**Definitions of Managed Objects
for the ADSL Lines**

Febuary 26, 1999

draft-ietf-adslmib-adsllinemib-05.txt

1. Status of this Memo

This document is an Internet-Draft and is in full conformance with
all provisions of Section 10 of RFC2026.

Internet-Drafts are working documents of the Internet Engineering
Task Force (IETF), its areas, and its working groups. Note that other
groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months
and may be updated, replaced, or obsoleted by other documents at any
time. It is inappropriate to use Internet-Drafts as reference
material or to cite them other than as ``work in progress.''

To view the entire list of current Internet-Drafts, please check the
"1id-abstracts.txt" listing contained in the Internet-Drafts Shadow
Directories on ftp.is.co.za (Africa), ftp.nordu.net (Northern
Europe), ftp.nis.garr.it (Southern Europe), munnari.oz.au (Pacific
Rim), ftp.ietf.org (US East Coast), or ftp.isi.edu (US West Coast).

2. Abstract

This document defines a standard SNMP MIB for ADSL lines based on the
ADSL Forum standard data model [9]. The ADSL standard describes
ATU-C and ATU-R as two sides of the ADSL line. This MIB covers both
ATU-C and ATU-R agent's perspectives. Each instance defined in the

MIB represents a single ADSL line.

It should be noted that the ADSL Forum Network Management Working
Group had significant input towards the original version (v00) of
this document. See `REVISION' clauses of this document for summary
of changes made since that point. See Acknowledgement Section for a
list of individuals involved with both the IETF and ADSL Forum
efforts.

3.   The SNMP Network Management Framework

The SNMP Management Framework presently consists of five major
components:

o   An overall architecture, described in RFC 2271 [13].

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 RFC 1155 [14], RFC 1212 [15] and RFC 1215 [16].
      The second version, called SMIv2, is described in RFC 1902
      [1], RFC 1903 [2] and RFC 1904 [17].

o   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].

o   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].

o   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. Object Definitions

Managed objects are accessed via a virtual information store, termed
the Management Information Base or MIB. Objects in the MIB are
defined using the extended subset of Abstract Syntax Notation One
(ASN.1) defined in the SMI. In particular, each object type is named
by an OBJECT IDENTIFIER, an administratively assigned name. The
object type together with an object instance serves to uniquely
identify a specific instantiation of the object. For human
convenience, we often use a textual string, termed the descriptor, to
also refer to the object type.

5. Introduction

This document describes an ADSL Line MIB which is intended to work
within the SNMP Network Management Framework (section 3). All MIB
definitions are backward compatible for SNMPv1 implementation.

The MIB definitions are attached. The MIB will eventually be located
in the MIB tree under mib-2 transmission, further discussed in
section 6 of this document.

6. Relationship of the ADSL LINE MIB with standard MIBs

This section outlines the relationship of ADSL Line MIB with other
MIBs described in RFCs and in their various degrees of
"standardization".

6.1 Use of the IfTable

The ADSL LINE MIB specifies the detailed attributes of a data
interface. As such, it needs to integrate with IF-MIB [5]. The IANA
has assigned the following ifType(s) relative to ADSL:

      IANAifType ::= TEXTUAL-CONVENTION

```
            . . .

        SYNTAX INTEGER {

                . . .

            adsl(94),     -- Asymmetric Digital Subscriber Loop

                . . .

            adslInterleave(124),    -- ADSL Interleaved Channel
            adslFast(125),          -- ADSL Fast Channel

                . . .             }
```
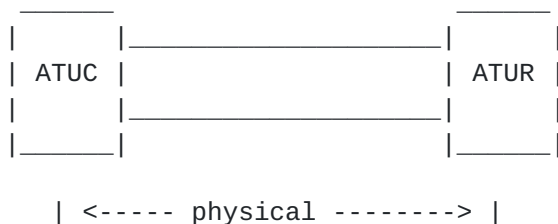
Interfaces of each of these types are modeled by this document.
Pending approval of the IANA, under the advisement from IESG, adslMIB
will be used as the root of this MIB and will be assigned to the
value { transmission 94 }.

Most MIB tables in this document represent information of one of
these interface types and are indexed by ifIndex. Remaining are
`profile' tables which may be accessed by the profileIndex. This is
explained in more detail in section 7.4 Profiles.

6.1.1 ADSL Interface Types

As shown below, three ADSL interface types are defined in this
document, namely physical, interleaved channel, and fast channel.
The physical interface represents characteristics of the physical
media associated with both the ATUC and ATUR. The interleaved and
fast channel interface represent the characteristics of the two types
of ADSL channels.

For each ADSL Line, a physical interface always exists.   Depending
on which ADSL operational configuration is present (as listed in
Figure 5), the channel interfaces (fast or interleaved) may or may
not exist.

```
             _____                       _____
            |     |_____|    |     |
            | ATUC |                         | ATUR |
            |       |_____|    |     |
            |_____|                         |_____|

              | <----- physical --------> |
```

```
            | <--- fast channel ------> |

            | <- interleaved channel -> |
```


                        Figure 1: ADSL Model

6.1.2 Use of IF-MIB (Interface MIB RFC 2233) [5]

The following attributes are part of the required
ifGeneralInformationGroup object group specified in RFC 2233 [5], and
are not duplicated in the ADSL MIB. Keep in mind that these objects
apply to the agent's view of the line.

```
            ifTable Object    Use for ADSL
==============================================================
            ifIndex           Interface index.

            ifDescr           See interfaces MIB [5]

            ifType            physical    - adsl(94)
                              fast        - adslFast(125)
                              interleaved - adslInterleave(124)

            ifSpeed           Transmit rate from the perspective
                              of the agent.

                              physical     - line rate
                              fast         - channel rate
                              interleaved  - channel rate

            ifPhysAddress     This object should have an octet string
                              with zero length.

            ifAdminStatus     See interfaces MIB [5]

            ifOperStatus      See interfaces MIB [5]

                              Supplemented by adslAturCurrStatus and
                              adslAturCurrStatus

            ifLastChange      See interfaces MIB [5]

            ifName            See interfaces MIB [5]
```

```
            ifLinkUpDownTrapEnable   See interfaces MIB [5]

                            Default set as follows:

                            physical      - enabled(1)
                            fast          - disabled(2)
                            interleaved   - disabled(2)

        ifHighSpeed         Speed of line in Mega-bits per second
                            (ifSpeed/1,000,000)

        ifConnectorPresent See interfaces MIB [5]

                            Default set as follows:

                            physical      - true(1)
                            fast          - false(2)
                            interleaved   - false(2)

        ifAlias             See interfaces MIB [5]

        ifTableLastChange See interfaces MIB [5]


   ================================================================

        Figure 2: Use of ifTable Objects: ifGeneralInformationGroup
```
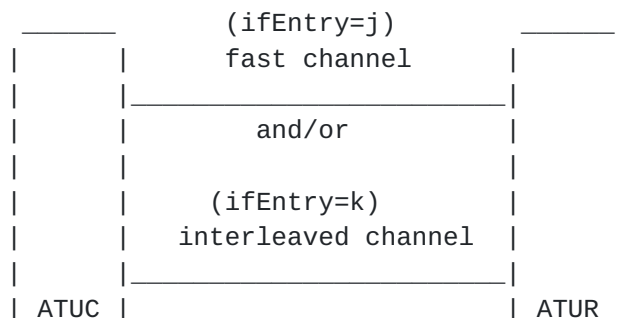
   Use of the ifStackTable to associate the entries for physical, fast,
   interleaved channels, and higher layers (e.g., ATM) is shown below in
   figure 3. Use of ifStackTable is necessary, because configuration
   information is stored in profile tables associated with the
   physical-layer ifEntry only. The channels' ifEntrys need the
   ifStackTable to find their associated physical-layer entry and thus
   their configuration parameters. (See Profile section, 7.4).

```
              _____           (ifEntry=j)          _____
             |      |           fast channel        |      |
             |      |_____|     |      |
             |      |            and/or             |      |
             |      |                               |      |
             |      |          (ifEntry=k)          |      |
             |      |       interleaved channel     |      |
             |      |_____|     |      |
             | ATUC |                               | ATUR |
```

```
      |        |                            |       |
      |        |       (ifEntry=i)          |       |
      |        |         physical           |       |
      |        |_____|       |
      |_____|                            |_____|
```
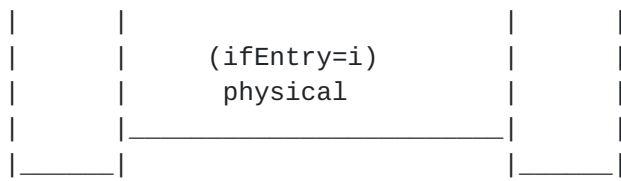
               Figure 3: Use of ifStackTable (part 1)

   The ifStackTable is then used to show the relationships between the
   various ADSL interfaces, as illustrated below in figure 4.

                 HigherLayer   LowerLayer
                 ----
                      j   i
                      k   i

               Figure 4: Use of ifStackTable (part 2)

   The ifRcvAddressTable is not applicable for ADSL interfaces.

   6.2 Relationship with RFC 2037 [25]

   Implementation of the Entity MIB [25] is optional. It in no way
   alters the information required in the adslLineMib, nor does it alter
   the relationship with IF-MIB.

   The Entity MIB introduces a standardized way of presenting the
   components of complex systems, such as a Digital Subscriber Line
   Access Multiplexer (DSLAM), that may contain multiple racks, shelves,
   line cards, and/or ports.   The Entity MIB's main goal is to present
   these system components, their containment relationship, and mapping
   information with other MIBs such as the Interface MIB and the
   adslLineMib.

   If implemented, the Entity MIB should include entities for the ATU-C
   in the entPhysicalTable. The MIB's entAliasMappingTable would
   contain mapping information identifying the `ifIndex' object
   associated with each ATU-C. Also associating the relationship
   between the ifTable and Entity MIB, the entPhysicalTable contains an
   `entPhysicalName' object, which approximates the semantics of the
   `ifName' object from the Interface MIB.

7. Conventions used in the MIB

7.1 Naming Conventions

A. Atuc/Atur are used for the ATU-C and ATU-R. In other RFCs, these
are sometimes referred to as the Near End (Ne) and Far End (Fe)
respectively, but not in this document.

B. The terms, "transmit" and "receive", are from the perspective of
the corresponding table's end of the line. For example, in the case
of Fast channels, adslAtucChanConfFastMaxTxRate defines the
"downstream" rate, while adslAturChanConfFastMaxTxRate defines the
"upstream" rate for a particular channel.

C. There are two possible channels: fast, and interleaved. None, one
or both may be implemented on a particular ADSL Line. Figure 5
illustrates all possible operational configurations.

D. Lof, Lol, Los, Lpr mean Loss of Framing, Link, Signal, and Power,
respectively. Lpr is used by T1E1, so it is used for consistency
(rather than Lop).

A Loss of Link condition is declared at the ATU-C if a Loss of Signal
is not preceded by a `dying-gasp' message from the ATU-R. Note that
Loss of Link is only supported by the ATU-C.

E. ES means errored second. An Errored Second is any second
containing one or more CRC anomaly, or one or more Los(s) or Severely
Errored Frame (Sef) defect(s).

F. A "block" is a physical-layer `data buffer' over which CRCs are
calculated. For example, in DMT, the block is defined as the ADSL
superframe. The block duration is 250 micro-seconds so the block
length in bytes, as defined in adslAtu*ChanCrcBlockLength, varies
with data rate. See Line Code Specific MIBs [11] [12] for more line
code specific information.

G. Atn means Attenuation, Psd is Power Spectral Density and Snr is
Signal to Noise Ratio.

H. LCS means line code specific, e.g.,

   o DMT = Discrete MultiTone

   o CAP = Carrierless Amplitude and Phase modulation and

   o QAM = Quadrature Amplitude Modulation

I. Vendor (in the Inventory objects) refers to the manufacturer of
the ATU-C or ATU-R assembly, not the modem chip vendor. When in
doubt, use the manufacturer of the smallest field replaceable unit
(e.g., stand-alone modem box, plug-in board).

J. RADSL - Rate Adaptive Asymmetric Digital Subscriber Loop

7.2 Structure

The MIB has multiple parallel tables. There are tables for:

    o line - common attributes

    o atuc and atur status

    o atuc and atur performance

        - Current and up to 96 buckets of 15 min performance history

        - Current and Previous 1-day bucket performance history

    o profiles - configuration parameters and alarm parameters

There are separate tables for Physical and Channel layers. Since
their attributes are similar, only one set of "channel" tables are
defined to be used for both fast and interleaved channels. The
corresponding ifType gives the proper interpretation for that
ifEntry.

The MIB definitions are attached. The MIB will eventually be located
in the MIB tree under mib-2 transmission, further discussed in
section 6 of this document.

It is intented that Line Code Specific MIBs be located under
adslLCSMib. These MIBs will be defined in separate modules.

There could have been fewer tables by combining the ATU-C and ATU-R
information into shared tables. However, the tables are more easily
read when there are two identical sets of data.

The figure below lists the five possible ADSL operational
configurations. (indicated by the value of the adslLineType). In all
configurations, the physical line interface entry will exist.
However, the existence of the ADSL channel varies in each case, as
shown below.

```
    Table                      Phys      Fast  Interleaved
_____
  No Channels (1)            |  Y   |        |        |
  Fast Only (2)              |  Y   |   Y    |        |
  Interleaved Only (3)       |  Y   |        |   Y    |
  Fast or Interleaved (4)    |  Y   |   Y    |   Y    |
  Fast and Interleaved (5)   |  Y   |   Y    |   Y    |
```

                Figure 5: ADSL Operational configurations

NOTE: In (4), channel exists of either Fast or Interleaved type, but
not both.   The Manager may select the type of channel to be used.

Depending on which operation configuration exists, some or all ADSL
MIB tables could be supported, as shown in below. See Conformance
Statements for more information on which objects are mandatory.

```
    Table                      Phys      Fast  Interleaved
_____
  adslLineTable              |  Y   |        |        |
  adslAtucPhysTable          |  Y   |        |        |
  adslAturPhysTable          |  Y   |        |        |
  adslAtucChanTable          |      |   Y    |   Y    |
  adslAturChanTable          |      |   Y    |   Y    |
  adslAtucPerfDataTable      |  Y   |        |        |
  adslAturPerfDataTable      |  Y   |        |        |
  adslAtucIntervalTable      |  Y   |        |        |
  adslAturIntervalTable      |  Y   |        |        |
  adslAtucChanPerfDataTable  |      |   Y    |   Y    |
  adslAturChanPerfDataTable  |      |   Y    |   Y    |
  adslAtucChanIntervalTable  |      |   Y    |   Y    |
  adslAturChanIntervalTable  |      |   Y    |   Y    |
```

        Figure 6: Use of ADSL MIB Tables with various ifIndex values

NOTE: The adslLineConfProfileTable and adslLineAlarmConfProfileTable
will be present for all scenarios. See Profile Section of this
document for implementation details such as profile creation,
assignment, and indexing.

7.2.1 Structure of Conformance Groups

The MIB is organized to cover both ends of the ADSL line, ATU-C and
ATU-R. Objects defined can be categorized into two groups: the
ATU-C group which provides objects that are supported by ATU-C agents
and the ATU-R group which provides objects that are supported by

ATU-R agents. These two groups are defined by the conformance
section of the MIB. All objects defined in the MIB module are
supported by the ATU-C agent and only portions of the objects are
supported by the ATU-R agent. Figure 7 lists all tables/objects that
are supported by the ATU-R agent.

```
            Table                       Objects

            _____

            adslLineTable               adslLineCoding
            adslAtucPhysTable           adslAtucInvVendorID
                                        adslAtucInvVersionNumber
                                        adslAtucCurrStatus (Partial)
                                        adslAtucCurrOutputPwr
                                        adslAtucCurrAttainableRate
            adslAturPhysTable           all are supported
            adslAtucChanTable           all except
                                        adslAtucChanCrcBlockLength
                                        are supported
            adslAtucPerfDataTable       all except
                                        adslAtucPerfLols, adslAtucPerfLprs
                                        adslAtucPerfCurr15MinLols,
                                        adslAtucPerfCurr15MinLprs,
                                        adslAtucPerfCurr1DayLols,
                                        adslAtucPerfCurr1DayLprs,
                                        adslAtucPerfPrev1DayLols and
                                        adslAtucPerfPrev1DayLprs
                                        are supported
            adslAturPerfDataTable       all are supported
            adslAtucIntervalTable       adslAtucIntervalLofs
                                        adslAtucIntervalLoss
                                        adslAtucIntervalESs
                                        adslAtucIntervalInits
                                        adslAtucIntervalValidData
            adslAturIntervalTable       all are supported
            adslAtucChanPerfDataTable   all are supported
            adslAturChanPerfDataTable   all are supported
            adslAtucChanIntervalTable   all are supported
            adslAturChanIntervalTable   all are supported
            adslLineConfProfileTable    not supported
            adslLineAlarmConfProfileTable all are supported except
                                        adslAtucThresh15MinLols
                                        and adslAtucThresh15MinLprs
      -----------------------------------------------------------------
```

Figure 7: MIB Tables and Objects Supported by the ATU-R Agent

All traps supported by the ATU-R agent are also listed:

```
                    adslAtucPerfLofsThreshTrap
                    adslAtucPerfLossThreshTrap
                    adslAtucPerfESsThreshTrap
                    adslAtucRateChangeTrap
                    adslAturPerfLofsThreshTrap
                    adslAturPerfLossThreshTrap
                    adslAturPerfLprsThreshTrap
                    adslAturPerfESsThreshTrap
                    adslAturRateChangeTrap
```

7.3 Counters, Interval Buckets and Thresholds

For physical-level ES, Los, Lof, Lol, Lpr and line initialization
attempts, there are event 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. Each physical-layer
current 15-minute event bucket has threshold trap.

At the channel level, there are counters for total received blocks,
received-and-corrected blocks, received-but-uncorrectable blocks, and
transmitted blocks. There are the same set of 15-minute and 1-day
buckets as at the physical-layer.

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.

7.4 Profiles

As a managed node can handle a large number of ATU-Cs (e.g., hundreds
or perhaps thousands of ADSL lines), provisioning every parameter on

every ATU-C may become burdensome. In response, two MIB tables have
been created to define ADSL equipment configuration data profiles, as
well as a mechanism to associate the equipment to these profiles.

Profile tables may be implemented in one of two ways, but not
simultaneously:

   o MODE-I: Dynamic Profiles - one profile shared by one or multiple
   ADSL lines.

   o MODE-II: Static Profiles - one profile per ADSL physical line
   always.

7.4.1 MODE-I : Dynamic Profiles

Implementations using this mode will enable the manager to
dynamically create and delete profiles as needed. The index of the
profile is an locally-unique administratively assigned name for the
profile having the textual convention `SnmpAdminString'
(RFC2271[13]).

One or more ADSL lines may be configured to share parameters of a
single profile (e.g., adslLineConfProfileName = `silver') by setting
its adslLineConfProfile objects to the index value of this profile.
If a change is made to the profile, all lines that refer to it will
be re-configured to the changed parameters. Before a profile can be
deleted or taken out of service it must be first unreferenced from
all associated lines.

This figure below shows an example of how this mode can be
implemented. In the example, ADSL lines `1' and `x' share the
configuration of the `silver' profile, while line `2' uses the
`platinum' profile.  The `gold' profile has no lines associated with
it.

ADSL   ifIndex   ifTable   Configuration Line
Profile Table

_____

1   i1   ADSL Line --   ---> Platinum Profile
         j1   Fast Chan | |
         k1   Int Chan | |
                                   | ^
                              v | Gold Profile

```
    2          i2          ADSL Line ------->----
               j2          Fast Chan    |
               k2          Int Chan     |

                                        |
                                        |
                                        |
                                        v


    x          ix          ADSL Line    ------>------> Silver Profile
               jx          Fast Chan  --------------->
               kx          Int Chan
```
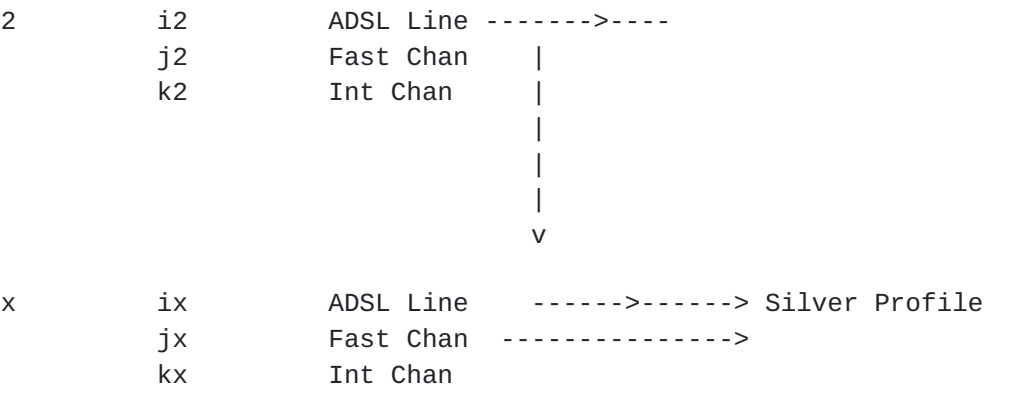_____

Figure 8: Use of Dynamic Profiles: MODE-I

In the figure above, note that three interface entries of an ADSL
line, physical, fast channel, and interleaved channel, are
represented by `i', `j', and `k'.  Only the physical-layer entry `i'
contains an adslLineTable entry, therefore only those entries contain
pointers to the adslLineConfProfileTable. The ifStackTable (see
rfc2233 [5]) can be used to link the channel entries to the
corresponding physical-layer entry to get the channel's configuration
parameters. See figure 4 for use of the ifStackTable.

The same characteristics and mechanisms are present for the alarm
profile type. There is no requirement that its index be the same as
the configuration profile.

Implementations of this mode, must provide a default profile whose
name is `DEFVAL' for each profile type: Configuration and Alarm. The
values of the associated parameters will be vendor specific unless
otherwise indicated in this document. Before a line's profiles have
been set, these profiles will be automatically used by setting
adslLineConfProfile and adslLineAlarmConfProfile to `DEFVAL'.

In this mode, profiles are created, assigned, and deleted dynamically
using these four objects: adslLineConfProfile,
adslLineConfProfileRowStatus, adslLineAlarmConfProfile, and
adslLineAlarmConfProfileRowStatus.

7.4.2 MODE-II : Static Profiles

Implementations with this mode will automatically create a profile
one-for-one with each ADSL line physical entry. The name of this
profile is a system generated read-only object whose value is
equivalent to the index of the physical line. The Agent will not
allow a Manager to create/delete profiles in this mode. Therefore,

adslLineConfProfile, adslLineConfProfileRowStatus,
adslLineAlarmConfProfile, and adslLineAlarmConfProfileRowStatus
objects have minimal value in this mode and are read-only.

The figure below shows an example of this mode. In the example, ADSL
lines `1', `2', and `x' each have their own profiles.

```
ADSL     ifIndex      ifTable                      Configuration Line
Profile Table

_____


1        i1         ADSL Line      ------------>  Profile
         j1         Fast Chan
         k1         Int Chan

2        i2         ADSL Line      ------------>  Profile
         j2         Fast Chan
         k2         Int Chan


x        ix         ADSL Line      ------------>  Profile
         jx         Fast Chan
         kx         Int Chan

_____
```

              Figure 9: Use of Static Profiles: MODE II

7.5 Traps

These SNMP traps are required: coldStart / warmStart (per [6]) --
which are per agent (e.g., per DSLAM in such a device), and linkUp /
linkDown (per [5]) -- which are per interface (i.e., ADSL line).
Note: RFC 2233 [5] recommends that linkUp / linkDown only be used at
a physical-layer ifEntry, as discussed above.

A linkDown trap is generated whenever any of Lof, Los, Lol, or Lpr
occurs. At this operational point, a manager can use
adslAtu*CurrStatus for additional detailed information. The
corresponding linkUp trap is sent when all link failure conditions
are cleared.

The traps defined in this MIB are for initialization failure, rate
change, and for the threshold crossings associated with the following
events: Lofs, Lols, Loss, Lprs, and ESs. Each threshold has its own
enable/threshold value. When that value is 0, the trap is disabled.

The current status objects (adslAtu*CurrStatus) indicate, through a bitmask, all outstanding error conditions or that the line is operational. Note that each object claims to represent the status of the modem at that end of the line. However, since the SNMP agent likely co-resides with only one end of the line, the corresponding far-end current status object may be incomplete. For example, when there are errors on the line, the far-end ATU may not be able to correctly report this condition. Therefore, not all conditions are included in its current status.

A threshold trap occurs whenever the corresponding current 15-minute interval error counter becomes equal and/or exceeds to the threshold value. One trap will be sent per interval per interface. Since the current 15-minute counter are reset to 0 every 15 minutes, if the condition persists, the trap may recur as often as every 15 minutes. For example, to get a trap whenever a "loss of" event occurs (but at most once every 15 minutes), set the corresponding "Thresh15Min" to 1. The agent will generate a trap when the event originally occurs. Note that the NMS will get a linkDown trap, as well, if enabled. At the beginning of the next 15 minute interval, the counter is reset. When the first second goes by and the event occurs, the current interval bucket will be 1, which equals the threshold and the trap will be sent again.

The rate change trap is invoked when the transmit rate on a channel either increases by adsl(x)Thresh(y)RateUp or decreases by adsl(x)Thresh(y)RateDown. The trap is per direction:(x) == Atuc or Atur, and per channel: (y) == Fast or Interleave. In other words, the trap is sent whenever the rate changes in either direction on either channel and:

$$CurrTxRate >= PrevTxRate \text{ plus } ThreshRateUp$$

$$or$$

$$CurrTxRate <= PrevTxRate \text{ minus } ThreshRateDown$$

No trap is sent on initialization.

It can be disabled by setting the Up (and/or) Down threshold rates to 0.

The PrevTxRate object is set to the current value at initialization and when a trap is sent. Thus rate changes are cumulative until the total change reaches the threshold.

8. Conformance and Compliance

See the conformance and compliance statements within the information
module.

9. Definitions

ADSL-LINE-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE,
    Counter32, Gauge32,
    NOTIFICATION-TYPE, experimental,
    transmission, Unsigned32   FROM SNMPv2-SMI
    TEXTUAL-CONVENTION, RowStatus,
    TruthValue, VariablePointer   FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP,
    NOTIFICATION-GROUP   FROM SNMPv2-CONF
    ifIndex   FROM IF-MIB
    PerfCurrentCount,
    PerfIntervalCount   FROM PerfHist-TC-MIB
    SnmpAdminString   FROM SNMP-FRAMEWORK-MIB
    ;

adslMIB MODULE-IDENTITY

LAST-UPDATED "9902261200Z"

ORGANIZATION "IETF ADSL MIB Working Group"

CONTACT-INFO
        "
        Gregory Bathrick
        AG Communication Systems
        A Subsidiary of Lucent Technologies
        2500 W Utopia Rd.
        Phoenix, AZ 85027 USA
        Tel: +1 602-582-7679
        Fax: +1 602-582-7697
        E-mail: bathricg@agcs.com

        Faye Ly
        Copper Mountain Networks
        Norcal Office
        2470 Embarcadero Way
        Palo Alto, CA 94303
        Tel: +1 650-858-8500

```
         Fax: +1 650-858-8085
         E-Mail: faye@norcal.coppermountain.com

         (ADSL Forum input only)
         John Burgess
         Predictive Systems, Inc.
         25A Vreeland Rd.
         Florham Park, NJ 07932 USA
         Tel: +1 973-301-5610
         Fax: +1 973-301-5699
         E-mail: jtburgess@predictive.com

         IETF ADSL MIB Working Group (adsl@xlist.agcs.com)
        "


   DESCRIPTION
        "The MIB module defining objects for the management of a pair of
        ADSL modems at each end of the ADSL line.  Each such line has
        an entry in an ifTable which may include multiple modem lines.
        An agent may reside at either end of the ADSL line however the
        MIB is designed to require no management communication between
        them beyond that inherent in the low-level ADSL line protocol.
        The agent may monitor and control this protocol for its needs.

        ADSL lines may support optional Fast or Interleaved channels.
        If these are supported, additional entries corresponding to the
        supported channels must be created in the ifTable. Thus an ADSL
        line that supports both channels will have three entries in the
        ifTable, one for each physical, fast, and interleaved, whose
        ifType values are equal to adsl(94), fast(125), and
        interleaved(124), respectively. The ifStackTable is used to
        represent the relationship between the entries.

        Naming Conventions:
                Atuc -- (ATUC) modem at near (Central) end of line
                Atur -- (ATUR) modem at Remote end of line
                Curr -- Current
                Prev -- Previous
                Atn -- Attenuation
                ES  -- Errored Second.
                LCS -- Line Code Specific
                Lof -- Loss of Frame
                Lol -- Loss of Link
                Los -- Loss of Signal
                Lpr -- Loss of Power
                xxxs-- interval of Seconds in which xxx occurs
                        (e.g., xxx=Lof, Los, Lpr)
                Max -- Maximum
```

                    Mgn -- Margin
                    Min -- Minimum
                    Psd -- Power Spectral Density
                    Snr -- Signal to Noise Ratio
                    Tx -- Transmit
                    Blks-- Blocks, a data unit, see
                            adslAtuXChanCrcBlockLength
            "
        REVISION   "9808071200Z" -- v00
        DESCRIPTION
            "Changes taken at the March 98 ADSL WG meeting:
                - Added Conformance Statement
                - SNMPv3 conformance
                - RFC-2233 conformance

             Comments from Technical Advisors, Wijnen and Tesink:
                - DisplayString -> UTF-8 String
                - minimized # of mandatory performance counts
                - Corrected Syntax of current status objects.
                - Corrected use of SNMP SMI.

             Lessons learned through implementation of MIB (ADSLF TR006):
                - clarified definition of channel block size, SNR
                  Interleave Delay, Attenuation, and Output power.
                - corrected UNITS and SYNTAX of adsl rate objects,
                  Version#, VendorID.
                - added missing line activation objects.

             General editorial cleanup.

             Added Security Statement (Dave Allan)
            "
        REVISION   "9808071200Z" -- v01
        DESCRIPTION
            "General editorial cleanup.
            "
        REVISION   "9810301200Z" -- v02
        DESCRIPTION
            "
            Changes taken at the August 98 ADSL WG meeting:
                - Used PerfCurrentCount and PerfIntervalCount
                  when appropriate.
                - Updated Security Statement to conform with
                  current format.
                - Changed SYNTAX of Serial #, Vendor ID, and
                  Version # to `OCTET STRING'.

            Comments taken from Jeff Johnson and other WG

```
            contributors:
                 - Removed references to MIB-2 and RFC-1213.
                 - Re-organized the `Use of IF-MIB' section for
                   clarification and conformance reasons.
                 - Changed definition of profile control objects:
                   For the static profiles, they are read-only.
                   Updated conformance statements in a likely
                   manner.
                 - Removed references to ifTestTypes.  IF-MIB does
                   support at this time.
                 - Minor changes to entity mib section.
                 - Changed SYNTAX of SNR, Attenuation, Attainable rate,
                   and Output power to `Gauge32`.
                 - Changed SYNTAX of adslLineSpecific to VariablePointer.
                 - Swapped lossOfLink(4) and lossOfSignalQuality(5) of
                   Atuc Current Status to line up better with Atur
                   Current Status.
                 - Removed ifIndex from traps
                 - and many additional and useful editorial comments.
            "

        REVISION       "9811161200Z" -- v03
        DESCRIPTION
            "
            Changes:
                 - updated text and conformance statements to include
                   CPE equipment view.
                 - updated text and objects to change profile tables
                   index to SnmpAdminString.
                 - changed transmission xx to experimental 89.
                 - resolved conflicting statements on when traps occur.
                 - added Faye Ly as co-editor and Ted Soo-Hoo and
                   Umberto Bonollo as contributors.
            "

        REVISION       "9812211200Z" -- v04
        DESCRIPTION
            "
            Changes (as agreed to made at the Orlando meeting).
                 - editorial corrections related to past CPE view updates.
                 - technical clarifications related to the use of profiles.
            "
        REVISION       "9902261200Z" -- v05
        DESCRIPTION
            "Group Last Call agreements:
             - Added AdslPerfCurrDayCount TC for current 1 day event
               counts which clarifies their meaning.  Assigned all
               current 1 day event counter objects to it.
```

                    - Added AdslPerfPrevDayCount TC for previous 1 day
                      event counts which clarifies their meaning. Assigned
                      all curr 1 day event counter objects to it.
                    - Clarified meaning of Valid Data Flag to maintain
                      usefulness when using when used with RFC-2493.
                    - Updated descriptions of xxxValidIntervals and
                      xxxxInvalidIntervals objects to conform with
                      latest definitions of RFC-2493.
                    - Added AdslPerfTimeElapsed TC for both 15 min and 1
                      day type elapsed time counters. Its definition was
                      dervived from RFC-2493. Assigned range of 15 minute
                      counters to be 0..899 and 1 day counters to
                      be 0..86399.
                    - Clarified definition of prev 1 day monitored second.
                    - Added associated count object to the var bin of
                      threshold traps. Clarified that only one trap will
                      be sent per interval per interface.
                    - Updated SYNTAX of all R/W rate objects to be
                      Unsigned32.
                    - Updated SYNTAX of Serial #, Vendor ID, and Version #
                      to be SnmpAdminString. Clarified description.
                    - Corrected Range of SNR margin objects to be -64
                      to +63.5 dB.
                    - Added text as directed by IETF editor, `This document
                      is an Internet-Draft and is in full conformance with
                      all provisions of Section 10 of RFC2026.'
                    - Conformed to new SMI RFC (draft-ops-smiv2-smi-00.txt)
                    - Editorial changes:
                       - Corrected resolution problems with
                         adslLineAlarmProfile, adslAturAturPhysicalGroup, and
                         adslAturLineProfileGroup
                       - Corrected problem with traps names.
                   "

       ::= { experimental 89 } -- to be assigned to `94' by IANA given IESG
                            -- approval.

    adslLineMib OBJECT IDENTIFIER ::= { adslMIB 1 }

    adslMibObjects OBJECT IDENTIFIER ::= { adslLineMib 1 }

    -- textual conventions
       AdslPerfCurrDayCount ::= TEXTUAL-CONVENTION
           STATUS current
           DESCRIPTION
               "A counter associated with interface performance
               measurements in a current 1-day (24 hour) measurement
               interval.

The value of this counter starts at zero at the
beginning of an interval and is increased when
associated events occur, until the end of the
1-day interval. At that time the value of the
counter is stored in the previous 1-day history
interval, if available, and the current interval
counter is restarted at zero.

In the case where the agent has no valid data available
for this interval the corresponding object
instance is not available and upon a retrieval
request a corresponding error message shall be
returned to indicate that this instance does
not exist (for example, a noSuchName error for
SNMPv1 and a noSuchInstance for SNMPv2 GET
operation)."
        SYNTAX Gauge32

    AdslPerfPrevDayCount ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
            "A counter associated with interface performance
            measurements during the most previous 1-day (24 hour)
            measurement interval. The value of this counter is
            equal to the value of the current day counter at
            the end of its most recent interval.

            In the case where the agent has no valid data available
            for this interval the corresponding object
            instance is not available and upon a retrieval
            request a corresponding error message shall be
            returned to indicate that this instance does
            not exist (for example, a noSuchName error for
            SNMPv1 and a noSuchInstance for SNMPv2 GET
            operation)."
        SYNTAX Gauge32

     AdslPerfTimeElapsed ::= TEXTUAL-CONVENTION
         STATUS current
         DESCRIPTION
             "The number of seconds that have elapsed since
              the beginning of the current measurement period.
              If, for some reason, such as an adjustment in the
              system's time-of-day clock, the current interval
              exceeds the maximum value, the agent will return
              the maximum value."
         SYNTAX Gauge32

```
    -- objects
        adslLineTable   OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslLineEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table includes common attributes describing
                both ends of the line.  It is required for all ADSL
                physical interfaces.  ADSL physical interfaces are
                those ifEntries where ifType is equal to adsl(94)."
        ::= { adslMibObjects 1 }

        adslLineEntry   OBJECT-TYPE
            SYNTAX          AdslLineEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in adslLineTable."
            INDEX           { ifIndex }
        ::= { adslLineTable 1 }

        AdslLineEntry ::=
            SEQUENCE {
            adslLineCoding          INTEGER,
            adslLineType            INTEGER,
            adslLineSpecific        VariablePointer,
            adslLineConfProfile     SnmpAdminString,
            adslLineAlarmConfProfile SnmpAdminString
            }

        adslLineCoding OBJECT-TYPE
            SYNTAX      INTEGER {
                other (1),
                dmt (2), -- Discrete MultiTone
                cap (3), -- Carrierless Amplitude & Phase modulation
                qam (4)  -- Quadrature Amplitude Modulation
            }
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Specifies the ADSL coding type used on this line.
                Other types may be added in the future."
        ::= { adslLineEntry 1 }

       adslLineType 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-only
        STATUS      current
        DESCRIPTION
            "Defines the type of ADSL physical line
            entity that exists, by defining whether and how
            the line is channelized.  If the line is channelized,
            the value will be other than noChannel(1).  This
            object defines which channel type(s) are supported.

            In the case that the line is channelized, the manager
            can use the ifStackTable to determine the ifIndex for
            the associated channel(s)."
     ::= { adslLineEntry 2 }

    adslLineSpecific OBJECT-TYPE
        SYNTAX      VariablePointer
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "OID instance in vendor-specific MIB. The Instance may
            be used to determine shelf/slot/port of the ATUC
            interface in a DSLAM."
     ::= { adslLineEntry 3 }

   adslLineConfProfile OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE (1..32))
        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.

            For `dynamic' mode, in the case which the
            configuration profile has not been set, the
            value will be set to `DEFVAL'.

            If the implementator of this MIB has chosen not
            to implement `dynamic assignment' of profiles, this
            object's MIN-ACCESS is read-only."
```

```
        ::= { adslLineEntry 4 }

   adslLineAlarmConfProfile OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE (1..32))
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "The value of this object identifies the row
            in the ADSL Line Alarm Configuration Profile Table,
            (adslLineAlarmConfProfileTable), which applies to this
            ADSL line, and channels if applicable.

            For `dynamic' mode, in the case which the
            alarm profile has not been set, the
            value will be set to `DEFVAL'.

            If the implementator of this MIB has chosen not
            to implement `dynamic assignment' of profiles, this
            object's MIN-ACCESS is read-only."
    ::= { adslLineEntry 5 }

   adslAtucPhysTable       OBJECT-TYPE
        SYNTAX          SEQUENCE OF AdslAtucPhysEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "This table provides one row for each ATUC.
            Each row contains the Physical Layer Parameters
            table for that ATUC. ADSL physical interfaces are
            those ifEntries where ifType is equal to adsl(94)."
    ::= { adslMibObjects 2 }

   adslAtucPhysEntry       OBJECT-TYPE
        SYNTAX          AdslAtucPhysEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION     "An entry in the adslAtucPhysTable."
        INDEX           { ifIndex }
    ::= { adslAtucPhysTable 1 }

   AdslAtucPhysEntry ::=
        SEQUENCE {
        adslAtucInvSerialNumber         SnmpAdminString,
        adslAtucInvVendorID             SnmpAdminString,
        adslAtucInvVersionNumber        SnmpAdminString,
        adslAtucCurrSnrMgn              INTEGER,
        adslAtucCurrAtn                 Gauge32,
        adslAtucCurrStatus              BITS,
```

```
            adslAtucCurrOutputPwr           INTEGER,
            adslAtucCurrAttainableRate      Gauge32
            }

    -- inventory group
    --
    -- These items should describe the lowest level identifiable
    -- component, be it a stand-alone modem, a card in a rack,
    -- a child-board, etc.
    --
    adslAtucInvSerialNumber OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE (0..32))
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The vendor specific string that identifies the
            vendor equipment."
    ::= { adslAtucPhysEntry 1 }

    adslAtucInvVendorID OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE (0..16))
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The vendor ID code is a copy of the binary
            vendor identification field defined by the
            PHY[10] and expressed as readable characters."
    ::= { adslAtucPhysEntry 2 }

    adslAtucInvVersionNumber OBJECT-TYPE
        SYNTAX      SnmpAdminString (SIZE (0..16))
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The vendor specific version number sent by this ATU
            as part of the initialization messages.  It is a copy
            of the binary version number field defined by the
            PHY[10] and expressed as readable characters."
    ::= { adslAtucPhysEntry 3 }

    -- current status group
    --
    adslAtucCurrSnrMgn OBJECT-TYPE
        SYNTAX      INTEGER (-640..640)
        UNITS       "tenth dB"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
```

```
                "Noise Margin as seen by this ATU with respect to its
                received signal in tenth dB."
            ::= { adslAtucPhysEntry 4 }

         adslAtucCurrAtn OBJECT-TYPE
             SYNTAX       Gauge32(0..630)
             UNITS        "tenth dB"
             MAX-ACCESS   read-only
             STATUS       current
             DESCRIPTION
                 "Measured difference in the total power transmitted by
                 the peer ATU and the total power received by this ATU."
            ::= { adslAtucPhysEntry 5 }

         adslAtucCurrStatus OBJECT-TYPE
             SYNTAX       BITS {
                               noDefect(0),
                               lossOfFraming(1),
                               lossOfSignal(2),
                               lossOfPower(3),
                               lossOfSignalQuality(4),
                               lossOfLink(5),
                               dataInitFailure(6),
                               configInitFailure(7),
                               protocolInitFailure(8),
                               noPeerAtuPresent(9)
                               }
             MAX-ACCESS   read-only
             STATUS       current
             DESCRIPTION
                 "Indicates current state of the ATUC line.  This is a
                 bit-map of possible conditions.  The various bit
                 positions are:

           0      noDefect              There no defects on the line

           1      lossOfFraming         ATUC failure due to not
                                        receiving valid frame.

           2      lossOfSignal          ATUC failure due to not
                                        receiving signal.

           3      lossOfPower           ATUC failure due to loss of
                                        power.
                                        Note: the Agent may still
                                        function.

           4      lossOfSignalQuality  Loss of Signal Quality is
```

```
                               declared when the Noise Margin
                               falls below the Minimum Noise
                               Margin, or the bit-error-rate
                               exceeds 10^-7.

    5      lossOfLink          ATUC failure due to inability
                               to link with ATUR.

    6      dataInitFailure     ATUC failure during
                               initialization due to bit
                               errors corrupting startup
                               exchange data.

    7      configInitFailure   ATUC failure during
                               initialization due to peer
                               ATU not able to support
                               requested configuration

    8      protocolInitFailure ATUC failure during
                               initialization due to
                               incompatible protocol used by
                               the peer ATU.

    9      noPeerAtuPresent    ATUC failure during
                               initialization due to no
                               activation sequence detected
                               from peer ATU.

        This is intended to supplement ifOperStatus."
    ::= { adslAtucPhysEntry 6 }

    adslAtucCurrOutputPwr OBJECT-TYPE
        SYNTAX      INTEGER (-310..310)
        UNITS       "tenth dBm"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Measured total output power transmitted by this ATU.
            This is the measurement that was reported during
            the last activation sequence."
    ::= { adslAtucPhysEntry 7 }

    adslAtucCurrAttainableRate OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "bps"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
```

```
             "Indicates the maximum currently attainable data rate
             by the ATU.  This value will be equal or greater than
             the current line rate."
        ::= { adslAtucPhysEntry 8 }

        adslAturPhysTable        OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAturPhysEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUR
                Each row contains the Physical Layer Parameters
                table for that ATUR. ADSL physical interfaces are
                those ifEntries where ifType is equal to adsl(94)."
        ::= { adslMibObjects 3 }

        adslAturPhysEntry        OBJECT-TYPE
            SYNTAX          AdslAturPhysEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in the adslAturPhysTable."
            INDEX           { ifIndex }
        ::= { adslAturPhysTable 1 }

        AdslAturPhysEntry ::=
            SEQUENCE {
            adslAturInvSerialNumber         SnmpAdminString,
            adslAturInvVendorID             SnmpAdminString,
            adslAturInvVersionNumber        SnmpAdminString,
            adslAturCurrSnrMgn              INTEGER,
            adslAturCurrAtn                 Gauge32,
            adslAturCurrStatus              BITS,
            adslAturCurrOutputPwr           INTEGER,
            adslAturCurrAttainableRate      Gauge32
            }

        -- inventory group
        --
        adslAturInvSerialNumber OBJECT-TYPE
            SYNTAX      SnmpAdminString (SIZE (0..32))
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The vendor specific string that identifies the
                vendor equipment."
        ::= { adslAturPhysEntry 1 }

        adslAturInvVendorID OBJECT-TYPE
```

```
        SYNTAX       SnmpAdminString (SIZE (0..16))
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The vendor ID code is a copy of the binary
            vendor identification field defined by the
            PHY[10] and expressed as readable characters."
    ::= { adslAturPhysEntry 2 }


    adslAturInvVersionNumber OBJECT-TYPE
        SYNTAX       SnmpAdminString (SIZE (0..16))
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The vendor specific version number sent by this ATU
            as part of the initialization messages.  It is a copy
            of the binary version number field defined by the
            PHY[10] and expressed as readable characters."
    ::= { adslAturPhysEntry 3 }


    -- current status group
    --
    adslAturCurrSnrMgn OBJECT-TYPE
        SYNTAX       INTEGER (-640..640)
        UNITS        "tenth dB"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Noise Margin as seen by this ATU with respect to its
            received signal in tenth dB."
    ::= { adslAturPhysEntry 4 }


    adslAturCurrAtn OBJECT-TYPE
        SYNTAX       Gauge32(0..630)
        UNITS        "tenth dB"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "Measured difference in the total power transmitted by
            the peer ATU and the total power received by this ATU."
    ::= { adslAturPhysEntry 5 }


    adslAturCurrStatus OBJECT-TYPE
        SYNTAX       BITS {
                        noDefect(0),
                        lossOfFraming(1),
                        lossOfSignal(2),
                        lossOfPower(3),
```

```
                                lossOfSignalQuality(4)
                              }
           MAX-ACCESS  read-only
           STATUS      current
           DESCRIPTION
               "Indicates current state of the ATUR line.  This is a
               bit-map of possible conditions.  Due to the isolation
               of the ATUR when line problems occur, many state
               conditions like loss of power, loss of quality signal,
               and initialization errors,  can not be determined.
               While trouble shooting ATUR, also use object,
               adslAtucCurrStatus.  The various bit positions are:

        0      noDefect            There no defects on the line

        1      lossOfFraming       ATUR failure due to not
                                   receiving valid frame

        2      lossOfSignal        ATUR failure due to not
                                   receiving signal

        3      lossOfPower         ATUR failure due to loss of
                                   power

        4      lossOfSignalQuality Loss of Signal Quality is
                                   declared when the Noise Margin
                                   falls below the Minimum Noise
                                   Margin, or the
                                   bit-error-rate exceeds 10^-7.

               This is intended to supplement ifOperStatus."
           ::= { adslAturPhysEntry 6 }


       adslAturCurrOutputPwr OBJECT-TYPE
           SYNTAX      INTEGER (-310..310)
           UNITS       "tenth dBm"
           MAX-ACCESS  read-only
           STATUS      current
           DESCRIPTION
               "Measured total output power transmitted by this ATU.
               This is the measurement that was reported during
               the last activation sequence."
           ::= { adslAturPhysEntry 7 }

       adslAturCurrAttainableRate OBJECT-TYPE
           SYNTAX      Gauge32
           UNITS       "bps"
```

```
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the maximum currently attainable data rate
                by the ATU.  This value will be equal or greater than
                the current line rate."
        ::= { adslAturPhysEntry 8 }


        adslAtucChanTable       OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAtucChanEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUC channel.
                ADSL channel interfaces are those ifEntries
                where ifType is equal to adslInterleave(124)
                or adslFast(125)."
        ::= { adslMibObjects 4 }

        adslAtucChanEntry       OBJECT-TYPE
            SYNTAX          AdslAtucChanEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in the adslAtucChanTable."
            INDEX           { ifIndex }
        ::= { adslAtucChanTable 1 }

        AdslAtucChanEntry ::=
            SEQUENCE {
            adslAtucChanInterleaveDelay     Gauge32,
            adslAtucChanCurrTxRate          Gauge32,
            adslAtucChanPrevTxRate          Gauge32,
            adslAtucChanCrcBlockLength      Gauge32
            }

        -- current group
        --
        adslAtucChanInterleaveDelay OBJECT-TYPE
            SYNTAX      Gauge32
            UNITS       "milli-seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Interleave Delay for this channel.

                Interleave delay applies only to the
                interleave channel and defines the mapping
```

```
            (relative spacing) between subsequent input
            bytes at the interleaver input and their placement
            in the bit stream at the interleaver output.
            Larger numbers provide greater separation between
            consecutive input bytes in the output bit stream
            allowing for improved impulse noise immunity at
            the expense of payload latency.

            In the case where the ifType is Fast(125), use
            noSuchObject."
    ::= { adslAtucChanEntry 1 }

    adslAtucChanCurrTxRate  OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "bps"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Actual transmit rate on this channel."
    ::= { adslAtucChanEntry 2 }

    adslAtucChanPrevTxRate OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS        "bps"
        MAX-ACCESS  accessible-for-notify
        STATUS      current
        DESCRIPTION
            "The rate at the time of the last
            adslAtucRateChangeTrap event. It is also set at
            initialization to prevent a trap being sent.

            Rate changes less than adslAtucThresh(*)RateDown
            or less than adslAtucThresh(*)RateUp will not
            cause a trap or cause this object to change.
            (*) == Fast or Interleave.
            See AdslLineAlarmConfProfileEntry."
    ::= { adslAtucChanEntry 3 }

    adslAtucChanCrcBlockLength OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS        "byte"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Indicates the length of the channel data-block
            on which the CRC operates.  Refer to Line Code
            Specific MIBs, [11] and [12] for more
            information."
```

```
        ::= { adslAtucChanEntry 4 }

    adslAturChanTable        OBJECT-TYPE
        SYNTAX           SEQUENCE OF AdslAturChanEntry
        MAX-ACCESS       not-accessible
        STATUS           current
        DESCRIPTION
            "This table provides one row for each ATUR channel.
            ADSL channel interfaces are those ifEntries
            where ifType is equal to adslInterleave(124)
            or adslFast(125)."
    ::= { adslMibObjects 5 }

    adslAturChanEntry        OBJECT-TYPE
        SYNTAX           AdslAturChanEntry
        MAX-ACCESS       not-accessible
        STATUS           current
        DESCRIPTION      "An entry in the adslAturChanTable."
        INDEX            { ifIndex }
    ::= { adslAturChanTable 1 }

    AdslAturChanEntry ::=
        SEQUENCE {
        adslAturChanInterleaveDelay     Gauge32,
        adslAturChanCurrTxRate          Gauge32,
        adslAturChanPrevTxRate          Gauge32,
        adslAturChanCrcBlockLength      Gauge32
        }

    -- current group
    --
    adslAturChanInterleaveDelay OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "milli-seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Interleave Delay for this channel.

            Interleave delay applies only to the
            interleave channel and defines the mapping
            (relative spacing) between subsequent input
            bytes at the interleaver input and their placement
            in the bit stream at the interleaver output.
            Larger numbers provide greater separation between
            consecutive input bytes in the output bit stream
            allowing for improved impulse noise immunity at
            the expense of payload latency.
```

```
             In the case where the ifType is Fast(125), use
             noSuchObject."
        ::= { adslAturChanEntry 1 }


        adslAturChanCurrTxRate  OBJECT-TYPE
            SYNTAX      Gauge32
            UNITS       "bps"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Actual transmit rate on this channel."
        ::= { adslAturChanEntry 2 }


        adslAturChanPrevTxRate OBJECT-TYPE
            SYNTAX      Gauge32
            UNITS       "bps"
            MAX-ACCESS  accessible-for-notify
            STATUS      current
            DESCRIPTION
               "The rate at the time of the last
                adslAturRateChangeTrap event. It is also set at
                initialization to prevent a trap being sent.

                Rate changes less than adslAturThresh(*)RateDown
                or less than adslAturThresh(*)RateUp will not
                cause a trap or cause this object to change.
                (*) == Fast or Interleave.
                See AdslLineAlarmConfProfileEntry."
        ::= { adslAturChanEntry 3 }

        adslAturChanCrcBlockLength OBJECT-TYPE
            SYNTAX      Gauge32
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the length of the channel data-block
                on which the CRC operates.  Refer to Line Code
                Specific MIBs, [11] and [12] for more
                information."
        ::= { adslAturChanEntry 4 }

        adslAtucPerfDataTable   OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAtucPerfDataEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUC.
                ADSL physical interfaces are
```

```
                those ifEntries where ifType is equal to adsl(94)."
        ::= { adslMibObjects 6 }

        adslAtucPerfDataEntry       OBJECT-TYPE
            SYNTAX          AdslAtucPerfDataEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in adslAtucPerfDataTable."
            INDEX           { ifIndex }
        ::= { adslAtucPerfDataTable 1 }

        AdslAtucPerfDataEntry ::=
            SEQUENCE {
            adslAtucPerfLofs                  Counter32,
            adslAtucPerfLoss                  Counter32,
            adslAtucPerfLols                  Counter32,
            adslAtucPerfLprs                  Counter32,
            adslAtucPerfESs                   Counter32,
            adslAtucPerfInits                 Counter32,
            adslAtucPerfValidIntervals        INTEGER,
            adslAtucPerfInvalidIntervals      INTEGER,
            adslAtucPerfCurr15MinTimeElapsed AdslPerfTimeElapsed,
            adslAtucPerfCurr15MinLofs         PerfCurrentCount,
            adslAtucPerfCurr15MinLoss         PerfCurrentCount,
            adslAtucPerfCurr15MinLols         PerfCurrentCount,
            adslAtucPerfCurr15MinLprs         PerfCurrentCount,
            adslAtucPerfCurr15MinESs          PerfCurrentCount,
            adslAtucPerfCurr15MinInits        PerfCurrentCount,
            adslAtucPerfCurr1DayTimeElapsed  AdslPerfTimeElapsed,
            adslAtucPerfCurr1DayLofs          AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayLoss          AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayLols          AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayLprs          AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayESs           AdslPerfCurrDayCount,
            adslAtucPerfCurr1DayInits         AdslPerfCurrDayCount,
            adslAtucPerfPrev1DayMoniSecs      INTEGER,
            adslAtucPerfPrev1DayLofs          AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayLoss          AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayLols          AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayLprs          AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayESs           AdslPerfPrevDayCount,
            adslAtucPerfPrev1DayInits         AdslPerfPrevDayCount
            }

        -- Event Counters
        --
        -- Also see adslAtucIntervalTable for 15 minute interval
        -- elapsed counters.
```

```
           --
           adslAtucPerfLofs OBJECT-TYPE
               SYNTAX      Counter32
               MAX-ACCESS  read-only
               STATUS      current
               DESCRIPTION
                   "Count of the number of Loss of Framing failures since
                   agent reset."
           ::= { adslAtucPerfDataEntry 1 }

           adslAtucPerfLoss  OBJECT-TYPE
               SYNTAX      Counter32
               MAX-ACCESS  read-only
               STATUS      current
               DESCRIPTION
                   "Count of the number of Loss of Signal failures since
                   agent reset."
           ::= { adslAtucPerfDataEntry 2 }

           adslAtucPerfLols OBJECT-TYPE
               SYNTAX      Counter32
               MAX-ACCESS  read-only
               STATUS      current
               DESCRIPTION
                   "Count of the number of Loss of Link failures since
                   agent reset."
           ::= { adslAtucPerfDataEntry 3 }

           adslAtucPerfLprs OBJECT-TYPE
               SYNTAX      Counter32
               MAX-ACCESS  read-only
               STATUS      current
               DESCRIPTION
                   "Count of the number of Loss of Power failures since
                   agent reset."
           ::= { adslAtucPerfDataEntry 4 }

           adslAtucPerfESs OBJECT-TYPE
               SYNTAX      Counter32
               MAX-ACCESS  read-only
               STATUS      current
               DESCRIPTION
                   "Count of the number of Errored Seconds since agent
                   reset.  The errored second parameter is a count of
                   one-second intervals containing one or more crc
                   anomalies, or one or more los or sef defects."
           ::= { adslAtucPerfDataEntry 5 }
```

```
            adslAtucPerfInits OBJECT-TYPE
                SYNTAX       Counter32
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "Count of the line initialization attempts since
                    agent reset. Includes both successful and failed
                    attempts."
            ::= { adslAtucPerfDataEntry 6 }


            -- general 15 min interval information
            --


            adslAtucPerfValidIntervals OBJECT-TYPE
                SYNTAX       INTEGER(0..96)
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "The number of previous 15-minute intervals in the
                    interval table for which data was collected.  Given
                    that <n> is the maximum # of intervals supported.
                    The value will be <n> unless the measurement was
                    (re-)started within the last (<n>*15) minutes, in which
                    case the value will be the number of complete 15
                    minute intervals for which the agent has at least
                    some data. In certain cases (e.g., in the case
                    where the agent is a proxy) it is possible that some
                    intervals are unavailable.  In this case, this
                    interval is the maximum interval number for
                    which data is available."
            ::= { adslAtucPerfDataEntry 7 }

            adslAtucPerfInvalidIntervals OBJECT-TYPE
                SYNTAX       INTEGER(0..96)
                MAX-ACCESS   read-only
                STATUS       current
                DESCRIPTION
                    "The number of intervals in the range from
                    0 to the value of adslAtucPerfValidIntervals
                    for which no data is available. This object
                    will typically be zero except in cases where
                    the data for some intervals are not available
                    (e.g., in proxy situations)."
            ::= { adslAtucPerfDataEntry 8 }

            -- 15 min current performance group
```

```
          --
          adslAtucPerfCurr15MinTimeElapsed OBJECT-TYPE
              SYNTAX      AdslPerfTimeElapsed(0..899)
              UNITS       "seconds"
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "Total elapsed seconds in this interval."
          ::= { adslAtucPerfDataEntry 9 }

          adslAtucPerfCurr15MinLofs 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 Loss of Framing."
          ::= { adslAtucPerfDataEntry 10 }

          adslAtucPerfCurr15MinLoss  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 Loss of Signal."
          ::= { adslAtucPerfDataEntry 11 }

          adslAtucPerfCurr15MinLols  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 Loss of Link."
          ::= { adslAtucPerfDataEntry 12 }

          adslAtucPerfCurr15MinLprs  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 Loss of Power."
```

```
            ::= { adslAtucPerfDataEntry 13 }

        adslAtucPerfCurr15MinESs OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of Errored Seconds in the current 15 minute
                interval.  The errored second parameter is a count of
                one-second intervals containing one or more crc
                anomalies, or one or more los or sef defects."
        ::= { adslAtucPerfDataEntry 14 }

        adslAtucPerfCurr15MinInits  OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the line initialization attempts in the
                current 15 minute interval. Includes both successful
                and failed attempts."
        ::= { adslAtucPerfDataEntry 15 }

        -- 1-day current and previous performance group
        --
        adslAtucPerfCurr1DayTimeElapsed OBJECT-TYPE
            SYNTAX      AdslPerfTimeElapsed(0..86399)
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Number of seconds that have elapsed since the
                beginning of the current 1-day interval."
        ::= { adslAtucPerfDataEntry 16 }


        adslAtucPerfCurr1DayLofs  OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the number of seconds when there was Loss of
                Framing during the current day as measured by
                adslAtucPerfCurr1DayTimeElapsed."
        ::= { adslAtucPerfDataEntry 17 }
```

            adslAtucPerfCurr1DayLoss OBJECT-TYPE
                SYNTAX   AdslPerfCurrDayCount
                UNITS   "seconds"
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Count of the number of seconds when there was Loss of
                    Signal during the current day as measured by
                    adslAtucPerfCurr1DayTimeElapsed."
            ::= { adslAtucPerfDataEntry 18 }

            adslAtucPerfCurr1DayLols OBJECT-TYPE
                SYNTAX   AdslPerfCurrDayCount
                UNITS   "seconds"
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Count of the number of seconds when there was Loss of
                    Link during the current day as measured by
                    adslAtucPerfCurr1DayTimeElapsed."
            ::= { adslAtucPerfDataEntry 19 }

            adslAtucPerfCurr1DayLprs OBJECT-TYPE
                SYNTAX   AdslPerfCurrDayCount
                UNITS   "seconds"
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Count of the number of seconds when there was Loss of
                    Power during the current day as measured by
                    adslAtucPerfCurr1DayTimeElapsed."
            ::= { adslAtucPerfDataEntry 20 }

            adslAtucPerfCurr1DayESs OBJECT-TYPE
                SYNTAX   AdslPerfCurrDayCount
                UNITS   "seconds"
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Count of Errored Seconds during the current day as
                    measured by adslAtucPerfCurr1DayTimeElapsed.
                    The errored second parameter is a count of
                    one-second intervals containing one or more crc
                    anomalies, or one or more los or sef defects."
            ::= { adslAtucPerfDataEntry 21 }

            adslAtucPerfCurr1DayInits OBJECT-TYPE
                SYNTAX   AdslPerfCurrDayCount

```
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the line initialization attempts in the
                day as measured by adslAtucPerfCurr1DayTimeElapsed.
                Includes both successful and failed attempts."
        ::= { adslAtucPerfDataEntry 22 }

        adslAtucPerfPrev1DayMoniSecs OBJECT-TYPE
            SYNTAX      INTEGER(0..86400)
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The amount of time in the previous 1-day interval
                over which the performance monitoring information
                is actually counted. This value will be the same as
                the interval duration except in a situation where
                performance monitoring data could not be collected
                for any reason."
        ::= { adslAtucPerfDataEntry 23 }

        adslAtucPerfPrev1DayLofs  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the interval when there was
                Loss of Framing within the most recent previous
                1-day period."
        ::= { adslAtucPerfDataEntry 24 }

        adslAtucPerfPrev1DayLoss  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the interval when there was
                Loss of Signal within the most recent previous
                1-day period."
        ::= { adslAtucPerfDataEntry 25 }

        adslAtucPerfPrev1DayLols  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
```

```
        STATUS      current
        DESCRIPTION
            "Count of seconds in the interval when there was
            Loss of Link within the most recent previous
            1-day period."
    ::= { adslAtucPerfDataEntry 26 }

    adslAtucPerfPrev1DayLprs  OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of seconds in the interval when there was
            Loss of Power within the most recent previous
            1-day period."
    ::= { adslAtucPerfDataEntry 27 }

    adslAtucPerfPrev1DayESs OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of Errored Seconds within the most recent
            previous 1-day period. The errored second parameter is
            a count of one-second intervals containing one or more
            crc anomalies, or one or more los or sef defects."
    ::= { adslAtucPerfDataEntry 28 }

    adslAtucPerfPrev1DayInits  OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of the line initialization attempts in the most
            recent previous 1-day period. Includes both successful
            and failed attempts."
    ::= { adslAtucPerfDataEntry 29 }


    adslAturPerfDataTable   OBJECT-TYPE
        SYNTAX          SEQUENCE OF AdslAturPerfDataEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "This table provides one row for each ATUR.
            ADSL physical interfaces are
```

```
              those ifEntries where ifType is equal to adsl(94)."
         ::= { adslMibObjects 7 }

         adslAturPerfDataEntry      OBJECT-TYPE
             SYNTAX          AdslAturPerfDataEntry
             MAX-ACCESS      not-accessible
             STATUS          current
             DESCRIPTION     "An entry in adslAturPerfDataTable."
             INDEX           { ifIndex }
         ::= { adslAturPerfDataTable 1 }

         AdslAturPerfDataEntry ::=
             SEQUENCE {
             adslAturPerfLofs                 Counter32,
             adslAturPerfLoss                 Counter32,
             adslAturPerfLprs                 Counter32,
             adslAturPerfESs                  Counter32,
             adslAturPerfValidIntervals       INTEGER,
             adslAturPerfInvalidIntervals     INTEGER,
             adslAturPerfCurr15MinTimeElapsed AdslPerfTimeElapsed,
             adslAturPerfCurr15MinLofs        PerfCurrentCount,
             adslAturPerfCurr15MinLoss        PerfCurrentCount,
             adslAturPerfCurr15MinLprs        PerfCurrentCount,
             adslAturPerfCurr15MinESs         PerfCurrentCount,
             adslAturPerfCurr1DayTimeElapsed  AdslPerfTimeElapsed,
             adslAturPerfCurr1DayLofs         AdslPerfCurrDayCount,
             adslAturPerfCurr1DayLoss         AdslPerfCurrDayCount,
             adslAturPerfCurr1DayLprs         AdslPerfCurrDayCount,
             adslAturPerfCurr1DayESs          AdslPerfCurrDayCount,
             adslAturPerfPrev1DayMoniSecs     INTEGER,
             adslAturPerfPrev1DayLofs         AdslPerfPrevDayCount,
             adslAturPerfPrev1DayLoss         AdslPerfPrevDayCount,
             adslAturPerfPrev1DayLprs         AdslPerfPrevDayCount,
             adslAturPerfPrev1DayESs          AdslPerfPrevDayCount
             }

         -- Event (Raw) Counters
         --
         -- Also see adslAturIntervalTable for 15 minute interval
         -- elapsed counters.
         --
         adslAturPerfLofs OBJECT-TYPE
             SYNTAX      Counter32
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of the number of Loss of Framing failures since
```

```
                   agent reset."
            ::= { adslAturPerfDataEntry 1 }

         adslAturPerfLoss  OBJECT-TYPE
             SYNTAX      Counter32
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of the number of Loss of Signal failures since
                  agent reset."
            ::= { adslAturPerfDataEntry 2 }

         adslAturPerfLprs  OBJECT-TYPE
             SYNTAX      Counter32
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of the number of Loss of Power failures since
                  agent reset."
            ::= { adslAturPerfDataEntry 3 }

         adslAturPerfESs  OBJECT-TYPE
             SYNTAX      Counter32
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of the number of Errored Seconds since agent
                  reset.  The errored second parameter is a count of
                  one-second intervals containing one or more crc
                  anomalies, or one or more los or sef defects."
            ::= { adslAturPerfDataEntry 4 }

         -- general 15 min interval information
         --
         adslAturPerfValidIntervals OBJECT-TYPE
             SYNTAX      INTEGER(0..96)
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "The number of previous 15-minute intervals in the
                  interval table for which data was collected.  Given
                  that <n> is the maximum # of intervals supported.
                  The value will be <n> unless the measurement was
                  (re-)started within the last (<n>*15) minutes, in which
                  case the value will be the number of complete 15
```

```
            minute intervals for which the agent has at least
            some data. In certain cases (e.g., in the case
            where the agent is a proxy) it is possible that some
            intervals are unavailable.  In this case, this
            interval is the maximum interval number for
            which data is available."
    ::= { adslAturPerfDataEntry 5 }

adslAturPerfInvalidIntervals OBJECT-TYPE
    SYNTAX      INTEGER(0..96)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of intervals in the range from
        0 to the value of adslAturPerfValidIntervals
        for which no data is available. This object
        will typically be zero except in cases where
        the data for some intervals are not available
        (e.g., in proxy situations)."
    ::= { adslAturPerfDataEntry 6 }

-- 15 min current performance group
--
adslAturPerfCurr15MinTimeElapsed OBJECT-TYPE
    SYNTAX      AdslPerfTimeElapsed(0..899)
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total elapsed seconds in this interval."
    ::= { adslAturPerfDataEntry 7 }

adslAturPerfCurr15MinLofs 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 Loss of Framing."
    ::= { adslAturPerfDataEntry 8 }

adslAturPerfCurr15MinLoss  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 Loss of Signal."
         ::= { adslAturPerfDataEntry 9 }


         adslAturPerfCurr15MinLprs  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 Loss of Power."
         ::= { adslAturPerfDataEntry 10 }


         adslAturPerfCurr15MinESs OBJECT-TYPE
             SYNTAX      PerfCurrentCount
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of Errored Seconds in the current 15 minute
                 interval.  The errored second parameter is a count of
                 one-second intervals containing one or more crc
                 anomalies, or one or more los or sef defects."
         ::= { adslAturPerfDataEntry 11 }

         -- 1-day current and previous performance group
         --
         adslAturPerfCurr1DayTimeElapsed OBJECT-TYPE
             SYNTAX      AdslPerfTimeElapsed(0..86399)
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Number of seconds that have elapsed since the
                 beginning of the current 1-day interval."
         ::= { adslAturPerfDataEntry 12 }


         adslAturPerfCurr1DayLofs  OBJECT-TYPE
             SYNTAX      AdslPerfCurrDayCount
             UNITS       "seconds"
             MAX-ACCESS  read-only
             STATUS      current
             DESCRIPTION
                 "Count of the number of seconds when there was Loss
                 of Framing during the current day as measured by
                 adslAturPerfCurr1DayTimeElapsed."
```

```
        ::= { adslAturPerfDataEntry 13 }

        adslAturPerfCurr1DayLoss  OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the number of seconds when there was Loss
                of Signal during the current day as measured by
                adslAturPerfCurr1DayTimeElapsed."
        ::= { adslAturPerfDataEntry 14 }

        adslAturPerfCurr1DayLprs  OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the number of seconds when there was Loss
                of Power during the current day as measured by
                adslAturPerfCurr1DayTimeElapsed."
        ::= { adslAturPerfDataEntry 15 }

    adslAturPerfCurr1DayESs OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of Errored Seconds during the current day as
                measured by adslAturPerfCurr1DayTimeElapsed.
                The errored second parameter is a count of
                one-second intervals containing one or more crc
                anomalies, or one or more los or sef defects."
        ::= { adslAturPerfDataEntry 16 }

        adslAturPerfPrev1DayMoniSecs OBJECT-TYPE
            SYNTAX      INTEGER(0..86400)
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The amount of time in the previous 1-day interval
                over which the performance monitoring information
                is actually counted. This value will be the same as
                the interval duration except in a situation where
                performance monitoring data could not be collected
```

```
                for any reason."
        ::= { adslAturPerfDataEntry 17 }

        adslAturPerfPrev1DayLofs  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the interval when there was
                Loss of Framing within the most recent previous
                1-day period."
        ::= { adslAturPerfDataEntry 18 }

        adslAturPerfPrev1DayLoss  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the interval when there was
                Loss of Signal within the most recent previous
                1-day period."
        ::= { adslAturPerfDataEntry 19 }

        adslAturPerfPrev1DayLprs  OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of seconds in the interval when there was
                Loss of Power within the most recent previous
                1-day period."
        ::= { adslAturPerfDataEntry 20 }

        adslAturPerfPrev1DayESs OBJECT-TYPE
            SYNTAX      AdslPerfPrevDayCount
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of Errored Seconds within the most recent
                previous 1-day period. The errored second parameter is
                a count of one-second intervals containing one or more
                crc anomalies, or one or more los or sef defects."
        ::= { adslAturPerfDataEntry 21 }
```

            adslAtucIntervalTable   OBJECT-TYPE
                SYNTAX   SEQUENCE OF AdslAtucIntervalEntry
                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)."
            ::= { adslMibObjects 8 }

            adslAtucIntervalEntry   OBJECT-TYPE
                SYNTAX   AdslAtucIntervalEntry
                MAX-ACCESS   not-accessible
                STATUS   current
                DESCRIPTION   "An entry in the adslAtucIntervalTable."
                INDEX   { ifIndex, adslAtucIntervalNumber }
            ::= { adslAtucIntervalTable 1 }

            AdslAtucIntervalEntry ::=
                SEQUENCE {
                adslAtucIntervalNumber   INTEGER,
                adslAtucIntervalLofs   PerfIntervalCount,
                adslAtucIntervalLoss   PerfIntervalCount,
                adslAtucIntervalLols   PerfIntervalCount,
                adslAtucIntervalLprs   PerfIntervalCount,
                adslAtucIntervalESs   PerfIntervalCount,
                adslAtucIntervalInits   PerfIntervalCount,
                adslAtucIntervalValidData   TruthValue
                }

            adslAtucIntervalNumber OBJECT-TYPE
                SYNTAX   INTEGER(1..96)
                MAX-ACCESS not-accessible
                STATUS   current
                DESCRIPTION
                    "Performance Data Interval number 1 is the
                    the most recent previous interval; interval
                    96 is 24 hours ago. Intervals 2..96 are
                    optional."
            ::= { adslAtucIntervalEntry 1 }

            adslAtucIntervalLofs OBJECT-TYPE
                SYNTAX   PerfIntervalCount
                UNITS   "seconds"
                MAX-ACCESS read-only
                STATUS   current
                DESCRIPTION

```
              "Count of seconds in the interval when there was Loss
              of Framing."
          ::= { adslAtucIntervalEntry 2 }

          adslAtucIntervalLoss  OBJECT-TYPE
              SYNTAX       PerfIntervalCount
              UNITS        "seconds"
              MAX-ACCESS   read-only
              STATUS       current
              DESCRIPTION
                  "Count of seconds in the interval when there was Loss
                  of Signal."
          ::= { adslAtucIntervalEntry 3 }

          adslAtucIntervalLols  OBJECT-TYPE
              SYNTAX       PerfIntervalCount
              UNITS        "seconds"
              MAX-ACCESS   read-only
              STATUS       current
              DESCRIPTION
                  "Count of seconds in the interval when there was Loss
                  of Link."
          ::= { adslAtucIntervalEntry 4 }

          adslAtucIntervalLprs  OBJECT-TYPE
              SYNTAX       PerfIntervalCount
              UNITS        "seconds"
              MAX-ACCESS   read-only
              STATUS       current
              DESCRIPTION
                  "Count of seconds in the interval when there was Loss
                  of Power."
          ::= { adslAtucIntervalEntry 5 }

          adslAtucIntervalESs OBJECT-TYPE
              SYNTAX       PerfIntervalCount
              UNITS        "seconds"
              MAX-ACCESS   read-only
              STATUS       current
              DESCRIPTION
                  "Count of Errored Seconds in the interval.
                  The errored second parameter is a count of
                  one-second intervals containing one or more crc
                  anomalies, or one or more los or sef defects."
          ::= { adslAtucIntervalEntry 6 }

          adslAtucIntervalInits  OBJECT-TYPE
              SYNTAX       PerfIntervalCount
```

```
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of the line initialization attempts
                during the interval. Includes both successful
                and failed attempts."
        ::= { adslAtucIntervalEntry 7 }

        adslAtucIntervalValidData OBJECT-TYPE
            SYNTAX TruthValue
            MAX-ACCESS read-only
            STATUS current
            DESCRIPTION
                "This variable indicates if the data for this
                interval is valid."
        ::= { adslAtucIntervalEntry 8 }

        adslAturIntervalTable   OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAturIntervalEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUR
                performance data collection interval.
                ADSL physical interfaces are those
                ifEntries where ifType is equal to adsl(94)."
        ::= { adslMibObjects 9 }

        adslAturIntervalEntry   OBJECT-TYPE
            SYNTAX          AdslAturIntervalEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in the adslAturIntervalTable."
            INDEX           { ifIndex, adslAturIntervalNumber }
        ::= { adslAturIntervalTable 1 }

        AdslAturIntervalEntry ::=
            SEQUENCE {
            adslAturIntervalNumber          INTEGER,
            adslAturIntervalLofs            PerfIntervalCount,
            adslAturIntervalLoss            PerfIntervalCount,
            adslAturIntervalLprs            PerfIntervalCount,
            adslAturIntervalESs             PerfIntervalCount,
            adslAturIntervalValidData       TruthValue
            }

        adslAturIntervalNumber OBJECT-TYPE
            SYNTAX      INTEGER(1..96)
```

```
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Performance Data Interval number 1 is the
            the most recent previous interval; interval
            96 is 24 hours ago.  Intervals 2..96 are
            optional."
    ::= { adslAturIntervalEntry 1 }

    adslAturIntervalLofs OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of seconds in the interval when there was
            Loss of Framing."
    ::= { adslAturIntervalEntry 2 }

    adslAturIntervalLoss  OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of seconds in the interval when there was
            Loss of Signal."
    ::= { adslAturIntervalEntry 3 }

    adslAturIntervalLprs  OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of seconds in the interval when there was
            Loss of Power."
    ::= { adslAturIntervalEntry 4 }

    adslAturIntervalESs OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of Errored Seconds in the interval.
            The errored second parameter is a count of
            one-second intervals containing one or more crc
```

```
                anomalies, or one or more los or sef defects."
          ::= { adslAturIntervalEntry 5 }

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


          adslAtucChanPerfDataTable       OBJECT-TYPE
              SYNTAX          SEQUENCE OF AdslAtucChanPerfDataEntry
              MAX-ACCESS      not-accessible
              STATUS          current
              DESCRIPTION
                  "This table provides one row for each ATUC channel.
                  ADSL channel interfaces are those ifEntries
                  where ifType is equal to adslInterleave(124)
                  or adslFast(125)."
          ::= { adslMibObjects 10 }

          adslAtucChanPerfDataEntry       OBJECT-TYPE
              SYNTAX          AdslAtucChanPerfDataEntry
              MAX-ACCESS      not-accessible
              STATUS          current
              DESCRIPTION     "An entry in adslAtucChanPerfDataTable."
              INDEX           { ifIndex }
          ::= { adslAtucChanPerfDataTable 1 }

          AdslAtucChanPerfDataEntry ::=
           SEQUENCE {
           adslAtucChanReceivedBlks                 Counter32,
           adslAtucChanTransmittedBlks              Counter32,
           adslAtucChanCorrectedBlks                Counter32,
           adslAtucChanUncorrectBlks                Counter32,
           adslAtucChanPerfValidIntervals           INTEGER,
           adslAtucChanPerfInvalidIntervals         INTEGER,
           adslAtucChanPerfCurr15MinTimeElapsed     AdslPerfTimeElapsed,
           adslAtucChanPerfCurr15MinReceivedBlks    PerfCurrentCount,
           adslAtucChanPerfCurr15MinTransmittedBlks PerfCurrentCount,
           adslAtucChanPerfCurr15MinCorrectedBlks   PerfCurrentCount,
           adslAtucChanPerfCurr15MinUncorrectBlks   PerfCurrentCount,
           adslAtucChanPerfCurr1DayTimeElapsed      AdslPerfTimeElapsed,
           adslAtucChanPerfCurr1DayReceivedBlks     AdslPerfCurrDayCount,
           adslAtucChanPerfCurr1DayTransmittedBlks  AdslPerfCurrDayCount,
```

```
            adslAtucChanPerfCurr1DayCorrectedBlks     AdslPerfCurrDayCount,
            adslAtucChanPerfCurr1DayUncorrectBlks     AdslPerfCurrDayCount,
            adslAtucChanPerfPrev1DayMoniSecs          INTEGER,
            adslAtucChanPerfPrev1DayReceivedBlks      AdslPerfPrevDayCount,
            adslAtucChanPerfPrev1DayTransmittedBlks   AdslPerfPrevDayCount,
            adslAtucChanPerfPrev1DayCorrectedBlks     AdslPerfPrevDayCount,
            adslAtucChanPerfPrev1DayUncorrectBlks     AdslPerfPrevDayCount
        }
        -- performance group
        --
        -- Note: block is intended to be the length of the channel
        --       data-block on which the CRC operates. See
        --       adslAtucChanCrcBlockLength for more information.
        --
        adslAtucChanReceivedBlks OBJECT-TYPE
            SYNTAX      Counter32
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all encoded blocks received on this channel
                since agent reset."
        ::= { adslAtucChanPerfDataEntry 1 }

        adslAtucChanTransmittedBlks  OBJECT-TYPE
            SYNTAX      Counter32
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all encoded blocks transmitted on this
                channel since agent reset."
        ::= { adslAtucChanPerfDataEntry 2 }

        adslAtucChanCorrectedBlks  OBJECT-TYPE
            SYNTAX      Counter32
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all blocks received with errors that were
                corrected since agent reset.  These blocks are passed
                on as good data."
        ::= { adslAtucChanPerfDataEntry 3 }

        adslAtucChanUncorrectBlks  OBJECT-TYPE
            SYNTAX      Counter32
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all blocks received with uncorrectable
```

```
                     errors since agent reset."
             ::= { adslAtucChanPerfDataEntry 4 }


             -- general 15 min interval information
             --
             adslAtucChanPerfValidIntervals OBJECT-TYPE
                 SYNTAX       INTEGER(0..96)
                 MAX-ACCESS   read-only
                 STATUS       current
                 DESCRIPTION
                     "The number of previous 15-minute intervals in the
                     interval table for which data was collected.  Given
                     that <n> is the maximum # of intervals supported.
                     The value will be <n> unless the measurement was
                     (re-)started within the last (<n>*15) minutes, in which
                     case the value will be the number of complete 15
                     minute intervals for which the agent has at least
                     some data. In certain cases (e.g., in the case
                     where the agent is a proxy) it is possible that some
                     intervals are unavailable.  In this case, this
                     interval is the maximum interval number for
                     which data is available."
             ::= { adslAtucChanPerfDataEntry 5 }


             adslAtucChanPerfInvalidIntervals OBJECT-TYPE
                 SYNTAX       INTEGER(0..96)
                 MAX-ACCESS   read-only
                 STATUS       current
                 DESCRIPTION
                     "The number of intervals in the range from
                     0 to the value of adslAtucChanPerfValidIntervals
                     for which no data is available. This object
                     will typically be zero except in cases where
                     the data for some intervals are not available
                     (e.g., in proxy situations)."
             ::= { adslAtucChanPerfDataEntry 6 }


             -- 15 min current performance group
             --
             adslAtucChanPerfCurr15MinTimeElapsed OBJECT-TYPE
                 SYNTAX       AdslPerfTimeElapsed(0..899)
                 UNITS        "seconds"
                 MAX-ACCESS   read-only
                 STATUS       current
                 DESCRIPTION
                     "Total elapsed seconds in this interval."
             ::= { adslAtucChanPerfDataEntry 7 }
```

          adslAtucChanPerfCurr15MinReceivedBlks OBJECT-TYPE
              SYNTAX   PerfCurrentCount
              MAX-ACCESS read-only
              STATUS   current
              DESCRIPTION
                  "Count of all encoded blocks received on this channel
                  within the current 15 minute interval."
          ::= { adslAtucChanPerfDataEntry 8 }

          adslAtucChanPerfCurr15MinTransmittedBlks OBJECT-TYPE
              SYNTAX   PerfCurrentCount
              MAX-ACCESS read-only
              STATUS   current
              DESCRIPTION
                  "Count of all encoded blocks transmitted on this
                  channel within the current 15 minute interval."
          ::= { adslAtucChanPerfDataEntry 9 }

          adslAtucChanPerfCurr15MinCorrectedBlks OBJECT-TYPE
              SYNTAX   PerfCurrentCount
              MAX-ACCESS read-only
              STATUS   current
              DESCRIPTION
                  "Count of all blocks received with errors that were
                  corrected on this channel within the current 15 minute
                  interval."
          ::= { adslAtucChanPerfDataEntry 10 }

          adslAtucChanPerfCurr15MinUncorrectBlks OBJECT-TYPE
              SYNTAX   PerfCurrentCount
              MAX-ACCESS read-only
              STATUS   current
              DESCRIPTION
                  "Count of all blocks received with uncorrectable
                  errors on this channel within the current 15 minute
                  interval."
          ::= { adslAtucChanPerfDataEntry 11 }

          -- 1-day current and previous performance group
          --
          adslAtucChanPerfCurr1DayTimeElapsed OBJECT-TYPE
              SYNTAX   AdslPerfTimeElapsed(0..86399)
              UNITS   "seconds"
              MAX-ACCESS read-only
              STATUS   current
              DESCRIPTION
                  "Number of seconds that have elapsed since the
                  beginning of the current 1-day interval."

```
            ::= { adslAtucChanPerfDataEntry 12 }

            adslAtucChanPerfCurr1DayReceivedBlks  OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of all encoded blocks received on this
                    channel during the current day as measured by
                    adslAtucChanPerfCurr1DayTimeElapsed."
            ::= { adslAtucChanPerfDataEntry 13 }

            adslAtucChanPerfCurr1DayTransmittedBlks  OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of all encoded blocks transmitted on this
                    channel during the current day as measured by
                    adslAtucChanPerfCurr1DayTimeElapsed."
            ::= { adslAtucChanPerfDataEntry 14 }

            adslAtucChanPerfCurr1DayCorrectedBlks  OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of all blocks received with errors that were
                    corrected on this channel during the current day as
                    measured by adslAtucChanPerfCurr1DayTimeElapsed."
            ::= { adslAtucChanPerfDataEntry 15 }

            adslAtucChanPerfCurr1DayUncorrectBlks  OBJECT-TYPE
                SYNTAX      AdslPerfCurrDayCount
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
                    "Count of all blocks received with uncorrectable
                    errors on this channel during the current day as
                    measured by adslAtucChanPerfCurr1DayTimeElapsed."
            ::= { adslAtucChanPerfDataEntry 16 }

            adslAtucChanPerfPrev1DayMoniSecs OBJECT-TYPE
                SYNTAX      INTEGER(0..86400)
                UNITS       "seconds"
                MAX-ACCESS  read-only
                STATUS      current
                DESCRIPTION
```

          "The amount of time in the previous 1-day interval
          over which the performance monitoring information
          is actually counted. This value will be the same as
          the interval duration except in a situation where
          performance monitoring data could not be collected
          for any reason."
      ::= { adslAtucChanPerfDataEntry 17 }

      adslAtucChanPerfPrev1DayReceivedBlks OBJECT-TYPE
          SYNTAX   AdslPerfPrevDayCount
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION
              "Count of all encoded blocks received on this
              channel within the most recent previous 1-day
              period."
      ::= { adslAtucChanPerfDataEntry 18 }

      adslAtucChanPerfPrev1DayTransmittedBlks OBJECT-TYPE
          SYNTAX   AdslPerfPrevDayCount
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION
              "Count of all encoded blocks transmitted on this
              channel within the most recent previous 1-day
              period."
      ::= { adslAtucChanPerfDataEntry 19 }

      adslAtucChanPerfPrev1DayCorrectedBlks OBJECT-TYPE
          SYNTAX   AdslPerfPrevDayCount
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION
              "Count of all blocks received with errors that were
              corrected on this channel within the most recent
              previous 1-day period."
      ::= { adslAtucChanPerfDataEntry 20 }

      adslAtucChanPerfPrev1DayUncorrectBlks OBJECT-TYPE
          SYNTAX   AdslPerfPrevDayCount
          MAX-ACCESS read-only
          STATUS   current
          DESCRIPTION
              "Count of all blocks received with uncorrectable
              errors on this channel within the most recent previous
              1-day period."
      ::= { adslAtucChanPerfDataEntry 21 }

```
        adslAturChanPerfDataTable       OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslAturChanPerfDataEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table provides one row for each ATUR channel.
                ADSL channel interfaces are those ifEntries
                where ifType is equal to adslInterleave(124)
                or adslFast(125)."
        ::= { adslMibObjects 11 }

        adslAturChanPerfDataEntry       OBJECT-TYPE
            SYNTAX          AdslAturChanPerfDataEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION     "An entry in adslAturChanPerfDataTable."
            INDEX           { ifIndex }
        ::= { adslAturChanPerfDataTable 1 }

        AdslAturChanPerfDataEntry ::=
         SEQUENCE {
         adslAturChanReceivedBlks                Counter32,
         adslAturChanTransmittedBlks             Counter32,
         adslAturChanCorrectedBlks               Counter32,
         adslAturChanUncorrectBlks               Counter32,
         adslAturChanPerfValidIntervals          INTEGER,
         adslAturChanPerfInvalidIntervals        INTEGER,
         adslAturChanPerfCurr15MinTimeElapsed    AdslPerfTimeElapsed,
         adslAturChanPerfCurr15MinReceivedBlks   PerfCurrentCount,
         adslAturChanPerfCurr15MinTransmittedBlks PerfCurrentCount,
         adslAturChanPerfCurr15MinCorrectedBlks  PerfCurrentCount,
         adslAturChanPerfCurr15MinUncorrectBlks  PerfCurrentCount,
         adslAturChanPerfCurr1DayTimeElapsed     AdslPerfTimeElapsed,
         adslAturChanPerfCurr1DayReceivedBlks    AdslPerfCurrDayCount,
         adslAturChanPerfCurr1DayTransmittedBlks AdslPerfCurrDayCount,
         adslAturChanPerfCurr1DayCorrectedBlks   AdslPerfCurrDayCount,
         adslAturChanPerfCurr1DayUncorrectBlks   AdslPerfCurrDayCount,
         adslAturChanPerfPrev1DayMoniSecs        INTEGER,
         adslAturChanPerfPrev1DayReceivedBlks    AdslPerfPrevDayCount,
         adslAturChanPerfPrev1DayTransmittedBlks AdslPerfPrevDayCount,
         adslAturChanPerfPrev1DayCorrectedBlks   AdslPerfPrevDayCount,
         adslAturChanPerfPrev1DayUncorrectBlks   AdslPerfPrevDayCount
         }
        -- performance group
        --
        -- Note: block is intended to be the length of the channel
        --       data-block on which the CRC operates. See
        --       adslAturChanCrcBlockLength for more information.
```

```
          --
          adslAturChanReceivedBlks OBJECT-TYPE
              SYNTAX      Counter32
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "Count of all encoded blocks received on this channel
                  since agent reset."
          ::= { adslAturChanPerfDataEntry 1 }

          adslAturChanTransmittedBlks  OBJECT-TYPE
              SYNTAX      Counter32
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "Count of all encoded blocks transmitted on this
                  channel since agent reset."
          ::= { adslAturChanPerfDataEntry 2 }

          adslAturChanCorrectedBlks  OBJECT-TYPE
              SYNTAX      Counter32
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "Count of all blocks received with errors that were
                  corrected since agent reset.  These blocks are passed
                  on as good data."
          ::= { adslAturChanPerfDataEntry 3 }

          adslAturChanUncorrectBlks  OBJECT-TYPE
              SYNTAX      Counter32
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "Count of all blocks received with uncorrectable
                  errors since agent reset."
          ::= { adslAturChanPerfDataEntry 4 }

          -- general 15 min interval information
          --
          adslAturChanPerfValidIntervals OBJECT-TYPE
              SYNTAX      INTEGER(0..96)
              MAX-ACCESS  read-only
              STATUS      current
              DESCRIPTION
                  "The number of previous 15-minute intervals in the
                  interval table for which data was collected.  Given
                  that <n> is the maximum # of intervals supported.
```

                    The value will be <n> unless the measurement was
                    (re-)started within the last (<n>*15) minutes, in which
                    case the value will be the number of complete 15
                    minute intervals for which the agent has at least
                    some data. In certain cases (e.g., in the case
                    where the agent is a proxy) it is possible that some
                    intervals are unavailable. In this case, this
                    interval is the maximum interval number for
                    which data is available."
            ::= { adslAturChanPerfDataEntry 5 }

            adslAturChanPerfInvalidIntervals OBJECT-TYPE
                SYNTAX   INTEGER(0..96)
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "The number of intervals in the range from
                    0 to the value of adslAturChanPerfValidIntervals
                    for which no data is available. This object
                    will typically be zero except in cases where
                    the data for some intervals are not available
                    (e.g., in proxy situations)."
            ::= { adslAturChanPerfDataEntry 6 }

            -- 15 min current performance group
            --
            adslAturChanPerfCurr15MinTimeElapsed OBJECT-TYPE
                SYNTAX   AdslPerfTimeElapsed(0..899)
                UNITS   "seconds"
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Total elapsed seconds in this interval.
                    A full interval is 900 seconds."
            ::= { adslAturChanPerfDataEntry 7 }

            adslAturChanPerfCurr15MinReceivedBlks OBJECT-TYPE
                SYNTAX   PerfCurrentCount
                MAX-ACCESS   read-only
                STATUS   current
                DESCRIPTION
                    "Count of all encoded blocks received on this
                    channel within the current 15 minute interval."
            ::= { adslAturChanPerfDataEntry 8 }

            adslAturChanPerfCurr15MinTransmittedBlks OBJECT-TYPE
                SYNTAX   PerfCurrentCount
                MAX-ACCESS   read-only

```
            STATUS      current
            DESCRIPTION
                "Count of all encoded blocks transmitted on this
                channel within the current 15 minute interval."
        ::= { adslAturChanPerfDataEntry 9 }

        adslAturChanPerfCurr15MinCorrectedBlks  OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all blocks received with errors that were
                corrected on this channel within the current 15 minute
                interval."
        ::= { adslAturChanPerfDataEntry 10 }

        adslAturChanPerfCurr15MinUncorrectBlks  OBJECT-TYPE
            SYNTAX      PerfCurrentCount
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all blocks received with uncorrectable
                errors on this channel within the current 15 minute
                interval."
        ::= { adslAturChanPerfDataEntry 11 }

        -- 1-day current and previous performance group
        --
        adslAturChanPerfCurr1DayTimeElapsed OBJECT-TYPE
            SYNTAX      AdslPerfTimeElapsed(0..86399)
            UNITS       "seconds"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Number of seconds that have elapsed since the
                beginning of the current 1-day interval."
        ::= { adslAturChanPerfDataEntry 12 }

        adslAturChanPerfCurr1DayReceivedBlks  OBJECT-TYPE
            SYNTAX      AdslPerfCurrDayCount
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Count of all encoded blocks received on this
                channel during the current day as measured by
                adslAturChanPerfCurr1DayTimeElapsed."
        ::= { adslAturChanPerfDataEntry 13 }
```

             adslAturChanPerfCurr1DayTransmittedBlks OBJECT-TYPE
                 SYNTAX   AdslPerfCurrDayCount
                 MAX-ACCESS   read-only
                 STATUS   current
                 DESCRIPTION
                     "Count of all encoded blocks transmitted on this
                     channel during the current day as measured by
                     adslAturChanPerfCurr1DayTimeElapsed."

             ::= { adslAturChanPerfDataEntry 14 }

             adslAturChanPerfCurr1DayCorrectedBlks OBJECT-TYPE
                 SYNTAX   AdslPerfCurrDayCount
                 MAX-ACCESS   read-only
                 STATUS   current
                 DESCRIPTION
                     "Count of all blocks received with errors that were
                     corrected on this channel during the current day as
                     measured by adslAturChanPerfCurr1DayTimeElapsed."
             ::= { adslAturChanPerfDataEntry 15 }

             adslAturChanPerfCurr1DayUncorrectBlks OBJECT-TYPE
                 SYNTAX   AdslPerfCurrDayCount
                 MAX-ACCESS   read-only
                 STATUS   current
                 DESCRIPTION
                     "Count of all blocks received with uncorrectable
                     errors on this channel during the current day as
                     measured by adslAturChanPerfCurr1DayTimeElapsed."
             ::= { adslAturChanPerfDataEntry 16 }

             adslAturChanPerfPrev1DayMoniSecs OBJECT-TYPE
                 SYNTAX   INTEGER(0..86400)
                 UNITS   "seconds"
                 MAX-ACCESS   read-only
                 STATUS   current
                 DESCRIPTION
                     "The amount of time in the previous 1-day interval
                     over which the performance monitoring information
                     is actually counted. This value will be the same as
                     the interval duration except in a situation where
                     performance monitoring data could not be collected
                     for any reason."
             ::= { adslAturChanPerfDataEntry 17 }

             adslAturChanPerfPrev1DayReceivedBlks OBJECT-TYPE
                 SYNTAX   AdslPerfPrevDayCount
                 MAX-ACCESS   read-only

```
        STATUS      current
        DESCRIPTION
            "Count of all encoded blocks received on this
            channel within the most recent previous 1-day
            period."
    ::= { adslAturChanPerfDataEntry 18 }

    adslAturChanPerfPrev1DayTransmittedBlks  OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all encoded blocks transmitted on this
            channel within the most recent previous 1-day
            period."
    ::= { adslAturChanPerfDataEntry 19 }

    adslAturChanPerfPrev1DayCorrectedBlks  OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all blocks received with errors that were
            corrected on this channel within the most recent
            previous 1-day period."
    ::= { adslAturChanPerfDataEntry 20 }

    adslAturChanPerfPrev1DayUncorrectBlks  OBJECT-TYPE
        SYNTAX      AdslPerfPrevDayCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all blocks received with uncorrectable
            errors on this channel within the most recent previous
            1-day period."
    ::= { adslAturChanPerfDataEntry 21 }

    adslAtucChanIntervalTable   OBJECT-TYPE
        SYNTAX          SEQUENCE OF AdslAtucChanIntervalEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "This table provides one row for each ATUC channel's
            performance data collection interval.
            ADSL channel interfaces are those ifEntries
            where ifType is equal to adslInterleave(124)
            or adslFast(125)."
    ::= { adslMibObjects 12 }
```

```
adslAtucChanIntervalEntry   OBJECT-TYPE
    SYNTAX          AdslAtucChanIntervalEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION     "An entry in the adslAtucIntervalTable."
    INDEX           { ifIndex, adslAtucChanIntervalNumber }
::= { adslAtucChanIntervalTable 1 }

AdslAtucChanIntervalEntry ::=
    SEQUENCE {
    adslAtucChanIntervalNumber          INTEGER,
    adslAtucChanIntervalReceivedBlks    PerfIntervalCount,
    adslAtucChanIntervalTransmittedBlks PerfIntervalCount,
    adslAtucChanIntervalCorrectedBlks   PerfIntervalCount,
    adslAtucChanIntervalUncorrectBlks   PerfIntervalCount,
    adslAtucChanIntervalValidData       TruthValue
    }
adslAtucChanIntervalNumber OBJECT-TYPE
    SYNTAX      INTEGER(1..96)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Performance Data Interval number 1 is the
        the most recent previous interval; interval
        96 is 24 hours ago.  Intervals 2..96 are
        optional."
::= { adslAtucChanIntervalEntry 1 }

adslAtucChanIntervalReceivedBlks OBJECT-TYPE
    SYNTAX      PerfIntervalCount
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Count of all encoded blocks received on this channel
        during this interval."
::= { adslAtucChanIntervalEntry 2 }

adslAtucChanIntervalTransmittedBlks  OBJECT-TYPE
    SYNTAX      PerfIntervalCount
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Count of all encoded blocks transmitted on this
        channel during this interval."
::= { adslAtucChanIntervalEntry 3 }

adslAtucChanIntervalCorrectedBlks  OBJECT-TYPE
    SYNTAX      PerfIntervalCount
```

```
           MAX-ACCESS  read-only
           STATUS      current
           DESCRIPTION
               "Count of all blocks received with errors that were
               corrected on this channel during this interval."
       ::= { adslAtucChanIntervalEntry 4 }

       adslAtucChanIntervalUncorrectBlks  OBJECT-TYPE
           SYNTAX      PerfIntervalCount
           MAX-ACCESS  read-only
           STATUS      current
           DESCRIPTION
               "Count of all blocks received with uncorrectable
               errors on this channel during this interval."
       ::= { adslAtucChanIntervalEntry 5 }

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


       adslAturChanIntervalTable   OBJECT-TYPE
           SYNTAX          SEQUENCE OF AdslAturChanIntervalEntry
           MAX-ACCESS      not-accessible
           STATUS          current
           DESCRIPTION
               "This table provides one row for each ATUR channel's
               performance data collection interval.
               ADSL channel interfaces are those ifEntries
               where ifType is equal to adslInterleave(124)
               or adslFast(125)."
       ::= { adslMibObjects 13 }

       adslAturChanIntervalEntry   OBJECT-TYPE
           SYNTAX          AdslAturChanIntervalEntry
           MAX-ACCESS      not-accessible
           STATUS          current
           DESCRIPTION     "An entry in the adslAturIntervalTable."
           INDEX           { ifIndex, adslAturChanIntervalNumber }
       ::= { adslAturChanIntervalTable 1 }

       AdslAturChanIntervalEntry ::=
           SEQUENCE {
```

```
        adslAturChanIntervalNumber              INTEGER,
        adslAturChanIntervalReceivedBlks        PerfIntervalCount,
        adslAturChanIntervalTransmittedBlks     PerfIntervalCount,
        adslAturChanIntervalCorrectedBlks       PerfIntervalCount,
        adslAturChanIntervalUncorrectBlks       PerfIntervalCount,
        adslAturChanIntervalValidData           TruthValue
        }
    adslAturChanIntervalNumber OBJECT-TYPE
        SYNTAX      INTEGER(1..96)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "Performance Data Interval number 1 is the
            the most recent previous interval; interval
            96 is 24 hours ago.  Intervals 2..96 are
            optional."
    ::= { adslAturChanIntervalEntry 1 }

    adslAturChanIntervalReceivedBlks OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all encoded blocks received on this channel
            during this interval."
    ::= { adslAturChanIntervalEntry 2 }

    adslAturChanIntervalTransmittedBlks  OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all encoded blocks transmitted on this
            channel during this interval."
    ::= { adslAturChanIntervalEntry 3 }

    adslAturChanIntervalCorrectedBlks  OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Count of all blocks received with errors that were
            corrected on this channel during this interval."
    ::= { adslAturChanIntervalEntry 4 }

    adslAturChanIntervalUncorrectBlks  OBJECT-TYPE
        SYNTAX      PerfIntervalCount
        MAX-ACCESS  read-only
```

```
            STATUS      current
            DESCRIPTION
                "Count of all blocks received with uncorrectable
                errors on this channel during this interval."
         ::= { adslAturChanIntervalEntry 5 }


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



         -- Profile Group
         --

         adslLineConfProfileTable    OBJECT-TYPE
            SYNTAX          SEQUENCE OF AdslLineConfProfileEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "This table contains information on the ADSL line
                configuration.  One entry in this table reflects a
                profile defined by a manager which can be used to
                configure the ADSL line."
         ::= { adslMibObjects 14}

         adslLineConfProfileEntry    OBJECT-TYPE
            SYNTAX          AdslLineConfProfileEntry
            MAX-ACCESS      not-accessible
            STATUS          current
            DESCRIPTION
                "Each entry consists of a list of parameters that
                represents the configuration of an ADSL modem.

                When `dynamic' profiles are implemented, a
                profile is created in one step with all necessary
                parameter values and adslLineConfProfileRowStatus set
                to createAndGo.  This RowStatus object is also used
                to destroy profiles.

                Also when `dynamic' profiles are implemented, a default
                profile will always exist.  This profile's name will
                be set to `DEFVAL' and its parameters will be set
                to vendor specific values, unless otherwise specified
```

```
          in this document.

          When `static' profiles are implemented, profiles
          are automaticly created or destroyed as ADSL
          physical lines are discovered and removed by
          the system.  The name of the profile will be
          equivalent to the decimal value of the line's
          interface index.
          "
      INDEX { IMPLIED adslLineConfProfileName}
     ::= { adslLineConfProfileTable 1}

     AdslLineConfProfileEntry ::=
         SEQUENCE {
         adslLineConfProfileName               SnmpAdminString,
         adslAtucConfRateMode                  INTEGER,
         adslAtucConfRateChanRatio             INTEGER,
         adslAtucConfTargetSnrMgn              INTEGER,
         adslAtucConfMaxSnrMgn                 INTEGER,
         adslAtucConfMinSnrMgn                 INTEGER,
         adslAtucConfDownshiftSnrMgn           INTEGER,
         adslAtucConfUpshiftSnrMgn             INTEGER,
         adslAtucConfMinUpshiftTime            INTEGER,
         adslAtucConfMinDownshiftTime          INTEGER,
         adslAtucChanConfFastMinTxRate         Unsigned32,
         adslAtucChanConfInterleaveMinTxRate   Unsigned32,
         adslAtucChanConfFastMaxTxRate         Unsigned32,
         adslAtucChanConfInterleaveMaxTxRate   Unsigned32,
         adslAtucChanConfMaxInterleaveDelay    INTEGER,
         adslAturConfRateMode                  INTEGER,
         adslAturConfRateChanRatio             INTEGER,
         adslAturConfTargetSnrMgn              INTEGER,
         adslAturConfMaxSnrMgn                 INTEGER,
         adslAturConfMinSnrMgn                 INTEGER,
         adslAturConfDownshiftSnrMgn           INTEGER,
         adslAturConfUpshiftSnrMgn             INTEGER,
         adslAturConfMinUpshiftTime            INTEGER,
         adslAturConfMinDownshiftTime          INTEGER,
         adslAturChanConfFastMinTxRate         Unsigned32,
         adslAturChanConfInterleaveMinTxRate   Unsigned32,
         adslAturChanConfFastMaxTxRate         Unsigned32,
         adslAturChanConfInterleaveMaxTxRate   Unsigned32,
         adslAturChanConfMaxInterleaveDelay    INTEGER,
         adslLineConfProfileRowStatus          RowStatus
         }

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

```
              MAX-ACCESS       not-accessible
              STATUS           current
              DESCRIPTION
              "This object is used by the line configuration table
              in order to identify a row of this table.

              When `dynamic' profiles are implemented, the profile
              name is user specified.  Also, the system will always
              provide a default profile whose name is `DEFVAL'.

              When `static' profiles are implemented, there is an
              one-to-one relationship between each line and its
              profile.  In which case, the profile name will
              need to algorithmicly represent the Line's ifIndex.
              Therefore, the profile's name is a decimalized string
              of the ifIndex that is fixed-length (i.e., 10) with
              leading zero(s).  For example, the profile name for
              ifIndex which equals '15' will be '0000000015'."
      ::= { adslLineConfProfileEntry 1 }

      adslAtucConfRateMode OBJECT-TYPE
          SYNTAX      INTEGER {
              fixed (1),              -- no rate adaptation
              adaptAtStartup (2),     -- perform rate adaptation
                                      -- only at initialization
              adaptAtRuntime (3)      -- perform rate adaptation at
                                      -- any time
          }
          MAX-ACCESS  read-create
          STATUS      current
          DESCRIPTION
              "Defines what form of transmit rate adaptation is
              configured on this modem.  See ADSL Forum TR-005 [3]
              for more information."
      ::= { adslLineConfProfileEntry 2 }

      adslAtucConfRateChanRatio OBJECT-TYPE
          SYNTAX      INTEGER(0..100)
          UNITS        "%"
          MAX-ACCESS  read-create
          STATUS      current
          DESCRIPTION
              "Configured allocation ratio of excess transmit
              bandwidth between fast and interleaved channels.  Only
              applies when two channel mode and RADSL are supported.
              Distribute bandwidth on each channel in excess of the
              corresponding ChanConfMinTxRate so that:
              adslAtucConfRateChanRatio =
```

```
                        [Fast / (Fast + Interleaved)] * 100

              In other words this value is the fast channel
              percentage."
          ::= { adslLineConfProfileEntry 3 }

          adslAtucConfTargetSnrMgn OBJECT-TYPE
              SYNTAX       INTEGER (-640..640)
              UNITS        "tenth dB"
              MAX-ACCESS   read-create
              STATUS       current
              DESCRIPTION
                  "Configured Target Signal/Noise Margin.
                  This is the Noise Margin the modem must achieve
                  with a BER of 10-7 or better to successfully complete
                  initialization."
          ::= { adslLineConfProfileEntry 4 }

          adslAtucConfMaxSnrMgn OBJECT-TYPE
              SYNTAX       INTEGER (-640..640)
              UNITS        "tenth dB"
              MAX-ACCESS   read-create
              STATUS       current
              DESCRIPTION
                  "Configured Maximum acceptable Signal/Noise Margin.
                  If the Noise Margin is above this the modem should
                  attempt to reduce its power output to optimize its
                  operation."
          ::= { adslLineConfProfileEntry 5 }

          adslAtucConfMinSnrMgn  OBJECT-TYPE
              SYNTAX       INTEGER (-640..640)
              UNITS        "tenth dB"
              MAX-ACCESS   read-create
              STATUS       current
              DESCRIPTION
                  "Configured Minimum acceptable Signal/Noise Margin.
                  If the noise margin falls below this level, the modem
                  should attempt to increase its power output.  If that
                  is not possible the modem will attempt to
                  re-initialize or shut down."
          ::= { adslLineConfProfileEntry 6 }

          adslAtucConfDownshiftSnrMgn  OBJECT-TYPE
              SYNTAX       INTEGER (-640..640)
              UNITS        "tenth dB"
              MAX-ACCESS   read-create
              STATUS       current
```

            DESCRIPTION
                "Configured Signal/Noise Margin for rate downshift.
                If the noise margin falls below this level, the modem
                should attempt to decrease its transmit rate. In
                the case that RADSL mode is not present,
                the value will be `0'."
        ::= { adslLineConfProfileEntry 7 }

        adslAtucConfUpshiftSnrMgn OBJECT-TYPE
            SYNTAX   INTEGER (-640..640)
            UNITS   "tenth dB"
            MAX-ACCESS   read-create
            STATUS   current
            DESCRIPTION
                "Configured Signal/Noise Margin for rate upshift.
                If the noise margin rises above this level, the modem
                should attempt to increase its transmit rate.   In
                the case that RADSL is not present, the value will
                be `0'."
        ::= { adslLineConfProfileEntry 8 }

        adslAtucConfMinUpshiftTime OBJECT-TYPE
            SYNTAX   INTEGER(0..16383)
            UNITS   "seconds"
            MAX-ACCESS   read-create
            STATUS   current
            DESCRIPTION
                "Minimum time that the current margin is above
                UpshiftSnrMgn before an upshift occurs.
                In the case that RADSL is not present, the value will
                be `0'."
         ::= { adslLineConfProfileEntry 9 }

        adslAtucConfMinDownshiftTime OBJECT-TYPE
            SYNTAX   INTEGER(0..16383)
            UNITS   "seconds"
            MAX-ACCESS   read-create
            STATUS   current
            DESCRIPTION
                "Minimum time that the current margin is below
                DownshiftSnrMgn before a downshift occurs.
                In the case that RADSL mode is not present,
                the value will be `0'."
         ::= { adslLineConfProfileEntry 10 }

        adslAtucChanConfFastMinTxRate OBJECT-TYPE
            SYNTAX   Unsigned32
            UNITS   "bps"

```
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Minimum Transmit rate for `Fast' channels,
            in bps.  See adslAtucConfRateChanRatio for information
            regarding RADSL mode and ATUR transmit rate for
            ATUC receive rates."
    ::= { adslLineConfProfileEntry 11 }

    adslAtucChanConfInterleaveMinTxRate OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Minimum Transmit rate for `Interleave'
            channels, in bps.  See adslAtucConfRateChanRatio for
            information regarding RADSL mode and see
            ATUR transmit rate for receive rates."
    ::= { adslLineConfProfileEntry 12 }

    adslAtucChanConfFastMaxTxRate  OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Maximum Transmit rate for `Fast' channels,
            in bps.  See adslAtucConfRateChanRatio for information
            regarding RADSL mode and see ATUR transmit rate for
            ATUC receive rates."
    ::= { adslLineConfProfileEntry 13 }

    adslAtucChanConfInterleaveMaxTxRate OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Maximum Transmit rate for `Interleave'
            channels, in bps.  See adslAtucConfRateChanRatio for
            information regarding RADSL mode and ATUR transmit
            rate for ATUC receive rates."
    ::= { adslLineConfProfileEntry 14 }

    adslAtucChanConfMaxInterleaveDelay OBJECT-TYPE
        SYNTAX       INTEGER(0..255)
        UNITS        "milli-seconds"
```

```
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured maximum Interleave Delay for this channel.

                Interleave delay applies only to the interleave channel
                and defines the mapping (relative spacing) between
                subsequent input bytes at the interleaver input and
                their placement in the bit stream at the interleaver
                output.  Larger numbers provide greater separation
                between consecutive input bytes in the output bit
                stream allowing for improved impulse noise immunity
                at the expense of payload latency."
        ::= { adslLineConfProfileEntry 15 }

        adslAturConfRateMode OBJECT-TYPE
            SYNTAX      INTEGER {
                fixed (1),               -- no rate adaptation
                adaptAtStartup (2),      -- perform rate adaptation
                                         -- only at initialization
                adaptAtRuntime (3)       -- perform rate adaptation at
                                         -- any time
            }
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Defines what form of transmit rate adaptation is
                configured on this modem.  See ADSL Forum TR-005 [3]
                for more information."
        ::= { adslLineConfProfileEntry 16 }

        adslAturConfRateChanRatio OBJECT-TYPE
            SYNTAX      INTEGER(0..100)
            UNITS       "%"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured allocation ratio of excess transmit
                bandwidth between fast and interleaved channels.  Only
                applies when two channel mode and RADSL are supported.
                Distribute bandwidth on each channel in excess of the
                corresponding ChanConfMinTxRate so that:
                adslAturConfRateChanRatio =

                        [Fast / (Fast + Interleaved)] * 100

                In other words this value is the fast channel
                percentage."
```

```
            ::= { adslLineConfProfileEntry 17 }

        adslAturConfTargetSnrMgn OBJECT-TYPE
            SYNTAX      INTEGER (-640..640)
            UNITS       "tenth dB"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured Target Signal/Noise Margin.
                This is the Noise Margin the modem must achieve
                with a BER of 10-7 or better to successfully complete
                initialization."
        ::= { adslLineConfProfileEntry 18 }

        adslAturConfMaxSnrMgn OBJECT-TYPE
            SYNTAX      INTEGER (-640..640)
            UNITS       "tenth dB"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured Maximum acceptable Signal/Noise Margin.
                If the Noise Margin is above this the modem should
                attempt to reduce its power output to optimize its
                operation."
        ::= { adslLineConfProfileEntry 19 }

        adslAturConfMinSnrMgn  OBJECT-TYPE
            SYNTAX      INTEGER (-640..640)
            UNITS       "tenth dB"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured Minimum acceptable Signal/Noise Margin.
                If the noise margin falls below this level, the modem
                should attempt to increase its power output.  If that
                is not possible the modem will attempt to
                re-initialize or shut down."
        ::= { adslLineConfProfileEntry 20 }

        adslAturConfDownshiftSnrMgn  OBJECT-TYPE
            SYNTAX      INTEGER (-640..640)
            UNITS       "tenth dB"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Configured Signal/Noise Margin for rate downshift.
                If the noise margin falls below this level, the modem
                should attempt to decrease its transmit rate.
```

```
                In the case that RADSL mode is not present,
                the value will be `0'."
          ::= { adslLineConfProfileEntry 21 }

          adslAturConfUpshiftSnrMgn  OBJECT-TYPE
              SYNTAX      INTEGER (-640..640)
              UNITS       "tenth dB"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                "Configured Signal/Noise Margin for rate upshift.
                If the noise margin rises above this level, the modem
                should attempt to increase its transmit rate.
                In the case that RADSL is not present,
                the value will be `0'."
          ::= { adslLineConfProfileEntry 22 }

          adslAturConfMinUpshiftTime OBJECT-TYPE
              SYNTAX      INTEGER(0..16383)
              UNITS       "seconds"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                "Minimum time that the current margin is above
                UpshiftSnrMgn before an upshift occurs.
                In the case that RADSL is not present, the value will
                be `0'."
           ::= { adslLineConfProfileEntry 23 }

          adslAturConfMinDownshiftTime OBJECT-TYPE
              SYNTAX      INTEGER(0..16383)
              UNITS       "seconds"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                "Minimum time that the current margin is below
                DownshiftSnrMgn before a downshift occurs.
                In the case that RADSL mode is not present,
                the value will be `0'."
           ::= { adslLineConfProfileEntry 24 }

          adslAturChanConfFastMinTxRate  OBJECT-TYPE
              SYNTAX      Unsigned32
              UNITS       "bps"
              MAX-ACCESS  read-create
              STATUS      current
              DESCRIPTION
                "Configured Minimum Transmit rate for `Fast' channels,
```

```
            in bps.  See adslAturConfRateChanRatio for information
            regarding RADSL mode and ATUC transmit rate
            for ATUR receive rates."
    ::= { adslLineConfProfileEntry 25 }

    adslAturChanConfInterleaveMinTxRate OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Minimum Transmit rate for `Interleave'
            channels, in bps.  See adslAturConfRateChanRatio for
            information regarding RADSL mode and ATUC transmit rate
            for ATUR receive rates."
    ::= { adslLineConfProfileEntry 26 }

    adslAturChanConfFastMaxTxRate  OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Maximum Transmit rate for `Fast' channels,
            in bps.  See adslAturConfRateChanRatio for information
            regarding RADSL mode and ATUC transmit rate
            for ATUR receive rates."
    ::= { adslLineConfProfileEntry 27 }

    adslAturChanConfInterleaveMaxTxRate OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "bps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured Maximum Transmit rate for `Interleave'
            channels, in bps.  See adslAturConfRateChanRatio for
            information regarding RADSL mode and see
            ATUC transmit rate for ATUR receive rates."
    ::= { adslLineConfProfileEntry 28 }

    adslAturChanConfMaxInterleaveDelay OBJECT-TYPE
        SYNTAX      INTEGER(0..255)
        UNITS        "milli-seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "Configured maximum Interleave Delay for this channel.
```

                Interleave delay applies only to the interleave channel
                and defines the mapping (relative spacing) between
                subsequent input bytes at the interleaver input and
                their placement in the bit stream at the interleaver
                output. Larger numbers provide greater separation
                between consecutive input bytes in the output bit
                stream allowing for improved impulse noise immunity
                at the expense of payload latency."
        ::= { adslLineConfProfileEntry 29 }

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

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

                Before a profile can be deleted or taken out of
                service, (by setting this object to `destroy' or
                `outOfService') it must be first unreferenced
                from all associated lines.

                If the implementator of this MIB has chosen not
                to implement `dynamic assignment' of profiles, this
                object's MIN-ACCESS is read-only and its value
                is always to be `active'."
        ::= { adslLineConfProfileEntry 30 }

        adslLineAlarmConfProfileTable   OBJECT-TYPE
            SYNTAX   SEQUENCE OF AdslLineAlarmConfProfileEntry
            MAX-ACCESS   not-accessible
            STATUS   current
            DESCRIPTION
                "This table contains information on the ADSL line
                configuration. One entry in this table reflects a
                profile defined by a manager which can be used to
                configure the modem for a physical line"
        ::= { adslMibObjects 15}

        adslLineAlarmConfProfileEntry   OBJECT-TYPE
            SYNTAX   AdslLineAlarmConfProfileEntry
            MAX-ACCESS   not-accessible

```
                STATUS           current
                DESCRIPTION
                    "Each entry consists of a list of parameters that
                    represents the configuration of an ADSL modem.

                    When `dynamic' profiles are implemented, a
                    profile is created in one step with all necessary
                    parameter values and adslLineConfProfileRowStatus set
                    to createAndGo.  This RowStatus object is also used
                    to destroy profiles.

                    Also when `dynamic' profiles are implemented, a default
                    profile will always exist.  This profile's name will
                    be set to `DEFVAL' and its parameters will be set to
                    vendor specific values, unless otherwise specified
                    in this document.

                    When `static' profiles are implemented, profiles
                    are automaticly created or destroyed as ADSL
                    physical lines are discovered and removed by
                    the system.  The name of the profile will be
                    equivalent to the decimal value of the line's
                    interface index.
                    "
                INDEX { IMPLIED adslLineAlarmConfProfileName}
            ::= { adslLineAlarmConfProfileTable 1}

            AdslLineAlarmConfProfileEntry ::=
                SEQUENCE {
                adslLineAlarmConfProfileName          SnmpAdminString,
                adslAtucThresh15MinLofs               INTEGER,
                adslAtucThresh15MinLoss               INTEGER,
                adslAtucThresh15MinLols               INTEGER,
                adslAtucThresh15MinLprs               INTEGER,
                adslAtucThresh15MinESs                INTEGER,
                adslAtucThreshFastRateUp              Unsigned32,
                adslAtucThreshInterleaveRateUp        Unsigned32,
                adslAtucThreshFastRateDown            Unsigned32,
                adslAtucThreshInterleaveRateDown      Unsigned32,
                adslAtucInitFailureTrapEnable         INTEGER,
                adslAturThresh15MinLofs               INTEGER,
                adslAturThresh15MinLoss               INTEGER,
                adslAturThresh15MinLprs               INTEGER,
                adslAturThresh15MinESs                INTEGER,
                adslAturThreshFastRateUp              Unsigned32,
                adslAturThreshInterleaveRateUp        Unsigned32,
                adslAturThreshFastRateDown            Unsigned32,
                adslAturThreshInterleaveRateDown      Unsigned32,
```

```
            adslLineAlarmConfProfileRowStatus     RowStatus
            }

    adslLineAlarmConfProfileName    OBJECT-TYPE
        SYNTAX           SnmpAdminString (SIZE (1..32))
        MAX-ACCESS       not-accessible
        STATUS           current
        DESCRIPTION
            "This object is used by the line alarm configuration
            table in order to identify a row of this table.

            When `dynamic' profiles are implemented, the profile
            name is user specified.  Also, the system will always
            provide a default profile whose name is `DEFVAL'.

            When `static' profiles are implemented, there is an
            one-to-one relationship between each line and its
            profile.  In which case, the profile name will
            need to algorithmicly represent the Line's ifIndex.
            Therefore, the profile's name is a decimalized string
            of the ifIndex that is fixed-length (i.e., 10) with
            leading zero(s).  For example, the profile name for
            ifIndex which equals '15' will be '0000000015'."
    ::= { adslLineAlarmConfProfileEntry 1}

    adslAtucThresh15MinLofs OBJECT-TYPE
        SYNTAX      INTEGER(0..900)
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The number of Loss of Frame Seconds
            encountered by an ADSL interface within any given 15
            minutes performance data collection period, which
            causes the SNMP agent to send an
            adslAtucPerfLofsThreshTrap.
            One trap will be sent per interval per interface.
            A value of `0' will disable the trap."
    ::= { adslLineAlarmConfProfileEntry 2}

    adslAtucThresh15MinLoss  OBJECT-TYPE
        SYNTAX      INTEGER(0..900)
        UNITS       "seconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The number of Loss of Signal Seconds
            encountered by an ADSL interface within any given 15
```

```
            minutes performance data collection period, which
            causes the SNMP agent to send an
            adslAtucPerfLossThreshTrap.
            One trap will be sent per interval per interface.
            A value of `0' will disable the trap."
    ::= { adslLineAlarmConfProfileEntry 3}

    adslAtucThresh15MinLols  OBJECT-TYPE
        SYNTAX       INTEGER(0..900)
        UNITS        "seconds"
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "The number of Loss of Link Seconds
            encountered by an ADSL interface within any given 15
            minutes performance data collection period, which
            causes the SNMP agent to send an
            adslAtucPerfLolsThreshTrap.
            One trap will be sent per interval per interface.
            A value of `0' will disable the trap."
    ::= { adslLineAlarmConfProfileEntry 4}

    adslAtucThresh15MinLprs  OBJECT-TYPE
        SYNTAX       INTEGER(0..900)
        UNITS        "seconds"
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "The number of Loss of Power Seconds
            encountered by an ADSL interface within any given 15
            minutes performance data collection period, which
            causes the SNMP agent to send an
            adslAtucPerfLprsThreshTrap.
            One trap will be sent per interval per interface.
            A value of `0' will disable the trap."
    ::= { adslLineAlarmConfProfileEntry 5}

    adslAtucThresh15MinESs  OBJECT-TYPE
        SYNTAX       INTEGER(0..900)
        UNITS        "seconds"
        MAX-ACCESS   read-create
        STATUS       current
        DESCRIPTION
            "The number of Errored Seconds
            encountered by an ADSL interface within any given 15
            minutes performance data collection period, which
            causes the SNMP agent to send an
            adslAtucPerfESsThreshTrap.
```

```
                 One trap will be sent per interval per interface.
                 A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 6}

         adslAtucThreshFastRateUp OBJECT-TYPE
             SYNTAX      Unsigned32
             UNITS       "bps"
             MAX-ACCESS  read-create
             STATUS      current
             DESCRIPTION
                 "Applies to `Fast' channels only.
                 Configured change in rate causing an
                 adslAtucRateChangeTrap. A trap is produced when:
                 ChanCurrTxRate >= ChanPrevTxRate plus the value of
                 this object. A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 7}

         adslAtucThreshInterleaveRateUp OBJECT-TYPE
             SYNTAX      Unsigned32
             UNITS       "bps"
             MAX-ACCESS  read-create
             STATUS      current
             DESCRIPTION
                 "Applies to `Interleave' channels only.
                 Configured change in rate causing an
                 adslAtucRateChangeTrap.  A trap is produced when:
                 ChanCurrTxRate >= ChanPrevTxRate plus the value of
                 this object. A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 8}

         adslAtucThreshFastRateDown OBJECT-TYPE
             SYNTAX      Unsigned32
             UNITS       "bps"
             MAX-ACCESS  read-create
             STATUS      current
             DESCRIPTION
                 "Applies to `Fast' channels only.
                 Configured change in rate causing an
                 adslAtucRateChangeTrap.  A trap is produced when:
                 ChanCurrTxRate <= ChanPrevTxRate minus the value of
                 this object. A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 9 }

         adslAtucThreshInterleaveRateDown OBJECT-TYPE
             SYNTAX      Unsigned32
             UNITS       "bps"
             MAX-ACCESS  read-create
             STATUS      current
```

```
        DESCRIPTION
            "Applies to `Interleave' channels only.
            Configured change in rate causing an
            adslAtucRateChangeTrap.  A trap is produced when:
            ChanCurrTxRate <= ChanPrevTxRate minus the value of
            this object. A value of `0' will disable the trap."
        ::= { adslLineAlarmConfProfileEntry 10 }

        adslAtucInitFailureTrapEnable OBJECT-TYPE
            SYNTAX      INTEGER {
                enable (1),
                disable (2)
            }
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "Enables and disables the InitFailureTrap.  This
                object is defaulted disable(2)."
        DEFVAL { disable }
        ::= { adslLineAlarmConfProfileEntry 11 }

        adslAturThresh15MinLofs OBJECT-TYPE
            SYNTAX      INTEGER(0..900)
            UNITS       "seconds"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "The number of Loss of Frame Seconds
                encountered by an ADSL interface within any given 15
                minutes performance data collection period, which
                causes the SNMP agent to send an
                adslAturPerfLofsThreshTrap.
                One trap will be sent per interval per interface.
                A value of `0' will disable the trap."
        ::= { adslLineAlarmConfProfileEntry 12 }

        adslAturThresh15MinLoss  OBJECT-TYPE
            SYNTAX      INTEGER(0..900)
            UNITS       "seconds"
            MAX-ACCESS  read-create
            STATUS      current
            DESCRIPTION
                "The number of Loss of Signal Seconds
                encountered by an ADSL interface within any given 15
                minutes performance data collection period, which
                causes the SNMP agent to send an
                adslAturPerfLossThreshTrap.
                One trap will be sent per interval per interface.
```

                A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 13 }

         adslAturThresh15MinLprs OBJECT-TYPE
             SYNTAX   INTEGER(0..900)
             UNITS   "seconds"
             MAX-ACCESS read-create
             STATUS   current
             DESCRIPTION
                 "The number of Loss of Power Seconds
                 encountered by an ADSL interface within any given 15
                 minutes performance data collection period, which
                 causes the SNMP agent to send an
                 adslAturPerfLprsThreshTrap.
                 One trap will be sent per interval per interface.
                 A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 14 }

         adslAturThresh15MinESs OBJECT-TYPE
             SYNTAX   INTEGER(0..900)
             UNITS   "seconds"
             MAX-ACCESS read-create
             STATUS   current
             DESCRIPTION
                 "The number of Errored Seconds
                 encountered by an ADSL interface within any given 15
                 minutes performance data collection period, which
                 causes the SNMP agent to send an
                 adslAturPerfESsThreshTrap.
                 One trap will be sent per interval per interface.
                 A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 15 }

         adslAturThreshFastRateUp OBJECT-TYPE
             SYNTAX   Unsigned32
             UNITS   "bps"
             MAX-ACCESS read-create
             STATUS   current
             DESCRIPTION
                 "Applies to `Fast' channels only.
                 Configured change in rate causing an
                 adslAturRateChangeTrap. A trap is produced when:
                 ChanCurrTxRate >= ChanPrevTxRate plus the value of
                 this object. A value of `0' will disable the trap."
         ::= { adslLineAlarmConfProfileEntry 16 }

         adslAturThreshInterleaveRateUp OBJECT-TYPE
             SYNTAX   Unsigned32

```
           UNITS        "bps"
           MAX-ACCESS   read-create
           STATUS       current
           DESCRIPTION
               "Applies to `Interleave' channels only.
               configured change in rate causing an
               adslAturRateChangeTrap.  A trap is produced when:
               ChanCurrTxRate >= ChanPrevTxRate plus the value of
               this object. A value of `0' will disable the trap."
       ::= { adslLineAlarmConfProfileEntry 17 }

       adslAturThreshFastRateDown OBJECT-TYPE
           SYNTAX       Unsigned32
           UNITS        "bps"
           MAX-ACCESS   read-create
           STATUS       current
           DESCRIPTION
               "Applies to `Fast' channels only.
               Configured change in rate causing an
               adslAturRateChangeTrap.  A trap is produced when:
               ChanCurrTxRate <= ChanPrevTxRate minus the value of
               this object. A value of `0' will disable the trap."
       ::= { adslLineAlarmConfProfileEntry 18 }

       adslAturThreshInterleaveRateDown OBJECT-TYPE
           SYNTAX       Unsigned32
           UNITS        "bps"
           MAX-ACCESS   read-create
           STATUS       current
           DESCRIPTION
               "Applies to `Interleave' channels only.
               Configured change in rate causing an
               adslAturRateChangeTrap.  A trap is produced when:
               ChanCurrTxRate <= ChanPrevTxRate minus the value of
               this object. A value of `0' will disable the trap."
       ::= { adslLineAlarmConfProfileEntry 19 }

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

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

```
             Before a profile can be deleted or taken out of
             service, (by setting this object to `destroy' or
             `outOfService') it must be first unreferenced
             from all associated lines.

             If the implementator of this MIB has chosen not
             to implement `dynamic assignment' of profiles, this
             object's MIN-ACCESS is read-only and its value
             is always to be `active'."
        ::= { adslLineAlarmConfProfileEntry 20 }

        -- Line Code Specific Tables

        -- These are place holders for the Line Code Specific MIBs
        -- once they become available.

        adslLCSMib  OBJECT IDENTIFIER ::= { adslMibObjects 16 }


   -- trap definitions

   adslTraps OBJECT IDENTIFIER ::= { adslLineMib 2 }

   adslAtucTraps OBJECT IDENTIFIER ::= { adslTraps 1 }

        adslAtucPerfLofsThreshTrap     NOTIFICATION-TYPE
           OBJECTS { adslAtucPerfCurr15MinLofs,
                     adslAtucThresh15MinLofs }
           STATUS  current
           DESCRIPTION
               "Loss of Framing 15-minute interval threshold reached."
        ::= { adslAtucTraps 0 1 }

        adslAtucPerfLossThreshTrap     NOTIFICATION-TYPE
           OBJECTS { adslAtucPerfCurr15MinLoss,
                     adslAtucThresh15MinLoss }
           STATUS  current
           DESCRIPTION
               "Loss of Signal 15-minute interval threshold reached."
        ::= { adslAtucTraps 0 2 }

        adslAtucPerfLprsThreshTrap      NOTIFICATION-TYPE
           OBJECTS { adslAtucPerfCurr15MinLprs,
                     adslAtucThresh15MinLprs }
           STATUS  current
           DESCRIPTION
               "Loss of Power 15-minute interval threshold reached."
        ::= { adslAtucTraps 0 3 }
```

```
        adslAtucPerfESsThreshTrap      NOTIFICATION-TYPE
            OBJECTS { adslAtucPerfCurr15MinESs,
                    adslAtucThresh15MinESs }
            STATUS   current
            DESCRIPTION
                "Errored Second 15-minute interval threshold reached."
        ::= { adslAtucTraps 0 4 }

        adslAtucRateChangeTrap  NOTIFICATION-TYPE
            OBJECTS { adslAtucChanCurrTxRate,
                    adslAtucChanPrevTxRate }
            STATUS   current
            DESCRIPTION
                "The ATUCs transmit rate has changed (RADSL mode only)"
        ::= { adslAtucTraps 0 5 }

        adslAtucPerfLolsThreshTrap      NOTIFICATION-TYPE
            OBJECTS { adslAtucPerfCurr15MinLols,
                    adslAtucThresh15MinLols }
            STATUS   current
            DESCRIPTION
                "Loss of Link 15-minute interval threshold reached."
        ::= { adslAtucTraps 0 6 }

        adslAtucInitFailureTrap NOTIFICATION-TYPE
            OBJECTS { adslAtucCurrStatus }
            STATUS   current
            DESCRIPTION
                "ATUC initialization failed. See adslAtucCurrStatus
                for potential reasons."
        ::= { adslAtucTraps 0 7 }


    adslAturTraps OBJECT IDENTIFIER ::= { adslTraps 2 }

        adslAturPerfLofsThreshTrap      NOTIFICATION-TYPE
            OBJECTS { adslAturPerfCurr15MinLofs,
                    adslAturThresh15MinLofs }
            STATUS   current
            DESCRIPTION
                "Loss of Framing 15-minute interval threshold reached."
        ::= { adslAturTraps 0 1 }

        adslAturPerfLossThreshTrap       NOTIFICATION-TYPE
            OBJECTS { adslAturPerfCurr15MinLoss,
                    adslAturThresh15MinLoss }
            STATUS   current
            DESCRIPTION
```

```
                "Loss of Signal 15-minute interval threshold reached."
        ::= { adslAturTraps 0 2 }

        adslAturPerfLprsThreshTrap     NOTIFICATION-TYPE
            OBJECTS { adslAturPerfCurr15MinLprs,
                      adslAturThresh15MinLprs }
            STATUS  current
            DESCRIPTION
                "Loss of Power 15-minute interval threshold reached."
        ::= { adslAturTraps 0 3 }

        adslAturPerfESsThreshTrap      NOTIFICATION-TYPE
            OBJECTS { adslAturPerfCurr15MinESs,
                      adslAturThresh15MinESs }
            STATUS  current
            DESCRIPTION
                "Errored Second 15-minute interval threshold reached."
        ::= { adslAturTraps 0 4 }

        adslAturRateChangeTrap  NOTIFICATION-TYPE
            OBJECTS { adslAturChanCurrTxRate,
                      adslAturChanPrevTxRate }
            STATUS  current
            DESCRIPTION
                "The ATURs transmit rate has changed (RADSL mode only)"
        ::= { adslAturTraps 0 5 }

        -- no adslAturPerfLolsThreshTrap possible { 0 6 }

        -- no adslAturInitFailureTrap possible { 0 7 }


    -- conformance information

    adslConformance OBJECT IDENTIFIER ::= { adslLineMib 3 }

    adslGroups OBJECT IDENTIFIER ::= { adslConformance 1 }
    adslCompliances OBJECT IDENTIFIER ::= { adslConformance 2 }


        -- compliance statements

            adslLineMibCompliance MODULE-COMPLIANCE
            STATUS  current
            DESCRIPTION
                "The compliance statement for SNMP entities
                which have ADSL interfaces."
```

```
                MODULE  -- this module
                MANDATORY-GROUPS
                   {
                   adslLineGroup, adslPhysicalGroup, adslChannelGroup,
                   adslAtucPhysPerfIntervalGroup,
                   adslAturPhysPerfIntervalGroup, adslLineConfProfileGroup,
                   adslLineAlarmConfProfileGroup,
                   adslLineConfProfileControlGroup
                   }

                GROUP       adslAtucPhysPerfRawCounterGroup
                DESCRIPTION
                    "This group is optional."

                GROUP       adslAturPhysPerfRawCounterGroup
                DESCRIPTION
                    "This group is optional."

                GROUP       adslAtucChanPerformanceGroup
                DESCRIPTION
                    "This group is optional."

                GROUP       adslAturChanPerformanceGroup
                DESCRIPTION
                    "This group is optional."

                OBJECT     adslAtucIntervalNumber
                SYNTAX   INTEGER (1..1)
                DESCRIPTION
                    "It is allowable to implement only one ATU-C 15-minute
                    performance interval."

                OBJECT     adslAturIntervalNumber
                SYNTAX   INTEGER (1..1)
                DESCRIPTION
                    "It is allowable to implement only one ATU-R 15-minute
                    performance interval."

                OBJECT     adslAtucChanIntervalNumber
                SYNTAX   INTEGER (1..1)
                DESCRIPTION
                    "It is allowable to implement only one ATU-C
                    channel 15-minute performance interval."

                OBJECT     adslAturChanIntervalNumber
                SYNTAX   INTEGER (1..1)
                DESCRIPTION
                    "It is allowable to implement only one ATU-R
```

```
                channel 15-minute performance interval."

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

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

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

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

    ::= { adslCompliances 1 }

-- Atur compliance statements

        adslLineMibAturCompliance MODULE-COMPLIANCE
        STATUS  current
        DESCRIPTION
            "The compliance statement for SNMP entities
             which manage ADSL ATU-R interfaces."

        MODULE  -- this module
        MANDATORY-GROUPS
            {
            adslAturLineGroup, adslAturPhysicalGroup,
            adslAturChannelGroup,
            adslAturAtucPhysPerfIntervalGroup,
            adslAturAturPhysPerfIntervalGroup,
            adslAturLineAlarmConfProfileGroup,
            adslAturLineConfProfileControlGroup
            }

        GROUP       adslAturAtucPhysPerfRawCounterGroup
```

```
            DESCRIPTION
                "This group is optional."

            GROUP       adslAturAturPhysPerfRawCounterGroup
            DESCRIPTION
                "This group is optional."

            GROUP       adslAturAtucChanPerformanceGroup
            DESCRIPTION
                "This group is optional."

            GROUP       adslAturAturChanPerformanceGroup
            DESCRIPTION
                "This group is optional."

            OBJECT      adslAtucIntervalNumber
            SYNTAX   INTEGER (1..1)
            DESCRIPTION
                "It is allowable to implement only one ATU-C 15-minute
                performance interval."

            OBJECT      adslAturIntervalNumber
            SYNTAX   INTEGER (1..1)
            DESCRIPTION
                "It is allowable to implement only one ATU-R 15-minute
                performance interval."

            OBJECT      adslAtucChanIntervalNumber
            SYNTAX   INTEGER (1..1)
            DESCRIPTION
                "It is allowable to implement only one ATU-C
                channel 15-minute performance interval."

            OBJECT      adslAturChanIntervalNumber
            SYNTAX   INTEGER (1..1)
            DESCRIPTION
                "It is allowable to implement only one ATU-R
                channel 15-minute performance interval."

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

            OBJECT      adslAtucCurrStatus
            SYNTAX   BITS {
                        noDefect(0),
```

```
                          lossOfFraming(1),
                          lossOfSignal(2)
                        }
            DESCRIPTION
                "It is allowable to implement only noDefect(0),
                lossOfFraming(1) and lossOfSignal(2) by the ATU-R
                agent."

        ::= { adslCompliances 2 }

        -- units of conformance
        adslLineGroup    OBJECT-GROUP
            OBJECTS {
                adslLineCoding, adslLineType, adslLineSpecific
                }
            STATUS      current
            DESCRIPTION
                "A collection of objects providing configuration
                information about an ADSL Line."
        ::= { adslGroups 1 }

        adslPhysicalGroup    OBJECT-GROUP
            OBJECTS {
                adslAtucInvSerialNumber, adslAtucInvVendorID,
                adslAtucInvVersionNumber, adslAtucCurrSnrMgn,
                adslAtucCurrAtn, adslAtucCurrStatus,
                adslAtucCurrOutputPwr, adslAtucCurrAttainableRate,
                adslAturInvSerialNumber, adslAturInvVendorID,
                adslAturInvVersionNumber, adslAturCurrSnrMgn,
                adslAturCurrAtn, adslAturCurrStatus,
                adslAturCurrOutputPwr, adslAturCurrAttainableRate
                }
            STATUS      current
            DESCRIPTION
                "A collection of objects providing physical
                configuration information of the ADSL Line."
        ::= { adslGroups 2 }

        adslChannelGroup    OBJECT-GROUP
            OBJECTS {
                adslAtucChanInterleaveDelay, adslAtucChanCurrTxRate,
                adslAtucChanPrevTxRate, adslAtucChanCrcBlockLength,
                adslAturChanInterleaveDelay, adslAturChanCurrTxRate,
                adslAturChanPrevTxRate, adslAturChanCrcBlockLength
                }
            STATUS      current
            DESCRIPTION
                "A collection of objects providing configuration
```

```
            information about an ADSL channel."
    ::= { adslGroups 3 }

    adslAtucPhysPerfRawCounterGroup OBJECT-GROUP
        OBJECTS {
            adslAtucPerfLofs, adslAtucPerfLoss,
            adslAtucPerfLols, adslAtucPerfLprs,
            adslAtucPerfESs, adslAtucPerfInits
            }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing raw performance
            counts on an ADSL Line (ATU-C end)."
    ::= { adslGroups 4 }

    adslAtucPhysPerfIntervalGroup OBJECT-GROUP
        OBJECTS {
            adslAtucPerfValidIntervals,
            adslAtucPerfInvalidIntervals,
            adslAtucPerfCurr15MinTimeElapsed,
            adslAtucPerfCurr15MinLofs, adslAtucPerfCurr15MinLoss,
            adslAtucPerfCurr15MinLols, adslAtucPerfCurr15MinLprs,
            adslAtucPerfCurr15MinESs, adslAtucPerfCurr15MinInits,
            adslAtucPerfCurr1DayLofs, adslAtucPerfCurr1DayLoss,
            adslAtucPerfCurr1DayLols, adslAtucPerfCurr1DayLprs,
            adslAtucPerfCurr1DayESs, adslAtucPerfCurr1DayInits,
            adslAtucPerfPrev1DayMoniSecs,
            adslAtucPerfPrev1DayLofs, adslAtucPerfPrev1DayLoss,
            adslAtucPerfPrev1DayLols, adslAtucPerfPrev1DayLprs,
            adslAtucPerfPrev1DayESs, adslAtucPerfPrev1DayInits,
            adslAtucIntervalLofs, adslAtucIntervalLoss,
            adslAtucIntervalLols, adslAtucIntervalLprs,
            adslAtucIntervalESs, adslAtucIntervalInits,
            adslAtucIntervalValidData
            }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing current 15-minute,
            1-day; and previous 1-day performance counts on
            ADSL Line (ATU-C end) ."
    ::= { adslGroups 5 }

    adslAturPhysPerfRawCounterGroup OBJECT-GROUP
        OBJECTS {
            adslAturPerfLofs, adslAturPerfLoss,
            adslAturPerfLprs, adslAturPerfESs
            }
        STATUS     current
```

             DESCRIPTION
                 "A collection of objects providing raw performance
                 counts on an ADSL Line (ATU-R end)."
         ::= { adslGroups 6 }

         adslAturPhysPerfIntervalGroup OBJECT-GROUP
             OBJECTS {
                 adslAturPerfValidIntervals,
                 adslAturPerfInvalidIntervals,
                 adslAturPerfCurr15MinTimeElapsed,
                 adslAturPerfCurr15MinLofs, adslAturPerfCurr15MinLoss,
                 adslAturPerfCurr15MinLprs, adslAturPerfCurr15MinESs,
                 adslAturPerfCurr1DayTimeElapsed,
                 adslAturPerfCurr1DayLofs, adslAturPerfCurr1DayLoss,
                 adslAturPerfCurr1DayLprs, adslAturPerfCurr1DayESs,
                 adslAturPerfPrev1DayMoniSecs,
                 adslAturPerfPrev1DayLofs, adslAturPerfPrev1DayLoss,
                 adslAturPerfPrev1DayLprs, adslAturPerfPrev1DayESs,
                 adslAturIntervalLofs,
                 adslAturIntervalLoss, adslAturIntervalLprs,
                 adslAturIntervalESs, adslAturIntervalValidData
                 }
             STATUS   current
             DESCRIPTION
                 "A collection of objects providing current 15-minute,
                 1-day; and previous 1-day performance counts on
                 ADSL Line (ATU-R end)."
         ::= { adslGroups 7 }

         adslAtucChanPerformanceGroup OBJECT-GROUP
             OBJECTS {
                 adslAtucChanReceivedBlks,
                 adslAtucChanTransmittedBlks,
                 adslAtucChanCorrectedBlks,
                 adslAtucChanUncorrectBlks,
                 adslAtucChanPerfValidIntervals,
                 adslAtucChanPerfInvalidIntervals,
                 adslAtucChanPerfCurr15MinTimeElapsed,
                 adslAtucChanPerfCurr15MinReceivedBlks,
                 adslAtucChanPerfCurr15MinTransmittedBlks,
                 adslAtucChanPerfCurr15MinCorrectedBlks,
                 adslAtucChanPerfCurr15MinUncorrectBlks,
                 adslAtucChanPerfCurr1DayTimeElapsed,
                 adslAtucChanPerfCurr1DayReceivedBlks,
                 adslAtucChanPerfCurr1DayTransmittedBlks,
                 adslAtucChanPerfCurr1DayCorrectedBlks,
                 adslAtucChanPerfCurr1DayUncorrectBlks,
                 adslAtucChanPerfPrev1DayMoniSecs,

```
            adslAtucChanPerfPrev1DayReceivedBlks,
            adslAtucChanPerfPrev1DayTransmittedBlks,
            adslAtucChanPerfPrev1DayCorrectedBlks,
            adslAtucChanPerfPrev1DayUncorrectBlks,
            adslAtucChanIntervalReceivedBlks,
            adslAtucChanIntervalTransmittedBlks,
            adslAtucChanIntervalCorrectedBlks,
            adslAtucChanIntervalUncorrectBlks,
            adslAtucChanIntervalValidData
            }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing channel block
             performance information on an ADSL channel
             (ATU-C end)."
        ::= { adslGroups 8 }

        adslAturChanPerformanceGroup OBJECT-GROUP
            OBJECTS {
            adslAturChanReceivedBlks,
            adslAturChanTransmittedBlks,
            adslAturChanCorrectedBlks,
            adslAturChanUncorrectBlks,
            adslAturChanPerfValidIntervals,
            adslAturChanPerfInvalidIntervals,
            adslAturChanPerfCurr15MinTimeElapsed,
            adslAturChanPerfCurr15MinReceivedBlks,
            adslAturChanPerfCurr15MinTransmittedBlks,
            adslAturChanPerfCurr15MinCorrectedBlks,
            adslAturChanPerfCurr15MinUncorrectBlks,
            adslAturChanPerfCurr1DayTimeElapsed,
            adslAturChanPerfCurr1DayReceivedBlks,
            adslAturChanPerfCurr1DayTransmittedBlks,
            adslAturChanPerfCurr1DayCorrectedBlks,
            adslAturChanPerfCurr1DayUncorrectBlks,
            adslAturChanPerfPrev1DayMoniSecs,
            adslAturChanPerfPrev1DayReceivedBlks,
            adslAturChanPerfPrev1DayTransmittedBlks,
            adslAturChanPerfPrev1DayCorrectedBlks,
            adslAturChanPerfPrev1DayUncorrectBlks,
            adslAturChanIntervalReceivedBlks,
            adslAturChanIntervalTransmittedBlks,
            adslAturChanIntervalCorrectedBlks,
            adslAturChanIntervalUncorrectBlks,
            adslAturChanIntervalValidData
            }
        STATUS     current
        DESCRIPTION
```

```
                "A collection of objects providing channel block
                 performance information on an ADSL channel
                 (ATU-C end)."
         ::= { adslGroups 9 }

         adslLineConfProfileGroup OBJECT-GROUP
             OBJECTS {
                 adslAtucConfRateMode, adslAtucConfRateChanRatio,
                 adslAtucConfTargetSnrMgn, adslAtucConfMaxSnrMgn,
                 adslAtucConfMinSnrMgn,
                 adslAtucConfDownshiftSnrMgn,
                 adslAtucConfUpshiftSnrMgn,
                 adslAtucConfMinUpshiftTime,
                 adslAtucConfMinDownshiftTime,
                 adslAtucChanConfFastMinTxRate,
                 adslAtucChanConfInterleaveMinTxRate,
                 adslAtucChanConfFastMaxTxRate,
                 adslAtucChanConfInterleaveMaxTxRate,
                 adslAtucChanConfMaxInterleaveDelay,
                 adslAturConfRateMode, adslAturConfRateChanRatio,
                 adslAturConfTargetSnrMgn, adslAturConfMaxSnrMgn,
                 adslAturConfMinSnrMgn, adslAturConfDownshiftSnrMgn,
                 adslAturConfUpshiftSnrMgn,
                 adslAturConfMinUpshiftTime,
                 adslAturConfMinDownshiftTime,
                 adslAturChanConfFastMinTxRate,
                 adslAturChanConfInterleaveMinTxRate,
                 adslAturChanConfFastMaxTxRate,
                 adslAturChanConfInterleaveMaxTxRate,
                 adslAturChanConfMaxInterleaveDelay
                 }
             STATUS     current
             DESCRIPTION
                 "A collection of objects providing provisioning
                  information about an ADSL Line."
         ::= { adslGroups 10 }

         adslLineAlarmConfProfileGroup OBJECT-GROUP
             OBJECTS {
                 adslAtucThresh15MinLofs, adslAtucThresh15MinLoss,
                 adslAtucThresh15MinLols, adslAtucThresh15MinLprs,
                 adslAtucThresh15MinESs, adslAtucThreshFastRateUp,
                 adslAtucThreshInterleaveRateUp,
                 adslAtucThreshFastRateDown,
                 adslAtucThreshInterleaveRateDown,
                 adslAtucInitFailureTrapEnable,
                 adslAturThresh15MinLofs, adslAturThresh15MinLoss,
                 adslAturThresh15MinLprs, adslAturThresh15MinESs,
```

```
                adslAturThreshFastRateUp,
                adslAturThreshInterleaveRateUp,
                adslAturThreshFastRateDown,
                adslAturThreshInterleaveRateDown
                }
            STATUS    current
            DESCRIPTION
                "A collection of objects providing alarm provisioning
                information about an ADSL Line."
        ::= { adslGroups 11 }

        adslLineConfProfileControlGroup OBJECT-GROUP
            OBJECTS {
                adslLineConfProfile, adslLineAlarmConfProfile,
                adslLineConfProfileRowStatus,
                adslLineAlarmConfProfileRowStatus
                }
            STATUS    current
            DESCRIPTION
                "A collection of objects providing profile
                control for the ADSL system."
        ::= { adslGroups 12 }

        adslNotificationsGroup NOTIFICATION-GROUP
            NOTIFICATIONS {
                adslAtucPerfLofsThreshTrap,
                adslAtucPerfLossThreshTrap,
                adslAtucPerfLprsThreshTrap,
                adslAtucPerfESsThreshTrap,
                adslAtucRateChangeTrap,
                adslAtucPerfLolsThreshTrap,
                adslAtucInitFailureTrap,
                adslAturPerfLofsThreshTrap,
                adslAturPerfLossThreshTrap,
                adslAturPerfLprsThreshTrap,
                adslAturPerfESsThreshTrap,
                adslAturRateChangeTrap
                }
            STATUS      current
            DESCRIPTION
                "The collection of adsl notifications."
        ::= { adslGroups 13 }

    -- units of conformance for ATU-R agent

        adslAturLineGroup    OBJECT-GROUP
            OBJECTS {
                adslLineCoding
```

```
            }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing configuration
            information about an ADSL Line on the ATU-R side."
    ::= { adslGroups 14 }

    adslAturPhysicalGroup    OBJECT-GROUP
        OBJECTS {
           adslAtucInvVendorID,
           adslAtucInvVersionNumber,
           adslAtucCurrOutputPwr, adslAtucCurrAttainableRate,
           adslAturInvSerialNumber, adslAturInvVendorID,
           adslAturInvVersionNumber, adslAturCurrSnrMgn,
           adslAturCurrAtn, adslAturCurrStatus,
           adslAturCurrOutputPwr, adslAturCurrAttainableRate
           }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing physical
            configuration information of the ADSL Line on the
            ATU-R side."
    ::= { adslGroups 15 }

    adslAturChannelGroup    OBJECT-GROUP
        OBJECTS {
           adslAtucChanInterleaveDelay, adslAtucChanCurrTxRate,
           adslAtucChanPrevTxRate,
           adslAturChanInterleaveDelay, adslAturChanCurrTxRate,
           adslAturChanPrevTxRate, adslAturChanCrcBlockLength
           }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing configuration
            information about an ADSL channel on the ATU-R
            side."
    ::= { adslGroups 16 }

    adslAturAtucPhysPerfRawCounterGroup OBJECT-GROUP
        OBJECTS {
           adslAtucPerfLofs, adslAtucPerfLoss,
           adslAtucPerfESs, adslAtucPerfInits
           }
        STATUS     current
        DESCRIPTION
            "A collection of objects providing raw performance
            counts on an ADSL Line (ATU-C end) provided by the
            ATU-R agent."
```

```
            ::= { adslGroups 17 }

            adslAturAtucPhysPerfIntervalGroup OBJECT-GROUP
                OBJECTS {
                    adslAtucPerfValidIntervals,
                    adslAtucPerfInvalidIntervals,
                    adslAtucPerfCurr15MinTimeElapsed,
                    adslAtucPerfCurr15MinLofs, adslAtucPerfCurr15MinLoss,
                    adslAtucPerfCurr15MinESs, adslAtucPerfCurr15MinInits,
                    adslAtucPerfCurr1DayTimeElapsed,
                    adslAtucPerfCurr1DayLofs, adslAtucPerfCurr1DayLoss,
                    adslAtucPerfCurr1DayESs, adslAtucPerfCurr1DayInits,
                    adslAtucPerfPrev1DayMoniSecs,
                    adslAtucPerfPrev1DayLofs, adslAtucPerfPrev1DayLoss,
                    adslAtucPerfPrev1DayESs, adslAtucPerfPrev1DayInits,
                    adslAtucIntervalLofs, adslAtucIntervalLoss,
                    adslAtucIntervalESs, adslAtucIntervalInits,
                    adslAtucIntervalValidData
                    }
                STATUS    current
                DESCRIPTION
                     "A collection of objects providing current
                    15-minute, 1-day; and previous 1-day performance
                    counts on ADSL Line (ATU-C end) provided by the
                    ATU-R agent."
            ::= { adslGroups 18 }

            adslAturAturPhysPerfRawCounterGroup OBJECT-GROUP
                OBJECTS {
                    adslAturPerfLofs, adslAturPerfLoss,
                    adslAturPerfLprs, adslAturPerfESs
                    }
                STATUS    current
                DESCRIPTION
                    "A collection of objects providing raw performance
                    counts on an ADSL Line (ATU-R end) provided by the
                    ATU-R agent."
            ::= { adslGroups 19 }

            adslAturAturPhysPerfIntervalGroup OBJECT-GROUP
                OBJECTS {
                    adslAturPerfValidIntervals,
                    adslAturPerfInvalidIntervals,
                    adslAturPerfCurr15MinTimeElapsed,
                    adslAturPerfCurr15MinLofs, adslAturPerfCurr15MinLoss,
                    adslAturPerfCurr15MinLprs, adslAturPerfCurr15MinESs,
                    adslAturPerfCurr1DayTimeElapsed,
                    adslAturPerfCurr1DayLofs, adslAturPerfCurr1DayLoss,
```

```
              adslAturPerfCurr1DayLprs, adslAturPerfCurr1DayESs,
              adslAturPerfPrev1DayMoniSecs,
              adslAturPerfPrev1DayLofs, adslAturPerfPrev1DayLoss,
              adslAturPerfPrev1DayLprs, adslAturPerfPrev1DayESs,
              adslAturIntervalLofs,
              adslAturIntervalLoss, adslAturIntervalLprs,
              adslAturIntervalESs, adslAturIntervalValidData
              }
          STATUS     current
          DESCRIPTION
              "A collection of objects providing current
              15-minute, 1-day; and previous 1-day performance
              counts on ADSL Line (ATU-R end) provided by the
              ATU-R agent."
          ::= { adslGroups 20 }

          adslAturAtucChanPerformanceGroup OBJECT-GROUP
              OBJECTS {
              adslAtucChanReceivedBlks,
              adslAtucChanTransmittedBlks,
              adslAtucChanCorrectedBlks,
              adslAtucChanUncorrectBlks,
              adslAtucChanPerfCurr15MinTimeElapsed,
              adslAtucChanPerfCurr15MinReceivedBlks,
              adslAtucChanPerfCurr15MinTransmittedBlks,
              adslAtucChanPerfCurr15MinCorrectedBlks,
              adslAtucChanPerfCurr15MinUncorrectBlks,
              adslAtucChanPerfCurr1DayTimeElapsed,
              adslAtucChanPerfCurr1DayReceivedBlks,
              adslAtucChanPerfCurr1DayTransmittedBlks,
              adslAtucChanPerfCurr1DayCorrectedBlks,
              adslAtucChanPerfCurr1DayUncorrectBlks,
              adslAtucChanPerfPrev1DayMoniSecs,
              adslAtucChanPerfPrev1DayReceivedBlks,
              adslAtucChanPerfPrev1DayTransmittedBlks,
              adslAtucChanPerfPrev1DayCorrectedBlks,
              adslAtucChanPerfPrev1DayUncorrectBlks,
              adslAtucChanPerfValidIntervals,
              adslAtucChanPerfInvalidIntervals,
              adslAtucChanIntervalReceivedBlks,
              adslAtucChanIntervalTransmittedBlks,
              adslAtucChanIntervalCorrectedBlks,
              adslAtucChanIntervalUncorrectBlks,
              adslAtucChanIntervalValidData
              }
          STATUS     current
          DESCRIPTION
              "A collection of objects providing channel block
```

```
                     performance information on an ADSL channel
                     (ATU-C end) provided by the ATU-R agent."
            ::= { adslGroups 21 }

            adslAturAturChanPerformanceGroup OBJECT-GROUP
                OBJECTS {
                    adslAturChanReceivedBlks,
                    adslAturChanTransmittedBlks,
                    adslAturChanCorrectedBlks,
                    adslAturChanUncorrectBlks,
                    adslAturChanPerfValidIntervals,
                    adslAturChanPerfInvalidIntervals,
                    adslAturChanPerfCurr15MinTimeElapsed,
                    adslAturChanPerfCurr15MinReceivedBlks,
                    adslAturChanPerfCurr15MinTransmittedBlks,
                    adslAturChanPerfCurr15MinCorrectedBlks,
                    adslAturChanPerfCurr15MinUncorrectBlks,
                    adslAturChanPerfCurr1DayTimeElapsed,
                    adslAturChanPerfCurr1DayReceivedBlks,
                    adslAturChanPerfCurr1DayTransmittedBlks,
                    adslAturChanPerfCurr1DayCorrectedBlks,
                    adslAturChanPerfCurr1DayUncorrectBlks,
                    adslAturChanPerfPrev1DayMoniSecs,
                    adslAturChanPerfPrev1DayReceivedBlks,
                    adslAturChanPerfPrev1DayTransmittedBlks,
                    adslAturChanPerfPrev1DayCorrectedBlks,
                    adslAturChanPerfPrev1DayUncorrectBlks,
                    adslAturChanIntervalReceivedBlks,
                    adslAturChanIntervalTransmittedBlks,
                    adslAturChanIntervalCorrectedBlks,
                    adslAturChanIntervalUncorrectBlks,
                    adslAturChanIntervalValidData
                    }
                STATUS      current
                DESCRIPTION
                    "A collection of objects providing channel block
                     performance information on an ADSL channel
                     (ATU-R end) provided by the ATU-R agent."
            ::= { adslGroups 22 }

            adslAturLineAlarmConfProfileGroup OBJECT-GROUP
                OBJECTS {
                    adslAtucThresh15MinLofs, adslAtucThresh15MinLoss,
                    adslAtucThresh15MinESs, adslAtucThreshFastRateUp,
                    adslAtucThreshInterleaveRateUp,
                    adslAtucThreshFastRateDown,
                    adslAtucThreshInterleaveRateDown,
                    adslAtucInitFailureTrapEnable,
```

```
                adslAturThresh15MinLofs, adslAturThresh15MinLoss,
                adslAturThresh15MinLprs, adslAturThresh15MinESs,
                adslAturThreshFastRateUp,
                adslAturThreshInterleaveRateUp,
                adslAturThreshFastRateDown,
                adslAturThreshInterleaveRateDown
                }
            STATUS     current
            DESCRIPTION
                "A collection of objects providing alarm
provisioning
                information about an ADSL Line provided by the
                ATU-R agent."
        ::= { adslGroups 23 }

        adslAturLineConfProfileControlGroup OBJECT-GROUP
            OBJECTS {
                adslLineAlarmConfProfile,
                adslLineAlarmConfProfileRowStatus
                }
            STATUS     current
            DESCRIPTION
                "A collection of objects providing profile
                control for the ADSL system by the ATU-R agent."
        ::= { adslGroups 24 }

        adslAturNotificationsGroup NOTIFICATION-GROUP
            NOTIFICATIONS {
                adslAtucPerfLofsThreshTrap,
                adslAtucPerfLossThreshTrap,
                adslAtucPerfESsThreshTrap,
                adslAtucRateChangeTrap,
                adslAturPerfLofsThreshTrap,
                adslAturPerfLossThreshTrap,
                adslAturPerfLprsThreshTrap,
                adslAturPerfESsThreshTrap,
                adslAturRateChangeTrap
                }
            STATUS        current
            DESCRIPTION
                "The collection of ADSL notifications implemented by
                the ATU-R agent."
        ::= { adslGroups 25 }

    END

    10.  Acknowledgments
```

     The current editors are:

          Gregory Bathrick (AG Communication Systems)
          Faye Ly (Copper Mountain Networks)

     Input from the ADSL Forum was edited by:

          Gregory Bathrick (AG Communication Systems)
          John Burgess (Predictive Systems)

   Contributions have been received from, but not limited to the
   following. (in alphabetical order)

          David Allen (Nortel)
          Rajesh Abbi (Alcatel)
          Gregory Bathrick (AG Communication Systems)
          Umberto Bonollo (NEC)
          John Burgess (Predictive Systems)
          Gail Cone (Amati)
          Andrew Cheer (NEC)
          Peter Duffy (Atlantech)
          Kevin Godfrey (Motorola)
          Bill Hong (Diamond Lane)
          Bob Jenness (Siemens)
          Lars Johansson (Ericsson)
          Jeff Johnson (RedBack Network)
          Tsu Kai Lu (DSC)
          Faye Ly (Copper Mountain Networks)
          Gigi Karmous-Edwards (Pulsecom)
          Ron Knipper (Diamond Lane)
          Adil Masood (AG Communication Systems)
          Padmore Peterson (BT)
          Anna Salguero (SBC)
          Donald Simon (Motorola)
          Mike Sneed (Pulsecom)
          Ted Soo-Hoo (Pulsecom)
          John Stehman (Diamond Lane)
          Chuck Storry (Newbridge)
          Chi-Lin Tom (AFC)
          Frank Van der Putten (Alcatel)
          Marc Van Vlimmeren (Alcatel)
          Bert Wijnen (IBM)

   11. References

   [1] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and
        S. Waldbusser, "Structure of Management Information for Version

        2 of the Simple Network Management Protocol (SNMPv2)",
        RFC 1902, January 1996.

[2]   Case, J., McCloghrie, K., Rose, M., and S. Waldbusser,
        "Textual Conventions for SNMPv2", RFC 1903, SNMP Research,
        Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc.,
        International Network Services, January 1996.

[3]   ADSL Forum TR-005, "Network Management Element Management",
        March 1998.

[4]   McCloghrie, K., and M. Rose, Editors, "Management
        Information Base for Network Management of TCP/IP-based
        internets: MIB-II", STD 17, RFC 1213, Hughes LAN Systems,
        Performance Systems International, March 1991.

[5]   McCloghrie, K. and F. Kastenholz, "The Interfaces Group
        MIB using SMIv2", RFC 2233, Cisco Systems, FTP Software,
        November 1997.

[6]   SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M.,
        and S. Waldbusser, "Management Information Base for
        version 2 of the Simple Network Management Protocol
        (SNMPv2)", RFC 1907, January 1996.

[6]   RFC 1907, "Management Information Base for Version 2 of the
        Simple Network Management Protocol (SNMPv2)", January 1996.

[7]   Case, J., Fedor, M., Schoffstall, M., and J. Davin. " A Simple
        Network Management Protocol (SNMP)", STD 15, RFC 1157, SNMP
        Research, Performance Systems International, MIT Lab for
        Computer Science, May 1990.

[8]   SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and
        S. Waldbusser, "Protocol Operations for Version 2 of the Simple
        Network Management Protocol (SNMPv2)", RFC 1905, January 1996.

[9]   ADSL Forum TR-006, "SNMP-based ADSL Line MIB", March 1998.

[10]   American National Standards Institute, ANSI T1.413-1995,
        August 1995.

[11]   ADSL Forum WT-014, "DMT Line Code Specific MIB", February 1999.

[12]   ADSL Forum WT-015, "CAP Line Code Specific MIB", February 1999.

[13]   Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for
        Describing SNMP Management Frameworks", RFC 2271, Cabletron

          Systems, Inc., BMC Software, Inc., IBM T. J. Watson Research,
          January 1998

     [14] Rose, M., and K. McCloghrie, "Structure and Identification of
          Management Information for TCP/IP-based Internets", RFC 1155,
          Performance Systems International, Hughes LAN Systems, May 1990

     [15] Rose, M., and K. McCloghrie, "Concise MIB Definitions",
          RFC 1212, Performance Systems International, Hughes LAN Systems,
          March 1991

     [16] M. Rose, "A Convention for Defining Traps for use with the
          SNMP", RFC 1215, Performance Systems International, March
          1991

     [17] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S.
          Waldbusser, "Conformance Statements for Version 2 of the Simple
          Network Management Protocol (SNMPv2)", RFC 1904, SNMP Research,
          Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc.,
          International Network Services, January 1996.

     [18] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S.
          Waldbusser, "Introduction to Community-based SNMPv2", RFC 1901,
          SNMP Research, Inc., Cisco Systems, Inc., Dover Beach
          Consulting, Inc., International Network Services, January 1996.

     [19] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S.
          Waldbusser, "Transport Mappings for Version 2 of the Simple
          Network Management Protocol (SNMPv2)", RFC 1906, SNMP Research,
          Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc.,
          International Network Services, January 1996.

     [20] Case, J., Harrington D., Presuhn R., and B. Wijnen, "Message
          Processing and Dispatching for the Simple Network Management
          Protocol (SNMP)", RFC 2272, SNMP Research, Inc., Cabletron
          Systems, Inc., BMC Software, Inc., IBM T. J. Watson Research,
          January 1998.

     [21] Blumenthal, U., and B. Wijnen, "User-based Security Model (USM)
          for version 3 of the Simple Network Management Protocol
          (SNMPv3)", RFC 2274, IBM T. J. Watson Research, January 1998.

     [22] Levi, D., Meyer, P., and B. Stewart, SNMPv3 Applications",
          RFC 2273, SNMP Research, Inc., Secure Computing Corporation,
          Cisco Systems, January 1998.

     [23] Wijnen, B., Presuhn, R., and K. McCloghrie, "View-based Access
          Control Model (VACM) for the Simple Network Management Protocol

(SNMP)", RFC 2275, IBM T. J. Watson Research, BMC Software, Inc., Cisco Systems, Inc., January 1998.

[24] Ahmed, M., and K. Tesink, Editors, "Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2", RFC 1695, Bell Communications Research, August 1994.

[25] McCloghrie, K. and A. Bierman, "Entity MIB", RFC 2037, October 1996.

[26] Yergeau, F., "UTF-8, a transformation format of Unicode and ISO 10646", RFC 2044, October 1996.

12. 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 7.4) 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 2274 [21] and the View-based Access Control Model RFC 2275 [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.

13. Authors' Addresses

        Gregory Bathrick
        AG Communication Systems
        A Subsidiary of Lucent Technologies
        2500 W Utopia Rd.
        Phoenix, AZ 85027 USA
        Tel: +1 602-582-7679
        Fax: +1 602-582-7697
        E-MAIL: bathricg@agcs.com

        Faye Ly
        Copper Mountain Networks
        Norcal Office
        2470 Embarcadero Way
        Palo Alto, CA 94303
        Tel: +1 650-858-8500
        Fax: +1 650-858-8085
        E-Mail: faye@norcal.coppermountain.com

Table of Contents