

# **Technical Report**

**TR-015**

# **CAP LINE CODE SPECIFIC MIB**

**February 1999**

## **ABSTRACT**

This contribution proposes a line code specific MIB extension for Carrierless AM/PM (CAP) standard ADSL lines. This contribution includes Network Element MIB definitions for the ATUC and ATUR proxy view required for CAP ADSL operation. These definitions supplement the IETFADSL line MIB, which was derived from TR-006.

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## 1 INTRODUCTION

The line code specific MIB definitions for Carrierless AM/PM (CAP) [1] DSL lines are intended to supplement and extend the generic ADSL line MIB definitions in the IETF ADSL line MIB [2], which was derived from TR-006 [3].

The following additions are made to the generic line MIB:

- The `adslLcsMib` is extended to support the CAP line code specific interface structure, `adslCAPMib`.
- Line code specific (LCS) tables are added under this new structure for each LCS type. These tables are organized identically to the elements under `adslMibObjects`. These tables perform the same functions as the tables under `adslMibObjects`; only their scope is limited to LCS parameters.

Although the MIB structure is in place to add LCS tables that correspond to all tables in `adslMibObjects`, not all are required for CAP. CAP only require the following LCS tables:

- Physical tables (i.e. actuals) for both ATUC and ATUR
- Performance data tables for both ATUC and ATUR
- Interval tables for both ATUC and ATUR
- Line configuration profile table
- Alarm configuration profile table

As with generic ADSL Line MIB, these ATUC MIB tables represent the view of the Network Element (NE) hosting the ATUC. The MIB is resident in the NE. Corresponding ATUR CAP-specific tables are also specified for the same functions. These ATUR tables also reside in the host NE and represent the NE's proxy view of the ATUR.

## 2 MIB STRUCTURE

The CAP LCS MIB is based on the generic ADSL line MIB structure:

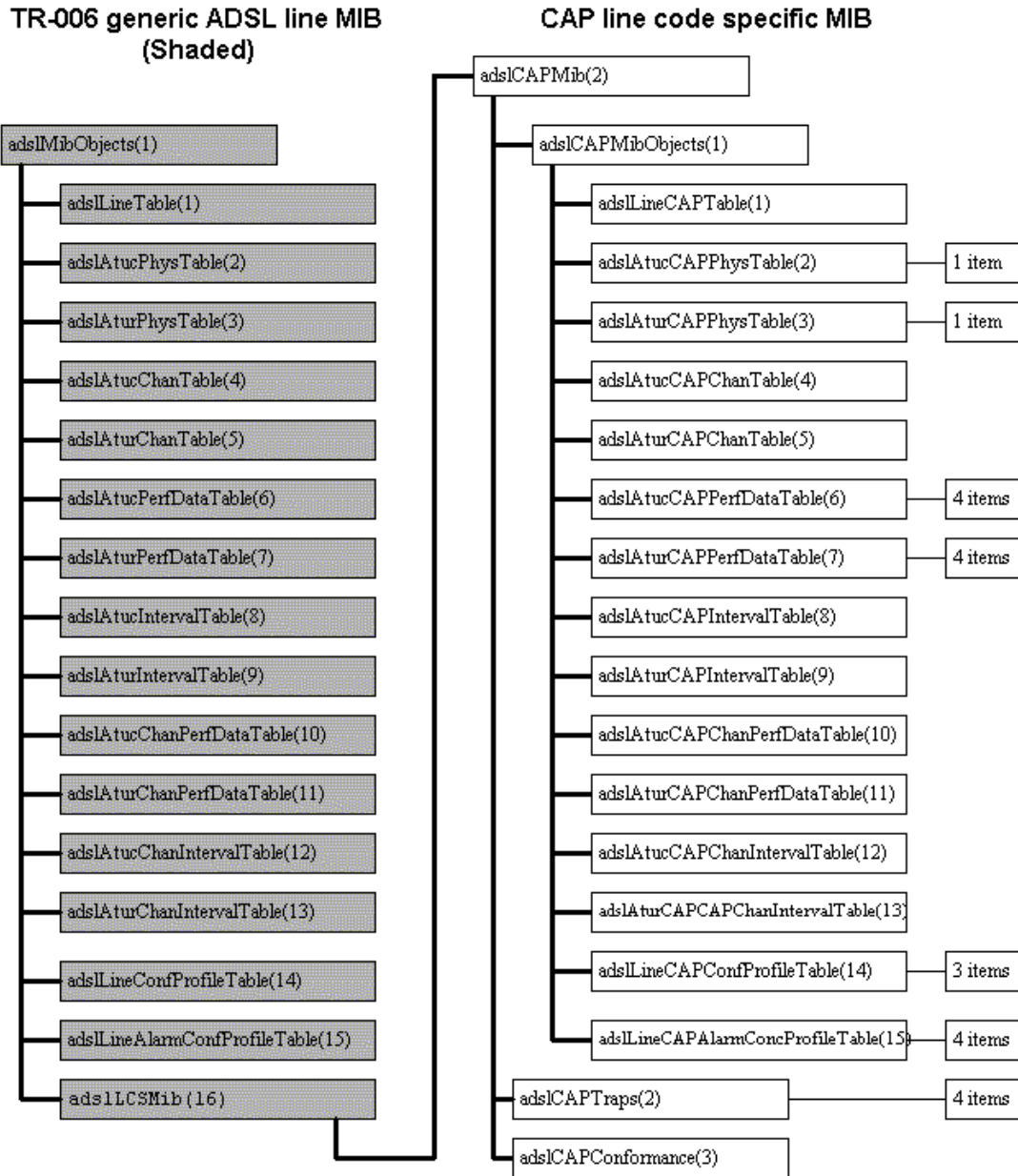


Figure 1. MIB Table Structure

## 4 CAP LCS MIB TABLES

The `adslCAPMibObjects` table uses the same structure as `adslMibObjects`.

Annex A includes the ASN.1 for the CAP LCS MIB.

### 4.1 `adslLineCAPTable`

Annex A includes a placeholder for this table, which is not currently used.

## 4.2 **adslAtucCAPPhysTable, adslAturCAPPhysTable**

The Phys tables contain status information returned from the ATUC/ATUR. Much of the CAP status information conforms to the generic ADSL model. Only 1 Phys element is currently required for CAP, which is:

- `adslAtu*CAPActivationSigQuality`

## 4.3 **adslAtucCAPChanTable, adslAturCAPChanTable**

Annex A includes placeholders for these tables, which are not currently used.

## 4.4 **adslAtucCAPPerfDataTable, adslAturCAPPerfDataTable**

CAP LCS performance data tables only require the addition of performance primitives. The performance monitoring general parameters (i.e. binned parameters) in the generic ADSL line MIB are sufficient to monitor CAP DSLs [4].

The physical layer performance primitives count CRC errors and CAP transceiver initializations based on error stimuli.

## 4.5 **adslAtucCAPIntervalTable, adslAturCAPIntervalTable**

Annex A includes placeholders for these tables, which are not currently used.

## 4.6 **adslAtucCAPChanPerfDataTable, adslAturCAPChanPerfDataTable**

Annex A includes placeholders for these tables, which are not currently used.

## 4.7 **adslAtucCAPChanIntervalTable, adslAturCAPChanIntervalTable**

Annex A includes placeholders for these tables, which are not currently used.

## 4.9 **adslLineCAPConfProfileTable**

The configuration profile tables contain additional CAP-specific transceiver controls.

The element `adslCAPTxPowerReduction` forces the ATUC CAP transmitter to limit output power below its maximum power level in order to limit power spectral density (PSD) emissions.

The configuration also contains retraining thresholds. When CRC error rate thresholds are exceeded, reinitialization (retraining) of the line is initiated. These thresholds operate in the same manner as alarm threshold, but the threshold crossing does not trigger an alarm, only reinitialization. The thresholds are:

- `adslAtucCAPThreshErrInits` base upon the ATUC CAP performance parameter `adslAtucCAPCurr15MinCrcErrRate`.
- `adslAturCAPThreshErrInits` base upon the ATUR CAP performance parameter `adslAturCAPCurr15MinCrcErrRate`.

#### 4.11 `adslLineCAPAlarmConfProfileTable`

The alarm configuration table contains threshold settings for CAP-specific alarms. Thresholds can be set for high error-rate failure alarm and the degraded error rate alarm on the CAP transceivers. As with the generic ADSL line MIB alarm configuration, setting the threshold to a 0 value disables the alarm trap. The alarms are:

- The ATUC high error rate failure alarm is asserted when the ATUC CAP performance parameter `adslAtucCAPCurr15MinCrcErrRate` crosses the `adslAtucCAPThresh15MinErrFail` threshold.
- The ATUC high error rate degraded alarm is asserted when the ATUC CAP performance parameter `adslAtucCAPCurr15MinCrcErrRate` crosses the `adslAtucCAPThresh15MinErrDegraded` threshold.
- The ATUR high error rate failure alarm is asserted when the ATUR CAP performance parameter `adslAturCAPCurr15MinCrcErrRate` crosses the `adslAturCAPThresh15MinErrFail` threshold.
- The ATUR high error rate degraded alarm is asserted when the ATUR CAP performance parameter `adslAturCAPCurr15MinCrcErrRate` crosses the `adslAturCAPThresh15MinErrDegraded` threshold.

## 5 TRAPS

Individual traps are provided for each of the 4 CAP LCS alarms.

## 6 TEST TYPES & CODES

Test, special-study analysis, and diagnostic functions are not incorporated into the CAP LCS MIB. These functions are addressed separately [5].

## 7 REFERENCES

- [1] Draft Technical Report for Single-Carrier Rate Adaptive Digital Subscriber Line (RADSL) — Revision 1, T1E1.4 LB715, November 1998.
- [2] Definitions of Managed Objects for the ADSL, Lines, IETF draft-ietf-adslmib-adslinemib-04.txt, December 21, 1998.
- [3] SNMP-Based ADSL Line MIB, ADSL Forum TR-006 (WT-015), February 1998.

- [4] Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring, ANSI/T1.231.
- [5] Proposal for In-Service Line Analysis and Test MIB, ADSL Forum 98-135, September 1998.

**ANNEX A — CAP LCS MIB**

```

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

    IMPORTS
        MODULE-IDENTITY, OBJECT-TYPE, Gauge32,
        NOTIFICATION-TYPE, Integer32
        FROM SNMPv2-SMI
        MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
        adslLineConfProfileName, adslLineAlarmConfProfileName,
        adslAtucPhysEntry, adslAturPhysEntry, adslLCSMib,
        adslAtucPerfDataEntry, adslAturPerfDataEntry
        FROM ADSL-LINE-MIB
    ;

-- CAP MIB OBJECTS

adslCAPMib MODULE-IDENTITY
    LAST-UPDATED "9902111900Z"
    ORGANIZATION "ADSL Forum"
    CONTACT-INFO
        "Ron Knipper
         Diamond Lane Communications Corp.
         1310 Redwood Way
         Petaluma, CA 94954 USA
         Tel: +1 707-793-7104
         Fax: +1 707-792-0850
         E-mail: knipper@dlcc.com"
    DESCRIPTION
        "Naming Conventions:
         Atuc -- (ATUC) modem at near (Central) end of line
         Atur -- (ATUR) modem at Remote end of line
         ES -- Errored Second.
         LCS -- Line Code Specific
         Lof -- Loss of Frame
         Lol -- Loss of Link
         Los -- Loss of Signal
         Lpr -- Loss of Power
         CAP line code specific notes regarding the generic
         ADSL line MIB:
         - adslAtu*ChanCrcBlockLength is the length of the
           TC-layer frame. The CAP TC-layer frame only
           supports the interleave channel.
        "
    ::= {adslLCSMib 2}

-- OBJECTS
adslCAPMibObjects OBJECT IDENTIFIER ::= { adslCAPMib 1}

--CAP LINE TABLE
adslLineCAPTable OBJECT IDENTIFIER ::= {adslCAPMibObjects 1}

-- ATUC PHYS TABLE
adslAtucCAPPhysTable OBJECT-TYPE
    SYNTAX SEQUENCE OF AdslAtucCAPPhysEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "cap interface PHY actuals information table
        for the central office."
    ::= {adslCAPMibObjects 2}

adslAtucCAPPhysEntry OBJECT-TYPE
    SYNTAX AdslAtucCAPPhysEntry

```



```

MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "cap interface PHY actuals information entry"
INDEX { adslAtucPhysEntry }
 ::= { adslAtucCAPPhysTable 1}

AdslAtucCAPPhysEntry ::=
    adslAtucCAPActivationSigQuality      SEQUENCE {
        Integer32
    }

adslAtucCAPActivationSigQuality      OBJECT-TYPE
SYNTAX          Integer32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "Atuc average signal quality (SNR)
measured during transceiver training.
This measurement is used to determine
current ATUC SNR margin."
 ::= {adslAtucCAPPhysEntry 1}

-- ATUR PHYS TABLE
adslAturCAPPhysTable OBJECT-TYPE
SYNTAX          SEQUENCE OF AdslAturCAPPhysEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "CAP interface PHY actuals information table
for the ATUR remote unit."
 ::= {adslCAPMibObjects 3}

adslAturCAPPhysEntry OBJECT-TYPE
SYNTAX          AdslAturCAPPhysEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "CAP interface PHY actuals information entry"
INDEX { adslAturPhysEntry }
 ::= {adslAturCAPPhysTable 1}

AdslAturCAPPhysEntry ::=
    adslAturCAPActivationSigQuality      SEQUENCE {
        Integer32
    }

adslAturCAPActivationSigQuality      OBJECT-TYPE
SYNTAX          Integer32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "ATUR average signal quality (SNR)
measured during transceiver training.
This measurement is used to determine
current ATUR SNR margin."
 ::= {adslAturCAPPhysEntry 1}

-- CHANNEL TABLES
adslAtucCAPChanTable OBJECT IDENTIFIER ::= {adslCAPMibObjects 4}
adslAturCAPChanTable OBJECT IDENTIFIER ::= {adslCAPMibObjects 5}

-- ATUC PERF DATA
-- Performance actuals for ATUC cap interface
adslAtucCAPPerfTable OBJECT-TYPE
SYNTAX          SEQUENCE OF AdslAtucCAPPerfEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "ATUC CAP-specific performance monitoring,
including PM primitives and general parameters
for the PHY interface."

```

```

 ::= {adslCAPMibObjects 6}

adslAtucCAPPerfEntry OBJECT-TYPE
    SYNTAX      AdslAtucCAPPerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "CAP ATUC physical interface channel performance
        monitoring parameter entry"
    INDEX      { adslAtucPerfDataEntry }
    ::= {adslAtucCAPPerfTable 1}

AdslAtucCAPPerfEntry ::=
    SEQUENCE {
    adslAtucCAPCrc          Gauge32,
    adslAtucCAPLOfInits    Gauge32,
    adslAtucCAPErrInits    Gauge32,
    adslAtucCAPCurrl5MinCrcErrRate  INTEGER
    }

adslAtucCAPCrc          OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Frame CRC errors since agent reset."
    ::= {adslAtucCAPPerfEntry 1}

adslAtucCAPLOfInits     OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "ATUC line initializations triggered
        by LOF since agent reset. This counter
        is a subset of adslAtucPerfInits."
    ::= {adslAtucCAPPerfEntry 2}

adslAtucCAPErrInits     OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "ATUC line initializations triggered
        by high error rates since agent reset.
        This counter is a subset of
        adslAtucPerfInits."
    ::= {adslAtucCAPPerfEntry 3}

adslAtucCAPCurrl5MinCrcErrRate OBJECT-TYPE
    SYNTAX      INTEGER
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "ATUC CRC error rate for the current 15Min
        interval. The value is expressed as
        an inverse power of 10, i.e. 10E-(value)."
    ::= {adslAtucCAPPerfEntry 4}

-- ATUR PERF DATA
-- Performance actuals for ATUR cap interface
adslAturCAPPerfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF AdslAturCAPPerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "ATUR CAP-specific performance monitoring,
        including PM primitives and general parameters
        for the PHY interface."
    ::= {adslCAPMibObjects 7}

adslAturCAPPerfEntry OBJECT-TYPE

```

```

SYNTAX          AdslAturCAPPerfEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "CAP ATUR physical interface channel performance
monitoring parameter entry"
INDEX           { adslAturPerfDataEntry }
 ::= { adslAturCAPPerfTable 1}

AdslAturCAPPerfEntry ::=          SEQUENCE {
adslAturCAPCrc                Gauge32,
adslAturCAPLOfInits           Gauge32,
adslAturCAPErrInits           Gauge32,
adslAturCAPCurr15MinCrcErrRate    INTEGER
}

adslAturCAPCrc                OBJECT-TYPE
SYNTAX          Gauge32
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Frame CRC errors since system reset."
 ::= { adslAturCAPPerfEntry 1}

adslAturCAPLOfInits           OBJECT-TYPE
SYNTAX          Gauge32
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "ATUR line initializations triggered
by LOF since agent reset. "
 ::= { adslAturCAPPerfEntry 2}

adslAturCAPErrInits           OBJECT-TYPE
SYNTAX          Gauge32
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "ATUR line initializations triggered
by high error rates since agent reset."
 ::= { adslAturCAPPerfEntry 3}

adslAturCAPCurr15MinCrcErrRate    OBJECT-TYPE
SYNTAX          INTEGER
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "ATUR CRC error rate for the current 15Min
interval. The value is expressed as
an inverse power of 10, i.e. 10E-(value)."
 ::= { adslAturCAPPerfEntry 4}

-- INTERVAL TABLES
adslAtucCAPIntervalTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 8}
adslAturCAPIntervalTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 9}

-- CHANNEL PERFORMANCE DATA TABLES
adslAtucCAPChanPerfDataTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 10}
adslAturCAPChanPerfDataTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 11}

-- CHANNEL INTERVAL TABLES
adslAtucCAPChanIntervalTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 12}
adslAturCAPChanIntervalTable OBJECT IDENTIFIER ::= { adslCAPMibObjects 13}

-- configuration for both ATUC/ATUR CAP interfaces
adslCAPConfProfileTable          OBJECT-TYPE
SYNTAX          SEQUENCE OF AdslCAPConfProfileEntry
MAX-ACCESS      not-accessible

```

```

        STATUS          current
        DESCRIPTION
"Configuration for CAP RADSL mode
functions"
        ::= {adslCAPMibObjects 14}

adslCAPConfProfileEntry      OBJECT-TYPE
    SYNTAX          AdslCAPConfProfileEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "cap interface config information entry"
    INDEX           { adslLineConfProfileName }
    ::= {adslCAPConfProfileTable 1}

AdslCAPConfProfileEntry      ::=      SEQUENCE {
    adslCAPTxPowerReduction      INTEGER,
    adslAtucCAPThreshErrInits    INTEGER,
    adslAturCAPThreshErrInits    INTEGER
}

adslCAPTxPowerReduction      OBJECT-TYPE
    SYNTAX          INTEGER (0..30)
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "ATUC transmit power reduction (from the power
level defined by training) expressed in dB.
ATUR power reduction is negotiated, not configured."
    DEFVAL { 0 }
    ::= {adslCAPConfProfileEntry 1}

adslAtucCAPThreshErrInits    OBJECT-TYPE
    SYNTAX          INTEGER (0..7)
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "Error rate (ATUC frame CRC error) threshold
to trigger the ATUC Inits process. The value
is expressed as an inverse power of 10, i.e.
10E-(value)."
    DEFVAL { 0 }
    ::= { adslCAPConfProfileEntry 2}

adslAturCAPThreshErrInits    OBJECT-TYPE
    SYNTAX          INTEGER (0..7)
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "Error rate (ATUR frame CRC errors reported
the ATUC as FEBEs) threshold to trigger the
ATUC Inits process. The value is expressed as
an inverse power of 10, i.e. 10E-(value)."
    DEFVAL { 0 }
    ::= { adslCAPConfProfileEntry 3}

-- alarm configuration for both ATUC/ATUR CAP interfaces
adslCAPAlarmConfProfileTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF AdslCAPAlarmConfProfileEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
"Configuration for CAP RADSL mode
functions"
        ::= {adslCAPMibObjects 15}

adslCAPAlarmConfProfileEntry OBJECT-TYPE
    SYNTAX          AdslCAPAlarmConfProfileEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION

```

```

        "cap interface config information entry"
INDEX   { adslLineAlarmConfProfileName }
 ::= { adslCAPAlarmConfProfileTable 1}

AdslCAPAlarmConfProfileEntry ::= SEQUENCE {
    adslAtucCAPThresh15MinErrFail      INTEGER,
    adslAtucCAPThresh15MinErrDegrade   INTEGER,
    adslAturCAPThresh15MinErrFail      INTEGER,
    adslAturCAPThresh15MinErrDegrade   INTEGER
}

adslAtucCAPThresh15MinErrFail OBJECT-TYPE
    SYNTAX      INTEGER (0..7)
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Error rate (frame CRC error) threshold to
trigger the ATUC high error rate failure alarm.
The value is expressed as an inverse power of 10,
i.e. 10E-(value). This threshold should be set
so as to alarm when the CAP CRC frame error rate is
sufficient to be unusable. This is accomplished by
comparing this threshold against current 15Min
interval's error rate in
adslAtucCAPCurr15MinCrcErrRate. The trap is
disabled by setting the threshold to 0."
    DEFVAL { 0 }
    ::= { adslCAPAlarmConfProfileEntry 1}

adslAtucCAPThresh15MinErrDegrade OBJECT-TYPE
    SYNTAX      INTEGER (0..7)
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Error rate (frame CRC error) threshold to
trigger the ATUC degraded error rate alarm. The
value is expressed as an inverse power of 10,
i.e. 10E-(value). This threshold should be set
so as to alarm when the ATUC receiver's frame
error rate is sufficient to degrade performance,
but is still usable. This is accomplished by
comparing this threshold against current 15Min
interval's error rate in
adslAtucCAPCurr15MinCrcErrRate. The trap is
disabled by setting the threshold to 0."
    DEFVAL { 0 }
    ::= { adslCAPAlarmConfProfileEntry 2}

adslAturCAPThresh15MinErrFail OBJECT-TYPE
    SYNTAX      INTEGER (0..7)
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Far-end error rate (FEBEs send by ATUR) failure
threshold to trigger the ATUR high error rate
alarm. The value is expressed as an inverse power
of 10, i.e. 10E-(value). This threshold should be
set so as to alarm when the ATUC received FEBE
rate is sufficient to be usable. This is
accomplished by comparing this threshold against
current 15Min interval's error rate in
adslAturCAPCurr15MinCrcErrRate. The trap is
disabled by setting the threshold to 0."
    DEFVAL { 0 }
    ::= { adslCAPAlarmConfProfileEntry 3}

adslAturCAPThresh15MinErrDegrade OBJECT-TYPE
    SYNTAX      INTEGER (0..7)
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Far-end error rate (FEBEs sent from ATUR) degrade

```

```

threshold to trigger the ATUR degraded error rate
alarm. The value is expressed as an inverse power
of 10, i.e. 10E-(value). This threshold should be set
so as to alarm when the ATUR receiver's FEBE rate
is sufficient to degrade performance, but is still
usable. This is accomplished by comparing this
threshold against current 15Min interval's error
rate in adslAturCAPCurr15MinCrcErrRate. The trap
is disabled by setting the threshold to 0."
    DEFVAL { 0 }
    ::= { adslCAPAlarmConfProfileEntry 4 }

-- TRAPS
adslCAPTraps OBJECT IDENTIFIER ::= { adslCAPMib 2 }

adslAtucCAPAlarmThreshFailTrap      NOTIFICATION-TYPE
OBJECTS { adslAtucCAPThresh15MinErrFail }
STATUS current
DESCRIPTION
    "ATUC CRC framing error rate 15-minute interval
exceeds failure threshold"
    ::= { adslCAPTraps 0 1 }

adslAtucCAPAlarmThreshDegradeTrap   NOTIFICATION-TYPE
OBJECTS { adslAtucCAPThresh15MinErrDegrade }
STATUS current
DESCRIPTION
    "ATUC CRC framing error rate 15-minute interval
exceeds degraded threshold"
    ::= { adslCAPTraps 0 2 }

adslAturCAPAlarmThreshFailTrap      NOTIFICATION-TYPE
OBJECTS { adslAturCAPThresh15MinErrFail }
STATUS current
DESCRIPTION
    "ATUR CRC framing error rate 15-minute interval
exceeds failure threshold"
    ::= { adslCAPTraps 0 3 }

adslAturCAPAlarmThreshDegradeTrap   NOTIFICATION-TYPE
OBJECTS { adslAturCAPThresh15MinErrDegrade }
STATUS current
DESCRIPTION
    "ATUR CRC framing error rate 15-minute interval
exceeds degraded threshold"
    ::= { adslCAPTraps 0 4 }

-- CONFORMANCE STATEMENTS
adslCAPConformance OBJECT IDENTIFIER ::= { adslCAPMib 3 }
adslCAPGroups OBJECT IDENTIFIER ::= { adslCAPConformance 1 }
adslCAPCompliances OBJECT IDENTIFIER ::= { adslCAPConformance 2 }

adslCAPMibCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION
    "The compliance statement for SNMP entities
which have ADSL interfaces."
MODULE -- this module
GROUP adslCAPGroup
    DESCRIPTION
        "These groups are implemented only when the
line code adslLineCode is set to the value
'cap'."
    ::= { adslCAPCompliances 1 }

-- units of conformance
adslCAPGroup OBJECT-GROUP
OBJECTS {
adslAtucCAPActivationSigQuality,
adslAturCAPActivationSigQuality,
adslAtucCAPCrc,

```

```
adslAtucCAPLoFInits,
adslAtucCAPErrInits,
adslAtucCAPCurr15MinCrcErrRate,
adslAturCAPCrc,
adslAturCAPLoFInits,
adslAturCAPErrInits,
adslAturCAPCurr15MinCrcErrRate,
adslCAPTxPowerReduction,
adslAtucCAPThreshErrInits,
adslAturCAPThreshErrInits,
adslCAPTxPowerReduction,
adslAtucCAPThreshErrInits,
adslAturCAPThreshErrInits
}
STATUS      current
DESCRIPTION
"This group of objects provides all line code
specific information for ATUC/ATUR CAP lines."
::= { adslCAPGroups 1 }

END
```