

**xDSL multi-pair bonding using Time-Division Inverse Multiplexing  
(G.Bond/TDIM) MIB  
draft-ietf-adslmib-gbond-tdim-mib-08.txt**

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 multi-pair bonded xDSL interfaces using Time-Division Inverse Multiplexing (TDIM), defined in ITU-T recommendation G.998.3.

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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>	Relationship 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="#">5.</a>	MIB Structure . . . . .	<a href="#">4</a>
<a href="#">5.1.</a>	Overview . . . . .	<a href="#">4</a>
<a href="#">5.2.</a>	Link Protection Configuration . . . . .	<a href="#">5</a>
<a href="#">5.3.</a>	Service Configuration . . . . .	<a href="#">5</a>
5.3.1.	Management of TDM Services and service drop priority during bandwidth degradation . . . . .	<a href="#">6</a>
<a href="#">5.3.2.</a>	Service Notifications . . . . .	<a href="#">6</a>
<a href="#">5.4.</a>	Performance Monitoring . . . . .	<a href="#">7</a>
5.5.	Mapping of Broadband Forum TR-159 and ITU-T G.998.3 Managed Objects . . . . .	<a href="#">7</a>
<a href="#">6.</a>	G.Bond/TDIM MIB Definitions . . . . .	<a href="#">9</a>
<a href="#">7.</a>	Security Considerations . . . . .	<a href="#">50</a>
<a href="#">8.</a>	IANA Considerations . . . . .	<a href="#">51</a>
<a href="#">9.</a>	Acknowledgments . . . . .	<a href="#">51</a>
<a href="#">10.</a>	References . . . . .	<a href="#">52</a>
<a href="#">10.1.</a>	Normative References . . . . .	<a href="#">52</a>
<a href="#">10.2.</a>	Informative References . . . . .	<a href="#">53</a>



## **1. Introduction**

The Multi-pair bonding using time-division inverse multiplexing (TDIM), a.k.a. G.Bond/TDIM, is specified in ITU-T G.998.3 recommendation [[G.998.3](#)], 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 a mix of various traffic streams, e.g. Ethernet, Asynchronous Transfer Mode (ATM), Time-Division Multiplexing (TDM).

The MIB module, defined in this document, provides G.Bond/TDIM-specific objects for the management of G.998.3 bonded interfaces, extending the common bonding objects specified in GBOND-MIB [[I-D.ietf-ads1mib-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. 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/TDIM 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/TDIM 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 G9983-MIB modules are REQUIRED to manage a G.Bond/TDIM port.

### **5. MIB Structure**

#### **5.1. Overview**

All management objects defined in the G9983-MIB module are contained in a single group g9983Port. This group is further split into 6 sub-groups, structured as recommended by [RFC 4181](#) [[RFC4181](#)]:

- o g9983PortNotifications - containing notifications (TDIM Service Down/Up).
- o g9983PortConfTable - containing objects for configuration of a G.Bond/TDIM port.
- o g9983PortCapTable - containing objects reflecting capability of a G.Bond/TDIM port.
- o g9983PortStatTable - containing objects providing overall status information of a G.Bond/TDIM port, complementing the generic status information from the ifTable of IF-MIB and gBondPortStatFltStatus of GBOND-MIB.
- o g9983SvcTable - containing objects for configuration and status of the services in a G.Bond/TDIM port.
- o g9983PM - containing objects for an OPTIONAL Historical Performance Monitoring (PM) of a G.Bond/TDIM port.



## **5.2. Link Protection Configuration**

G.Bond/TDIM specification allows an optional Forward Error Correction (FEC) and Interleaver block, which, if supported and enabled, provides a degree of protection against micro-interruptions, alien noise, and even individual Bonding Channel Entity (BCE) failures, a.k.a. cut-line protection.

Management objects in the g9983PortConfTable can be used to configure and query the FEC and Interleaver function of the G.Bond/TDIM port.

## **5.3. Service Configuration**

Unlike the other two xDSL Multi-Pair Bonding schemes (G.Bond/ATM and G.Bond/Ethernet), which send the information required for reassembly of the fragmented data along with the data, G.Bond/TDIM is a synchronous scheme, requiring both ends to know the data distribution tables before any actual data transfer can happen.

Management objects in the g9983PortConfTable (g9983PortConfAdminServices), g9983SvcTable and g9983OperSvcTable can be used to configure and query the configuration of services transported via the G.Bond/TDIM link. The services may be configured independently of the link state (i.e. in- and out-of-service), as G.998.3 communicates changes in the service configuration via specific Bonding Communication Channel (BCC) messages, switching both ends of the link to the new configuration synchronously.

There can be up to 60 active services defined on a G.Bond/TDIM link. This MIB module provides an ability to define up to 255 services via the g9983SvcTable, with each row representing a possible service, and then set the actual service configuration using the g9983PortConfAdminServices object (a byte-vector of service indices), listing the active services in the order of their position in the G.Bond/TDIM frame. This design allows one to easily modify service drop priority, which directly corresponds to the service position.

The actual list of services is provided via the read-only g9983OperSvcTable, where each entry's index corresponds to the service position, starting from index 1 for the first entry, 2 for the second entry etc., providing an easy service navigation for a management application using GET-NEXT (instead of counting bytes in the g9983PortConfAdminServices object).

The service configuration can only be changed on a Bonding Transmission Unit at the Central Office (BTU-C).

When configuring the services, please bear in mind that the sum of





all the services' bandwidth SHOULD be less or equal to the target data rate of the bonded link. Note that G.Bond/TDIM links are symmetrical, i.e. their upstream data rate equals to the downstream data rate.

#### **5.3.1. Management of TDM Services and service drop priority during bandwidth degradation**

G.Bond/TDIM protocol provides an ability to map TDM services into the TDIM bonded link directly, without any additional overhead. It addresses only structure-agnostic TDM transport, disregarding any structure that may be imposed on these streams, in particular the structure imposed by the standard TDM framing [[G.704](#)].

During bandwidth degradation services with a lower priority are impaired or dropped first. Synchronous services (fractional DS1/E1, clear channel E1/T1, T3/E3, clock) positioned in the beginning of the G.Bond/TDIM frame, have higher priority than asynchronous services (Ethernet, ATM, GFP encapsulated), positioned farther away. Within the services of the same type, those with lower position (index) have higher priority.

#### **5.3.2. Service Notifications**

This MIB module provides specific Up/Down notifications (g9983SvcUp/g9983SvcDown) for each of the configured services. During bandwidth degradation a number of services may be suspended (dropped) simultaneously, according to their drop priority (position in the service list). Please note that it is possible for a higher priority service to be dropped before a lower priority one. For example, suppose there are two services configured on a 2 Mbps G.Bond/TDIM link: a T1 service (g9983SvcType with a value of ds1, with a bandwidth requirement of 1.5 Mbps) and an Ethernet service with a size of 0.5 Mbps. When the actual link bandwidth is reduced to 1.4 Mbps, the T1 service with a g9983SvcPosition value of 1 would be dropped, while the Ethernet service with a g9983SvcPosition value of 2 would remain up.

Notifications SHOULD be rate-limited (throttled) such that there is an implementation-specific gap between the generation of consecutive notifications of the same event. This mechanism prevents notification flooding in case g9983ServiceOperState oscillates between Up and Down states. When notifications are rate-limited, they are dropped and not queued for sending at a future time. This is intended to be a general rate-limiting statement for notifications that otherwise have no explicit rate-limiting assertions in this document.



#### **5.4. 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 [[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 G.Bond TDIM port is reinitialized, but rather only when the agent is reset or reinitialized.

Note that the accumulation of certain performance events for a monitored entity is inhibited (counting stops) during periods of service unavailability on that entity. The DESCRIPTION clause of performance monitoring counters in this MIB module specifies which of the counters are inhibited during periods of service unavailability.

#### **5.5. Mapping of Broadband Forum TR-159 and ITU-T G.998.3 Managed Objects**

This section contains the mapping between relevant managed objects (attributes) defined in [[TR-159](#)] and managed objects defined in this document. Note that all management objects defined in [[G.998.3](#)] have corresponding objects in [[TR-159](#)].



+-----+-----+		
TR-159 Managed Object	Corresponding SNMP Object	
+-----+-----+		
oBondTDIM - Basic Package		
(Mandatory)		
+-----+-----+		
aCRC4Errors	g9983PortStatCrc4Errors	
+-----+-----+		
aCRC6Errors	g9983PortStatCrc6Errors	
+-----+-----+		
aCRC8Errors	g9983PortStatCrc8Errors	
+-----+-----+		
aFECSupported	g9983PortCapFecSupported	
+-----+-----+		
oBondTDIM - FEC Package		
(Optional)		
+-----+-----+		
aFECAdminState	g9983PortConfFecAdminState	
+-----+-----+		
aFECOperState	g9983PortStatFecOperState	
+-----+-----+		
aFECWordSize	g9983PortConfFecWordSize	
+-----+-----+		
aFECRedundancySize	g9983PortConfFecRedundancySize	
+-----+-----+		
aFECInterleaverType	g9983PortConfFecInterleaverType	
+-----+-----+		
aFECInterleaverDepth	g9983PortConfFecInterleaverDepth	
+-----+-----+		
aFECMaxWordSize	g9983PortCapFecMaxWordSize	
+-----+-----+		
aFECMaxRedundancySize	g9983PortCapFecMaxRedundancySize	
+-----+-----+		
aFECInterleaverTypesSupport	g9983PortCapFecInterleaverTypeSupport	
ted	ted	
+-----+-----+		
aFECMaxInterleaverDepth	g9983PortCapFecMaxInterleaverDepth	
+-----+-----+		
oTDIMService - Basic		
Package (Mandatory)		
+-----+-----+		
aServiceID	g9983SvcPosition	
+-----+-----+		
aServiceIfIdx	g9983SvcIfIdx	
+-----+-----+		
aServiceType	g9983SvcType	
+-----+-----+		
aServiceSize	g9983SvcSize	



aServiceOperState	g9983OperSvcState	
+-----+	+-----+	+-----+
aServiceUpDownEnable	g9983PortConfSvcUpDownEnable	
+-----+	+-----+	+-----+
nServiceUp	g9983SvcUp	
+-----+	+-----+	+-----+
nServiceDown	g9983SvcDown	
+-----+	+-----+	+-----+

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 g9983PortPm\* and g9983SvcPm\* 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 g9983PortPm\* and g9983SvcPm\* 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/TDIM MIB Definitions

G9983-MIB DEFINITIONS ::= BEGIN

### IMPORTS

```

MODULE-IDENTITY,
OBJECT-TYPE,
NOTIFICATION-TYPE,
mib-2,
Unsigned32,
Counter32
    FROM SNMPv2-SMI          -- [RFC2578]
TEXTUAL-CONVENTION,
RowStatus,
TruthValue
    FROM SNMPv2-TC          -- [RFC2579]
MODULE-COMPLIANCE,
OBJECT-GROUP,
NOTIFICATION-GROUP
    FROM SNMPv2-CONF        -- [RFC2580]
ifIndex,
InterfaceIndex
    FROM IF-MIB              -- [RFC2863]
HCPerfCurrentCount,
HCPerfIntervalCount,
HCPerfValidIntervals,
```





```
HCPperfInvalidIntervals,  
HCPperfTimeElapsed  
FROM HC-PerfHist-TC-MIB -- [RFC3705]  
;
```

---

g9983MIB MODULE-IDENTITY

LAST-UPDATED "201203120000Z" -- Mar 12, 2012

ORGANIZATION "IETF ADSL MIB Working Group"

CONTACT-INFO

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

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DESCRIPTION

"The objects in this MIB module are used to manage the multi-pair bonded xDSL Interfaces using time-division inverse multiplexing (TDIM), defined in ITU-T recommendation G.998.3 (G.Bond/TDIM).

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.998.3] refers to:

ITU-T Recommendation G.998.3: 'Multi-pair bonding using time-division inverse multiplexing', January 2005.



[TR-159] refers to:

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

Naming Conventions:

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  
GBS-C - Generic Bonded Sub-layer, CO side  
GBS-R - Generic Bonded Sub-layer, Remote Terminal (CPE) side  
SNR - Signal to Noise Ratio

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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](#)

g99830bjects OBJECT IDENTIFIER ::= { g9983MIB 1 }

g9983Conformance OBJECT IDENTIFIER ::= { g9983MIB 2 }

-- Groups in the module

g9983Port OBJECT IDENTIFIER ::= { g99830bjects 1 }

-- Textual Conventions

G9983SvcIndex ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION



"A unique value, greater than zero, for each Service defined in the managed G.Bond/TDIM port.

It is RECOMMENDED that values are assigned contiguously starting from 1. The value for each Service MUST remain constant at least from one re-initialization of the local management subsystem to the next re-initialization."

SYNTAX           Unsigned32 (1..255)

G9983SvcIndexList ::= TEXTUAL-CONVENTION

DISPLAY-HINT "1d:"

STATUS           current

DESCRIPTION

"This textual convention represents a continuous ordered list of all the services defined for the managed G.Bond/TDIM port.

The value of this object is a concatenation of zero or more (up to 60) octets, where each octet contains an 8-bit

G9983SvcIndex value, identifying a particular service.

An octet's position reflects the associated service position and its priority in the G.Bond/TDIM frame, with 1st octet being the 1st service of highest priority.

A zero-length octet string is object-specific and MUST therefore be defined as part of the description of any object that uses this syntax. Examples of the usage of a zero-length value might include situations where an object using this textual convention is irrelevant for a specific G.Bond/TDIM port type or that no services have been defined for this port."

SYNTAX           OCTET STRING (SIZE(0..60))

G9983SvcOrderIndex ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS           current

DESCRIPTION

"A unique value, greater than zero, for each Service defined in the managed G.Bond/TDIM port, showing its relative position inside the G.Bond/TDIM frame."

SYNTAX           Unsigned32 (1..60)

-- Port Notifications Group

g9983PortNotifications OBJECT IDENTIFIER

:= { g9983Port 0 }

g9983SvcUp NOTIFICATION-TYPE

OBJECTS {

-- ifIndex and g9983SvcPosition would be part of the trap OID

g9983SvcIdx,

g9983SvcIfIdx



```
}
STATUS      current
DESCRIPTION
    "This notification indicates that a service, indicated by the
    g99830perSvcIdx (mapped to a particular interface
    indicated by the g9983SvcIfIdx), in a particular
    G.Bond/TDIM port is passing traffic.

    This notification is generated (unless disabled or dropped by
    the rate limiting mechanism), when the g99830perSvcState
    object has left the Down state, while the G.Bond/TDIM port
    state (ifOperStatus of IF-MIB) is Up.

    Generation of this notification is controlled by the
    g9983PortConfSvcUpDownEnable object.

    This object maps to the TR-159 notification nServiceUp."
REFERENCE
    "[TR-159] 5.5.5.7"
::= { g9983PortNotifications 1 }

g9983SvcDown NOTIFICATION-TYPE
OBJECTS {
    -- ifIndex and g99830perSvcPosition would be part of the trap OID
    g99830perSvcIdx,
    g9983SvcIfIdx
}
STATUS      current
DESCRIPTION
    "This notification indicates that a service indicated by the
    g99830perSvcIdx (mapped to a particular interface
    indicated by the g9983SvcIfIdx) in a particular
    G.Bond/TDIM port has stopped passing the traffic.

    This notification is generated (unless disabled or dropped by
    the rate limiting mechanism), when the g99830perSvcState
    object has entered the Down state, while the G.Bond/TDIM port
    state (ifOperStatus of IF-MIB) is Up.

    Generation of this notification is controlled by the
    g9983PortConfSvcUpDownEnable object.

    This object maps to the TR-159 notification nServiceDown."
REFERENCE
    "[TR-159] 5.5.5.8"
::= { g9983PortNotifications 2 }

-- G.Bond/TDIM Port group
```





## g9983PortConfTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983PortConfEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"Table for Configuration of G.Bond/TDIM ports. Entries in this table MUST be maintained in a persistent manner"

::= { g9983Port 1 }

## g9983PortConfEntry OBJECT-TYPE

SYNTAX G9983PortConfEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the G.Bond/TDIM Port Configuration table. Each entry represents an G.Bond/TDIM port indexed by the ifIndex. Additional configuration parameters are available via the gBondPortConfEntry of GBOND-MIB. Note that an G.Bond/TDIM port runs on top of a single or multiple BCE port(s), which are also indexed by ifIndex."

INDEX { ifIndex }

::= { g9983PortConfTable 1 }

## G9983PortConfEntry ::=

SEQUENCE {

g9983PortConfFecAdminState	TruthValue,
g9983PortConfFecWordSize	Unsigned32,
g9983PortConfFecRedundancySize	Unsigned32,
g9983PortConfFecInterleaverType	INTEGER,
g9983PortConfFecInterleaverDepth	Unsigned32,
g9983PortConfAdminServices	G9983SvcIndexList,
g9983PortConfSvcUpDownEnable	TruthValue

}

## g9983PortConfFecAdminState OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"A desired state of the OPTIONAL Forward Error Correction (FEC) function of the G.Bond/TDIM port.

A value of 'false' indicates that the FEC function SHALL be disabled. A value of 'true' indicates that the FEC SHALL be enabled, if supported by the G.Bond/TDIM port, as indicated by the g9983PortCapFecSupported object.

The g9983PortStatFecOperState object indicates current operational state of the FEC function.



For the GBS-R ports, the value of this object cannot be changed directly. This value may be changed as a result of writing operation on the g9983PortCapFecSupported object of a remote GBS-C.

Modifications of this object MUST be performed when the link is Down.

Attempts to change this object MUST be rejected, if the link is Up or Initializing or if it is an GBS-R.

This object maps to TR-159/G.998.3 attribute aFECAdminState."

REFERENCE

"[[TR-159](#)] 5.5.4.5; [[G.998.3](#)] [Appendix II](#), B-X"  
::= { g9983PortConfEntry 1 }

g9983PortConfFecWordSize OBJECT-TYPE

SYNTAX Unsigned32(0|20..255)

UNITS "octets"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"A FEC code word size in octets for the G.Bond/TDIM ports supporting FEC function.

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

A value of zero SHALL be returned if the FEC is disabled (via g9983PortConfFecAdminState) or not supported.

Changing of the FEC code word size MUST be performed when the FEC enabled link is Down. Attempts to change this object MUST be rejected, if the link is Up or Initializing or the FEC function is disabled/not supported.

This object maps to TR-159/G.998.3 attribute aFECWordSize."

REFERENCE

"[[TR-159](#)] 5.5.4.7; [[G.998.3](#)] [Appendix II](#), B-XI"  
::= { g9983PortConfEntry 2 }

g9983PortConfFecRedundancySize OBJECT-TYPE

SYNTAX Unsigned32(0|2|4|8|16|20)

UNITS "octets"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"A FEC redundancy word size in octets for the G.Bond/TDIM ports supporting FEC function.



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

A value of zero SHALL be returned if the FEC is disabled (via g9983PortConfFecAdminState) or not supported.

Changing of the FEC redundancy word size MUST be performed when the FEC enabled link is Down. Attempts to change this object MUST be rejected, if the link is Up or Initializing or the FEC function is disabled/not supported.

This object maps to TR-159/G.998.3 attribute aFECRedundancySize."

#### REFERENCE

"[[TR-159](#)] 5.5.4.8; [[G.998.3](#)] [Appendix II](#), B-XII"  
::= { g9983PortConfEntry 3 }

g9983PortConfFecInterleaverType OBJECT-TYPE

SYNTAX INTEGER {  
    none(0),  
    block(1),  
    convolution(2)  
}

MAX-ACCESS read-write

STATUS current

#### DESCRIPTION

"An Interleaver type for the G.Bond/TDIM ports supporting FEC function.

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

A value of none(0) SHALL be returned if the FEC is disabled (via g9983PortConfFecAdminState) or not supported.

Changing of the Interleaver type MUST be performed when the FEC enabled link is Down. Attempts to change this object MUST be rejected, if the link is Up or Initializing or the FEC function is disabled/not supported.

This object maps to TR-159/G.998.3 attribute aFECInterleaverType."

#### REFERENCE

"[[TR-159](#)] 5.5.4.9; [[G.998.3](#)] [Appendix II](#), B-XIII"  
::= { g9983PortConfEntry 4 }

g9983PortConfFecInterleaverDepth OBJECT-TYPE

SYNTAX Unsigned32(0|1|2|3|4|6|8|12|16|24|32|48|96)



MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An Interleaver Depth for the G.Bond/TDIM ports supporting FEC function.

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

A value of zero SHALL be returned if the FEC is disabled (via g9983PortConfFecAdminState) or not supported.

Changing of the Interleaver Depth MUST be performed when the FEC enabled link is Down. Attempts to change this object MUST be rejected, if the link is Up or Initializing or the FEC function is disabled/not supported.

This object maps to TR-159/G.998.3 attribute aFECInterleaverDepth."

REFERENCE

"[[TR-159](#)] 5.5.4.10; [[G.998.3](#)] [Appendix II](#), B-XIV"  
::= { g9983PortConfEntry 5 }

g9983PortConfAdminServices OBJECT-TYPE

SYNTAX G9983SvcIndexList

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Desired list of services for a G.Bond/TDIM port. This object is a list of pointers to entries in the g9983SvcTable.

The value of this object is a continuous ordered list of up to 60 indices (g9983SvcIdx) of the active services carried via the G.Bond/TDIM link. The position of a service in the list determines its relative priority in case of a bandwidth degradation - the priority decreases towards the end of the list, which means that the last service in the list would be suspended first when the bandwidth degrades.

This object is writable and readable for the GBS-C ports. It is irrelevant for the GBS-R ports - a zero-length octet string SHALL be returned on an attempt to read this object and an attempt to change this object MUST be rejected in this case.

Note that the current operational service list is available via the g9983OperSvcTable object.

This object for a GBS-C port MAY be modified independently of





the link's state, i.e. in- and out-of-service.

Attempts to set this object to a list with a member value that is not the value of the index for an active entry in the corresponding g9983SvcTable table MUST be rejected."

REFERENCE

"[[G.998.3](#)] 10.2.3, 13.3.4.6-13.3.4.11"  
::= { g9983PortConfEntry 6 }

g9983PortConfSvcUpDownEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Indicates whether g9983SvcUp and g9983SvcDown notifications should be generated for this interface.

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

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

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

REFERENCE

"[[TR-159](#)] 5.5.5.6"  
::= { g9983PortConfEntry 7 }

g9983PortCapTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983PortCapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

::= { g9983Port 2 }

g9983PortCapEntry OBJECT-TYPE

SYNTAX G9983PortCapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/TDIM port Capability table.

Each entry represents an G.Bond/TDIM port indexed by the ifIndex. Additional capabilities are available via the gBondPortCapabilityEntry of GBOND-MIB.

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

INDEX { ifIndex }



```
::= { g9983PortCapTable 1 }
```

```
G9983PortCapEntry ::=
```

```
SEQUENCE {  
    g9983PortCapFecSupported          TruthValue,  
    g9983PortCapFecMaxWordSize        Unsigned32,  
    g9983PortCapFecMaxRedundancySize   Unsigned32,  
    g9983PortCapFecInterleaverTypeSupported INTEGER,  
    g9983PortCapFecMaxInterleaverDepth Unsigned32  
}
```

```
g9983PortCapFecSupported OBJECT-TYPE
```

```
SYNTAX      TruthValue
```

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

```
STATUS      current
```

```
DESCRIPTION
```

"FEC and Interleaver Capability of the G.Bond/TDIM port.  
This object has a value of true(1) when the port supports the  
FEC and Interleaver function.  
A value of false(2) is returned when the port does not  
support the FEC and Interleaver function.

This object maps to the TR-159/G.998.3 attribute  
aFECSupported."

```
REFERENCE
```

"[[TR-159](#)] 5.5.4.4; [[G.998.3](#)] [Appendix II](#), B-VI"

```
::= { g9983PortCapEntry 1 }
```

```
g9983PortCapFecMaxWordSize OBJECT-TYPE
```

```
SYNTAX      Unsigned32(0|20..255)
```

```
UNITS       "octets"
```

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

```
STATUS      current
```

```
DESCRIPTION
```

"A Maximum supported FEC code word size in octets for the  
G.Bond/TDIM ports with FEC function.

A value of zero SHALL be returned if the FEC is not supported.

This object maps to TR-159 attribute aFECWordSize"

```
REFERENCE
```

"[[TR-159](#)] 5.5.4.11; [[G.998.3](#)] [Appendix II](#), B-XI"

```
::= { g9983PortCapEntry 2 }
```

```
g9983PortCapFecMaxRedundancySize OBJECT-TYPE
```

```
SYNTAX      Unsigned32(0|2|4|8|16|20)
```

```
UNITS       "octets"
```

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



STATUS current

DESCRIPTION

"A Maximum supported FEC redundancy word size in octets for the G.Bond/TDIM ports with FEC function.

A value of zero SHALL be returned if the FEC is not supported.

This object maps to TR-159 attribute  
aFECMaxRedundancySize."

REFERENCE

"[[TR-159](#)] 5.5.4.12; [[G.998.3](#)] [Appendix II](#), B-XII"  
::= { g9983PortCapEntry 3 }

g9983PortCapFecInterleaverTypeSupported OBJECT-TYPE

SYNTAX INTEGER {  
none(0),  
block(1),  
convolution(2),  
blockConvolution(3)  
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Supported Interleaver types for the G.Bond/TDIM ports with FEC function.

Possible values are:

none	- the port does not support interleaving
block	- the port supports Block Interleaver
convolution	- the port supports Convolution Interleaver
blockConvolution	- the port supports both Block and Convolution Interleaver

This object maps to TR-159 attribute  
aFECInterleaverTypesSupported."

REFERENCE

"[[TR-159](#)] 5.5.4.13; [[G.998.3](#)] [Appendix II](#), B-XIII"  
::= { g9983PortCapEntry 4 }

g9983PortCapFecMaxInterleaverDepth OBJECT-TYPE

SYNTAX Unsigned32(0|1|2|3|4|6|8|12|16|24|32|48|96)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A Maximum Interleaver Depth for the G.Bond/TDIM ports with FEC function.

A value of zero SHALL be returned if the Interleaver is not



supported.

This object maps to TR-159 attribute aFECMaxInterleaverDepth."

#### REFERENCE

"[[TR-159](#)] 5.5.4.14; [[G.998.3](#)] [Appendix II](#), B-XIV"

::= { g9983PortCapEntry 5 }

#### g9983PortStatTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983PortStatEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"This table provides overall status information of G.Bond TDIM 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."

::= { g9983Port 3 }

#### g9983PortStatEntry OBJECT-TYPE

SYNTAX G9983PortStatEntry

MAX-ACCESS not-accessible

STATUS current

#### DESCRIPTION

"An entry in the G.Bond/TDIM port Status table.

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

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

INDEX { ifIndex }

::= { g9983PortStatTable 1 }

#### G9983PortStatEntry ::=

SEQUENCE {

g9983PortStatFecOperState	TruthValue,
g9983PortStatFltStatus	BITS,
g9983PortStatCrc4Errors	Counter32,
g9983PortStatCrc6Errors	Counter32,
g9983PortStatCrc8Errors	Counter32

}

#### g9983PortStatFecOperState OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only





STATUS current

DESCRIPTION

"A read-only value, indicating current operational state of the OPTIONAL Forward Error Correction (FEC) function for the G.998.3 port.

A value of 'false' indicates that the FEC function is disabled. A value of 'true' indicates that the FEC function is enabled (and supported).

This object maps to TR-159 attribute aFECOperState."

REFERENCE

"[[TR-159](#)] 5.5.4.6"

::= { g9983PortStatEntry 1 }

g9983PortStatFltStatus OBJECT-TYPE

SYNTAX BITS {  
serviceDown(0),  
wrongConfig(1)  
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"G.Bond/TDIM port Fault Status. This is a bitmap of possible conditions. The various bit positions are:

serviceDown - at least one of the services defined for this aggregation group is down (due to low rate).

wrongConfig - at least one BCE at the remote GBS-R is already connected to another GBS.

This object is intended to supplement ifOperStatus object in IF-MIB and gBondFltStatus in GBOND-MIB."

REFERENCE

"G.998.3 [Section 6.3](#);

IF-MIB, ifOperStatus; GBOND-MIB, gBondFltStatus"

::= { g9983PortStatEntry 2 }

g9983PortStatCrc4Errors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of CRC-4 errors (frame header error) on all pairs in the G.Bond/TDIM port. Simultaneous errors on M lines SHOULD be counted M times.

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/G.998.3 attribute aCRC4Errors."

REFERENCE

"[[TR-159](#)] 5.5.4.1; [[G.998.3](#)] [Appendix II](#), B-VII"  
::= { g9983PortStatEntry 3 }

g9983PortStatCrc6Errors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of CRC-6 errors (super-frame error) on all pairs in the G.Bond/TDIM port. Simultaneous errors on M lines SHOULD be counted 1 time.

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

This object maps to TR-159/G.998.3 attribute aCRC6Errors."

REFERENCE

"[[TR-159](#)] 5.5.4.2; [[G.998.3](#)] [Appendix II](#), B-VIII"  
::= { g9983PortStatEntry 4 }

g9983PortStatCrc8Errors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of CRC-8 errors (event/message error) on all pairs in the G.Bond/TDIM port. Simultaneous errors on M lines SHOULD be counted M times.

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

This object maps to TR-159/G.998.3 attribute aCRC8Errors."

REFERENCE

"[[TR-159](#)] 5.5.4.3; [[G.998.3](#)] [Appendix II](#), B-IX"  
::= { g9983PortStatEntry 5 }

g99830perSvcTable OBJECT-TYPE



SYNTAX SEQUENCE OF G99830perSvcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of the operational Services configured on a G.Bond/TDIM port. This table reflects current actual service configuration, set by the g9983PortConfAdminServices object. The number of entries (services) in this table therefore can vary between 0, when no services are configured, and 60, for the maximum number of services.

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

::= { g9983Port 4 }

g99830perSvcEntry OBJECT-TYPE

SYNTAX G99830perSvcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/TDIM Port Operational Service table, containing the index of an active Service entry in the g9983SvcTable. The entry is indexed by ifIndex, indicating corresponding G.Bond/TDIM port, and by g99830perSvcPosition (1..60), indicating the corresponding service position in the G.Bond/TDIM frame."

INDEX { ifIndex, g99830perSvcPosition }

::= { g99830perSvcTable 1 }

G99830perSvcEntry ::=

SEQUENCE {

g99830perSvcPosition G9983SvcOrderIndex,

g99830perSvcIdx G9983SvcIndex,

g99830perSvcState INTEGER

}

g99830perSvcPosition OBJECT-TYPE

SYNTAX G9983SvcOrderIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"G.Bond/TDIM operational Service position - a unique index, indicating relative placement of the associated service pointed by g99830perSvcIdx, within the G.Bond/TDIM frame.

There can be up to 60 services defined over TDIM bonded facility. Services with lower indices have higher priority in case of bandwidth degradation.



The value of g99830perSvcPosition for the first g99830perSvcEntry is always 1, incrementing sequentially for each consecutive entry, i.e. 2 for the second entry, 3 for the third etc.

This objects maps to TR-159/G.998.3 attribute aServiceID."

## REFERENCE

"[[TR-159](#)] 5.5.5.1; [[G.998.3](#)] [Appendix II](#), C-I"  
::= { g99830perSvcEntry 1 }

## g99830perSvcIdx OBJECT-TYPE

SYNTAX G9983SvcIndex

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"G.Bond/TDIM operational Service index - a read-only pointer to an existing entry in the g9983SvcTable (value of g9983SvcIdx), describing a particular service."  
::= { g99830perSvcEntry 2 }

## g99830perSvcState OBJECT-TYPE

SYNTAX INTEGER {

up(1),

down(2)

}

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"G.Bond/TDIM Service Operational State.

Possible values are:

- up - Service is up passing traffic.
- down - Service is down, due to a variety of reasons, e.g. G.Bond/TDIM port is down, current link bandwidth is too low to support a particular service, etc.

This objects maps to TR-159 attribute aServiceOperState."

## REFERENCE

"[[TR-159](#)] 5.5.5.5"  
::= { g99830perSvcEntry 3 }

## g9983SvcTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983SvcEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION





"Table of possible Services for a G.Bond/TDIM ports.  
Entries in this table MUST be maintained in a persistent  
manner"

::= { g9983Port 5 }

g9983SvcEntry OBJECT-TYPE

SYNTAX G9983SvcEntry  
MAX-ACCESS not-accessible  
STATUS current

DESCRIPTION

"An entry in the G.Bond/TDIM Port Service table, containing  
the management information applicable to a particular Service,  
indexed by the g9983SvcIdx, on a G.Bond/TDIM port,  
indexed by the ifIndex."

INDEX { ifIndex, g9983SvcIdx }

::= { g9983SvcTable 1 }

G9983SvcEntry ::=

SEQUENCE {  
    g9983SvcIdx G9983SvcIndex,  
    g9983SvcIfIdx InterfaceIndex,  
    g9983SvcType INTEGER,  
    g9983SvcSize Unsigned32,  
    g9983SvcRowStatus RowStatus  
}

g9983SvcIdx OBJECT-TYPE

SYNTAX G9983SvcIndex  
MAX-ACCESS not-accessible  
STATUS current

DESCRIPTION

"G.Bond/TDIM Service index - a unique index associated with  
a particular service entry."

::= { g9983SvcEntry 1 }

g9983SvcIfIdx OBJECT-TYPE

SYNTAX InterfaceIndex  
MAX-ACCESS read-create  
STATUS current

DESCRIPTION

"This is a unique index within the ifTable. It represents  
the interface index of a service to be transmitted over the  
G.Bond/TDIM service instance."

This objects maps to TR-159 attribute aServiceIfIndex."

REFERENCE

"[[TR-159](#)] 5.5.5.2"

::= { g9983SvcEntry 2 }



g9983SvcType OBJECT-TYPE

SYNTAX INTEGER {

ds1(0),  
e1(1),  
nxds0(2),  
nxe0(3),  
ds3(4),  
e3(5),  
clock(6),  
ethernet(7),  
atm(8),  
gfpNoFCS(9),  
gfp(10)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"G.Bond/TDIM Service Type.

Possible values are:

ds1	- Clear Channel DS1 (synchronous)
e1	- Clear Channel E1 (synchronous)
nxds0	- Fractional DS1 (synchronous)
nxe0	- Fractional E1 (synchronous)
ds3	- DS3 (synchronous)
e3	- E3 (synchronous)
clock	- Clock transfer (synchronous)
ethernet	- Ethernet (asynchronous)
atm	- ATM (asynchronous)
gfpNoFCS	- GFP encapsulated without FCS (asynchronous)
gfp	- GFP encapsulated with FCS (asynchronous)

For the GBS-R ports, the value of this object cannot be changed directly. This value may be changed as a result of writing operation on the g9983SvcType object of a remote GBS-C.

Attempts to change this object MUST be rejected for the GBS-R ports.

This object maps to TR-159/G.998.3 attribute aServiceType."

REFERENCE

"[[TR-159](#)] 5.5.5.3; [[G.998.3](#)] [Appendix II](#), C-II"

::= { g9983SvcEntry 3 }

g9983SvcSize OBJECT-TYPE

SYNTAX Unsigned32(0|20..255)

UNITS "octets"



MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Service size in octets per bonding sub-block for a specific service identified by g9983SvcIdx.

For TDM (synchronous) services with variable size  
e.g. fractional DS1/E1 - this object represents the number of DS0/E0 channels.

For asynchronous services (Ethernet, ATM, GFPnoFCS or GFP) -  
this object represents max. number of octets.

For non-fractional TDM services, i.e. DS1, E1, DS3, E3 and  
Clock, the value of this object MUST be 0.

A GET operation returns current value.

A SET operation, allowed on GBS-C ports, changes the service  
size to the indicated value. If the service type is a fixed  
rate synchronous service (g9983SvcType is nxds0, nxe0,  
ds1, e1, ds3, e3 or clock), the operation MUST be rejected.

This object maps to TR-159/G.998.3 attribute aServiceSize."

REFERENCE

"[[TR-159](#)] 5.5.5.4; [[G.998.3](#)] [Appendix II](#), C-III"

::= { g9983SvcEntry 4 }

g9983SvcRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls the creation, modification, or deletion  
of the associated entry in the g9983SvcTable per the  
semantics of RowStatus.

If an 'active' entry is referenced via g9983SvcPerSvcIdx  
or g9983PortConfAdminServices instance or indexes a  
g9983SvcPm\*Entry, the entry MUST remain  
'active'.

An 'active' entry SHALL NOT be modified. In order to modify an  
existing entry, it MUST be taken out of service (by setting  
this object to 'notInService'), modified, and set 'active'  
again."

::= { g9983SvcEntry 5 }

-----  
-- Performance Monitoring group



```
-----

g9983PM    OBJECT IDENTIFIER ::= { g9983Port 6 }

g9983PortPmCurTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF G9983PortPmCurEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains current Performance Monitoring information
        for a G.Bond/TDIM port. This table contains live data from the
        equipment and as such is NOT persistent."
    ::= { g9983PM 1 }

g9983PortPmCurEntry OBJECT-TYPE
    SYNTAX      G9983PortPmCurEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the G.Bond/TDIM Port PM table.
        Each entry represents a G.Bond/TDIM port indexed by the
        ifIndex."
    INDEX { ifIndex }
    ::= { g9983PortPmCurTable 1 }

G9983PortPmCurEntry ::=
    SEQUENCE {
        g9983PortPmCur15MinValidIntervals    HCPeefValidIntervals,
        g9983PortPmCur15MinInvalidIntervals  HCPeefInvalidIntervals,
        g9983PortPmCur15MinTimeElapsed       HCPeefTimeElapsed,
        g9983PortPmCur15MinCrc4s             HCPeefCurrentCount,
        g9983PortPmCur15MinCrc6s             HCPeefCurrentCount,
        g9983PortPmCur15MinCrc8s             HCPeefCurrentCount,
        g9983PortPmCur1DayValidIntervals     Unsigned32,
        g9983PortPmCur1DayInvalidIntervals   Unsigned32,
        g9983PortPmCur1DayTimeElapsed        HCPeefTimeElapsed,
        g9983PortPmCur1DayCrc4s              HCPeefCurrentCount,
        g9983PortPmCur1DayCrc6s              HCPeefCurrentCount,
        g9983PortPmCur1DayCrc8s              HCPeefCurrentCount
    }

g9983PortPmCur15MinValidIntervals OBJECT-TYPE
    SYNTAX      HCPeefValidIntervals
    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 `aGroupPerf15MinInvalidIntervals`."

REFERENCE

"[[TR-159](#)] 5.5.1.32"  
::= { g9983PortPmCurEntry 1 }

`g9983PortPmCur15MinInvalidIntervals` 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"  
::= { g9983PortPmCurEntry 2 }

`g9983PortPmCur15MinTimeElapsed` 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"  
::= { g9983PortPmCurEntry 3 }

`g9983PortPmCur15MinCrc4s` OBJECT-TYPE

SYNTAX HCPerfCurrentCount



MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of CRC-4 errors (frame header errors) on all active pairs in the G.Bond/TDIM port during the current 15-minute performance interval.

Simultaneous errors on M lines SHOULD be counted M times.

Note that the total number of CRC-4 errors is indicated by the g9983PortStatCrc4Errors object.

This object is inhibited during Severely Errored Seconds (SES) or Unavailable Seconds (UAS)."

REFERENCE

"[[TR-159](#)] 5.5.4.1"

::= { g9983PortPmCurEntry 4}

g9983PortPmCur15MinCrc6s OBJECT-TYPE

SYNTAX HCPperfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of CRC-6 errors (super-frame errors) on all active pairs in the G.Bond/TDIM port during the current 15-minute performance interval.

Simultaneous errors on M lines SHOULD be counted 1 time.

Note that the total number of CRC-6 errors is indicated by the g9983PortStatCrc6Errors object.

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

REFERENCE

"[[TR-159](#)] 5.5.4.2"

::= { g9983PortPmCurEntry 5}

g9983PortPmCur15MinCrc8s OBJECT-TYPE

SYNTAX HCPperfCurrentCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of CRC-8 errors (event/message errors) on all active pairs in the G.Bond/TDIM port during the current 15-minute performance interval.

Simultaneous errors on M lines SHOULD be counted M times.

Note that the total number of CRC-8 errors is indicated by the g9983PortStatCrc8Errors object.



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

## REFERENCE

"[[TR-159](#)] 5.5.4.3"

::= { g9983PortPmCurEntry 6 }

## g9983PortPmCur1DayValidIntervals 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"

::= { g9983PortPmCurEntry 7 }

## g9983PortPmCur1DayInvalidIntervals 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"

::= { g9983PortPmCurEntry 8 }

## g9983PortPmCur1DayTimeElapsed 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"

::= { g9983PortPmCurEntry 9 }

## g9983PortPmCur1DayCrc4s OBJECT-TYPE



SYNTAX        HCPperfCurrentCount

MAX-ACCESS   read-only

STATUS        current

DESCRIPTION

"A read-only count of CRC-4 errors on the G.Bond/TDIM port in the current 1-day performance interval.

This object is inhibited during Severely Errored Seconds (SES) and Unavailable Seconds (UAS)."

::= { g9983PortPmCurEntry 10 }

g9983PortPmCur1DayCrc6s OBJECT-TYPE

SYNTAX        HCPperfCurrentCount

MAX-ACCESS   read-only

STATUS        current

DESCRIPTION

"A read-only count of CRC-6 errors on the G.Bond/TDIM port in the current 1-day performance interval.

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

::= { g9983PortPmCurEntry 11 }

g9983PortPmCur1DayCrc8s OBJECT-TYPE

SYNTAX        HCPperfCurrentCount

MAX-ACCESS   read-only

STATUS        current

DESCRIPTION

"A read-only count of CRC-8 on the G.Bond/TDIM port in the current 1-day performance interval.

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

::= { g9983PortPmCurEntry 12 }

-- Port PM history: 15-min buckets

g9983PortPm15MinTable OBJECT-TYPE

SYNTAX        SEQUENCE OF G9983PortPm15MinEntry

MAX-ACCESS   not-accessible

STATUS        current

DESCRIPTION

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

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

::= { g9983PM 2 }

g9983PortPm15MinEntry OBJECT-TYPE

SYNTAX        G9983PortPm15MinEntry





```
MAX-ACCESS    not-accessible
STATUS         current
DESCRIPTION
    "An entry in the G.Bond/TDIM Port historical 15-minute PM table.
    Each entry represents performance monitoring data for a G.Bond
    TDIM port, indexed by ifIndex, collected during a particular
    15-minute interval, indexed by
    g9983PortPm15MinIntervalIndex."
INDEX { ifIndex, g9983PortPm15MinIntervalIndex }
 ::= { g9983PortPm15MinTable 1 }
```

```
G9983PortPm15MinEntry ::=
```

```
SEQUENCE {
    g9983PortPm15MinIntervalIndex      Unsigned32,
    g9983PortPm15MinIntervalMoniTime   HCPerfTimeElapsed,
    g9983PortPm15MinIntervalCrc4s      HCPerfIntervalCount,
    g9983PortPm15MinIntervalCrc6s      HCPerfIntervalCount,
    g9983PortPm15MinIntervalCrc8s      HCPerfIntervalCount,
    g9983PortPm15MinIntervalValid      TruthValue
}
```

```
g9983PortPm15MinIntervalIndex 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"
 ::= { g9983PortPm15MinEntry 1 }
```

```
g9983PortPm15MinIntervalMoniTime OBJECT-TYPE
```

```
SYNTAX         HCPerfTimeElapsed
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."
 ::= { g9983PortPm15MinEntry 2 }
```



## g9983PortPm15MinIntervalCrc4s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of CRC-4 errors on the G.Bond/TDIM port during the 15-minute performance history interval.

This object is inhibited during Severely Errored Seconds (SES) and Unavailable Seconds (UAS)."

::= { g9983PortPm15MinEntry 3 }

## g9983PortPm15MinIntervalCrc6s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of CRC-6 errors on the G.Bond/TDIM port during the 15-minute performance history interval.

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

::= { g9983PortPm15MinEntry 4 }

## g9983PortPm15MinIntervalCrc8s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of CRC-8 errors on the G.Bond/TDIM port during the current 15-minute performance interval.

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

::= { g9983PortPm15MinEntry 5 }

## g9983PortPm15MinIntervalValid 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-C 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"

::= { g9983PortPm15MinEntry 6 }

-- Port PM history: 1-day buckets

g9983PortPm1DayTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983PortPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

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

::= { g9983PM 3 }

g9983PortPm1DayEntry OBJECT-TYPE

SYNTAX G9983PortPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/TDIM 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 g9983PortPm1DayIntervalIndex."

INDEX { ifIndex, g9983PortPm1DayIntervalIndex }

::= { g9983PortPm1DayTable 1 }

G9983PortPm1DayEntry ::=

SEQUENCE {

g9983PortPm1DayIntervalIndex	Unsigned32,
g9983PortPm1DayIntervalMoniTime	HCPperfTimeElapsed,
g9983PortPm1DayIntervalCrc4s	HCPperfIntervalCount,
g9983PortPm1DayIntervalCrc6s	HCPperfIntervalCount,
g9983PortPm1DayIntervalCrc8s	HCPperfIntervalCount,
g9983PortPm1DayIntervalValid	TruthValue

}

g9983PortPm1DayIntervalIndex 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"  
::= { g9983PortPm1DayEntry 1 }

## g9983PortPm1DayIntervalMoniTime OBJECT-TYPE

SYNTAX HCPerfTimeElapsed

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"  
::= { g9983PortPm1DayEntry 2 }

## g9983PortPm1DayIntervalCrc4s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of CRC-4 errors on the G.Bond/TDIM port during the 1-day performance history interval.

This object is inhibited during Severely Errored Seconds (SES) and Unavailable Seconds (UAS)."

::= { g9983PortPm1DayEntry 3 }

## g9983PortPm1DayIntervalCrc6s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"A read-only count of CRC-6 errors on the G.Bond/TDIM port during the 1-day performance history interval.

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





```
::= { g9983PortPm1DayEntry 4 }
```

g9983PortPm1DayIntervalCrc8s OBJECT-TYPE

SYNTAX HCPerfIntervalCount

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of CRC-6 errors on the G.Bond/TDIM port during the current 1-day performance interval.

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

```
::= { g9983PortPm1DayEntry 5 }
```

g9983PortPm1DayIntervalValid 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-C 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"

```
::= { g9983PortPm1DayEntry 6 }
```

-- Services PM

g9983SvcPmCurTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983SvcPmCurEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains current Performance Monitoring information for the services of a G.Bond/TDIM port.

This table contains live data from the equipment and as such is NOT persistent."

```
::= { g9983PM 4 }
```



## g9983SvcPmCurEntry OBJECT-TYPE

SYNTAX G9983SvcPmCurEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the G.Bond/TDIM Services PM table.  
Each entry represents a service, indexed by the  
g9983SvcIdx, in a G.Bond/TDIM port, indexed by the  
ifIndex."

INDEX { ifIndex, g9983SvcIdx }

::= { g9983SvcPmCurTable 1 }

## G9983SvcPmCurEntry ::=

## SEQUENCE {

g9983SvcPmCur15MinValidIntervals	HCPperfValidIntervals,
g9983SvcPmCur15MinInvalidIntervals	HCPperfInvalidIntervals,
g9983SvcPmCur15MinTimeElapsed	HCPperfTimeElapsed,
g9983SvcPmCur15MinDowns	HCPperfCurrentCount,
g9983SvcPmCur1DayValidIntervals	Unsigned32,
g9983SvcPmCur1DayInvalidIntervals	Unsigned32,
g9983SvcPmCur1DayTimeElapsed	HCPperfTimeElapsed,
g9983SvcPmCur1DayDowns	HCPperfCurrentCount

}

## g9983SvcPmCur15MinValidIntervals 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"

::= { g9983SvcPmCurEntry 1 }

## g9983SvcPmCur15MinInvalidIntervals 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"

::= { g9983SvcPmCurEntry 2 }

g9983SvcPmCur15MinTimeElapsed 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"

::= { g9983SvcPmCurEntry 3 }

g9983SvcPmCur15MinDowns OBJECT-TYPE

SYNTAX HCPerfCurrentCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of seconds in the current 15-minute performance interval, during which a particular TDIM Service was 'down', as indicated by the g99830perSvcState object.

This object is inhibited during Unavailable Seconds (UAS)."  
::= { g9983SvcPmCurEntry 4 }

g9983SvcPmCur1DayValidIntervals OBJECT-TYPE

SYNTAX Unsigned32 (0..7)

UNITS "days"

MAX-ACCESS read-only

STATUS current



## DESCRIPTION

"A read-only number of 1-day performance history intervals for which the 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"  
 ::= { g9983SvcPmCurEntry 5 }

## g9983SvcPmCur1DayInvalidIntervals OBJECT-TYPE

SYNTAX Unsigned32 (0..7)  
UNITS "days"  
MAX-ACCESS read-only  
STATUS current

## DESCRIPTION

"A read-only number of 1-day performance history 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."

## REFERENCE

"[[TR-159](#)] 5.5.1.46"  
 ::= { g9983SvcPmCurEntry 6 }

## g9983SvcPmCur1DayTimeElapsed 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"  
 ::= { g9983SvcPmCurEntry 7 }

## g9983SvcPmCur1DayDowns OBJECT-TYPE

SYNTAX HCPerfCurrentCount  
UNITS "seconds"  
MAX-ACCESS read-only  
STATUS current

## DESCRIPTION

"A read-only count of seconds in the current 1-day performance interval, during which a particular TDIM Service was





'down', as indicated by the g99830perSvcState object.

This object is inhibited during Unavailable Seconds (UAS)."  
::= { g9983SvcPmCurEntry 8 }

-- Service PM history: 15-min buckets

g9983SvcPm15MinTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983SvcPm15MinEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

Entries in this table MUST be maintained in a persistent manner."  
::= { g9983PM 5 }

g9983SvcPm15MinEntry OBJECT-TYPE

SYNTAX G9983SvcPm15MinEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the G.Bond/TDIM Services historical 15-minute PM table.

Each entry represents performance monitoring data for a particular Service, indexed by g9983SvcIdx, in a G.Bond TDIM port, indexed by ifIndex, collected during a particular 15-minute interval, indexed by g9983SvcPm15MinIntervalIndex."

INDEX { ifIndex, g9983SvcIdx,  
g9983SvcPm15MinIntervalIndex }

::= { g9983SvcPm15MinTable 1 }

G9983SvcPm15MinEntry ::=

SEQUENCE {

g9983SvcPm15MinIntervalIndex	Unsigned32,
g9983SvcPm15MinIntervalMoniTime	HCPperfTimeElapsed,
g9983SvcPm15MinIntervalDowns	HCPperfIntervalCount,
g9983SvcPm15MinIntervalValid	TruthValue

}

g9983SvcPm15MinIntervalIndex 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"  
::= { g9983SvcPm15MinEntry 1 }

## g9983SvcPm15MinIntervalMoniTime OBJECT-TYPE

SYNTAX HCPerfTimeElapsed  
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."  
::= { g9983SvcPm15MinEntry 2 }

## g9983SvcPm15MinIntervalDowns OBJECT-TYPE

SYNTAX HCPerfIntervalCount  
UNITS "seconds"  
MAX-ACCESS read-only  
STATUS current

## DESCRIPTION

"A read-only count of seconds in the 15-minute performance history interval, during which a particular TDIM Service was 'down', as indicated by the g9983SvcPm15MinEntry object.

This object is inhibited during Unavailable Seconds (UAS)."  
::= { g9983SvcPm15MinEntry 3 }

## g9983SvcPm15MinIntervalValid 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-C 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"  
::= { g9983SvcPm15MinEntry 4 }

-- Service PM history: 1-day buckets

## g9983SvcPm1DayTable OBJECT-TYPE

SYNTAX SEQUENCE OF G9983SvcPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

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

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

::= { g9983PM 6 }

## g9983SvcPm1DayEntry OBJECT-TYPE

SYNTAX G9983SvcPm1DayEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"An entry in the G.Bond/TDIM Service historical 1-day PM table. Each entry represents performance monitoring data for a particular Service, indexed by g9983SvcIdx, defined in a G.Bond/TDIM port, indexed by ifIndex, collected during a particular 1-day interval, indexed by g9983SvcPm1DayIntervalIndex."

INDEX { ifIndex, g9983SvcIdx,  
g9983SvcPm1DayIntervalIndex }

::= { g9983SvcPm1DayTable 1 }

## G9983SvcPm1DayEntry ::=

## SEQUENCE {

g9983SvcPm1DayIntervalIndex	Unsigned32,
g9983SvcPm1DayIntervalMoniTime	HCPperfTimeElapsed,
g9983SvcPm1DayIntervalDowns	HCPperfIntervalCount,
g9983SvcPm1DayIntervalValid	TruthValue

}

## g9983SvcPm1DayIntervalIndex 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"

::= { g9983SvcPm1DayEntry 1 }

g9983SvcPm1DayIntervalMoniTime OBJECT-TYPE

SYNTAX HCPerfTimeElapsed

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"

::= { g9983SvcPm1DayEntry 2 }

g9983SvcPm1DayIntervalDowns OBJECT-TYPE

SYNTAX HCPerfIntervalCount

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A read-only count of seconds in the 1-day performance history interval, during which a particular TDIM Service was 'down', as indicated by the g99830perSvcState object.

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

::= { g9983SvcPm1DayEntry 3 }

g9983SvcPm1DayIntervalValid 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-C 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"

::= { g9983SvcPm1DayEntry 4 }

--

-- Conformance Statements

--

g9983Groups OBJECT IDENTIFIER  
::= { g9983Conformance 1 }

g9983Compliances OBJECT IDENTIFIER  
::= { g9983Conformance 2 }

-- Object Groups

g9983BasicGroup OBJECT-GROUP  
OBJECTS {  
g9983PortConfAdminServices,  
g9983PortStatCrc4Errors,  
g9983PortStatCrc6Errors,  
g9983PortStatCrc8Errors,  
g9983PortCapFecSupported,  
g99830perSvcIdx,  
g99830perSvcState,  
g9983SvcIfIdx,  
g9983SvcType,  
g9983SvcSize,  
g9983SvcRowStatus,  
g9983PortStatFltStatus  
}

STATUS current

DESCRIPTION



```
"A collection of objects representing management information
for G.Bond/TDIM ports."
::= { g9983Groups 1 }
```

#### g9983FecGroup OBJECT-GROUP

```
OBJECTS {
    g9983PortCapFecSupported,
    g9983PortConfFecAdminState,
    g9983PortStatFecOperState,
    g9983PortConfFecWordSize,
    g9983PortConfFecRedundancySize,
    g9983PortConfFecInterleaverType,
    g9983PortConfFecInterleaverDepth,
    g9983PortCapFecMaxWordSize,
    g9983PortCapFecMaxRedundancySize,
    g9983PortCapFecInterleaverTypeSupported,
    g9983PortCapFecMaxInterleaverDepth
}
STATUS      current
DESCRIPTION
    "A collection of objects supporting OPTIONAL Forward Error
    Correction (FEC) and Interleaver function in G.Bond/TDIM
    ports."
::= { g9983Groups 2 }
```

#### g9983AlarmConfGroup OBJECT-GROUP

```
OBJECTS {
    g9983PortConfSvcUpDownEnable
}
STATUS      current
DESCRIPTION
    "A collection of objects required for configuration of alarm
    thresholds and notifications in G.Bond/TDIM ports."
::= { g9983Groups 3 }
```

#### g9983NotificationGroup NOTIFICATION-GROUP

```
NOTIFICATIONS {
    g9983SvcUp,
    g9983SvcDown
}
STATUS      current
DESCRIPTION
    "This group supports notifications of significant conditions
    associated with G.Bond/TDIM ports."
::= { g9983Groups 4 }
```

#### g9983PerfCurrGroup OBJECT-GROUP

```
OBJECTS {
```



```
g9983PortPmCur15MinValidIntervals,
g9983PortPmCur15MinInvalidIntervals,
g9983PortPmCur15MinTimeElapsed,
g9983PortPmCur15MinCrc4s,
g9983PortPmCur15MinCrc6s,
g9983PortPmCur15MinCrc8s,
g9983PortPmCur1DayValidIntervals,
g9983PortPmCur1DayInvalidIntervals,
g9983PortPmCur1DayTimeElapsed,
g9983PortPmCur1DayCrc4s,
g9983PortPmCur1DayCrc6s,
g9983PortPmCur1DayCrc8s,
g9983SvcPmCur15MinValidIntervals,
g9983SvcPmCur15MinInvalidIntervals,
g9983SvcPmCur15MinTimeElapsed,
g9983SvcPmCur15MinDowns,
g9983SvcPmCur1DayValidIntervals,
g9983SvcPmCur1DayInvalidIntervals,
g9983SvcPmCur1DayTimeElapsed,
g9983SvcPmCur1DayDowns
}
STATUS      current
DESCRIPTION
  "A collection of objects supporting OPTIONAL current Performance
  Monitoring information for G.Bond/TDIM ports."
 ::= { g9983Groups 5 }

g9983Perf15MinGroup OBJECT-GROUP
OBJECTS {
  g9983PortPm15MinIntervalMoniTime,
  g9983PortPm15MinIntervalCrc4s,
  g9983PortPm15MinIntervalCrc6s,
  g9983PortPm15MinIntervalCrc8s,
  g9983PortPm15MinIntervalValid,
  g9983SvcPm15MinIntervalMoniTime,
  g9983SvcPm15MinIntervalDowns,
  g9983SvcPm15MinIntervalValid
}
STATUS      current
DESCRIPTION
  "A collection of objects supporting OPTIONAL historical
  Performance Monitoring information for G.Bond/TDIM ports, during
  previous 15-minute intervals ."
 ::= { g9983Groups 6 }

g9983Perf1DayGroup OBJECT-GROUP
OBJECTS {
  g9983PortPm1DayIntervalMoniTime,
```



```
g9983PortPm1DayIntervalCrc4s,
g9983PortPm1DayIntervalCrc6s,
g9983PortPm1DayIntervalCrc8s,
g9983PortPm1DayIntervalValid,
g9983SvcPm1DayIntervalMoniTime,
g9983SvcPm1DayIntervalDowns,
g9983SvcPm1DayIntervalValid
}
STATUS          current
DESCRIPTION
  "A collection of objects supporting OPTIONAL historical
  Performance Monitoring information for G.Bond/TDIM ports, during
  previous 1-day intervals ."
:= { g9983Groups 7 }

-- Compliance Statements

g9983Compliance MODULE-COMPLIANCE
STATUS          current
DESCRIPTION
  "The compliance statement for G.Bond/TDIM 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 {
  g9983BasicGroup,
  g9983AlarmConfGroup,
  g9983NotificationGroup
}

GROUP          g9983FecGroup
DESCRIPTION
  "Support for this group is only required for implementations
  supporting G.Bond/TDIM FEC and Interleaver function."

GROUP          g9983PerfCurrGroup
DESCRIPTION
  "Support for this group is only required for implementations
  supporting Performance Monitoring."

GROUP          g9983Perf15MinGroup
DESCRIPTION
```





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

GROUP           g9983Perf1DayGroup

DESCRIPTION

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

::= { g9983Compliances 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 g9983PortConfAdminServices object may lead to a potential service disruption, by changing a particular service' position (therefore changing its drop priority) or even removing the service from the link altogether.
- o Changing of g9983SvcTable configuration parameters (e.g. g9983SvcType or g9983SvcSize) may lead to a potential service impairment, for example a TDM service would be dropped if there is not enough actual bandwidth on the bonded link to support this service.
- o Changing of g9983PortConfTable configuration parameters (e.g. g9983PortConfFecAdminState) may lead to anything from link quality and rate degradation to a complete link initialization failure.

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.

In particular, since a bonded xDSL port can be comprised of multiple Unshielded Twisted Pair (UTP) voice grade copper, located in the same bundle with other pairs belonging to another operator/customer, it is theoretically possible to eavesdrop to a G.Bond transmission, simply by "listening" to a cross-talk from the bonded pairs, especially if the operating parameters of the G.Bond link in question are known.



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 g9983PortStatFecOperState in g9983PortStatTable indicate whether the FEC function is enabled, which may aid in deciphering of the G.Bond/TDIM transmissions.
- o g9983OperSvcTable provide current operational service configuration, which may aid in deciphering of the G.Bond/TDIM 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 g9983MIB 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.

Special thanks to Dan Romascanu for his meticulous review of this text.



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#### URIs

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