

Pseudo Wire Edge to Edge Emulation
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Managed Objects for ATM over Packet Switched Network (PSN)
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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for modeling ATM Pseudowire (PW) carrying ATM cells over Packet Switch Network (PSN).

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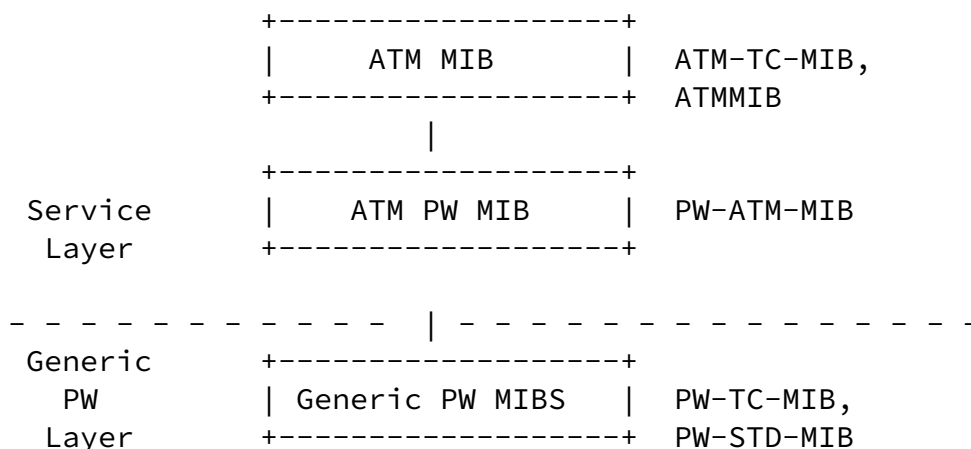
1. Introduction

This document describes a model for managing "emulated" ATM services over a Packet Switched Network(PSN).

The document follows the requirements for Pseudo-Wire Emulation Edge-to-Edge [[PWREQ](#)], and closely related to [[ATMENCAP](#)] and [[ATMTRANS](#)] which describe the encapsulation of ATM signals and provide the Emulation Service over a Packet Switched Network.

The ATM management model consists of several MIB modules, following the layering model described in the PWE3 Architecture [[PWARCH](#)] document. The ATM MIB module described in this document works closely with the MIB modules described in [[AToMTC](#)], [[AToM](#)], [[IFMIB](#)], [[PWMIB](#)] and the textual conventions defined in [[PWTC](#)]. The conceptual layering and relationship among all those is described in Figure 1 and in the "Relation to other PW-MIB modules" section listed below. AN ATM connection will be a pseudo-wire (PW) connection. It will not be treated as an interface and will therefore not be represented in the ifTable.

Figure 1:Conceptual Layering



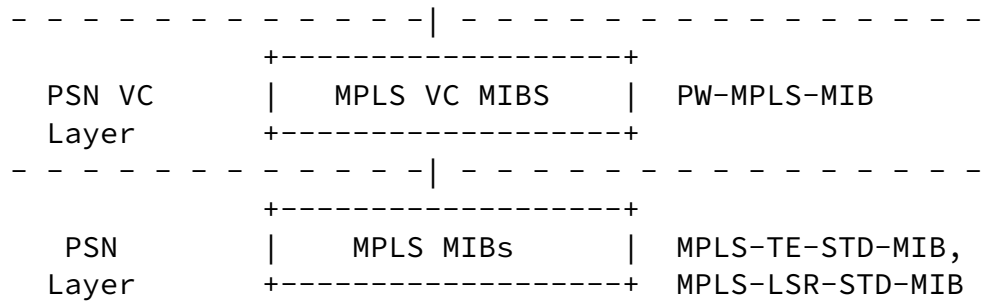


Figure 1

Comments should be made directly to PWE3 group at pwe3@ietf.org.

2. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[BCP14](#)].

3. Terminology

This document follows the terminology used in PW Architecture [[PWARCH](#)].

| | |
|-----------|---|
| PSN bound | References the traffic direction where a ATM Cell is received, adapted to packet, assigned a PW label, and sent into the PSN. Within the MIB objects it is called outbound. |
| CE bound | The direction where packets are received from the PSN, cells are reconstructed from the packet payloads, and sent into the ATM Network as cells. Within the MIB objects it is called inbound. |

| | |
|------------|---|
| Adaptation | Refers to the method of adapting a "foreign" communications protocol such that it can be carried by a packet switched net (the PSN). For example, in a ATM service the foreign protocol is ATM. The PSN may be MPLS. |
| PSN | Packet Switched Network. |
| PSN Tunnel | A general term indicating a virtual connection between the two PW edge devices. In practice this connection is not limited to path-oriented types of PSNs such as MPLS. An example of a non-path-oriented PSN is an IP PSN. |

[4.](#) The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7](#) of

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[RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

[5.](#) Overview

This MIB module is designed to satisfy the following requirements and constraints:

- o - Fit within the architecture defined by [[PWARCH](#)] and [[PWMIB](#)].
- o - Fit within the model for VP/VC definitions and management concept as defined in the [[AToM](#)] MIB.
- o - Supports manually configured ATM PWs
- o - Supports automatically configured ATM PWs
- o - The MIB module enables the use of any PSN type

- o - The MIB module supports point-to-point ATM PW connections. Point-to-multipoint and multipoint-to-point connections are for future study.
- o - The MIB module allows configuration of all the parameters needed to establish a PW to carry ATM cells.
- o - The MIB module reports: ATM performance metrics for the ATM PW. This includes cells transmit, Cells dropped, Cells received, and unknownCells. In addition it reports performance metrics at packet level.
- o - ATM OAM cell support.
- o - The MIB module does not consider ILMI support

6. Relation to other PW-MIB modules

The MIB structure for defining a PW service is composed of three layers of MIB modules functioning together. This general model is defined in the PWE3 Architecture [[PWARCH](#)]. The layering model is intended to sufficiently isolate PW services from the underlying PSN layer that carries the emulated service. This is done at the same time as providing a standard means for connecting any supported services to any supported PSNs.

The first layer known as the service layer contains service-specific modules such as the one defined in this document. These modules define service-specific management objects that interface or

collaborate with existing MIB modules for the native version of the service. The service-specific module "glues" the standard module to the PWE MIB framework.

The next layer of the PWE MIB framework is comprised of the PW-MIB module [[PWMIB](#)]. This module is used to configure general parameters of PW connections that are common to all types of emulated services and PSNs. This layer is connected to the service-specific layer above, and the PSN layer below.

The PSN layer provides PSN-specific modules for each type of PSN. These modules associate the PW with one or more "tunnels" that carry the service over the PSN. These modules are defined in other documents. This module is used to "glue" the PW service to the underlying PSN-specific MIB modules. In the case of MPLS, for

example, the PW-MPLS MIB [[PWMPPLSMIB](#)] is used to connect the PW service to either the MPLS-LDP [[LDPMIB](#)] or MPLS-TE [[TEMIB](#)] MIBs.

[PWTC] defines some of the object types used in these modules.

[7.](#) ATM-PW MIB Usage

This section provides an example of using the MIB objects described in [section 9](#) to set up an ATM PW. While this example is not meant to illustrate every permutation of the MIB, it is intended as an aid in the understanding of some key concepts. It is meant to be read after going through the MIB itself. See [[PWMIB](#)] for an example of setting up a PSN Tunnel.

The following example illustrates how a user will set up an AAL5 ATM PW on a switch/router with cells entering the switch/router through ATM Interface with IfIndex 1000 [[IFMIB](#)], VPI 1 and VCI 100 (from ATM Network to PSN - outbound direction) and on the way back, it goes out of the switch/router through ATM Interface 1000 with VPI 1 and VCI 100 (PSN to ATM Network - inbound direction)

First create an entry in PW MIB with pwType atmAal5SduVcc(2), then create entries in pwAtmCfg table, inbound and outbound tables.

In PW ATM MIB

In pwAtmCfgTable:

pwAtmCfgMaxCellConcatenation 29

pwAtmCfgTimeoutMode enabled(3)

pwAtmClpQosMapping false(0) --CLP will not be mapped to QoS

pwAtmOamCellSupported true(1) --OAM cells will be supported

```

In pwAtmOutboundTable:
{
    pwAtmOutboundAtmIf          1000    --Outbound AtmIf
    pwAtmOutboundVpi            1        --Outbound VPI
    pwAtmOutboundVci            100      --Outbound VCI
    pwAtmOutboundTrafficParamDescr 0.0    --Best Effort
    pwAtmOutboundRowStatus      createAndGo
}

```

```

In pwAtmInboundTable
{
    pwAtmInboundAtmIf          1000 --Inbound AtmIf
    pwAtmInboundVpi            1     --Inbound VPI
    pwAtmInboundVci            100   --Inbound VCI
    pwAtmInboundTrafficParamDescr 0.0 --Best Effort
    pwAtmInboundRowStatus      createAndGo
}

```

8. Structure of the MIB module

This MIB consists of 4 types of tables;

It is important to note that the TrafficParamDescr Table is not defined as part of this MIB although an object pointing to such table entry exist in all configuration tables of this MIB module. Users can refer to any ATM TrafficDescr (TD) Table if there is a need to overwrite the TD assigned to the ATM endpoint in the ATM service MIB [[AToM](#)].

- PW ATM Cfg Table A table for generic parameters for ATM PW configuration that is applicable for each ATM PW.
- PW ATM Outbound Table There are 2 tables to configure an outbound ATM PW depending on the type of service. One table for 1: 1 service, and the other for N:1 service and transparent cell mode [[ATMTRANS](#)].
- PW ATM Inbound Table There are 2 tables to configure an inbound ATM PW depending on the type of service. One table for 1: 1 service, and the other for N:1 service and transparent cell mode.

- PW ATM Perf Table There are 3 tables each contains the relevant

time dependent statistics for an ATM PW Entry. There is a current table, 15 minutes interval table and one day interval table. The tables are aligned with statistic model of other PW services.

9. Object definition

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

```
IMPORTS
```

```
MODULE-IDENTITY, OBJECT-TYPE,  
Counter32, Unsigned32, mib-2  
FROM SNMPv2-SMI
```

```
MODULE-COMPLIANCE, OBJECT-GROUP  
FROM SNMPv2-CONF
```

```
TruthValue, RowStatus, RowPointer  
FROM SNMPv2-TC
```

```
PerfCurrentCount, PerfIntervalCount  
FROM PerfHist-TC-MIB
```

```
InterfaceIndex  
FROM IF-MIB
```

```
pwIndex  
FROM PW-STD-MIB
```

```
AtmVpIdentifier, AtmVcIdentifier  
FROM ATM-TC-MIB;
```

```
pwAtmMIB MODULE-IDENTITY
```

```
LAST-UPDATED "200804290000Z" -- 2008
```

```
ORGANIZATION "Pseudo-Wire Emulation Edge-to-Edge (PWE3)  
Working Group"
```

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Discussion and general questions should be posed to
the PWE3 Working Group (pwe3@ietf.org)."

DESCRIPTION

"This MIB contains managed object definitions for
Pseudo Wire emulation of ATM over Packet Switched
Networks (PSN).

This MIB supplements the PW-STD-MIB module.
The PW-STD-MIB contains structures and MIB associations
generic to Pseudo-Wire (PW) emulation. PW-specific
MIBs (such as this) contain config and stats for specific
PW types.

Copyright (C) The IETF Trust (2008). This version of
this MIB module is part of RFC XXXX; see the RFC itself for
full legal notices.

-- RFC Ed.: replace XXXX with actual RFC number & remove this
note"

-- Revision history.

REVISION "200804290000Z" -- 2008

DESCRIPTION "Initial version published as RFC XXXX."

-- RFC Ed.: replace XXXX with actual RFC number & remove this
-- note"

```
 ::= { mib-2 YYY }  
-- RFC Editor: replace YYY with IANA-assigned number & remove this
```

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```
-- note. Please see IANA considerations section.
```

```
-- Top-level components of this MIB
```

```
pwAtmNotifications OBJECT IDENTIFIER ::= { pwAtmMIB 0 }  
pwAtmObjects        OBJECT IDENTIFIER ::= { pwAtmMIB 1 }  
pwAtmConformance    OBJECT IDENTIFIER ::= { pwAtmMIB 2 }
```

```
-- ATM PW PSN Bound(Outbound) Table for 1 to 1 connection
```

```
pwAtmOutboundTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF PwAtmOutboundEntry
```

```
MAX-ACCESS      not-accessible
```

```
STATUS          current
```

```
DESCRIPTION
```

```
    "This table specifies the information for an ATM PW to  
    be carried over PSN in the outbound direction. An  
    entry is created in this table for every entry in  
    the pwTable with a pwType equal to one of the following:  
    atmAal5SduVcc(2), atmCell1to1Vcc(12), atmCell1to1Vpc(13)  
    or atmAal5PduVcc(14), or atmTransparent(3)."
```

```
 ::= { pwAtmObjects 1 }
```

```
pwAtmOutboundEntry OBJECT-TYPE
```

```
SYNTAX      PwAtmOutboundEntry
```

```
MAX-ACCESS      not-accessible
```

```
STATUS          current
```

```
DESCRIPTION
```

```
    "A row in this table represents an ATM PW that needs to be  
    adapted and carried over PSN. This table is indexed by  
    pwIndex from pwTable. Unless otherwise specified, all  
    writable objects in this table MUST NOT be changed after  
    row activation in the generic pwTable and values must  
    persist after reboot."
```

```
REFERENCE
```

```
    "See [PWMIB] "
```

```
INDEX { pwIndex }  
 ::= { pwAtmOutboundTable 1 }
```

```
PwAtmOutboundEntry ::= SEQUENCE {  
    pwAtmOutboundAtmIf          InterfaceIndex,  
    pwAtmOutboundVpi            AtmVpIdentifier,  
    pwAtmOutboundVci            AtmVcIdentifier,  
    pwAtmOutboundTrafficParamDescr RowPointer,  
    pwAtmOutboundRowStatus      RowStatus  
}
```

```
pwAtmOutboundAtmIf OBJECT-TYPE  
    SYNTAX      InterfaceIndex  
    MAX-ACCESS  read-create  
    STATUS      current  
    DESCRIPTION  
        "The ATM Interface that receives cells from the ATM  
        network."  
    ::= { pwAtmOutboundEntry 1 }
```

```
pwAtmOutboundVpi OBJECT-TYPE  
    SYNTAX      AtmVpIdentifier  
    MAX-ACCESS  read-create  
    STATUS      current  
    DESCRIPTION  
        "VPI value of this ATM PW. The value may indicate the  
        translated value when egress generates new VPI."  
    ::= { pwAtmOutboundEntry 2 }
```

```
pwAtmOutboundVci OBJECT-TYPE  
    SYNTAX      AtmVcIdentifier  
    MAX-ACCESS  read-create  
    STATUS      current  
    DESCRIPTION  
        "VCI value of this ATM PW. The value may indicate the
```

```
translated value when egress generates new VCI."
 ::= { pwAtmOutboundEntry 3 }
```

pwAtmOutboundTrafficParamDescr OBJECT-TYPE

```
SYNTAX      RowPointer
MAX-ACCESS  read-create
STATUS      current
```

DESCRIPTION

"This object represents a pointer to an ATM traffic parameter specific row in either a private or standard table which will be employed while receiving cells from the ATM network. This row should contain a set of self-consistent ATM traffic parameters including the ATM traffic service category. A value of 0.0 indicates Best Effort"

```
 ::= { pwAtmOutboundEntry 4 }
```

pwAtmOutboundRowStatus OBJECT-TYPE

```
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
```

DESCRIPTION

"This Object is used to create, modify or delete a row in this table. Unless otherwise specified, all writeable objects in this table MUST NOT be changed after row activation as explained in the pwAtmOutboundEntry "

```
 ::= { pwAtmOutboundEntry 5 }
```

-- End of ATM PW Outbound Table

-- ATM PW CE Bound(Inbound) Table for 1 to 1 mode

pwAtmInboundTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF PwAtmInboundEntry
MAX-ACCESS  not-accessible
STATUS      current
```

DESCRIPTION

"This table specifies the information for an ATM PW in the Inbound direction."

```
 ::= { pwAtmObjects 3 }
```

pwAtmInboundEntry OBJECT-TYPE

SYNTAX PwAtmInboundEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A row in this table represents an ATM PW that needs to be sent into the ATM Network after reconstructing cells from Packets received from a PSN. This table is indexed by pwIndex from pwTable. An entry is created in this table for every entry in the pwTable with a pwType equal to one of the following: atmAal5SduVcc(2), atmCell1to1Vcc(12), atmCell1to1Vpc(13,) or atmAal5PduVcc(14), or atmTransparent(3). Unless otherwise specified, all writeable objects in this table MUST NOT be changed after row activation in the generic pwTable and values must persist after reboot."

REFERENCE

"See [[PWMIB](#)] "

INDEX { pwIndex }

::= { pwAtmInboundTable 1 }

```
PwAtmInboundEntry ::= SEQUENCE {  
    pwAtmInboundAtmIf      InterfaceIndex,  
    pwAtmInboundVpi        AtmVpIdentifier,  
    pwAtmInboundVci        AtmVcIdentifier,  
    pwAtmInboundTrafficParamDescr  RowPointer,  
    pwAtmInboundRowStatus   RowStatus  
}
```

pwAtmInboundAtmIf OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The ATM Interface that sends cells into the ATM network after reconstructing cells from packets received from a PSN."

::= { pwAtmInboundEntry 1 }

pwAtmInboundVpi OBJECT-TYPE
 SYNTAX AtmVpIdentifier
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "VPI value of this ATM PW.
 If the pwType is atmTransparent then the value will
 be set to zero."
 ::= { pwAtmInboundEntry 2 }

pwAtmInboundVci OBJECT-TYPE
 SYNTAX AtmVcIdentifier
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "VCI value of this ATM PW.
 If the pwType is atmTransparent atmCell1to1Vpc or
 atmCellNto1Vpc then the value will be set to zero."
 ::= { pwAtmInboundEntry 3 }

pwAtmInboundTrafficParamDescr OBJECT-TYPE
 SYNTAX RowPointer
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object represents a pointer to a ATM traffic parameter
 specific row in either a private or standard table which will
 be employed while transmit into the ATM network. This table
 contains a set of self-consistent ATM traffic parameters
 including the ATM traffic service category. A value of 0.0
 indicates Best Effort."

```

        ::= { pwAtmInboundEntry 4 }

pwAtmInboundRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "This Object is used to create, modify or delete a row in
        this table. Unless otherwise specified, all writeable
        objects in this table MUST NOT be changed after row
        activation as explained in the pwAtmInboundEntry "
        ::= { pwAtmInboundEntry 5 }

-- End of ATM PW Inbound Table

--Generic ATM PW table for all types of ATM PW connection.

pwAtmCfgTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PwAtmCfgEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table specifies generic information for an ATM PW
        to be carried over PSN in any mode."
        ::= { pwAtmObjects 5 }

```

```

pwAtmCfgEntry OBJECT-TYPE
    SYNTAX      PwAtmCfgEntry
    MAX-ACCESS   not-accessible
    STATUS       current

```


DESCRIPTION

"This table contains a set of parameters for the ATM PW that needs to be adapted and carried over PSN. This table is indexed by pwIndex from pwTable. An entry is created for every newly ATM type associated pwIndex in the pwTable. Unless otherwise specified, all read-write objects in this table MAY be changed when the PW is defined as not active and all RW objects values must persist after reboot"

REFERENCE

"See [[PWMIB](#)] "

INDEX { pwIndex }
 ::= { pwAtmCfgTable 1 }

PwAtmCfgEntry ::= SEQUENCE {
 pwAtmCfgMaxCellConcatenation Unsigned32,
 pwAtmCfgFarEndMaxCellConcatenation Unsigned32,
 pwAtmCfgTimeoutMode INTEGER,
 pwAtmClpQosMapping TruthValue
 }

pwAtmCfgMaxCellConcatenation OBJECT-TYPE

SYNTAX Unsigned32 (1..29)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The maximum number of ATM cells that can be concatenated into one PW packet towards PSN. In non LDP or other signaling protocol environment, this object MAY be changed at anytime, but traffic might be interrupted, otherwise, it may be changed when PW is not active."

::= { pwAtmCfgEntry 1 }

pwAtmCfgFarEndMaxCellConcatenation OBJECT-TYPE

SYNTAX Unsigned32 (1..29)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The maximum number of ATM cells that can be concatenated into one PW packet towards PSN as reported by the far end. If no LDP in use, the object will either return value 0 or allow setting it for calculating protocol overhead."

::= { pwAtmCfgEntry 2 }

pwAtmCfgTimeoutMode OBJECT-TYPE

SYNTAX INTEGER

{
notApplicable (1),
disabled (2),
enabled (3)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This objects determines whether a packet can be transmitted to the PSN based on time out expiration for collecting cells or not. The actual handling of the time out is implementation specific-as such this object may be changed at any time under proper consideration of traffic interruption effect."

::= { pwAtmCfgEntry 3 }

pwAtmClpQosMapping OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This Object indicates whether the CLP bits should be considered when setting the value in the Quality of Service fields of the encapsulating protocol (e.g. EXP fields of the MPLS Label Stack). Selecting True allows the drop precedence to be preserved across the PSN. In transparent cell transport, the value of this object MUST be false(2), in other cases it can be changed at any time."

REFERENCE

"See [[ATMENCAP](#)] [section 12](#)"

::= { pwAtmCfgEntry 4 }

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```
-- Device capable of implementing N:1, 1:1 and transparent cell
-- mode assumes to support the N:1 table for all
-- modes with respective applicable setting.
-- In such implementation, user can create an entry for either
-- 1:1 or transparent cell transport modes only
-- in pwAtmInboundNto1Table. The side effect of such
-- will be an automatic create of the respective line in the
-- pwAtmOutboundNto1Table.
```

```
-- ATM PW Outbound Table for N to 1 connection
```

```
pwAtmOutboundNto1Table OBJECT-TYPE
```

```
    SYNTAX      SEQUENCE OF PwAtmOutboundNto1Entry
```

```
    MAX-ACCESS   not-accessible
```

```
    STATUS       current
```

```
    DESCRIPTION
```

```
        "This table specifies the information for an ATM PW to
        be carried over PSN in the outbound direction. Up to
        N entries can be created in this table for every
        entry in the pwTable with a pwType equal to:
        atmCellNto1Vcc(9), or atmCellNto1Vpc(10).
```

```
        An entry can be created only when the VP/VC are known.
        A single entry will be created in this table for every
        entry in the pwTable with a pwType equal to
        one of the following: atmCell1to1Vcc(12), or
        atmCell1to1Vpc(13), or atmAal5PduVcc(14), or
        atmAal5SduVcc(2), or atmTransparent(3).
        "
```

```
 ::= { pwAtmObjects 6 }
```

```
pwAtmOutboundNto1Entry OBJECT-TYPE
```

```
    SYNTAX      PwAtmOutboundNto1Entry
```

```
    MAX-ACCESS   not-accessible
```

```
    STATUS       current
```

```
    DESCRIPTION
```

```
        "A row in this table represents an ATM PW that needs to be
        adapted and carried over PSN. This table is indexed by
        pwIndex from pwTable and the ATM interface with VPL/ VCLs.
        In atmTransparent(3), Vpi and Vci will be 0xFFFF
        during set operation.
```

Unless otherwise specified, all read-create objects in this table MUST NOT be changed after row activation and SHOULD remain unchanged after reboot."

```

INDEX { pwIndex, pwAtmOutboundNto1AtmIf ,
        pwAtmOutboundNto1Vpi,
        pwAtmOutboundNto1Vci  }
 ::= { pwAtmOutboundNto1Table 1 }

```

```

PwAtmOutboundNto1Entry ::= SEQUENCE {
    pwAtmOutboundNto1AtmIf      InterfaceIndex,
    pwAtmOutboundNto1Vpi        AtmVpIdentifier,
    pwAtmOutboundNto1Vci        AtmVcIdentifier,
    pwAtmOutboundNto1RowStatus  RowStatus,
    pwAtmOutboundNto1TrafficParamDescr RowPointer,
    pwAtmOutboundNto1MappedVpi  AtmVpIdentifier,
    pwAtmOutboundNto1MappedVci  AtmVcIdentifier
}

pwAtmOutboundNto1AtmIf OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ATM Interface that receives cells from the ATM network."
    ::= { pwAtmOutboundNto1Entry 1 }

pwAtmOutboundNto1Vpi OBJECT-TYPE
    SYNTAX      AtmVpIdentifier
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "VPI value of this ATM PW. In atmTransparent(3),
        Vpi will be the equivalent of 0xFFFF"
    ::= { pwAtmOutboundNto1Entry 2 }

pwAtmOutboundNto1Vci OBJECT-TYPE
    SYNTAX      AtmVcIdentifier
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "VCI value of this ATM PW. In atmTransparent(3), or

```

VP case, the value will be the equivalent of
0xFFFF"
 ::= { pwAtmOutboundNto1Entry 3 }

pwAtmOutboundNto1RowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"This Object is used to create, modify or delete a row in
this table."

::= { pwAtmOutboundNto1Entry 4 }

pwAtmOutboundNto1TrafficParamDescr OBJECT-TYPE

SYNTAX RowPointer
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"This object represents a pointer to a ATM traffic parameter
specific row in either private or standard table which will
be employed while receiving cells from the ATM network.
This table should contain a set
of self-consistent ATM traffic parameters including the ATM
traffic service category. A value of 0.0 indicates Best
Effort."

::= { pwAtmOutboundNto1Entry 5 }

pwAtmOutboundNto1MappedVpi OBJECT-TYPE

SYNTAX AtmVpIdentifier
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"The egress generated VPI value of this ATM PW. The
entry is valid for PW type of atmCellNto1Vcc(9),
atmCellNto1Vpc(10), atmCelllto1Vcc(12), or
atmCelllto1Vpc(13). In other types, the value will be the
equivalent of 0xFFFF. Value MAY be changed when the
PW is defined as not active "

```
::= { pwAtmOutboundNto1Entry 6 }
```

pwAtmOutboundNto1MappedVci OBJECT-TYPE

SYNTAX AtmVcIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The egress generated VCI value of this ATM PW. The entry is valid for PW type of atmCellNto1Vcc(9), atmCellNto1Vpc(10), atmCell1to1Vcc(12), or atmCell1to1Vpc(13). In VP case or other types, the value will be the equivalent of 0xFFFF. Value MAY be changed when the PW is defined as not active."

```
::= { pwAtmOutboundNto1Entry 7 }
```

-- ATM PW Inbound Table for N to 1 connection

pwAtmInboundNto1Table OBJECT-TYPE

SYNTAX SEQUENCE OF PwAtmInboundNto1Entry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table specifies the information for an ATM PW to be carried over PSN in the Inbound direction. Up to N entries can be created in this table for every entry in the pwTable with a pwType equal to: atmCellNto1Vcc(9), or atmCellNto1Vpc(10).

An entry can be created only when the VP/VC are known. A single entry will be created in this table for every entry in the pwTable with a pwType equal to one of the following: atmCell1to1Vcc(12), or atmCell1to1Vpc(13), or atmAal5PduVcc(14), or atmAal5SduVcc(2), or atmTransparent(3)."

```
::= { pwAtmObjects 7 }
```

pwAtmInboundNto1Entry OBJECT-TYPE

DESCRIPTION

"VPI value of this ATM PW. In atmTransparent(3),
Vpi will be the equivalent of 0xFFFF."

::= { pwAtmInboundNto1Entry 2 }

pwAtmInboundNto1Vci OBJECT-TYPE

SYNTAX AtmVcIdentifier

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"VCI value of this ATM PW. In atmTransparent(3), or
VP case, the value will be the equivalent of
0xFFFF"

::= { pwAtmInboundNto1Entry 3 }

pwAtmInboundNto1RowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This Object is used to create, modify or delete a row in
this table."

::= { pwAtmInboundNto1Entry 4 }

pwAtmInboundNto1TrafficParamDescr OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object represents a pointer to a ATM traffic parameter specific row in either private or standard table which will be employed while receiving cells from the ATM network. This table should contain a set of self-consistent ATM traffic parameters including the ATM traffic service category. A value of 0.0 indicates Best Effort."

```
::= { pwAtmInboundNto1Entry 5 }
```

```
pwAtmInboundNto1MappedVpi    OBJECT-TYPE
```

```
SYNTAX            AtmVpIdentifier
```

```
MAX-ACCESS        read-create
```

```
STATUS            current
```

```
DESCRIPTION
```

"The generated VPI value of this ATM PW. The entry is valid for PW type of atmCellNto1Vcc(9), atmCellNto1Vpc(10), atmCelllto1Vcc(12), or atmCelllto1Vpc(13). In other types, the value will be the equivalent of 0xFFFF. Value MAY be changed when the PW is defined as not active."

```
::= { pwAtmInboundNto1Entry 6 }
```

```
pwAtmInboundNto1MappedVci    OBJECT-TYPE
```

```
SYNTAX            AtmVcIdentifier
```

```
MAX-ACCESS        read-create
```

```
STATUS            current
```

```
DESCRIPTION
```

"The generated VCI value of this ATM PW. The entry is valid for PW type of atmCellNto1Vcc(9), atmCellNto1Vpc(10), atmCelllto1Vcc(12), or atmCelllto1Vpc(13). In VP case or other types, the value will be the equivalent of 0xFFFF. Value MAY be changed when the PW is defined as not active."

```
::= { pwAtmInboundNto1Entry 7 }
```

```
-- ATM PW Outbound Perf Table
```

```
-- The following supplement the counters presented in the
```

```
-- PW generic MIB
```

-- ATM PW Performance Current Table.

pwAtmPerfCurrentTable OBJECT-TYPE

SYNTAX SEQUENCE OF PwAtmPerfCurrentEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The current 15 minute interval counts are in this table.

This table provides performance information per ATM PW."

::= { pwAtmObjects 8 }

pwAtmPerfCurrentEntry OBJECT-TYPE

SYNTAX PwAtmPerfCurrentEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in this table is created by the agent for every pwAtmCfgTable entry. After 15 minutes, the contents of this table entry are copied to a new entry in the pwAtmPerfInterval table and the counts in this entry are reset to zero."

INDEX { pwIndex }

::= { pwAtmPerfCurrentTable 1 }

PwAtmPerfCurrentEntry ::= SEQUENCE {

pwAtmPerfCurrentMissingPkts PerfCurrentCount,

pwAtmPerfCurrentPktsReOrder PerfCurrentCount,

pwAtmPerfCurrentPktsMisOrder PerfCurrentCount,

pwAtmPerfCurrentPktsTimeout PerfCurrentCount,

pwAtmPerfCurrentCellsXmit PerfCurrentCount,

pwAtmPerfCurrentCellsDropped PerfCurrentCount,

pwAtmPerfCurrentCellsReceived PerfCurrentCount,

pwAtmPerfCurrentUnknownCells PerfCurrentCount

}

pwAtmPerfCurrentMissingPkts OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of missing packets (as detected via control word sequence number gaps)."

::= { pwAtmPerfCurrentEntry 1 }

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pwAtmPerfCurrentPktsReOrder OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of sequence (via control word sequence number), but successfully re-ordered.

Note: some implementations may not support this Feature."

::= { pwAtmPerfCurrentEntry 2 }

pwAtmPerfCurrentPktsMisOrder OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of order (via control word sequence numbers)."

::= { pwAtmPerfCurrentEntry 3 }

pwAtmPerfCurrentPktsTimeout OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets transmitted due to timeout expiration while attempting to collect cells."

::= { pwAtmPerfCurrentEntry 4 }

pwAtmPerfCurrentCellsXmit OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of transmitted cells."

::= { pwAtmPerfCurrentEntry 5 }

pwAtmPerfCurrentCellsDropped OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of dropped cells."

::= { pwAtmPerfCurrentEntry 6 }

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pwAtmPerfCurrentCellsReceived OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of received cells."

::= { pwAtmPerfCurrentEntry 7 }

pwAtmPerfCurrentUnknownCells OBJECT-TYPE

SYNTAX PerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of cells received from the PSN with unknown VPI or VCI values. This object is relevant only in N:1 mode."

::= { pwAtmPerfCurrentEntry 8 }

-- End ATM PW Performance Current Interval Table

-- ATM PW Performance Interval Table.

pwAtmPerfIntervalTable OBJECT-TYPE

SYNTAX SEQUENCE OF PwAtmPerfIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides performance information per ATM PW similar to the pwAtmPerfCurrentTable above. However, these counts represent historical 15 minute intervals. Typically, this table will have a maximum of 96 entries for a 24 hour period. "

::= { pwAtmObjects 9 }

pwAtmPerfIntervalEntry OBJECT-TYPE

SYNTAX PwAtmPerfIntervalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in this table is created by the agent for every pwAtmPerfCurrentEntry that is 15 minutes old. The contents of the Current entry are copied to the new entry here. The Current entry, then resets its counts to zero for the next current 15 minute interval. "

INDEX { pwIndex, pwAtmPerfIntervalNumber }

::= { pwAtmPerfIntervalTable 1 }

```
PwAtmPerfIntervalEntry ::= SEQUENCE {  
    pwAtmPerfIntervalNumber      Unsigned32,  
    pwAtmPerfIntervalValidData   TruthValue,  
    pwAtmPerfIntervalDuration    Unsigned32,  
    pwAtmPerfIntervalMissingPkts PerfIntervalCount,  
    pwAtmPerfIntervalPktsReOrder PerfIntervalCount,  
    pwAtmPerfIntervalPktsMisOrder PerfIntervalCount,  
    pwAtmPerfIntervalPktsTimeout PerfIntervalCount,  
    pwAtmPerfIntervalCellsXmit   PerfIntervalCount,  
    pwAtmPerfIntervalCellsDropped PerfIntervalCount,  
    pwAtmPerfIntervalCellsReceived PerfIntervalCount,  
    pwAtmPerfIntervalUnknownCells PerfIntervalCount  
}
```

pwAtmPerfIntervalNumber OBJECT-TYPE

SYNTAX Unsigned32 (1..96)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A number (normally between 1 and 96 to cover a 24 hour period) which identifies the interval for which the set of statistics is available. 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. The minimum range of N is 1 through 4. The default range is 1 through 32. The maximum value of N is 96."

::= { pwAtmPerfIntervalEntry 1 }

pwAtmPerfIntervalValidData OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This variable indicates if the data for this interval
is valid."

::= { pwAtmPerfIntervalEntry 2 }

pwAtmPerfIntervalDuration OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The duration of a particular interval in seconds,
Adjustments in the system's time-of-day clock, may
cause the interval to be greater or less than, the
normal value. Therefore this actual interval value
is provided."

::= { pwAtmPerfIntervalEntry 3 }

pwAtmPerfIntervalMissingPkts OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of missing packets (as detected via control
word sequence number gaps)."

::= { pwAtmPerfIntervalEntry 4 }

pwAtmPerfIntervalPktsReOrder OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of sequence (via control word sequence number), but successfully re-ordered.

Note: some implementations may not support this Feature."

::= { pwAtmPerfIntervalEntry 5 }

pwAtmPerfIntervalPktsMisOrder OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of order (via control word sequence numbers)."

::= { pwAtmPerfIntervalEntry 6 }

pwAtmPerfIntervalPktsTimeout OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets transmitted due to timeout expiration."

::= { pwAtmPerfIntervalEntry 7 }

pwAtmPerfIntervalCellsXmit OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of transmitted cells."

::= { pwAtmPerfIntervalEntry 8 }

pwAtmPerfIntervalCellsDropped OBJECT-TYPE

SYNTAX PerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of dropped cells."

```

 ::= { pwAtmPerfIntervalEntry 9 }

pwAtmPerfIntervalCellsReceived OBJECT-TYPE
    SYNTAX          PerfIntervalCount
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION
        "Number of received cells."
    ::= { pwAtmPerfIntervalEntry 10 }

pwAtmPerfIntervalUnknownCells OBJECT-TYPE
    SYNTAX          PerfIntervalCount
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION
        "Number of cells received from the PSN with unknown VPI or
        VCI values. This object is relevant only in N:1 mode."
    ::= { pwAtmPerfIntervalEntry 11 }

-- End ATM PW Performance Interval Table

-- ATM PW 1day Performance Table

```

```

pwAtmPerf1DayIntervalTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF PwAtmPerf1DayIntervalEntry
    MAX-ACCESS      not-accessible
    STATUS           current
    DESCRIPTION
        "This table provides performance information per ATM PW
        similar to the pwAtmPerfIntervalTable above. However,

```


these counters represent historical 1 day intervals up to one full month."
 ::= { pwAtmObjects 10 }

pwAtmPerf1DayIntervalEntry OBJECT-TYPE
SYNTAX PwAtmPerf1DayIntervalEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"An entry is created in this table by the agent for every entry in the pwAtmCfgTable table."
INDEX { pwIndex,pwAtmPerf1DayIntervalNumber }
 ::= { pwAtmPerf1DayIntervalTable 1 }

PwAtmPerf1DayIntervalEntry ::= SEQUENCE {
pwAtmPerf1DayIntervalNumber Unsigned32,
pwAtmPerf1DayIntervalValidData TruthValue,
pwAtmPerf1DayIntervalDuration Unsigned32,
pwAtmPerf1DayIntervalMissingPkts Counter32,
pwAtmPerf1DayIntervalPktsReOrder Counter32,
pwAtmPerf1DayIntervalPktsMisOrder Counter32,
pwAtmPerf1DayIntervalPktsTimeout Counter32,
pwAtmPerf1DayIntervalCellsXmit Counter32,
pwAtmPerf1DayIntervalCellsDropped Counter32,
pwAtmPerf1DayIntervalCellsReceived Counter32,
pwAtmPerf1DayIntervalUnknownCells Counter32
}

pwAtmPerf1DayIntervalNumber OBJECT-TYPE
SYNTAX Unsigned32 (1..365)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The number of interval, where 1 indicates current day measured period and 2 and above indicate previous days respectively"
 ::= { pwAtmPerf1DayIntervalEntry 1 }

pwAtmPerf1DayIntervalValidData OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object indicates if the data for this interval
is valid."

::= { pwAtmPerf1DayIntervalEntry 2 }

pwAtmPerf1DayIntervalDuration OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The duration of a particular interval in seconds,
Adjustments in the system's time-of-day clock, may
cause the interval to be greater or less than, the
normal value. Therefore this actual interval value
is provided."

::= { pwAtmPerf1DayIntervalEntry 3 }

pwAtmPerf1DayIntervalMissingPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of missing packets (as detected via control word
sequence number gaps)."

::= { pwAtmPerf1DayIntervalEntry 4 }

pwAtmPerf1DayIntervalPktsReOrder OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of sequence (via control
word sequence number), but successfully re-ordered.
Note: some implementations may not support this
feature."

::= { pwAtmPerf1DayIntervalEntry 5 }

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pwAtmPerf1DayIntervalPktsMisOrder OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets detected out of order(via control word sequence numbers), and could not be re-ordered."

::= { pwAtmPerf1DayIntervalEntry 6 }

pwAtmPerf1DayIntervalPktsTimeout OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of packets transmitted due to timeout expiration."

::= { pwAtmPerf1DayIntervalEntry 7 }

pwAtmPerf1DayIntervalCellsXmit OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of transmitted cells."

::= { pwAtmPerf1DayIntervalEntry 8 }

pwAtmPerf1DayIntervalCellsDropped OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of dropped cells."

::= { pwAtmPerf1DayIntervalEntry 9 }

pwAtmPerf1DayIntervalCellsReceived OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of received cells."

::= { pwAtmPerf1DayIntervalEntry 10 }

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pwAtmPerf1DayIntervalUnknownCells OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of cells received from the PSN with unknown VPI
or VCI value. This object is relevant only in N:1 mode."

::= { pwAtmPerf1DayIntervalEntry 11 }

-- End of ATM PW Performance table

pwAtmCompliances OBJECT IDENTIFIER ::= { pwAtmConformance 1 }

pwAtmGroups OBJECT IDENTIFIER ::= { pwAtmConformance 2 }

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pwAtmCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for agent that support
ATM PW."

MODULE -- this module

MANDATORY-GROUPS { pwAtmCfgGroup,
pwAtmPerfGroup
}

OBJECT pwAtmCfgFarEndMaxCellConcatenation

MIN-ACCESS read-only

DESCRIPTION

"The ability to set this object
is not required."

GROUP pwAtmOutbound1to1Group

DESCRIPTION "This group is mandatory only for implementations
that support the ATM PW 1:1 mode and not using
Nto1 table."

GROUP pwAtmInbound1to1Group

DESCRIPTION "This group is mandatory only for implementations
that support the ATM PW 1:1 mode and not using
Nto1 table."

GROUP pwAtmOutboundNto1Group

DESCRIPTION "This group is mandatory only for implementations

that support the ATM PW N:1 and transparent mode."

GROUP pwAtmInboundNto1Group

DESCRIPTION "This group is mandatory only for implementations
that support the ATM PW N:1 and transparent mode."

::= { pwAtmCompliances 2 }

-- Units of conformance.

pwAtmCfgGroup OBJECT-GROUP

OBJECTS {pwAtmCfgMaxCellConcatenation,
pwAtmCfgFarEndMaxCellConcatenation,
pwAtmCfgTimeoutMode,
pwAtmClpQosMapping
}

STATUS current

DESCRIPTION

"Collection of objects for basic ATM PW
config."

::= { pwAtmGroups 5 }

pwAtmPerfGroup OBJECT-GROUP

OBJECTS {pwAtmPerfCurrentMissingPkts,
pwAtmPerfCurrentPktsReOrder,
pwAtmPerfCurrentPktsMisOrder,
pwAtmPerfCurrentPktsTimeout,
pwAtmPerfCurrentCellsXmit,
pwAtmPerfCurrentCellsDropped,
pwAtmPerfCurrentCellsReceived,
pwAtmPerfCurrentUnknownCells,

```

pwAtmPerfIntervalValidData,
pwAtmPerfIntervalDuration,
pwAtmPerfIntervalMissingPkts,
pwAtmPerfIntervalPktsReOrder,
pwAtmPerfIntervalPktsMisOrder,
pwAtmPerfIntervalPktsTimeout,
pwAtmPerfIntervalCellsXmit,
pwAtmPerfIntervalCellsDropped,
pwAtmPerfIntervalCellsReceived,
pwAtmPerfIntervalUnknownCells,
pwAtmPerf1DayIntervalValidData,
pwAtmPerf1DayIntervalDuration,
pwAtmPerf1DayIntervalMissingPkts,
pwAtmPerf1DayIntervalPktsReOrder,
pwAtmPerf1DayIntervalPktsMisOrder,
pwAtmPerf1DayIntervalPktsTimeout,
pwAtmPerf1DayIntervalCellsXmit,
pwAtmPerf1DayIntervalCellsDropped,
pwAtmPerf1DayIntervalCellsReceived,
pwAtmPerf1DayIntervalUnknownCells
    }

```

STATUS current

DESCRIPTION

"Collection of objects for basic ATM PW Performance."

::= { pwAtmGroups 6 }

pwAtmOutbound1to1Group OBJECT-GROUP

```

OBJECTS {pwAtmOutboundAtmIf,
        pwAtmOutboundVpi,
        pwAtmOutboundVci,
        pwAtmOutboundTrafficParamDescr,
        pwAtmOutboundRowStatus
    }

```

STATUS current

DESCRIPTION

"Collection of objects for basic 1:1 ATM PW outbound config."

::= { pwAtmGroups 7 }

pwAtmInbound1to1Group OBJECT-GROUP

```

OBJECTS {pwAtmInboundAtmIf,

```

```

        pwAtmInboundVpi,
        pwAtmInboundVci,
        pwAtmInboundTrafficParamDescr,
        pwAtmInboundRowStatus
    }
STATUS    current
DESCRIPTION
    "Collection of objects for basic 1:1 ATM PW inbound
    config."
::= { pwAtmGroups 8 }

pwAtmOutboundNto1Group OBJECT-GROUP
OBJECTS {pwAtmOutboundNto1RowStatus,
        pwAtmOutboundNto1TrafficParamDescr,
        pwAtmOutboundNto1MappedVpi,
        pwAtmOutboundNto1MappedVci
        }
STATUS    current
DESCRIPTION
    "Collection of objects for N:1 or 1:1 or transparent
    ATM PW outbound config."
::= { pwAtmGroups 9 }

```

```

pwAtmInboundNto1Group OBJECT-GROUP
OBJECTS {pwAtmInboundNto1RowStatus,
        pwAtmInboundNto1TrafficParamDescr,
        pwAtmInboundNto1MappedVpi,
        pwAtmInboundNto1MappedVci
        }
STATUS    current
DESCRIPTION

```



```
        "Collection of objects for N:1 or 1:1 or transparent
        ATM PW inbound config."
 ::= { pwAtmGroups 10 }
```

END

10. Security considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are the tables and objects and their sensitivity/vulnerability:

The pwAtmOutboundTable, pwAtmInboundTable, pwAtmCfgTable, pwAtmOutboundNto1Table, and pwAtmInboundNto1Table contain objects of ATM PW parameters on a Provider Edge (PE) device. Unauthorized access to objects in these tables could result in disruption of traffic on the network.

The use of stronger mechanisms such as SNMPv3 security should be considered where possible. Specifically, SNMPv3 VACM and USM MUST be used with any SNMPV3 agent, which implements this MIB module. Administrators should consider whether read access to these objects should be allowed, since read access may be undesirable under certain circumstances.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

pwAtmPerf1DayIntervalTable collectively show the ATM pseudo wire connectivity topology and its performance characteristics.

If an Administrator does not want to reveal this information, then these tables should be considered sensitive/vulnerable.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [\[RFC3410\]](#), [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

[11.](#) IANA considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor OBJECT IDENTIFIER value

pwATMMIB { mib-2 XXX }

Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for "XXX" under the 'mib-2' subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace "XXX" (here and in the MIB module) with the assigned value and to remove this note.

[12.](#) References

[12.1.](#) Normative references

- [PWTC] Nadeau, T., Zelig D. "Definitions for Textual Conventions and OBJECT-IDENTITIES for Pseudo-Wires Management", work-in-progress.
- [PWMIB] Zelig D., Nadeau T., "Pseudo Wire (PW) Management Information Base", work-in-progress.
- [PWMPLSMIB] Zelig et al, "Pseudo Wire (PW) Over MPLS PSN Management Information Base", work-in-progress.
- [ATMENCAP] Martini et al, "Encapsulation Methods for Transport of Asynchronous Transfer Mode (ATM) over MPLS Networks", [RFC 4717](#), December 2006.
- [ATMTRANS] Malis et al, "PWE3 ATM Transparent Cell Transport Service", [RFC 4816](#), February 2007.
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