Definitions of Extension Managed Objects
for ADSL Lines

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1. Status of this Memo

This document is an Internet-Draft and is in full conformance with
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material or to cite them other than as ``work in progress.''

2. Abstract

This memo defines a portion of the Management Information Base (MIB)
for use with network management protocols in the Internet community.
In particular, it describes additional managed objects used for
managing Asymmetric Digital Subscriber Line (ADSL) interfaces not
covered by the ADSL Line MIB [RFC2662].

3. The SNMP Network Management Framework

The SNMP Management Framework presently consists of five major
components:

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

o Mechanisms for describing and naming objects and events
   for the purpose of management. The first version of this
   Structure of Management Information (SMI) is called SMIv1
   and described in STD 16, RFC 1155 [RFC1155], STD 16,
   RFC 1212 [RFC1212] and RFC 1215 [RFC1215]. The second version,
   called SMIv2, is described in STD 58, RFC 2578 [RFC2578],
   STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

o Message protocols for transferring management information.
   The first version of the SNMP message protocol is called
   SNMPv1 and described in STD 15, RFC 1157[RFC1157]. A second
   version of the SNMP message protocol, which is not an Internet
   standards track protocol, is called SNMPv2c and described in RFC
   1901 [RFC1901] and RFC 1906 [RFC1906]. The third version of the
   message protocol is called SNMPv3 and described in RFC 1906
   [RFC1906], RFC2572 [RFC2572] and RFC 2574 [RFC2574].

o Protocol operations for accessing management information. The
   first set of protocol operations and associated PDU formats is
   described in STD 15, RFC 1157 [RFC1157]. A second set of protocol
   operations and associated PDU formats is described in RFC 1905
   [RFC1905].

o A set of fundamental applications described in RFC 2573
   [RFC2573] and the view-based access control mechanism described in
   RFC 2575 [RFC2575].

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

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

This memo specifies a MIB module that is compliant to the SMIv2. A
MIB conforming to the SMIv1 can be produced through the appropriate
translations. The resulting translated MIB must be semantically
equivalent, except where objects or events are omitted because no
translation is possible (use of Counter64). Some machine-readable
information in SMIv2 will be converted into textual descriptions in
SMIv1 during the translation process. However, this loss of machine
readable information is not considered to change the semantics of the
MIB.

4. Introduction

The purpose of this memo is to define a supplemental set of managed
objects that is not covered by ADSL Line MIB as defined in [RFC2662].
This memo addresses the additional objects defined in ITU G.997.1
[ITU G.997.1].

5. Relationship of ADSL Line Extension MIB with standard MIBs

This section outlines the relationship of ADSL Line Extension MIB
with other MIBs described in RFCs and in their various degrees
of standardization. In regards to these relationship, the ADSL Line
Extension MIB follows conventions as used by the ADSL Line MIB with
one exception. The value of the RFC2863 object, ifOperstatus,
SHALL be down(2) when the ADSL line interface is in power state L3 as
defined in ITU G.992.1 [ITU G.992.1], which means no power. Its value
shall be up(1) if the ADSL line interface is in power state L0 (power on)
[ITU G.992.1] or L1 (reduced power). Power Status L2 [ITU G.992.1] is
not applicable.

6. Conventions used in the MIB

6.1 Structure

The MIB is organized to follow the same structure of the ADSL Line
MIB [RFC2662].

6.2 Additional Managed Objects

Objects specific to the management of ADSL G.Lite as defined in
ITU G.992.2 [ITU G.992.2] are:

    - ADSL Transceiver Unit - Central Office End (ATU-C)
      Transmission System and Line Mode
    - Power Management
    - Counters for Fast Retrains and Failed Fast Retrains
    - Counters for Severe Error Second-line and Unavailable Second
    - Alternative profile configuration for the Dual line mode interface

Besides the management of G.Lite, another object has been added in
order to manage the ADSL line profile.   The object is the line mode
configuration.

6.2.1 ATU-C ADSL Transmission System Parameters and Line Mode

The adslLineConfigTable needs to be extended to cover control of the
ATU-C ADSL Transmission system. Three objects are defined to monitor

and configure the transmission mode as well as the actual line mode:

        - Capability
        - Configuration
        - Actual Status

Transmission modes can further determine the line mode of the ADSL
interface. For example, if g9921PotsNonOverlapped(2) is the actual
value of the ADSL interface, the interface is operating in Full rate
ADSL. If the interface is set to g9922PotsOverlapped(9), the
interface is operating in G.Lite mode.

The transmission mode and the corresponding line mode are defined as:

```
Transmission mode                      Line Mode
---------------------------------------------------------
Regional Std. (ANSI T1.413)            Full
   [ANSI T1.413]
Regional Std. (ETSI DTS/TM06006)       Full
   [ETSI DTS/TM06006]
G.992.1 [ITU G992.1] POTS non-overlapped Full
G.992.1 POTS overlapped                Full
G.992.1 Integrated Services Digital
   Network (ISDN) non-overlapped       Full
G.992.1 ISDN overlapped                Full
G.992.1 TCM-ISDN non-overlapped        Full
G.992.1 TCM-ISDN overlapped            Full
G.992.2 POTS non-overlapped            G.Lite
G.992.2 POTS overlapped                G.Lite
G.992.2 with TCM-ISDN                  G.Lite
     non-overlapped
G.992.2 with TCM-ISDN overlapped       G.Lite
G.992.1 TCM-ISDN symmetric             Full
```

                  Table 1: Transmission Mode and Line Mode

In case more than one bit is configured for an ADSL interface and
both Full and G.Lite modes are selected, the interface is said to
be configured in the dual mode. Only one bit can be set in the Actual
object that reflects the actual mode of transmission as well as the
line mode.

6.2.2 Power Management

There are three possible power states for each managed ADSL interface
operating in the G.Lite mode. L0 is power on, L1 is power on but
reduced and L3 is power off. Power state cannot be configured by an
operator but it can be viewed via the ifOperStatus object for the

managed ADSL interface. The value of the object ifOperStatus is
set to down(2) if the ADSL interface is in power state L3 and is set
to up(1) if the ADSL line interface is in power state L0 or L1.

An ADSL line power state, if the interface is operating in the
G.Lite mode, can also be monitored by the adslLineGlitePowerState
object defined in the ADSL Line Extension table. The value of the
object enumerates the three power states attainable by the managed
interface.

6.2.3 Fast Retrain Parameters

Section 7.4.15 [ITU G.997.1] specifies fast retrain parameters. Fast
retrain parameters include two counters: fast retrain count and failed
fast retrain count. These two counters have been added to all
performance tables.

6.2.4 Counters for Severely Errored Second-line and Unavailable
      Seconds-line

ITU G.997.1 sections 6.2.1.1.7 and 6.2.1.1.9 specify two counters that
are not covered by the ADSL Line MIB [RFC2662]. These two counters
(severely errored seconds-line and unavailable seconds-line) are added
to all the performance tables.

Unavailable seconds counts cumulative number of seconds in which the
interface was unavailable during the measured period. This counter
does not include the seconds in which unavailability was caused solely
by fast retrains and failed fast retrains. Fast retrains and failed
fast retrains are considered to be part of the normal network operation
and thus are not counted as unavailable errors.

6.2.5 Counters, Interval Buckets and Thresholds

For physical-level events, there are counters, current 15-minute and
one (up to 96) 15-minute history bucket(s) of "interval-counters", as
well as current and previous 1-day interval-counters.   Threshold
notification can be configured for each physical-layer current
15-minute bucket.

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

Separate tables are provided for the 96 interval-counters. They are
indexed by {ifIndex, AdslAtu*IntervalNumber}.

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

The 15-minute event counters are of type PerfCurrentCount and
PerfIntervalCount. The 1-day event counters are of type
AdslPerfCurrDayCount and AdslPerfPrevDayCount. Both 15-minute and 1-
day time elapsed counters are of type AdslPerfTimeElapsed.

6.2.6 Alternative profile configuration for the dual line mode
       interface

The object, adslLineConfProfileDualLite, is used only when the interface
(the ADSL line and, if applicable, channel) is configured as dual mode,
that is, the object adslLineTransAtucConfig is configured with one or
more full-rate modes and one or more G.Lite modes.

The object adslLineConfProfile defined in ADSL-MIB [RFC2662] is used as
the primary full-rate profile. The newly added object in this MIB
module, adslLineConfProfileDualLite, is used to describe and configure
the G.Lite profile. Note that if one or more full-rate modes are
configured, or only G.Lite modes are configured, only the original
full-rate profile is needed. The dual-mode profile object is only
needed when both full-rate and G.Lite profiles are needed. In this
case, it will be set to the value of adslLineConfProfile when 'dynamic'
profiles are implemented.

When 'static' profiles are implemented, however, similar to the case
of the object, adslLineConfProfileName [RFC2662], this object's value
will need to algorithmically represent the line. In this case, the
value of the line's ifIndex plus a value indicating the line mode type
(e.g., G.Lite, Full-rate) will be used. Therefore, the profile's name
is a string of the concatenation of ifIndex and one of the follow
values: Full or Lite. This string will be fixed-length (i.e., 14) with
leading zero(s). For example, the profile name for ifIndex that
equals '15' and is a full rate line, it will be '0000000015Full'.

7. Conformance and Compliance

See the conformance and compliance statements within the information
module.

8. Definitions

    ADSL-LINE-EXT-MIB DEFINITIONS ::= BEGIN

```
IMPORTS
   Counter32,
   Integer32,
   NOTIFICATION-TYPE,
   MODULE-IDENTITY,
   OBJECT-TYPE                      FROM SNMPv2-SMI
   MODULE-COMPLIANCE, OBJECT-GROUP,
   NOTIFICATION-GROUP               FROM SNMPv2-CONF
   TEXTUAL-CONVENTION               FROM SNMPv2-TC
   PerfCurrentCount,
   PerfIntervalCount                FROM PerfHist-TC-MIB
   AdslPerfCurrDayCount,
   AdslPerfPrevDayCount             FROM ADSL-TC-MIB
   SnmpAdminString                  FROM SNMP-FRAMEWORK-MIB
   adslLineAlarmConfProfileEntry,
   adslLineConfProfileEntry,
   adslAturIntervalEntry,
   adslAturPerfDataEntry,
   adslAtucIntervalEntry,
   adslAtucPerfDataEntry,
   adslLineEntry,
   adslMIB                          FROM ADSL-LINE-MIB
   ;

adslExtMIB MODULE-IDENTITY

LAST-UPDATED "200204231200Z"

ORGANIZATION "IETF ADSL MIB Working Group"

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```

```
              IETF ADSL MIB Working Group
              <XDSLMIB@LISTSERV.ECIRALEIGH.COM>
              "
      DESCRIPTION
              "This MIB Module is a supplement to the ADSL-LINE-MIB
              [RFC2662]."
      REVISION     "200204231200Z"
      DESCRIPTION  "Initial Version, published as RFC xxxx. This MIB
                    module supplements the ADSL-LINE-MIB [RFC2662]."
              ::= { adslMIB 3 }

      adslExtMibObjects  OBJECT IDENTIFIER ::= { adslExtMIB 1 }

      AdslTransmissionModeType ::= TEXTUAL-CONVENTION
          STATUS        current
          DESCRIPTION
              "A set of ADSL line transmission modes, with one bit
               per mode.  The notes (F) and (L) denote Full-Rate
               and G.Lite 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)
              "
          SYNTAX      BITS {
              ansit1413(0),
              etsi(1),
              q9921PotsNonOverlapped(2),
              q9921PotsOverlapped(3),
              q9921IsdnNonOverlapped(4),
              q9921isdnOverlapped(5),
              q9921tcmIsdnNonOverlapped(6),
              q9921tcmIsdnOverlapped(7),
              q9922potsNonOverlapeed(8),
              q9922potsOverlapped(9),
              q9922tcmIsdnNonOverlapped(10),
              q9922tcmIsdnOverlapped(11),
              q9921tcmIsdnSymmetric(12)
            }
```

```
            adslLineExtTable   OBJECT-TYPE
                SYNTAX          SEQUENCE OF AdslLineExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "This table is an extension of RFC2662.  It
                     contains ADSL line configuration and
                     monitoring information. This includes the ADSL
                     line's capabilities and actual ADSL transmission
                     system."
            ::= { adslExtMibObjects 17 }

            adslLineExtEntry   OBJECT-TYPE
                SYNTAX          AdslLineExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "An entry extends the adslLineEntry defined in
                     [RFC2662].  Each entry corresponds to an ADSL
                     line."
                AUGMENTS { adslLineEntry }
            ::= { adslLineExtTable 1 }

            AdslLineExtEntry ::=
                SEQUENCE {
                adslLineTransAtucCap       AdslTransmissionModeType,
                adslLineTransAtucConfig    AdslTransmissionModeType,
                adslLineTransAtucActual    AdslTransmissionModeType,
                adslLineGlitePowerState    INTEGER,
                adslLineConfProfileDualLite SnmpAdminString
                }

            adslLineTransAtucCap OBJECT-TYPE
                SYNTAX      AdslTransmissionModeType
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The transmission modes, represented by a
                     bitmask that the ATU-C is capable of
                     supporting.  The modes available are limited
                     by the design of the equipment."
                REFERENCE "Section 7.3.2 ITU G.997.1"
            ::= { adslLineExtEntry 1 }

            adslLineTransAtucConfig OBJECT-TYPE
                SYNTAX      AdslTransmissionModeType
                MAX-ACCESS  read-write
                STATUS      current
```

                    DESCRIPTION
                        "The transmission modes, represented by a bitmask,
                         currently enabled by the ATU-C. The manager can
                         only set those modes that are supported by the
                         ATU-C. An ATU-C's supported modes are provided by
                         AdslLineTransAtucCap."
                    REFERENCE "Section 7.3.2 ITU G.997.1"
                ::= { adslLineExtEntry 2 }

                adslLineTransAtucActual OBJECT-TYPE
                    SYNTAX   AdslTransmissionModeType
                    MAX-ACCESS read-only
                    STATUS   current
                    DESCRIPTION
                        "The actual transmission mode of the ATU-C.
                         During ADSL line initialization, the ADSL
                         Transceiver Unit - Remote terminal end (ATU-R)
                         will determine the mode used for the link.
                         This value will be limited a single transmission
                         mode that is a subset of those modes enabled
                         by the ATU-C and denoted by adslLineTransAtucConfig.
                         After an initialization has occurred, its mode is
                         saved as the 'Current' mode and is persistence
                         should the link go down. This object returns 0
                         (i.e. BITS with no mode bit set) if the mode is
                         not known."
                    REFERENCE "Section 7.3.2 ITU G.997.1 "
                ::= { adslLineExtEntry 3 }

                adslLineGlitePowerState OBJECT-TYPE
                    SYNTAX   INTEGER {
                                none(1),
                                l0(2),   -- L0 Power on
                                l1(3),   -- L1 Power on but reduced
                                l3(4)   -- L3 Power off
                                }
                    MAX-ACCESS read-only
                    STATUS   current
                    DESCRIPTION
                        "The value of this object specifies the power
                         state of this interface. L0 is power on, L1 is
                         power on but reduced and L3 is power off. Power
                         state cannot be configured by an operator but it
                         can be viewed via the ifOperStatus object for the
                         managed ADSL interface. The value of the object
                         ifOperStatus is set to down(2) if the ADSL interface
                         is in power state L3 and is set to up(1) if the ADSL
                         line interface is in power state L0 or L1. If the

```
            object adslLineTransAtucActual is set to a G.992.2
            (G.Lite)-type transmission mode, the value of
            this object will be one of the valid power
            states: L0(2), L1(3), or L3(4).  Otherwise, its
            value will be none(1)."
    ::= { adslLineExtEntry 4 }

adslLineConfProfileDualLite OBJECT-TYPE
    SYNTAX SnmpAdminString
    MAX-ACCESS  read-write
    STATUS current
    DESCRIPTION
        "This object extends the definition an ADSL line and
         associated channels (when applicable) for cases when
         it is configured in dual mode, and operating in a
         G.Lite-type mode as denoted by
         adslLineTransAtucActual.  Dual mode exists when the
         object, adslLineTransAtucConfig, is configured with
         one or more full-rate modes and one or more G.Lite
         modes simultaneously.

         When 'dynamic' profiles are implemented, the value of
         object is equal to the index of the applicable row in
         the ADSL Line Configuration Profile Table,
         AdslLineConfProfileTable defined in ADSL-MIB
         [RFC2662].

         In the case when dual-mode has not been enabled, the
        value of the object will be equal to the value of the
         object adslLineConfProfile [RFC2662].

         When `static' profiles are implemented, in much
         like the case of the object, adslLineConfProfileName
         [RFC2662], this object's value will need to
         algorithmically represent the characteristics of the
         line.  In this case, the value of the line's ifIndex
         plus a value indicating the line mode type
         (e.g., G.Lite, Full-rate) will be used. Therefore,
         the profile's name is a string concatenating the
         ifIndex and one of the follow values: Full or Lite.
         This string will be fixed-length (i.e., 14) with
         leading zero(s).  For example, the profile name for
         ifIndex that equals '15' and is a full rate line, it
         will be '0000000015Full'."
    REFERENCE "Section 5.4 Profiles, RFC 2662"
    ::= { adslLineExtEntry 5 }

adslAtucPerfDataExtTable    OBJECT-TYPE
```

```
            SYNTAX          SEQUENCE OF AdslAtucPerfDataExtEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table extends adslAtucPerfDataTable [RFC2662]
                 with additional ADSL physical line counter
                 information such as unavailable seconds-line and
                 severely errored seconds-line."
            ::= { adslExtMibObjects 18 }

        adslAtucPerfDataExtEntry   OBJECT-TYPE
            SYNTAX          AdslAtucPerfDataExtEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "An entry extends the adslAtucPerfDataEntry defined
                 in [RFC2662].  Each entry corresponds to an ADSL
                 line."
            AUGMENTS { adslAtucPerfDataEntry }
            ::= { adslAtucPerfDataExtTable 1 }

        AdslAtucPerfDataExtEntry ::=
            SEQUENCE {
            adslAtucPerfStatFastR           Counter32,
            adslAtucPerfStatFailedFastR     Counter32,
            adslAtucPerfStatSesL            Counter32,
            adslAtucPerfStatUasL            Counter32,
            adslAtucPerfCurr15MinFastR      PerfCurrentCount,
            adslAtucPerfCurr15MinFailedFastR PerfCurrentCount,
            adslAtucPerfCurr15MinSesL       PerfCurrentCount,
            adslAtucPerfCurr15MinUasL       PerfCurrentCount,
            adslAtucPerfCurr1DayFastR       AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayFailedFastR AdslPerfCurrDayCount,
            adslAtucPerfCurr1DaySesL        AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayUasL        AdslPerfCurrDayCount,
            adslAtucPerfPrev1DayFastR       AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayFailedFastR AdslPerfPrevDayCount,
            adslAtucPerfPrev1DaySesL        AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayUasL        AdslPerfPrevDayCount
            }

        adslAtucPerfStatFastR OBJECT-TYPE
            SYNTAX      Counter32
            UNITS       "line retrains"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The value of this object reports the count of
```

                    the number of fast line bs since last
                    agent reset."
            REFERENCE "ITU G.997.1 Section 7.4.15.1 "
        ::= { adslAtucPerfDataExtEntry 1 }

        adslAtucPerfStatFailedFastR OBJECT-TYPE
            SYNTAX   Counter32
            UNITS   "line retrains"
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The value of this object reports the count of
                 the number of failed fast line retrains since
                 last agent reset."
            REFERENCE "ITU G.997.1 Section 7.4.15.2 "
        ::= { adslAtucPerfDataExtEntry 2 }

        adslAtucPerfStatSesL OBJECT-TYPE
            SYNTAX   Counter32
            UNITS   "seconds"
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The value of this object reports the count of
                 the number of severely errored seconds-line since
                 last agent reset."
            REFERENCE "ITU G.997.1 Section 7.2.1.1.7 "
        ::= { adslAtucPerfDataExtEntry 3 }

        adslAtucPerfStatUasL OBJECT-TYPE
            SYNTAX   Counter32
            UNITS   "seconds"
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The value of this object reports the count of
                 the number of unavailable seconds-line since
                 last agent reset."
            REFERENCE "ITU G.997.1 Section 7.2.1.1.9 "
        ::= { adslAtucPerfDataExtEntry 4 }

        adslAtucPerfCurr15MinFastR OBJECT-TYPE
            SYNTAX   PerfCurrentCount
            UNITS   "seconds"
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "For the current 15-minute interval,

                    adslAtucPerfCurr15MinFastR reports the current
                    number of seconds during which there have been
                    fast retrains."
               REFERENCE "ITU G.997.1 Section 7.4.15.1 "
          ::= { adslAtucPerfDataExtEntry 5 }

          adslAtucPerfCurr15MinFailedFastR   OBJECT-TYPE
               SYNTAX   PerfCurrentCount
               UNITS   "seconds"
               MAX-ACCESS   read-only
               STATUS   current
               DESCRIPTION
                    "For the current 15-minute interval,
                     adslAtucPerfCurr15MinFailedFastR reports the current
                     number of seconds during which there have been
                     failed fast retrains."
               REFERENCE "ITU G.997.1 Section 7.4.15.2 "
          ::= { adslAtucPerfDataExtEntry 6 }

          adslAtucPerfCurr15MinSesL OBJECT-TYPE
               SYNTAX   PerfCurrentCount
               UNITS   "seconds"
               MAX-ACCESS   read-only
               STATUS   current
               DESCRIPTION
                    "For the current 15-minute interval,
                     adslAtucPerfCurr15MinSesL reports the current
                     number of seconds during which there have been
                     severely errored seconds-line."
               REFERENCE "ITU G.997.1 Section 7.2.1.1.7 "
          ::= { adslAtucPerfDataExtEntry 7 }

          adslAtucPerfCurr15MinUasL   OBJECT-TYPE
               SYNTAX   PerfCurrentCount
               UNITS   "seconds"
               MAX-ACCESS   read-only
               STATUS   current
               DESCRIPTION
                    "For the current 15-minute interval,
                     adslAtucPerfCurr15MinUasL reports the current
                     number of seconds during which there have been
                     unavailable seconds-line."
               REFERENCE "ITU G.997.1 Section 7.2.1.1.9 "
          ::= { adslAtucPerfDataExtEntry 8 }

          adslAtucPerfCurr1DayFastR   OBJECT-TYPE
               SYNTAX   AdslPerfCurrDayCount
               UNITS   "seconds"

```
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAtucPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAtucPerfCurr1DayFastR reports the number
                 of seconds during which there have been
                 fast retrains."
            REFERENCE "ITU G.997.1 Section 7.4.15.1 "
        ::= { adslAtucPerfDataExtEntry 9 }

        adslAtucPerfCurr1DayFailedFastR    OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAtucPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAtucPerfCurr1DayFailedFastR reports the
                 number of seconds during which there have been
                 failed fast retrains."
            REFERENCE "ITU G.997.1 Section 7.4.15.2 "
        ::= { adslAtucPerfDataExtEntry 10 }

        adslAtucPerfCurr1DaySesL    OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAtucPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAtucPerfCurr1DaySesL reports the
                 number of seconds during which there have been
                 severely errored seconds-line."
            REFERENCE "ITU G.997.1 Section 7.2.1.1.7 "
        ::= { adslAtucPerfDataExtEntry 11 }

        adslAtucPerfCurr1DayUasL    OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAtucPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAtucPerfCurr1DayUasL reports the
```

               number of seconds during which there have been
               unavailable seconds-line."
           REFERENCE "ITU G.997.1 Section 7.2.1.1.9 "
       ::= { adslAtucPerfDataExtEntry 12 }

       adslAtucPerfPrev1DayFastR   OBJECT-TYPE
           SYNTAX   AdslPerfPrevDayCount
           UNITS   "seconds"
           MAX-ACCESS read-only
           STATUS   current
           DESCRIPTION
               "For the previous day, adslAtucPerfPrev1DayFastR
                reports the number of seconds during which there
                were fast retrains."
           REFERENCE "ITU G.997.1 Section 7.4.15.1 "
       ::= { adslAtucPerfDataExtEntry 13 }

       adslAtucPerfPrev1DayFailedFastR OBJECT-TYPE
           SYNTAX   AdslPerfPrevDayCount
           UNITS   "seconds"
           MAX-ACCESS read-only
           STATUS   current
           DESCRIPTION
               "For the previous day, adslAtucPerfPrev1DayFailedFastR
                reports the number of seconds during which there
                were failed fast retrains."
           REFERENCE "ITU G.997.1 Section 7.4.15.2 "
       ::= { adslAtucPerfDataExtEntry 14 }

       adslAtucPerfPrev1DaySesL   OBJECT-TYPE
           SYNTAX   AdslPerfPrevDayCount
           UNITS   "seconds"
           MAX-ACCESS read-only
           STATUS   current
           DESCRIPTION
               "For the previous day, adslAtucPerfPrev1DaySesL
                reports the number of seconds during which there
                were severely errored seconds-line."
           REFERENCE "ITU G.997.1 Section 7.2.1.1.7 "
       ::= { adslAtucPerfDataExtEntry 15 }

       adslAtucPerfPrev1DayUasL OBJECT-TYPE
           SYNTAX   AdslPerfPrevDayCount
           UNITS   "seconds"
           MAX-ACCESS read-only
           STATUS   current
           DESCRIPTION
               "For the previous day, adslAtucPerfPrev1DayUasL

```
                 reports the number of seconds during which there
                 were unavailable seconds-line."
             REFERENCE "ITU G.997.1 Section 7.2.1.1.9 "
        ::= { adslAtucPerfDataExtEntry 16 }

        adslAtucIntervalExtTable   OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAtucIntervalExtEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATU-C
                 performance data collection interval for
                 ADSL physical interfaces whose
                 IfEntries' ifType is equal to adsl(94)."
        ::= { adslExtMibObjects 19 }

        adslAtucIntervalExtEntry   OBJECT-TYPE
            SYNTAX          AdslAtucIntervalExtEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in the
                             adslAtucIntervalExtTable."
            AUGMENTS        { adslAtucIntervalEntry }
        ::= { adslAtucIntervalExtTable 1 }

        AdslAtucIntervalExtEntry ::=
            SEQUENCE {
            adslAtucIntervalFastR           PerfIntervalCount,
            adslAtucIntervalFailedFastR     PerfIntervalCount,
            adslAtucIntervalSesL            PerfIntervalCount,
            adslAtucIntervalUasL            PerfIntervalCount
            }

        adslAtucIntervalFastR OBJECT-TYPE
            SYNTAX      PerfIntervalCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current interval, adslAtucIntervalFastR
                 reports the current number of seconds during which
                 there have been fast retrains."
        ::= { adslAtucIntervalExtEntry 1 }

        adslAtucIntervalFailedFastR OBJECT-TYPE
            SYNTAX      PerfIntervalCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
```

```
             STATUS      current
             DESCRIPTION
                 "For the each interval, adslAtucIntervalFailedFastR
                  reports the number of seconds during which
                  there have been failed fast retrains."
        ::= { adslAtucIntervalExtEntry 2 }

        adslAtucIntervalSesL OBJECT-TYPE
             SYNTAX      PerfIntervalCount
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "For the each interval, adslAtucIntervalSesL
                  reports the number of seconds during which
                  there have been severely errored seconds-line."
        ::= { adslAtucIntervalExtEntry 3 }

        adslAtucIntervalUasL OBJECT-TYPE
             SYNTAX      PerfIntervalCount
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "For the each interval, adslAtucIntervalUasL
                  reports the number of seconds during which
                  there have been unavailable seconds-line."
        ::= { adslAtucIntervalExtEntry 4 }

        adslAturPerfDataExtTable   OBJECT-TYPE
             SYNTAX         SEQUENCE OF AdslAturPerfDataExtEntry
             MAX-ACCESS     not-accessible
             STATUS         current
             DESCRIPTION
                 "This table contains ADSL physical line counters
                  not defined in the adslAturPerfDataTable
                  from the ADSL-LINE-MIB [RFC2662]."
        ::= { adslExtMibObjects 20 }

        adslAturPerfDataExtEntry   OBJECT-TYPE
             SYNTAX         AdslAturPerfDataExtEntry
             MAX-ACCESS     not-accessible
             STATUS         current
             DESCRIPTION
                 "An entry extends the adslAturPerfDataEntry defined
                  in [RFC2662].  Each entry corresponds to an ADSL
                  line."
             AUGMENTS { adslAturPerfDataEntry }
```

```
            ::= { adslAturPerfDataExtTable 1 }

            AdslAturPerfDataExtEntry ::=
                SEQUENCE {
                adslAturPerfStatSesL              Counter32,
                adslAturPerfStatUasL              Counter32,
                adslAturPerfCurr15MinSesL         PerfCurrentCount,
                adslAturPerfCurr15MinUasL         PerfCurrentCount,
                adslAturPerfCurr1DaySesL          AdslPerfCurrDayCount,
                adslAturPerfCurr1DayUasL          AdslPerfCurrDayCount,
                adslAturPerfPrev1DaySesL          AdslPerfPrevDayCount,
                adslAturPerfPrev1DayUasL          AdslPerfPrevDayCount
            }

            adslAturPerfStatSesL OBJECT-TYPE
                SYNTAX       Counter32
                UNITS        "seconds"
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "The value of this object reports the count of
                     severely errored second-line since the last agent
                     reset."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.7 "
            ::= { adslAturPerfDataExtEntry 1 }

            adslAturPerfStatUasL OBJECT-TYPE
                SYNTAX       Counter32
                UNITS        "seconds"
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "The value of this object reports the count of
                     unavailable seconds-line since the last agent
                     reset."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.9 "
            ::= { adslAturPerfDataExtEntry 2 }

            adslAturPerfCurr15MinSesL OBJECT-TYPE
                SYNTAX       PerfCurrentCount
                UNITS        "seconds"
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "For the current 15-minute interval,
                     adslAturPerfCurr15MinSesL reports the current
                     number of seconds during which there have been
                     severely errored seconds-line."
```

```
            REFERENCE "ITU G.997.1 Section 7.2.1.2.7 "
        ::= { adslAturPerfDataExtEntry 3 }

        adslAturPerfCurr15MinUasL   OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current 15-minute interval,
                 adslAturPerfCurr15MinUasL reports the current
                 number of seconds during which there have been
                 available seconds-line."
            REFERENCE "ITU G.997.1 Section 7.2.1.2.9 "
        ::= { adslAturPerfDataExtEntry 4 }

        adslAturPerfCurr1DaySesL    OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAturPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAturPerfCurr1DaySesL reports the
                 number of seconds during which there have been
                 severely errored seconds-line."
            REFERENCE "ITU G.997.1 Section 7.2.1.2.7 "
        ::= { adslAturPerfDataExtEntry 5 }

        adslAturPerfCurr1DayUasL    OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "For the current day as measured by
                 adslAturPerfCurr1DayTimeElapsed [RFC 2662],
                 adslAturPerfCurr1DayUasL reports the
                 number of seconds during which there have been
                 unavailable seconds-line."
            REFERENCE "ITU G.997.1 Section 7.2.1.2.9 "
        ::= { adslAturPerfDataExtEntry 6 }

        adslAturPerfPrev1DaySesL     OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
```

```
        STATUS        current
        DESCRIPTION
            "For the previous day, adslAturPerfPrev1DaySesL
             reports the number of seconds during which there
             were severely errored seconds-line."
        REFERENCE "ITU G.997.1 Section 7.2.1.2.7 "
    ::= { adslAturPerfDataExtEntry 7 }

    adslAturPerfPrev1DayUasL OBJECT-TYPE
        SYNTAX        AdslPerfPrevDayCount
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For the previous day, adslAturPerfPrev1DayUasL
             reports the number of seconds during which there
             were severely errored seconds-line."
        REFERENCE "ITU G.997.1 Section 7.2.1.2.9 "
    ::= { adslAturPerfDataExtEntry 8 }

    adslAturIntervalExtTable   OBJECT-TYPE
        SYNTAX         SEQUENCE OF AdslAturIntervalExtEntry
        MAX-ACCESS     not-accessible
        STATUS         current
        DESCRIPTION
            "This table provides one row for each ATU-R
             performance data collection interval for
             ADSL physical interfaces whose
             IfEntries' ifType is equal to adsl(94)."
    ::= { adslExtMibObjects 21 }

    adslAturIntervalExtEntry   OBJECT-TYPE
        SYNTAX         AdslAturIntervalExtEntry
        MAX-ACCESS     not-accessible
        STATUS         current
        DESCRIPTION    "An entry in the
                        adslAturIntervalExtTable."
        AUGMENTS       { adslAturIntervalEntry }
    ::= { adslAturIntervalExtTable 1 }

    AdslAturIntervalExtEntry ::=
        SEQUENCE {
        adslAturIntervalSesL            PerfIntervalCount,
        adslAturIntervalUasL            PerfIntervalCount
        }

    adslAturIntervalSesL OBJECT-TYPE
        SYNTAX        PerfIntervalCount
```

```
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "For the each interval, adslAturIntervalSesL
             reports the number of seconds during which
             there have been severely errored seconds-line."
    ::= { adslAturIntervalExtEntry 1 }

    adslAturIntervalUasL OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "For the each interval, adslAturIntervalUasL
             reports the number of seconds during which
             there have been unavailable seconds-line."
    ::= { adslAturIntervalExtEntry 2 }

    adslConfProfileExtTable   OBJECT-TYPE
        SYNTAX          SEQUENCE OF AdslConfProfileExtEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "The adslConfProfileExtTable extends the ADSL line
             profile configuration information in the
             adslLineConfProfileTable from the ADSL-LINE-MIB
             [RFC2662] by adding the ability to configure the
             ADSL physical line mode."
    ::= { adslExtMibObjects 22 }

    adslConfProfileExtEntry   OBJECT-TYPE
        SYNTAX          AdslConfProfileExtEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "An entry extends the adslLineConfProfileEntry defined
             in [RFC2662].  Each entry corresponds to an ADSL line
             profile."
        AUGMENTS { adslLineConfProfileEntry }
    ::= { adslConfProfileExtTable 1 }

    AdslConfProfileExtEntry ::=
        SEQUENCE {
            adslConfProfileLineType  INTEGER
        }
```

```
adslConfProfileLineType OBJECT-TYPE
    SYNTAX      INTEGER {
        noChannel (1),          -- no channels exist
        fastOnly (2),           -- only fast channel exists
        interleavedOnly (3),  -- only interleaved channel
                                -- exist
        fastOrInterleaved (4),-- either fast or interleaved
                                -- channels can exist, but
                                -- only one at any time
        fastAndInterleaved (5)-- both the fast channel and
                                -- the interleaved channel
                                -- exist
        }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object is used to configure the ADSL physical
         line mode.  It has following valid values:

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

         In the case when no value has been set, the default
         Value is noChannel(1).
         "
    DEFVAL { fastOnly }
::= { adslConfProfileExtEntry 1 }

adslAlarmConfProfileExtTable   OBJECT-TYPE
    SYNTAX          SEQUENCE OF AdslAlarmConfProfileExtEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This table extends the adslLineAlarmConfProfileTable
         and provides threshold parameters for all the
         counters defined in this MIB module."
::= { adslExtMibObjects 23 }

adslAlarmConfProfileExtEntry   OBJECT-TYPE
    SYNTAX          AdslAlarmConfProfileExtEntry
    MAX-ACCESS      not-accessible
```

```
        STATUS          current
        DESCRIPTION
            "An entry extends the adslLineAlarmConfProfileTable
             defined in [RFC2662].  Each entry corresponds to
             an ADSL alarm profile."
        AUGMENTS { adslLineAlarmConfProfileEntry }
    ::= { adslAlarmConfProfileExtTable 1 }

    AdslAlarmConfProfileExtEntry ::=
        SEQUENCE {
        adslAtucThreshold15MinFailedFastR     Integer32,
        adslAtucThreshold15MinSesL            Integer32,
        adslAtucThreshold15MinUasL            Integer32,
        adslAturThreshold15MinSesL            Integer32,
        adslAturThreshold15MinUasL            Integer32
    }

    adslAtucThreshold15MinFailedFastR   OBJECT-TYPE
        SYNTAX      Integer32(0..900)
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The first time the value of the corresponding
             instance of adslAtucPerfCurr15MinFailedFastR reaches
             or exceeds this value within a given 15-minute
             performance data collection period, an
             adslAtucFailedFastRThreshTrap  notification will
             be generated. The value '0' will disable the
             notification. The default value of this object is
             '0'."
        DEFVAL { 0 }
    ::= { adslAlarmConfProfileExtEntry 1 }

    adslAtucThreshold15MinSesL OBJECT-TYPE
        SYNTAX      Integer32(0..900)
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The first time the value of the corresponding instance
             of adslAtucPerf15MinSesL reaches or exceeds
             this value within a given 15-minute performance data
             collection period, an adslAtucSesLThreshTrap
             notification will be generated. The value '0' will
             disable the notification.  The default value of this
             object is '0'."
        DEFVAL { 0 }
```

```
              ::= { adslAlarmConfProfileExtEntry 2 }

          adslAtucThreshold15MinUasL OBJECT-TYPE
              SYNTAX      Integer32(0..900)
              UNITS       "seconds"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                  "The first time the value of the corresponding instance
                   of adslAtucPerf15MinUasL reaches or exceeds
                   this value within a given 15-minute performance data
                   collection period, an adslAtucUasLThreshTrap
                   notification will be generated. The value '0' will
                   disable the notification.  The default value of this
                   object is '0'."
              DEFVAL { 0 }
          ::= { adslAlarmConfProfileExtEntry 3 }

          adslAturThreshold15MinSesL OBJECT-TYPE
              SYNTAX      Integer32(0..900)
              UNITS       "seconds"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                  "The first time the value of the corresponding instance
                   of adslAturPerf15MinSesL reaches or exceeds
                   this value within a given 15-minute performance data
                   collection period, an adslAturSesLThreshTrap
                   notification will be generated. The value '0' will
                   disable the notification.  The default value of this
                   object is '0'."
              DEFVAL { 0 }
          ::= { adslAlarmConfProfileExtEntry 4 }

          adslAturThreshold15MinUasL OBJECT-TYPE
              SYNTAX      Integer32(0..900)
              UNITS       "seconds"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                  "The first time the value of the corresponding instance
                   of adslAturPerf15MinUasL reaches or exceeds
                   this value within a given 15-minute performance data
                   collection period, an adslAturUasLThreshTrap
                   notification will be generated. The value '0' will
                   disable the notification.  The default value of this
                   object is '0'."
              DEFVAL { 0 }
```

```
          ::= { adslAlarmConfProfileExtEntry 5 }

    --    definitions

     adslExtTraps OBJECT IDENTIFIER ::= { adslExtMibObjects 24 }

    adslExtAtucTraps OBJECT IDENTIFIER ::= { adslExtTraps 1 }

    adslExtAtucTrapsPrefix OBJECT IDENTIFIER ::= { adslExtAtucTraps 0 }

         adslAtucFailedFastRThreshTrap     NOTIFICATION-TYPE
             OBJECTS { adslAtucPerfCurr15MinFailedFastR }
             STATUS  current
             DESCRIPTION
                 "Failed Fast Retrains 15-minute threshold reached."
         ::= { adslExtAtucTrapsPrefix 1 }

         adslAtucSesLThreshTrap     NOTIFICATION-TYPE
             OBJECTS { adslAtucPerfCurr15MinSesL }
             STATUS  current
             DESCRIPTION
                 "Severely errored seconds-line 15-minute threshold
                  reached."
         ::= { adslExtAtucTrapsPrefix 2 }

         adslAtucUasLThreshTrap     NOTIFICATION-TYPE
             OBJECTS { adslAtucPerfCurr15MinUasL }
             STATUS  current
             DESCRIPTION
                 "Unavailable seconds-line 15-minute threshold reached."
         ::= { adslExtAtucTrapsPrefix 3 }


    adslExtAturTraps OBJECT IDENTIFIER ::= { adslExtTraps 2 }

    adslExtAturTrapsPrefix OBJECT IDENTIFIER ::= { adslExtAturTraps 0 }

         adslAturSesLThreshTrap     NOTIFICATION-TYPE
             OBJECTS { adslAturPerfCurr15MinSesL }
             STATUS  current
             DESCRIPTION
                 "Severely errored seconds-line 15-minute threshold
                  reached."
         ::= { adslExtAturTrapsPrefix 1 }

         adslAturUasLThreshTrap     NOTIFICATION-TYPE
             OBJECTS { adslAturPerfCurr15MinUasL }
             STATUS  current
```

```
              DESCRIPTION
                  "Unavailable seconds-line 15-minute threshold reached."
          ::= { adslExtAturTrapsPrefix 2 }


      -- conformance information

      adslExtConformance OBJECT IDENTIFIER ::= { adslExtMIB 2 }

      adslExtGroups OBJECT IDENTIFIER ::= { adslExtConformance 1 }
      adslExtCompliances OBJECT IDENTIFIER ::= { adslExtConformance 2 }

          -- ATU-C agent compliance statements

          adslExtLineMibAtucCompliance MODULE-COMPLIANCE
              STATUS   current
              DESCRIPTION
                  "The compliance statement for SNMP entities which
                   represent ADSL ATU-C interfaces."

              MODULE  -- this module
              MANDATORY-GROUPS
                 {
                 adslExtLineGroup,
                 adslExtLineConfProfileControlGroup,
                 adslExtLineAlarmConfProfileGroup
                 }

              GROUP        adslExtAtucPhysPerfCounterGroup
              DESCRIPTION
                  "This group is optional.  Implementations which
                   require continuous ATU-C physical event counters
                   should implement this group."

              GROUP        adslExtAturPhysPerfCounterGroup
              DESCRIPTION
                  "This group is optional.  Implementations which
                   require continuous ATU-R physical event counters
                   should implement this group."

              GROUP   adslExtNotificationsGroup
              DESCRIPTION
             "This group is optional.  Implementations which
                   support TCA (Threshold Crossing Alert) should
                   implement this group."

              OBJECT       adslAtucThreshold15MinFailedFastR
              MIN-ACCESS   read-write
```

```
                 DESCRIPTION
                     "Read-write access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

                 OBJECT       adslAtucThreshold15MinSesL
                 MIN-ACCESS  read-write
                 DESCRIPTION
                     "Read-write access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

                 OBJECT       adslAtucThreshold15MinUasL
                 MIN-ACCESS  read-write
                 DESCRIPTION
                     "Read-write access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

                 OBJECT       adslAturThreshold15MinSesL
                 MIN-ACCESS  read-write
                 DESCRIPTION
                     "Read-write access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

                 OBJECT       adslAturThreshold15MinUasL
                 MIN-ACCESS  read-write
                 DESCRIPTION
                     "Read-write access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

                 OBJECT       adslLineConfProfileDualLite
                 MIN-ACCESS  read-only
                 DESCRIPTION
                     "Read-only access is applicable only when
                      static profiles as defined in ADSL Line MIB
                      [RFC2662] are implemented."

            ::= { adslExtCompliances 1 }

            -- units of conformance
            adslExtLineGroup    OBJECT-GROUP
                OBJECTS {
                    adslLineConfProfileDualLite,
                    adslLineTransAtucCap,
                    adslLineTransAtucConfig,
```

```
                adslLineTransAtucActual,
                adslLineGlitePowerState
              }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing extended
            configuration information about an ADSL Line."
    ::= { adslExtGroups 1 }

    adslExtAtucPhysPerfCounterGroup OBJECT-GROUP
        OBJECTS {
            adslAtucPerfStatFastR,
            adslAtucPerfStatFailedFastR,
            adslAtucPerfCurr15MinFastR,
            adslAtucPerfCurr15MinFailedFastR,
            adslAtucPerfCurr1DayFastR,
            adslAtucPerfCurr1DayFailedFastR,
            adslAtucPerfPrev1DayFastR,
            adslAtucPerfPrev1DayFailedFastR,
            adslAtucPerfStatSesL,
            adslAtucPerfStatUasL,
            adslAtucPerfCurr15MinSesL,
            adslAtucPerfCurr15MinUasL,
            adslAtucPerfCurr1DaySesL,
            adslAtucPerfCurr1DayUasL,
            adslAtucPerfPrev1DaySesL,
            adslAtucPerfPrev1DayUasL,
            adslAtucIntervalFastR,
            adslAtucIntervalFailedFastR,
            adslAtucIntervalSesL,
            adslAtucIntervalUasL
          }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing raw performance
            counts on an ADSL Line (ATU-C end)."
    ::= { adslExtGroups 2 }

    adslExtAturPhysPerfCounterGroup OBJECT-GROUP
        OBJECTS {
            adslAturPerfStatSesL,
            adslAturPerfStatUasL,
            adslAturPerfCurr15MinSesL,
            adslAturPerfCurr15MinUasL,
            adslAturPerfCurr1DaySesL,
            adslAturPerfCurr1DayUasL,
            adslAturPerfPrev1DaySesL,
            adslAturPerfPrev1DayUasL,
```

```
                     adslAturIntervalSesL, adslAturIntervalUasL
                   }
             STATUS      current
             DESCRIPTION
                 "A collection of objects providing raw performance
                 counts on an ADSL Line (ATU-C end)."
         ::= { adslExtGroups 3 }

         adslExtLineConfProfileControlGroup OBJECT-GROUP
             OBJECTS {
                 adslConfProfileLineType
               }
             STATUS      current
             DESCRIPTION
                 "A collection of objects providing profile
                 control for the ADSL system."
         ::= { adslExtGroups 4 }

         adslExtLineAlarmConfProfileGroup OBJECT-GROUP
             OBJECTS {
                   adslAtucThreshold15MinFailedFastR,
                   adslAtucThreshold15MinSesL,
                   adslAtucThreshold15MinUasL,
                   adslAturThreshold15MinSesL,
                   adslAturThreshold15MinUasL
               }
             STATUS      current
             DESCRIPTION
                 "A collection of objects providing alarm profile
                 control for the ADSL system."
         ::= { adslExtGroups 5 }

         adslExtNotificationsGroup NOTIFICATION-GROUP
             NOTIFICATIONS {
                 adslAtucFailedFastRThreshTrap,
                 adslAtucSesLThreshTrap,
                 adslAtucUasLThreshTrap,
                 adslAturSesLThreshTrap,
                 adslAturUasLThreshTrap
             }
             STATUS        current
             DESCRIPTION
                 "The collection of ADSL extension notifications."
            ::= { adslExtGroups 6 }

   END

   9.  Acknowledgments
```

This document is a product of the ADSL MIB Working Group.

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11. Security Considerations

   The following security matters should be considered when implementing
   this MIB.

   1) Blocking unauthorized access to the ADSL MIB via the element
   management system is outside the scope of this document. It should be
   noted that access to the MIB permits the unauthorized entity to
   modify the profiles (section 6.4) such that both subscriber service
   and network operations can be interfered with. Subscriber service can
   be altered by modifying any of a number of service characteristics
   such as rate partitioning and maximum transmission rates. Network
   operations can be impacted by modification of notification thresholds
   such as Signal-to-Noise Ratio (SNR) margins.

   2) There are a number of managed objects in this MIB that may be
   considered to contain sensitive information. In particular, the
   certain objects may be considered sensitive in many environments,
   since it would allow an intruder to obtain information about which
   vendor's equipment is in use on the network. Therefore, it may be
   important in some environments to control read access to these
   objects and possibly to even encrypt the values of these object when
   sending them over the network via SNMP. Not all versions of SNMP
   provide features for such a secure environment.

   SNMPv1 by itself is such an insecure environment. Even if the
   network itself is secure (for example by using IPSec), even then,
   there is no control as to who on the secure network is allowed to
   access and GET (read) the objects in this MIB. It is recommended
   that the implementors consider the security features as provided by
   the SNMPv3 framework. Specifically, the use of the User-based
   Security Model RFC 2574 [21] and the View-based Access Control Model
   RFC 2575 [23] is recommended.

   It is then a customer/user responsibility to ensure that the SNMP
   entity giving access to an instance of this MIB, is properly
   configured to give access to those objects only to those principals
   (users) that have legitimate rights to access them.

   3) The profile mechanism presented in this document requires specific
   attention. The implementor of this MIB has a choice of implementing
   either 'static' or 'dynamic' profiles. This decision must be
   consistent with the implementation of RFC2662.

In the case of 'static' profiles, the elements of the profile are
read-write as opposed to read-create when 'dynamic' profiles are
implemented:

- adslConfProfileLineType,
  - adslAtucThreshold15MinFailedFastR,
  - adslAtucThreshold15MinSesL,
  - adslAtucThreshold15MinUasL,
- adslAturThreshold15MinSesL, and
  - adslAturThreshold15MinUasL.

This decision also impacts the mechanics of the index,
adslLineConfProfileDualLite. When 'static' profiles are implemented,
its value is algorithmically set by the system and its value is
based on the ifIndex, hence not guaranteed across system reboots.
Similar to the handling of adslLineConfProfile [RFC2662], the
implementor of this MIB must ensure that the profile object values
associated with these indices are maintained across system reboots.

In the case of dynamic profiles, this object is set by the SNMP
manager. The implementor of this MIB may want to provide view of the
profile on a customer-by-customer standpoint, but should be cautious
of the dynamic nature of these objects.

4) ADSL layer connectivity from the ATU-R will permit the subscriber
to manipulate both the ADSL link directly and the ADSL overhead
control channel(AOC)/embedded operations channel (EOC)
for their own loop. For example, unchecked or unfiltered
fluctuations initiated by the subscriber could generate sufficient
notifications to potentially overwhelm either the management
interface to the network or the element manager. Other attacks
affecting the ATU-R portions of the MIB may also be possible.

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Acknowledgement

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