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                   ATM-Based xDSL Bonded Interfaces MIB
                   draft-ietf-adslmib-gbond-atm-mib-03.txt

Abstract

   This document defines Management Information Base (MIB) module for
   use with network management protocols in TCP/IP based networks. This
   document proposes an extension to the GBOND-MIB module with a set of
   objects for managing ATM-based multi-pair bonded xDSL interfaces,
   defined in ITU-T recommendation G.998.1.

Status of This Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   time. It is inappropriate to use Internet-Drafts as reference
   material or to cite them other than as "work in progress."

   This Internet-Draft will expire on September 15, 2011.

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1. Introduction

   The ATM-Based Multi-Pair Bonding, a.k.a. G.Bond/ATM, is specified in
   ITU-T G.998.1 recommendation [G.998.1], which defines a method for
   bonding (or aggregating) of multiple xDSL lines (or individual bearer
   channels in multiple xDSL lines) into a single bi-directional logical
   link carrying an ATM stream.

   This specification can be viewed as an evolution of the legacy
   Inverse Multiplexing over ATM (IMA) technology [af-phy-0086], applied
   to xDSL with variable rates on each line/bearer channel. As with the
   other bonding schemes, ATM bonding also allows bonding of up to 32
   individual sub-layers with variable rates, providing common
   functionality for the configuration, initialization, operation and
   monitoring of the bonded link.

   The MIB module, defined in this document, defines a set of managed
   objects for the management of G.998.1 bonded interfaces, extending
   the common objects specified in the GBOND-MIB
   [I-D.ietf-adslmib-gbond-mib] module.

2. 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
   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].

   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 [RFC2119].

3. The DSL Forum Management Framework for xDSL Bonding

   This document makes use of the DSL Forum technical report Management
   Framework for xDSL Bonding [TR-159], defining a management model and
   a hierarchy of management objects for the bonded xDSL interfaces.

4. Relationship to other MIB modules

This section outlines the relationship of the MIB modules defined in
this document with other MIB modules described in the relevant RFCs.
Specifically, the following MIB modules are discussed: Interfaces
Group MIB (IF-MIB) and G.Bond MIB (GBOND-MIB).

4.1. Relationship to Interfaces Group MIB module

A G.Bond/ATM port is a private case of a Bonded multi-pair xDSL
interface and as such is managed using generic interface management
objects defined in the IF-MIB [RFC2863]. In particular an interface
index (ifIndex) is used to index instances of G.Bond/ATM ports, as
well as xDSL lines/channels, in a managed system.

4.2. Relationship to G.Bond MIB module

GBOND-MIB [I-D.ietf-adslmib-gbond-mib] module defines management
objects common for all Bonded multi-pair xDSL interfaces. In
particular it describes the bonding management, bonded port and
channel configuration, initialization sequence etc.

Both GBOND-MIB and GBOND-ATM-MIB modules are REQUIRED to manage a
G.Bond/ATM port.

4.3. Relationship to ATM MIB module

ATM-MIB [RFC2515] module defines management objects for an ATM
interface.

ATM-MIB module can be used to manage the ATM aspects of a G.Bond/ATM
port.

5. MIB Structure

5.1. Overview

All management objects defined in the GBOND-ATM-MIB module are
contained in a single group gBondAtmPort. This group is further
split into 4 sub-groups, structured as recommended by RFC 4181
[RFC4181]:

o gBondTdimPortNotifications - containing notifications (Up/
   Downstream Diff. Delay Tolerance Exceeded).

o gBondAtmPortConfTable - containing objects for configuration of a
   G.Bond/ATM port.

o gBondAtmPortStatusTable - containing objects providing overall
   status information of a G.Bond/ATM port, complementing the generic
   status information from the ifTable of IF-MIB and gBondFltStatus
   of GBOND-MIB.

o gBondAtmPM - containing objects providing historical performance
   monitoring (PM) information of a G.Bond/ATM port, complementing
   the PM information from the gBondPortPM of GBOND-MIB.

Note that the rest of the objects for the Generic Bonded Sub-layer
(GBS) port configuration, capabilities, status, notifications and
performance monitoring is located in the GBOND-MIB module.

5.2. Performance Monitoring

The OPTIONAL performance monitoring counters, thresholds and history
buckets (interval-counters) are implemented using the textual
conventions defined in the HC-PerfHist-TC-MIB [RFC3705]. The HC-
PerfHist-TC-MIB defines 64-bit versions of the textual conventions
found in PerfHist-TC-MIB [RFC3593].

The agent SHOULD align the beginning of each interval to a fifteen
minute boundary of a wall clock. Likewise, the beginning of each one
day intervals SHOULD be aligned with the start of a day.

Counters are not reset when a GBS is reinitialized, but rather only
when the agent is reset or reinitialized (or under specific request
outside the scope of this MIB module).

5.3. Mapping of Broadband Forum TR-159 Managed Objects

This section contains the mapping between relevant managed objects
(attributes) defined in [TR-159] and the managed objects defined in
this document.

TR-159 Managed Object	Corresponding SNMP Object
oBondATM - Basic Package (Mandatory)	
aIMARxLostCells	gBondAtmRxLostCells
aIMAPeerRxLostCells	gBondAtmTxLostCells
aIMAMaxUpDiffDelay	gBondAtmMaxUpDiffDelay
aIMAMaxDownDiffDelay	gBondAtmMaxDnDiffDelay
aIMAUpDiffDelayTolerance	gBondAtmUpDiffDelayTolerance
aIMADownDiffDelayTolerance	gBondAtmDnDiffDelayTolerance
aIMADiffDelayToleranceExceededEnable	gBondAtmDiffDelayToleranceExceededEnable
nIMAUpDiffDelayToleranceExceeded	gBondAtmUpDiffDelayToleranceExceeded
nIMADownDiffDelayToleranceExceeded	gBondAtmDnDiffDelayToleranceExceeded

                Table 1: Mapping of TR-159 Managed Objects

6. G.Bond/ATM MIB Definitions

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

IMPORTS
  MODULE-IDENTITY,
  OBJECT-TYPE,
  NOTIFICATION-TYPE,
  mib-2,
  Unsigned32,
  Counter32
    FROM SNMPv2-SMI          -- [RFC2578]
  TEXTUAL-CONVENTION,
  TruthValue
    FROM SNMPv2-TC           -- [RFC2579]
  MODULE-COMPLIANCE,
  OBJECT-GROUP,
  NOTIFICATION-GROUP
```

```
     FROM SNMPv2-CONF        -- [RFC2580]
   ifIndex
     FROM IF-MIB             -- [RFC2863]
   HCPerfCurrentCount,
   HCPerfIntervalCount,
   HCPerfValidIntervals,
   HCPerfInvalidIntervals,
   HCPerfTimeElapsed
     FROM  HC-PerfHist-TC-MIB  -- [RFC3705]
   ;
-----------------------------------------------------------------------
 gBondAtmMIB MODULE-IDENTITY
   LAST-UPDATED "201103140000Z"  -- Mar 14, 2011
   ORGANIZATION "IETF ADSL MIB Working Group"
   CONTACT-INFO
     "WG charter:
       http://www.ietf.org/html.charters/adslmib-charter.html

     Mailing Lists:
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   DESCRIPTION
     "The objects in this MIB module are used to manage the
     multi-pair bonded xDSL Interfaces using ATM inverse
     multiplexing, defined in ITU-T recommendation G.998.1
     (G.Bond/ATM).

     This MIB module MUST be used in conjunction with GBOND-MIB
     module, common to all G.Bond technologies.
```

The following references are used throughout this MIB module:

[G.998.1] refers to:
  ITU-T Recommendation G.998.1: 'ATM-based multi-pair bonding',
  January 2005.

[TR-159] refers to:
  Broadband Forum Technical Report: 'Management Framework for
  xDSL Bonding', December 2008.

Naming Conventions:
  ATM   - Asynchronous Transfer Mode
  BCE   - Bonding Channel Entity
  BTU   - Bonding Terminating Unit
  CO   - Central Office
  CPE   - Customer Premises Equipment
  GBS   - Generic Bonding Sublayer
  GBS-C - Generic Bonded Sub-layer, CO side
  GBS-R - Generic Bonded Sub-layer, RT (or CPE) side
  PM   - Performance Monitoring
  RT   - Remote Terminal
  SNR   - Signal to Noise Ratio
  SES   - Severely Errored Seconds
  US   - Unavailable Seconds

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This version of this MIB module is part of RFC YYYY;
see the RFC itself for full legal notices."

REVISION   "201103140000Z" -- Mar 14, 2011
DESCRIPTION "Initial version, published as RFC YYYY."

  -- EdNote: Replace YYYY with the actual RFC number &
  -- remove this note

::= { mib-2 ZZZ }

  -- EdNote: Replace ZZZ with a real OID once it is
  -- allocated & remove this note.

-- Sections of the module
-- Structured as recommended by [RFC4181], Appendix D

gBondAtmObjects   OBJECT IDENTIFIER ::= { gBondAtmMIB 1 }

gBondAtmConformance OBJECT IDENTIFIER ::= { gBondAtmMIB 2 }

-- Groups in the module

    gBondAtmPort   OBJECT IDENTIFIER ::= { gBondAtmObjects 1 }

    -- Textual Conventions

    MilliSeconds ::= TEXTUAL-CONVENTION
      DISPLAY-HINT "d"
      STATUS   current
      DESCRIPTION
        "Represents time unit value in milliseconds."
      SYNTAX   Unsigned32

    -- Port Notifications Group

    gBondAtmPortNotifications OBJECT IDENTIFIER
      ::= { gBondAtmPort 0 }

    gBondAtmUpDiffDelayToleranceExceeded NOTIFICATION-TYPE
      OBJECTS {
        -- ifIndex is not needed here since we are under specific GBS
        gBondAtmUpDiffDelayTolerance,
        gBondAtmMaxUpDiffDelay
      }
      STATUS   current
      DESCRIPTION
        "This notification indicates that the maximum upstream
        differential delay has exceeded the max upstream differential
        delay threshold, specified by gBondAtmUpDiffDelayTolerance.

        This notification MAY be sent for the GBS-C ports while the
        port is up, on the crossing event in both directions: from
        normal (diff. delay is above the threshold) to low (diff.
        delay equals the threshold or below it) and from low to
        normal. This notification is not applicable to the GBS-R
        ports.

        Generation of this notification is controlled by the
        gBondAtmDiffDelayToleranceExceededEnable attribute.

        This object maps to the TR-159 notification
        nIMAUpDiffDelayToleranceExceeded."
      REFERENCE
        "[TR-159] 5.5.2.8"
      ::= { gBondAtmPortNotifications 1 }

    gBondAtmDnDiffDelayToleranceExceeded NOTIFICATION-TYPE
      OBJECTS {
        -- ifIndex is not needed here since we are under specific GBS
        gBondAtmDnDiffDelayTolerance,

```
      gBondAtmMaxDnDiffDelay
    }
  STATUS      current
  DESCRIPTION
    "This notification indicates that the maximum downstream
    differential delay has exceeded the max downstream
    differential delay threshold, specified by
    gBondAtmDnDiffDelayTolerance.

    This notification MAY be sent for the GBS-C ports while the
    port is up, on the crossing event in both directions: from
    normal (diff. delay is above the threshold) to low (diff.
    delay equals the threshold or below it) and from low to
    normal. This notification is not applicable to the GBS-R
    ports.

    Generation of this notification is controlled by the
    gBondAtmDiffDelayToleranceExceededEnable attribute.

    This object maps to the TR-159 notification
    nIMADownDiffDelayToleranceExceeded."
  REFERENCE
    "[TR-159] 5.5.2.9"
  ::= { gBondAtmPortNotifications 2 }

-- G.Bond/ATM Port group

gBondAtmPortConfTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF GBondAtmPortConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Table for Configuration of G.Bond/ATM ports. Entries in
    this table MUST be maintained in a persistent manner"
  ::= { gBondAtmPort 1 }

gBondAtmPortConfEntry OBJECT-TYPE
  SYNTAX      GBondAtmPortConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the G.Bond/ATM Port Configuration table.
    Each entry represents a G.Bond/ATM port indexed by the
    ifIndex. Additional configuration parameters are available
    via the gBondPortConfEntry of GBOND-MIB.
    Note that a G.Bond/ATM port runs on top of a single or
    multiple BCE port(s), which are also indexed by ifIndex."
  INDEX  { ifIndex }
```

```
     ::= { gBondAtmPortConfTable 1 }

  GBondAtmPortConfEntry ::=
    SEQUENCE {
      gBondAtmUpDiffDelayTolerance            MilliSeconds,
      gBondAtmDnDiffDelayTolerance            MilliSeconds,
      gBondAtmDiffDelayToleranceExceededEnable TruthValue
    }

  gBondAtmUpDiffDelayTolerance  OBJECT-TYPE
    SYNTAX       MilliSeconds(0..2047)
    UNITS        "milliseconds"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
      "A maximum tolerated upstream differential delay (among
      the member BCEs) of a G.Bond/ATM port, expressed in ms.

      This object is read-write for the GBS-C and irrelevant for
      the GBS-R ports.

      This object maps to TR-159 attribute
      aIMAUpDiffDelayTolerance"
    REFERENCE
      "[TR-159] 5.5.2.5; [G.998.1] 11.4.1 (6)"
    ::= { gBondAtmPortConfEntry 1 }

  gBondAtmDnDiffDelayTolerance  OBJECT-TYPE
    SYNTAX       MilliSeconds(0..2047)
    UNITS        "milliseconds"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
      "A maximum tolerated downstream differential delay (among
      the member BCEs) of a G.Bond/ATM port, expressed in ms.

      This object is read-write for the GBS-C and irrelevant for
      the GBS-R ports.

      This object maps to TR-159 attribute
      aIMADownDiffDelayTolerance"
    REFERENCE
      "[TR-159] 5.5.2.6; [G.998.1] 11.4.1 (6)"
    ::= { gBondAtmPortConfEntry 2 }

  gBondAtmDiffDelayToleranceExceededEnable  OBJECT-TYPE
    SYNTAX       TruthValue
    MAX-ACCESS   read-write
```

        STATUS   current
        DESCRIPTION
          "Indicates whether gBondAtmUpDiffDelayToleranceExceeded and
          gBondAtmDnDiffDelayToleranceExceeded notifications should
          be generated for G.Bond/ATM port.

          Value of true(1) indicates that the notifications are enabled.
          Value of false(2) indicates that the notifications are
          disabled.

          This object is read-write for the GBS-C and irrelevant for
          the GBS-R ports.
          This object MUST be maintained in a persistent manner.

          This object maps to the TR-159 attribute
          aIMADiffDelayToleranceExceededEnable."
        REFERENCE
          "[TR-159] 5.5.5.7"
        ::= { gBondAtmPortConfEntry 3 }

    gBondAtmPortStatusTable OBJECT-TYPE
        SYNTAX   SEQUENCE OF GBondAtmPortStatusEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
          "This table provides overall status information of G.Bond/ATM
          ports, complementing the generic status information from the
          ifTable of IF-MIB and gBondFltStatus of GBOND-MIB.
          Additional status information about connected BCEs is available
          from the relevant line MIBs.

          This table contains live data from the equipment. As such, it is
          NOT persistent."
        ::= { gBondAtmPort 2 }

    gBondAtmPortStatusEntry OBJECT-TYPE
        SYNTAX   GBondAtmPortStatusEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
          "An entry in the G.Bond/ATM port Status table.
          Each entry represents a G.Bond/ATM port indexed by the
          ifIndex.
          Note that a GBS port runs on top of a single or multiple BCE
          port(s), which are also indexed by ifIndex."
        INDEX { ifIndex }
        ::= { gBondAtmPortStatusTable 1 }

     GBondAtmPortStatusEntry ::=
       SEQUENCE {
         gBondAtmRxLostCells   Counter32,
         gBondAtmTxLostCells   Counter32,
         gBondAtmMaxUpDiffDelay   Unsigned32,
         gBondAtmMaxDnDiffDelay   Unsigned32
       }

     gBondAtmRxLostCells OBJECT-TYPE
       SYNTAX   Counter32
       MAX-ACCESS read-only
       STATUS   current
       DESCRIPTION
         "The number of lost ATM cells detected by the G.Bond/ATM port
         in the receive direction, i.e. upstream direction for
         a GBS-C port.

         Discontinuities in the value of this counter can occur at
         re-initialization of the management system, and at other times
         as indicated by the value of ifCounterDiscontinuityTime,
         defined in IF-MIB.

         This object maps to TR-159 attribute aIMARxLostCells."
       REFERENCE
         "[TR-159] 5.5.2.1; [G.998.1] 11.4.2 (4)"
       ::= { gBondAtmPortStatusEntry 1 }

     gBondAtmTxLostCells OBJECT-TYPE
       SYNTAX   Counter32
       MAX-ACCESS read-only
       STATUS   current
       DESCRIPTION
         "The number of lost ATM cells detected by the peer G.Bond/ATM
         port in the receive direction, e.g. downstream direction for a
         GBS-C port.

         This object is read only for the GBS-C ports and irrelevant
         for the GBS-R ports.

         Discontinuities in the value of this counter can occur at
         re-initialization of the management system, and at other times
         as indicated by the value of ifCounterDiscontinuityTime,
         defined in IF-MIB.

         This object maps to TR-159 attribute aIMAPeerRxLostCells."
       REFERENCE
         "[TR-159] 5.5.2.1; [G.998.1] 11.4.2 (4)"
       ::= { gBondAtmPortStatusEntry 2 }

    gBondAtmMaxUpDiffDelay OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "0.1 ms"
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
        "Current maximum upstream differential delay between all
        operational BCEs in the G.Bond/ATM bonding group, measured in
        units of 0.1ms.

        This object is read-only for the GBS-C and irrelevant for
        the GBS-R ports.

        This object maps to TR-159 attribute aIMAMaxUpDiffDelay."
      REFERENCE
        "[TR-159] 5.5.2.3"
      ::= { gBondAtmPortStatusEntry 3 }

    gBondAtmMaxDnDiffDelay OBJECT-TYPE
      SYNTAX   Unsigned32
      UNITS   "0.1 ms"
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
        "Current maximum downstream differential delay between all
        operational BCEs in the G.Bond/ATM bonding group, measured in
        units of 0.1ms.

        This object is read-only for the GBS-C and irrelevant for
        the GBS-R ports.

        This object maps to TR-159 attribute aIMAMaxDownDiffDelay."
      REFERENCE
        "[TR-159] 5.5.2.4"
      ::= { gBondAtmPortStatusEntry 4 }

    -- Performance Monitoring group
    ----

    gBondAtmPM   OBJECT IDENTIFIER ::= { gBondAtmPort 3 }

    gBondAtmPortPerfCurrTable OBJECT-TYPE
      SYNTAX   SEQUENCE OF GBondAtmPortPerfCurrEntry
      MAX-ACCESS   not-accessible
      STATUS   current
      DESCRIPTION
        "This table contains current Performance Monitoring information

```
      for a G.Bond/ATM port. This table contains live data from the
      equipment and as such is NOT persistent."
    ::= { gBondAtmPM 1 }

  gBondAtmPortPerfCurrEntry OBJECT-TYPE
    SYNTAX       GBondAtmPortPerfCurrEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
      "An entry in the G.Bond/ATM Port PM table.
      Each entry represents a G.Bond/ATM port indexed by the
      ifIndex."
    INDEX  { ifIndex }
    ::= { gBondAtmPortPerfCurrTable 1 }

  GBondAtmPortPerfCurrEntry ::=
    SEQUENCE {
      gBondAtmPortPerf15MinValidIntervals       HCPerfValidIntervals,
      gBondAtmPortPerf15MinInvalidIntervals     HCPerfInvalidIntervals,
      gBondAtmPortPerfCurr15MinTimeElapsed      HCPerfTimeElapsed,
      gBondAtmPortPerfCurr15MinRxLostCells      HCPerfCurrentCount,
      gBondAtmPortPerfCurr15MinTxLostCells      HCPerfCurrentCount,
      gBondAtmPortPerfCurr15MinUpDiffDelay      HCPerfCurrentCount,
      gBondAtmPortPerfCurr15MinDnDiffDelay      HCPerfCurrentCount,
      gBondAtmPortPerf1DayValidIntervals        Unsigned32,
      gBondAtmPortPerf1DayInvalidIntervals      Unsigned32,
      gBondAtmPortPerfCurr1DayTimeElapsed       HCPerfTimeElapsed,
      gBondAtmPortPerfCurr1DayRxLostCells       HCPerfCurrentCount,
      gBondAtmPortPerfCurr1DayTxLostCells       HCPerfCurrentCount,
      gBondAtmPortPerfCurr1DayUpDiffDelay       HCPerfCurrentCount,
      gBondAtmPortPerfCurr1DayDnDiffDelay       HCPerfCurrentCount
    }

  gBondAtmPortPerf15MinValidIntervals  OBJECT-TYPE
    SYNTAX       HCPerfValidIntervals
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
      "A read-only number of 15-minute intervals for which the
      performance data was collected. The value of this object will
      be 96 or the maximum number of 15-minute history intervals
      collected by the implementation unless the measurement was
      (re-)started recently, in which case the value will be the
      number of complete 15 minutes intervals for which there are at
      least some data.
      In certain cases it is possible that some intervals are
      unavailable. In this case, this object reports the maximum
      interval number for which data is available.
```

      This object partially maps to the TR-159 attribute
      aGroupPerf15MinValidIntervals."
    REFERENCE
      "[TR-159] 5.5.1.32"
    ::= { gBondAtmPortPerfCurrEntry 1 }

  gBondAtmPortPerf15MinInvalidIntervals OBJECT-TYPE
    SYNTAX   HCPerfInvalidIntervals
    MAX-ACCESS   read-only
    STATUS   current
    DESCRIPTION
      "A read-only number of 15-minute intervals for which the
      performance data was not always available. The value will
      typically be zero except in cases where the data for some
      intervals are not available.

      This object partially maps to the TR-159 attribute
      aGroupPerf15MinInvalidIntervals."
    REFERENCE
      "[TR-159] 5.5.1.33"
    ::= { gBondAtmPortPerfCurrEntry 2 }

  gBondAtmPortPerfCurr15MinTimeElapsed OBJECT-TYPE
    SYNTAX   HCPerfTimeElapsed
    MAX-ACCESS   read-only
    STATUS   current
    DESCRIPTION
      "A read-only count of seconds that have elapsed since the
      beginning of the current 15-minute performance interval.

      This object partially maps to the TR-159 attribute
      aGroupPerfCurr15MinTimeElapsed."
    REFERENCE
      "[TR-159] 5.5.1.34"
    ::= { gBondAtmPortPerfCurrEntry 3 }

  gBondAtmPortPerfCurr15MinRxLostCells OBJECT-TYPE
    SYNTAX   HCPerfCurrentCount
    MAX-ACCESS   read-only
    STATUS   current
    DESCRIPTION
      "A read-only count of lost ATM cells detected by a G.Bond/ATM
      port (e.g. GBS-C) in the receive direction, during the current
      15-minute performance history interval.

      Note that the total number of lost ATM cells is indicated by the
      gBondAtmRxLostCells object.

      This object is inhibited during Severely Errored Seconds (SES)
      or Unavailable Seconds (UAS)."
    REFERENCE
      "[TR-159] 5.5.2.1"
    ::= { gBondAtmPortPerfCurrEntry 4}

  gBondAtmPortPerfCurr15MinTxLostCells OBJECT-TYPE
    SYNTAX   HCPerfCurrentCount
    MAX-ACCESS read-only
    STATUS   current
    DESCRIPTION
      "A read-only count of lost ATM cells detected by the peer
      G.Bond/ATM port (e.g. by GBS-R for GBS-C), during the current
      15-minute performance history interval.

      Note that the total number of lost ATM cells is indicated by the
      gBondAtmTxLostCells object.

      This object is inhibited during Unavailable Seconds (UAS)."
    REFERENCE
      "[TR-159] 5.5.2.2"
    ::= { gBondAtmPortPerfCurrEntry 5}

  gBondAtmPortPerfCurr15MinUpDiffDelay OBJECT-TYPE
    SYNTAX   HCPerfCurrentCount
    MAX-ACCESS read-only
    STATUS   current
    DESCRIPTION
      "A read-only value specifying maximum upstream differential
      delay between all operational BCEs in the GBS-C, measured in
      units of 0.1ms, during the current 15-minute performance
      interval.

      Note that the current max upstream differential delay is
      indicated by the gBondAtmMaxUpDiffDelay object.

      This object is inhibited during Unavailable Seconds (UAS)."
    REFERENCE
      "[TR-159] 5.5.2.3"
    ::= { gBondAtmPortPerfCurrEntry 6}

  gBondAtmPortPerfCurr15MinDnDiffDelay OBJECT-TYPE
    SYNTAX   HCPerfCurrentCount
    MAX-ACCESS read-only
    STATUS   current
    DESCRIPTION
      "A read-only value specifying maximum downstream differential
      delay between all operational BCEs in the GBS-C (as perceived

       by GBS-R), measured in units of 0.1ms, during the current
       15-minute performance history interval.

       Note that the current max downstream differential delay is
       indicated by the gBondAtmMaxDnDiffDelay object.

       This object is inhibited during Unavailable Seconds (UAS)."
     REFERENCE
       "[TR-159] 5.5.2.4"
     ::= { gBondAtmPortPerfCurrEntry 7}

   gBondAtmPortPerf1DayValidIntervals OBJECT-TYPE
     SYNTAX   Unsigned32 (0..7)
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only number of 1-day intervals for which data was
       collected. The value of this object will be 7 or the maximum
       number of 1-day history intervals collected by the
       implementation unless the measurement was (re-)started recently,
       in which case the value will be the number of complete 1-day
       intervals for which there are at least some data.
       In certain cases it is possible that some intervals are
       unavailable. In this case, this object reports the maximum
       interval number for which data is available."
     REFERENCE
       "[TR-159] 5.5.1.45"
     ::= { gBondAtmPortPerfCurrEntry 8 }

   gBondAtmPortPerf1DayInvalidIntervals OBJECT-TYPE
     SYNTAX   Unsigned32 (0..7)
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only number of 1-day intervals for which data was
       not always available. The value will typically be zero except in
       cases where the data for some intervals are not available."
     REFERENCE
       "[TR-159] 5.5.1.46"
     ::= { gBondAtmPortPerfCurrEntry 9 }

   gBondAtmPortPerfCurr1DayTimeElapsed OBJECT-TYPE
     SYNTAX   HCPerfTimeElapsed
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only count of seconds that have elapsed since the
       beginning of the current 1-day performance interval."

      REFERENCE
        "[TR-159] 5.5.1.47"
      ::= { gBondAtmPortPerfCurrEntry 10 }

   gBondAtmPortPerfCurr1DayRxLostCells OBJECT-TYPE
      SYNTAX   HCPerfCurrentCount
      MAX-ACCESS read-only
      STATUS   current
      DESCRIPTION
        "A read-only count of lost ATM cells detected by the G.Bond/ATM
        port (e.g. GBS-C), during the current 1-day performance
        interval.

        This object is inhibited during Severely Errored Seconds (SES)
        and Unavailable Seconds (UAS)."
      ::= { gBondAtmPortPerfCurrEntry 11 }

   gBondAtmPortPerfCurr1DayTxLostCells OBJECT-TYPE
      SYNTAX   HCPerfCurrentCount
      MAX-ACCESS read-only
      STATUS   current
      DESCRIPTION
        "A read-only count of lost ATM cells detected by the peer
        G.Bond/ATM port (e.g. by GBS-R for GBS-C), during the current
        1-day performance history interval.

        This object is inhibited during Unavailable Seconds (UAS)."
      ::= { gBondAtmPortPerfCurrEntry 12 }

   gBondAtmPortPerfCurr1DayUpDiffDelay OBJECT-TYPE
      SYNTAX   HCPerfCurrentCount
      MAX-ACCESS read-only
      STATUS   current
      DESCRIPTION
        "A read-only value specifying maximum upstream differential
        delay between all operational BCEs in the GBS-C, measured in
        units of 0.1ms, during the current 1-day performance
        interval.

        This object is inhibited during Unavailable Seconds (UAS)."
      ::= { gBondAtmPortPerfCurrEntry 13 }

   gBondAtmPortPerfCurr1DayDnDiffDelay OBJECT-TYPE
      SYNTAX   HCPerfCurrentCount
      MAX-ACCESS read-only
      STATUS   current
      DESCRIPTION
        "A read-only value specifying maximum downstream differential

```
   delay between all operational BCEs in the GBS-C, measured in
   units of 0.1ms, during the current 1-day performance
   interval.

   This object is inhibited during Unavailable Seconds (UAS)."
 ::= { gBondAtmPortPerfCurrEntry 14 }

-- Port PM history: 15-min buckets

gBondAtmPortPerf15MinTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF GBondAtmPortPerf15MinEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table contains historical 15-minute buckets of Performance
    Monitoring information for a G.Bond/ATM port (a row for each
    15-minute interval, up to 96 intervals).
    Entries in this table MUST be maintained in a persistent manner."
  ::= { gBondAtmPM 2 }

gBondAtmPortPerf15MinEntry OBJECT-TYPE
  SYNTAX      GBondAtmPortPerf15MinEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the G.Bond/ATM Port historical 15-minute PM table.
    Each entry represents performance monitoring data for a
    G.Bond/ATM port, indexed by ifIndex, collected during a
    particular 15-minute interval, indexed by
    gBondAtmPortPerf15MinIntervalIndex."
  INDEX  { ifIndex, gBondAtmPortPerf15MinIntervalIndex }
  ::= { gBondAtmPortPerf15MinTable 1 }

GBondAtmPortPerf15MinEntry ::=
  SEQUENCE {
    gBondAtmPortPerf15MinIntervalIndex       Unsigned32,
    gBondAtmPortPerf15MinIntervalMoniTime    HCPerfTimeElapsed,
    gBondAtmPortPerf15MinIntervalRxLostCells HCPerfIntervalCount,
    gBondAtmPortPerf15MinIntervalTxLostCells HCPerfIntervalCount,
    gBondAtmPortPerf15MinIntervalUpDiffDelay HCPerfIntervalCount,
    gBondAtmPortPerf15MinIntervalDnDiffDelay HCPerfIntervalCount,
    gBondAtmPortPerf15MinIntervalValid       TruthValue
  }

gBondAtmPortPerf15MinIntervalIndex  OBJECT-TYPE
  SYNTAX      Unsigned32 (1..96)
  MAX-ACCESS  not-accessible
  STATUS      current
```

```
   DESCRIPTION
     "Performance Data Interval number. 1 is the most recent previous
     interval; interval 96 is 24 hours ago.
     Intervals 2..96 are OPTIONAL.

     This object partially maps to the TR-159 attribute
     aGroupPerf15MinIntervalNumber."
   REFERENCE
     "[TR-159] 5.5.1.57"
   ::= { gBondAtmPortPerf15MinEntry 1 }

gBondAtmPortPerf15MinIntervalMoniTime  OBJECT-TYPE
   SYNTAX      HCPerfTimeElapsed
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
     "A read-only count of seconds over which the performance data
     was actually monitored. This value will be the same as the
     interval duration (900 seconds), except in a situation where
     performance data could not be collected for any reason."
   ::= { gBondAtmPortPerf15MinEntry 2 }

gBondAtmPortPerf15MinIntervalRxLostCells  OBJECT-TYPE
   SYNTAX      HCPerfIntervalCount
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
     "A read-only count of lost ATM cells detected by a G.Bond/ATM
     port (e.g. GBS-C) in the receive direction, during the
     15-minute performance history interval.

     Note that the total number of lost ATM cells is indicated by the
     gBondAtmRxLostCells object.

     This object is inhibited during Severely Errored Seconds (SES)
     or Unavailable Seconds (UAS)."
   REFERENCE
     "[TR-159] 5.5.2.1"
   ::= { gBondAtmPortPerf15MinEntry 3 }

gBondAtmPortPerf15MinIntervalTxLostCells  OBJECT-TYPE
   SYNTAX      HCPerfIntervalCount
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
     "A read-only count of lost ATM cells detected by the peer
     G.Bond/ATM port (e.g. by GBS-R for GBS-C), during the 15-minute
     performance history interval.
```

      Note that the total number of lost ATM cells is indicated by the
      gBondAtmTxLostCells object.

      This object is inhibited during Unavailable Seconds (UAS)."
   REFERENCE
      "[TR-159] 5.5.2.2"
   ::= { gBondAtmPortPerf15MinEntry 4 }

   gBondAtmPortPerf15MinIntervalUpDiffDelay OBJECT-TYPE
      SYNTAX   HCPerfIntervalCount
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
      "A read-only value specifying maximum upstream differential
      delay between all operational BCEs in the GBS, measured in
      units of 0.1ms, during the 15-minute performance history
      interval.

      Note that the current max upstream differential delay is
      indicated by the gBondAtmMaxUpDiffDelay object.

      This object is inhibited during Unavailable Seconds (UAS)."
   REFERENCE
      "[TR-159] 5.5.2.3"
   ::= { gBondAtmPortPerf15MinEntry 5 }

   gBondAtmPortPerf15MinIntervalDnDiffDelay OBJECT-TYPE
      SYNTAX   HCPerfIntervalCount
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
      "A read-only value specifying maximum downstream differential
      delay between all operational BCEs in the GBS, as perceived by
      its peer port, measured in units of 0.1ms, during the
      15-minute performance history interval.

      Note that the current max upstream differential delay is
      indicated by the gBondAtmMaxDnDiffDelay object.

      This object is inhibited during Unavailable Seconds (UAS)."
   REFERENCE
      "[TR-159] 5.5.2.4"
   ::= { gBondAtmPortPerf15MinEntry 6 }

   gBondAtmPortPerf15MinIntervalValid OBJECT-TYPE
      SYNTAX   TruthValue
      MAX-ACCESS   read-only
      STATUS   current

      DESCRIPTION
        "A read-only object indicating whether or not this history
        bucket contains valid data. Valid bucket is reported as true(1)
        and invalid bucket as false(2).
        If this history bucket is invalid the BTU MUST NOT produce
        notifications based upon the value of the counters in this
        bucket.
        Note that an implementation may decide not to store invalid
        history buckets in its data base. In such case this object is
        not required as only valid history buckets are available while
        invalid history buckets are simply not in the data base.

        This object partially maps to the TR-159 attribute
        aGroupPerf15MinIntervalValid."
      REFERENCE
        "[TR-159] 5.5.1.58"
      ::= { gBondAtmPortPerf15MinEntry 7 }

   -- Port PM history: 1-day buckets

   gBondAtmPortPerf1DayTable OBJECT-TYPE
      SYNTAX   SEQUENCE OF GBondAtmPortPerf1DayEntry
      MAX-ACCESS   not-accessible
      STATUS   current
      DESCRIPTION
        "This table contains historical 1-day buckets of Performance
        Monitoring information for a G.Bond/ATM port (a row for each
        1-day interval, up to 7 intervals).
        Entries in this table MUST be maintained in a persistent manner."
      ::= { gBondAtmPM 3 }

   gBondAtmPortPerf1DayEntry OBJECT-TYPE
      SYNTAX   GBondAtmPortPerf1DayEntry
      MAX-ACCESS   not-accessible
      STATUS   current
      DESCRIPTION
        "An entry in the G.Bond/ATM port historical 1-day PM table.
        Each entry represents performance monitoring data for such port,
        indexed by ifIndex, collected during a particular 1-day
        interval, indexed by gBondAtmPortPerf1DayIntervalIndex."
      INDEX { ifIndex, gBondAtmPortPerf1DayIntervalIndex }
      ::= { gBondAtmPortPerf1DayTable 1 }

   GBondAtmPortPerf1DayEntry ::=
      SEQUENCE {
        gBondAtmPortPerf1DayIntervalIndex   Unsigned32,
        gBondAtmPortPerf1DayIntervalMoniTime   HCPerfTimeElapsed,
        gBondAtmPortPerf1DayIntervalRxLostCells HCPerfIntervalCount,

```
   gBondAtmPortPerf1DayIntervalTxLostCells  HCPerfIntervalCount,
   gBondAtmPortPerf1DayIntervalUpDiffDelay  HCPerfIntervalCount,
   gBondAtmPortPerf1DayIntervalDnDiffDelay  HCPerfIntervalCount,
   gBondAtmPortPerf1DayIntervalValid        TruthValue
 }
```

gBondAtmPortPerf1DayIntervalIndex OBJECT-TYPE
  SYNTAX   Unsigned32 (1..7)
  MAX-ACCESS not-accessible
  STATUS   current
  DESCRIPTION
    "Performance Data Interval number. 1 is the most recent previous
    interval; interval 7 is 24 hours ago.
    Intervals 2..7 are OPTIONAL.

    This object partially maps to the TR-159 attribute
    aGroupPerf1DayIntervalNumber."
  REFERENCE
    "[TR-159] 5.5.1.62"
  ::= { gBondAtmPortPerf1DayEntry 1 }

gBondAtmPortPerf1DayIntervalMoniTime OBJECT-TYPE
  SYNTAX   HCPerfTimeElapsed
  MAX-ACCESS read-only
  STATUS   current
  DESCRIPTION
    "A read-only count of seconds over which the performance data
    was actually monitored. This value will be the same as the
    interval duration (86400 seconds), except in a situation where
    performance data could not be collected for any reason.

    This object partially maps to the TR-159 attribute
    aGroupPerf1DayIntervalMoniSecs."
  REFERENCE
    "[TR-159] 5.5.1.64"
  ::= { gBondAtmPortPerf1DayEntry 2 }

gBondAtmPortPerf1DayIntervalRxLostCells OBJECT-TYPE
  SYNTAX   HCPerfIntervalCount
  MAX-ACCESS read-only
  STATUS   current
  DESCRIPTION
    "A read-only count of lost ATM cells detected by the G.Bond/ATM
    port (e.g. GBS-C), during the 1-day performance history interval.

    This object is inhibited during Severely Errored Seconds (SES)
    and Unavailable Seconds (UAS)."
  ::= { gBondAtmPortPerf1DayEntry 3 }

   gBondAtmPortPerf1DayIntervalTxLostCells OBJECT-TYPE
     SYNTAX   HCPerfIntervalCount
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only count of lost ATM cells detected by the peer
       G.Bond/ATM port (e.g. by GBS-R for GBS-C), during the 1-day
       performance history interval.

       This object is inhibited during Unavailable Seconds (UAS)."
     ::= { gBondAtmPortPerf1DayEntry 4 }

   gBondAtmPortPerf1DayIntervalUpDiffDelay OBJECT-TYPE
     SYNTAX   HCPerfIntervalCount
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only value specifying maximum upstream differential
       delay between all operational BCEs in the GBS-C, measured in
       units of 0.1ms, during the 1-day performance history interval.

       This object is inhibited during Unavailable Seconds (UAS)."
     ::= { gBondAtmPortPerf1DayEntry 5 }

   gBondAtmPortPerf1DayIntervalDnDiffDelay OBJECT-TYPE
     SYNTAX   HCPerfIntervalCount
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only value specifying maximum downstream differential
       delay between all operational BCEs in the GBS-C, measured in
       units of 0.1ms, during the 1-day performance history interval.

       This object is inhibited during Unavailable Seconds (UAS)."
     ::= { gBondAtmPortPerf1DayEntry 6 }

   gBondAtmPortPerf1DayIntervalValid OBJECT-TYPE
     SYNTAX   TruthValue
     MAX-ACCESS read-only
     STATUS   current
     DESCRIPTION
       "A read-only object indicating whether or not this history
       bucket contains valid data. Valid bucket is reported as true(1)
       and invalid bucket as false(2).
       If this history bucket is invalid the BTU MUST NOT produce
       notifications based upon the value of the counters in this
       bucket.
       Note that an implementation may decide not to store invalid

        history buckets in its data base. In such case this object is
        not required as only valid history buckets are available while
        invalid history buckets are simply not in the data base.

        This object partially maps to the TR-159 attribute
        aGroupPerf1DayIntervalValid."
      REFERENCE
        "[TR-159] 5.5.1.63"
      ::= { gBondAtmPortPerf1DayEntry 7 }

  --
  -- Conformance Statements
  --

   gBondAtmGroups   OBJECT IDENTIFIER
     ::= { gBondAtmConformance 1 }

   gBondAtmCompliances OBJECT IDENTIFIER
     ::= { gBondAtmConformance 2 }

   -- Object Groups

   gBondAtmBasicGroup OBJECT-GROUP
     OBJECTS {
       gBondAtmRxLostCells,
       gBondAtmTxLostCells,
       gBondAtmMaxUpDiffDelay,
       gBondAtmMaxDnDiffDelay
     }
     STATUS   current
     DESCRIPTION
       "A collection of objects representing management information
       for a G.Bond/ATM port."
     ::= { gBondAtmGroups 1 }

   gBondAtmAlarmConfGroup OBJECT-GROUP
     OBJECTS {
       gBondAtmUpDiffDelayTolerance,
       gBondAtmDnDiffDelayTolerance,
       gBondAtmDiffDelayToleranceExceededEnable
     }
     STATUS   current
     DESCRIPTION
       "A collection of objects required for configuration of alarm
       thresholds and notifications in G.Bond/ATM ports."
     ::= { gBondAtmGroups 2 }

   gBondAtmNotificationGroup NOTIFICATION-GROUP

```
      NOTIFICATIONS {
        gBondAtmUpDiffDelayToleranceExceeded,
        gBondAtmDnDiffDelayToleranceExceeded
      }
      STATUS      current
      DESCRIPTION
        "This group supports notifications of significant conditions
        associated with G.Bond/ATM ports."
      ::= { gBondAtmGroups 3 }

    gBondAtmPerfCurrGroup OBJECT-GROUP
      OBJECTS {
        gBondAtmPortPerf15MinValidIntervals,
        gBondAtmPortPerf15MinInvalidIntervals,
        gBondAtmPortPerfCurr15MinTimeElapsed,
        gBondAtmPortPerfCurr15MinRxLostCells,
        gBondAtmPortPerfCurr15MinTxLostCells,
        gBondAtmPortPerfCurr15MinUpDiffDelay,
        gBondAtmPortPerfCurr15MinDnDiffDelay,
        gBondAtmPortPerf1DayValidIntervals,
        gBondAtmPortPerf1DayInvalidIntervals,
        gBondAtmPortPerfCurr1DayTimeElapsed,
        gBondAtmPortPerfCurr1DayRxLostCells,
        gBondAtmPortPerfCurr1DayTxLostCells,
        gBondAtmPortPerfCurr1DayUpDiffDelay,
        gBondAtmPortPerfCurr1DayDnDiffDelay
      }
      STATUS      current
      DESCRIPTION
        "A collection of objects supporting OPTIONAL current Performance
        Monitoring information for G.Bond/ATM ports."
      ::= { gBondAtmGroups 4 }

    gBondAtmPerf15MinGroup OBJECT-GROUP
      OBJECTS {
        gBondAtmPortPerf15MinIntervalMoniTime,
        gBondAtmPortPerf15MinIntervalRxLostCells,
        gBondAtmPortPerf15MinIntervalTxLostCells,
        gBondAtmPortPerf15MinIntervalUpDiffDelay,
        gBondAtmPortPerf15MinIntervalDnDiffDelay,
        gBondAtmPortPerf15MinIntervalValid
      }
      STATUS      current
      DESCRIPTION
        "A collection of objects supporting OPTIONAL historical
        Performance Monitoring information for G.Bond/ATM ports, during
        previous 15-minute intervals ."
      ::= { gBondAtmGroups 5 }
```

```
   gBondAtmPerf1DayGroup OBJECT-GROUP
     OBJECTS {
       gBondAtmPortPerf1DayIntervalMoniTime,
       gBondAtmPortPerf1DayIntervalRxLostCells,
       gBondAtmPortPerf1DayIntervalTxLostCells,
       gBondAtmPortPerf1DayIntervalUpDiffDelay,
       gBondAtmPortPerf1DayIntervalDnDiffDelay,
       gBondAtmPortPerf1DayIntervalValid
     }
     STATUS      current
     DESCRIPTION
       "A collection of objects supporting OPTIONAL historical
       Performance Monitoring information for G.Bond/ATM ports, during
       previous 1-day intervals ."
     ::= { gBondAtmGroups 6 }


   -- Compliance Statements

   gBondAtmCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION
       "The compliance statement for G.Bond/ATM interfaces.
       Compliance with the following external compliance statements
       is REQUIRED:

       MIB Module              Compliance Statement
       ----------              --------------------
       IF-MIB                  ifCompliance3
       GBOND-MIB               gBondCompliance"

     MODULE  -- this module
       MANDATORY-GROUPS {
         gBondAtmBasicGroup,
         gBondAtmAlarmConfGroup,
         gBondAtmNotificationGroup
       }

       GROUP       gBondAtmPerfCurrGroup
       DESCRIPTION
         "Support for this group is only required for implementations
         supporting Performance Monitoring."

       GROUP       gBondAtmPerf15MinGroup
       DESCRIPTION
         "Support for this group is only required for implementations
         supporting historical Performance Monitoring."
```

       GROUP   gBondAtmPerf1DayGroup
       DESCRIPTION
         "Support for this group is only required for implementations
         supporting 1-day historical Performance Monitoring."

    ::= { gBondAtmCompliances 1 }
END

7. Security Considerations

   There is a number of managed objects defined in the GBOND-ATM-MIB
   module that have a MAX-ACCESS clause of read-write. Writing to these
   objects can have potentially disruptive effects on network operation,
   for example:

   o Changing of gBondAtmPortConfTable configuration parameters MAY
      lead to a potential Service Level Agreement (SLA) breach, for
      example if a traffic delay is increased as a result of the higher
      delay tolerance (increased gBondAtmUpDiffDelayTolerance and/or
      gBondAtmDnDiffDelayTolerance), or the differential delay tolerance
      notifications are disabled by manipulating the
      gBondAtmDiffDelayToleranceExceededEnable parameter.

   The user of the GBOND-ATM-MIB module must therefore be aware that
   support for SET operations in a non-secure environment without proper
   protection can have a negative effect on network operations.

   The readable objects in the GBOND-ATM-MIB module (i.e., those with
   MAX-ACCESS other than not-accessible) may be considered sensitive in
   some environments since, collectively, they provide information about
   the performance of network interfaces and can reveal some aspects of
   their configuration.

   In such environments it is important to control also GET and NOTIFY
   access to these objects and possibly even to encrypt their values
   when sending them over the network via SNMP.

   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.

8. IANA Considerations

An object identifier for gBondAtmMIB MODULE-IDENTITY SHALL be
allocated by IANA [1] in the MIB-2 transmission sub-tree, before this
document is published as an RFC.

9. Acknowledgments

This document was produced by the [ADSLMIB] working group.

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10.1. Normative References

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