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E. Beili  
Actelis Networks  
M. Morgenstern  
ECI Telecom  
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**Ethernet-based xDSL multi-pair bonding (G.Bond/Ethernet) MIB  
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Abstract

This document defines Management Information Base (MIB) module for use with network management protocols in TCP/IP based internets. This document proposes an extension to the GBOND-MIB module with a set of objects for managing Ethernet-based multi-pair bonded xDSL interfaces, defined in ITU-T recommendation G.998.2.

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">3</a>
<a href="#">2.</a>	The Internet-Standard Management Framework . . . . .	<a href="#">3</a>
<a href="#">3.</a>	The Broadband Forum Management Framework for xDSL Bonding . .	<a href="#">3</a>
<a href="#">4.</a>	Relation to other MIB modules . . . . .	<a href="#">3</a>
<a href="#">4.1.</a>	Relationship to Interfaces Group MIB module . . . . .	<a href="#">4</a>
<a href="#">4.2.</a>	Relationship to G.Bond MIB module . . . . .	<a href="#">4</a>
<a href="#">4.2.1.</a>	BACP-based Discovery . . . . .	<a href="#">4</a>
<a href="#">4.3.</a>	Relationship to EFM Copper MIB module . . . . .	<a href="#">6</a>
<a href="#">5.</a>	MIB Structure . . . . .	<a href="#">7</a>
<a href="#">5.1.</a>	Overview . . . . .	<a href="#">7</a>
<a href="#">5.2.</a>	Performance Monitoring . . . . .	<a href="#">7</a>
<a href="#">5.3.</a>	Mapping of Broadband Forum TR-159 Managed Objects . . . . .	<a href="#">7</a>
<a href="#">6.</a>	G.Bond/Ethernet MIB Definitions . . . . .	<a href="#">9</a>
<a href="#">7.</a>	Security Considerations . . . . .	<a href="#">48</a>
<a href="#">8.</a>	IANA Considerations . . . . .	<a href="#">49</a>
<a href="#">9.</a>	Acknowledgments . . . . .	<a href="#">49</a>
<a href="#">10.</a>	References . . . . .	<a href="#">49</a>
<a href="#">10.1.</a>	Normative References . . . . .	<a href="#">49</a>
<a href="#">10.2.</a>	Informative References . . . . .	<a href="#">51</a>



## **1. Introduction**

The Ethernet-based xDSL Multi-Pair Bonding, a.k.a. G.Bond/Ethernet, is specified in ITU-T G.998.2 recommendation [[G.998.2](#)], 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 Ethernet traffic.

The MIB module, defined in this document, provides G.Bond/Ethernet specific objects for the management of G.998.2 bonded interfaces, extending the common bonding objects specified in 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", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

## **3. The Broadband Forum Management Framework for xDSL Bonding**

This document makes use of the Broadband 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. Relation 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), G.Bond MIB (GBOND-MIB), and EFM Copper MIB (EFM-CU-MIB).



#### **[4.1.](#) Relationship to Interfaces Group MIB module**

A G.Bond/Ethernet 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/Ethernet 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, handshake-based discovery, initialization sequence etc.

Both GBOND-MIB and G9982-MIB modules are REQUIRED to manage a G.Bond/Ethernet port.

##### **[4.2.1.](#) BACP-based Discovery**

All G.998 protocols share a remote Bonding Channel Entity (BCE) discovery, using the [[G.994.1](#)] handshake (G.hs). The GBOND-MIB module provides an example of an automatic BCE connection to the corresponding Generic Bonding Sublayer (GBS) ports of a generic G.998 multi-port Central Office (CO) device, using the G.hs-based BCE discovery. Amendment 2 to the ITU-T G.998.2 specification [[G.998.2-Amd2](#)], provides an alternative optional Bonding Aggregation Control Protocol (BACP) for in-service discovery, aggregation and pair management.

The following pseudo-code gives the same example of the discovery and automatic BCE assignment for a multi-GBS G.Bond/Eth CO device, using BACP objects defined in this MIB module, IF-CAP-STACK-MIB and IF-MIB modules [Note that automatic BCE assignment is only shown here for the purposes of the example. Fixed BCE pre-assignment, manual assignment or auto-assignment using an alternative internal algorithm may be chosen by a particular implementation]:



```
// Go over all GBS ports in the CO device
FOREACH gbs[i] IN CO_device
{ // Perform discovery and auto-assignment on GBS ports
  // with room for more Channels
  IF ( gbs[i].NumBCEs < gbs[i].BondCapacity )
  { IF ( gbs[i].g99820perCp == cpBACP )
    { // Using BACP

      // Get Eligible Group ID and Remote Group ID
      // from a connected BCE (during BACP
      // initialization each BCE is connected to its own GBS)
      gid = ifStackTable[gbs[i]].bce[0].g9982BceEligibleGroupID;
      rgid =
        ifStackTable[gbs[i]].bce[0].g9982BcePeerEligibleGroupID;

      // Go over all disconnected Channels, which can
      // potentially be connected to the GBS
      FOREACH bce[j] IN ifCapStackTable[gbs[i]] AND
        NOT IN ifStackTable[gbs[i]] // not connected
      { // Read the Remote Group ID for the selected BCE
        // and compare it with the Remote Group ID of the connected
        // BCE.
        r = bce[j].g9982BcePeerEligibleGroupID;
        IF ( r == rgid AND gbs[i].NumBCEs < gbs[i].BondCapacity)
        { // Remote RT_device connected via BCE[j] is a peer
          // for GBS[i] and there room for another BCE in the
          // GBS[i] aggregation group (max. Bonding capacity is
          // not reached yet).
          // Connect this BCE to the GBS (via ifStackTable,
          // ifInvStackTable being inverse of ifStackTable is
          // updated automatically, i.e., gbs[i] is auto-added
          // to ifInvStackTable[bce[j]])
          ADD bce[j] TO ifStackTable[gbs[i]];
          gbs[i].NumBCEs = gbs[i].NumBCEs + 1;
        }
      }
    }
  }
  // At this point we have discovered all local BCEs which
  // are physically connected to the same remote RT_device
  // and connected them to GBS[i]. Go to the next GBS.
  BREAK;
}
ELSE
{ // Use default G.hs discovery protocol
  ...
}
}
```





An SNMP Agent for a G.Bond device builds ifCapStackTable and its inverse ifInvCapStackTable on device initialization, according to the cross-connect capabilities of the device. When BACP is used, the g9982BceConfEligibleGroupID object identifying bonding eligibility MUST be automatically updated, whenever the ifCapStackTable/ifInvCapStackTable are changed.

#### **4.3. Relationship to EFM Copper MIB module**

EFM-CU-MIB [[RFC5066](#)] module defines objects for managing Ethernet in the First Mile Copper (EFMCu) interfaces 10PASS-TS and 2BASE-TL, defined in IEEE Std 802.3-2005 [[802.3](#)]. These interfaces are based on Single-pair High-speed Digital Subscriber Line (SHDSL) [[G.991.2](#)] and Very High speed Digital Subscriber Line (VDSL) [[G.993.1](#)] technology respectively, and can be optionally aggregated (bonded).

ITU-T G.998.2 specification extends the IEEE 802.3 Clause 61 bonding to work over any xDSL technology, providing the ability to bond individual channels as well as physical lines. It also allows the use of alternative HDLC encapsulation instead of the default 64/65-octet encapsulation and adds a new optional Bonding Aggregation Control Protocol (BACP) for in-service discovery, aggregation and pair management instead of the default G.hs-based bonding protocol, which cannot be used in-service, while the link is up.

EFM-CU-MIB can be used to manage all aspects of the EFMCu physical interfaces (PHYS), including a complete (within the scope of the 802.3 standard) management of the SHDSL/VDSL lines. GBOND-MIB and G9982-MIB modules on the other hand, provide management objects only for the bonding part, leaving the management of the individual xDSL interfaces (lines/channels) to the respective xDSL-LINE-MIB modules.

Therefore an IEEE 802.3 2BASE-TL/10PASS-TS interface can be managed by either combination of the following MIB modules:

IF-MIB + IF-CAP-STACK-MIB + EtherLike-MIB + MAU-MIB + EFM-CU-MIB

IF-MIB + IF-CAP-STACK-MIB + GBOND-MIB + G9982-MIB + HDLSL2-SHDSL-LINE-MIB/VDSL-LINE-MIB

Note also that while EFM-CU-MIB relies on ifMauMediaAvailable object from MAU-MIB [[RFC4836](#)] for the additional bonded xDSL-specific operational states, GBOND-MIB provides these indication via gBondPortStatOperStatus object, complementing the ifOperStatus object from IF-MIB.

Finally, EFM-CU-MIB does not include historical Performance Monitoring (PM), while GBOND-MIB/GBOND-MIB-ETH/xDSL-LINE-MIB



combination provides full PM functionality for a bonded link and individual xDSL lines.

## **5. MIB Structure**

### **5.1. Overview**

The main management objects defined in the G9982-MIB module are split into 2 groups, structured as recommended by [RFC 4181](#) [[RFC4181](#)]:

- o g9982Port - containing objects for configuration, capabilities, status and PM of G.Bond/Eth ports. Note that the rest of the objects for the Generic Bonded Sub-layer (GBS) port configuration, capabilities, status, notifications and PM, is located in the GBOND-MIB module.
- o g9982Bce - containing objects representing OPTIONAL status information and BACP configuration for each Bonding Channel Entity (BCE). Note that the rest of the objects for the BCE configuration, capabilities, status and notifications, is located in relevant xDSL line MIB modules as well as in the GBOND-MIB module.

### **5.2. Performance Monitoring**

The OPTIONAL performance monitoring counters, thresholds and history buckets (interval-counters), similar to those defined in [[TR-159](#)] are implemented using the textual conventions defined in the HC-PerfHist-TC-MIB [[RFC3795](#)]. 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.

### **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 managed objects defined in this document.



+-----+-----+	+-----+-----+	+-----+-----+
TR-159 Managed Object	Corresponding SNMP Object	
+-----+-----+	+-----+-----+	+-----+-----+
oBondEth - Basic Package		
(Mandatory)		
+-----+-----+	+-----+-----+	+-----+-----+
aEthBACPSupported	g9982PortCapBacpSupported	
+-----+-----+	+-----+-----+	+-----+-----+
aEthTcAdminType	g9982PortConfTcAdminType	
+-----+-----+	+-----+-----+	+-----+-----+
aEthTcOperType	g9982PortStatTcOperType	
+-----+-----+	+-----+-----+	+-----+-----+
aEthTcTypesSupported	g9982PortCapTcTypesSupported	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxErros	g9982PortStatRxErros	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxSmallFragments	g9982PortStatRxSmallFragments	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxLargeFragments	g9982PortStatRxLargeFragments	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxBadFragments	g9982PortStatRxBadFragments	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxLostFragments	g9982PortStatRxLostFragments	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxLostStarts	g9982PortStatRxLostStarts	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxLostEnds	g9982PortStatRxLostEnds	
+-----+-----+	+-----+-----+	+-----+-----+
aEthRxOverflows	g9982PortStatRxOverflows	
+-----+-----+	+-----+-----+	+-----+-----+
oBondEth - BACP Package		
(Optional)		
+-----+-----+	+-----+-----+	+-----+-----+
aEthAdminCP	g9982PortConfAdminCp	
+-----+-----+	+-----+-----+	+-----+-----+
aEthOperCP	g9982PortStatOperCp	
+-----+-----+	+-----+-----+	+-----+-----+
oChannel - BACP package		
(Optional)		
+-----+-----+	+-----+-----+	+-----+-----+
aChannelEligibleGroupID	g9982BceConfEligibleGroupID	
+-----+-----+	+-----+-----+	+-----+-----+
aChannelEligibleStreamID	g9982BceConfPeerEligibleGroupID	
+-----+-----+	+-----+-----+	+-----+-----+
oChannel - PM package		
(Optional)		
+-----+-----+	+-----+-----+	+-----+-----+
aChannelPtmTcRxCodingViolations	g9982BceStatTcInCodingErrors	



aChannelPtmTcRxCrcErrors	g9982BceStatTcInCrcErrors	
+-----+	+-----+	+-----+

Table 1: Mapping of TR-159 Managed Objects

Note that some of the mapping between the objects defined in TR-159 and the ones defined in this MIB module is not one-to-one, for example, while TR-159 PM attributes aGroupPerf\* map to the corresponding gBondPortPm\* objects of the GBOND-MIB module, there are no dedicated PM attributes for the g9982PortPm\* objects introduced in this MIB module. However, since their definition is identical to the definition of gBondPortPm\* objects of the GBOND-MIB module, we can map g9982PortPm\* to the relevant aGroupPerf\* attributes of TR-159 and use the term 'partial mapping' to denote the fact that this mapping is not one-to-one.

## 6. G.Bond/Ethernet MIB Definitions

G9982-MIB DEFINITIONS ::= BEGIN

```

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Counter32,
    mib-2,
    Unsigned32
        FROM SNMPv2-SMI          -- [RFC2578]
    TEXTUAL-CONVENTION,
    TruthValue,
    PhysAddress
        FROM SNMPv2-TC          -- [RFC2579]
    MODULE-COMPLIANCE,
    OBJECT-GROUP
        FROM SNMPv2-CONF        -- [RFC2580]
    ifIndex
        FROM IF-MIB              -- [RFC2863]
    HCPperfCurrentCount,
    HCPperfValidIntervals,
    HCPperfInvalidIntervals,
    HCPperfTimeElapsed
        FROM HC-PerfHist-TC-MIB -- [RFC3705]
;

```

---

```

g9982MIB MODULE-IDENTITY
    LAST-UPDATED "201203120000Z" -- Mar 12, 2012
    ORGANIZATION "IETF ADSL MIB Working Group"
    CONTACT-INFO
        "WG charter:

```





<http://www.ietf.org/html.charters/adslmib-charter.html>

Mailing Lists:

General Discussion: [adslmib@ietf.org](mailto:adslmib@ietf.org)  
To Subscribe: [adslmib-request@ietf.org](mailto:adslmib-request@ietf.org)  
In Body: subscribe your\_email\_address

Chair: Menachem Dodge  
Postal: ECI Telecom, Ltd.  
30 Hasivim St.,  
Petach-Tikva 4951169  
Israel  
Phone: +972-3-926-8421  
Email: [menachem.dodge@ecitele.com](mailto:menachem.dodge@ecitele.com)

Editor: Edward Beili  
Postal: Actelis Networks, Inc.  
25 Bazel St., P.O.B. 10173  
Petach-Tikva 49103  
Israel  
Phone: +972-3-924-3491  
Email: [edward.beili@actelis.com](mailto:edward.beili@actelis.com)

Editor: Moti Morgenstern  
Postal: ECI Telecom  
30 Hasivim St.  
Petach-Tikva 4951169  
Israel  
Phone: +972-3-926-6258  
Email: [moti.morgenstern@ecitele.com](mailto:moti.morgenstern@ecitele.com)

DESCRIPTION

"The objects in this MIB module are used to manage the Ethernet-based multi-pair bonded xDSL Interfaces, defined in ITU-T recommendation G.998.2 (G.Bond/Ethernet).

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.998.2] refers to:

ITU-T Recommendation G.998.2: 'Ethernet-based multi-pair bonding', January 2005.

[G.998.2-Amd2] refers to:

ITU-T G.998.2 Amendment 2, December 2007



[802.3] refers to:

IEEE Std 802.3-2005: 'IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications', December 2005.

[TR-159] refers to:

Broadband Forum Technical Report: 'Management Framework for xDSL Bonding', December 2008.

Naming Conventions:

BACP - Bonding Aggregation Control Protocol  
BCE - Bonding Channel Entity  
BTU - Bonding Transmission Unit  
BTU-C - Bonding Transmission Unit, CO side  
BTU-R - Bonding Transmission Unit, Remote Terminal (CPE) side  
CO - Central Office  
CPE - Customer Premises Equipment  
GBS - Generic Bonding Sublayer  
HDLC - High-level Data Link Control  
PTM-TC - Packet Transfer Mode Transmission Convergence (sub-layer)  
SNR - Signal to Noise Ratio  
TC - Transmission Convergence (sub-layer)  
UAS - 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 "201203120000Z" -- Mar 12, 2012

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](#)

g99820objects OBJECT IDENTIFIER ::= { g9982MIB 1 }



```
g9982Conformance OBJECT IDENTIFIER ::= { g9982MIB 2 }
```

```
-- Groups in the module
```

```
g9982Port          OBJECT IDENTIFIER ::= { g9982Objects 1 }
```

```
g9982Bce           OBJECT IDENTIFIER ::= { g9982Objects 2 }
```

```
-----  
-- Textual Conventions  
-----
```

```
G9982PtmTcType ::= TEXTUAL-CONVENTION
```

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "This textual convention represents possible PTM-TC types in  
        G.bond/Eth ports. The following values are defined:
```

```
        tc6465      - 64/65-octet encapsulation, as defined in  
                     \[802.3\] Clause 61.3.3
```

```
        tcHDLC      - HDLC encapsulation, as defined in [G.998.2]  
                     Annex B"
```

```
    SYNTAX          INTEGER {
```

```
        tc6465(1),
```

```
        tcHDLC(2)
```

```
    }
```

```
G9982CpType ::= TEXTUAL-CONVENTION
```

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "This textual convention represents possible Control Protocol  
        types in G.bond/Eth ports. The following values are defined:
```

```
        unknown     - the Control Protocol cannot be determined.
```

```
        cpHS        - G.hs-based discovery and aggregation,  
                     as specified in [G.998.2]
```

```
        cpBACP      - Bonding Aggregation Control Protocol (BACP) -  
                     a frame-based discovery, aggregation and link  
                     management protocol, as specified in  
                     [G.998.2-Amd2] Annex C."
```

```
    SYNTAX          INTEGER {
```

```
        unknown(0),
```

```
        cpHS(1),
```

```
        cpBACP(2)
```

```
    }
```

```
-----  
-- GBS Notifications group  
-----
```



```
-- empty --

-----
-- GBS group
-----

g9982PortConfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF G9982PortConfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table for Configuration of G.Bond/Eth GBS ports. Entries in
        this table MUST be maintained in a persistent manner"
    ::= { g9982Port 1 }

g9982PortConfEntry OBJECT-TYPE
    SYNTAX      G9982PortConfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the G.Bond/Eth Port Configuration table.
        Each entry represents a G.Bond Ethernet port indexed by the
        ifIndex.
        Note that a G.Bond/Eth GBS port runs on top of a single
        or multiple BCE port(s), which are also indexed by ifIndex."
    INDEX { ifIndex }
    ::= { g9982PortConfTable 1 }

G9982PortConfEntry ::=
    SEQUENCE {
        g9982PortConfTcAdminType      G9982PtmTcType,
        g9982PortConfAdminCp          G9982CpType
    }

g9982PortConfTcAdminType OBJECT-TYPE
    SYNTAX      G9982PtmTcType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Administrative (desired) PTM-TC encapsulation type of
        G.Bond/Eth port (GBS).
        Possible values are:
            tc6465(1) - 64/65-octet encapsulation
            tcHDLC(2) - HDLC encapsulation
        Attempts to set a port to a non-supported PTM-TC encapsulation
        type (see g9982PortCapTcTypesSupported) SHALL be rejected
        (with the error inconsistentValue).
```





Changing g9982PortConfTcAdminType is a traffic disruptive operation and as such SHALL be done when the link (GBS) is administratively 'down', as indicated by the ifAdminStatus object in IF-MIB.

Attempts to change this object SHALL be rejected (with the error inconsistentValue) if the link is Up or Initializing.

This object maps to the TR-159 attribute aEthTcAdminType."

#### REFERENCE

"[[TR-159](#)] 5.5.3.4; IF-MIB, ifAdminStatus"  
::= { g9982PortConfEntry 1 }

#### g9982PortConfAdminCp OBJECT-TYPE

SYNTAX G9982CpType

MAX-ACCESS read-write

STATUS current

#### DESCRIPTION

"Administrative (desired) bonding control protocol of G.Bond/Eth port (GBS). Possible values are:

cpHS(1) - use G.hs-based protocol (default)

cpBACP(2) - use frame-based BACP

Note G.hs-based protocol support is mandatory, according to [[G.998.2](#)]. Attempts to set a port to a non-supported bonding control protocol (e.g. BACP if the value of g9982PortCapBacpSupported is false) SHALL be rejected (with the error inconsistentValue).

Changing g9982PortConfAdminCp is a traffic disruptive operation and as such SHALL be done when the link (GBS) is administratively 'down', as indicated by the ifAdminStatus object in IF-MIB.

Attempts to change this object SHALL be rejected (with the error inconsistentValue) if the link is Up or Initializing.

This object maps to the TR-159 attribute aEthAdminCP."

#### REFERENCE

"[[TR-159](#)] 5.5.3.2; IF-MIB, ifAdminStatus"  
DEFVAL { cpHS }  
::= { g9982PortConfEntry 2 }

#### g9982PortCapTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982PortCapEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"Table for Capabilities of G.Bond/Eth Ports. Entries in this table MUST be maintained in a persistent manner"



```
::= { g9982Port 2 }
```

g9982PortCapEntry OBJECT-TYPE

SYNTAX G9982PortCapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/Eth Port Capability table.

Each entry represents a G.Bond port indexed by the ifIndex.

Note that a G.Bond GBS port runs on top of a single

or multiple BCE port(s), which are also indexed by ifIndex."

INDEX { ifIndex }

```
::= { g9982PortCapTable 1 }
```

G9982PortCapEntry ::=

SEQUENCE {

g9982PortCapTcTypesSupported BITS,

g9982PortCapBacpSupported TruthValue

}

g9982PortCapTcTypesSupported OBJECT-TYPE

SYNTAX BITS {

tc6465(0),

tcHDLC(1)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"PTM-TC Encapsulation types supported by the G.Bond/Eth port.

This is a bitmap of possible encapsulation types. The various bit positions are:

tc6465 - GBS is capable of 64/65-octet encapsulation

tcHDLC - GBS is capable of HDLC encapsulation

A desired encapsulation is determined by

g9982PortConfTcAdminType, while g9982PortStatTcOperType reflects the current operating mode.

This object maps to the TR-159 attribute aEthTcTypesSupported."

REFERENCE

"[[TR-159](#)] 5.5.3.6"

```
::= { g9982PortCapEntry 1 }
```

g9982PortCapBacpSupported OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION



"Indicates whether Bonding Aggregation Control Protocol (BACP) - frame-based discovery, aggregation and link management protocol specified in [[G.998.2-Amd2](#)] is supported by the G.Bond/Ethernet port.

A value of true(1) indicates that the BACP is supported.

A value of false(2) indicates that the BACP is unsupported.

The BACP functionality, if supported, can be enabled or disabled via g9982AdminCP, while g9982OperCP reflects the current BACP operating mode.

This object maps to the TR-159 attribute aEthBACPSupported."

#### REFERENCE

"[[TR-159](#)] 5.5.3.1, [[G.998.2-Amd2](#)] Annex C"

::= { g9982PortCapEntry 2 }

#### g9982PortStatTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982PortStatEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"This table provides overall status information of G.Bond ports, complementing the generic status information from the ifTable of IF-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."

::= { g9982Port 3 }

#### g9982PortStatEntry OBJECT-TYPE

SYNTAX G9982PortStatEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"An entry in the G.Bond/Eth Port Status table.

Each entry represents a G.Bond/Eth port indexed by the ifIndex.

Note that a G.Bond GBS port runs on top of a single or multiple BCE port(s), which are also indexed by ifIndex."

INDEX { ifIndex }

::= { g9982PortStatTable 1 }

#### G9982PortStatEntry ::=

SEQUENCE {

g9982PortStatTcOperType

G9982PtmTcType,

g9982PortStatOperCp

G9982CpType,



g9982PortStatRxErrors	Counter32,
g9982PortStatRxSmallFragments	Counter32,
g9982PortStatRxLargeFragments	Counter32,
g9982PortStatRxBadFragments	Counter32,
g9982PortStatRxLostFragments	Counter32,
g9982PortStatRxLostStarts	Counter32,
g9982PortStatRxLostEnds	Counter32,
g9982PortStatRxOverflows	Counter32

}

#### g9982PortStatTcOperType OBJECT-TYPE

SYNTAX G9982PtmTcType

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"Current operational encapsulation type of the G.Bond/Eth port.

Possible values are:

tc6465(1) - GBS uses 64/65-octet encapsulation

tcHDLC(2) - GBS uses HDLC encapsulation

The operational PTM-TC encapsulation type can be configured via g9982PortConfTcAdminType.

This objects maps to the TR-159 attribute aEthTcOperType."

##### REFERENCE

"[[TR-159](#)] 5.5.3.5"

::= { g9982PortStatEntry 1 }

#### g9982PortStatOperCp OBJECT-TYPE

SYNTAX G9982CpType

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"Current operational bonding discovery and aggregation control protocol of the G.Bond/Eth port.

Possible values are:

unknown(0) - the protocol cannot be determined, e.g. when the GBS is down

cpHS(1) - GBS uses G.hs-based protocol

cpBACP(2) - GBS uses frame-based BACP

The operational discovery and aggregation control protocol can be configured via g9982PortConfAdminCp variable.

This objects maps to the TR-159 attribute aEthOperCP."

##### REFERENCE

"[[TR-159](#)] 5.5.3.3"





```
::= { g9982PortStatEntry 2 }
```

#### g9982PortStatRxEErrors OBJECT-TYPE

```
SYNTAX      Counter32
UNITS       "fragments"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
```

"A number of Ethernet frame fragments that have been received by the bonding function and discarded due to various errors.

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 the TR-159 attribute aEthRxEErrors."

#### REFERENCE

"[[TR-159](#)] 5.5.3.7"

```
::= { g9982PortStatEntry 3 }
```

#### g9982PortStatRxSmallFragments OBJECT-TYPE

```
SYNTAX      Counter32
UNITS       "fragments"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
```

"A number of fragments smaller than minFragmentSize (64 Bytes), that have been received by the bonding function and discarded.

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 the TR-159 attribute aEthRxSmallFragments."

#### REFERENCE

"[[TR-159](#)] 5.5.3.8"

```
::= { g9982PortStatEntry 4 }
```

#### g9982PortStatRxBLargeFragments OBJECT-TYPE

```
SYNTAX      Counter32
UNITS       "fragments"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
```

"A number of fragments larger than maxFragmentSize (512 Bytes), which have been received by the bonding function and discarded.



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 the TR-159 attribute aEthRxLargeFragments."

REFERENCE

"[[TR-159](#)] 5.5.3.9"  
::= { g9982PortStatEntry 5 }

g9982PortStatRxBadFragments OBJECT-TYPE

SYNTAX Counter32  
UNITS "fragments"  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

"A number of fragments which do not fit into the sequence expected by the frame assembly function, that have been received and discarded by the bonding function (the frame buffer is flushed to the next valid frame start).

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 the TR-159 attribute aEthRxBadFragments."

REFERENCE

"[[TR-159](#)] 5.5.3.10"  
::= { g9982PortStatEntry 6 }

g9982PortStatRxLostFragments OBJECT-TYPE

SYNTAX Counter32  
UNITS "fragments"  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

"A number of gaps in the sequence of fragments, which have been received by the bonding function (the frame buffer is flushed to the next valid frame start, when fragment/fragments expected by the frame assembly function is/are not received).

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 the TR-159 attribute aEthRxLostFragments."



## REFERENCE

"[[TR-159](#)] 5.5.3.11"  
::= { g9982PortStatEntry 7 }

## g9982PortStatRxLostStarts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A number of missing StartOfPacket indicators expected by the frame assembly function.

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 the TR-159 attribute aEthRxLostStarts."

## REFERENCE

"[[TR-159](#)] 5.5.3.12"  
::= { g9982PortStatEntry 8 }

## g9982PortStatRxLostEnds OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A number of missing EndOfPacket indicators expected by the frame assembly function.

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 the TR-159 attribute aEthRxLostEnds."

## REFERENCE

"[[TR-159](#)] 5.5.3.13"  
::= { g9982PortStatEntry 9 }

## g9982PortStatRxOverflows OBJECT-TYPE

SYNTAX Counter32

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A number of fragments, received and discarded by the bonding function, which would have caused the frame assembly buffer to



overflow.

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 the TR-159 attribute aEthRxOverflows."

#### REFERENCE

"[[TR-159](#)] 5.5.3.14"

::= { g9982PortStatEntry 10 }

-----  
 -- GBS Performance Monitoring group  
 -----

g9982PM OBJECT IDENTIFIER ::= { g9982Port 4 }

g9982PortPmCurTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982PortPmCurEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"This table contains current Performance Monitoring information for a G.Bond/ETth port. This table contains live data from the equipment and as such is NOT persistent."

::= { g9982PM 1 }

g9982PortPmCurEntry OBJECT-TYPE

SYNTAX G9982PortPmCurEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"An entry in the G.Bond/Eth Port PM table.

Each entry represents a G.Bond/Eth port indexed by the ifIndex."

INDEX { ifIndex }

::= { g9982PortPmCurTable 1 }

G9982PortPmCurEntry ::=

SEQUENCE {

g9982PortPm15MinValidIntervals	HCPeefValidIntervals,
g9982PortPm15MinInvalidIntervals	HCPeefInvalidIntervals,
g9982PortPmCur15MinTimeElapsed	HCPeefTimeElapsed,
g9982PortPmCur15MinRxErros	HCPeefCurrentCount,
g9982PortPmCur15MinRxBadFragments	HCPeefCurrentCount,
g9982PortPmCur15MinRxBadFragments	HCPeefCurrentCount,
g9982PortPmCur15MinRxBadFragments	HCPeefCurrentCount,





g9982PortPmCur15MinRxLostFragments	HCPperfCurrentCount,
g9982PortPmCur15MinRxLostStarts	HCPperfCurrentCount,
g9982PortPmCur15MinRxLostEnds	HCPperfCurrentCount,
g9982PortPmCur15MinRxOverflows	HCPperfCurrentCount,
g9982PortPm1DayValidIntervals	Unsigned32,
g9982PortPm1DayInvalidIntervals	Unsigned32,
g9982PortPmCur1DayTimeElapsed	HCPperfTimeElapsed,
g9982PortPmCur1DayRxErrors	HCPperfCurrentCount,
g9982PortPmCur1DayRxSmallFragments	HCPperfCurrentCount,
g9982PortPmCur1DayRxLargeFragments	HCPperfCurrentCount,
g9982PortPmCur1DayRxBadFragments	HCPperfCurrentCount,
g9982PortPmCur1DayRxLostFragments	HCPperfCurrentCount,
g9982PortPmCur1DayRxLostStarts	HCPperfCurrentCount,
g9982PortPmCur1DayRxLostEnds	HCPperfCurrentCount,
g9982PortPmCur1DayRxOverflows	HCPperfCurrentCount

}

#### g9982PortPm15MinValidIntervals OBJECT-TYPE

SYNTAX        HCPperfValidIntervals

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"

::= { g9982PortPmCurEntry 1 }

#### g9982PortPm15MinInvalidIntervals OBJECT-TYPE

SYNTAX        HCPperfInvalidIntervals

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"

::= { g9982PortPmCurEntry 2 }

## g9982PortPmCur15MinTimeElapsed OBJECT-TYPE

SYNTAX HCPerfTimeElapsed

UNITS "seconds"

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"

::= { g9982PortPmCurEntry 3 }

## g9982PortPmCur15MinRxErrors OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of errored fragments received and discarded  
by a G.Bond/Eth port, during the current 15-minute performance  
interval.

Note that the total number of errored fragments is indicated by  
the g9982PortStatRxErrors object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.7"

::= { g9982PortPmCurEntry 4 }

## g9982PortPmCur15MinRxSmallFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments smaller than minFragmentSize  
(64 Bytes), that have been received and discarded by a  
G.Bond/Eth port, during the current 15-minute performance



interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxSmallFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.8"

::= { g9982PortPmCurEntry 5}

g9982PortPmCur15MinRxLargeFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments larger than maxFragmentSize (512 Bytes), that have been received and discarded by a G.Bond/Eth port, during the current 15-minute performance interval.

Note that the total number of large fragments is indicated by the g9982PortStatRxLargeFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.9"

::= { g9982PortPmCurEntry 6}

g9982PortPmCur15MinRxBadFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments which do not fit into the sequence expected by the frame assembly function, that have been received and discarded by a G.Bond/Eth port, during the current 15-minute performance interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxBadFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.10"

::= { g9982PortPmCurEntry 7}



**g9982PortPmCur15MinRxLostFragments OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of gaps in the sequence of fragments, expected by the frame assembly function of a G.Bond/Eth port, during the current 15-minute performance interval.

Note that the total number of the lost fragments is indicated by the g9982PortStatRxLostFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

**REFERENCE**

"[[TR-159](#)] 5.5.3.11"

::= { g9982PortPmCurEntry 8}

**g9982PortPmCur15MinRxLostStarts OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of missing StartOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the current 15-minute performance interval.

Note that the total number of missing StartOfPacket indicators is indicated by the g9982PortStatRxLostStarts object.

This object is inhibited during Unavailable Seconds (UAS)."

**REFERENCE**

"[[TR-159](#)] 5.5.3.12"

::= { g9982PortPmCurEntry 9}

**g9982PortPmCur15MinRxLostEnds OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of missing EndOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the current 15-minute performance interval.

Note that the total number of missing EndOfPacket indicators is indicated by the g9982PortStatRxLostEnds object.

This object is inhibited during Unavailable Seconds (UAS)."





## REFERENCE

"[[TR-159](#)] 5.5.3.13"  
::= { g9982PortPmCurEntry 10}

## g9982PortPmCur15MinRxOverflows OBJECT-TYPE

SYNTAX        HCPperfCurrentCount

UNITS         "fragments"

MAX-ACCESS   read-only

STATUS        current

## DESCRIPTION

"A read-only count of fragments that have been received and discarded by a G.Bond/Eth port, which would have caused the frame assembly buffer to overflow, during the current 15-minute performance interval.

Note that the total number of fragments which would have caused the frame assembly buffer to overflow is indicated by the g9982PortStatRxOverflows object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.14"  
::= { g9982PortPmCurEntry 11}

## g9982PortPm1DayValidIntervals OBJECT-TYPE

SYNTAX        Unsigned32 (0..7)

UNITS         "days"

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"  
::= { g9982PortPmCurEntry 12 }

## g9982PortPm1DayInvalidIntervals OBJECT-TYPE

SYNTAX        Unsigned32 (0..7)

UNITS         "days"

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"

::= { g9982PortPmCurEntry 13 }

## g9982PortPmCur1DayTimeElapsed OBJECT-TYPE

SYNTAX HCPerfTimeElapsed

UNITS "seconds"

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"

::= { g9982PortPmCurEntry 14 }

## g9982PortPmCur1DayRxErrors OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of errored fragments received and discarded by a G.Bond/Eth port, during the current 1-day performance interval."

Note that the total number of errored fragments is indicated by the g9982PortStatRxErrors object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.7"

::= { g9982PortPmCurEntry 15 }

## g9982PortPmCur1DayRxSmallFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments smaller than minFragmentSize (64 Bytes), that have been received and discarded by a G.Bond/Eth port, during the current 1-day performance interval."



Note that the total number of small fragments is indicated by the g9982PortStatRxSmallFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.8"

::= { g9982PortPmCurEntry 16}

## g9982PortPmCur1DayRxLargeFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments larger than maxFragmentSize (512 Bytes), that have been received and discarded by a G.Bond/Eth port, during the current 1-day performance interval.

Note that the total number of large fragments is indicated by the g9982PortStatRxLargeFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.9"

::= { g9982PortPmCurEntry 17}

## g9982PortPmCur1DayRxBadFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments which do not fit into the sequence expected by the frame assembly function, that have been received and discarded by a G.Bond/Eth port, during the current 1-day performance interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxBadFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.10"

::= { g9982PortPmCurEntry 18}

## g9982PortPmCur1DayRxLostFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"



MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of gaps in the sequence of fragments, expected by the frame assembly function of a G.Bond/Eth port, during the current 1-day performance interval.

Note that the total number of the lost fragments is indicated by the g9982PortStatRxLostFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.11"

::= { g9982PortPmCurEntry 19}

g9982PortPmCur1DayRxLostStarts OBJECT-TYPE

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of missing StartOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the current 1-day performance interval.

Note that the total number of missing StartOfPacket indicators is indicated by the g9982PortStatRxLostStarts object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.12"

::= { g9982PortPmCurEntry 20}

g9982PortPmCur1DayRxLostEnds OBJECT-TYPE

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of missing EndOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the current 1-day performance interval.

Note that the total number of missing EndOfPacket indicators is indicated by the g9982PortStatRxLostEnds object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.13"

::= { g9982PortPmCurEntry 21}





## g9982PortPmCur1DayRxOverflows OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments that have been received and discarded by a G.Bond/Eth port, which would have caused the frame assembly buffer to overflow, during the current 1-day performance interval.

Note that the total number of fragments which would have caused the frame assembly buffer to overflow is indicated by the g9982PortStatRxOverflows object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.14"

::= { g9982PortPmCurEntry 22 }

-- Port PM history: 15-min buckets

## g9982PortPm15MinTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982PortPm15MinEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"This table contains historical 15-minute buckets of Performance Monitoring information for a G.Bond/Eth port (a row for each 15-minute interval, up to 96 intervals).

Entries in this table MUST be maintained in a persistent manner."

::= { g9982PM 2 }

## g9982PortPm15MinEntry OBJECT-TYPE

SYNTAX G9982PortPm15MinEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the G.Bond/Eth Port historical 15-minute PM table. Each entry represents performance monitoring data for a G.Bond/Eth port, indexed by ifIndex, collected during a particular 15-minute interval, indexed by g9982PortPm15MinIntervalIndex."

INDEX { ifIndex, g9982PortPm15MinIntervalIndex }

::= { g9982PortPm15MinTable 1 }

G9982PortPm15MinEntry ::=

SEQUENCE {



g9982PortPm15MinIntervalIndex	Unsigned32,
g9982PortPm15MinIntervalMoniTime	HCPperfTimeElapsed,
g9982PortPm15MinIntervalRxErrors	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxSmallFragments	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxLargeFragments	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxBadFragments	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxLostFragments	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxLostStarts	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxLostEnds	HCPperfCurrentCount,
g9982PortPm15MinIntervalRxOverflows	HCPperfCurrentCount,
g9982PortPm15MinIntervalValid	TruthValue

}

#### g9982PortPm15MinIntervalIndex 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"

::= { g9982PortPm15MinEntry 1 }

#### g9982PortPm15MinIntervalMoniTime OBJECT-TYPE

SYNTAX HCPperfTimeElapsed

UNITS "seconds"

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."

::= { g9982PortPm15MinEntry 2 }

#### g9982PortPm15MinIntervalRxErrors OBJECT-TYPE

SYNTAX HCPperfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"A read-only count of errored fragments received and discarded by a G.Bond/Eth port, during the 15-minute performance history



interval.

Note that the total number of errored fragments is indicated by the g9982PortStatRxErrors object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.7"

::= { g9982PortPm15MinEntry 3}

g9982PortPm15MinIntervalRxSmallFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments smaller than minFragmentSize (64 Bytes), that have been received and discarded by a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxSmallFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.8"

::= { g9982PortPm15MinEntry 4}

g9982PortPm15MinIntervalRxLargeFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments larger than maxFragmentSize (512 Bytes), that have been received and discarded by a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of large fragments is indicated by the g9982PortStatRxLargeFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.9"

::= { g9982PortPm15MinEntry 5}



**g9982PortPm15MinIntervalRxBadFragments OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of fragments which do not fit into the sequence expected by the frame assembly function, that have been received and discarded by a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxBadFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

**REFERENCE**

"[[TR-159](#)] 5.5.3.10"

::= { g9982PortPm15MinEntry 6}

**g9982PortPm15MinIntervalRxLostFragments OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of gaps in the sequence of fragments, expected by the frame assembly function of a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of the lost fragments is indicated by the g9982PortStatRxLostFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

**REFERENCE**

"[[TR-159](#)] 5.5.3.11"

::= { g9982PortPm15MinEntry 7}

**g9982PortPm15MinIntervalRxLostStarts OBJECT-TYPE**

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"A read-only count of missing StartOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of missing StartOfPacket indicators is indicated by the g9982PortStatRxLostStarts object.





This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.12"

::= { g9982PortPm15MinEntry 8}

## g9982PortPm15MinIntervalRxLostEnds OBJECT-TYPE

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of missing EndOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the 15-minute performance history interval.

Note that the total number of missing EndOfPacket indicators is indicated by the g9982PortStatRxLostEnds object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.13"

::= { g9982PortPm15MinEntry 9}

## g9982PortPm15MinIntervalRxOverflows OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments that have been received and discarded by a G.Bond/Eth port, which would have caused the frame assembly buffer to overflow, during the 15-minute performance history interval.

Note that the total number of fragments which would have caused the frame assembly buffer to overflow is indicated by the g9982PortStatRxOverflows object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.14"

::= { g9982PortPm15MinEntry 10}

## g9982PortPm15MinIntervalValid 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"

::= { g9982PortPm15MinEntry 11 }

-- Port PM history: 1-day buckets

g9982PortPm1DayTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982PortPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains historical 1-day buckets of Performance Monitoring information for a G.Bond/Eth port (a row for each 1-day interval, up to 7 intervals).

Entries in this table MUST be maintained in a persistent manner."

::= { g9982PM 3 }

g9982PortPm1DayEntry OBJECT-TYPE

SYNTAX G9982PortPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/Eth 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 g9982PortPm1DayIntervalIndex."

INDEX { ifIndex, g9982PortPm1DayIntervalIndex }

::= { g9982PortPm1DayTable 1 }

G9982PortPm1DayEntry ::=

SEQUENCE {

g9982PortPm1DayIntervalIndex	Unsigned32,
g9982PortPm1DayIntervalMoniTime	HCPperfTimeElapsed,
g9982PortPm1DayIntervalRxErrors	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxSmallFragments	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxLargeFragments	HCPperfCurrentCount,



g9982PortPm1DayIntervalRxBadFragments	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxBadFragments	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxBadStarts	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxBadEnds	HCPperfCurrentCount,
g9982PortPm1DayIntervalRxBadOverflows	HCPperfCurrentCount,
g9982PortPm1DayIntervalValid	TruthValue

}

g9982PortPm1DayIntervalIndex 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 7 days ago. Intervals 2..7 are OPTIONAL.

This object partially maps to the TR-159 attribute aGroupPerf1DayIntervalNumber."

REFERENCE

"[[TR-159](#)] 5.5.1.62"

::= { g9982PortPm1DayEntry 1 }

g9982PortPm1DayIntervalMoniTime OBJECT-TYPE

SYNTAX HCPperfTimeElapsed

UNITS "seconds"

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"

::= { g9982PortPm1DayEntry 2 }

g9982PortPm1DayIntervalRxErrors OBJECT-TYPE

SYNTAX HCPperfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of errored fragments received and discarded by a G.Bond/Eth port, during the 1-day performance history



interval.

Note that the total number of errored fragments is indicated by the g9982PortStatRxErrors object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.7"

::= { g9982PortPm1DayEntry 3 }

g9982PortPm1DayIntervalRxSmallFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments smaller than minFragmentSize (64 Bytes), that have been received and discarded by a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxSmallFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.8"

::= { g9982PortPm1DayEntry 4 }

g9982PortPm1DayIntervalRxBigFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments larger than maxFragmentSize (512 Bytes), that have been received and discarded by a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of large fragments is indicated by the g9982PortStatRxBigFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.9"

::= { g9982PortPm1DayEntry 5 }

g9982PortPm1DayIntervalRxBadFragments OBJECT-TYPE

SYNTAX HCPerfCurrentCount





UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of fragments which do not fit into the sequence expected by the frame assembly function, that have been received and discarded by a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of small fragments is indicated by the g9982PortStatRxBadFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.10"

::= { g9982PortPm1DayEntry 6}

g9982PortPm1DayIntervalRxBadFragments OBJECT-TYPE

SYNTAX HCPperfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of gaps in the sequence of fragments, expected by the frame assembly function of a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of the lost fragments is indicated by the g9982PortStatRxBadFragments object.

This object is inhibited during Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.3.11"

::= { g9982PortPm1DayEntry 7}

g9982PortPm1DayIntervalRxBadStarts OBJECT-TYPE

SYNTAX HCPperfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of missing StartOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of missing StartOfPacket indicators is indicated by the g9982PortStatRxBadStarts object.

This object is inhibited during Unavailable Seconds (UAS)."



## REFERENCE

"[[TR-159](#)] 5.5.3.12"  
::= { g9982PortPm1DayEntry 8}

## g9982PortPm1DayIntervalRxLostEnds OBJECT-TYPE

SYNTAX HCPerfCurrentCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of missing EndOfPacket indicators expected by the frame assembly function of a G.Bond/Eth port, during the 1-day performance history interval.

Note that the total number of missing EndOfPacket indicators is indicated by the g9982PortStatRxLostEnds object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.13"  
::= { g9982PortPm1DayEntry 9}

## g9982PortPm1DayIntervalRxOverflows OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "fragments"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of fragments that have been received and discarded by a G.Bond/Eth port, which would have caused the frame assembly buffer to overflow, during the 1-day performance history interval.

Note that the total number of fragments which would have caused the frame assembly buffer to overflow is indicated by the g9982PortStatRxOverflows object.

This object is inhibited during Unavailable Seconds (UAS)."

## REFERENCE

"[[TR-159](#)] 5.5.3.14"  
::= { g9982PortPm1DayEntry 10}

## g9982PortPm1DayIntervalValid 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"

::= { g9982PortPm1DayEntry 11 }

-----  
-- BCE group  
-----

g9982BceConfTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982BceConfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table for Configuration of G.Bond/Eth specific aspects for the Bonding Channel Entity (BCE) ports (modems/channels).

Entries in this table MUST be maintained in a persistent manner."

::= { g9982Bce 1 }

g9982BceConfEntry OBJECT-TYPE

SYNTAX G9982BceConfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/Eth BCE Configuration table.

Each entry represents G.998.2-specific aspects of a BCE port indexed by the ifIndex. Note that a G.Bond/Eth BCE port can be stacked below a single GBS port, also indexed by ifIndex."

INDEX { ifIndex }

::= { g9982BceConfTable 1 }

G9982BceConfEntry ::=

SEQUENCE {

g9982BceConfEligibleGroupID PhysAddress,

g9982BceConfPeerEligibleGroupID PhysAddress

}



**g9982BceConfEligibleGroupID OBJECT-TYPE**

SYNTAX PhysAddress (SIZE(0|6))

MAX-ACCESS read-write

STATUS current

**DESCRIPTION**

"BACP Eligible Group ID of a G.Bond/ETH BCE port.

A universally unique 6-octet long identifier, used by the OPTIONAL BACP, to determine bonding eligibility. When two BCEs have the same g9982BceConfEligibleGroupID on a system, they are eligible to be aggregated on that system. Typically, all BCEs on a BTU-R device would be assigned the same g9982BceConfEligibleGroupID, to assert that all of the BCEs should be in the same bonded group. BCEs with different g9982BceConfEligibleGroupID values MUST NOT be connected to the same GBS.

BCEs with the same g9982BceConfEligibleGroupID MAY be connected to different GBS ports.

This object MUST be instantiated during BACP initialization, when every BCE belongs to its own GBS. Attempts to change this object MUST be rejected (with the error inconsistentValue), if the BCE is aggregated with other BCEs, i.e. more than one BCE is connected to the same GBS, or if the BCE in question is not eligible to be bonded with other BCEs having the same value (e.g. the bonding is limited to a single Line Card and BCEs are located on the different Line Cards, or BCEs are the channels of the same line).

Note that bonding eligibility is reflected in the ifCapStackTable and its inverse ifInvCapStackTable, and as such any modification of g9982BceConfEligibleGroupID MUST be reflected in these tables.

A zero-length octet string SHALL be returned on an attempt to read this object on systems not supporting BACP (the value of g9982PortCapBacpSupported for the connected GBS is false).

This object maps to the TR-159 attribute aChannelEligibleGroupID."

**REFERENCE**

"[[TR-159](#)] 5.5.7.3"

::= { g9982BceConfEntry 1 }

**g9982BceConfPeerEligibleGroupID OBJECT-TYPE**

SYNTAX PhysAddress (SIZE(0|6))

MAX-ACCESS read-only

STATUS current

**DESCRIPTION**

"BACP Eligible Group ID of a peer G.Bond/ETH BCE port, most





recently received by the local BCE via Local info TLV BACPDU message from the peer BCE.

A universally unique 6-octet long identifier, used by the OPTIONAL BACP, to determine bonding eligibility.

BCEs with different g9982BceConfPeerEligibleGroupID values MUST NOT be connected to the same GBS.

BCEs with the same g9982BceConfPeerEligibleGroupID MAY be connected to different GBS ports.

A zero-length octet string SHALL be returned on an attempt to read this object on systems not supporting BACP (the value of g9982PortCapBacpSupported for the connected GBS is false) or when no BACPPDUs has been received from the peer BCE.

This object maps to the G.998.2-Amd2 attribute  
Remote Group ID."

#### REFERENCE

"[[G.998.2-Amd2](#)] C.3.1.6"  
::= { g9982BceConfEntry 2 }

#### g9982BceStatTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9982BceStatEntry  
MAX-ACCESS not-accessible  
STATUS current

##### DESCRIPTION

"This table provides common status information of G.Bond/Eth BCE ports.

This table contains live data from the equipment. As such, it is NOT persistent."

::= { g9982Bce 2 }

#### g9982BceStatEntry OBJECT-TYPE

SYNTAX G9982BceStatEntry  
MAX-ACCESS not-accessible  
STATUS current

##### DESCRIPTION

"An entry in the G.Bond/Eth BCE Status table.  
Each entry represents common aspects of a G.Bond/Eth BCE port indexed by the ifIndex. Note that a BCE port can be stacked below a single GBS port, also indexed by ifIndex, possibly together with other BCE ports."

INDEX { ifIndex }  
::= { g9982BceStatTable 1 }

G9982BceStatEntry ::=   
SEQUENCE {



```
    g9982BceStatTcInCodingErrors      Counter32,  
    g9982BceStatTcInCrcErrors         Counter32  
}
```

#### g9982BceStatTcInCodingErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"A number of PTM-TC encapsulation errors. This counter is incremented for each encapsulation error detected by the PTM-TC receive function.

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 aChannelPtmTcRxCodingViolations."

##### REFERENCE

"[[TR-159](#)] 5.5.7.8"

::= { g9982BceStatEntry 1 }

#### g9982BceStatTcInCrcErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"A number of PTM-TC CRC errors. This counter is incremented for each CRC error detected by the PTM-TC receive function.

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 aChannelPtmTcRxCrcErrors."

##### REFERENCE

"[[TR-159](#)] 5.5.7.9"

::= { g9982BceStatEntry 2 }

-----  
-- Conformance Statements  
-----

g9982Groups OBJECT IDENTIFIER



```
::= { g9982Conformance 1 }
```

```
g9982Compliances OBJECT IDENTIFIER
```

```
::= { g9982Conformance 2 }
```

```
-- Object Groups
```

```
g9982BasicGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    g9982PortCapTcTypesSupported,  
    g9982PortCapBacpSupported,  
    g9982PortConfTcAdminType,  
    g9982PortStatTcOperType,  
    g9982PortStatRxErrors,  
    g9982PortStatRxSmallFragments,  
    g9982PortStatRxLargeFragments,  
    g9982PortStatRxBadFragments,  
    g9982PortStatRxLostFragments,  
    g9982PortStatRxLostStarts,  
    g9982PortStatRxLostEnds,  
    g9982PortStatRxOverflows,  
    g9982BceStatTcInCodingErrors,  
    g9982BceStatTcInCrcErrors
```

```
}
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "A collection of objects representing management information  
    for G.Bond/Eth GBS ports."
```

```
::= { g9982Groups 1 }
```

```
g9982BacpGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    g9982PortConfAdminCp,  
    g9982PortStatOperCp,  
    g9982BceConfEligibleGroupID,  
    g9982BceConfPeerEligibleGroupID
```

```
}
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "A collection of objects representing management information  
    for the OPTIONAL frame-based Bonding Aggregation Control  
    Protocol (BACP) used by G.Bond/Eth GBS ports instead of the  
    mandatory G.hs-based discovery and aggregation protocol."
```

```
::= { g9982Groups 2 }
```

```
g9982BceGroup OBJECT-GROUP
```

```
OBJECTS {
```



```
    g9982BceStatTcInCodingErrors,  
    g9982BceStatTcInCrcErrors  
}
```

```
STATUS      current
```

DESCRIPTION

"A collection of objects representing OPTIONAL management information for G.Bond/Eth BCE ports."

```
::= { g9982Groups 3 }
```

g9982PerfCurrGroup OBJECT-GROUP

OBJECTS {

```
    g9982PortPm15MinValidIntervals,  
    g9982PortPm15MinInvalidIntervals,  
    g9982PortPmCur15MinTimeElapsed,  
    g9982PortPmCur15MinRxErrors,  
    g9982PortPmCur15MinRxSmallFragments,  
    g9982PortPmCur15MinRxLargeFragments,  
    g9982PortPmCur15MinRxBadFragments,  
    g9982PortPmCur15MinRxLostFragments,  
    g9982PortPmCur15MinRxLostStarts,  
    g9982PortPmCur15MinRxLostEnds,  
    g9982PortPmCur15MinRxOverflows,  
    g9982PortPm1DayValidIntervals,  
    g9982PortPm1DayInvalidIntervals,  
    g9982PortPmCur1DayTimeElapsed,  
    g9982PortPmCur1DayRxErrors,  
    g9982PortPmCur1DayRxSmallFragments,  
    g9982PortPmCur1DayRxLargeFragments,  
    g9982PortPmCur1DayRxBadFragments,  
    g9982PortPmCur1DayRxLostFragments,  
    g9982PortPmCur1DayRxLostStarts,  
    g9982PortPmCur1DayRxLostEnds,  
    g9982PortPmCur1DayRxOverflows
```

```
}
```

```
STATUS      current
```

DESCRIPTION

"A collection of objects supporting OPTIONAL current Performance Monitoring information for G.Bond/Eth ports."

```
::= { g9982Groups 4 }
```

g9982Perf15MinGroup OBJECT-GROUP

OBJECTS {

```
    g9982PortPm15MinIntervalMoniTime,  
    g9982PortPm15MinIntervalRxErrors,  
    g9982PortPm15MinIntervalRxSmallFragments,  
    g9982PortPm15MinIntervalRxLargeFragments,  
    g9982PortPm15MinIntervalRxBadFragments,  
    g9982PortPm15MinIntervalRxLostFragments,
```





```
g9982PortPm15MinIntervalRxLostStarts,
g9982PortPm15MinIntervalRxLostEnds,
g9982PortPm15MinIntervalRxOverflows,
g9982PortPm15MinIntervalValid
}
STATUS      current
DESCRIPTION
  "A collection of objects supporting OPTIONAL historical
  Performance Monitoring information for G.Bond/Eth ports, during
  previous 15-minute intervals ."
 ::= { g9982Groups 5 }
```

#### g9982Perf1DayGroup OBJECT-GROUP

```
OBJECTS {
  g9982PortPm1DayIntervalMoniTime,
  g9982PortPm1DayIntervalRxErrors,
  g9982PortPm1DayIntervalRxSmallFragments,
  g9982PortPm1DayIntervalRxLargeFragments,
  g9982PortPm1DayIntervalRxBadFragments,
  g9982PortPm1DayIntervalRxLostFragments,
  g9982PortPm1DayIntervalRxLostStarts,
  g9982PortPm1DayIntervalRxLostEnds,
  g9982PortPm1DayIntervalRxOverflows,
  g9982PortPm1DayIntervalValid
}
STATUS      current
DESCRIPTION
  "A collection of objects supporting OPTIONAL historical
  Performance Monitoring information for G.Bond/Eth ports, during
  previous 1-day intervals ."
 ::= { g9982Groups 6 }
```

```
-----
-- Compliance Statements
-----
```

#### g9982Compliance MODULE-COMPLIANCE

```
STATUS      current
DESCRIPTION
  "The compliance statement for G.Bond Ethernet 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 {
    g9982BasicGroup
}

GROUP          g9982BceGroup
DESCRIPTION
    "Support for this group is OPTIONAL"

GROUP          g9982BacpGroup
DESCRIPTION
    "Support for this group is OPTIONAL and only required for
    implementations supporting BACP."

GROUP          g9982PerfCurrGroup
DESCRIPTION
    "Support for this group is only required for implementations
    supporting Performance Monitoring."

GROUP          g9982Perf15MinGroup
DESCRIPTION
    "Support for this group is only required for implementations
    supporting historical Performance Monitoring."

GROUP          g9982Perf1DayGroup
DESCRIPTION
    "Support for this group is only required for implementations
    supporting 1-day historical Performance Monitoring."

OBJECT          g9982PortCapTcTypesSupported
SYNTAX          BITS {
    tc6465(0),
    tcHDL(1)
}
DESCRIPTION
    "Support for all TC types is not required. However at least
    one value SHALL be supported"

OBJECT          g9982PortCapBacpSupported
SYNTAX          TruthValue
DESCRIPTION
    "Support for BACP is OPTIONAL, therefore a value of false(2)
    SHALL be supported."

OBJECT          g9982PortConfTcAdminType
MIN-ACCESS      read-only
DESCRIPTION
    "Write access is not required (needed only for GBS"
```



supporting more than a single TC encapsulation type, i.e. tc6465 and tcHDLC."

OBJECT g9982PortConfAdminCp

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required (needed only for GBS supporting BACP in addition to mandatory G.hs-based bonding discovery and aggregation protocol."

::= { g9982Compliances 1 }

END

## **7. Security Considerations**

There is a number of managed 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:

- o Changing of g9982PortConfTable configuration parameters (e.g. g9982PortConfTcAdminType) may lead to a complete service interruption, in case the specified PTM-TC encapsulation type is not supported by the remote end.
- o Changing of g9982BceConfTable configuration parameters (e.g. g9982BceConfEligibleGroupID) may lead to preventing a non-bonded BCE from being bonded in any bonding group or false advertisement of bonding eligibility (e.g. between BCEs residing on different line cards in an application which does not support cross-card bonding).

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

It is thus important to control even GET and/or NOTIFY access to these objects and possibly 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:

- o g9982PortStatTable - objects in this table (e.g. g9982PortStatTcOperType) provide status information for the G.Bond



port, which may aid in deciphering of the G.Bond/ETH transmissions.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), 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.

Implementations MUST provide the security features described by the SNMPv3 framework (see [[RFC3410](#)]), including full support for authentication and privacy via the User-based Security Model (USM) [[RFC3414](#)] with the AES cipher algorithm [[RFC3826](#)]. Implementations MAY also provide support for the Transport Security Model (TSM) [[RFC5591](#)] in combination with a secure transport such as SSH [[RFC5592](#)] or TLS/DTLS [[RFC6353](#)].

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 g9982MIB 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**

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## **10. References**

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#### URIs

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#### Authors' Addresses

Edward Beili  
Actelis Networks  
25 Bazel St.  
Petach-Tikva 49103  
Israel

Phone: +972-3-924-3491  
EMail: [edward.beili@actelis.com](mailto:edward.beili@actelis.com)



Moti Morgenstern  
ECI Telecom  
30 Hasivim St.  
Petach-Tikva 4951169  
Israel

Phone: +972-3-926-6258  
EMail: moti.morgenstern@ecitele.com