

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.983.2

Amendment 2

(01/2007)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Digital sections and digital line system – Optical line
systems for local and access networks

ONT management and control interface
specification for B-PON

Amendment 2

ITU-T Recommendation G.983.2 (2005) – Amendment 2



International
Telecommunication
Union

Document Sharing Hub

ITU-T G-SERIES RECOMMENDATIONS
TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
General	G.900–G.909
Parameters for optical fibre cable systems	G.910–G.919
Digital sections at hierarchical bit rates based on a bit rate of 2048 kbit/s	G.920–G.929
Digital line transmission systems on cable at non-hierarchical bit rates	G.930–G.939
Digital line systems provided by FDM transmission bearers	G.940–G.949
Digital line systems	G.950–G.959
Digital section and digital transmission systems for customer access to ISDN	G.960–G.969
Optical fibre submarine cable systems	G.970–G.979
Optical line systems for local and access networks	G.980–G.989
Access networks	G.990–G.999
QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
PACKET OVER TRANSPORT ASPECTS	G.8000–G.8999
ACCESS NETWORKS	G.9000–G.9999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation G.983.2

ONT management and control interface specification for B-PON

Amendment 2

Summary

This amendment includes various enhancements to the OMCI, as defined in ITU-T Rec. G.983.2. The major topic areas include IGMP tests, equipment alarms, SIP alarms, power shedding alarms, VLAN tagging operation, VLAN filtering, and VDSL2 management. Additionally, various editorial corrections are included.

Source

Amendment 2 to ITU-T Recommendation G.983.2 (2005) was approved on 13 January 2007 by ITU-T Study Group 15 (2005-2008) under the ITU-T Recommendation A.8 procedure.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2007

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

Page

1)	Modifications to existing clauses of G.983.2	1
1.1)	Modify clause 2, References	1
1.2)	Modify clause 4, Abbreviations	1
1.3)	Modify clause 5.2, Fault management	1
1.4)	Modify clause 5.3, Performance management	2
1.5)	Modify clause 6.1, Managed entities.....	2
1.6)	Modify clause 6.2, Managed entity relation diagrams	3
1.7)	Modifications throughout clause 7	3
1.8)	Modify clause 7.1.1, ONT _{B-PON}	4
1.9)	Modify clause 7.1.3, Cardholder	4
1.10)	Modify clause 7.1.4, Circuit pack	4
1.11)	Modify clause 7.1.10, Equipment extension package	5
1.12)	Modify clause 7.1.12, ONT power shedding	5
1.13)	Modify clause 7.3.6, TC Adapter _{B-PON}	6
1.14)	Modify clause 7.3.17, Threshold Data _{B-PON}	6
1.15)	Modify clause 7.3.26, Physical path termination point POTS UNI	6
1.16)	Modify clause 7.3.29, MAC bridge service profile.....	7
1.17)	Modify clause 7.3.31, MAC bridge port configuration data	7
1.18)	Modify clause 7.3.50, VLAN tagging filter data.....	8
1.19)	Modify clause 7.3.53, Physical path termination point video ANI	9
1.20)	Modify clauses 7.3.63 through 7.3.81 and clause 7.3.88	9
1.21)	Modify clause 7.3.63, Physical path termination point xDSL UNI part 1	9
1.22)	Modify clause 7.3.64, Physical path termination point xDSL UNI part 2	10
1.23)	Modify clause 7.3.65, xDSL line inventory and status data part 1	11
1.24)	Modify clause 7.3.66, xDSL line inventory and status data part 2	11
1.25)	Modify clause 7.3.67, xDSL channel downstream status data.....	13
1.26)	Modify clause 7.3.68, xDSL channel upstream status data.....	14
1.27)	Modify clause 7.3.69, xDSL line configuration profile part 1	16
1.28)	Modify clause 7.3.70, xDSL line configuration profile part 2	17
1.29)	Modify clause 7.3.71, xDSL line configuration profile part 3	18
1.30)	Modify clause 7.3.72, xDSL channel configuration profile.....	18
1.31)	Modify clause 7.3.73, xDSL subcarrier masking downstream profile.....	20
1.32)	Modify clause 7.3.74, xDSL subcarrier masking upstream profile.....	20
1.33)	Modify clause 7.3.75, xDSL PSD mask profile	20
1.34)	Modify clause 7.3.76, xDSL downstream RFI bands profile.....	21
1.35)	Modify clause 7.3.77, xDSL xTU-C performance monitoring history data ..	22
1.36)	Modify clause 7.3.78, xDSL xTU-R performance monitoring history data ..	23
1.37)	Modify clause 7.3.79, xDSL xTU-C channel performance monitoring history data	24

Documents

Document Sharing Hub

ITU-T Rec. G.983.2 (2005)/Amd.2 (01/2007)

Licensee=/, User=,
Not for Resale,

1.38)	Modify clause 7.3.80, xDSL xTU-R channel performance monitoring history data	24
1.39)	Modify clause 7.3.81, TC adaptor performance monitoring history data xDSL.....	25
1.40)	Modify clause 7.3.82, Physical path termination point VDSL UNI	25
1.41)	Modify clause 7.3.88, VDSL band plan configuration profile.....	25
1.42)	<i>Left blank on purpose.</i>	25
1.43)	Modify clause 7.3.94, Video return path statistics	25
1.44)	Modify clause 7.3.95, 802.1p mapper service profile	25
1.45)	Modify clause 7.3.98, IP host config data	26
1.46)	Modify clause 7.3.103, SIP agent config data.....	26
1.47)	Modify clause 7.3.106, SIP user data	26
1.48)	Modify clause 9.1.6, Message identifier	26
1.49)	Modify clause I.1.2, MIB audit and resynchronization.....	27
1.50)	Modify clause I.1.6, Create an instance of a managed entity with an attribute that is larger than the OMCI message contents field	27
1.51)	Modify clause I.1.8, Alarm reporting control.....	28
1.52)	Modify clause II.2.26, Attribute value change	28
1.53)	Modify clause II.2.1, Create	28
1.54)	Modify clause II.2.15, Get all alarms	28
1.55)	Modify clause II.2.27, Test.....	28
1.56)	Modify clause II.2.45, Test result.....	29
2)	Addition of new clauses to G.983.2	31
2.1)	Add the following clauses to the end of clause 7.3	31
2.2)	Add the following clause to the end of clause 7.3.....	49

Introduction

The OMCI as defined in ITU-T Rec. G.983.2 continues to play an important role in PON systems, both G.983 and G.984 base systems. Various new services are being introduced on these systems, such as VDSL2 and the set introduced in G.983.2 Amendment 1 (03/2006). Many modifications and additions need to be made to support and improve these services, and this is the reason for this amendment.

Document Sharing Hub



Documents

Document Sharing Hub

ITU-T Rec. G.983.2 (2005)/Amd.2 (01/2007)

Licensee=/, User=,
Not for Resale,

Downloaded from https://www.ava.com

ITU-T Recommendation G.983.2

ONT management and control interface specification for B-PON

Amendment 2

1) Modifications to existing clauses of G.983.2

1.1) Modify clause 2, References

Modify the following reference:

"ITU-T Recommendation G.997.1 (2006), *Physical layer management for digital subscriber line (DSL) transceivers*."

1.2) Modify clause 4, Abbreviations

a) Modify the following 2 items:

ADSL Asymmetric Digital Subscriber Line

NOTE 1 – The xDSL MEs include the G.992 family as well as G.993.2 VDSL2, but not G.993.1 VDSL.

VDSL Very High Speed DSL

NOTE 2 – G.993.2 VDSL2 is managed under the xDSL family of MEs.

b) Add the following items in alphabetic sequence:

SBC Set-by-Create

xTU-C xDSL transceiver unit at the central office end (in the case of PON, the ONT/ONU), used as a generic term referring to both the ATU-C of the G.992.x series of ITU-T Recommendations and the VTU-O of ITU-T Rec. G.993.2.

xTU-R xDSL transceiver unit at the remote end (subscriber premises), used as a generic term referring to both the ATU-R of the G.992.x series of ITU-T Recommendations and the VTU-R of ITU-T Rec. G.993.2.

1.3) Modify clause 5.2, Fault management

a) Replace item k) with the following:

k) Physical Path Termination Point xDSL UNI;

b) At the end of clause 5.2, add the following text:

To avoid erratic floods of alarm messages, it is common to filter, or soak, defects such as facility impairments before declaring them as alarms, and to soak defect clearing before retiring the alarm. The declaration soak time is typically 2.5 ± 0.5 seconds, while the retirement soak time is typically 10.5 ± 0.5 seconds. Which alarms are to be soaked, and what the soak intervals should be, are regarded as vendor-specific choices. Interoperability considerations, however, require that alarms be soaked at exactly one of the OLT or ONT, and this Recommendation specifies that they be soaked at the ONT.

1.4) Modify clause 5.3, Performance management

Replace items t) through x) with the following:

- t) xDSL xTU-C Performance Monitoring History Data;
- u) xDSL xTU-R Performance Monitoring History Data;
- v) xDSL xTU-C Channel Performance Monitoring History Data;
- w) xDSL xTU-R Channel Performance Monitoring History Data;
- x) TC Adaptor Performance Monitoring History Data xDSL;

1.5) Modify clause 6.1, Managed entities

a) Replace the ADSL entries in Table 1 as shown. Reorder the table alphabetically:

Managed entity	Required/ Optional	Description	Defined in clause
xDSL xTU-C Channel Performance Monitoring History Data	O	Performance monitoring data for an xDSL xTU-C channel (formerly ADSL ATU-C Channel Performance Monitoring History Data)	7.3.79
xDSL xTU-C Performance Monitoring History Data	O	Performance monitoring data for an xDSL xTU-C modem path (formerly ADSL ATU-C Performance Monitoring History Data)	7.3.77
xDSL xTU-R Channel Performance Monitoring History Data	O	Performance monitoring data for an xDSL xTU-R channel (formerly ADSL ATU-R Channel Performance Monitoring History Data)	7.3.80
xDSL xTU-R Performance Monitoring History Data	O	Performance monitoring data for an xDSL xTU-R modem path (formerly ADSL ATU-R Performance Monitoring History Data)	7.3.78
xDSL Channel Configuration Profile	CR	Contains configuration for a channel (formerly ADSL Channel Configuration Profile)	7.3.72
xDSL Channel Downstream Status Data	CR	Contains status on the downstream channel (formerly ADSL Channel Downstream Status Data)	7.3.67
xDSL Channel Upstream Status Data	CR	Contains status on the upstream channel (formerly ADSL Channel Upstream Status Data)	7.3.68
xDSL PSD Mask Profile	CR	Contains PSD masking information (formerly ADSL Downstream PSD Mask Profile)	7.3.75
xDSL Downstream RFI Bands Profile	CR	Contains information on the downstream RFI bands (formerly ADSL Downstream RFI Bands Profile)	7.3.76
xDSL Line Configuration Profile Part 1	CR	Contains the line parameters for an xDSL line (formerly ADSL Line Configuration Profile Part 1)	7.3.69
xDSL Line Configuration Profile Part 2	CR	Contains the line parameters for an xDSL line (formerly ADSL Line Configuration Profile Part 2)	7.3.70
xDSL Line Configuration Profile Part 3	CR	Contains the line parameters for an xDSL line (formerly ADSL Line Configuration Profile Part 3)	7.3.71
xDSL Line Inventory and Status Data Part 1	CR	Contains the inventory and status information on the xDSL line (formerly ADSL Line Inventory and Status Data Part 1)	7.3.65

Managed entity	Required/ Optional	Description	Defined in clause
xDSL Line Inventory and Status Data Part 2	CR	Contains the inventory and status information on the xDSL line (formerly ADSL Line Inventory and Status Data Part 2)	7.3.66
xDSL Subcarrier Masking Downstream Profile	CR	Contains masking information for the downstream subcarriers (formerly ADSL Subcarrier Masking Downstream Profile)	7.3.73
xDSL Subcarrier Masking Upstream Profile	CR	Contains masking information for the upstream subcarriers (formerly ADSL Subcarrier Masking Upstream Profile)	7.3.74
Physical Path Termination Point xDSL UNI Part 1	CR	Used for the physical path termination point at an xDSL CO modem (formerly Physical Path Termination Point ADSL UNI Part 1)	7.3.63
Physical Path Termination Point xDSL UNI Part 2	CR	Used for the physical path termination point at an xDSL CO modem (formerly Physical Path Termination Point ADSL UNI Part 2)	7.3.64
TC Adaptor Performance Monitoring History Data xDSL	O	Performance monitoring data for the xDSL ATM data path (formerly TC Adaptor Performance Monitoring History Data ADSL)	7.3.81

b) Add the following new entries to Table 1 in alphabetic sequence:

VDSL2 line configuration extensions	CR	Contains xDSL attributes unique to VDSL2 (G.993.2)	7.3.122
xDSL line inventory and status data Part 3	CR	Contains additional test and status attributes for xDSL lines.	7.3.123
xDSL line inventory and status data Part 4	CR	Contains additional test and status attributes for xDSL lines.	7.3.124
VDSL2 line inventory and status data Part 1	CR	Contains additional test and status attributes for xDSL lines, specifically, extensions for VDSL2.	7.3.125
VDSL2 line inventory and status data Part 2	CR	Contains additional test and status attributes for xDSL lines, specifically, extensions for VDSL2.	7.3.126
VDSL2 line inventory and status data Part 3	CR	Contains additional test and status attributes for xDSL lines, specifically, extensions for VDSL2.	7.3.127
Extended VLAN Tagging Operation Configuration Data	CR	Contains configurations parameters for enhanced VLAN operations, including adding, removing, and changing multiple tags	7.3.128

1.6) Modify clause 6.2, Managed entity relation diagrams

Modify Figure 27 and its caption with references to xDSL instead of ADSL. Extend figure to show the new MEs defined in this amendment.

1.7) Modifications throughout clause 7

- Ensure that all table attributes have the word 'table' in their name, to indicate to the reader that the table access method should be used.
- Create a uniform treatment of the "Actions" section, locating all generally applicable text in one location, and making the actions section in each ME brief.
- Ensure that all ME IDs for OLT created MEs are marked (R, Set-by-create).

- d) *Ensure that all ME IDs for ONT created MEs are marked (R).*
- e) *Ensure the proper use of "dB" for increments and relative measurements, and "dBm" and similar for absolute measurements.*

1.8) **Modify clause 7.1.1, ONT_{B-PON}**

Modify the following attributes to improve readability, as follows:

Total T-CONT buffer number: This attribute provides the total number of T-CONT buffers that are not associated with the PON interface. Upon autonomous instantiation, this attribute is set to zero.

(R) (mandatory if DBA supported) (1 byte)

Total Priority Queue number: This attribute provides the total number of priority queues that are not associated with the PON interface. Upon autonomous instantiation, this attribute is set to zero.

(R) (mandatory if DBA supported) (1 byte)

Total Traffic Scheduler number: This attribute provides the total number of Traffic Schedulers that are not associated with the PON interface. The ONT supports NULL function, HOL (Head Of the Line) scheduling and WRR (Weighted Round Robin) from the priority control and guarantee of minimum rate control points of view, respectively. If the ONT does not have any Traffic Scheduler, this attribute should be 0. Upon autonomous instantiation, this attribute is set to zero.

(R) (mandatory if DBA supported) (1 byte)

1.9) **Modify clause 7.1.3, Cardholder**

- a) *Change Note 2 (already introduced in Amd.1) in the "ME ID" attribute to read as follows:*

"NOTE 2 – Some xDSL managed entities use the two most significant bits of the first byte (slot address) for other purposes. An ONT that supports these services may have slot limitations or restrictions."

- b) *Replace the following lines of Table 3 with text as follows:*

Coding	Contents	Description
35	xDSL	xDSL IF
36	SHDSL	SHDSL IF
37	VDSL	VDSL IF (G.993.1)
41	xDSL/POTS	Combination xDSL and POTS interfaces
42	VDSL/POTS	Combination VDSL (G.993.1) and POTS interfaces

1.10) **Modify clause 7.1.4, Circuit pack**

- a) *Revise the "Alarm:" subclause to read as follows:*

"This notification is used to notify the management system when a failure has been detected or cleared. Both ONT and OLT should know the alarm list used by this entity. The alarm list for this entity is given in Table 5b.

NOTE 3 – For ONTs with integrated interfaces on the UNI side, alarms are not applicable except perhaps for video support.

Use of alarms for video support is considered optional and is for future study. An ONT vendor may choose to indicate impending failure to the subscriber, for example via LED, such that a failing subscriber premises ONT could be replaced before it fails."

- b) Modify Table 5b, "Alarms list for circuit pack," to read as follows:

Table 5b/G.983.2 – Alarms list for circuit pack

Number	Event	Description
0	EquipmentAlarm	A failure on an internal interface or failed self test
1	PoweringAlarm	LIM fuse failure or failure of LIM DC/DC converter
2	SelfTestFailure	Failure of circuit pack autonomous self test
3	Laser end of life	Failure of transmit laser imminent
4-223	Reserved	
224-239	Vendor specific alarms	Not to be standardized

1.11) Modify clause 7.1.10, Equipment extension package

- a) Change the "Environmental sense" and "Contact closure" attributes to: (R, W).
- b) In the table "Alarm list for equipment extension package", add the following row at the top of the list of alarms:

0	Reserved	
---	----------	--

1.12) Modify clause 7.1.12, ONT power shedding

- a) Replace the ADSL lines of the introductory table as follows:

Shedding Class	PPTP Type	Coding	Contents
Dsl	xDSL PPTP	35	xDSL
	Unspecified	36	SHDSL
	VDSL PPTP	37	G.993.1 VDSL
Voice (Dsl may also apply)	xDSL + POTS	41	xDSL/POTS
	VDSL + POTS	42	G.993.1 VDSL/POTS

- b) Add the following attribute to the list:

Shedding Status:	Attribute provides Boolean indication of power shedding status for each shedding class. Two-byte field formatted ABCD EFGH IJKL MNOP, where: A = Data class B = Voice class C = Video overlay class D = Video return class E = DSL class F = ATM class G = CES class H = Frame class I = SONET class J through P = reserved and set to zero. The bit is set when shedding turns on, and cleared when power is restored. Upon autonomous instantiation, this attribute is set to 0x00. (R) (optional) (2 bytes)
------------------	--

c) Change the "Notifications" section to read:

Notifications

Attribute value change: This notification is used to report autonomous changes of attributes of this managed entity. The notification shall identify its new value. The AVC list is given in Table 5e.

Table 5e/G.983.2 – AVC list for ONT power shedding

Number	Attribute value change	Description
1-10	N/A	
11	Shedding status	State of the shedding function for all classes
12-16	Reserved	Reserved for AVCs of vendor-specific attributes

1.13) Modify clause 7.3.6, TC Adapter_{B-PON}

Modify Table 10b, "Alarm list for TC Adapter_{B-PON}", to read as follows:

Table 10b/G.983.2 – Alarm list for TC Adapter_{B-PON}

Number	Alarm	Description
0	LCD	Loss of cell delineation, near end
1	NCD	No cell delineation, near end
2	LCD-FE	Loss of cell delineation, far end
3	NCD-FE	No cell delineation, far end
4-223	Reserved	
224-239	Vendor specific alarms	Not to be standardized

1.14) Modify clause 7.3.17, Threshold Data_{B-PON}

In the "Related Managed Entities" subsection, replace the 5 list entries that refer to ADSL PM objects with their new xDSL names, as follows:

- xDSL xTU-C Channel Performance Monitoring History Data;
- xDSL xTU-C Performance Monitoring History Data;
- xDSL xTU-R Channel Performance Monitoring History Data;
- xDSL xTU-R Performance Monitoring History Data;
- TC Adaptor Performance Monitoring History Data xDSL.

1.15) Modify clause 7.3.26, Physical path termination point POTS UNI

Add the following attribute description:

POTS holdover time: This attribute determines the time during which POTS loop voltage is held up when the ONT is not ranged on the PON. After the specified time elapses, the ONT drops POTS loop voltage, and may thereby cause premises intrusion alarm circuits to go active. When the ONT ranges successfully on the PON, it restores POTS loop voltage immediately and resets the timer to zero. The attribute is expressed in seconds. The default value 0 selects the vendor's factory policy.

(R, W) (optional) (2 bytes)

1.16) Modify clause 7.3.29, MAC bridge service profile

- a) In the "Relationships" section, replace "Physical Path Termination Point Ethernet UNI managed entity" with "MAC bridge Port Configuration Data managed entity".
- b) In the "Managed entity ID" attribute, change (R) to (R, SBC).

1.17) Modify clause 7.3.31, MAC bridge port configuration data

- a) Revise the following attribute descriptions to read as shown:

TPType: This attribute identifies the type of the termination point associated with this MAC bridge port.

TPType	Managed entity type
1	Physical Path Termination Point Ethernet UNI
2	Interworking VCC Termination Point
3	802.1p mapper service profile
4	IP Host Config Data
5	Reserved for definition in G.984.4
6	Reserved for definition in G.984.4
7	Physical Path Termination Point xDSL UNI part 1
8	Physical Path Termination Point VDSL UNI
9	Reserved for definition in G.984.4

(R, Set-by-create) (mandatory) (1 byte)

TPPointer: This attribute points to the termination point associated with this MAC bridge port. The TPType attribute indicates the type of termination point, while TPPointer selects an instance of this type.

(R, Set-by-create) (mandatory) (2 bytes)

- b) Add the following two attributes at the end of the attribute list:

Reserved 1: This attribute reserves space for an attribute used in G.984.4.

(R, W) (optional) (2 bytes)

Reserved 2: This attribute reserves space for an attribute used in G.984.4.

(R, W) (optional) (2 bytes)

1.17a) Modify clause 7.3.49, VLAN tagging operation configuration data

- a) Modify the "Relationships" section to read as follows:

Zero or one instance of this managed entity may exist for an instance of a MAC bridge port, an 802.1p mapper service profile, an IP host, or any physical path termination point that supports Ethernet service; in short, any managed entity that can terminate or modify an Ethernet stream.

- b) Modify the description of the "ME ID" to read as follows:

Managed Entity id: This attribute provides a unique number for each instance of this managed entity. The assigned number is the same as the id of the managed entity with which this VLAN Tagging Operation Configuration Data instance is associated.

(R, Set-by-create) (mandatory) (2 bytes)

c) Add the following additional attribute at the end of the list of attributes:

Association type: This attribute identifies the type of ME that is associated with this VLAN tagging operation configuration data ME. Values are assigned in accordance with the following list.

(R, W, Set-by-create) (optional) (1 byte)

- 0 Physical path termination point Ethernet UNI (default)
- 1 IP host config data
- 2 802.1p mapper service profile
- 3 MAC bridge port configuration data
- 4 Physical path termination point xDSL UNI
- 5 GEM interworking termination point
- 6 Multicast GEM interworking termination point
- 7 Physical path termination point MoCA UNI
- 8 Physical path termination point 802.11 UNI
- 9 Ethernet flow termination point

1.18) Modify clause 7.3.50, VLAN tagging filter data

a) Modify lettered list items a) and f) to read as follows:

- a) **Basic MAC bridge operation:** As shown in Figure 38, if the DA (Destination MAC Address) in the received frame is listed in the MAC Bridge Port Bridge Table Data for one or more ports, this frame is forwarded to the indicated ports. Otherwise, it is broadcast to all ports except the receiving port.
- f) **Positive filtering by TCI:** If some or all of the fields in the TCI of the received frame are included in VLAN Tag Filter Data, it is forwarded according to action a) to the indicated ports as shown in Figure 39. Otherwise, its TCI is ignored and it is controlled by action a).

b) Modify Figure 40 to correct the routing arrows:

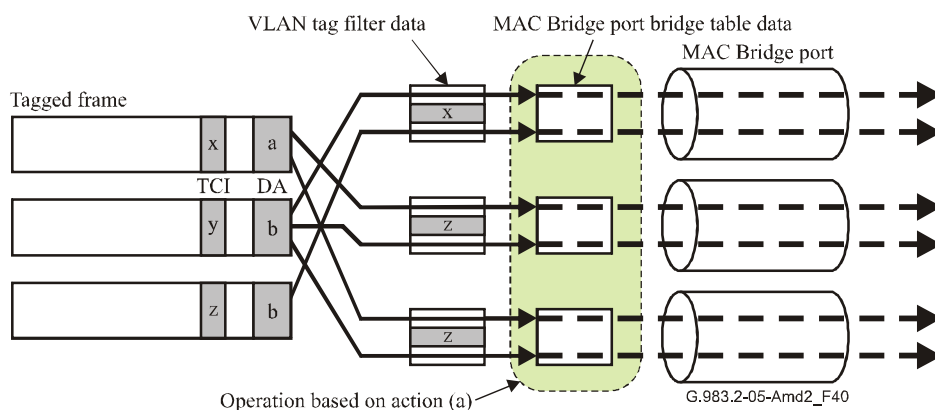


Figure 40/G.983.2 – Negative filtering by TCI operation

c) Add the following item to the lettered list in the "supplementary explanation" subsection:

- "h) **Positive filtering by TCI and Dropping for no match:** If some or all of the fields in the TCI of the received frame are included in VLAN Tag Filter Data, it is forwarded according to action a) to the indicated ports as shown in Figure 40a. Otherwise, it is dropped.

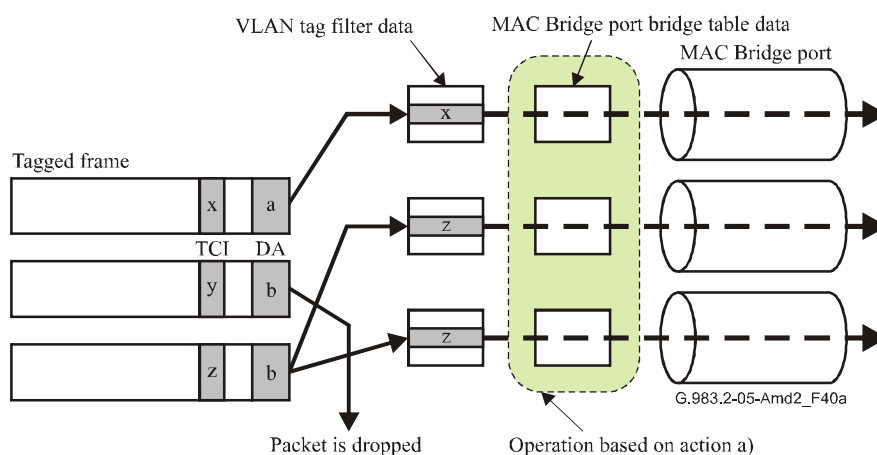


Figure 40a/G.983.2 – Positive filtering by TCI operation and Dropping for no match"

d) Add the following rows to the "Forwarding Operation" table:

0x0F	Action h) (VID investigation)	Action a)
0x10	Action h) (VID investigation)	Action e)
0x11	Action h) (user priority investigation)	Action a)
0x12	Action h) (user priority investigation)	Action e)
0x13	Action h) (TCI investigation)	Action a)
0x14	Action h) (TCI investigation)	Action e)

1.19) Modify clause 7.3.53, Physical path termination point video ANI

In the description of "Video Upper Optical Threshold", change the "-12 dB" to "-12 dBm", and change "0.1 dBm" to "0.1 dB".

1.20) Modify clauses 7.3.63 through 7.3.81 and clause 7.3.88

- As well as the specific changes noted in the following amendment clauses, change ADSL to xDSL, and change ATU to xTU (usually -C or -R) throughout the otherwise unaltered text and headings in these clauses. Finally, change the title of Table 21 from "ATU transmission system table" to "xTU transmission system enabling".
- In all clauses describing an ME whose name is changed, add a Note of the form similar to that given in clause 1.21, modifications to 7.3.63.
- Ensure that all OLT created MEs have the "Create" and "Delete" actions.
- Ensure that all ONU created MEs do not have "Create" and "Delete" actions.

1.21) Modify clause 7.3.63, Physical path termination point xDSL UNI part 1

- Replace the first paragraph with the following two paragraphs:

"NOTE 1 – This managed entity was previously called Physical path termination point ADSL UNI part 1.

This managed entity represents the point in the ONU where physical paths terminate on an xDSL CO modem (xTU-C). The xDSL managed entity family is used for ADSL and VDSL2 services. (The existing VDSL family of managed entities remains valid for G.993.1 VDSL1.)"

- b) *Modify the description of the "ADSL downstream PSD Mask Profile" attribute to read as follows:*

xDSL Downstream PSD Mask Profile: This attribute provides a pointer to an instance of the xDSL PSD mask profile managed entity that contains data necessary for initializing an xDSL modem. The default value 0, set when this ME is auto-created, indicates that this ME does not point to an xDSL PSD mask profile.

(R, W) (mandatory) (2 bytes)

- c) *Add the following attributes at the end of the present list (after ARCInterval):*

Modem type: This attribute indicates the modem type. If the hardware cannot support the requested modem type, the ONT must deny the provisioning command. For backward compatibility, the attribute is optional, with a default of ATM.

0 – undefined

1 – ATM (default)

2 – PTM (Ethernet)

(R, W) (optional) (1 byte)

Upstream PSD mask profile: This attribute points to an instance of the xDSL PSD mask profile. The default value 0, set when this ME is auto-created, indicates that this ME does not point to an xDSL PSD mask profile.

(R, W) (optional) (2 bytes)

- d) *Amend Table 20 as follows:*

Table 20/G.983.2 – Alarm list for physical path termination point xDSL UNI

...		
11	LINIT	Line initialization failure
12-223	reserved	
...		

- e) *Add the following Note after the alarms table:*

"NOTE 2 – The data rate upshift and downshift notifications are triggered by the individual channels. However, the alarms do not contain information about which channel shifted its rate. For further information, refer to the data rate threshold attribute descriptions in the xDSL channel configuration profile managed entity."

1.22) Modify clause 7.3.64, Physical path termination point xDSL UNI part 2

- a) *Replace the first paragraph with the following two paragraphs:*

"NOTE – This managed entity was previously called Physical path termination point ADSL UNI part 2.

This managed entity represents the point in the ONU where physical paths terminate on an xDSL CO modem (xTU-C). Standards and chip sets support several forms of DSL, including VDSL2, and the xDSL managed entity family is used for all of them, with specific extensions for technology variations. (The existing VDSL family of managed entities remains valid for G.993.1 VDSL1.)"

- b) *Modify the description of the "Managed entity ID" attribute to read:*

Managed Entity ID: This attribute acts as an implicit pointer. Its value is identical to that of its associated physical path termination point xDSL UNI part 1.

(R) (mandatory) (2 bytes)

1.23) Modify clause 7.3.65, xDSL line inventory and status data part 1

a) *Revise the introductory paragraphs to read as follows:*

"NOTE 1 – This managed entity was previously called ADSL line inventory and status data part 1.

This managed entity contains part 1 of the line inventory and status data for an xDSL line. An instance of this managed entity shall be automatically created/deleted by the ONU upon the creation/deletion of a Physical Path Termination Point xDSL UNI Part 1.

Relationships

An instance of this managed entity shall be contained in an instance of a Physical Path Termination Point xDSL UNI Part 1."

b) *Amend the transmission system capability attribute descriptions as follows:*

xTU-C Transmission System Capability: This attribute lists xTU-C transmission system capabilities. It is coded in a bit-map representation according to Table 21.

NOTE 2 – An additional byte identifying VDSL2 capabilities is defined in the VDSL2 line inventory and status data part 1 managed entity.

(R) (mandatory) (7 bytes)

xTU-R Transmission System Capability: This attribute lists xTU-R transmission system capabilities. It is coded in a bit-map representation according to Table 21.

NOTE 3 – An additional byte identifying VDSL2 capabilities is defined in the VDSL2 line inventory and status data part 2 managed entity.

(R) (mandatory) (7 bytes)

c) *Append octet 8 to Table 21 as follows:*

Octet 8	
57	G.993.2 region A (North America) (Annex A/G.993.2)
58	G.993.2 region B (Europe) (Annex B/G.993.2)
59	G.993.2 region C (Japan) (Annex C/G.993.2)
60	Reserved
61	Reserved
62	Reserved
63	Reserved
64	Reserved

1.24) Modify clause 7.3.66, xDSL line inventory and status data part 2

a) *Revise the introductory paragraphs to read as follows:*

"NOTE 1 – This managed entity was previously called ADSL line inventory and status data part 2.

This managed entity contains part 2 of the line inventory and status data for an xDSL line. An instance of this managed entity shall be automatically created/deleted by the ONU upon the creation/deletion of a Physical Path Termination Point xDSL UNI Part 1.

NOTE 2 – ITU-T Rec. G.997.1 (2006) specifies that bit rate attributes have granularity of 1000 bit/s. If G.997.1 compliance is required, the ONT should only report values with this granularity.

Relationships

An instance of this managed entity shall be contained in an instance of a Physical Path Termination Point xDSL UNI Part 1."

b) *Amend the description of the following attributes to read:*

xDSL Transmission System: This attribute defines the transmission system capabilities in use. It is coded in bitmap representation according to Table 21.

NOTE 3 – An additional byte identifying VDSL2 capabilities is defined in the VDSL2 line inventory and status data part 1 managed entity.

(R) (mandatory) (7 bytes)

Downstream Line Attenuation: The LATNds attribute is the measured difference in the total power transmitted by the xTU-C and the total power received by the xTU-R over all subcarriers during diagnostics mode and initialization. Downstream line attenuation ranges from 0 (0) to +127 (1270) dB in 0.1 dB steps. The special value 0xFFFF indicates the line attenuation is out of range to be represented.

NOTE 4 – VDSL2 (G.993.2) specifies a per-band array to represent this attribute. The array is defined in the VDSL2 line inventory and status data part 3 managed entity. In a G.993.2 context, the attribute should be set to 0 in this managed entity, and populated in the VDSL2 line inventory and status data part 3 ME instead.

(R) (mandatory) (2 bytes)

Upstream Line Attenuation: The LATNus attribute is the measured difference in dB in the total power transmitted by the xTU-R and the total power received by the xTU-C over all subcarriers during diagnostics mode and initialization. Upstream line attenuation ranges from 0 (0) to +127 (1270) dB in 0.1 dB steps. The special value 0xFFFF indicates the line attenuation is out of range to be represented.

NOTE 5 – VDSL2 (G.993.2) specifies a per-band array to represent this attribute. The array is defined in the VDSL2 line inventory and status data part 3 managed entity. In a G.993.2 context, the attribute should be set to 0 in this managed entity, and populated in the VDSL2 line inventory and status data part 3 ME instead.

(R) (mandatory) (2 bytes)

Downstream Signal Attenuation: The SATNds attribute is the measured difference in the total power transmitted by the xTU-C and the total power received by the xTU-R over all subcarriers during showtime. Downstream signal attenuation ranges from 0 (0) to +127 (1270) dB in 0.1 dB steps. The special value 0xFFFF indicates the signal attenuation is out of range to be represented.

NOTE 6 – VDSL2 (G.993.2) specifies a per-band array to represent this attribute. The array is defined in the VDSL2 line inventory and status data part 3 managed entity. In a G.993.2 context, the attribute should be set to 0 in this managed entity, and populated in the VDSL2 line inventory and status data part 3 ME instead.

(R) (mandatory) (2 bytes)

Upstream Signal Attenuation: The SATNus attribute is the measured difference in dB in the total power transmitted by the xTU-R and the total power received by the xTU-C over all subcarriers during showtime. Upstream signal attenuation ranges from 0 (0) to +127 (1270) dB in 0.1 dB steps. The special value 0xFFFF indicates the signal attenuation is out of range to be represented.

NOTE 7 – VDSL2 (G.993.2) specifies a per-band array to represent this attribute. The array is defined in the VDSL2 line inventory and status data part 3 managed entity. In a G.993.2 context, the attribute should be set to 0 in this managed entity, and populated in the VDSL2 line inventory and status data part 3 ME instead.

(R) (mandatory) (2 bytes)

Downstream Signal-to-Noise Ratio Margin: The SNRMds attribute is the maximum increase in dB of the noise power received at the xTU-R, such that the BER requirements are met for all downstream bearer channels. The downstream SNR margin ranges from –64 (0) dB to +63 (1270) dB in 0.1 dB steps. The special value 0xFFFF indicates the attribute is out of range to be represented.

(R) (mandatory) (2 bytes)