the LOS seconds
         threshold has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 8 }

   adsl2LinePerfUASThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurr15MUas,
      adsl2LineAlarmConfProfileAtucThresh15MinUas
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the unavailable seconds
         threshold has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 9 }

   adsl2LinePerfUASThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
```

```
      adsl2PMLCurr15MUas,
      adsl2LineAlarmConfProfileAturThresh15MinUas
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the unavailable seconds
         threshold has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 10 }

   adsl2LinePerfCodingViolationsThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMChCurr15MCodingViolations,
      adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the coding violations
         threshold has been reached/exceeded for the referred ATU-C."
      ::= { adsl2Notifications 11 }

   adsl2LinePerfCodingViolationsThreshAtur NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMChCurr15MCodingViolations,
      adsl2ChAlarmConfProfileAturThresh15MinCodingViolations
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the coding violations
         threshold has been reached/exceeded for the referred ATU-R."
      ::= { adsl2Notifications 12 }

   adsl2LinePerfCorrectedThreshAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMChCurr15MCorrectedBlocks,
      adsl2ChAlarmConfProfileAtucThresh15MinCorrected
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the corrected blocks
         (FEC events) threshold has been reached/exceeded for the
         referred ATU-C."
      ::= { adsl2Notifications 13 }

   adsl2LinePerfCorrectedThreshAtur NOTIFICATION-TYPE
      OBJECTS
```

```
      {
      adsl2PMChCurr15MCorrectedBlocks,
      adsl2ChAlarmConfProfileAturThresh15MinCorrected
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the corrected blocks
         (FEC events) threshold has been reached/exceeded for the
         referred ATU-R."
      ::= { adsl2Notifications 14 }

   adsl2LinePerfFailedFullInitThresh NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurrInit15MFailedFullInits,
      adsl2LineAlarmConfProfileThresh15MinFailedFullInt
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the failed full
         initializations threshold has been reached/exceeded for the
         referred ADSL/ADSL2 or ADSL2+ line."
      ::= { adsl2Notifications 15 }

   adsl2LinePerfFailedShortInitThresh NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2PMLCurrInit15MFailedShortInits,
      adsl2LineAlarmConfProfileThresh15MinFailedShrtInt
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that the failed short
         initializations threshold has been reached/exceeded for the
         referred ADSL/ADSL2 or ADSL2+ line."
      ::= { adsl2Notifications 16 }

   adsl2LineStatusChangeAtuc NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2LineStatusAtuc
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that a status change is
         detected for the referred ATU-C."
      ::= { adsl2Notifications 17 }
```

```
   adsl2LineStatusChangeAtur NOTIFICATION-TYPE
      OBJECTS
      {
      adsl2LineStatusAtur
      }
      STATUS     current
      DESCRIPTION
        "This notification indicates that a status change is
         detected for the referred ATU-R."
      ::= { adsl2Notifications 18 }


      -- conformance information

      adsl2Groups OBJECT IDENTIFIER ::= { adsl2Conformance 1 }
      adsl2Compliances OBJECT IDENTIFIER ::= { adsl2Conformance 2 }

      adsl2LineMibCompliance MODULE-COMPLIANCE
         STATUS  current
         DESCRIPTION
             "The compliance statement for SNMP entities that
             manage ADSL/ADSL2 or ADSL2+ interfaces."
         MODULE  -- this module
         MANDATORY-GROUPS
             {
             adsl2LineGroup,
             adsl2ChannelStatusGroup,
             adsl2SCStatusGroup,
             adsl2LineInventoryGroup,
             adsl2LineConfTemplateGroup,
             adsl2LineConfProfGroup,
             adsl2LineConfProfModeSpecGroup,
             adsl2ChConfProfileGroup,
             adsl2LineAlarmConfTemplateGroup,
             adsl2PMLineCurrGroup,
             adsl2PMLineCurrInitGroup,
             adsl2PMLineHist15MinGroup,
             adsl2PMLineHist1DayGroup,
             adsl2PMLineInitHist15MinGroup,
             adsl2PMLineInitHist1DayGroup,
             adsl2PMChCurrGroup,
             adsl2PMChHist15MinGroup,
             adsl2PMChHist1DGroup
             }

      GROUP  adsl2ChannelStatusAtmGroup
         DESCRIPTION
           "The group of status objects required when the data path
```

```
          is ATM."

      GROUP  adsl2ChannelStatusPtmGroup
         DESCRIPTION
           "The group of status objects required when the data path
           is PTM."

      GROUP  adsl2LineConfProfRaGroup
         DESCRIPTION
           "The group of objects required for controlling the rate-
           adaptive behavior of the line."

      GROUP  adsl2LineConfProfMsgMinGroup
         DESCRIPTION
           "The group of objects required for controlling the rate
           reserved for Overhead traffic."

      GROUP  adsl2LineAlarmConfProfileGroup
         DESCRIPTION
           "The group of objects that define the alarm thresholds
           on line-level PM counters."

      GROUP  adsl2ChAlarmConfProfileGroup
         DESCRIPTION
           "The group of objects that define the alarm thresholds
           on channel-level PM counters."

      GROUP  adsl2ChConfProfileAtmGroup
         DESCRIPTION
           "The group of configuration objects required when the data
           path is ATM."

      GROUP  adsl2ChConfProfileMinResGroup
         DESCRIPTION
           "The group of configuration objects required for the
           reserved data rate."

      GROUP  adsl2PMLineCurrInitShortGroup
         DESCRIPTION
           "The group of PM counters for the current interval's
           short initializations."

      GROUP  adsl2PMLineInitHist15MinShortGroup
         DESCRIPTION
           "The group of PM counters for the previous 15-minute
           interval's short initializations."

      GROUP  adsl2PMLineInitHist1DayShortGroup
```

```
         DESCRIPTION
           "The group of PM counters for the previous 24-hour
           interval's short initializations."

      GROUP  adsl2ScalarSCGroup
         DESCRIPTION
           "The group of objects that report the available memory
           resources for DELT processes."

      GROUP  adsl2ThreshNotificationGroup
         DESCRIPTION
           "The group of threshold crossing notifications."

      GROUP  adsl2StatusChangeNotificationGroup
         DESCRIPTION
           "The group of status change notifications."

         ::= { adsl2Compliances 1 }

      -- units of conformance

      adsl2LineGroup OBJECT-GROUP
         OBJECTS
             {
             adsl2LineCnfgTemplate,
             adsl2LineAlarmCnfgTemplate,
             adsl2LineCmndConfPmsf,
             adsl2LineCmndConfLdsf,
             adsl2LineCmndConfLdsfFailReason,
             adsl2LineCmndAutomodeColdStart,
             adsl2LineStatusAtuTransSys,
             adsl2LineStatusPwrMngState,
             adsl2LineStatusInitResult,
             adsl2LineStatusLastStateDs,
             adsl2LineStatusLastStateUs,
             adsl2LineStatusAtur,
             adsl2LineStatusAtuc,
             adsl2LineStatusLnAttenDs,
             adsl2LineStatusLnAttenUs,
             adsl2LineStatusSigAttenDs,
             adsl2LineStatusSigAttenUs,
             adsl2LineStatusSnrMarginDs,
             adsl2LineStatusSnrMarginUs,
             adsl2LineStatusAttainableRateDs,
             adsl2LineStatusAttainableRateUs,
             adsl2LineStatusActPsdDs,
             adsl2LineStatusActPsdUs,
             adsl2LineStatusActAtpDs,
```

```
            adsl2LineStatusActAtpUs
            }
        STATUS     current
        DESCRIPTION
            "The group of configuration, status, and commands objects
            on the line level."
        ::= { adsl2Groups 1 }

    adsl2ChannelStatusGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ChStatusChannelNum,
            adsl2ChStatusActDataRate,
            adsl2ChStatusPrevDataRate,
            adsl2ChStatusActDelay
            }
        STATUS     current
        DESCRIPTION
            "The group of status objects on the channel level."
        ::= { adsl2Groups 2 }

    adsl2ChannelStatusAtmGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ChStatusAtmStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of status objects on the data path level
            when it is ATM."
        ::= { adsl2Groups 3 }

    adsl2ChannelStatusPtmGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ChStatusPtmStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of status objects on the data path level
            when it is PTM."
        ::= { adsl2Groups 4 }

    adsl2SCStatusGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2SCStatusMtime,
            adsl2SCStatusSnr,
```

```
            adsl2SCStatusBitsAlloc,
            adsl2SCStatusGainAlloc,
            adsl2SCStatusTssi,
            adsl2SCStatusLinScale,
            adsl2SCStatusLinReal,
            adsl2SCStatusLinImg,
            adsl2SCStatusLogMt,
            adsl2SCStatusLog,
            adsl2SCStatusQlnMt,
            adsl2SCStatusQln,
            adsl2SCStatusLnAtten,
            adsl2SCStatusSigAtten,
            adsl2SCStatusSnrMargin,
            adsl2SCStatusAttainableRate,
            adsl2SCStatusActAtp,
            adsl2SCStatusRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of status objects on the sub-carrier level.
            They are updated as a result of a DELT process."
        ::= { adsl2Groups 5 }

    adsl2LineInventoryGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LInvG994VendorId,
            adsl2LInvSystemVendorId,
            adsl2LInvVersionNumber,
            adsl2LInvSerialNumber,
            adsl2LInvSelfTestResult,
            adsl2LInvTransmissionCapabilities
            }
        STATUS     current
        DESCRIPTION
            "The group of inventory objects per XTU."
        ::= { adsl2Groups 6 }

    adsl2LineConfTemplateGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LConfTempLineProfile,
            adsl2LConfTempChan1ConfProfile,
            adsl2LConfTempChan1RaRatioDs,
            adsl2LConfTempChan1RaRatioUs,
            adsl2LConfTempChan2ConfProfile,
            adsl2LConfTempChan2RaRatioDs,
            adsl2LConfTempChan2RaRatioUs,
```

```
            adsl2LConfTempChan3ConfProfile,
            adsl2LConfTempChan3RaRatioDs,
            adsl2LConfTempChan3RaRatioUs,
            adsl2LConfTempChan4ConfProfile,
            adsl2LConfTempChan4RaRatioDs,
            adsl2LConfTempChan4RaRatioUs,
            adsl2LConfTempRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a line configuration template."
        ::= { adsl2Groups 7 }

    adsl2LineConfProfGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LConfProfScMaskDs,
            adsl2LConfProfScMaskUs,
            adsl2LConfProfRfiBandsDs,
            adsl2LConfProfRaModeDs,
            adsl2LConfProfRaModeUs,
            adsl2LConfProfTargetSnrmDs,
            adsl2LConfProfTargetSnrmUs,
            adsl2LConfProfMaxSnrmDs,
            adsl2LConfProfMaxSnrmUs,
            adsl2LConfProfMinSnrmDs,
            adsl2LConfProfMinSnrmUs,
            adsl2LConfProfAtuTransSysEna,
            adsl2LConfProfPmMode,
            adsl2LConfProfL0Time,
            adsl2LConfProfL2Time,
            adsl2LConfProfL2Atpr,
            adsl2LConfProfL2Atprt,
            adsl2LConfProfRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a line configuration profile."
        ::= { adsl2Groups 8 }

    adsl2LineConfProfRaGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LConfProfRaUsNrmDs,
            adsl2LConfProfRaUsNrmUs,
            adsl2LConfProfRaUsTimeDs,
            adsl2LConfProfRaUsTimeUs,
            adsl2LConfProfRaDsNrmsDs,
```

```
            adsl2LConfProfRaDsNrmsUs,
            adsl2LConfProfRaDsTimeDs,
            adsl2LConfProfRaDsTimeUs
            }
        STATUS     current
        DESCRIPTION
          "The group of objects required for controlling the rate-
          adaptive behavior of the line."
        ::= { adsl2Groups 9 }

    adsl2LineConfProfMsgMinGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LConfProfMsgMinUs,
            adsl2LConfProfMsgMinDs
            }
        STATUS     current
        DESCRIPTION
          "The group of objects required for controlling the rate
          reserved for Overhead traffic."
        ::= { adsl2Groups 10 }

    adsl2LineConfProfModeSpecGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LConfProfMaxNomPsdDs,
            adsl2LConfProfMaxNomPsdUs,
            adsl2LConfProfMaxNomAtpDs,
            adsl2LConfProfMaxNomAtpUs,
            adsl2LConfProfMaxAggRxPwrUs,
            adsl2LConfProfPsdMaskDs,
            adsl2LConfProfPsdMaskUs,
            adsl2LConfProfPsdMaskSelectUs,
            adsl2LConfProfModeSpecRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a line configuration profile
            that have an instance for each operation mode allowed."
        ::= { adsl2Groups 11 }

    adsl2ChConfProfileGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ChConfProfMinDataRateDs,
            adsl2ChConfProfMinDataRateUs,
            adsl2ChConfProfMaxDataRateDs,
            adsl2ChConfProfMaxDataRateUs,
```

```
            adsl2ChConfProfMinDataRateLowPwrDs,
            adsl2ChConfProfMaxDelayDs,
            adsl2ChConfProfMaxDelayUs,
            adsl2ChConfProfMinProtectionDs,
            adsl2ChConfProfMinProtectionUs,
            adsl2ChConfProfMaxBerDs,
            adsl2ChConfProfMaxBerUs,
            adsl2ChConfProfUsDataRateDs,
            adsl2ChConfProfDsDataRateDs,
            adsl2ChConfProfUsDataRateUs,
            adsl2ChConfProfDsDataRateUs,
            adsl2ChConfProfRowStatus
            }
         STATUS     current
         DESCRIPTION
            "The group of objects in a channel configuration profile."
         ::= { adsl2Groups 12 }

      adsl2ChConfProfileAtmGroup OBJECT-GROUP
         OBJECTS
            {
            adsl2ChConfProfImaEnabled,
            adsl2ChStatusAtmStatus
            }
         STATUS     current
         DESCRIPTION
           "The group of configuration objects required when the data
           path is ATM."
         ::= { adsl2Groups 13 }

      adsl2ChConfProfileMinResGroup OBJECT-GROUP
         OBJECTS
            {
            adsl2ChConfProfMinResDataRateDs,
            adsl2ChConfProfMinResDataRateUs
            }
         STATUS     current
         DESCRIPTION
           "The group of configuration objects required for the
           reserved data rate."
         ::= { adsl2Groups 14 }

      adsl2LineAlarmConfTemplateGroup OBJECT-GROUP
         OBJECTS
            {
            adsl2LAlarmConfTempLineProfile,
            adsl2LAlarmConfTempChan1ConfProfile,
            adsl2LAlarmConfTempChan2ConfProfile,
```

```
            adsl2LAlarmConfTempChan3ConfProfile,
            adsl2LAlarmConfTempChan4ConfProfile,
            adsl2LAlarmConfTempRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a line alarm
             template."
        ::= { adsl2Groups 15 }

    adsl2LineAlarmConfProfileGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2LineAlarmConfProfileAtucThresh15MinFecs,
            adsl2LineAlarmConfProfileAtucThresh15MinEs,
            adsl2LineAlarmConfProfileAtucThresh15MinSes,
            adsl2LineAlarmConfProfileAtucThresh15MinLoss,
            adsl2LineAlarmConfProfileAtucThresh15MinUas,
            adsl2LineAlarmConfProfileAturThresh15MinFecs,
            adsl2LineAlarmConfProfileAturThresh15MinEs,
            adsl2LineAlarmConfProfileAturThresh15MinSes,
            adsl2LineAlarmConfProfileAturThresh15MinLoss,
            adsl2LineAlarmConfProfileAturThresh15MinUas,
            adsl2LineAlarmConfProfileThresh15MinFailedFullInt,
            adsl2LineAlarmConfProfileThresh15MinFailedShrtInt,
            adsl2LineAlarmConfProfileRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a line alarm profile."
        ::= { adsl2Groups 16 }

    adsl2ChAlarmConfProfileGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations,
            adsl2ChAlarmConfProfileAtucThresh15MinCorrected,
            adsl2ChAlarmConfProfileAturThresh15MinCodingViolations,
            adsl2ChAlarmConfProfileAturThresh15MinCorrected,
            adsl2ChAlarmConfProfileRowStatus
            }
        STATUS     current
        DESCRIPTION
            "The group of objects in a channel alarm profile."
        ::= { adsl2Groups 17 }

    adsl2PMLineCurrGroup OBJECT-GROUP
        OBJECTS
```

```
            {
            adsl2PMLCurrValidIntervals,
            adsl2PMLCurrInvalidIntervals,
            adsl2PMLCurr15MTimeElapsed,
            adsl2PMLCurr15MFecs,
            adsl2PMLCurr15MEs,
            adsl2PMLCurr15MSes,
            adsl2PMLCurr15MLoss,
            adsl2PMLCurr15MUas,
            adsl2PMLCurr1DayValidIntervals,
            adsl2PMLCurr1DayInvalidIntervals,
            adsl2PMLCurr1DayTimeElapsed,
            adsl2PMLCurr1DayFecs,
            adsl2PMLCurr1DayEs,
            adsl2PMLCurr1DaySes,
            adsl2PMLCurr1DayLoss,
            adsl2PMLCurr1DayUas
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the line-level
          counters for current PM intervals."
        ::= { adsl2Groups 18 }

    adsl2PMLineCurrInitGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMLCurrInit15MTimeElapsed,
            adsl2PMLCurrInit15MFullInits,
            adsl2PMLCurrInit15MFailedFullInits,
            adsl2PMLCurrInit1DayTimeElapsed,
            adsl2PMLCurrInit1DayFullInits,
            adsl2PMLCurrInit1DayFailedFullInits
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the full
          initialization counters for current PM intervals."
        ::= { adsl2Groups 19 }

    adsl2PMLineCurrInitShortGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMLCurrInit15MShortInits,
            adsl2PMLCurrInit15MFailedShortInits,
            adsl2PMLCurrInit1DayShortInits,
            adsl2PMLCurrInit1DayFailedShortInits
            }
```

```
        STATUS     current
        DESCRIPTION
          "The group of objects that report the short
          initialization counters for current PM intervals."
        ::= { adsl2Groups 20 }

      adsl2PMLineHist15MinGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMLHist15MMonitoredTime,
            adsl2PMLHist15MFecs,
            adsl2PMLHist15MEs,
            adsl2PMLHist15MSes,
            adsl2PMLHist15MLoss,
            adsl2PMLHist15MUas,
            adsl2PMLHist15MValidInterval
            }
        STATUS     current
        DESCRIPTION
          "The group of line-level PM counters for the previous
          15-minute interval."
        ::= { adsl2Groups 21 }

      adsl2PMLineHist1DayGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMLHist1DMonitoredTime,
            adsl2PMLHist1DFecs,
            adsl2PMLHist1DEs,
            adsl2PMLHist1DSes,
            adsl2PMLHist1DLoss,
            adsl2PMLHist1DUas,
            adsl2PMLHist1DValidInterval
            }
        STATUS     current
        DESCRIPTION
          "The group of line-level PM counters for the previous
          24-hour interval."
        ::= { adsl2Groups 22 }

      adsl2PMLineInitHist15MinGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMLHistInit15MMonitoredTime,
            adsl2PMLHistInit15MFullInits,
            adsl2PMLHistInit15MFailedFullInits,
            adsl2PMLHistInit15MValidInterval
            }
```

```
          STATUS     current
          DESCRIPTION
            "The group of PM counters for the previous 15-minute
            interval's full initializations."
          ::= { adsl2Groups 23 }

       adsl2PMLineInitHist15MinShortGroup OBJECT-GROUP
          OBJECTS
              {
              adsl2PMLHistInit15MShortInits,
              adsl2PMLHistInit15MFailedShortInits
              }
          STATUS     current
          DESCRIPTION
            "The group of PM counters for the previous 15-minute
            interval's short initializations."
          ::= { adsl2Groups 24 }

       adsl2PMLineInitHist1DayGroup OBJECT-GROUP
          OBJECTS
              {
              adsl2PMLHistinit1DMonitoredTime,
              adsl2PMLHistinit1DFullInits,
              adsl2PMLHistinit1DFailedFullInits,
              adsl2PMLHistinit1DValidInterval
              }
          STATUS     current
          DESCRIPTION
            "The group of PM counters for the previous 24-hour
            interval's full initializations."
          ::= { adsl2Groups 25 }

       adsl2PMLineInitHist1DayShortGroup OBJECT-GROUP
          OBJECTS
              {
              adsl2PMLHistinit1DShortInits,
              adsl2PMLHistinit1DFailedShortInits
              }
          STATUS     current
          DESCRIPTION
            "The group of PM counters for the previous 24-hour
            interval's short initializations."
          ::= { adsl2Groups 26 }

       adsl2PMChCurrGroup OBJECT-GROUP
          OBJECTS
              {
              adsl2PMChCurrValidIntervals,
```

```
            adsl2PMChCurrInvalidIntervals,
            adsl2PMChCurr15MTimeElapsed,
            adsl2PMChCurr15MCodingViolations,
            adsl2PMChCurr15MCorrectedBlocks,
            adsl2PMChCurr1DayValidIntervals,
            adsl2PMChCurr1DayInvalidIntervals,
            adsl2PMChCurr1DayTimeElapsed,
            adsl2PMChCurr1DayCodingViolations,
            adsl2PMChCurr1DayCorrectedBlocks
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the channel-level
          counters for current PM intervals."
        ::= { adsl2Groups 27 }

    adsl2PMChHist15MinGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMChHist15MMonitoredTime,
            adsl2PMChHist15MCodingViolations,
            adsl2PMChHist15MCorrectedBlocks,
            adsl2PMChHist15MValidInterval
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the channel-level
          counters for previous 15-minute PM intervals."
        ::= { adsl2Groups 28 }

    adsl2PMChHist1DGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2PMChHist1DMonitoredTime,
            adsl2PMChHist1DCodingViolations,
            adsl2PMChHist1DCorrectedBlocks,
            adsl2PMChHist1DValidInterval
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the channel-level
          counters for previous 24-hour PM intervals."
        ::= { adsl2Groups 29 }

    adsl2ScalarSCGroup OBJECT-GROUP
        OBJECTS
            {
            adsl2ScalarSCMaxInterfaces,
```

```
            adsl2ScalarSCAvailInterfaces
            }
        STATUS     current
        DESCRIPTION
          "The group of objects that report the available memory
          resources for DELT processes."
        ::= { adsl2Groups 30 }

    adsl2ThreshNotificationGroup NOTIFICATION-GROUP
        NOTIFICATIONS
        {
        adsl2LinePerfFECSThreshAtuc,
        adsl2LinePerfFECSThreshAtur,
        adsl2LinePerfESThreshAtuc,
        adsl2LinePerfESThreshAtur,
        adsl2LinePerfSESThreshAtuc,
        adsl2LinePerfSESThreshAtur,
        adsl2LinePerfLOSSThreshAtuc,
        adsl2LinePerfLOSSThreshAtur,
        adsl2LinePerfUASThreshAtuc,
        adsl2LinePerfUASThreshAtur,
        adsl2LinePerfCodingViolationsThreshAtuc,
        adsl2LinePerfCodingViolationsThreshAtur,
        adsl2LinePerfCorrectedThreshAtuc,
        adsl2LinePerfCorrectedThreshAtur,
        adsl2LinePerfFailedFullInitThresh,
        adsl2LinePerfFailedShortInitThresh
        }
        STATUS      current
        DESCRIPTION
          "This group supports notifications of significant conditions
          associated with ADSL/ADSL2/ADSL2+ lines."
        ::= { adsl2Groups 31 }

    adsl2StatusChangeNotificationGroup NOTIFICATION-GROUP
        NOTIFICATIONS
        {
        adsl2LineStatusChangeAtuc,
        adsl2LineStatusChangeAtur
        }
        STATUS      current
        DESCRIPTION
          "This group supports notifications of threshold crossing
          associated with ADSL/ADSL2/ADSL2+ lines."
        ::= { adsl2Groups 32 }

END
```

4. Implementation Analysis

A management application intended to manage ADSL links (e.g., G.992.1) with this MIB module must be modified to adapt itself to certain differences between RFC 2662 [RFC2662] and this MIB module, including the following aspects:

- Although the configuration templates/profiles allow referring to 1-4 bearer channels, ADSL links are limited to 2 channels at most.

- Although the channel configuration profile allows higher data rates, ADSL links are limited to downstream/upstream data rates as assumed in RFC 2662 [RFC2662].

- The Impulse Noise Protection (INP) configuration parameters are given by minimum protection and maximum delay parameters.

- The line configuration profile includes a sub-table that addresses mode-specific parameters. For ADSL links, the management application SHOULD create a row in that table for the 'adsl' mode.

- The line configuration profile includes parameters that are irrelevant for ADSL links. Similarly, many status parameters in the MIB are irrelevant for certain ADSL modes. Therefore, it is advised to consult with ITU G.997.1 standard [G.997.1] regarding the scope and relevance of each parameter in this MIB.

5. Security Considerations

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

- adsl2LineTable

  The table consists of the following objects that support SET operations:

  * adsl2LineCnfgTemplate
  * adsl2LineAlarmCnfgTemplate
  * adsl2LineCmndConfPmsf
  * adsl2LineCmndConfLdsf
  * adsl2LineCmndAutomodeColdStart

Unauthorized changes to adsl2LineCnfgTemplate could have a major adverse operational effect on many lines simultaneously.

Unauthorized changes to adsl2LineAlarmCnfgTemplate could have a contrary effect on notifications.

Unauthorized changes to adsl2LineCmndConfPmsf could have an adverse affect on the power consumption of a line and may disrupt an operational service.

Unauthorized changes to adsl2LineCmndConfLdsf could cause an unscheduled line test to be carried out on the line.

Unauthorized changes to adsl2LineCmndAutomodeColdStart could cause an unscheduled cold reset to the line.

- adsl2SCStatusTable

  This table contains one object, adsl2SCStatusRowStatus, that supports SET operations. Unauthorized changes could result in line test results being deleted prematurely.

- adsl2LineConfTemplateTable

  The table consists of the following objects that support SET operations:

  * adsl2LConfTempLineProfile
  * adsl2LConfTempChan1ConfProfile
  * adsl2LConfTempChan1RaRatioDs
  * adsl2LConfTempChan1RaRatioUs
  * adsl2LConfTempChan2ConfProfile
  * adsl2LConfTempChan2RaRatioDs
  * adsl2LConfTempChan2RaRatioUs
  * adsl2LConfTempChan3ConfProfile
  * adsl2LConfTempChan3RaRatioDs
  * adsl2LConfTempChan3RaRatioUs
  * adsl2LConfTempChan4ConfProfile
  * adsl2LConfTempChan4RaRatioDs
  * adsl2LConfTempChan4RaRatioUs
  * adsl2LConfTempRowStatus

  Unauthorized changes to adsl2LConfTempLineProfile, adsl2LConfTempChan1ConfProfile, adsl2LConfTempChan2ConfProfile, adsl2LConfTempChan3ConfProfile, or adsl2LConfTempChan4ConfProfile could have an adverse operational effect on several lines; could

change several lines over to running in unwanted levels of operation; or could result in several services undergoing changes in the number of channels that carry the service.

Unauthorized changes to adsl2LConfTempChan1RaRatioDs, adsl2LConfTempChan2RaRatioDs, adsl2LConfTempChan3RaRatioDs, or adsl2LConfTempChan4RaRatioDs, would alter the relative rate allocations among all channels belonging to a line. This could have an adverse operational effect on several lines.

Unauthorized changes to adsl2LConfTempRowStatus could result in templates being created or brought into service prematurely; or could result in templates being inadvertently deleted or taken out of service.

- adsl2LineConfProfTable

  The table consists of the following objects that support SET operations:

  * adsl2LConfProfScMaskDs
  * adsl2LConfProfScMaskUs
  * adsl2LConfProfRfiBandsDs
  * adsl2LConfProfRaModeDs
  * adsl2LConfProfRaModeUs
  * adsl2LConfProfRaUsNrmDs
  * adsl2LConfProfRaUsNrmUs
  * adsl2LConfProfRaUsTimeDs
  * adsl2LConfProfRaUsTimeUs
  * adsl2LConfProfRaDsNrmsDs
  * adsl2LConfProfRaDsNrmsUs
  * adsl2LConfProfRaDsTimeDs
  * adsl2LConfProfRaDsTimeUs
  * adsl2LConfProfTargetSnrmDs
  * adsl2LConfProfTargetSnrmUs
  * adsl2LConfProfMaxSnrmDs
  * adsl2LConfProfMaxSnrmUs
  * adsl2LConfProfMinSnrmDs
  * adsl2LConfProfMinSnrmUs
  * adsl2LConfProfMsgMinUs
  * adsl2LConfProfMsgMinDs
  * adsl2LConfProfAtuTransSysEna
  * adsl2LConfProfPmMode
  * adsl2LConfProfL0Time
  * adsl2LConfProfL2Time
  * adsl2LConfProfL2Atpr
  * adsl2LConfProfL2Atprt
  * adsl2LConfProfRowStatus

Unauthorized changes resulting in the setting of any of the above objects to an incorrect value could have an adverse operational effect on several lines.

Also, unauthorized changes to adsl2LConfProfRowStatus could result in unwanted line profiles being created or brought into service prematurely; or could result in line profiles being inadvertently deleted or taken out of service.

- adsl2LineConfProfModeSpecTable

  The table consists of the following objects that support SET operations:

  * adsl2LConfProfMaxNomPsdDs
  * adsl2LConfProfMaxNomPsdUs
  * adsl2LConfProfMaxNomAtpDs
  * adsl2LConfProfMaxNomAtpUs
  * adsl2LConfProfMaxAggRxPwrUs
  * adsl2LConfProfPsdMaskDs
  * adsl2LConfProfPsdMaskUs
  * adsl2LConfProfPsdMaskSelectUs
  * adsl2LConfProfModeSpecRowStatus

  Unauthorized changes resulting in the setting of any of the above objects to an incorrect value could have an adverse operational effect on several lines.

  Also, unauthorized changes to adsl2LConfProfModeSpecRowStatus could result in unwanted PSD configurations being created or brought into service prematurely; or could result in PSD configurations being inadvertently deleted or taken out of service.

- adsl2ChConfProfileTable

  The table consists of the following objects that support SET operations:

  * adsl2ChConfProfMinDataRateDs
  * adsl2ChConfProfMinDataRateUs
  * adsl2ChConfProfMinResDataRateDs
  * adsl2ChConfProfMinResDataRateUs
  * adsl2ChConfProfMaxDataRateDs
  * adsl2ChConfProfMaxDataRateUs
  * adsl2ChConfProfMinDataRateLowPwrDs
  * adsl2ChConfProfMaxDelayDs
  * adsl2ChConfProfMaxDelayUs

* adsl2ChConfProfMinProtectionDs
* adsl2ChConfProfMinProtectionUs
* adsl2ChConfProfMaxBerDs
* adsl2ChConfProfMaxBerUs
* adsl2ChConfProfUsDataRateDs
* adsl2ChConfProfDsDataRateDs
* adsl2ChConfProfUsDataRateUs
* adsl2ChConfProfDsDataRateUs
* adsl2ChConfProfImaEnabled
* adsl2ChConfProfRowStatus

Unauthorized changes resulting in the setting of any of the above objects to an incorrect value could have an adverse operational effect on several lines.

Also, unauthorized changes to adsl2ChConfProfRowStatus could result in unwanted channel profiles being created or brought into service prematurely; or could result in channel profiles being inadvertently deleted or taken out of service.

o adsl2LineAlarmConfTemplateTable

The table consists of the following objects that support SET operations:

* adsl2LAlarmConfTempLineProfile
* adsl2LAlarmConfTempChan1ConfProfile
* adsl2LalarmConfTempChan2ConfProfile
* adsl2LalarmConfTempChan3ConfProfile
* adsl2LalarmConfTempChan4ConfProfile
* adsl2LAlarmConfTempRowStatus

Unauthorized changes to adsl2LAlarmConfTempLineProfile, adsl2LAlarmConfTempChan1ConfProfile, adsl2LAlarmConfTempChan2ConfProfile, adsl2LAlarmConfTempChan3ConfProfile, or adsl2LAlarmConfTempChan4ConfProfile could have an adverse effect on the management of notifications generated at the scope of several to many lines; or could change several to many lines over to running with unwanted management rates for generated notifications.

Unauthorized changes to adsl2LAlarmConfTempRowStatus could result in alarm templates being created or brought into service prematurely; or could result in alarm templates being inadvertently deleted or taken out of service.

- adsl2LineAlarmConfProfileTable

  The table consists of the following objects that support SET operations:

  * adsl2LineAlarmConfProfileAtucThresh15MinFecs
  * adsl2LineAlarmConfProfileAtucThresh15MinEs
  * adsl2LineAlarmConfProfileAtucThresh15MinSes
  * adsl2LineAlarmConfProfileAtucThresh15MinLoss
  * adsl2LineAlarmConfProfileAtucThresh15MinUas
  * adsl2LineAlarmConfProfileAturThresh15MinFecs
  * adsl2LineAlarmConfProfileAturThresh15MinEs
  * adsl2LineAlarmConfProfileAturThresh15MinSes
  * adsl2LineAlarmConfProfileAturThresh15MinLoss
  * adsl2LineAlarmConfProfileAturThresh15MinUas
  * adsl2LineAlarmConfProfileThresh15MinFailedFullInt
  * adsl2LineAlarmConfProfileThresh15MinFailedShrtInt
  * adsl2LineAlarmConfProfileRowStatus

    Increasing any of the threshold values could result in a notification being suppressed or deferred. Setting a threshold to 0 could result in a notification being suppressed. Suppressing or deferring a notification could prevent the timely delivery of important diagnostic information. Decreasing any of the threshold values could result in a notification being sent from the network falsely reporting a threshold crossing.

    Changing a threshold value could also have an impact on the amount of notifications the agent sends. The Notifications Section of this document has a paragraph that provides general guidance on the rate-limiting of notifications. Agent implementations not providing rate-limiting could result in notifications being generated at an uncontrolled rate. Unauthorized changes to a threshold value could result in an undesired notification rate.

    Unauthorized changes to row status could result in unwanted line alarm profiles being created or brought into service. Also, changes to the row status could result in line alarm profiles being inadvertently deleted or taken out of service.

- adsl2ChAlarmConfProfileTable

  The table consists of the following objects that support SET operations:

* adsl2ChAlarmConfProfileAtucThresh15MinCodingViolations
* adsl2ChAlarmConfProfileAtucThresh15MinCorrected
* adsl2ChAlarmConfProfileAturThresh15MinCodingViolations
* adsl2ChAlarmConfProfileAturThresh15MinCorrected
* adsl2ChAlarmConfProfileRowStatus
* adsl2LineAlarmConfProfileAturThresh15MinFecs
* adsl2LineAlarmConfProfileAturThresh15MinEs
* adsl2LineAlarmConfProfileAturThresh15MinSes
* adsl2LineAlarmConfProfileAturThresh15MinLoss
* adsl2LineAlarmConfProfileAturThresh15MinUas
* adsl2LineAlarmConfProfileThresh15MinFailedFullInt
* adsl2LineAlarmConfProfileThresh15MinFailedShrtInt
* adsl2LineAlarmConfProfileRowStatus

  Increasing any of the threshold values could result in a notification being suppressed or deferred. Setting a threshold to 0 could result in a notification being suppressed. Suppressing or deferring a notification could prevent the timely delivery of important diagnostic information. Decreasing any of the threshold values could result in a notification being sent from the network falsely reporting a threshold crossing.

  Changing a threshold value could also have an impact on the amount of notifications the agent sends. The Notifications Section of this document has a paragraph that provides general guidance on the rate-limiting of notifications. Agent implementations not providing rate-limiting could result in notifications being generated at an uncontrolled rate. Unauthorized changes to a threshold value could result in an undesired notification rate.

  Unauthorized changes to row status could result in unwanted channel alarm profiles being created or brought into service. Also, changes to the row status could result in channel alarm profiles being inadvertently deleted or taken out of service.

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

- o adsl2LineInventoryTable

  Access to these objects would allow an intruder to obtain information about which vendor's equipment is in use on the network. Further, such information is considered sensitive in many environments for competitive reasons.

  * adsl2LInvG994VendorId
  * adsl2LInvSystemVendorId
  * adsl2LInvVersionNumber
  * adsl2LInvSerialNumber
  * adsl2LInvSelfTestResult
  * adsl2LInvTransmissionCapabilities

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).

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 only to those objects whose principals (users) have legitimate rights to indeed GET or SET (change/create/delete) them.

6. Acknowledgements

The authors are deeply grateful to the authors of the HDSL2 LINE MIB (RFC 4319), Clay Sikes and Bob Ray, for contributing to accelerating the work on this document. The structure of this document as well as several paragraphs originate in their document.

Special thanks to Bert Wijnen for his meticulous review of this text.

Other contributions and advice were received from the following:

Bert Wijnen	(Lucent)
Bob Ray	(Pesa)
Chen Jian	(Huawei)
Clay Sikes	(Zhone)
Mauro Molinari	(Marconi)
Narendranath Nair	(Wipro)
Randy Presuhn	(Mindspring)
Veena Naidu	(Wipro)

7. References

7.1. Normative References

[G.992.1] "Asymmetric digital subscriber line (ADSL) transceivers", ITU-T G.992.1, 1999.

[G.992.2] "Splitterless asymmetric digital subscriber line (ADSL) transceivers", ITU-T G.992.2, 1999.

[G.992.3] "Asymmetric digital subscriber line transceivers 2 (ADSL2)", ITU-T G.992.3, 2002.

[G.992.4] "Splitterless asymmetric digital subscriber line transceivers 2 (Splitterless ADSL2)", ITU-T G.992.4, 2002.

[G.992.5] "Asymmetric digital subscriber line (ADSL) transceivers - Extended bandwidth ADSL2 (ADSL2+)", ITU-T G.992.5, 2003.

[G.993.2] "Very-high speed Digital Subscriber Line Transceivers 2 (VDSL2 draft)", ITU-T G.993.2, July 2005.

[G.997.1] "Physical layer management for digital subscriber line (DSL) transceivers", ITU-T G.997.1, May 2003.

[G.997.1am1] "Physical layer management for digital subscriber line (DSL) transceivers Amendment 1", ITU-T G.997.1 Amendment 1, December 2003.

[G.997.1am2] "Physical layer management for digital subscriber line (DSL) transceivers Amendment 2", ITU-T G.997.1 Amendment 2, January 2005.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

[RFC2863] McCloghrie, K. and F. Kastenholz, "The Interfaces Group MIB", RFC 2863, June 2000.

[RFC3411] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks", STD 62, RFC 3411, December 2002.

[RFC3593] Tesink, K., "Textual Conventions for MIB Modules Using Performance History Based on 15 Minute Intervals", RFC 3593, September 2003.

[RFC3705] Ray, B. and R. Abbi, "High Capacity Textual Conventions for MIB Modules Using Performance History Based on 15 Minute Intervals", RFC 3705, February 2004.

[T1E1.413] J. Bingham & F. Van der Putten, "Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Line (ADSL) Metallic Interface. (T1.413 Issue 2)", ANSI T1E1.413-1998, June 1998.

[TR-90] Abbi, R., "Protocol Independent Object Model for Managing Next Generation ADSL Technologies", DSL Forum TR-90, December 2004.

7.2. Informative References

[RFC2662] Bathrick, G. and F. Ly, "Definitions of Managed Objects for the ADSL Lines", RFC 2662, August 1999.

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, December 2002.

[RFC3418] Presuhn, R., "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", STD 62, RFC 3418, December 2002.

Authors' Addresses

Moti Morgenstern
ECI Telecom Ltd.
30 Hasivim St.
Petach Tikva 49517
Israel

Phone: +972 3 926 6258
Fax: +972 3 928 7342
EMail: moti.Morgenstern@ecitele.com

Menachem Dodge
ECI Telecom Ltd.
30 Hasivim St.
Petach Tikva 49517
Israel

Phone: +972 3 926 8421
Fax: +972 3 928 7342
EMail: mbdodge@ieee.org

Scott Baillie
NEC Australia
649-655 Springvale Road
Mulgrave, Victoria 3170
Australia

Phone: +61 3 9264 3986
Fax: +61 3 9264 3892
EMail: scott.baillie@nec.com.au

Umberto Bonollo
NEC Australia
649-655 Springvale Road
Mulgrave, Victoria 3170
Australia

Phone: +61 3 9264 3385
Fax: +61 3 9264 3892
EMail: umberto.bonollo@nec.com.au

Full Copyright Statement

Intellectual Property

Acknowledgement

Funding for the RFC Editor function is provided by the IETF Administrative Support Activity (IASA).