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Definitions of Extension Managed Objects for ADSL Lines

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1. Status of this Memo

2. Abstract

This document defines a standard SNMP MIB for additional functions not covered by the ADSL Line MIB [1].

3. The SNMP Network Management Framework

The SNMP Management Framework presently consists of five major components:

- An overall architecture, described in RFC 2571 [11].

- 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 [14], STD 16, RFC 1212 [15] and RFC 1215 [16]. The second version, called SMIv2, is described in STD 58, RFC 2578 [1], STD 58, RFC 2579 [2] and STD 58, RFC 2580 [17].

- Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in RFC 1157 [7]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in RFC 1901 [18] and RFC 1906 [19]. The third version of the message protocol is called SNMPv3 and described in RFC 1906 [19], RFC 2272 [20] and RFC 2274 [21].

- Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in RFC 1157 [7]. A second set of protocol operations and associated PDU formats is described in RFC 1905 [8].

- A set of fundamental applications described in RFC 2273 [22] and the view-based access control mechanism described in RFC 2275 [23].

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 document 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 (e.g., 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. Change Log

This section tracks changes made to the revisions of the Internet Drafts of this document. It will be deleted when the document is published as an RFC.

The following changes were made for the version of the document dated May 10, 2000.

- Fixed the syntax AUGMENT for all tables.
- Corrected typos and added section 10, 11 and 12.

The following changes were made for the version of the document dated May 10, 2000.

- Renamed adslLineTransAtucCapActual to adslLineTransAtucActual

The following changes were made for the version of the document dated March 10, 2000.

- Added a new object in the adslLineExtTable describing the G.lite power state.

The following changes were made for the version of the document dated October 20, 1999.

- Changed adslLineExtTable to include config ATU-C, ATU-C and ATU-R actual transmission capabilities.
- renamed adslProfileLineMode to adslProfileLineType to match rfc2662 adslLineType object.
- Added two objects in the adslLineExtTable: one for adslLineModeConfig and adslLineModeActual.
- Added a new textual convention for ADSL line mode.
- Corrected the MIB compiled errors and typos.

5. 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 [10]. This memo addresses the additional objects defined in ITU G.997.1 [8]. These additional objects specifically address the management capabilities of ADSL "Lite" as defined by ITU-T G.992.2 [9].

6. Relationship of the 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". ADSL Line Extension MIB obeys the same relationship between ADSL Line MIB to other standard MIBs with one exception for the ifOperStatus as defined in RFC 1213 [3].

6.1 ifOperStatus

ifOperStatus is set to down(2) when the ADSL line interface is in power state L2, which means no power. ifOperStatus is set to up(1) if the ADSL line interface is in power state L0 (power on) or L1 (reduced power).

7. Conventions used in the MIB

7.1 Structure

The MIB is organized to follow the same structure of the ADSL Line MIB [1].

7.2 Additional Managed Objects

A few objects are added to cover the ADSL "Lite" management and they are:

- 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 ADSL "Lite", another object has been added to the ADSL Line MIB [10] in order to manage the ADSL line profile. The object is the line mode configuration.

The MIB definitions are attached. The MIB will be branched from the ADSL Line MIB [10].

7.2.1 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 transmssion mode and the corresponding line mode are defined as:

Transmission mode	Line Mode
Regional Std. (ANSI T1.413)	Full
Regional Std. (ETSI DTS/TM06006)	Full
G.992.1 POTS non-overlapped	Full
G.992.1 POTS overlapped	Full
G.992.1 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	Lite
G.992.2 POTS overlapped	Lite
G.992.2 with TCM-ISDN non-overlapped	Lite
G.992.2 with TCM-ISDN overlapped	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 Lite modes are selected, the interface is said to configure 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.

7.2.2 Power Management

There are three power states for each managed ADSL interface operating in the G.lite mode. L0 is power on, L1 is power on but reduced and L2 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 L2 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.

7.2.3 Fast Retrain Parameters

Section 7.4.15 of 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.

7.2.4 Counters for Severe Error Second-line and Unavailable Second

Section 7.2.1.1.7 and section 7.2.1.1.9 specify two counters that are not covered by the ADSL Line MIB [10]. These two counters (severe error seconds-line and unavailable seconds) 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 retrins. Fast retrains and failed fast retrains are considered to be part of the normal network operation and thus are not counted as unavailable errors.

7.2.5 Alternative profile configuration for the Dual line mode interface

This object is used only when the interface (for the ADSL line or channel) is configured as dual mode, that is, the object adslLineTransAtucConfig is configued with one or more full-rate modes and one or more Lite modes.

The object adslLineConfProfile defined in ADSL-MIB [10] is used as the primary full-rate profile. The newly added object in this MIB module, adslLineConfProfileDualLite is used to describe or configure the Lite profile. Note that if one or more full-rate modes are configured, or only 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 lite profiles are needed.

If the static profile is used, the profile name is the ifIndex ASCII string plus the differentiator string appended to the end of the static profile name. For example, for interface 100, the object adslLineConfProfile is set by the agent to be "100Full" and the object adslLineConfProfileDualLite is set to be "100Lite".

8. Conformance and Compliance

See the conformance and compliance statements within the information module.

9. Definitions

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

```
      IMPORTS
         Counter32,
         Unsigned32,
         NOTIFICATION-TYPE,
         MODULE-IDENTITY, Gauge32,
         OBJECT-TYPE, mib-2                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,
         AdslPerfTimeElapsed,
         AdslLineCodingType                FROM ADSL-TC-MIB
         ifIndex                           FROM IF-MIB
         SnmpAdminString                   FROM SNMP-FRAMEWORK-MIB
         adslLineConfProfileName,
         adslAtucIntervalNumber,
         adslAturIntervalNumber,
         adslLineAlarmConfProfileName,
         adslMIB                           FROM ADSL-LINE-MIB
         ;

      adslExtMIB MODULE-IDENTITY

      LAST-UPDATED "0101141200Z"

      ORGANIZATION "IETF ADSL MIB Working Group"

      CONTACT-INFO
            "
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```

```
      DESCRIPTION
             "This MIB Module is a supplement to the ADSL-LINE-MIB [1]."
             ::= { 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 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 contains ADSL line configuration and
```

```
   monitoring
                    information not defined in the adslLineTable from
   the
                    ADSL-LINE-MIB [1].  This includes the 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 [1].
   Each
                     entry corresponds to an ADSL line."
            INDEX { ifIndex }
            ::= { 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 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 [8]"
            ::= { adslLineExtEntry 1 }

            adslLineTransAtucConfig OBJECT-TYPE
                SYNTAX      AdslTransmissionModeType
                MAX-ACCESS  read-write
                STATUS      current
                DESCRIPTION
                    "The transmission modes that the ATU-C must enable
                     for the line.  The ATU-C's enable modes must be
                     a subset of its capable modes."
                REFERENCE "Section 7.3.2 ITU G.997.1 [8]"
```

```
            ::= { adslLineExtEntry 2 }

            adslLineTransAtucActual OBJECT-TYPE
                SYNTAX      AdslTransmissionModeType
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The transmission mode of the ATU-C. This object
                     returns 0 (i.e BITS with no mode bit set) if there
                     is no mode currently known.  The initialization
                     with the ATU-R will determine the mode used
                     and the result must be a one-mode subset of the
                     'Enable' modes.  After an initialization has
   occurred,
                     its mode is saved as the 'Current' mode and it
                     should persist even if the link goes down
   subsequently. This leaves a hint on what may be
                     used next time."
                REFERENCE "Section 7.3.2 ITU G.997.1 [8]"
            ::= { adslLineExtEntry 3 }

            adslLineGlitePowerState OBJECT-TYPE
                SYNTAX      INTEGER {
                            none(1),
                            l0(2),          -- L0 Power on
                            l1(3),          -- L1 Power on but reduced
                            l2(4)           -- L2 Power off
                            }
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The value of this object specifies the power state
                     this interface is in.  If the object
   adslLineModeActual
                     is set to glite, the value of this object can be
   either
                     one of the power state from L0 to L2.  If the
   object
                     adslLineTransAtucActual is set to other than
   G.lite,
                     the value of this object is always set to none(1)."
            ::= { adslLineExtEntry 4 }

            adslLineConfProfileDualLite OBJECT-TYPE
                SYNTAX     SnmpAdminString
                MAX-ACCESS read-write
                STATUS     current
                DESCRIPTION
```

```
                "The value of this object identifies the row
   in the ADSL Line Configuration Profile Table,
   (adslLineConfProfileTable), which applies for this
   ADSL line, and channels if applicable, when the                mode
   after initialization is any G.992.2 (G.lite)                 mode
   AND adslLineTransAtucConfig has enabled                  dual-mode.
   Dual-mode in this case means one or more                  Full-Rate
   modes AND one or more Lite modes enabled.

                If dual-mode has not been enabled by this MIB or if
                the ATU-C does not support this extension MIB, then
                the previously existing adslLineConfProfile is used
                even if the ATU-C mode is one of the G.992.2 modes."
          ::= { adslLineExtEntry 5 }

          adslAtucPerfDataExtTable   OBJECT-TYPE
              SYNTAX          SEQUENCE OF AdslAtucPerfDataExtEntry
              MAX-ACCESS      not-accessible
              STATUS          current
              DESCRIPTION
                  "This table contains ADSL physical line counters
   information not defined in the adslAtucPerfDataTable from the ADSL-
   LINE-MIB [10]."
          ::= { adslExtMibObjects 18 }

          adslAtucPerfDataExtEntry   OBJECT-TYPE
              SYNTAX          AdslAtucPerfDataExtEntry
              MAX-ACCESS      not-accessible
              STATUS          current
              DESCRIPTION
                  "An entry extends the adslAtucPerfDataEntry defined
   in [10].  Each entry corresponds to an ADSL line."
          INDEX { ifIndex }
          ::= { 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
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The value of this object indicates the count of
    fast retrains."
                REFERENCE "ITU G.997.1 Section 7.4.15.1 [8]"
            ::= { adslAtucPerfDataExtEntry 1 }

            adslAtucPerfStatFailedFastR OBJECT-TYPE
                SYNTAX      Counter32
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The value of this object indicates the count of
    failed fast retrains."
                REFERENCE "ITU G.997.1 Section 7.4.15.2 [8]"
            ::= { adslAtucPerfDataExtEntry 2 }

            adslAtucPerfStatSesL OBJECT-TYPE
                SYNTAX      Counter32
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The value of this object indicates the count of
    severely errored second-line."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.7 [8]"
            ::= { adslAtucPerfDataExtEntry 3 }

            adslAtucPerfStatUasL OBJECT-TYPE
                SYNTAX      Counter32
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "The value of this object indicates the count of
    unavailable second."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.9 [8]"
            ::= { adslAtucPerfDataExtEntry 4 }
```

```
            adslAtucPerfCurr15MinFastR OBJECT-TYPE
                SYNTAX      PerfCurrentCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the current 15 minute interval
                    when there was fast retrains."
                REFERENCE "ITU G.997.1 Section 7.4.15.1 [8]"
            ::= { adslAtucPerfDataExtEntry 5 }

            adslAtucPerfCurr15MinFailedFastR   OBJECT-TYPE
                SYNTAX      PerfCurrentCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the current 15 minute interval
                    when there was failed fast retrains."
                REFERENCE "ITU G.997.1 Section 7.4.15.2 [8]"
            ::= { adslAtucPerfDataExtEntry 6 }

            adslAtucPerfCurr15MinSesL OBJECT-TYPE
                SYNTAX      PerfCurrentCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the current 15 minute interval
                    when there was fast retrains."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.7 [8]"
            ::= { adslAtucPerfDataExtEntry 7 }

            adslAtucPerfCurr15MinUasL   OBJECT-TYPE
                SYNTAX      PerfCurrentCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the current 15 minute interval
                    when there was count for unavailable errored
  seconds."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.9 [8]"
            ::= { adslAtucPerfDataExtEntry 8 }

            adslAtucPerfCurr1DayFastR    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
```

```
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was fast
                    retrains during the current day as measured by
                    adslAtucPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.4.15.1 [8]"
            ::= { adslAtucPerfDataExtEntry 9 }

            adslAtucPerfCurr1DayFailedFastR    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was
   failed
                    fast retrains during the current day as measured by
                    adslAtucPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.4.15.2 [8]"
            ::= { adslAtucPerfDataExtEntry 10 }

            adslAtucPerfCurr1DaySesL    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was
   Severe
                    Errored Seconds during the current day as measured
   by
                    adslAtucPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.7 [8]"
            ::= { adslAtucPerfDataExtEntry 11 }

            adslAtucPerfCurr1DayUasL    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was
   Unavailable
                    Errored Seconds during the current day as measured
   by
                    adslAtucPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.9 [8]"
```

```
            ::= { adslAtucPerfDataExtEntry 12 }

            adslAtucPerfPrev1DayFastR     OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    fast retrains within the most recent previous
                    1-day period."
                REFERENCE "ITU G.997.1 Section 7.4.15.1 [8]"
            ::= { adslAtucPerfDataExtEntry 13 }

            adslAtucPerfPrev1DayFailedFastR OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    failed fast retrains within the most recent previous
                    1-day period."
                REFERENCE "ITU G.997.1 Section 7.4.15.2 [8]"
            ::= { adslAtucPerfDataExtEntry 14 }

            adslAtucPerfPrev1DaySesL     OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    severed errored seconds within the most recent
   previous
                    1-day period."
                REFERENCE "ITU G.997.1 Section 7.2.1.1.7 [8]"
            ::= { adslAtucPerfDataExtEntry 15 }

            adslAtucPerfPrev1DayUasL OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    unavailable errored seconds within the most recent
   previous
```

```
                1-day period."
            REFERENCE "ITU G.997.1 Section 7.2.1.1.9 [8]"
        ::= { adslAtucPerfDataExtEntry 16 }

        adslAtucIntervalExtTable   OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAtucIntervalExtEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUC
                performance data collection interval.
                ADSL physical interfaces are
                those ifEntries where 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."
            INDEX           { ifIndex, adslAtucIntervalNumber }
        ::= { 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
                "Count of seconds in the interval when there was
Fast
                Retrains."
        ::= { adslAtucIntervalExtEntry 1 }

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

```
                DESCRIPTION
                    "Count of seconds in the interval when there was
   Failed
                    Fast Retrains."
            ::= { adslAtucIntervalExtEntry 2 }

            adslAtucIntervalSesL OBJECT-TYPE
                SYNTAX      PerfIntervalCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    severed errors."
            ::= { adslAtucIntervalExtEntry 3 }

            adslAtucIntervalUasL OBJECT-TYPE
                SYNTAX      PerfIntervalCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    unavailable errors."
            ::= { adslAtucIntervalExtEntry 4 }

            adslAturPerfDataExtTable   OBJECT-TYPE
                SYNTAX          SEQUENCE OF AdslAturPerfDataExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "This table contains ADSL physical line counters
   information not defined in the adslAturPerfDataTable from the ADSL-
   LINE-MIB [10]."
            ::= { adslExtMibObjects 20 }

            adslAturPerfDataExtEntry   OBJECT-TYPE
                SYNTAX          AdslAturPerfDataExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "An entry extends the adslAturPerfDataEntry defined
   in [10].  Each entry corresponds to an ADSL line."
            INDEX { ifIndex }
            ::= { 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 indicates the count of
severely errored second-line."
            REFERENCE "ITU G.997.1 Section 7.2.1.1.7 [8]"
        ::= { adslAturPerfDataExtEntry 1 }

        adslAturPerfStatUasL OBJECT-TYPE
            SYNTAX      Counter32
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The value of this object indicates the count of
unavailable second."
            REFERENCE "ITU G.997.1 Section 7.2.1.2.9 [8]"
        ::= { adslAturPerfDataExtEntry 2 }


        adslAturPerfCurr15MinSesL OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the current 15 minute interval
                when there was Severe Errored Seconds-Line."
            REFERENCE "ITU G.997.1 Section 7.2.1.2.7 [8]"
        ::= { adslAturPerfDataExtEntry 3 }

        adslAturPerfCurr15MinUasL   OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
```

```
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the current 15 minute interval
                    when there was Unavailable Errored Seconds."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.9 [8]"
            ::= { adslAturPerfDataExtEntry 4 }

            adslAturPerfCurr1DaySesL    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was
   Severe
                    Errored Seconds during the current day as measured
   by
                    adslAturPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.7 [8]"
            ::= { adslAturPerfDataExtEntry 5 }

            adslAturPerfCurr1DayUasL    OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of the number of seconds when there was
   Unavailable
                    Errored Seconds during the current day as measured
   by
                    adslAturPerfCurr1DayTimeElapsed."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.9 [8]"
            ::= { adslAturPerfDataExtEntry 6 }

            adslAturPerfPrev1DaySesL     OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    severed errored second within the most recent
   previous
                    1-day period."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.7 [8]"
            ::= { adslAturPerfDataExtEntry 7 }
```

```
            adslAturPerfPrev1DayUasL OBJECT-TYPE
                SYNTAX      AdslPerfPrevDayCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    unavailable errored second within the most recent
   previous
                    1-day period."
                REFERENCE "ITU G.997.1 Section 7.2.1.2.9 [8]"
            ::= { adslAturPerfDataExtEntry 8 }

            adslAturIntervalExtTable   OBJECT-TYPE
                SYNTAX          SEQUENCE OF AdslAturIntervalExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "This table provides one row for each ATUC
                    performance data collection interval.
                    ADSL physical interfaces are
                    those ifEntries where 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."
                INDEX           { ifIndex, adslAturIntervalNumber }
            ::= { adslAturIntervalExtTable 1 }

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

            adslAturIntervalSesL OBJECT-TYPE
                SYNTAX      PerfIntervalCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    severed errors."
            ::= { adslAturIntervalExtEntry 1 }
```

```
            adslAturIntervalUasL OBJECT-TYPE
                SYNTAX      PerfIntervalCount
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of seconds in the interval when there was
                    unavailable errors."
            ::= { adslAturIntervalExtEntry 2 }

            adslConfProfileExtTable   OBJECT-TYPE
                SYNTAX          SEQUENCE OF AdslConfProfileExtEntry
                MAX-ACCESS      not-accessible
                STATUS          current
                DESCRIPTION
                    "This table contains ADSL line profile configuration
                     information not defined in the
   adslLineConfProfileTable
                     from the ADSL-LINE-MIB [1].  This includes the line
   mode."
            ::= { adslExtMibObjects 22 }

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

            AdslConfProfileExtEntry ::=
                SEQUENCE {
                    adslConfProfileLineType  INTEGER
                }

            adslConfProfileLineType OBJECT-TYPE
                SYNTAX      INTEGER {
                    noChannel (1),        -- no channels exist
                    fastOnly (2),         -- fast channel exists only
                    interleavedOnly (3),  -- interleaved channel exists
                                          -- only
                    fastOrInterleaved (4),-- either fast or interleaved
                                          -- channels can exist, but
                                          -- only one at any time
                    fastAndInterleaved (5)-- both fast or interleaved
```

```
                                        -- channels exist
                    }
                MAX-ACCESS  read-create
                STATUS      current
                DESCRIPTION
                    "
                    This object is used to configure the ADSL physical
   line
                    mode.  "
            ::= { 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 [10].  Each entry corresponds to an ADSL alarm profile."
                INDEX { IMPLIED adslLineAlarmConfProfileName}
            ::= { adslAlarmConfProfileExtTable 1 }

            AdslAlarmConfProfileExtEntry ::=
                SEQUENCE {
                adslAtucThreshold15MinFailedFastR     Unsigned32,
                adslAtucThreshold15MinSesL            Unsigned32,
                adslAtucThreshold15MinUasL            Unsigned32
            }

            adslAtucThreshold15MinFailedFastR   OBJECT-TYPE
                SYNTAX      Unsigned32
                UNITS       "seconds"
                MAX-ACCESS  read-create
                STATUS      current
                DESCRIPTION
                    "The number of failed retrains encountered by an
                     ADSL interface within any giving 15 minutes
```

```
   performance
                    data collection period, which cause the SNMP agent
                    to send an adslAtucFailedFastRTrap.  One trap will
   be
                    sent per interval per interface.  A value '0' will
                    disable the trap."
            ::= { adslAlarmConfProfileExtEntry 1 }

            adslAtucThreshold15MinSesL OBJECT-TYPE
                SYNTAX      Unsigned32
                UNITS       "seconds"
                MAX-ACCESS  read-create
                STATUS      current
                DESCRIPTION
                    "The number of Severe errored seconds encountered by
   an
                    ADSL interface withing any giving 15 minutes
   performance
                    data collection period, which cause the SNMP agent
                    to send an adslAtucSesLTrap.  One trap will be
                    sent per interval per interface.  A value '0' will
                    disable the trap."
            ::= { adslAlarmConfProfileExtEntry 2 }

            adslAtucThreshold15MinUasL OBJECT-TYPE
                SYNTAX      Unsigned32
                UNITS       "seconds"
                MAX-ACCESS  read-create
                STATUS      current
                DESCRIPTION
                    "The number of unavailable errored seconds
   encountered by an
                    ADSL interface withing any giving 15 minutes
   performance
                    data collection period, which cause the SNMP agent
                    to send an adslAtucUasLThreshTrap.  One trap will
   be
                    sent per interval per interface.  A value '0' will
                    disable the trap."
            ::= { adslAlarmConfProfileExtEntry 3 }

      -- trap definitions

      adslExtTraps OBJECT IDENTIFIER ::= { adslExtMibObjects 24 }

      adslExtAtucTraps OBJECT IDENTIFIER ::= { adslExtTraps 1 }

            adslAtucFailedFastRThreshTrap      NOTIFICATION-TYPE
```

```
                OBJECTS { adslAtucPerfCurr15MinFailedFastR }
                STATUS  current
                DESCRIPTION
                    "Failed Fast Retrains 15 minutes threshold reached."
            ::= { adslExtAtucTraps 0 1 }

            adslAtucSesLThreshTrap      NOTIFICATION-TYPE
                OBJECTS { adslAtucPerfCurr15MinSesL }
                STATUS  current
                DESCRIPTION
                    "Severe errored seconds 15 minutes threshold
   reached."
            ::= { adslExtAtucTraps 0 2 }

            adslAtucUasLThreshTrap      NOTIFICATION-TYPE
                OBJECTS { adslAtucPerfCurr15MinUasL }
                STATUS  current
                DESCRIPTION
                    "Unavailable seconds 15 minutes threshold reached."
            ::= { adslExtAtucTraps 0 3 }

      -- 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
   manage ADSL ATU-C interfaces."

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

                GROUP       adslExtAtucPhysPerfRawCounterGroup
                DESCRIPTION
                    "This group is optional.  Implementations which
                     require continuous ATU-C physical event counters
```

```
                should implement this group."

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

            OBJECT      adslAtucThreshold15MinFailedFastR
            MIN-ACCESS  read-write
            DESCRIPTION
                "Read-write access is applicable when
                 static profiles are implemented."

            OBJECT      adslAtucThreshold15MinSesL
            MIN-ACCESS  read-write
            DESCRIPTION
                "Read-write access is applicable when
                 static profiles are implemented."

            OBJECT      adslAtucThreshold15MinUasL
            MIN-ACCESS  read-write
            DESCRIPTION
                "Read-write access is applicable when
                 static profiles are implemented."

            OBJECT      adslLineConfProfileDualLite
            MIN-ACCESS  read-only
            DESCRIPTION
                "Read-only access is applicable when static
                 profiles are implemented."

        ::= { adslExtCompliances 1 }

        -- units of conformance
        adslExtLineGroup    OBJECT-GROUP
            OBJECTS {
                adslLineConfProfileDualLite,
                adslLineTransAtucCap,
                adslLineTransAtucConfig,
                adslLineTransAtucActual,
                adslLineGlitePowerState
               }
            STATUS     current
            DESCRIPTION
                "A collection of objects providing configuration
                information about an ADSL Line."
        ::= { adslExtGroups 1 }
```

```
            adslExtAtucPhysPerfRawCounterGroup 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 }

            adslExtAturPhysPerfRawCounterGroup 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
                   }
                STATUS     current
                DESCRIPTION
                    "A collection of objects providing alarm profile
                    control for the ADSL system."
            ::= { adslExtGroups 5 }

            adslExtNotificationsGroup NOTIFICATION-GROUP
                NOTIFICATIONS {
                    adslAtucFailedFastRThreshTrap,
                    adslAtucSesLThreshTrap,
                    adslAtucUasLThreshTrap
                }
                STATUS        current
                DESCRIPTION
                    "The collection of ADSL 2 notifications."
               ::= { adslExtGroups 6 }

   END
```

9. Acknowledgments

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

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10. Security Considerations

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 (sect 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 trap thresholds such as 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) ADSL layer connectivity from the ATU-R will permit the subscriber to manipulate both the ADSL link directly and the AOC/EOC channels for their own loop. For example, unchecked or unfiltered fluctuations initiated by the subscriber could generate sufficient traps 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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