



The ATM Forum

Technical Committee

ATM APS SNMP MIB

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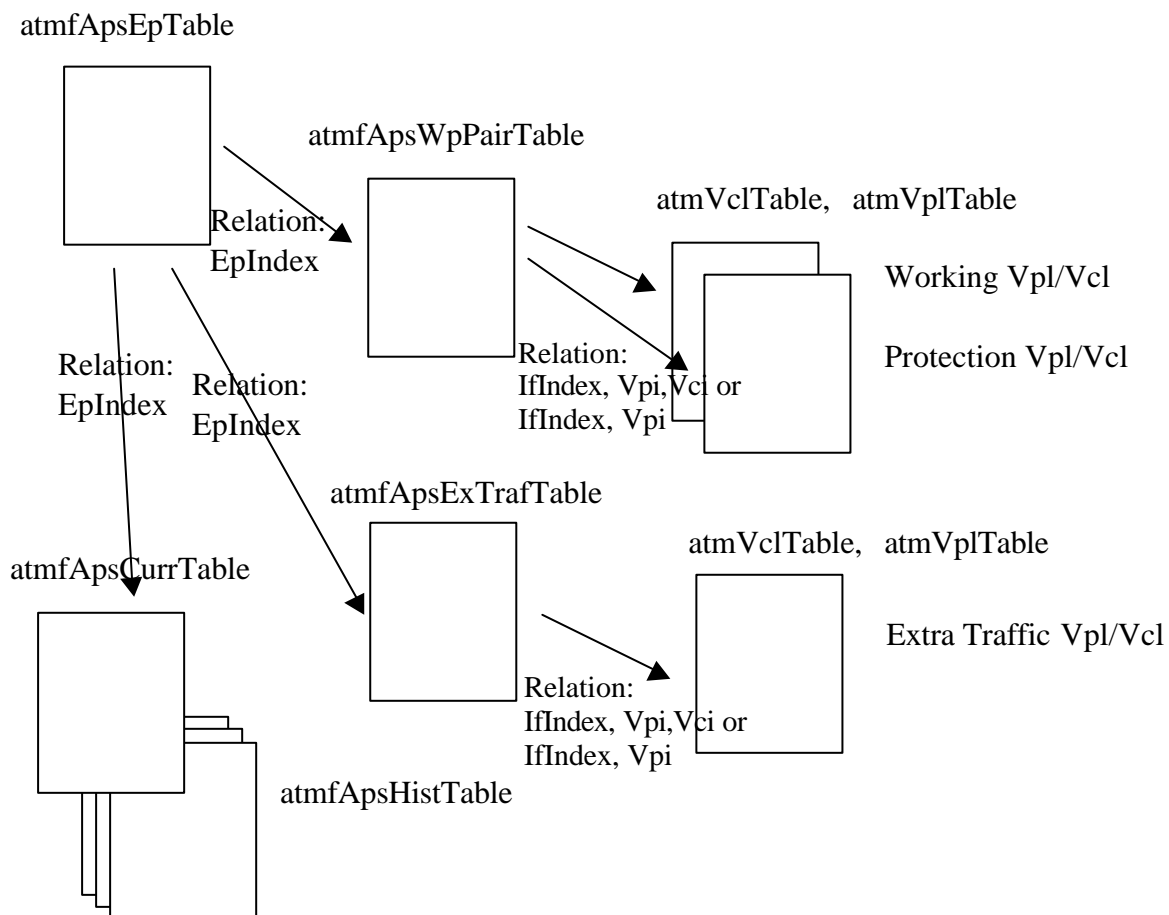
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1 Introduction

This document defines an SNMP MIB for management of ATM Layer APS according to the logical model described in [1].

2 MIB table relationships

The figure below illustrates how the ATM APS MIB tables are related to each other and to the IETF AToMMIB VCL and VPL tables as defined in [3]. The 'Working Vpl/Vcl' and the 'Protection Vpl/Vcl' and corresponding cross-connections (if applicable) are created in the way described in [3] using the atmVclTable, atmVplTable, atmVpCrossConnectTable and atmVcCrossConnectTable respectively. The associated APS entities are then created afterwards pointing to the previously created VCLs or VPLs through the Ifindex, Vpi or IfIndex, Vpi, Vci. The atmfApsWpPairTable, atmfApsCurrTable and atmfApsHistTable entries are related to the APS end point through the EpIndex.



3 Relationships between logical MIB and SNMP MIB

The table below illustrates how the entities of the logical MIB are mapped into corresponding entities in the SNMP MIB.

Logical MIB managed entity	Logical MIB attribute	SNMP MIB table	SNMP MIB attribute
ATM APS End Point		atmfApsEpTable	
	Managed entity id		atmfApsEpIndex
	Protection Scheme		atmfApsEpProtScheme
	Protection Direction		atmfApsEpProtDirection
	Protection Mode		atmfApsEpProtMode
	Group Protection Indicator		atmfApsEpGroupIndicator
	Working/Protection Pair List		-
	-		atmfApsEpTestTrailSignalId
	ATM APS Test Trail Working Entity		atmfApsEpTestTrailWorkingIf atmfApsEpTestTrailWorkingVpi atmfApsEpTestTrailWorkingVci
	ATM APS Test Trail Protection Entity		atmfApsEpTestTrailProtectionIf atmfApsEpTestTrailProtectionVpi atmfApsEpTestTrailProtectionVci
	Coupling Indicator		atmfApsEpCouplIndicator
	ATM APS Trigger List		atmfApsEpTriggers
	Hold Off Timer		atmfApsEpHoldOffTimer
	WTR Timer		atmfApsEpWtrTimer
	Set/Clear ATM APS Request (actions)		atmfApsEpManualRequest
	ATM APS Request List		atmfApsEpApsRequestList
	Current K1K2 Byte		atmfApsEpCurrentK1Byte atmfApsEpCurrentK2Byte
	Selector Status		atmfApsEpSelectorStatus
	Bridge Status		atmfApsEpBridgeStatus
	ATM APS Availability Status		atmfApsEpAvailabilityStatus
-	atmfApsEpRowStatus		
ATM APS Working/Protection Pair		atmfApsWpPairTable	
	Managed Entity Id		atmfApsWpEpIndex atmfApsWpPairWorkIf atmfApsWpPairWorkVpi atmfApsWpPairWorkVci atmfApsWpPairProtIf atmfApsWpPairProtVpi atmfApsWpPairProtVci
	-		atmfApsWpPairSignalId
	Supported Working Termination		atmfApsWpPairWorkIf atmfApsWpPairWorkVpi atmfApsWpPairWorkVci

Logical MIB managed entity	Logical MIB attribute	SNMP MIB table	SNMP MIB attribute
	Supported Protection Termination		atmfApsWpPairProtIf atmfApsWpPairProtVpi atmfApsWpPairProtVci
	-		AtmfApsWpPairRowStatus
ATM APS Current Data		atmfApsCurrTable	
	Managed Entity Id		atmfApsEpIndex
	Administrative state		-
	Suspect Flag		atmfApsCurrSuspect
	Elapsed Time		atmfApsCurrElapsedTime
	Threshold Data Id		-
	Number Of Suppressed Intervals		atmfApsCurrSupprIntvls
	Failure to Switch on SF/SD		atmfApsCurrFailSwOnSfSd
	Failure to Switch after WTR expired		atmfApsCurrFailSwOnWtr
	Failure to Switch after Far-End Switch		atmfApsCurrFailSwNearEnd
	Failure to Switch after Near-End Switch		atmfApsCurrFailSwFarEnd
Successful Switches		atmfApsCurrSuccessSwitch	
ATM APS Extra Traffic		atmfApsExTrafTable	
	Managed Entity Id		atmfApsExTrafEpIndex atmfApsExTrafProtectionIf atmfApsExTrafVpi atmfApsExTrafVci
	-		atmfApsExTrafSignalId
	Extra traffic link		atmfApsExTrafProtectionIf atmfApsExTrafVpi atmfApsExTrafVci
	-		atmfApsExTrafRowStatus
ATM APS History Data		atmfApsHistTable	
	Managed Entity Id		atmfApsEpIndex atmfApsHistIndex
	Period End Time		atmfApsHistPeriodEndTime
	Suspect Flag		atmfApsHistSuspect
	Number Of Suppressed Intervals		atmfApsHistSupprIntvls
	Failure to Switch on SF/SD		atmfApsHistFailSwOnSfSd
	Failure to Switch after WTR expired		atmfApsHistFailSwOnWtr
	Failure to Switch after Far-End Switch		atmfApsHistFailSwNearEnd
	Failure to Switch after Near-End Switch		atmfApsHistFailSwFarEnd
Successful Switches		atmfApsHistSuccessSwitch	

4 SNMP MIB for ATM Layer Automatic Protection Switching (APS)

```
ATM-APS-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-TYPE, Integer32,
    NOTIFICATION-TYPE, enterprises, Counter32, Unsigned32
        FROM SNMPv2-SMI
    NOTIFICATION-GROUP
        FROM SNMPv2-CONF
    TEXTUAL-CONVENTION, RowStatus, TimeInterval, TruthValue,
    DateAndTime
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    AtmVcIdentifier, AtmVpIdentifier
        FROM ATM-TC-MIB
    InterfaceIndex
        FROM IF-MIB;
```

```
atmfApsMIB MODULE-IDENTITY
```

```
    LAST-UPDATED      "200202120000Z"
    ORGANIZATION      "The ATM Forum."
    CONTACT-INFO
        "The ATM Forum
        Worldwide Headquarters
        Presidio of San Francisco
        Building 572B Rugar (surface)
        P.O. Box 29920 (mail)
        San Francisco, CA 94129-0920 USA
        Phone: +1.415.561.6275
        Email: info@atmforum.com"
```

```
DESCRIPTION
```

```
    "The SNMP MIB module for ATM Automatic Protection Switching (APS)
    for the M4 NE View (af-nm-0184.000)"
```

```
 ::= { atmFaps 1 }
```

```
atmForum          OBJECT IDENTIFIER ::= { enterprises 353 }
atmForumNetworkManagement OBJECT IDENTIFIER ::= { atmForum 5 }
```

```
atmfAps          OBJECT IDENTIFIER ::= { atmForumNetworkManagement 11 }
atmfApsMIBObjects OBJECT IDENTIFIER ::= { atmfApsMIB 1 }
```

```
-- Textual Conventions
```

```
SignalId ::= TEXTUAL-CONVENTION
```

```
    STATUS      current
```

```
DESCRIPTION
```

```
    "This object indicates if the associated table entry is
    of VP or VC type. When the table entry is of VP type the
```

Vci column of the associated entry will either not be used or will be given a specified fixed value."

```
SYNTAX INTEGER {
  vp (1),
  vc (2)
}
```

AtmfApsFailToSwitchType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This object defines which type of failure that is experienced when the ATM APS function fails to switch at an APS triggering event. In case the switching is successful this object will have the value 'none'.

The different switch failure reasons are:

- localFailToSwitchAtSfSd:
This means that this APS End Point fails to switch when it experiences a signal fail or signal degrade at the working or protection entity.
- localFailToSwitchAtWtr:
This means that this APS End Point fails to switch back to the working entity when the wait to restore timer expires.
- localFailToSwitchAtSwFarEnd:
This means that this APS End Point fails to switch when a switch occurs at the remote end of the protected domain (at bi-directional protection switching)."

```
SYNTAX INTEGER {
  none(1),
  localFailToSwitchAtSfSd (2),
  localFailToSwitchAtWtr (3),
  localFailToSwitchAtSwFarEnd (4)
}
```

-- The ATM APS End Point Table

atmfApsConnGroup OBJECT IDENTIFIER ::= { atmfApsMIBObjects 1 }

atmfApsEpTable OBJECT-TYPE

SYNTAX SEQUENCE OF AtmfApsEpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table contains the configured ATM APS End Points within the network element."

::= { atmfApsConnGroup 1 }

atmfApsEpEntry OBJECT-TYPE

SYNTAX AtmfApsEpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry in this table specifies an ATM APS End Point which represents one end of a protected domain. The APS End Point may be related to one atmfApsWorkProtPairEntry if single protection, or to a number of atmfApsWorkProtPairEntry if group protection.

To create a single protected connection the following steps shall be taken:

- Create the working atmVclEntry or atmVplEntry, if it is not already existing (This VCL or VPL may at this stage already be cross connected).
- Create the protection atmVclEntry or atmVplEntry
- Create the atmfApsEpEntry specifying the protection scheme etc. and setting the atmfApsEpGroupIndicator to 'single'.
- Create the atmfApsWpPairEntry pointing to the working and protection VCLs or VPLs using the index of this atmfApsEpEntry as part of the row index.

To create a protected group the following steps shall be taken:

- (0) Create the atmfApsEpEntry specifying the protection scheme etc. and setting the atmfApsEpGroupIndicator to 'group'. The working and protection test trails shall also be specified here by setting the associated objects in the atmfApsEpEntry.

These objects are:

- atmfApsEpTestTrailSignalId
 - atmfApsEpTestTrailWorkingIf
 - atmfApsEpTestTrailWorkingVpi
 - atmfApsEpTestTrailWorkingVci
 - atmfApsEpTestTrailProtectionIf
 - atmfApsEpTestTrailProtectionVpi
 - atmfApsEpTestTrailProtectionVci
- (1) Create the working atmVclEntry or atmVplEntry, if it is not already existing (This VCL or VPL may at this stage already be cross connected if it is not located at the end of the VCC or VPC). At group protection the working VCL or VPL must always be located at the same interface as the working test trail.
 - (2) Create the protection atmVclEntry or atmVplEntry. At group protection the protection VCL or VPL must always be located at the same interface as the protection test trail.
 - (3) Create a atmfApsWpPairEntry pointing to the working and protection VCLs or VPLs using the index of this atmfApsEpEntry as part of the row index.
 - Repeat step (1) to (3) for each connection that shall belong to the protected group

To remove a single protected connection first remove the atmfApsWpPairEntry row (and the two associated atmVplEntry or atmVclEntry rows) and then remove the atmfApsEpEntry row.

To remove a protected group first remove all atmfApsWpPairEntry rows of the group (and the associated atmVplEntry or atmVclEntry rows) and then remove the atmfApsEpEntry row. Removing of the atmfApsEpEntry row will also remove the test trails associated with it.

"

```
INDEX      { atmfApsEpIndex }
 ::= { atmfApsEpTable 1 }
```

AtmfApsEpEntry ::= SEQUENCE

```

{
    atmfApsEpIndex                Unsigned32,
    atmfApsEpProtScheme           INTEGER,
    atmfApsEpProtDirection       INTEGER,
    atmfApsEpProtMode            INTEGER,
    atmfApsEpGroupIndicator      INTEGER,
    atmfApsEpCouplIndicator      INTEGER,
    atmfApsEpTriggers            BITS,
    atmfApsEpHoldOffTimer        Integer32,
    atmfApsEpWtrTimer            Integer32,
    atmfApsEpManualRequest       INTEGER,
    atmfApsEpApsRequestList      OCTET STRING,
    atmfApsEpCurrentK1Byte       Integer32,
    atmfApsEpCurrentK2Byte       Integer32,
    atmfApsEpSelectorStatus      INTEGER,
    atmfApsEpBridgeStatus        INTEGER,
    atmfApsEpAvailabilityStatus  INTEGER,
    atmfApsEpTestTrailSignalId   SignalId,
    atmfApsEpTestTrailWorkingIf  InterfaceIndex,
    atmfApsEpTestTrailWorkingVpi AtmVpIdentifier,
    atmfApsEpTestTrailWorkingVci AtmVcIdentifier,
    atmfApsEpTestTrailProtectionIf InterfaceIndex,
    atmfApsEpTestTrailProtectionVpi AtmVpIdentifier,
    atmfApsEpTestTrailProtectionVci AtmVcIdentifier,
    atmfApsEpRowStatus           RowStatus
}

```

atmfApsEpIndex OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An arbitrary integer uniquely identifying a APS End Point. This will be assigned when the APS End Point is created."

::= { atmfApsEpEntry 1 }

atmfApsEpProtScheme OBJECT-TYPE

SYNTAX INTEGER {

onePlusOne(1),

oneColonOne(2)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The protection scheme used for the APS End Point. The protection scheme is either of 1+1 or 1:1 type."

REFERENCE

"ITU-T Recommendation I.630"

::= { atmfApsEpEntry 2 }

atmfApsEpProtDirection OBJECT-TYPE

SYNTAX INTEGER {

uniDirectional(1),

biDirectional(2)

}

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This attribute indicates if the protection switching is coordinated
    between the two APS End Points or not. If uni-directional switching
    is specified the two APS End Points may switch independently of each
    other. If bi-directional switching is specified switching of both
    ends will be coordinated through the ATM APS protocol. "
REFERENCE
    "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 3 }

atmfApsEpProtMode OBJECT-TYPE
SYNTAX INTEGER {
    revertive(1),
    nonRevertive(2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This attribute specifies if revertive or non-revertive switching
    shall apply for the APS End Point."
REFERENCE
    "ITU-T Recommendation I.630"
DEFVAL { nonRevertive }
 ::= { atmfApsEpEntry 4 }

atmfApsEpGroupIndicator OBJECT-TYPE
SYNTAX INTEGER {
    single(1),
    group(2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This attribute specifies if the APS End Point is used for protection
    of an individual (single) connection or for group protection."
REFERENCE
    "ITU-T Recommendation I.630"
DEFVAL { single }
 ::= { atmfApsEpEntry 5 }

atmfApsEpCouplIndicator OBJECT-TYPE
SYNTAX INTEGER {
    none(1),
    segmentEndPoint(2),
    endToEndPoint(3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "This attribute denotes whether the associated Working and Protection
    ATM end points (VPLs or VCLs) are OAM flow end points or not. Valid
    values are 'none', 'end-to-end point' or 'segment end point'. Note
    that the value 'none' will be returned for group protection or for a
    non-intrusively monitored ATM APS connection."
REFERENCE

```

```

        "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 6 }

atmfApsEpTriggers OBJECT-TYPE
    SYNTAX BITS {
        endToEndAis(0),
        segmentAis(1),
        signalDegrade(2),
        lossOfSignal(3)
    }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "This attribute specifies the triggers that are used for the
        protection switching mechanism. One or several triggers may be
        configured. To activate a specific trigger the corresponding bit
        of this attribute shall be set to 1.

        Note: The use of 'signal degrade' as an ATM APS triggering
        Condition is still for further study within ITU-T."
    REFERENCE
        "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 7 }

atmfApsEpHoldOffTimer OBJECT-TYPE
    SYNTAX Integer32 (0..10000)
    UNITS "milliseconds"
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "This attribute defines the duration of the hold-off timer in ATM APS.
        The value is specified in milliseconds starting at 0 milliseconds
        with a maximum of 10 seconds.
        The timer specifies the time from a lower layer impairment until the
        ATM layer protection switching function will be activated.
        The default value is 500 ms."
    REFERENCE
        "ITU-T Recommendation I.630"
    DEFVAL { 500 }
 ::= { atmfApsEpEntry 8 }

atmfApsEpWtrTimer OBJECT-TYPE
    SYNTAX Integer32 (1..30)
    UNITS "minutes"
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "This attribute defines the wait to restore time in minutes at
        revertive protection switching."
    REFERENCE
        "ITU-T Recommendation I.630"
    DEFVAL { 12 }
 ::= { atmfApsEpEntry 9 }

atmfApsEpManualRequest OBJECT-TYPE
    SYNTAX INTEGER {
        noOp(1),

```

```

setFreeze(2),
clearFreeze(3),
setLockoutOfProtection(4),
clearLockoutOfProtection(5),
setForcedSwitchForWorking(6),
clearForcedSwitchForWorking(7),
setManualSwitchForWorking(8),
clearManualSwitchForWorking(9),
setManualSwitchForProtection(10),
clearManualSwitchForProtection(11),
clearAll(12)
}

```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This attribute enables activation and clearing of the different manual requests that may be performed towards an APS End Point. The different requests that may be set or cleared are:

- freeze :
 - This will freeze the bridge-selector in the current position and thus prevent any protection switching for this APS End Point. This request may be combined with any of the requests below.
- lockoutOfProtection :
 - This prevents any protection switching from the working to the protection entity. If the traffic was routed to the protection entity it will be forced back to the working entity.
- forcedSwitchForWorking :
 - This will force the traffic from the working entity to the protection entity unless there are any higher priority requests.
- manualSwitchForWorking :
 - This will force the traffic from the working entity to the protection entity unless there are any higher priority requests. A signal fail or a signal degrade will have higher priority than this request.
- manualSwitchForProtection :
 - This will force the traffic from the protection entity to the working entity unless there are any higher priority requests. A signal fail or a signal degrade will have higher priority than this request.

The clearAll action will clear all active manual requests through one set operation, thus avoiding clearing of each active request separately. The requests that will be cleared through the clearAll command are the 'Freeze', 'Lockout of protection', 'Forced switch for working', 'Manual switch for working' and 'Manual switch for protection'. Any active automatic requests (non operator initiated request) will not be affected by the clearAll command.

When read this attribute will have the value 'noOp'. The active requests are instead displayed through the atmfApsEpApsRequestList attribute."

REFERENCE

"ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 10 }

atmfApsEpApsRequestList OBJECT-TYPE

SYNTAX OCTET STRING


```

MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "This attribute displays which local ATM APS requests
    (operator initiated or automatically initiated) that currently
    are active for the APS End Point. The list is sorted
    in priority order according to ITU-T I.630. I.e. the first octet in
    the list contains the identity of the request of the highest priority
    and so on. The identities of the different requests are coded as
    integers and defined as follows:
    - freeze(1)
    - lockoutOfProtection(2)
    - signalFailForProtection(3)
    - forcedSwitchForWorking(4)
    - signalFailForWorking(5)
    - signalDegradeForProtection(6)
    - signalDegradeForWorking(7)
    - manualSwitchForProtection(8)
    - manualSwitchForWorking(9)
    - waitToRestoreForWorking(10)
    - doNotRevertForWorking(11)
    - noRequest(12)"

```

REFERENCE

```

    "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 11 }

```

```
atmfApsEpCurrentK1Byte OBJECT-TYPE
```

```
SYNTAX Integer32 (0..255)
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

DESCRIPTION

```

    "This attribute displays the value of the current K1 byte as received
    through the ATM APS protocol. The K1 byte is defined in ITU-T I.630."

```

REFERENCE

```

    "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 12 }

```

```
atmfApsEpCurrentK2Byte OBJECT-TYPE
```

```
SYNTAX Integer32 (0..255)
```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

DESCRIPTION

```

    "This attribute displays the value of the current K2 byte as received
    through the ATM APS protocol. The K2 byte is defined in ITU-T I.630."

```

REFERENCE

```

    "ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 13 }

```

```
atmfApsEpSelectorStatus OBJECT-TYPE
```

```

SYNTAX INTEGER {
    working(1),
    protection(2)
}

```

```
MAX-ACCESS read-only
```

```
STATUS      current
```

DESCRIPTION

```

    "This attribute indicates the selector status of the APS End Point.

```

The attribute points out from which entity the incoming cell flow is received. Either it is coming from the working entity or from the protection entity."

REFERENCE

"ITU-T Recommendation I.630"

::= { atmfApsEpEntry 14 }

atmfApsEpBridgeStatus OBJECT-TYPE

SYNTAX INTEGER {
working(1),
protection(2),
both(3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This attribute indicates the bridge status of the APS End Point. The attribute points out to which entity(ies) the outgoing cell flow is sent. Either it is sent to the working entity or to the protection Entity at 1:1 protection, or to both entities at 1+1 protection."

::= { atmfApsEpEntry 15 }

atmfApsEpAvailabilityStatus OBJECT-TYPE

SYNTAX INTEGER {
fullyOperational(1),
degraded(2),
disabled(3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This attribute indicates the availability status of the APS End Point. When the APS End Point cannot provide it's service this attribute will be set to 'disabled'. If either the working or protection entity is out of service the attribute will be set to 'degraded'."

::= { atmfApsEpEntry 16 }

atmfApsEpTestTrailSignalId OBJECT-TYPE

SYNTAX SignalId

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This attribute indicates if the test trail is of VP or VC type.

When the test trail is of VPC type (this object is set to 'vp'), the following objects have to be specified at test trail creation :

-For the working test trail:

atmfApsEpTestTrailWorkingIf
atmfApsEpTestTrailWorkingVpi

-For the protection test trail:

atmfApsEpTestTrailProtectionIf
atmfApsEpTestTrailProtectionVpi

When the test trail is of VCC type (this object is set to 'vc'), the following objects have to be specified at test trail creation :

```

-For the working test trail:
  atmfApsEpTestTrailWorkingIf
  atmfApsEpTestTrailWorkingVpi
  atmfApsEpTestTrailWorkingVci

-For the protection test trail:
  atmfApsEpTestTrailProtectionIf
  atmfApsEpTestTrailProtectionVpi
  atmfApsEpTestTrailProtectionVci

```

```

"
 ::= { atmfApsEpEntry 17 }

```

atmfApsEpTestTrailWorkingIf OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the interface of the working test trail at group protection.

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection.

When a VCC test trail is created, the three objects :

- atmfApsEpTestTrailWorkingIf
- atmfApsEpTestTrailWorkingVpi
- atmfApsEpTestTrailWorkingVci

shall be included in one set operation so that the underlying VCC used to terminate the working test trail may be created.

When a VPC test trail is created, the two objects :

- atmfApsEpTestTrailWorkingIf
- atmfApsEpTestTrailWorkingVpi

shall be supplied in one set operation to create the test trail VPC."

REFERENCE

"ITU-T Recommendation I.630"

```
 ::= { atmfApsEpEntry 18 }
```

atmfApsEpTestTrailWorkingVpi OBJECT-TYPE

SYNTAX AtmVpIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the VPI of the working test trail at group protection.

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection."

REFERENCE

"ITU-T Recommendation I.630"

```
 ::= { atmfApsEpEntry 19 }
```

atmfApsEpTestTrailWorkingVci OBJECT-TYPE

SYNTAX AtmVcIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the VCI of the working test trail at group protection. This object shall not be used when the test trail is of VPC type (when the atmfApsEpTestTrailSignalId is set to 'vp')."

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection."

REFERENCE

"ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 20 }

atmfApsEpTestTrailProtectionIf OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the interface of the protection test trail at group protection."

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection."

When a VCC test trail is created, all three objects :

- atmfApsEpTestTrailProtectionIf
- atmfApsEpTestTrailProtectionVpi
- atmfApsEpTestTrailProtectionVci

shall be included in one set operation so that the underlying VCC used to terminate the protection test trail may be created.

When a VPC test trail is created, the two objects :

- atmfApsEpTestTrailProtectionIf
- atmfApsEpTestTrailProtectionVpi

shall be supplied in one set operation to create the test trail VPC."

REFERENCE

"ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 21 }

atmfApsEpTestTrailProtectionVpi OBJECT-TYPE

SYNTAX AtmVpIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the VPI of the protection test trail at group protection."

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection."

REFERENCE

"ITU-T Recommendation I.630"
 ::= { atmfApsEpEntry 22 }

atmfApsEpTestTrailProtectionVci OBJECT-TYPE

SYNTAX AtmVcIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object identifies the VCI of the protection test trail at group protection. This object shall not be used when the test trail is of VPC type (when the atmfApsEpTestTrailSignalId is set to 'vp')."

NOTE: The test trail objects must be specified prior to creating any objects in the atmfApsWpPairTable at group protection."

REFERENCE

"ITU-T Recommendation I.630"

::= { atmfApsEpEntry 23 }

atmfApsEpRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Indicates the status of this row. The object is used according to the standard procedures for object creation/deletion. To destroy an entry in this table all the objects corresponding to it in the atmfApsWpPairTable must be destroyed first."

::= { atmfApsEpEntry 24 }

-- The ATM APS Working Protection Pair table

atmfApsWpPairTable OBJECT-TYPE

SYNTAX SEQUENCE OF AtmfApsWpPairEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table contains the configured ATM APS working/protection pairs of the network element."

::= { atmfApsConnGroup 2 }

atmfApsWpPairEntry OBJECT-TYPE

SYNTAX AtmfApsWpPairEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" Each entry in this table represents a protected VP or VC connection.

In case of protection of a single connection there will be a one to one relationship between this entry and the corresponding atmfApsEpEntry.

Several entries in this table may be related to one atmfApsEpEntry in case of group protection. In this case the entries will use the same atmfApsWpEpIndex.

When a row in this table is created there must already exist two rows in the atmVclTable or atmVplTable that this entity may point at. These two entities shall be configured with the same traffic contract (traffic descriptors).

The two entities shall also be of the same type:

- if one Vpl is terminated (used for VC switching)

- the other Vpl shall be terminated as well.
- if one Vcl is terminated the other Vcl shall be terminated as well.
 - if one Vcl/Vpl is intended for cross-connection the other Vcl/Vpl shall have the same property.
 - if one Vcl/Vpl is a segment end point the other shall also be a segment end point etc.

```

"
INDEX      { atmfApsWpEpIndex,
             atmfApsWpPairWorkIf,
             atmfApsWpPairWorkVpi,
             atmfApsWpPairWorkVci,
             atmfApsWpPairProtIf,
             atmfApsWpPairProtVpi,
             atmfApsWpPairProtVci }
 ::= { atmfApsWpPairTable 1 }

```

```

AtmfApsWpPairEntry ::= SEQUENCE
{
    atmfApsWpEpIndex          Unsigned32,
    atmfApsWpPairWorkIf      InterfaceIndex,
    atmfApsWpPairWorkVpi     AtmVpIdentifier,
    atmfApsWpPairWorkVci     AtmVcIdentifier,
    atmfApsWpPairProtIf      InterfaceIndex,
    atmfApsWpPairProtVpi     AtmVpIdentifier,
    atmfApsWpPairProtVci     AtmVcIdentifier,
    atmfApsWpPairSignalId    SignalId,
    atmfApsWpPairRowStatus   RowStatus
}

```

```

atmfApsWpEpIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This object identifies the APS End Point to which this Working
        Protection Pair belongs."
    ::= { atmfApsWpPairEntry 1 }

```

```

atmfApsWpPairWorkIf OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object identifies the interface of the working entity VP or VC."
    ::= { atmfApsWpPairEntry 2 }

```

```

atmfApsWpPairWorkVpi OBJECT-TYPE
    SYNTAX      AtmVpIdentifier
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object identifies the VPI of the working entity (VP or VC)."
    ::= { atmfApsWpPairEntry 3 }

```

```

atmfApsWpPairWorkVci OBJECT-TYPE
    SYNTAX      AtmVcIdentifier

```

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object identifies the VCI of the working entity if a protected
    VC. In case of VP protection (atmfApsWpPairSignalId is set
    to 'vp') this object shall have the value 0. "
 ::= { atmfApsWpPairEntry 4 }

atmfApsWpPairProtIf OBJECT-TYPE
SYNTAX InterfaceIndex
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object identifies the interface of the protection entity
    (VP or VC). "
 ::= { atmfApsWpPairEntry 5 }

atmfApsWpPairProtVpi OBJECT-TYPE
SYNTAX AtmVpIdentifier
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object identifies the VPI of the protection entity (VP or VC). "
 ::= { atmfApsWpPairEntry 6 }

atmfApsWpPairProtVci OBJECT-TYPE
SYNTAX AtmVcIdentifier
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object identifies the VCI of the protection entity if a
    protected VC. In case of VP protection (atmfApsWpPairSignalId
    is set to 'vp') this object shall have the value 0. "
 ::= { atmfApsWpPairEntry 7 }

atmfApsWpPairSignalId OBJECT-TYPE
SYNTAX SignalId
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object indicates if the working-protection pair is of VP
    or VC type"
 ::= { atmfApsWpPairEntry 8 }

atmfApsWpPairRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "Indicates the status of this row. The object is used according
    to the standard procedures for object creation/deletion.

    Prior to creating an entry in this table an entry in the
    atmfApsEpTable must be created. There must also exist two
    entries in the atmVclTable or the atmVplTable (for the
    working and protection entity). "
 ::= { atmfApsWpPairEntry 9 }

```

-- The ATM APS Extra Traffic table

atmfApsExtraTrafTable OBJECT-TYPE

SYNTAX SEQUENCE OF AtmfApsExtraTrafEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table contains the configured ATM APS Extra Traffic entities associated with the the network element."

::= { atmfApsConnGroup 3 }

atmfApsExtraTrafEntry OBJECT-TYPE

SYNTAX AtmfApsExtraTrafEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" Each entry in this table represents a VP or VC connection used for extra traffic at 1:1 protection. The extra traffic entry is always configured to the protection interface. Several extra traffic connections may be associated with one atmfApsEpEntry (as long as their bandwidth does not exceed the bandwidth of the associated protection entity).

The connection may be of VPL,VPC,VCL or VCC type.

If the extra traffic connection is of VP type (atmfApsExTrafSignalId is set to 'vp') the VCI value shall be set to 0. The atmfApsEtrafProtectionIf and atmfApsExTrafVpi shall in this case point to an entry in the atmVplTable used for the extra traffic.

If the extra traffic connection is of VC type the atmfApsEtrafProtectionIf, atmfApsExTrafVpi and atmfApsExTrafVci shall point to an entry in the atmVclTable used for the extra traffic.

"

INDEX { atmfApsExTrafEpIndex,
atmfApsExTrafProtectionIf,
atmfApsExTrafVpi,
atmfApsExTrafVci }

::= { atmfApsExtraTrafTable 1 }

AtmfApsExtraTrafEntry ::= SEQUENCE

{	atmfApsExTrafEpIndex	Unsigned32,
	atmfApsExTrafProtectionIf	InterfaceIndex,
	atmfApsExTrafVpi	AtmVpIdentifier,
	atmfApsExTrafVci	AtmVcIdentifier,
	atmfApsExTrafSignalId	SignalId,
	atmfApsExTrafRowStatus	RowStatus
}		

atmfApsExTrafEpIndex OBJECT-TYPE

SYNTAX Unsigned32


```

MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "This object identifies the APS End Point to which this Extra
    Traffic entity belongs."
 ::= { atmfApsExtraTrafEntry 1 }

atmfApsExTrafProtectionIf OBJECT-TYPE
SYNTAX      InterfaceIndex
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This object identifies the interface index associated with
    the protection entity for which the extra traffic is configured."
 ::= { atmfApsExtraTrafEntry 2 }

atmfApsExTrafVpi OBJECT-TYPE
SYNTAX      AtmVpIdentifier
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This object identifies the VPI value of the Extra Traffic entity."
 ::= { atmfApsExtraTrafEntry 3 }

atmfApsExTrafVci OBJECT-TYPE
SYNTAX      AtmVcIdentifier
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This object identifies the VCI value of the Extra Traffic entity
    if it is a VC connection. If the Extra Traffic entity is of VP
    type (atmfApsExTrafSignalId is set to 'vp') this object shall
    have the value 0."
 ::= { atmfApsExtraTrafEntry 4 }

atmfApsExTrafSignalId OBJECT-TYPE
SYNTAX      SignalId
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This object indicates if this extra traffic entity is of VP
    or VC type."
 ::= { atmfApsExtraTrafEntry 5 }

atmfApsExTrafRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Indicates the status of this row. The object is used according
    to the standard procedures for object creation/deletion.

    Prior to creating an entry in this table an entry (or several at
    group protection ) in the atmfApsWpPairTable must be created.
    This is to allow identification of the protection interface and
    to enable check of the allocated bandwidth.
    There must also exist an entry in either the atmVclTable or the

```

```

        atmVplTable located at the protection interface to be associated
        with the extra traffic."
 ::= { atmfApsExtraTrafEntry 6 }

--
-- ATM APS Current Data tables
--

atmfApsStatisticsGroup OBJECT IDENTIFIER ::= { atmfApsMIBObjects 2 }

atmfApsCurrTable OBJECT-TYPE
    SYNTAX SEQUENCE OF AtmfApsCurrEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The ATM APS Current Data statistics table.

        This table maintains statistics for the ATM APS End
        Points displaying data for the fifteen-minute interval
        currently being collected."
 ::= { atmfApsStatisticsGroup 1 }

atmfApsCurrEntry OBJECT-TYPE
    SYNTAX AtmfApsCurrEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An entry in the ATM APS Current Data table
        holds statistics for a specific ATM APS End Point.

        Each ATM APS End Point automatically has
        an entry in this table associated with it."
    INDEX { atmfApsEpIndex }
 ::= { atmfApsCurrTable 1 }

AtmfApsCurrEntry ::= SEQUENCE {
    atmfApsCurrSuspect TruthValue,
    atmfApsCurrElapsedTime TimeInterval,
    atmfApsCurrSupprIntvls Counter32,
    atmfApsCurrFailSwOnSfSd Counter32,
    atmfApsCurrFailSwOnWtr Counter32,
    atmfApsCurrFailSwNearEnd Counter32,
    atmfApsCurrFailSwFarEnd Counter32,
    atmfApsCurrSuccessSwitch Counter32
}

atmfApsCurrSuspect OBJECT-TYPE
    SYNTAX TruthValue
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "If true, the statistics in this entry may be unreliable."
 ::= { atmfApsCurrEntry 1 }

atmfApsCurrElapsedTime OBJECT-TYPE
    SYNTAX TimeInterval

```

```

MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "Amount of time, measured in units of 0.01 second, that
    statistics for this entry (the current interval) have been
    counted."
 ::= { atmFapsCurrEntry 2 }

```

atmFapsCurrSupprIntvls OBJECT-TYPE

```

SYNTAX      Counter32
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "This attribute is non-zero only if the ATM NE is
    suppressing ATM APS History Data
    entry creation when the current interval terminates with
    'all-zeroes' performance measurements."
 ::= { atmFapsCurrEntry 3 }

```

atmFapsCurrFailSwOnSfSd OBJECT-TYPE

```

SYNTAX      Counter32
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    over after detection of Signal Degrade (SD) or Signal Fail (SF)."
```

```

 ::= { atmFapsCurrEntry 4 }

```

atmFapsCurrFailSwOnWtr OBJECT-TYPE

```

SYNTAX      Counter32
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    over after the wait-to-restore (WTR) timer has expired."
 ::= { atmFapsCurrEntry 5 }

```

atmFapsCurrFailSwNearEnd OBJECT-TYPE

```

SYNTAX      Counter32
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    at the near end after a switch at the far end for a protection
    entity configured for bi-directional protection switching."
 ::= { atmFapsCurrEntry 6 }

```

atmFapsCurrFailSwFarEnd OBJECT-TYPE

```

SYNTAX      Counter32
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    at the far end after a switch at the near end for a protection
    entity configured for bi-directional protection switching."
 ::= { atmFapsCurrEntry 7 }

```

```

atmfApsCurrSuccessSwitch OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of times the APS function has succeeded to do a
        switch at this end of the protected domain. The attribute
        counts switches from the working to the protection entity
        and vice versa."
    ::= { atmfApsCurrEntry 8 }

-- ATM APS History Data table

atmfApsHistTable OBJECT-TYPE
    SYNTAX SEQUENCE OF AtmfApsHistEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "This managed entity contains all the previously collected
        ATM APS Current data for the APS End Point managed entities

        Each entry in this table corresponds to a 15 minute interval
        of collected data."
    ::= { atmfApsStatisticsGroup 2 }

atmfApsHistEntry OBJECT-TYPE
    SYNTAX      AtmfApsHistEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the ATM APS History Data table for an
        ATM APS End Point.

        Each APS End Point will automatically get entries
        in this table associated with it."
    INDEX      { atmfApsEpIndex,
                 atmfApsHistIndex }
    ::= { atmfApsHistTable 1 }

AtmfApsHistEntry ::= SEQUENCE {
    atmfApsHistIndex      Integer32,
    atmfApsHistSuspect    TruthValue,
    atmfApsHistPeriodEndTime DateAndTime,
    atmfApsHistSupprIntvls Unsigned32,
    atmfApsHistFailSwOnSfSd Unsigned32,
    atmfApsHistFailSwOnWtr Unsigned32,
    atmfApsHistFailSwNearEnd Unsigned32,
    atmfApsHistFailSwFarEnd Unsigned32,
    atmfApsHistSuccessSwitch Unsigned32
}

atmfApsHistIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..96)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION

```

"A number between 1 and 96, which identifies the interval for which the set of statistics in this entry was collected.

The interval identified by 1 is the most recently completed 15 minute interval, and the interval identified by N is the interval immediately preceding the one identified by N-1."
 ::= { atmfApsHistEntry 1 }

atmfApsHistSuspect OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "If true, the statistics in this entry may be unreliable."
 ::= { atmfApsHistEntry 2 }

atmfApsHistPeriodEndTime OBJECT-TYPE

SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The date and time when the data of this entry was collected and put into this table."
 ::= { atmfApsHistEntry 3 }

atmfApsHistSupprIntvls OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "This attribute is non-zero only if the ATM NE is suppressing ATM APS History Data entry creation when the current interval terminates with 'all-zeroes' performance measurements."
 ::= { atmfApsHistEntry 4 }

atmfApsHistFailSwOnSfSd OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of times the APS function has failed to do a switch over after detection of Signal Degrade (SD) or Signal Fail (SF)."
 ::= { atmfApsHistEntry 5 }

atmfApsHistFailSwOnWtr OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of times the APS function has failed to do a switch over after the wait-to-restore (WTR) timer has expired."
 ::= { atmfApsHistEntry 6 }

atmfApsHistFailSwNearEnd OBJECT-TYPE

SYNTAX Unsigned32

```

MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    at the near end after a switch at the far end for a protection
    entity configured for bi-directional protection switching."
 ::= { atmfApsHistEntry 7 }

```

```

atmfApsHistFailSwFarEnd OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of times the APS function has failed to do a switch
    at the far end after a switch at the near end for a protection
    entity configured for bi-directional protection switching."
 ::= { atmfApsHistEntry 8 }

```

```

atmfApsHistSuccessSwitch OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of times the APS function has succeeded to do a
    switch at this end of the protected domain. The attribute
    counts switches from the working to the protection entity
    and vice versa."
 ::= { atmfApsHistEntry 9 }

```

-- ATM APS Traps

```

atmfApsMIBTrapsPrefix OBJECT IDENTIFIER ::= { atmfApsMIB 2 }
atmfApsMIBTraps OBJECT IDENTIFIER ::= { atmfApsMIBTrapsPrefix 0 }

```

-- ATM APS End Point notifications

```

atmfApsFailToSwitchInfo OBJECT-TYPE
SYNTAX AtmfApsFailToSwitchType
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "If the ATM APS function fails to switch
    when a APS trigger occurs, this object will
    contain which type of failure that is
    experienced."
 ::= { atmfApsMIBTraps 9 }

```

```

atmfApsEpStatusChange NOTIFICATION-TYPE
OBJECTS {
    atmfApsEpIndex,
    atmfApsEpApsRequestList,
    atmfApsEpSelectorStatus,

```

```

        atmfApsEpBridgeStatus,
        atmfApsEpAvailabilityStatus
    }
STATUS      current
DESCRIPTION
    "This trap will be sent as soon as any of the status objects of the
    ATM APS End Point changes."
 ::= { atmfApsMIBTraps 1}

atmfApsEpProtSwFailNotif NOTIFICATION-TYPE
OBJECTS     {
    atmfApsEpIndex,
    atmfApsEpApsRequestList,
    atmfApsEpSelectorStatus,
    atmfApsEpBridgeStatus,
    atmfApsEpAvailabilityStatus,
    atmfApsFailToSwitchInfo
}
STATUS      current
DESCRIPTION
    "This trap will be sent when a protection switching failure has
    occurred. The trap shall be sent in the following situations:
    - At local failure to switch after detection of Signal Fail or
      Signal Degrade.
    - At local failure to switch after expiration of the
      wait-to-restore timer.
    - At local failure to switch after a switch in the far end
      (at bi-directional protection switching). In this case the
      trap shall be sent after a time period allowing 3 lost
      OAM APS coordination cells.
    The atmfApsFailToSwitchInfo will indicate which of the faults
    above that has occurred."
 ::= { atmfApsMIBTraps 2}

-- Object creation and deletion notification traps

atmfApsEpCreated NOTIFICATION-TYPE
OBJECTS     { atmfApsEpIndex }
STATUS      current
DESCRIPTION
    "Indicates that an ATM APS End Point managed entity has been
    created."
 ::= { atmfApsMIBTraps 3 }

atmfApsEpDeleted NOTIFICATION-TYPE
OBJECTS     { atmfApsEpIndex }
STATUS      current
DESCRIPTION
    "Indicates that an ATM APS End Point managed entity has been
    deleted."
 ::= { atmfApsMIBTraps 4 }

atmfApsWpPairCreated NOTIFICATION-TYPE
OBJECTS     { atmfApsWpEpIndex }

```

```

STATUS      current
DESCRIPTION
    "Indicates that an ATM APS Working Protection Pair managed
    entity has been created."
 ::= { atmfApsMIBTraps 5 }

atmfApsWpPairDeleted NOTIFICATION-TYPE
OBJECTS
    { atmfApsWpEpIndex }
STATUS      current
DESCRIPTION
    "Indicates that an ATM APS Working Protection Pair managed
    entity has been deleted."
 ::= { atmfApsMIBTraps 6 }

atmfApsExTrafCreated NOTIFICATION-TYPE
OBJECTS
    { atmfApsExTrafEpIndex }
STATUS      current
DESCRIPTION
    "Indicates that an ATM APS Extra Traffic managed
    entity has been created."
 ::= { atmfApsMIBTraps 7 }

atmfApsExTrafDeleted NOTIFICATION-TYPE
OBJECTS
    { atmfApsExTrafEpIndex }
STATUS      current
DESCRIPTION
    "Indicates that an ATM APS Extra Traffic managed
    entity has been deleted."
 ::= { atmfApsMIBTraps 8 }

-- conformance information

atmfApsMIBConformance
    OBJECT IDENTIFIER ::= { atmfApsMIB 3 }

atmfApsMIBCompliances
    OBJECT IDENTIFIER ::= { atmfApsMIBConformance 1 }

atmfApsMIBGroups
    OBJECT IDENTIFIER ::= { atmfApsMIBConformance 2 }

-- compliance statements

atmfApsMIBCompliance MODULE-COMPLIANCE
STATUS      current
DESCRIPTION
    "The compliance statement for entities which implement the
    ATM APS protection functionality."
MODULE      -- this module
MANDATORY-GROUPS
    { atmfApsEpGroup,
      atmfApsWpPairGroup,

```



```

        atmfApsCurrDataGroup,
        atmfApsHistDataGroup,
        atmfApsAlarmTCGroup,
        atmfApsNotificationsGroup
    }

GROUP atmfApsExTrafGroup
DESCRIPTION
    "This group shall be included when ATM APS Extra Traffic is supported"

GROUP atmfApsEpTriggerGroup
DESCRIPTION
    "This group shall be included when configuration of ATM APS trigger
    mechanism is supported."

 ::= { atmfApsMIBCompliances 1 }

-- units of conformance

atmfApsEpGroup OBJECT-GROUP
    OBJECTS {
        atmfApsEpIndex,
        atmfApsEpProtScheme,
        atmfApsEpProtDirection,
        atmfApsEpProtMode,
        atmfApsEpGroupIndicator,
        atmfApsEpCouplIndicator,
        atmfApsEpHoldOffTimer,
        atmfApsEpWtrTimer,
        atmfApsEpManualRequest,
        atmfApsEpApsRequestList,
        atmfApsEpCurrentK1Byte,
        atmfApsEpCurrentK2Byte,
        atmfApsEpSelectorStatus,
        atmfApsEpBridgeStatus,
        atmfApsEpAvailabilityStatus,
        atmfApsEpTestTrailSignalId,
        atmfApsEpTestTrailWorkingIf,
        atmfApsEpTestTrailWorkingVpi,
        atmfApsEpTestTrailWorkingVci,
        atmfApsEpTestTrailProtectionIf,
        atmfApsEpTestTrailProtectionVpi,
        atmfApsEpTestTrailProtectionVci,
        atmfApsEpRowStatus
    }
    STATUS current
    DESCRIPTION
        "A collection of objects required for the ATM APS End Point managed
        entity."
    ::= { atmfApsMIBGroups 1 }

atmfApsEpTriggerGroup OBJECT-GROUP
    OBJECTS {
        atmfApsEpTriggers
    }

```

```

STATUS      current
DESCRIPTION
    "This group contains the optional objects that need to be implemented
    when configuration of ATM APS triggering mechanism is supported for
    the ATM APS End Point."
 ::= { atmfApsMIBGroups 2 }

atmfApsWpPairGroup OBJECT-GROUP
OBJECTS {
    atmfApsWpPairSignalId,
    atmfApsWpPairWorkIf,
    atmfApsWpPairWorkVpi,
    atmfApsWpPairWorkVci,
    atmfApsWpPairProtIf,
    atmfApsWpPairProtVpi,
    atmfApsWpPairProtVci,
    atmfApsWpPairRowStatus
}
STATUS      current
DESCRIPTION
    "A collection of objects used in the ATM APS Working Protection
    Pair managed entity. "
 ::= { atmfApsMIBGroups 3 }

atmfApsExTrafGroup OBJECT-GROUP
OBJECTS {
    atmfApsExTrafSignalId,
    atmfApsExTrafProtectionIf,
    atmfApsExTrafVpi,
    atmfApsExTrafVci,
    atmfApsExTrafRowStatus
}
STATUS      current
DESCRIPTION
    "A collection of objects used for the optional Extra Traffic
    managed entity. "
 ::= { atmfApsMIBGroups 4 }

atmfApsCurrDataGroup OBJECT-GROUP
OBJECTS {
    atmfApsCurrSuspect,
    atmfApsCurrElapsedTime,
    atmfApsCurrSupprIntvls,
    atmfApsCurrFailSwOnSfSd,
    atmfApsCurrFailSwOnWtr,
    atmfApsCurrFailSwNearEnd,
    atmfApsCurrFailSwFarEnd,
    atmfApsCurrSuccessSwitch
}
STATUS      current
DESCRIPTION
    "A collection of objects used in the ATM APS Current Data
    managed entity. "
 ::= { atmfApsMIBGroups 5 }

atmfApsHistDataGroup OBJECT-GROUP
OBJECTS {

```

```
        atmfApsHistSuspect,
        atmfApsHistPeriodEndTime,
        atmfApsHistSupprIntvls,
        atmfApsHistFailSwOnSfSd,
        atmfApsHistFailSwOnWtr,
        atmfApsHistFailSwNearEnd,
        atmfApsHistFailSwFarEnd,
        atmfApsHistSuccessSwitch
    }
STATUS      current
DESCRIPTION
    "A collection of objects used in the ATM APS History Data
    managed entity. "
 ::= { atmfApsMIBGroups 6 }

atmfApsAlarmTCGroup OBJECT-GROUP
    OBJECTS {
        atmfApsFailToSwitchInfo }
    STATUS      current
    DESCRIPTION
        "Objects used in the atmfApsEpProtSwFailNotif notification."
    ::= { atmfApsMIBGroups 7 }

atmfApsNotificationsGroup NOTIFICATION-GROUP
    NOTIFICATIONS
        { atmfApsWpPairDeleted,
          atmfApsWpPairCreated,
          atmfApsEpDeleted,
          atmfApsEpCreated,
          atmfApsExTrafDeleted,
          atmfApsExTrafCreated,
          atmfApsEpStatusChange,
          atmfApsEpProtSwFailNotif
        }
    STATUS      current
    DESCRIPTION
        "The ATM APS notification list."
    ::= { atmfApsMIBGroups 8 }

END
```

5 References

- [1] af-nm-0183.000 : ATM APS Requirements and Logical MIB, March 2002
- [2] ITU-T Recommendation I.630 : ATM Protection Switching, February 1999
- [3] IETF RFC2515 : Definitions of Managed Objects for ATM Management', February 1999
- [4] IETF RFC1695 : Definitions of Managed Objects for ATM Management Version 8.0 using SMIV2, August 1994 (Superseded by RFC2515).
- [5] IETF RFC2514 : Definitions of Textual Conventions and OBJECT-IDENTITIES for ATM management, February 1999.
- [6] IETF RFC2578 : Structure of Management Information version 2 (SMIV2), April 1999.
- [7] IETF RFC2580 : Conformance Statements for SMIV2, April 1999.
- [8] IETF RFC2579 : Textual conventions for SMIV2, April 1999.
- [9] IETF RFC2863 : The Interfaces Group MIB, June 2000.