The ATM Forum
Technical Committee

Addendum to the ILMI Auto-configuration Extension

af-nm-0165.000

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Acknowledgments

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1   Introduction and Scope

This addendum to atmf-nm-0122.000 [ref 1] provides enhancements to the ILMI auto-configuration MIB in the following areas:

1.   It provides a MAC/PHY identifier object. This object allows the configuration of PVCs on ATM PHY layers that support multiple end points.
2.   It provides a Layer 3 Protocol Identifier, that provides a parseable and unambiguous identifier of the layer 3 protocol carried over a PVC.
3.   It provides a configuration failed trap to allow the network side IME to be notified of a failure of the CPE side to accept the offered configuration.
4.   It defines an AAL2 Profile to enable the configuration of the AAL2 for PVCs that support AAL2 applications.

These additions to the ILMI MIB as described in [ref 1] are implemented as additional objects to be added to the MIB described in that document.   The entire ILMI auto-configuration MIB with objects from [ref 1] and the new elements described in the text of this addendum are described in section 7 of this document. The resulting MIB is backward compatible with the MIB as defined in [ref 1] as no object defined in that document has been changed in the MIB defined in this addendum. Although the MIB describes objects discussed in both this document and [ref 1], only those objects newly defined in this addendum are discussed in the text of this document. Readers are referred to [ref 1] for text describing those objects which are carried over unchanged from that work.

2   PVCs on PHYs that support multiple connection endpoints

2.1   Architectural model

Certain ATM Physical layers have atypical properties that affect the service provided by the PHY layer to the ATM layer. These PHYs are modeled as supporting multiple physical layer connections, which in turn support a single instance of the ATM layer. This may occur, for example, in ATM-based shared media access networks, or when the PHY layer provides more than one physical layer connection, each of which has a different PHY layer (as opposed to ATM layer) Quality-of-Service parameters. One example of the former is the IEEE 802.14 [ref 2] Media Access Control (MAC) protocol. An example of the latter is dual latency ADSL, where latency paths are modeled as PHY connections.

Figure 1 is an abstract model of the relationship between such a PHY and the ATM layer. The modeling techniques of the OSI Reference Model are used as a descriptive tool.   The model represents either an ATM end-system or an NT2, and an ATM access node at opposite sides of a UNI. The case shown uses a point-to-point physical media. For each system, there is one Physical Layer entity bound to the physical media and to a PHY-service-access point. There are one or more point-to-point PHY layer connections between the PHY layer entities in the ATM access node and the end system or NT2. Each such point-to-point PHY connection terminates at each end in a PHY-connection-endpoint.   The PHY-connection is identified (explicitly or implicitly) within the PHY by a PHY-protocol-connection-identifier; in a typical real PHY, it is an implicit selection of part of the framing structure.   The PHY-connection-endpoint is identified by a PHY-connection-endpoint-identifier (which in the remainder of this specification is called the PHY/MAC Layer Identifier).   There is exactly one instance of an ATM layer entity bound to each PHY-service-access-point; i.e., there is only one copy of the VPI/VCI space, one set of reserved VPI/VCI and so on. When a virtual connection is established, the ATM layer entity must bind that VC to a PHY-connection-endpoint that is identified by a PHY/MAC layer identifier. This binding must be coordinated at each side of the UNI, such that cells are not transmitted by the access node on a different PHY-connection than the end-system expects (or vice-versa), and also such that traffic contracts, QoS objectives and policy objectives can be satisfied. For SVCs, the coordination is done using the extensions to the UNI Signaling 4.0 specification defined in the PHY/MAC Identifier Addendum to UNI Signaling 4.0, af-cs-135.000. [ref 3] For PVCs, the ILMI MIB is extended as defined in this specification.

For the shared media case (which is not shown), there are multiple end-systems or NT2s on the same physical media. A Media Access Control (MAC) sublayer is present in the PHY layer. PHY-connections may be point-to-point or unidirectional point-to-multipoint (in the direction from the Access Node to the end-system or NT); the latter could be used to efficiently support point-to-multipoint ATM VCs.   In the end-system or NT, there is one PHY-service-access-point. In the Access Node, there would be one PHY-service-access-point for each end-system or NT2, and at least one for point-to-multipoint PHY connections. The PHY/MAC identifier uniquely identifies the end-system or NT2, as well as the endpoint of each PHY-connection for point-to-point PHY-connections.
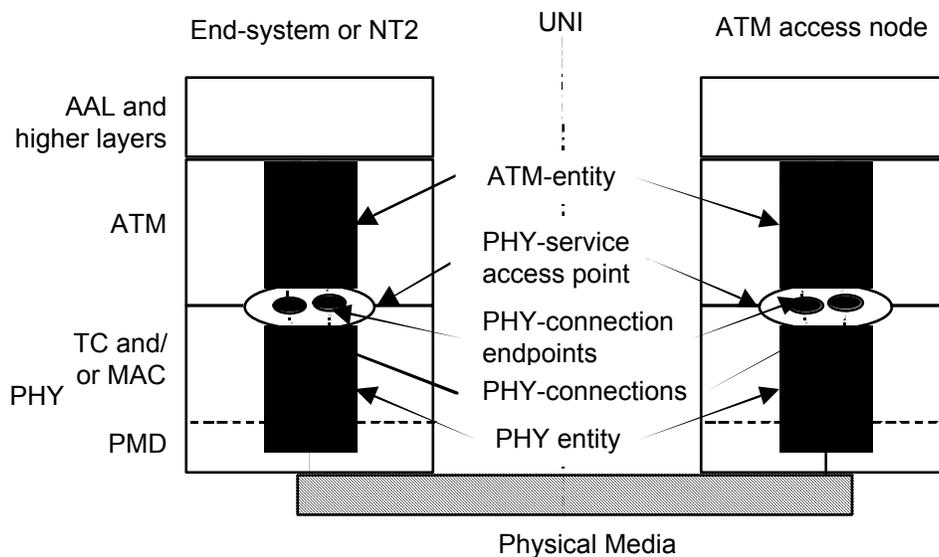
Figure 1 Architectural model of PHY identifiers

2.2   MAC/PHY Identifier Object.

An object, atmfAtmServicePhyMacIdentifier is defined, which indicates which of multiple PHY or MAC layer connections a particular PVC is to be bound to. The object is defined as an integer. The semantics of the value of this object is PHY and/or MAC specific. The semantics will thus generally be specified with the particular PHY or MAC. However, the semantics for the two PHY/MAC specifications that have already been identified as having multiple connections is provided here for convenience:

When the physical layer is dual latency ADSL, the PHY/MAC Identifier selects the latency path to be bound to each direction of transmission for the PVC. The value of the PHY/MAC Identifier shall be as follows:

default = 0
upstream and downstream both interleaved path = 1
upstream and downstream both fast path = 2
upstream interleaved path, downstream fast path = 3
upstream fast path, downstream interleaved path = 4

The "default" value shall be used for single latency ADSL PHYs.

When the physical and MAC layers are IEEE 802.14, the PHY/MAC Identifier specifies the 802.14 Local Identifier for the PVC.

This object is placed in the atmfAtmServiceConnInfoExtensionTable table in the ILMI auto-configuration MIB.

3 Client Protocol IDs

In addition to the atmfAtmServiceClient defined in [ref 1], two additional objects, the atmfAtmServiceLayer2ProtocolID and atmfAtmServiceLayer3ProtocolID are added to the ILMI Autoconfiguration MIB. The atmfAtmServiceLayer2ProtocolID is used to select the user plane layer 2 protocol (above the AAL) which is to be used for this PVC. The syntax of this object is octet-string. Its encoding is consistent with that of the User information layer 2 octet group (octet group 6) of the Broadband Low Layer Information (B-LLI) Information Element, as specified in the ATM Forum Signaling 4.0 specification, af-sig-0061.000, [ref 3]and ITU-T Recommendation Q.2931 [ref 5]. Detailed cases for the use of these objects are provided in Annex A of this Addendum.

The atmfAtmServiceLayer3ProtocolID object is used to select the user plane layer 3 protocol to be used for this PVC. The syntax of this object is octet-string. Its encoding is consistent with that of the User information layer 3 octet group (octet group 7) of the B-LLI Information Element. The User Information Layer 3 protocol may be encoded to indicate "ISO/IEC TR9577". [ref 6] In this case either:
   a) The remaining octets of the octet string contain an ISO/IEC TR9577 NLPID which indicates the layer 3 protocol to be used in the user plane or;
   b) The octet string contains only one octet (i.e., the "ISO/IEC TR9577" encoding), and the first octet(s) of each Layer 3 protocol data unit in the user plane identify the layer 3 protocol which is being used.

Detailed cases for the use of the atmfAtmServiceLayer3ProtocolID are provided in Annex A of this addendum.

Note: The user plane protocol identified by this object may in turn contain identifiers for one or more higher layer protocol. Management of the atmfAtmServiceLayer2ProtocolID and atmfAtmServiceLayer3ProtocolID objects by element or network management system (EMS or NMS) that may control the network side IME will require enhancements to the M4 protocols between the element and the EMS or NMS. Such enhancements are outside the scope of this specification.

These objects shall be placed in the atmfAtmServiceTypeExtensionTable table in the ILMI auto-configuration MIB.

4 "Configuration Failed" Trap

A Configuration failed trap `atmfAtmServiceConfFail` is added to the ILMI Auto-configuration MIB. It allows the user side IME to indicate to the network side IME that the user side IME was not able to configure itself to the auto-configuration values delivered over the ILMI. This trap shall be sent from the user side IME

1. The configuration failure trap will be generated under the following failure conditions.
    1.1. A requested client protocol is not supported by the NT.
    1.2. A requested service category is not supported by the NT.
    1.3. A requested AAL is not supported by the NT.
    1.4. The NT cannot support the number of PVCs requested.
    1.5. The user side IME is asked to configure a PVC with a VPI/VCI value that it has reserved for other uses.
    1.6. The information provided was insufficient to complete the auto-configuration.
    1.7. The information provided was inconsistent and the user-side IME was unable to use the information to complete the configuration.
    The trap contains a parameter, the *atmfAtmServiceConfFailReason* that indicates the cause of the failure.

2. The trap will provide a pointer, where possible, to the values in the PVC auto-configuration MIB the user-side IME received that caused the failure.

Interpretation of this trap by EMS or NMS that manage the element containing the network side IME will require enhancements to the M4 protocols between the element and EMS or NMS. Such enhancements are outside the scope of this document.

5 AAL2 Related Information

5.1 Requirements

An AAL2 profile is required in the ILMI MIB to allow the auto-configuration of AAL2 parameters for PVCs that support AAL2 applications. Since the ILMI is independent of any single AAL2 application or service, the AAL2 profile shall contain those configuration parameters which are common to all AAL2 applications, namely the CPS [ref. 7] and SSCS [ref.8], [ref. 9] parameters. It will also contain additional parameters that are required by specific AAL2 applications such as those defined in [ref. 5] and [ref. 6]. For clarity the AAL2 Profile definition will be partitioned into a common part and extension parts to hold the common and additional parameters, respectively.

AAL2 applications may choose not to use ILMI for the auto-configuration of AAL2 parameters and do this via other MIBs and management channels. In this case ILMI shall only be used to configure the PVC and not AAL2 parameters. To support this a parameter will be introduced that will indicate the responsibility of ILMI to auto-configure the AAL2 and other parameters related to the AAL2 application. When auto-configuring an AAL2 PVC the user-side IME shall check the value of this parameter before proceeding with auto-configuration, as it will be able to use it to determine whether or not it should auto-configure the AAL2.

Table 1 specifies the parameters for the common part and extension parts of the AAL2 Profile. In addition this table specifies the mandatory and conditional parameters. For the conditional parameters, the conditions that determine their provisioning and configuring through ILMI are given. Note that these parameters are provisioned by the network-side IME and they are used by the user-side IME to auto-configure the AAL2 for the associated PVC at the NT, either in part or full, depending on the value of the SSCS configuration responsibility parameter.

AAL2 Profile Part	Parameter	Mandatory/Conditional
Common	Application Identifier (from af-vtoa-0113.000 and af-vmoa-0145.000)	Conditional (Note 1)
	AAL2 configuration responsibility	Mandatory
	CPS (from I.363.2)	Conditional (Note 1)
	SSSAR SSCS (from I.366.1)	Conditional (Note 1)
	SSCS for Trunking (from I.366.2)	Conditional (Note 1)
	SSCOP (from Q.2110)	Conditional (Note 4)
Extension for ATM Trunking using AAL2 (note 5)	VCCI (from af-vtoa-0113.000)	Conditional (Note 2)
	SigVCCI (from af-vmoa-0145.000)	Conditional (Note 2)
Extension for the Loop Emulation Service using AAL2 (note 5)	CPS optimization option	Conditional (Note 3)
	CID Range	Conditional (Note 3)

Note 1 – If AAL2 configuration responsibility = ILMI then mandatory, else not applicable.

Note 2 – If AAL2 configuration responsibility = ILMI and Application Identifier indicates ATM Trunking then mandatory, else not applicable.

Note 3 – If AAL2 configuration responsibility = ILMI and Application Identifier indicates Loop Emulation Service then mandatory, else not applicable.

Note 4 - If AAL2 configuration responsibility = ILMI and Application Identifier indicates ATM Trunking and SSADT is selected then mandatory, else not applicable.

Note 5 – Only one of the extension must be provisioned (i.e. they are mutually exclusive).

Table 1. AAL2 Profile parameters for the ILMI MIB

When the user-side IME cannot auto-configure the AAL2 parameters of operation for a PVC, for example because a particular AAL2 service is not supported by the AAL2 entity in the NT, then the user-side IME shall send an atmfAtmServiceConfFail trap to the network-side IME. The atmfServiceConfFailReason shall indicate 'unsupportedAAL' and the atmfAtmServiceConfFailOID will point to the row in the appropriate AAL2 Profile Table that contains the unsupported parameter value.

5.2   Common AAL2 Profile

5.2.1   Application Identifier (AppId)
The AppId specifies the AAL2 application that is running on the PVC. In addition it specifies protocol combinations used between IWFs. The AppId of a VCC, its AAL type, and the location of its controlling CCS (if any) determine which protocol stacks are used on the VCC. The list of AAL2 applications are administered by the ATM Forum in section 5 of a document entitled "ATM Forum Well-known Addresses and Assigned Codes". This document is located on the ATM Forum website under the URL:

 http://www.atmforum.com/atmforum/specs/public_assigned_codes.pdf.

Refer to this location for a complete list of supported AppIDs.

5.2.2   Responsibility for AAL2 Configuration
This parameter will indicate whether the ILMI, Loop Emulation Service Embedded Operations Channel (see af-vmoa-0145.000 [ref 8]) or some other mechanism is to be used to auto-configure the AAL2 for the PVC. When auto-configuring an AAL2 PVC the user-side IME must check the value of this parameter before proceeding with the configuration of the AAL2, as it will be able to use this parameter to determine whether or not it should auto-configure the AAL2 using the AAL2 Profile parameters supplied by ILMI.

5.2.3   Common AAL2 CPS Parameter Values
Common AAL2 parameters of the CPS as specified in Table 7/I.363.2(1997) [ref 9] are:
* Maximum number of multiplexed channels
* Maximum length of a CPS-SDU

5.2.4   Common SSCS Parameter Values as specified in I.366.1
Common AAL2 parameters of the SSCS as specified in Table 6/I.366.1(1998) [ref 10] are:

* Maximum length of an SSSAR-SDU

  * Selection of transmission and error detection mechanisms (SSTED)

  * Selection of the assured data transfer mechanism (SSADT)

In the absence of signaling or provisioning of these parameters on a per AAL2 channel basis, either explicit or implicit, these SSCS parameter values shall apply to all AAL2 channels within the AAL2 VCC, which use I.366.1.

5.2.5   Common SSCS Parameter Values as specified in I.366.2

Common AAL2 parameters of the SSCS as specified in Table 18-1/I.366.2 (1999) [ref 11] are:

- Service Category

- Transport of audio information

- Source of the encoding format profile (ITU-T or other)

- If source is other, then IEEE OUI of organization that defined the profile[1]

- Predefined Profile Identifier

- Interpretation of the generic PCM encoding format

- Transport of demodulated facsimile data

- Transport of channel associated signaling bits

- Transport of DTMF dialed digits

- Transport of MF-R1 dialed digits

- Transport of MF-R2 dialed digits

- Transport of circuit mode data

- Multiplier N in N*64 kbit/s circuit mode data

- Transport of frame mode data

- Maximum length of a frame mode data unit

In the absence of signaling or provisioning of these parameters on a per AAL2 channel basis, either explicit or implicit, these SSCS parameter values shall apply to all AAL2 channels within the AAL2 VCC, which use I.366.2.

5.2.6   Common SSCOP parameters as specified in Q.2110

- Maximum size of SSCOP-SDU

- Maximum size of SSCOP-UU field

In the absence of signaling or provisioning of these parameters on a per AAL2 channel basis, either explicit or implicit, these SSCS parameter values shall apply to all AAL2 channels within the AAL2 VCC which use the I.366.1 SSADT service

5.3   AAL2 Profile Extension for ATM Trunking using AAL2

These parameters are supplied only when the AAL2 application supported by the PVC is in conformance with af-vtoa-0113.000 [ref 7].

5.3.1   VCC Identifier (VCCI)

To distinguish multiple VCCs, each shall be assigned a VCCI. This applies to both AAL2 and AAL5 VCCs. The VCCI of a PVC is mutually provisioned.

The VCCI shall be unique for all VCCs between two IWFs but may be repeated with other peer IWFs.

To create two non-conflicting value spaces, the format of a VCCI includes one bit to flag which peer IWF assigned its value. That is, the sender or receiver of a message containing the VCCI.

Between two IWFs, a VCCI + CID pair is enough to identify an AAL2 channel.

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[1] Although not directly an I.366.2 parameter, it is implied by I.366.2 allowing other profile sources to be defined.

5.3.2   Signaling VCCI Identifier (SigVCCI)

More than one narrowband signaling channel can exist between a pair of IWFs. Multiple AAL5 VCCs are possible, as well as multiple AAL2 VCCs, and both can carry CCS. It is important to know which CCS controls a given AAL2 VCC, so that call collisions can be avoided or resolved and restarts can be effected.

If the AppId of an AAL2 VCC (VCC1) indicates CCS, then the VCCI of the AAL2 VCC or AAL5 VCC that contains the CCS (VCC2) shall be specified in the SigVCCI of the AAL2 VCC (VCC1).

Consequently, if for a particular AAL2 VCC the SigVCCI is the same as the VCCI then the AAL2 VCC contains CCS. Conversely, if an AAL2 VCC contains CCS then by implication the SigVCCI must be the same as the VCCI for that AAL2 VCC, i.e. the AAL2 VCC shall be controlled by the CCS within it.

This does not prevent CCS within an AAL2 VCC from also controlling other AAL2 VCCs that do not contain their own CCS.

5.4   AAL2 Profile Extension for the Loop Emulation Service using AAL2

These parameters are supplied only when the AAL2 application supported by the PVC is consistent with af-vmoa-0145.000.

5.4.1   AAL2 CPS Parame*te*r Values specified in af-vmoa-0145.000

af-vmoa-0145.000 [ref 8] defines two additional CPS parameters which are:

- CID range

- CPS optimization option

5.5   AAL 2 MIB tables

AAL2 Profile parameters mentioned in this section will be provided in three MIB tables, i.e. *atmfAAL2CommonProfileTable*, *atmfAAL2TrunkingProfileTable* and *atmfAAL2LESProfileTable*.

6   MIB Definition

The text of this section contains the MIB definition for ILMI Auto-configuration MIB [ref 1]. The new elements from this addendum have been inserted into this MIB. The MIB from [ref 1] and this version of the MIB are backward compatible as no changes have been made to any elements of the MIB as defined in [ref 1].

Compilation information

The MIB was compiled using the following compilers

1. Wind River Systems WindNet MIB compiler , version 1.0.
    Copyright (c) 1989-1996, Wind River Systems Inc.

2. Epilogue Technology Emissary SNMP MIB Compiler, version 9.2.
    Copyright 1989-1997 Epilogue Technology Corporation.
    Copyright 1997-2000 Integrated Systems, Inc.
    Copyright 2000-2001 Wind River Systems, Inc.
    All rights reserved.

Note that 2. is a successor version to 1.

Example call:

mibcomp   -l mibs -l . -o mibleaf.h -leaf rfc1155.smi rfc1213.mib af-ilmi-0065.000.mib fb-nm-0165.000.mib

Note: the fb-nm-0165.000.mib must always be compiled together with the af-ilmi-0065.000.mib

Disclaimer:
The compilation information that is provided should not be construed as an
endorsement by the ATM Forum for these products (compilers)

```
ATM-FORUM-AUTO-CONFIG DEFINITIONS ::= BEGIN


    IMPORTS
          DisplayString, RowPointer     FROM SNMPv2-TC
          OBJECT-TYPE                   FROM SNMPv2-SMI
          atmForum, atmForumUni         FROM ATM-FORUM-TC-MIB
          TRAP-TYPE                     FROM RFC-1215;



    -- -------------------------------------------------------------------
    -- 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
    -- AAL 2 Profile Table
    -- -----------------------------------------------------------------


    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 }


----------------------------------------------------------------------
-- ATM Forum ILMI Extension for Auto Configuration
-- ATM Common AAL2 Profile
-- In the case where an AAL2CommonProfileEntry contains parameter(s)
-- which is/are set to a value that is/are not supported by the AAL2
-- entity in the ATU-R, the user-side IME must raise an
-- atmfAtmServiceConfFail trap towards the network-side IME. The
-- atmfAtmServiceConfFailReason should be 'unsupportedAAL' and
-- the atmfAtmServiceConfFailOID must point to the
-- atmfAAL2CommonProfileEntry that contains the unsupported
-- parameter(s).
----------------------------------------------------------------------


atmfAAL2CommonProfileTable OBJECT-TYPE
```

```
        SYNTAX SEQUENCE OF AtmfAAL2CommonProfileEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
            "The ATM Forum ILMI Auto Configuration Extension AAL2 Profile
            Information. This table contains AAL2 parameters that are common
            to all AAL2 applications. These parameters are taken from
            I.363.2, I.366.1 and I.366.2"
        ::= { atmfAutoConfigGroup 6 }


    atmfAAL2CommonProfileEntry OBJECT-TYPE
        SYNTAX AtmfAAL2CommonProfileEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
            "An atmfAAL2CommonProfileEntry provides AAL2 common parameters
            of operation that are to be used by the PVC associated with this
entry."
        INDEX { atmfAAL2ProfileIndex }
        ::= { atmfAAL2CommonProfileTable 1 }


    AtmfAAL2CommonProfileEntry ::= SEQUENCE {
        atmfAAL2ProfileIndex                    INTEGER,
        atmfAAL2ApplicationIdentifier           INTEGER,
        atmfAAL2ConfigResponsibility            INTEGER,
        atmfAAL2CpsMaxMultiplexedChannels       INTEGER,
        atmfAAL2CpsMaxSduLength                 INTEGER,
        atmfAAL2SscsMaxSssarSduLength           INTEGER,
        atmfAAL2SscsSstedStatus                 INTEGER,
        atmfAAL2SscsSsadtStatus                 INTEGER,
        atmfAAL2SscsServiceCategory             INTEGER,
        atmfAAL2SscsAudioServiceTransport       INTEGER,
        atmfAAL2SscsProfileSource               INTEGER,
        atmfAAL2SscsIeeeOui                     INTEGER,
        atmfAAL2SscsPredefinedProfileIdentifier INTEGER,
        atmfAAL2SscsPcmEncoding                 INTEGER,
        atmfAAL2SscsFaxDemodulationTransport    INTEGER,
        atmfAAL2SscsCasSignalingTransport       INTEGER,
        atmfAAL2SscsDtmfDigitPacketTransport    INTEGER,
        atmfAAL2SscsMfR1DigitPacketTransport    INTEGER,
        atmfAAL2SscsMfR2DigitPacketTransport    INTEGER,
        atmfAAL2SscsCircuitModeDataTransport    INTEGER,
        atmfAAL2SscsCircuitModeDataNumChannels  INTEGER,
        atmfAAL2SscsFrameModeDataTransport      INTEGER,
        atmfAAL2SscsFrameModeDataMaxLength      INTEGER,
        atmfAAL2SscopSduLength                  INTEGER,
```

```
        atmfAAL2SscopUuFieldLength               INTEGER


}


atmfAAL2ProfileIndex OBJECT-TYPE
    SYNTAX INTEGER
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "A number which uniquely identifies the entry in the AAL2
        Profile Table."
    ::= { atmfAAL2CommonProfileEntry 1 }


atmfAAL2ApplicationIdentifier OBJECT-TYPE
    SYNTAX INTEGER
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
    "The application identifier specifies which AAL2
    application is using the PVC. In addition it specifies
    protocol combinations to be used on AAL2 channels between
    IWFs, i.e. it implicitly configures the use of I.366.1 or
    I.366.2 for bearer and signalling AAL2 channels. The value
    of this object should be one of those values given in the
    administered list of AppIds for AAL2 Applications in
    section 5 of the ATM Forum document of well-known addresses
    and assigned codes which can be located at
    vhttp://www.atmforum.com/atmforum/specs/public_assigned_codes.pdf."
    ::= { atmfAAL2CommonProfileEntry 2 }


 atmfAAL2ConfigResponsibility OBJECT-TYPE
    SYNTAX INTEGER {
            ilmi (1),
            lesEoc (2),
            other (3)
            }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
     "This object identifies which management channel is
      responsible for AAL2 provisioning and auto-configuration.
      The user-side IME must check the value of this parameter
      first before configuring the AAL2 for the PVC to determine
      whether or not this responsibility lies with ILMI.
      ilmi - if this is selected then the user-side IME must use
      the AAL2 Profile defined in this entry and associated AAL2
```

Profile extension table entry to auto-configure the AAL2
for the PVC.

lesEoc - if this is selected then the user-side IME must
not auto-configure the AAL2 using ILMI. The AAL2 Profile
parameters do not need to be provisioned by the network-
side IME and with the exception of this object the AAL2
profile parameters in the ILMI MIB are not applicable. The
Loop Emulation Service Embedded Operations Channel (LES
EOC) shall be used to provision the AAL2 for the PVC. The
start-up AAL2 parameters for this PVC must assume the
default values specified in the af-vmoa-0145.000 MIB such
that the LES EOC is operational.

other - if this is selected then the user-side IME must not
auto-configure the AAL2 using ILMI. The AAL2 Profile
parameters do not need to be provisioned by the network-
side IME and with the exception of this object the AAL2
profile parameters in the ILMI MIB are not applicable.
Another mechanism will be used to provision the AAL2 at the
ATU-R for the PVC."
::= { atmfAAL2CommonProfileEntry 3 }

atmfAAL2CpsMaxMultiplexedChannels OBJECT-TYPE
  SYNTAX INTEGER (1..255)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION   "Maximum number of multiplexed channels."
    DEFVAL { 255 }
    ::= { atmfAAL2CommonProfileEntry 4 }

atmfAAL2CpsMaxSduLength OBJECT-TYPE
    SYNTAX INTEGER (45 | 64)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Maximum CPS-SDU size given in octets. This parameter is
        bidirectional, i.e. its value applies to both directions of the
        AAL2 connection."
    DEFVAL { 45 }
    ::= { atmfAAL2CommonProfileEntry 5 }

atmfAAL2SscsMaxSssarSduLength OBJECT-TYPE
    SYNTAX INTEGER (1..65568)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION

```
                   "This is the maximum size and SSSAR-SDU can take as defined
                   in I.366.1. This parameter only applies to those AAL2 channels
                   using I.366.1 SSSAR. This parameter is bidirectional, i.e its
value
                   applies to both directions of the AAL2 connection. Note that if
the
                   appID indicates Loop Emulation Service as the AAL2 application
                   then the minimum allowable value of this parameter is 493."
              ::= { atmfAAL2CommonProfileEntry 6 }


     atmfAAL2SscsSstedStatus OBJECT-TYPE
         SYNTAX INTEGER {
                   selected(1),
                   notSelected(2)
              }
         MAX-ACCESS read-only
         STATUS current
         DESCRIPTION
              "This specifies whether the SSTED service is used or not.
              If the value of this object is 'selected' then I.366.1
              SSSAR must be supported by the AAL2. This parameter only
              applies to those AAL2 channels using I.366.1 SSSAR."
         ::= { atmfAAL2CommonProfileEntry 7 }


     atmfAAL2SscsSsadtStatus OBJECT-TYPE
         SYNTAX INTEGER {
                   selected(1),
                   notSelected(2)
              }
         MAX-ACCESS read-only
         STATUS current
         DESCRIPTION
              "This specifies whether SSADT service is used or not.
              Note that if the value of this object is 'selected' then
              I.366.1 SSSAR must be supported and by implication the SSTED
              service must also be 'selected'. This parameter only applies
              to those AAL2 channels using I.366.1 SSSAR."
         ::= { atmfAAL2CommonProfileEntry 8 }


     atmfAAL2SscsServiceCategory OBJECT-TYPE
         SYNTAX INTEGER {
                   audio (1),
                   multirate (2),
                   audioAndMultiRate (3)
              }
         MAX-ACCESS read-only
```

```
        STATUS current
        DESCRIPTION
            "This object describes the type of service category supported
            by this AAL2 PVC."
        DEFVAL { audio }
        ::= { atmfAAL2CommonProfileEntry 9 }


atmfAAL2SscsAudioServiceTransport OBJECT-TYPE
        SYNTAX INTEGER {
                    disabled (1),
                    enabled (2)
                }
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
            "This object describes whether the Audio Service that
            is used for transporting voice and voiceband data is enabled
            or disabled."
        DEFVAL { enabled }
        ::= { atmfAAL2CommonProfileEntry 10 }


atmfAAL2SscsProfileSource OBJECT-TYPE
        SYNTAX INTEGER {
                    itut (1),
                    other (2)
                }
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
            "This attribute describes the source of the profile. "
        DEFVAL { itut }
        ::= { atmfAAL2CommonProfileEntry 11 }


atmfAAL2SscsIeeeOui OBJECT-TYPE
        SYNTAX INTEGER
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
            "This attribute contains the IEEE Organizationally Unique
            Identifier (OUI) of the organisation that specified the
            profile being used, if other than ITU-T. For example, if
            the source is the ATM Forum, the value of this object is 00A03E.
            This attribute is only meaningful if atmfAAL2SccsProfileSource
            has the value 'other'."
        ::= { atmfAAL2CommonProfileEntry 12 }
```

```
atmfAAL2SscsPredefinedProfileIdentifier OBJECT-TYPE
    SYNTAX INTEGER
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object describes the predefined profile identifier."
    DEFVAL { 1 }
    ::= { atmfAAL2CommonProfileEntry 13 }


atmfAAL2SscsPcmEncoding OBJECT-TYPE
    SYNTAX INTEGER {
                aLaw (1),
                ulaw (2)
            }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object describes the type of PCM encoding used."
    DEFVAL { aLaw }
    ::= { atmfAAL2CommonProfileEntry 14 }


atmfAAL2SscsFaxDemodulationTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled  (2)
            }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object describes whether transport of demodulated
        facsimile data is enabled or disabled."
    DEFVAL { disabled }
    ::= { atmfAAL2CommonProfileEntry 15 }


atmfAAL2SscsCasSignalingTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled (2)
            }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This attribute describes whether transport of CAS
        signaling bits is enabled or disabled."
    DEFVAL { disabled }
    ::= { atmfAAL2CommonProfileEntry 16 }
```

```
atmfAAL2SscsDtmfDigitPacketTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled (2)
          }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This attribute describes whether transport of DTMF dialled
        digits is enabled or disabled."
    DEFVAL { disabled }
    ::= { atmfAAL2CommonProfileEntry 17 }


atmfAAL2SscsMfR1DigitPacketTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled (2)
          }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object describes whether transport of MF-R1 dialled
        digits is enabled or disabled."
    DEFVAL { disabled }
    ::= { atmfAAL2CommonProfileEntry 18 }


atmfAAL2SscsMfR2DigitPacketTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled (2)
          }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object describes whether transport of MF-R2 dialled
        digits is enabled or disabled."
    DEFVAL { disabled }
    ::= { atmfAAL2CommonProfileEntry 19 }


atmfAAL2SscsCircuitModeDataTransport OBJECT-TYPE
    SYNTAX INTEGER {
                disabled (1),
                enabled (2)
          }
    MAX-ACCESS read-only
```

```
      STATUS current
      DESCRIPTION
          "This object describes whether transport of circuit mode
          data is enabled or disabled."
      DEFVAL { disabled }
      ::= { atmfAAL2CommonProfileEntry 20 }


  atmfAAL2SscsCircuitModeDataNumChannels OBJECT-TYPE
      SYNTAX INTEGER (1..31)
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "This object describes the multiplier N in N*64kbit/s
          circuit mode data. It is only applicable if the value of
          atmfAAL2SscsCircuitModeDataTransport is 'enabled'."
      DEFVAL { 1 }
      ::= { atmfAAL2CommonProfileEntry 21 }


  atmfAAL2SscsFrameModeDataTransport OBJECT-TYPE
      SYNTAX INTEGER {
                  disabled (1),
                  enabled (2)
              }
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "This object describes whether the I.366.2 frame mode data
          service is enabled or disabled."
      DEFVAL { disabled }
      ::= { atmfAAL2CommonProfileEntry 22 }


  atmfAAL2SscsFrameModeDataMaxLength OBJECT-TYPE
      SYNTAX INTEGER (1..65535)
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
          "This object specifies the maximum length of I.366.2
          frame mode data. It is only applicable if the value
          of atmfAAL2FrameModeDataTransport is 'enabled'."
       ::= { atmfAAL2CommonProfileEntry 23 }


 atmfAAL2SscopSduLength OBJECT-TYPE
      SYNTAX INTEGER (1..65524)
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
```

```
                "The Maximum SSCOP-SDU length. This object is only required
                is the value of atmfAAL2SscsSsadtStatus is selected else it
                is not applicable."
            ::= { atmfAAL2CommonProfileEntry 24 }


    atmfAAL2SscopUuFieldLength OBJECT-TYPE
        SYNTAX INTEGER (1..65524)
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
           "The Maximum SSCOP-UU field length. This object is only
           required is the value of atmfAAL2SscsSsadtStatus is
           selected else it is not applicable."
         ::= { atmfAAL2CommonProfileEntry 25 }


     -------------------------------------------------------------------
     -- ATM Forum ILMI Extension for Auto Configuration
     -- ATM Trunking AAL2 Profile
     -------------------------------------------------------------------


    atmfAAL2TrunkingProfileTable OBJECT-TYPE
        SYNTAX SEQUENCE OF AtmfAAL2TrunkingProfileEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
             "The ATM Forum ILMI Auto Configuration Extension AAL2
             Profile Information. This table contains AAL2 parameters
             that are specific to the ATM Trunking AAL 2 application.
             These parameters are taken from af-vtoa-0113.000"
          ::= { atmfAutoConfigGroup 7 }


    atmfAAL2TrunkingProfileEntry OBJECT-TYPE
        SYNTAX AtmfAAL2TrunkingProfileEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
             "An atmfAAL2TrunkingProfileEntry provides AAL2 parameters
             of operation for ATM Trunking applications to be used in
             addition to those provided in the Common AAL2 Profile Table.
             These together provide complete configuration of AAL2 for
             PVCs that support ATM Trunking using AAl2 as defined in
             af-vtoa-0113.000."
         INDEX { atmfAAL2ProfileIndex }
          ::= { atmfAAL2TrunkingProfileTable 1 }


    AtmfAAL2TrunkingProfileEntry ::= SEQUENCE {
```

```
               atmfAAL2Vcci           INTEGER,
               atmfAAL2SignalingVcci  INTEGER
      }




      atmfAAL2Vcci OBJECT-TYPE
           SYNTAX INTEGER
           MAX-ACCESS read-only
           STATUS current
           DESCRIPTION
               "This object uniquely identifies a PVC between IWFs."
           ::= { atmfAAL2TrunkingProfileEntry 1 }

      atmfAAL2SignalingVcci OBJECT-TYPE
           SYNTAX INTEGER
           MAX-ACCESS read-only
           STATUS current
           DESCRIPTION
               "This object specifies the VCCI of the PVC that is used
               to carry the CCS for this PVC."
            ::= { atmfAAL2TrunkingProfileEntry 2 }


      --------------------------------------------------------------------
      -- ATM Forum ILMI Extension for Auto Configuration
      -- ATM LES AAL2 Profile
      -- In the case where an AAL2LESProfileEntry contains parameter(s)
      -- which is/are set to a value that is/are not supported by the AAL2
      -- entity in the ATU-R, the user-side IME must raise an
      -- atmfAtmServiceConfFail trap towards the network-side IME. The
      -- atmfAtmServiceConfFailReason should be 'unsupportedAAL' and
      -- the atmfAtmServiceConfFailOID must point to the
      -- atmfAAL2LESProfileEntry that contains the unsupported
      -- parameter(s).
      --------------------------------------------------------------------


      atmfAAL2LESProfileTable OBJECT-TYPE
           SYNTAX SEQUENCE OF AtmfAAL2LESProfileEntry
           MAX-ACCESS not-accessible
           STATUS current
           DESCRIPTION
               "The ATM Forum ILMI Auto Configuration Extension AAL2 Profile
               Information. This table contains AAL2 parameters that are
               specific to the ATM LES AAL 2 application. These parameters
               are taken from af-vmna-0145.000"
           ::= { atmfAutoConfigGroup 8 }
```

```
atmfAAL2LESProfileEntry OBJECT-TYPE
    SYNTAX AtmfAAL2LESProfileEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An atmfAAL2LESProfileEntry provides AAL2 parameters of
        operation for LES applications to be used in addition to
        those provided in the Common AAL2 Profile Table. These together
        provide complete configuration of AAL2 for PVCs that support
        LES using AAl2 as defined in af-vmoa-0145.000."
    INDEX { atmfAAL2ProfileIndex }
    ::= { atmfAAL2LESProfileTable 1 }


AtmfAAL2LESProfileEntry ::= SEQUENCE {
    atmfAAL2CpsCIDLowerLimit  INTEGER,
    atmfAAL2CpsCIDUpperLimit  INTEGER,
    atmfAAL2CpsOptimisation   INTEGER
}


atmfAAL2CpsCIDLowerLimit OBJECT-TYPE
    SYNTAX INTEGER (16..223)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The minimum value the CID can take for AAL2 bearer channels
        and ISDN-D channels."
    DEFVAL { 16 }
    ::= { atmfAAL2LESProfileEntry 1 }


atmfAAL2CpsCIDUpperLimit OBJECT-TYPE
    SYNTAX INTEGER (16..223)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        " The maximum value the CID can take for AAL2 bearer channels
        and ISDN-D channels."
    DEFVAL { 223 }
    ::= { atmfAAL2LESProfileEntry 2 }


atmfAAL2CpsOptimisation OBJECT-TYPE
    SYNTAX      INTEGER {
                    singleCpsPacketPerCpsPduNoOverlap(1),
                    multipleCpsPacketsPerCpsPduWithOverlap(2)
                }
    MAX-ACCESS  read-only
```

```
        STATUS current
        DESCRIPTION
           "This object refers to the mode of operation of the CPS on the
           CP-IWF The value of this object imposes a restriction on the
           CPS-SDU length and hence must override the value of
           atmfAAl2CpsMaxSDULength.
           singleCpsPacketPerCpsPduNoOverlap -A single CPS Packet is
contained
           within a CPS-PDU and no overlap can occur into the next CPS-PDU.
           If this option is selected, then Timer_CU is not applicable.
           Also Max CPS-SDU size must be less than or equal to 44.
           multipleCpsPacketsPerCpsPduWithOverlap - Multiple CPS Packets are
           contained within a CPS-PDU and overlap can occur into the next
          CPS-PDU. If this option is selected, then Timer_CU is applicable.
           Also Max CPS-SDU size must be less than or equal to 64."
        DEFVAL { singleCpsPacketPerCpsPduNoOverlap }
         ::= { atmfAAL2LESProfileEntry 3 }


    ----------------------------------------------------------------------
    -- ATM Forum ILMI Extension for Auto Configuration
    -- atmfAtmServicePhyMacIdentifier
    ----------------------------------------------------------------------


    atmfAtmServiceConnInfoExtensionTable OBJECT-TYPE
        SYNTAX SEQUENCE OF AtmfAtmServiceConnInfoExtensionEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
           "The ATM Forum ILMI Auto Configuration Extension ATM
           Service Connection Information. "
        ::= { atmfAutoConfigGroup 9 }


    atmfAtmServiceConnInfoExtensionEntry OBJECT-TYPE
        SYNTAX AtmfAtmServiceConnInfoExtensionEntry
        MAX-ACCESS not-accessible
        STATUS current
        DESCRIPTION
        "An entry in the service connection information extension table
        provides additional elements that help describe the ATM connection
        that provides a service across an ATM interface. The connection
        is identified by port and VPI/VCI value."
        AUGMENTS { atmfAtmServiceConnInfoEntry }
        ::= { atmfAtmServiceConnInfoExtensionTable 1 }


    AtmfAtmServiceConnInfoExtensionEntry ::= SEQUENCE {
         atmfAtmServicePhyMacIdentifier INTEGER
```

```
    }


atmfAtmServicePhyMacIdentifier OBJECT-TYPE
    SYNTAX INTEGER
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        " When the physical and/or MAC layer has more than one
        PHY-connection or MAC-connection, this object is used to
        select the PHY- or MAC-connection to be bound to the PVC.
        The semantics of the value of this object is PHY and/or
        MAC specific. This semantics generally shall be specified
        with the PHY or MAC. However, the semantics for the two
        PHY/MAC specifications which have been identified as having
        multiple connections is provided here for convenience:

      When the physical layer is dual latency ADSL, the PhyMacIdentifier
        selects the latency path to be bound to each direction of
        transmission for the PVC. The value of the PhyMacIdentifier
        shall be as follows:
            default = 0
            upstream and downstream both interleaved path = 1
            upstream and downstream both fast path = 2
            upstream interleaved path, downstream fast path = 3
            upstream fast path, downstream interleaved path = 4
      The 'default' value shall be used for single latency ADSL PHYs.

        When the physical and MAC layers are IEEE 802.14, the
        PhyMacIdentifier specifies the 802.14 Local Identifier for
        the PVC"
     ::= { atmfAtmServiceConnInfoExtensionEntry 1  }


    ----------------------------------------------------------------------
    -- ATM Forum ILMI Extension for Auto Configuration
    -- Layer 2 and Layer 3 Protocol ID
    ----------------------------------------------------------------------


atmfAtmServiceTypeExtensionTable OBJECT-TYPE
    SYNTAX SEQUENCE OF AtmfAtmServiceTypeExtensionEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The ATM Forum ILMI Auto Configuration Extension ATM
        Service Type Extension Information. "
     ::= { atmfAutoConfigGroup 10 }
```

```
atmfAtmServiceTypeExtensionEntry OBJECT-TYPE
    SYNTAX AtmfAtmServiceTypeExtensionEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An entry in the service type extension table describes additional
        information about a service that may be associated with individual
        ATM connections for the purpose of auto-configuration. This
        information describes the Client Protocol ID's associated with a
        particular service."
    AUGMENTS { atmfAtmServiceTypeEntry }
    ::= { atmfAtmServiceTypeExtensionTable 1 }


AtmfAtmServiceTypeExtensionEntry ::= SEQUENCE {
    atmfAtmServiceLayer2ProtocolId OCTET STRING,
    atmfAtmServiceLayer3ProtocolId OCTET STRING
}


atmfAtmServiceLayer2ProtocolId OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object shall be used to select the user plane layer 2
        protocol (if any) to be used above the AAL. The first octet
        of this object shall be encoded as follows. Bits 5-7 (i.e.
        the three most significant bits) shall be set to 0; any other
        values shall be ignored. Bits 0-4 (i.e. the five least significant
        bits) shall be encoded as shown in the entry for 'User information
        layer 2 protocol (octet 6)' in Table 4-10/Q.2931. However, if no
        user plane layer 2 protocol is present above the AAL, then the
        first (and only) octet shall be encoded as '0b00000000'. If the
        encoding of the first octet requires subsequent octets, then bit 7
        (i.e., the most significant bit) of each of these octets shall be
        set to 0; however, if it is set to 1, it shall be ignored. Bits 0-
6
        shall be encoded according to table 4-10/Q.2931. If more than one
        subsequent octet is needed, then octets shall appear in the order
        shown in figure 4-16/Q.2931."
    ::= { atmfAtmServiceTypeExtensionEntry 1 }


atmfAtmServiceLayer3ProtocolId OBJECT-TYPE
    SYNTAX OCTET STRING
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
```

"This object shall be used to select a user plane layer 3 protocol
(or user plane layer 2 bridging). The first octet of this object
shall be encoded as follows. Bits 5-7 (i.e., the three most
significant bits) shall be set to 0; any other values shall be
ignored. Bits 0-4 (i.e., the five least significant bits) shall be
encoded as shown in the entry for 'User information layer 3
protocol (octet 7)' in Table 4-10/Q.2931. However, if no user plane
layer 3 protocol is specified, then the first (and only) octet
shall be encoded as '0b00000000'.

a) If ISO TR9577 network layer protocol identification is to be
used, then the first octet shall be encoded to indicate 'ISO/IEC
TR9577'. In this case, either:

i) the user plane layer 3 protocol is to be selected in the
management plane. The second octet of this object shall
contain the ISO/IEC TR9577 Initial Protocol Identifier (IPI).
- For layer 3 protocols for which ISO/IEC has assigned a
Network Layer Protocol Identifier (NLPID), then this NLPID
shall be used as the IPI, and the length of the octet
string shall be 2.
- For layer 3 protocols for which ISO/IEC has not assigned
an NLPID, the IPI shall be encoded to indicate 'IEEE
802.1a SNAP identifier' (see Annex D of ISO/IEC 9577). The
following five octets (octets 3 through 7) of this object
shall then contain a SNAP identifier, which consists of a
3-octet organization unique identifier (OUI) and a 2-octet
protocol identifier (PID). This SNAP coding shall be used
only if ISO/IEC has not assigned a Network Layer Protocol
Identifier for the layer 3 or layer 2 protocol. The octet
string shall thus be 7 octets long.
- If an IME wishes to indicate that bridged LAN frames are
to be carried in the user plane then the IPI shall be
encoded to indicate 'IEEE 802.1a SNAP identifier'. The
following five octets of this object shall contain a SNAP
identifier, which indicates the bridged protocol.
For consistency with SIG 4.0, use of the ISO/IEC subsequent
protocol identifier (SPI) is not recommended but not explicitly
prohibited as one can envision scenarios where it has utility.
or
ii) the user plane layer 3 protocol is to be selected using
network layer protocol identification in the user plane. The
octet-string shall be one octet long. The first octet(s) of
each layer 3 protocol data unit shall contain layer 3
protocol identification according to ISO/IEC TR9577.

b)If bits 0-4 of the first octet of the octet string are set to
any value other than 'ISO/IEC TR9577', then any subsequent octets

```
        shall be encoded as follows. Bit 7 (i.e., the most significant
         bit) of each of these octets shall be set to 0; however, if it is
         set to 1, it shall be ignored. Bits 0-6 shall be encoded according
         to the codings for octet 7a, octet 7b and octet 7c specified in
         table 4- 10/Q.2931. If more than one subsequent octet is needed,
         then octets shall appear in the order shown in figure 4-16/Q.2931."
      ::= { atmfAtmServiceTypeExtensionEntry 2}


   -------------------------------------------------------------------
   -- ATM Forum ILMI Extension for Auto Configuration
   -- AAL5 Profile Extension Table
   -- This extension is required for supporting AAL2 trunking
   -------------------------------------------------------------------


atmfAAL5ProfileExtensionTable OBJECT-TYPE
    SYNTAX SEQUENCE OF AtmfAAL5ProfileExtensionEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Additional parameters for the AAL5 Profile are stored in
        this table."
    ::= { atmfAutoConfigGroup 11 }


atmfAAL5ProfileExtensionEntry OBJECT-TYPE
    SYNTAX AtmfAAL5ProfileExtensionEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An entry in this table augments an entry in the
      atmfAAL5ProfileTable"
    AUGMENTS { atmfAAL5ProfileEntry }
    ::= { atmfAAL5ProfileExtensionTable 1 }


AtmfAAL5ProfileExtensionEntry ::= SEQUENCE {
      atmfAAL5Vcci    INTEGER
}


atmfAAL5Vcci OBJECT-TYPE
    SYNTAX INTEGER
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object's value is only applicable if the AAL5 VCC is
         carrying CCS for AAL2 narrowband calls."
    ::= { atmfAAL5ProfileExtensionEntry 1 }
```

```
    ----------------------------------------------------------------
    -- ATM Forum ILMI Extension for Auto Configuration
    -- Configuration Failed Trap
    ----------------------------------------------------------------


atmfAtmServiceConfFail TRAP-TYPE
    ENTERPRISE atmForum
    VARIABLES { atmfAtmServiceConfFailReason, atmfAtmServiceConfFailOID }
    DESCRIPTION
       "The user-side IME will send this trap whenever it
        is unable to configure itself based on the information
        provided in the ILMI auto-configuration MIB. The variables
        included in the trap identify the reason for the failure
        and the row in the MIB table that caused the failure. "
    ::= 3


 atmfAtmServiceConfFailReason OBJECT-TYPE
    SYNTAX     INTEGER {
                        unsupportedClientProtocol (1),
                        unsupportedServiceCategory (2),
                        unsupportedAAL (3),
                        invalidVPIVCIValue (4),
                        tooManyPVCs (5),
                        incompleteConfigurationInformation (6),
                        inconsistentConfigurationInformation (7)
              }
    MAX-ACCESS   read-only
    STATUS     current
    DESCRIPTION
        "The reason for the failure to configure the PVC at the ATU-R"
    ::= { atmfAutoConfigGroup 12 }

 atmfAtmServiceConfFailOID OBJECT-TYPE
    SYNTAX RowPointer
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object holds a pointer to a row in the appropriate
        table depending on the value of the atmfAtmServiceFailReason
        object. This will allow the network side to determine MIB
        information that caused the auto-configuration failure.
        The value of this object should be as follows:
        If atmfAtmServiceConfFailReason = 1 or 2, then this object's
        value points to the row in the atmfAtmServiceTypeTable that
        is the cause of the problem.
        If atmfAtmServiceConfFailReason = 3, then this object's value
```

```
                     points to the row in the atmfAALxProfileTable, where x is
                     1, 2, 34, or 5 depending on the AAL that can't be supported.
                     If atmfAtmServiceConfFailReason = 4, then this object's value
                     points to the row in the atmfAtmServiceConnInfoTable that is
                     the cause of the problem.
                     For any other value of atmfAtmServiceConfFailReason, this
                     object's value should be ignored."
             ::= { atmfAutoConfigGroup 13 }


     END
```

7 Glossary

AAL	ATM Adaptation Layer
AAL2	Application Adaptation Layer Type 2
ADSL	Asynchronous Digital Subscriber Line
ATU-R	Asynchronous-DSL Terminal Unit - Remote
B-LLI	Broadband - Lower Level Indication
BNT1	Broadband Network Termination 1
CCS	Common Channel Signaling
CID	Connection Identifier
CPE	Customer Premise Equipment
DSL	Digital Subscriber Line
DTMF	Dual-Tone Multi-frequency
EMS	Element Management System
IE	Information Element
ILMI	Integrated Local Management Interface
IME	ILMI Management Entity
ITU-T	International Telecommunication Union - Telecommunication Section
IWF	Inter-working Function
LES	Loop Extension Service
LLC	Logical Link Control
M4	Management Interfaces Between the Element Management System and Network Management Systems and a Network or Network Elements.
MAC	Media Access Control
MF-R1	Multi-frequency, Release 1
MF-R2	Multi-frequency, Release 2
MIB	Management Information Base
NMS	Network Management System
NT	Network Termination
NT2	Network Termination 2
OSI	Open System Interconnection
OUI	Organization Unique Identifier
PHY	Physical Layer Interface
PMD	Physical Media Device
PPP	Point to Point Protocol
PVC	Permanent Virtual Circuit
QoS	Quality of Service
SNAP	Subnetwork Service Access Point
SSADT	Service Specific Assured Data Transfer
SSCOP	Service Specific Connection Oriented Protocol
SSCOP-UU	Service Specific Connection Oriented Protocol - User to User
SSCS	Service Specific Convergence Sublayer
SSSAR	Service Specific Segmentation and Reassembly
SVC	Switched Virtual Circuit
TC	Transmission Convergence

UNI	User Network Interface
VC	Virtual Circuit
VCC	Virtual Circuit Connection
VCCI	Virtual Circuit Connection Identifier
VCI	Virtual Connection Identifier
VPI	Virtual Path Identifier

8   References

[ref 1] ATM Forum af-nm-0122.000, "Auto-configuration of PVCs", May 1999.

[ref 2] IEEE 802.14 (draft) "Cable TV Access Method and Physical Later Specification"

[ref 3] ATM Forum af-cs-135.000, "PHY/MAC Identifier Addendum to UNI Signalling 4.0", November 1999

[ref 4] ATM Forum af-sig-0061.000, "UNI Signaling 4.0", July 1996

 [ref 5] ITU-T Recommendation Q.2931, "B-ISDN DSS2 User-Network Interface (UNI) Layer 3 Specification for Basic Call Connection Control", 1996

[ref 6] ITU-T X.263 –" ISO/IEC Technical Report 9577 - Information Technology – Protocol Identification in the Network Layer" – 1998

[ref 7] ATM Forum af-vtoa-0113.000, "ATM Trunking Using AAL2 for Narrowband Services", Feb, 1999

[ref 8] ATM Forum af-vmoa-0145.000, "Loop Emulation Service using AAL2", July, 2000

[ref 9] ITU-T I.363.2, "B-ISDN ATM Adaptation Layer Specification Type 2 ALL", September 1997

 [ref 10] ITU-T I.366.1, "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2", June 1998

[ref 11] ITU-T I.366.2 , "AAL TYPE 2 Service Specific Convergence Sublayer for Trunking", 1999

[ref 12] IETF RFC 2684, - D,Grossman, J. Heinanen, " Multiprotocol Encapsulation over ATM Adaptation Layer 5", , September 1999

[ref 13] IETF RFC 2364, - G. Gross, et.al. " PPP Over AAL5", July 1998

Annex A (Normative). Encodings of the atmfAtmServiceLayer2ProtocolID and atmfAtmServiceLayer3ProtocolID objects

This Annex describes the use of the atmfAtmServiceLayer2ProtocolID and atmfAtmServiceLayer3ProtocolID that shall be used for some commonly used protocols. These are similar to those in Annex A.3 of the ATM Forum Signaling 4.0 specification, af-sig-0061.000, [ref 4]. The list of protocols in this Annex is not exhaustive

The atmfAtmServiceLayer2ProtocolID has an octet-string syntax for flexibility. It is anticipated that it will most often be used to indicate that either IEEE 802.1 LLC encapsulation is to be used, or that no layer 2 protocol is present above the AAL. The atmfAtmServiceLayer3ProtocolID object also has an octet-string syntax for flexibility. It is anticipated that it will most often be used with an ISO/IEC TR 9577 (Protocol Identification in the Network Layer) protocol ID to select one of several layer 3 protocols or to select layer 2 bridging.

Hexadecimal notation is used in the following examples.

Case 1: Multiprotocol Encapsulation over ATM (RFC 2684 [ref 12]), with null encapsulation of Internet Protocol Version 4 (IPv4) In this example, there is no layer 2 protocol over AAL5. IPv4 has an ISO/IEC 9577 NLPID value. Therefore, the atmfAtmLayer2ProtocolID shall be encoded '0x00'' and the atmfAtmLayer3ProtocolID shall be encoded as a 2-octet string, '0x0BCC'.

Case 2: Multiprotocol Encapsulation over ATM (RFC 2684) with LLC/SNAP encapsulation In this example, the layer 2 protocol above the AAL is LLC/SNAP. The layer 3 protocol is identified by a SNAP header in each packet in the user plane. Thus, the atmfAtmLayer2ProtocolID shall be encoded '0x0C' and the atmfAtmLayer3ProtocolID shall be encoded as a 2-octet string, '0x0B0B'

Case 3: PPP over ATM with LLC encapsulation (RFC 2364 [ref 13]). In this example the protocol above the AAL is LLC-encapsulated PPP. Consistent with RFC 2364, only the LLC encapsulation is indicated in the B-LLI Information Element (IE); PPP is identified in the user plane by the LLC header, NLPID and PPP payload. Therefore, the atmfAtmLayer2ProtocolID shall be encoded as a one-octet string, '0x0C' and the atmfAtmLayer3ProtocolID shall be encoded as a one-octet string, '0x00'. In this case, other protocols can be multiplexed with PPP at layer 2, using LLC.

If ONLY PPP is carried over LLC, PPP may be indicated as the layer 3 protocol. Therefore, the atmfAtmLayer2ProtocolID shall be encoded as a one-octet string, '0x0C' and the atmfAtmLayer3ProtocolID shall be encoded as a 2-octet string, '0x0BCF'.

Case 4: PPP over ATM with NULL encapsulation (RFC 2364) In this example the protocol above the AAL is PPP, without LLC encapsulation. PPP has an ISO/IEC 9577 NLPID value of '0xCF'. Therefore, the atmfAtmLayer2ProtocolID shall be encoded as a one-octet string, '0x00' and the atmfAtmLayer3ProtocolID shall be encoded as a 2-octet string, '0x0BCF'.

Case 5: Multiprotocol Encapsulation over ATM (RFC 2684), with null encapsulation of bridged Ethernet frames. In this example the layer 2 protocol above the AAL is bridged Ethernet. Here a SNAP encoding must be used. Therefore, the atmfAtmLayer2ProtocolID shall be encoded '0x0C', and the atmfAtmLayer3ProtocolID shall be encoded as a 7-octet string, '0x 0B 80 00 80 c2 00 07'. Similar coding rules apply for null encapsulation of other kinds of bridged MAC frames, and for routed frames which can only be identified using the SNAP convention (e.g., IPX™).