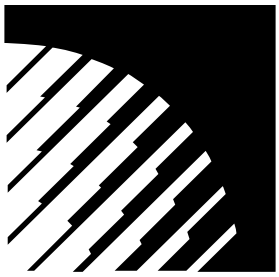

The ATM Forum
Technical Committee

Auto-configuration of PVCs

AF-NM-0122.000

May, 1999

The ATM Forum
Worldwide Headquarters
2570 West El Camino Real, Suite 304
Mountain View, CA 94040-1313
Tel: +1-650-949-6700
Fax:+1-650-949-6705

Editors: Kathleen Jarosinski
Andrew J. Mayer, Ph.D.

Table of Contents

1. INTRODUCTION 1

2. OVERVIEW 1

3. AUTO-CONFIGURATION REQUIREMENTS 2

3.1 SERVICE TYPE (R) 2
3.2 CONNECTION INFORMATION (R) 2
3.3 AAL ENCAPSULATION (O) 2
3.4 TRAFFIC MANAGEMENT CLASS AND PARAMETERS (R) 2
3.5 UNI PARAMETERS (R) 3

4. ILMI MIB SUPPORT FOR AUTO-CONFIGURATION REQUIREMENTS 4

4.1 SERVICE TYPE 4
4.2 CONNECTION INFORMATION 4
4.3 AAL ENCAPSULATION 4
4.4 TRAFFIC MANAGEMENT CLASS AND PARAMETERS 5
4.5 UNI PARAMETERS 5

5. EXTENSIONS TO THE ILMI SNMP MIB 6

Introduction

This document defines the requirements and extensions to the SNMP MIB required for using ILMI to auto-configure ATM permanent virtual circuits (PVCs) in remote CPE. The ILMI operates between the network (e.g., Digital Subscriber Loop Access Mux (DSLAM)) and the ATM Network Termination at the customer premises (e.g., ADSL modem, a.k.a. ATU-R). Auto-configuration will allow the network to use the ILMI to send ATM PVC information and characteristics to the ATM Network Termination. This information includes the PVC VPI/VCI, AAL, traffic type and parameters. Also, in the event there are multiple PVCs terminated at ATM Network Termination with different QoS, ILMI will provide enough distinguishing information, so that the appropriate ATM PVC is automatically selected.

Overview

Currently, when a service requiring remote configuration (e.g., ADSL) is sold to a customer, the carrier must dispatch a service technician to the customer's house to configure the CPE (e.g., ATU-R), or depend on the customer to do it himself. This creates a potential frustrating situation for the customer who is now required to understand ATM. It also creates a security risk situation for theft of service, should a user with enough familiarity with the network provide valid connection identifiers which are not assigned to him.

The current ILMI 4.0 specification provides network address registration for ATM SVCs. This feature enables an ATM end station to provide its address to the network. The extensions to the existing SNMP MIB defined in this document will allow the ILMI to be used to carry information regarding the configuration ATM specific aspects of the remote CPE. Figure 1 provides an example of auto-configuration using ILMI for ADSL.

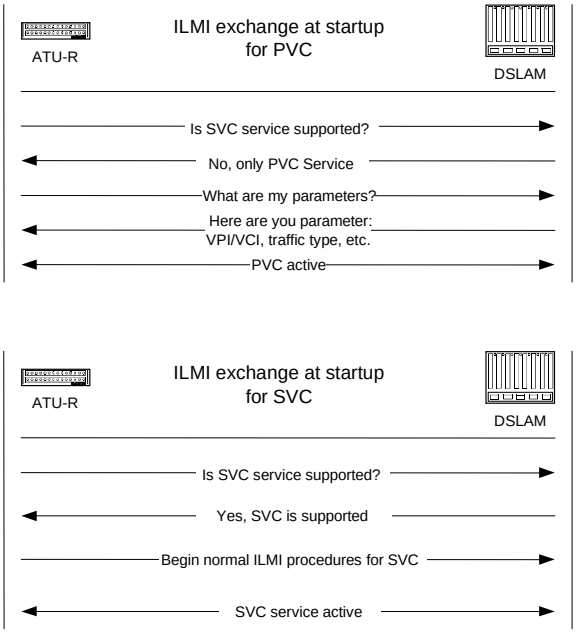

Figure 1: Example of Auto-configuration for ADSL using ILMI

Auto-Configuration Requirements

Service Type (R)

A service type shall be defined for the Auto-Configuration table, which is present on the network side of the ATM UNI. This table, implemented by the IME on the network side of the ATM UNI, contains all of the services that are available to the user side IME indexed by the service. This information contains the service specific attributes associated with the different ATM PVCs such as the name of the service provided by the PVC, the service category (CBR, rt-VBR, nrt-VBR, UBR, ABR, GFR) as defined by TM 4.0, and the conformance definition (CBR.1, VBR.1, VBR.2, VBR.3, UBR.1, UBR.2, ABR, GFR.1, GFR.2) as defined by TM 4.0.

Connection Information (R)

Each PVC must be identified by a unique VPI/VCI.

The connection shall be associated with service type information.

Optionally, the connection may be named.

AAL Encapsulation (O)

The ATM Adaptation Layer (AAL) Type and Parameters may be specified for the endpoint of the VCC. Valid values of the AAL Type are none, AAL1, AAL2, AAL3/4, and AAL5. If the value of this field is none, then the AAL parameters are not specified.

Traffic Management Class and Parameters (R)

The traffic management class and its associated parameters shall be specified as follows:

- Constant Bit Rate (CBR)
  - Peak Cell Rate (PCR)
  - Cell Delay Variation Tolerance (CDVT)
- Variable Bit Rate – (VBR)
  - Peak Cell Rate (PCR)
  - Maximum Burst Size (MBS)
  - Sustained Cell Rate (SCR)
  - Cell Delay Variation Tolerance (CDVT)
- Available Bit Rate (ABR)
  - Peak Cell Rate (PCR)
  - Cell Delay Variation Tolerance (CDVT)
  - Minimum Cell Rate (MCR)

  - Initial Cell Rate (ICR)
  - Number of data cells per forward RM-cell (Nrm)
  - Maximum time between forward RM-cells (Trm)
  - Cutoff Decrease Factor (CDF)
  - Rate Increment Factor (RIF)
  - Rate Decrease Factor (RDF)
  - ACR Decrease Time Factor (ADTF)
  - RM-cells before Cutoff (CRM)
- Unspecified Bit Rate (UBR)
  - Peak Cell Rate (PCR)
  - Cell Delay Variation Tolerance (CDVT)
- Guaranteed Frame Rate (GFR)
  - Peak Cell Rate (PCR)
  - Minimum Cell Rate (MCR)
  - Maximum Burst Size (MBS)
  - Maximum Frame Size (MFS)
  - Cell Delay Variation Tolerance (CDVT)

UNI Parameters (R)

There shall be an indication of whether or not SVC service is supported at the UNI.

ILMI MIB Support for Auto-Configuration Requirements

Service Type

Support for Service Type information is provided by the *atmfAtmServiceTypeTable*, a new extension to the ILMI MIB. There is one entry in the *atmfAtmServiceTypeTable* per Service Type.
Service Type information includes:

- Service Provider Name
- Service Type Name
- Service Type Sub-name (if any)
- Client Layer Protocol Name (if any) (e.g., PPP, MPEG-2, etc.)
- TM 4.0 Service Category (CBR, rt-VBR, nrt-VBR, UBR, ABR, GFR)
- TM 4.0 Conformance Definition (CBR.1, VBR.1, VBR.2, VBR.3, UBR.1, UBR.2, ABR, GFR.1, GFR.2)

Connection Information

Support for Connection is provided by the *atmfAtmServiceConnInfoTable*, a new extension to the ILMI MIB. There is one entry in the *atmfAtmServiceConnInfoTable* per customer service connection.
Service Connection Information includes:

- ATM Port
- VP or VC connection indicator
- Connection VPI
- Connection VCI
- Association to Service Type
- Optional connection name

Specific information about each PVC may be found in the ILMI 4.0 *atmfVpcTable* for VP connections or the ILMI 4.0 *atmfVccTable* for VC connections.

Information about signaling support on the interface may be found in the ILMI 4.0 *atmfATMLayerTable*

AAL Encapsulation

Support for the AAL Encapsulation Type is provided by additions in the *atmfAtmServiceConnInfoTable*, a new extension to the ILMI MIB.
To support AAL Encapsulation the following is included in the *atmfAtmServiceConnInfoTable*:

- AAL Type
- AAL Profile Assocation

Specific AAL parameters are provided by the *atmfAAL1ProfileTable*, *atmfAAL34ProfileTable*, and *atmfAAL5ProfileTable*.

AAL 1 Profile information inlcudes:

- AAL1 Subtype (are NULL, Voice-band based on 64 KBPS, Circuit Emulation (synchronous), Circuit Emulation (asynchronous), High- quality Audio, and Video)
- CBR Rate
- Clock Recovery Type (Synchronous, Asynchronous-SRTS, or Asynchronous-Adaptive Clock Recovery)
- Forward Error Correction Type (no FEC, FEC for Loss Sensitive Signal Transport, or FEC for Delay Sensitive Signal Transport)
- Structure Data Transfer (A value of TRUE means SDT has been selected. This attribute value can be set to TRUE only when the Forward Error Correction Type attribute is no FEC)
- Partially Filled Cells (identifies the number of leading octets in use)
- Cell Loss Integration Period (represents the time in milliseconds for the cell loss integration period)

AAL 3/4 Profile information inlcudes:

- Max CPCS SDU Size Forward
- Max CPCS SDU Size Backward
- MID Range Low
- MID Range High
- AAL Mode (message mode or stream mode, assured or unassured)
- SSCS Type (NULL, Data SSCS based on SSCOP (assured operation), Data SSCS based on SSCOP (non-assured operation), or Frame Relay SSCS)

AAL 5 Profile information inlcudes:

- Max CPCS SDU Size Forward
- Max CPCS SDU Size Backward
- AAL Mode (message mode or stream mode, assured or unassured)
- SSCS Type (NULL, Data SSCS based on SSCOP (assured operation), Data SSCS based on SSCOP (non-assured operation), or Frame Relay SSCS)

Traffic Management Class and Parameters

In addition to the traffic management class information described in the *atmfServiceTypeTable*, the ILMI 4.0 MIB provides per connection traffic management class and parameter information in the *atmfVpcTable* and the *atmfVccTable*. Additional traffic parameters for ABR service are provided in the *atmfVpcAbrTable* and *atmfVccAbrTable* found in ILMI 4.0. These tables provide sufficient coverage of the required traffic parameters. Beyond what has already been described, no new extension to ILMI is necessary for Traffic Management Class and Parameter information.

UNI Parameters

If SVC service is supported at the UNI, then the value of ILMI 4.0 atmfAtmLayerTable's *atmfAtmLayerUniVersion* shall indicate the UNI Signalling Version, otherwise it shall be set to *unsupported*. The ILMI 4.0 atmfAtmLayerTable's *atmfAtmLayerMaxSvpcVpi* and *atmfAtmLayerMaxSvccVpi* values shall equal *zero* if SVC service is not supported at the UNI.

Extensions to the ILMI SNMP MIB

```
ATM-FORUM-AUTO-CONFIG DEFINITIONS ::= BEGIN
-------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
--
-- This definition contains the following tables
--        ATM Service Type Table
--        ATM Service Connection Information Table
--        AAL1 Profile Table
--        AAL3/4 Profile Table
--        AAL 5 Profile Table
-------------------------------------------------------------------
IMPORTS
     DisplayString                          FROM SNMPv2-TC
     atmForum, atmForumUni                  FROM ATM-FORUM-TC-MIB;


atmfAutoConfigGroup   OBJECT IDENTIFIER ::= { atmForumUni 12 }



-------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM Service Type
-------------------------------------------------------------------

atmfAtmServiceTypeTable OBJECT-TYPE
     SYNTAX    SEQUENCE OF    AtmfAtmServiceTypeEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "The ATM Forum ILMI Auto Configuration Extension ATM
          Service Type Information. "
     ::= { atmfAutoConfigGroup 1 }

atmfAtmServiceTypeEntry OBJECT-TYPE
     SYNTAX    AtmfAtmServiceTypeEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "An entry in the service type table describes the reference
          information about a service that may be associated with
          individual ATM connections for the purpose of auto-
          configuration.  This information describe the name and sub-
          name of the service, the client layer protocol using the ATM
          service, the TM 4.0 service category, and the TM 4.0
          conformance definition."
INDEX          { atmfAtmServiceTypeIndex }
     ::= { atmfAtmServiceTypeTable 1 }

AtmfAtmServiceTypeEntry ::= SEQUENCE {
     atmfAtmServiceTypeIndex            INTEGER,
     atmfAtmServiceProviderName         DisplayString,
     atmfAtmServiceName                 DisplayString,
     atmfAtmServiceSubName              DisplayString,
     atmfAtmServiceClient               DisplayString,
     atmfAtmServiceTMCategory           INTEGER,
     atmfAtmServiceTMConformanceDef     INTEGER
}
```

```
atmfAtmServiceTypeIndex OBJECT-TYPE
     SYNTAX    INTEGER (1..2147483647)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "A number between which identifies the entry in the Service
          Type Table. "
     ::= { atmfAtmServiceTypeEntry 1 }

atmfAtmServiceProviderName OBJECT-TYPE
     SYNTAX    DisplayString
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This string identifies the name of the service provider for
          the service described in this profile. The value of this
          attribute should not set to NULL."
     ::= { atmfAtmServiceTypeEntry 2 }

atmfAtmServiceName OBJECT-TYPE
     SYNTAX    DisplayString
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This string identifies the name of the service described in
          this profile.  The value of this attribute should not be set
          to NULL.  "
     ::= { atmfAtmServiceTypeEntry 3 }

atmfAtmServiceSubName OBJECT-TYPE
     SYNTAX    DisplayString
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This string identifies the sub-name of the service described
          in this profile.  A Service may have zero or more sub-names,
          each with its own service type profile. "
     ::= { atmfAtmServiceTypeEntry 4 }


atmfAtmServiceClient OBJECT-TYPE
     SYNTAX    DisplayString
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This string identifies the client protocol of the service
          described in this profile.  A Service (sub-service) may have
          zero or more described client, each with its own service type
          profile. "
     ::= { atmfAtmServiceTypeEntry 5 }

atmfAtmServiceTMCategory OBJECT-TYPE
     SYNTAX    INTEGER {
                       other  (1),
                       cbr    (2),
                       rtVbr  (3),
                       nrtVbr (4),
                       abr    (5),
                       ubr    (6),
                       gfr    (7)
                         }
     MAX-ACCESS     read-only
     STATUS         current
```

```
     DESCRIPTION
          "The TM 4.0 Service category used for this service type.
          Indicates CBR, rt-VBR, nrt-VBR, ABR, UBR, (or GFR) "
     ::= { atmfAtmServiceTypeEntry 6 }

atmfAtmServiceTMConformanceDef OBJECT-TYPE
     SYNTAX    INTEGER {
                    none (0),
                    other(1),
                    cbr1 (2),
                    vbr1 (3),
                    vbr2 (4),
                    vbr3 (5),
                    ubr1 (6),
                    ubr2 (7),
                    abr  (8),
                    gfr1  (9),
                    gfr2 (10)
                      }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The TM 4.1 conformance definition used for this service type.
           Indicates CBR.1, VBR.1, VBR.2, VBR.3, UBR.1, UBR.2, ABR,
           GFR.1, or GFR.2. "
     ::= { atmfAtmServiceTypeEntry 7 }



-------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM Service Connection Information
-------------------------------------------------------------------

atmfAtmServiceConnInfoTable OBJECT-TYPE
     SYNTAX    SEQUENCE OF    AtmfAtmServiceConnInfoEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "The ATM Forum ILMI Auto Configuration Extension ATM
          Service Connection Information. "
     ::= { atmfAutoConfigGroup 2 }

atmfAtmServiceConnInfoEntry OBJECT-TYPE
     SYNTAX    AtmfAtmServiceConnInfoEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "An entry in the service connection information table
          describes the ATM connection that provides a service across
          an ATM interface.  The connection is identified by port and
          VPI/VCI value.  Information about the connection includes the
          connection type (VP or VC, SVC or PVC), and the association of
          the connection with a service type.  Specific connection
          information, such as traffic descriptors, should be accessed
          in the atmfVpc and atmfVcc tables defined in ILMI. "
INDEX          { atmfAtmServicePortIndex, atmfAtmServiceVpi,
                 atmfAtmServiceVci }
     ::= { atmfAtmServiceConnInfoTable 1 }

AtmfAtmServiceConnInfoEntry ::= SEQUENCE {
     atmfAtmServicePortIndex            INTEGER,
     atmfAtmServiceVpi                  INTEGER,
     atmfAtmServiceVci                  INTEGER,
```

```
     atmfAtmServiceSignalId             INTEGER,
     atmfAtmServiceConnServiceIndex     INTEGER,
     atmfAtmServiceConnName             DisplayString,
     atmfAtmServiceConnAALType          INTEGER,
     atmfAtmServiceConnAALIndex         INTEGER
}

atmfAtmServicePortIndex OBJECT-TYPE
     SYNTAX    INTEGER (0..2147483647)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The value of 0 (zero)has the special meaning of identifying
          the ATM Interface over which this ILMI message was received. "
     ::= { atmfAtmServiceConnInfoEntry 1 }

atmfAtmServiceVpi OBJECT-TYPE
     SYNTAX    INTEGER (0..255)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The VPI value of the ATM service connection at the local ATM
          interface. "
     ::= { atmfAtmServiceConnInfoEntry 2 }

atmfAtmServiceVci OBJECT-TYPE
     SYNTAX    INTEGER (0..65535)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The VCI value of the ATM service connection at the local ATM
          interface. If the atmfAtmServiceSignalId indicates that the
          connection is a VP connection, the value of this attribute
          shall be set to 0 (zero) and any meaning of this attribute
          ignored."
     ::= { atmfAtmServiceConnInfoEntry 3 }

atmfAtmServiceSignalID OBJECT-TYPE
     SYNTAX    INTEGER {
                    vcCI(0),
                    vpCI(1)
                         }
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the characteristic
          information of the layer network domain. It may be set to
          either VC characteristic information (vcCI) or VP
          characteristic information (vpCI)."
     ::= { atmfAtmServiceConnInfoEntry 4 }



atmfAtmServiceConnServiceIndex OBJECT-TYPE
     SYNTAX    INTEGER
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The value of this object identifies the row in the
          atmfAtmServiceTypeTable. This entry represents the
          association between an ATM service connection and an ATM
          service type profile that describes it. "
     ::= { atmfAtmServiceConnInfoEntry 5 }

atmfAtmServiceConnName OBJECT-TYPE
```

```
     SYNTAX    DisplayString
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This string identifies the name of the service connection.
           The value of this attribute may be set to NULL.  "
     ::= { atmfAtmServiceConnInfoEntry 6 }

atmfAtmServiceConnAALType OBJECT-TYPE
     SYNTAX    INTEGER {
                    none  (0),
                    aal1  (1),
                    aal34 (2),
                    aal5  (3),
                    other (4),
                    unknown (5),
                    aal2  (6)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "Describes the AAL Type of the ATM service connection.  A
          value of none indicates that no AAL is used.  The AAL types
          include AAL1, AAL 3/4, and AAL 5.  The value other may be a
          user-defined AAL type.  The unknown type indicates that the
          AAL type cannot be determined. "
     ::= { atmfAtmServiceConnInfoEntry 7 }


atmfAtmServiceConnAALIndex OBJECT-TYPE
     SYNTAX    INTEGER
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "The value of this object identifies the row in the
          atmfAAL1ProfileTable for AAL 1 connection, the
          atmfAAL34ProfileTable for AAL3/4 connection, and the
          atmfAAL5ProfileTable for AAL 5 connections. This entry
          represents the association between an ATM service connection
          and an ATM Adaptation Layer profile that describes it. "
     ::= { atmfAtmServiceConnInfoEntry 8 }



-----------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM AAL1 Profile
-----------------------------------------------------------------

atmfAAL1ProfileTable OBJECT-TYPE
     SYNTAX    SEQUENCE OF    AtmfAAL1ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "The ATM Forum ILMI Auto Configuration Extension AAL1
          Profile Information. "
     ::= { atmfAutoConfigGroup 3 }

atmfAAL1ProfileEntry OBJECT-TYPE
     SYNTAX    AtmfAAL1ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "An entry in the AAL1 Profile table provides data that
          describes the AAL1 processing function. "
```

```
INDEX          { atmfAAL1ProfileIndex }
     ::= { atmfAAL1ProfileTable 1 }

AtmfAAL1ProfileEntry ::= SEQUENCE {
     atmfAAL1ProfileIndex               INTEGER,
     atmfAAL1Subtype                    INTEGER,
     atmfAAL1CBRRate                    INTEGER,
     atmfAAL1ClkRecoveryType            INTEGER,
     atmfAAL1FEC                        INTEGER,
     atmfAAL1SDT                        INTEGER,
     atmfAAL1PartiallyFilledCells       INTEGER,
     atmfAAL1CellLossIntegrPeriod       INTEGER
}

atmfAAL1ProfileIndex OBJECT-TYPE
     SYNTAX    INTEGER (1..2147483647)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "A number between which identifies the entry in the AAL1
          Profile Table. "
     ::= { atmfAAL1ProfileEntry 1 }

atmfAAL1Subtype OBJECT-TYPE
     SYNTAX    INTEGER {
                    null (0),
                    voiceBand (1),
                    circuitEmulationSynchronous (2),
                    circuitEmulationAsynchronous (3),
                    highQualityAuto (4),
                    video (5)
                         }
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute describes AAL type 1 subtype used by the CBR
          service application (e.g.  64 KBPS voice band signal
          transport, circuit transport). "
     ::= { atmfAAL1ProfileEntry 2 }

atmfAAL1CBRRate OBJECT-TYPE
     SYNTAX    INTEGER
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute describes the rate of the CBR service
          supported by the AAL."
     ::= { atmfAAL1ProfileEntry 3 }


atmfAAL1ClkRecoveryType OBJECT-TYPE
     SYNTAX    INTEGER {
                     synchronous (0),
                     srts(1),
                     adaptive (2)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute indicates whether the clock recovery type is
          synchronous, asynchronous-SRTS(Synchronous Residual Time Stamp),
          or asynchronous-Adaptive Clock Recovery. "
     ::= { atmfAAL1ProfileEntry 4 }
```

```
atmfAAL1FEC OBJECT-TYPE
     SYNTAX    INTEGER {
                    noFEC (0),
                    lossSensitiveSignalFEC (1),
                    delaySensitiveSignalFEC (2)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute indicates the FEC method: no FEC, FEC for
          Loss Sensitive Signal Transport, or FEC for Delay Sensitive
          Signal Transport. "
     ::= { atmfAAL1ProfileEntry 5 }

atmfAAL1SDT OBJECT-TYPE
     SYNTAX    INTEGER {
                    false (0),
                    true(1)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute indicates whether Structured Data Transfer
          (SDT) has been configured at the AAL.  A value of TRUE means
          SDT has been selected.  This attribute value can be set to
          TRUE only when the Forward Error Correction Type attribute
          equals noFEC. "
     ::= { atmfAAL1ProfileEntry 6 }

atmfAAL1PartiallyFilledCells OBJECT-TYPE
     SYNTAX    INTEGER
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute identifies the number of leading octets in
          use."
     ::= { atmfAAL1ProfileEntry 7 }

atmfAAL1CellLossIntegrPeriod OBJECT-TYPE
     SYNTAX    INTEGER
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the time in milliseconds for the
          cell loss integration period.  If cells are lost for this
          period of time, the Interworking VCC Termination Point entity
          will generate a cell starvation alarm."
     ::= { atmfAAL1ProfileEntry 8 }


-------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM AAL3/4 Profile
-------------------------------------------------------------------

atmfAAL34ProfileTable OBJECT-TYPE
     SYNTAX    SEQUENCE OF    AtmfAAL34ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "The ATM Forum ILMI Auto Configuration Extension AAL3/4
          Profile Information. "
     ::= { atmfAutoConfigGroup 4 }
```

```
atmfAAL34ProfileEntry OBJECT-TYPE
     SYNTAX    AtmfAAL34ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "An entry in the AAL34 Profile table provides data that
          describes the AAL3/4 processing function. "
INDEX          { atmfAAL34ProfileIndex }
     ::= { atmfAAL34ProfileTable 1 }

AtmfAAL34ProfileEntry ::= SEQUENCE {
     atmfAAL34ProfileIndex                INTEGER,
     atmfAAL34MaxCpcsSduSizeForward       INTEGER,
     atmfAAL34MaxCpcsSduSizeBackward      INTEGER,
     atmfAAL34MIDRangeLow                 INTEGER,
     atmfAAL34MIDRangeHigh                INTEGER,
     atmfAAL34AALMode                     INTEGER,
     atmfAAL34SscsType                    INTEGER
}

atmfAAL34ProfileIndex OBJECT-TYPE
     SYNTAX    INTEGER (1..2147483647)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "A number between which identifies the entry in the AAL3/4
          Profile Table. "
     ::= { atmfAAL34ProfileEntry 1 }

atmfAAL34MaxCpcsSduSizeForward OBJECT-TYPE
     SYNTAX    INTEGER (1..65535)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the maximum CPCS_PDU size that will
          be transmitted over the connection in both the incoming
          (forward) direction of transmission. "
     ::= { atmfAAL34ProfileEntry 2 }

atmfAAL34MaxCpcsSduSizeBackward OBJECT-TYPE
     SYNTAX    INTEGER (1..65535)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the maximum CPCS_PDU size that will
          be transmitted over the connection in both the outgoing
          (backward) direction of transmission. "
     ::= { atmfAAL34ProfileEntry 3 }

atmfAAL34MIDRangeLow OBJECT-TYPE
     SYNTAX    INTEGER (1..66536)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the low value of MID supported at
          the AAL for the supporting VCC."
     ::= { atmfAAL34ProfileEntry 4 }

atmfAAL34MIDRangeHigh OBJECT-TYPE
     SYNTAX    INTEGER (1..66536)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the high value of MID supported at
```

```
          the AAL for the supporting VCC."
     ::= { atmfAAL34ProfileEntry 5 }

atmfAAL34AALMode OBJECT-TYPE
     SYNTAX    INTEGER {
                    messageAssured (0),
                    messageUnassured (1),
                    streamingAssured (2),
                    streamingUnassured (3)
                      }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute indicates whether the AAL for the supporting
          VCC is operating in message mode or streaming mode, assured or
          unassured. "
     ::= { atmfAAL34ProfileEntry 6 }

atmfAAL34SscsType OBJECT-TYPE
     SYNTAX    INTEGER {
                    null (0),
                    dataAssured (1),
                    dataNonAssured (2),
                    frameRelay (3)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute identifies the SSCS type for the AAL.  Valid
          values are NULL, Data SSCS based on SSCOP (assured operation),
          Data SSCS based on SSCOP (non-assured operation), or Frame
          Relay SSCS "
     ::= { atmfAAL34ProfileEntry 7 }


-------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM AAL5 Profile
-------------------------------------------------------------------

atmfAAL5ProfileTable OBJECT-TYPE
     SYNTAX    SEQUENCE OF    AtmfAAL5ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "The ATM Forum ILMI Auto Configuration Extension AAL5
          Profile Information. "
     ::= { atmfAutoConfigGroup 5 }

atmfAAL5ProfileEntry OBJECT-TYPE
     SYNTAX    AtmfAAL5ProfileEntry
     MAX-ACCESS     not-accessible
     STATUS    current
     DESCRIPTION
          "An entry in the AAL5 Profile table provides data that
          describes the AAL5 processing function. "
INDEX          { atmfAAL5ProfileIndex }
     ::= { atmfAAL5ProfileTable 1 }

AtmfAAL5ProfileEntry ::= SEQUENCE {
     atmfAAL5ProfileIndex               INTEGER,
     atmfAAL5MaxCpcsSduSizeForward      INTEGER,
     atmfAAL5MaxCpcsSduSizeBackward     INTEGER,
     atmfAAL5AALMode                    INTEGER,
     atmfAAL5SscsType                   INTEGER
```

```
}

atmfAAL5ProfileIndex OBJECT-TYPE
     SYNTAX    INTEGER (1..2147483647)
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "A number between which identifies the entry in the AAL5
          Profile Table. "
     ::= { atmfAAL5ProfileEntry 1 }

atmfAAL5MaxCpcsSduSizeForward OBJECT-TYPE
     SYNTAX    INTEGER (1..65535)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the maximum CPCS_PDU size that will
          be transmitted over the connection in both the incoming
          (forward) direction of transmission. "
     ::= { atmfAAL5ProfileEntry 2 }

atmfAAL5MaxCpcsSduSizeBackward OBJECT-TYPE
     SYNTAX    INTEGER (1..65535)
     MAX-ACCESS     read-only
     STATUS    current
     DESCRIPTION
          "This attribute represents the maximum CPCS_PDU size that will
          be transmitted over the connection in both the outgoing
          (backward) direction of transmission. "
     ::= { atmfAAL5ProfileEntry 3 }

atmfAAL5AALMode OBJECT-TYPE
     SYNTAX    INTEGER {
                    messageAssured (0),
                    messageUnassured (1),
                    streamingAssured (2),
                    streamingUnassured (3)
                      }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute indicates whether the AAL for the supporting
          VCC is operating in message mode or streaming mode, assured or
          unassured. "
     ::= { atmfAAL5ProfileEntry 4 }

atmfAAL5SscsType OBJECT-TYPE
     SYNTAX    INTEGER {
                    null (0),
                    dataAssured (1),
                    dataNonAssured (2),
                    frameRelay (3)
                       }
     MAX-ACCESS     read-only
     STATUS         current
     DESCRIPTION
          "This attribute identifies the SSCS type for the AAL.  Valid
          values are NULL, Data SSCS based on SSCOP (assured operation),
          Data SSCS based on SSCOP (non-assured operation), or Frame
          Relay SSCS "
     ::= { atmfAAL5ProfileEntry 5 }


END
```