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G.988

Amendment 2

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

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

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ONU management and control interface (OMCI) specification

Amendment 2

Recommendation ITU-T G.988 (2012) – Amendment 2

International Telecommunication Union

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Recommendation ITU-T G.988

ONU management and control interface (OMCI) specification

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Summary

Amendment 2 to Recommendation ITU-T G.988 (2012) includes circuit emulation service (CES) user network interface (UNI) refinements, threshold data 64-bit refinement, OpenFlow support, G.fast support, etc.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.988	2010-10-07	15	11.1002/1000/10891
1.1	ITU-T G.988 (2010) Amd. 1	2011-04-13	15	11.1002/1000/11126
1.2	ITU-T G.988 (2010) Amd. 2	2012-04-22	15	11.1002/1000/11501
1.3	ITU-T G.988 (2010) Cor. 1	2012-06-13	15	11.1002/1000/11641
2.0	ITU-T G.988	2012-10-29	15	11.1002/1000/11784
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2.2	ITU-T G.988 (2012) Amd. 2	2016-06-22	15	11.1002/1000/12795

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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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.

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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/.

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ONU management and control interface (OMCI) specification

Amendment 2

1) Clause 2, References

In clause 2, add the following references in appropriate order:

[ITU-T G.997.2] Recommendation ITU-T G.997.2 (2015), *Physical layer management for G.fast transceivers*.

[ITU-T G.9700] Recommendation ITU-T G.9700 (2014), *Fast access to subscriber terminals (G.fast) – Power spectral density specification*.

[ITU-T G.9701] Recommendation ITU-T G.9701 (2014), *Fast access to subscriber terminals (G.fast) – Physical layer specification*.

2) Clause 9.8.1, Physical path termination point CES UNI

In clause 9.8.1, replace the existing text for CES loopback configuration as follows:

CES loopback configuration: This attribute specifies and reports the loopback configuration of the physical interface.

0 No loopback
1 Payload loopback
2 Line loopback
3 OS-directed loopback 1 (loopback from/to PON side)
4 OS-directed loopback 2 (loopback from/to CES UNI side)
5 OS-directed loopback 3 (loopback of both PON side and CES UNI side)
6 Manual button-directed loopback (read only)
7 Network-side code inband-directed loopback (read only)
8 SmartJack-directed loopback (read only)
9 Network-side code inband-directed loopback (armed; read only)
10 Remote-line loopback via FDL
11 Remote-line loopback via inband code
12 Remote-payload loopback.

Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (mandatory) (1 byte)

3) Clause 9.12.18, OpenFlow config data

Add the following new ME clause 9.12.18 to clause 9.12 as follows:

9.12.18 OpenFlow config data

This managed entity contains the configuration data whose underlying transport method is OpenFlow. Instances of this managed entity are created and deleted by the OLT.

Relationships

An instance of this managed entity is associated with each instance per OpenFlow transportation channel. There might be more than one OpenFlow transportation channel per ONU.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. (R, set by create) (mandatory) (2 bytes)

TP type: This attribute specifies the type of ANI-side termination point associated with this managed entity.

1 GEM interworking TP

(R, W, set by create) (mandatory) (1 byte)

TP pointer: This attribute points to the instance of the TP associated with this OpenFlow configuration data. The type of the associated TP is determined by the TP type attribute. (R, W, set by create) (mandatory) (2 bytes)

Version: This integer attribute reports the version of the OpenFlow protocol in use. The ONU should deny an attempt by the OLT to set or create a value that it does not support. The value 0 indicates that no particular version is specified. (R, W, set by create) (mandatory) (1 byte)

D/S OpenFlow message: This attribute specifies the D/S OpenFlow message which is carried over the OMCC channel. (R, W) (mandatory) (24*N* bytes)

D/S forwading control: This Boolean attribute indicates the current D/S OpenFlow message is ready to be sent (true) or not. The default value is false. (R, W) (mandatory) (1 byte)

D/S receiving status: This Boolean attribute indicates the ONU is ready to accept a new downstream packet (true) or not. The default value is false. (R) (mandatory) (1 byte)

U/S OpenFlow message: This attribute specifies the U/S OpenFlow message which is carried over the OMCC channel. (R, W) (mandatory) (24*N* bytes)

U/S receiving control: This Boolean attribute controls the current U/S OpenFlow message is dafely received (true) or not. The default value is false. (R, W) (mandatory) (1 byte)

U/S forwarding status: This Boolean attribute reports the current U/S OpenFlow message is ready to be sent (true) or not. The default value is false. (R) (mandatory) (1 byte)

Circuit ID: This attribute identifies the first access information of the user

(R, W) (Optional) (24*N* byte)

Remote ID: This attribute identifies the second access imformation of the user as an addition identifier to circuit ID. (R, W) (Optional) (24*N* byte)

Administrative state: This attribute locks (1) and unlocks (0) the functions performed by the MPLS pseudowire TP. Administrative state is further described in clause A.1.6. (R, W) (optional) (1 byte)

Operational state: This attribute reports whether the managed entity is currently capable of performing its function. Valid values are enabled (0) and disabled (1). (R) (optional) (1 byte)

Actions

Create, delete, get, get next, set

Notifications

Attribute value change

Number	Attribute value change	Description
1..5	N/A	
6	D/S receiving status	The D/S packets receiving status has changed
7..8	N/A	
9	U/S forwarding status	A new ONU response has been loaded into the table for the OLT to retrieve
10-12	N/A	
13	Op state	Operational state
14..16	reserved	

4) Clause 9.7.1, Physical path termination point xDSL UNI part 1

Replace the PPTP xDSL UNI part 1 as follows:

9.7.1 Physical path termination point xDSL UNI part 1

This managed entity represents the point where physical paths terminate on an xDSL CO modem (xTU-C). The xDSL managed entity family is used for ADSL, VDSL2 and FAST services. A legacy family of VDSL managed entities remains valid for [ITU-T G.993.1] VDSL, if needed. It is documented in [ITU-T G.983.2].

The ONU automatically creates an instance of this managed entity per port:

- when the ONU has xDSL ports built into its factory configuration;
- when a cardholder is provisioned to expect a circuit pack of the xDSL type;
- when a cardholder provisioned for plug-and-play is equipped with a circuit pack of the xDSL type. Note that the installation of a plug-and-play card may indicate the presence of xDSL ports via equipment ID as well as its type, and indeed may cause the ONU to instantiate a port mapping package that specifies xDSL ports.

The ONU automatically deletes instances of this managed entity when a cardholder is neither provisioned to expect an xDSL circuit pack, nor is it equipped with an xDSL circuit pack.

Relationships

An instance of this managed entity is associated with each instance of a real or pre-provisioned xDSL port.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. This two-byte number indicates the physical position of the UNI. The six least significant bits of the first byte are the slot ID, defined in clause 9.1.5. The two most significant bits indicate the channel number in some of the implicitly linked MEs, and must be 0 in the PPTP itself. This reduces the possible number of physical slots to 64. The second byte is the port ID, with the range 1..255. (R) (mandatory) (2 bytes)

Loopback configuration: This attribute represents the loopback configuration of this physical interface.

0 No loopback

1 Loopback2 – a loopback at the ONU towards the OLT. The OLT can execute a physical level loopback test after loopback2 is set.

Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (mandatory) (1 byte)

Administrative state: This attribute locks (1) and unlocks (0) the functions performed by this managed entity. Administrative state is further described in clause A.1.6. (R, W) (mandatory) (1 byte)

Operational state: This attribute indicates whether or not the managed entity is capable of performing its function. Valid values are enabled (0) and disabled (1). (R) (optional) (1 byte)

xDSL line configuration profile: This attribute points to an instance of the xDSL line configuration profiles (part 1, 2 and 3) managed entities, and if necessary, also to VDSL2 line configuration extensions (1 and 2) MEs, also to vectoring line configuration extension MEs. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

xDSL subcarrier masking downstream profile: This attribute points to an instance of the xDSL subcarrier masking downstream profile managed entity. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

xDSL subcarrier masking upstream profile: This attribute points to an instance of the xDSL subcarrier masking upstream profile managed entity. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

xDSL downstream PSD mask profile: This attribute points to an instance of the xDSL PSD mask profile managed entity that defines downstream parameters. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

xDSL downstream RFI bands profile: This attribute points to an instance of the xDSL downstream RFI bands profile managed entity. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

ARC: See clause A.1.4.3. (R, W) (optional) (1 byte)

ARC interval: See clause A.1.4.3. (R, W) (optional) (1 byte)

Modem type: This attribute specifies the modem type. If the hardware cannot support the requested modem type, the ONU should 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)

NOTE – Many newer VDSL2 chip sets support only PTM. The ATM default is retained for backward compatibility, but implementers should be aware that the default may need to be overridden by provisioning before the xDSL UNI can be brought into service.

Upstream PSD mask profile: This attribute points to an instance of the xDSL PSD mask profile that defines upstream parameters. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (optional) (2 bytes)

Network specific extensions pointer: This attribute points to a network address managed entity that contains the path and name of a file containing network specific parameters for the associated UNI. Upon ME instantiation, the ONU sets this attribute to 0xFFFF, a null pointer. (R, W) (optional) (2 bytes)

Actions

Get, set

Notifications

Attribute value change

Number	Attribute value change	Description
1..2	N/A	
3	Op state	Operational state
4..8	N/A	
9	ARC	ARC timer expiration
10..12	N/A	
13..16	Reserved	

Alarm

Alarm number	Alarm	Description
0	NE LOF	Near-end loss of frame
1	NE LOS	Near-end loss of signal
2	NE LOL	Near-end loss of link
3	NE LPR	Near-end loss of power
4	Card alm	Card in alarm
5	FE LOF	Far-end loss of frame
6	FE LOS	Far-end loss of signal
7	FE LOL	Far-end loss of link
8	FE LPR	Far-end loss of power
9	DRT up	Data rate threshold upshift (Note 1)
10	DRT down	Data rate threshold downshift (Note 1)
11	LINIT	Line initialization failure
12	LCD	Loss of cell delineation, near end (Note 2)
13	NCD	No cell delineation, near end (Note 2)
14	LCD-FE	Loss of cell delineation, far end (Note 2)
15	NCD-FE	No cell delineation, far end (Note 2)
16	File not found	The PPTP xDSL UNI attempted to access a network specific extensions file that is not available.
17	OOS	PTM near-end out-of-sync failure – see clause 7.1.5.1.1 of [ITU T G.997.1] and clause N.4 of [ITU T G.992.3]

Alarm

Alarm number	Alarm	Description
18	OOS-FE	PTM far-end out-of-sync failure – see clause 7.1.5.2.1 of [ITU T G.997.1] and clause N.4 of [ITU T G.992.3]
19	LOR	Loss-of-RMC (LOR) failure – see clause 7.4.1.2 of [ITU-T G.997.2]
20	LOM	Loss-of-margin (LOM) failure – see clause 7.4.1.3 of [ITU-T G.997.2]
21	LOR-FE	Far-end loss-of-RMC (LOR-FE) failure – see clause 7.4.2.2 of [ITU-T G.997.2]
22	LOM-FE	Far-end loss-of-margin (LOM-FE) failure – see clause 7.4.2.3 of [ITU-T G.997.2]
23.207	Reserved	
NOTE 1 – The data rate upshift and downshift alarms are deprecated. They are not defined in [ITU-T G.997.1]. NOTE 2 – These alarms are meaningful only for ATM transport. The alarms may be declared against the UNI itself, or against one of the bearer channels. In the latter case, the two MSBs of the instance identifier in the alarm message specify the bearer channel.		

5) Clause 9.7.38, VDSL2 line inventory and status data part 4

Fix typographical error in VDSL2 line inventory by renaming the attribute "ATTNDR Downstream Actual impulse noise protection against REIN (ATTNDR_ACTINP_REINus)" to read:

"ATTNDR Upstream Actual impulse noise protection against REIN (ATTNDR_ACTINP_REINus)"

6) Clause 9.7, xDSL services

Add the following MEs to clause 9.7.

6.1) New G.fast managed entity

In cause 9.7, add new clause 9.7.48 as follows:

9.7.48 Physical path termination point xDSL UNI part 3

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 FAST, and the xDSL managed entity family is used for all of them, with specific extensions for technology variations.

The ONU creates or deletes an instance of this managed entity at the same time it creates or deletes the corresponding PPTP xDSL UNI part 1.

Relationships

An instance of this managed entity is associated with each instance of a real or preprovisioned xDSL port

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. This two-byte number indicates the physical position of the UNI. The six least significant bits of the first byte are the slot ID, defined in clause 9.1.5. The two

most significant bits indicate the channel number in some of the implicitly linked MEs, and must be 0 in the PPTP itself. This reduces the possible number of physical slots to 64. The second byte is the port ID, with range 1..255. (R) (mandatory) (2 bytes)

FAST line configuration profile: This attribute points to an instance of the FAST line configuration profiles (part 1, 2, 3 and 4) managed entities, also to FAST vectoring line configuration extension MEs. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (mandatory) (2 bytes)

FAST data path configuration profile: This attribute points to an instance of the FAST data configuration profile that defines data path parameters. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (optional) (2 bytes)

FAST channel configuration profile for bearer channel 0 downstream: This attribute points to an instance of the FAST channel configuration profile that defines channel parameters. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer. (R, W) (optional) (2 bytes)

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

FAST xDSL channel configuration profile for bearer channel 0 upstream: This attribute points to an instance of the FAST channel configuration profile that defines channel parameters. Upon ME instantiation, the ONU sets this attribute to 0, a null pointer (R, W) (optional) (2 bytes)

Actions

Get, set

Notifications

None.

6.2) New FAST line configuration entities

In clause 9.7, add new clauses 9.7.49 through 9.47.52 for FAST line configuration extensions part 1-4, and clauses 9.7.53 through 9.7.55 for FAST configuration profiles and extensions as follows:

9.7.49 FAST line configuration profile part 1

This managed entity extends the xDSL line configuration MEs with attributes that were originally unique to [ITU-T G.9700] and [ITU-T G.9701] FAST. The attributes of this ME are defined in [ITU-T G.997.2]. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of an xDSL UNI.

The overall FAST line configuration profile is modelled in several parts, all of which are associated together through a common managed entity ID (the client physical path termination point xDSL UNI part 3 has a single pointer, which refers to the entire set of line configuration parts).

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. All FAST line configuration profiles and extensions that pertain to a given

physical path termination point xDSL UNI must share a common managed entity ID. (R, Set by create) (mandatory) (2 bytes)

ITU-T G.9701 profiles enabling (PROFILES): This attribute contains the ITU-T G.9701 profiles to be allowed by the xTU-C. See clause 7.1.0.1 of [ITU-T G.997.2]. It is coded in a bit map representation (0 if not allowed, 1 if allowed) with the following definition:

Bit	Meaning
1 (LSB)	ITU-T G.9701 profile 106a.

(R, W, set by create) (mandatory) (1 byte)

Symbol periods per TDD frame (MF): This attribute specifies the total number of symbol periods in a TDD frame. See clause 10.5 of [ITU-T G.9701]. Valid values are 23 and 36. (R, W, Set by create) (mandatory) (1 byte)

Symbol periods per TDD frame dedicated for downstream transmission (Mds): This attribute specifies the total number of symbol positions in a TDD frame allocated for downstream transmission. The total number of symbol positions in a TDD frame allocated for upstream transmission is calculated as Mus = MF--1--Mds. See clause 10.5 of [ITU-T G.9701]. Valid values range from 10 to 32 (if MF=36) and from 6 to 19 (if MF=23). The default value is 28 (if MF=36) and 18 (if MF=23). See clause 7.1.1.2 of [ITU-T G.997.2]. (R, W, Set by create) (mandatory) (1 byte)

Downstream maximum aggregate transmit power (MAXATPds): This attribute specifies the maximum aggregate transmit power at the U-O2 reference point in the downstream direction during initialization and showtime (in dBm). Valid values range from 5 to 31 in steps of 1 second. See clause 7.1.2.1 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream maximum aggregate transmit power (MAXATPus): This attribute specifies the maximum aggregate transmit power at the U-R2 reference point in the upstream direction during initialization and showtime (in dBm). The attribute value ranges from 0 (−31.0 dBm) to 620 (+31.0 dBm) in steps of 0.1 dBm. See clause 7.1.2.2 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream subcarrier masking (CARMASKds) table: This attribute specifies the masked subcarrier bands in the downstream direction. All subcarriers within the band, i.e., with indices higher than or equal to the start subcarrier index and lower than or equal to the stop subcarrier index, are masked, i.e., have a transmit power set to zero (linear scale)

The CARMASK attribute is a table where each entry comprises:

– an entry number field (1 byte, first entry numbered 1)

– band start subcarrier index (2 bytes)

– band stop subcarrier index (2 bytes)

subcarrier index Valid values ranges from 0 to 4095 (subcarrier index 0 to 4095). By default, no masked subcarriers, the table is empty. Setting a table entry with non-zero subcarrier references implies insertion into the table. Setting an entry's subcarrier references to 0xFFFF implies deletion from the table, if present. See clause 7.1.2.3 of [ITU-T G.997.2]

(R, W) mandatory (5*N bytes)

Upstream subcarrier masking (CARMASKus) table: This attribute specifies the masked subcarrier bands in the upstream direction. All subcarriers within the band, i.e., with indices higher than or equal to the start subcarrier index and lower than or equal to the stop subcarrier index, have a transmit power set to zero (linear scale).

The CARMASK attribute is a table where each entry comprises:

– an entry number field (1 byte, first entry numbered 1)

– band start subcarrier index (2 bytes)

– band stop subcarrier index (2 bytes)

Valid value of band subcarrier index ranges from 0 to 4095. By default, no masked subcarriers, the table is empty. Setting a table entry with non-zero subcarrier references implies insertion into the table. Setting an entry's subcarrier references to 0xFFFF implies deletion from the table, if present. See clause 7.1.2.4 of [ITU-T G.997.2]

(R, W) (mandatory) (5*N bytes)

Downstream PSD mask (PSDMASKds) table: This attribute specifies the downstream PSD mask applicable at the U-O2 reference point. Requirements for a valid PSDMASKds are defined in [ITU-T G.9701] clauses 7.3.1.1.2.1 and 7.3.1.1.2.2.

Each table entry in this attribute comprises:

– an entry number field (1 byte, first entry numbered 1)

– a subcarrier index field, denoted *t* (2 bytes)

– a PSD mask level field (1 byte)

The valid value of subcarrier index ranges from 0 to 4095. The valid values of PSD level range from 0 (0 dBm/Hz) to 255 (−127.5 dBm/Hz), with a granularity of −0.5 dBm/Hz. Setting a table entry with non-zero subcarrier references implies insertion into the table. Setting an entry's subcarrier references to 0xFFFF implies deletion from the table, if present. See clause 7.1.2.5 of [ITU-T G.997.2]

(R, W) (mandatory) (4*N N<=32bytes)

Upstream PSD mask (PSDMASKus) table: This attribute specifices the upstream PSD mask applicable at the U-R2 reference point. Requirements for a valid PSDMASKds are defined in [ITU-T G.9701] clauses 7.3.1.1.2.1 and 7.3.1.1.2.2.

Each table entry in this attribute comprises:

– an entry number field (1 byte, first entry numbered 1)

– a subcarrier index field, denoted t (2 bytes)

– a PSD mask level field (1 byte)

The valid values of subcarrier index range from 0 to 4095. The valid value of PSD level ranges from 0 (0 dBm/Hz) to 255 (−127.5 dBm/Hz), with a granularity of −0.5 dBm/Hz. Setting a table entry with non-zero subcarrier references implies insertion into the table. Setting an entry's subcarrier references to 0xFFFF implies deletion from the table, if present. See clause 7.1.2.6 of [ITU-T G.997.2]. (R, W) (mandatory) (4*N N<=32bytes)

RFI bands (RFIBANDS) table: This attribute specifies the bands where the PSD shall be reduced as specified in [ITU-T G.9701] clause 7.3.1.2.

The table where each entry comprises:

– an entry number field (1 byte, first entry numbered 1)

– subcarrier index 1 field (2 bytes)

– subcarrier index 2 field (2 bytes)

Valid value of band subcarrier index ranges from 0 to 4095. By default, no masked subcarriers, the table is empty. Setting a table entry with non-zero subcarrier references implies insertion into the table. Setting an entry's subcarrier references to 0xFFFF implies deletion from the table, if present. See clause 7.1.2.7 of [ITU-T G.997.2].

(R, W) (mandatory) (5 * N bytes)

International Amateur Radio bands (IARBANDS): This attribute specifies for each International Amateur Radio (IAR) band whether transmit PSD reduction is enabled or disabled in that band.

Bit representation:

0 International amateur radio band 1800-2000 kHz

1 International amateur radio band 3500-4000 kHz

2 International amateur radio band 7000-7300 kHz

3 International amateur radio band 10100-10150 kHz

4 International amateur radio band 14000-14350 kHz

5 International amateur radio band 18068-18168 kHz

6 International amateur radio band 21000-21450 kHz

7 International amateur radio band 24890-24990 kHz

8 International amateur radio band 28000-29700 kHz

9 International amateur radio band 50000-54000 kHz

10 International amateur radio band 70000-70500 kHz

11 International amateur radioμ band 144000-148000 kHz

Default value: All IAR bands disabled (no PSD reduction)

See clause 7.1.2.8 of [ITU-T G.997.2]

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

Upstream power back-off reference PSD (UPBOPSDA): This attribute specifies the parameter *a* for the UPBO reference PSD used to compute the upstream power back-off for the upstream frequency band. The valid values range from 0 (40 dBm/Hz) to 4095 (80.95 dBm/Hz), with a granularity of −0.01 dBm/Hz. See clause 7.1.2.9 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream power back-off reference PSD (UPBOPSDB): This attribute specifies the parameter *b* for the UPBO reference PSD used to compute the upstream power back-off for the upstream frequency band. The valid values range from 0 (0 dBm/Hz) to 4095 (40.95 dBm/Hz), with a granularity of −0.01 dBm/Hz. See clause 7.1.2.10 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream electrical length (UPBOKL): This attribute specifies the electrical length kl0 (expressed in dB at 1 MHz). The valid values range from 0 (0 dB) to 1280

(128 dB), with a granularity of −0.1 dB. See clause 7.1.2.11 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Force electrical length (UPBOKLF): This Boolean attribute specifies whether or not the FTU-R is forced to use the electrical length kl0 = UPBOKL to compute the UPBOMASK. If not forced, the FTUs determine the electrical length kl0. true specifies that the FTU-R is forced to use, false specifies not forced. See clause 7.1.2.12 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

UPBO reference electrical length per band (UPBOKLREF): This attribute specifies the UPBO reference electrical length kl0_REF used to compute the upstream power back-off for the Equalized FEXT UPBO method. The valid values range from 18 (1.8) to 635 (63.5 dB), with a granularity of −0.1 dB. The special value 0 indicates that the Equal PSD UPBO method is used. See clause 7.1.2.13 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Actions

Create, delete, get, get next, set

set table (optional)

Notifications

None.

9.7.50 FAST line configuration profile part 2

This managed entity extends the FAST line configuration MEs. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of the physical path termination point xDSL UNI part 1.

The overall FAST line configuration profile is modelled in several parts, all of which are associated together through a common managed entity ID. (The client physical path termination point xDSL UNI part 3 has a single pointer, which refers to the entire set of line configuration parts).

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. All FAST line configuration profiles and extensions that pertain to a given physical path termination point xDSL UNI must share a common managed entity ID. (R, Set by create) (mandatory) (2 bytes)

Downstream target noise margin (TARSNRMds): This attribute specifies the downstream target noise margin for the channel initialization policy. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.3.1 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream target noise margin (TARSNRMus): This attribute specifies the upstream target noise margin used in the channel initialization policy. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.3.2 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream maximum noise margin (MAXSNRMds): This attribute specifies the downstream maximum noise margin used in the channel initialization policy. The special value indicates there is no maximum bound for the downstream

noise margin (i.e., the downstream maximum noise margin is infinite). The valid values range 511 (special value) and 0..310 (0 to 31 dB) in steps of −0.1 dB. See clause 7.1.3.3 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream maximum noise margin (MAXSNRMus): This attribute specifies the upstream maximum noise margin used in the channel initialization policy. The special value indicates there is no maximum bound for the upstream noise margin (i.e., the upstream maximum noise margin is infinite). The valid values range 511 (special value) and 0..310 (0 to 31 dB) in steps of −0.1 dB. See clause 7.1.3.3 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream minimum noise margin (MINSNRMds): This attribute specifies the downstream minimum noise margin the FTU-R receiver shall tolerate. If the downstream noise margin (SNRMds) falls below this level, the FTU-R requests the FTU-O to increase the FTU-O transmit power. If an increase to FTU-O transmit power is not possible, a loss-of-margin (lom) defect occurs. Upon persistency of the lom defect, the FTU-R triggers a re-initialization. See clause 12.1.4.2 of [ITU-T G.9701]. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.3.4 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream minimum noise margin (MINSNRMus): This attribute specifies the upstream minimum noise margin the FTU-O receiver shall tolerate. If the upstream noise margin (SNRMus) falls below this level, the FTU-O requests the FTU-R to increase the FTU-R transmit power. If an increase to FTU-R transmit power is not possible, a loss-of-margin (lom) defect occurs. Upon persistency of the lom defect, the FTU-O triggers a re-initialization. See clause 12.1.4.2 of [ITU-T G.9701]. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.3.5 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream target noise margin for RMC (TARSNRM-RMCds): This attribute specifies the downstream RMC noise margin (SNRMRMCds) that the FTU-R receiver shall achieve, relative to the BER requirement, or better, to successfully complete initialization. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of 0.1 dB. See clause 7.1.6.1 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (2 bytes)

Upstream target noise margin (TARSNRM-RMCus): This attribute specifies the upstream RMC noise margin (SNRMRMCus) that the FTU-O receiver shall achieve, relative to the BER requirement, or better, to successfully complete initialization. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of 0.1 dB. See clause 7.1.6.2 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (2 bytes)

Downstream minimum noise margin for RMC (MINSNRM-RMCds): This attribute defines the downstream minimum noise margin the FTU-R receiver tolerates for the RMC. If the downstream RMC noise margin (SNRM-RMCds) falls below this level, the FTU-R initiates the RPA procedure. The valid values range from 0 (0 dB) to 310 (31 dB) in steps of 0.1 dB. See clause 7.1.6.3 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (2 bytes)

Upstream minimum noise margin for RMC (MINSNRM-RMCus): This attribute defines the upstream minimum noise margin the FTU-O receiver tolerates for the RMC. If the downstream RMC noise margin (SNRM-RMCus) falls below this level, the FTU-O initiates the RPA procedure. The valid values range from 0

(0 dB) to 310 (31 dB) in steps of 0.1 dB. See clause 7.1.6.4 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (2 bytes)

Downstream maximum bitloading for RMC (MAXBL-RMCds): This attributes defines the maximum allowed bit-loading for the downstream RMC subcarriers. The valid values range from 2 to 6. See clause 7.1.6.5 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (1 byte)

Upstream maximum bitloading for RMC (MAXBL-RMCus): This attribute defines the maximum allowed bit-loading for the upstream RMC subcarriers. The valid values range from 2 to 6. See clause 7.1.6.6 of [ITU-T G.997.2] for detailed specification. (R, W) (mandatory) (1 byte)

Actions

Create, delete, get, set

Notifications

None.

9.7.51 FAST line configuration profile part 3

This managed entity extends the FAST line configuration MEs. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of an xDSL UNI.

The overall FAST line configuration profile is modelled in several parts, all of which are associated together through a common managed entity ID (the client physical path termination point xDSL UNI part 3 has a single pointer, which refers to the entire set of line configuration parts).

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. All xDSL and VDSL2 line configuration profiles and extensions that pertain to a given physical path termination point xDSL UNI must share a common managed entity ID. (R, Set by create) (mandatory) (2 bytes)

Downstream upshift noise margin (SRA-USNRMds): If the downstream noise margin (SNRMds) is above the downstream upshift noise margin and stays above that for more than the time specified by the downstream minimum upshift rate adaptation interval (SRA-UTIMEds), the FTU-R autonomously attempts to increase the downstream net data rate (NDR). The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.4.1 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream upshift noise margin (SRA-USNRMus): If the upstream noise margin (SNRMus) is above the upstream upshift noise margin and stays above that for more than the time specified by the upstream minimum upshift rate adaptation interval (SRA-UTIMEds), the FTU-R autonomously attempts to increase the upstream net data rate (NDR).The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.4.2 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream minimum time interval for upshift SRA (SRA-UTIMEds): This attribute specifies the interval of time the downstream noise margin (SNRMds) should stay above the downstream upshift noise margin (SRA-USNRMds) before the FTU-R autonomously attempts to increase the downstream net data rate (NDRds).The valid values range from 0 to 16383 seconds. See clause 7.1.4.3 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream minimum time interval for upshift SRA (SRA-UTIMEus): This attribute specifies the interval of time the upstream noise margin (SNRMus) should stay above the upstream upshift noise margin (SRA-USNRMus) before the FTU-O autonomously attempts to increase the upstream net data rate (NDRus). The valid values range from 0 to 16383 seconds. See clause 7.1.4.4 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream downshift noise margin (SRA-DSNRMds): If the downstream noise margin (SNRMds) is below the downstream downshift noise margin and stays below that for more than the time specified by the downstream minimum downshift rate adaptation interval (SRA-DTIMEds), the FTU-R autonomously attempts to decrease the downstream net data rate (NDRds). The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.4.5 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream downshift noise margin (SRA-DSNRMus): If the upstream noise margin (SNRMus) is below the upstream downshift noise margin and stays below that for more than the time specified by the upstream minimum downshift rate adaptation interval (SRA-DTIMEus), the FTU-O autonomously attempts to decrease the upstream net data rate (NDRus). The valid values range from 0 (0 dB) to 310 (31 dB) in steps of −0.1 dB. See clause 7.1.4.6 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream minimum time interval for downshift SRA (SRA-DTIMEds): This attribute specifies the interval of time the downstream noise margin (SNRMds) should stay below the downstream downshift noise margin (SRA-DSNRMds) before the FTU-R autonomously attempts to decrease the downstream net data rate (NDRds). The valid values range from 0 to 16383 seconds. See clause 7.1.4.7 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream minimum time interval for downshift SRA (SRA-DTIMEus): This attribute specifies the interval of time the upstream noise margin (SNRMus) should stay below the upstream downshift noise margin (SRA-DSNRMus) before the FTU-O autonomously attempts to decrease the upstream net data rate (NDRus). The valid values range from 0 to 16383 seconds. See clause 7.1.4.8 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream FRA time window (FRA-TIMEds): In the standard FRA triggering criteria. See clause 13.3.1.1 of [ITU-T G.9701] for the downstream direction. The valid values range from 1 to 8 (if MF=36) and from 1 to 12 (if MF=23). See clause 7.1.5.1 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Upstream FRA time window (FRA-TIMEus): This attribute specifies the duration of the time window used in the standard FRA triggering criteria. See clause 13.3.1.1 of [ITU-T G.9701] for the upstream direction. The valid values range from 1 to 8 (if MF=36) and from 1 to 12 (if MF=23). See clause 7.1.5.2 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Downstream FRA minimum percentage of degraded tones (FRA-NTONESds): This attribute specifies the minimum percentage of loaded subcarriers (i.e.,

subcarriers with bi>0) that are detected as degraded throughout a time window equal to FRA-TIMEds in order to arm the first FRA triggering criteria. See clause 13.3.1.1.1.5 of [ITU-T G.9701] in the downstream direction. The valid values range from 1 to 100. The special value 0 indicates that monitoring of the percentage of degraded subcarriers is disabled. See clause 7.1.5.3 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Upstream FRA minimum percentage of degraded tones (FRA-NTONESus): This attribute specifies the minimum percentage of loaded subcarriers (i.e., subcarriers with bi>0) that are detected as degraded throughout a time window equal to FRA-TIMEds in order to arm the first FRA triggering criteria. See clause 13.3.1.1.1.5 of [ITU-T G.9701] in the upstream direction. The valid values range from 1 to 100. The special value 0 indicates that monitoring of the percentage of degraded subcarriers is disabled. See clause 7.1.5.4 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Downstream FRA number of uncorrectable DTU (FRA-RTXUCds): This attribute specifies the minimum number of rtx-uc anomalies received throughout a time window equal to FRA-TIMEds in order to arm the second FRA triggering criteria. See clause 13.3.1.1.1.5 of [ITU-T G.9701] in the downstream direction. The valid values range from 1 to 1023. The special value 0 indicates that monitoring of the number of rtx-uc anomalies is disabled. See clause 7.1.5.5 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Upstream FRA number of uncorrectable DTU (FRA-RTXUCus): This attribute specifies the minimum number of rtx-uc anomalies received throughout a time window equal to FRA-TIMEus in order to arm the second FRA triggering criteria. See clause 13.3.1.1.1.5 of [ITU-T G.9701] in the upstream direction. The valid values range from 1 to 1023. The special value 0 indicates that monitoring of the number of rtx-uc anomalies is disabled. See clause 7.1.5.6 of [ITU-T G.997.2]. (R, W) (mandatory) (2 bytes)

Downstream vendor discretionary FRA triggering criteria (FRA-VENDISCds): This Boolean attribute specifies whether vendor discretionary FRA triggering criteria may be used (enabled) or not (disabled) in the downstream direction. See clause 7.1.5.7 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Upstream vendor discretionary FRA triggering criteria (FRA-VENDISCus): This Boolean attribute specifies whether vendor discretionary FRA triggering criteria may be used (enabled) or not (disabled) in the upstream direction. See clause 7.1.5.8 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Actions

Create, delete, get, set

Notifications

None.

9.7.52 FAST line configuration profile part 4

This managed entity extends the FAST line configuration MEs. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of an xDSL UNI.

The overall FAST line configuration profile is modelled in several parts, all of which are associated together through a common managed entity ID (the client physical path termination point xDSL UNI part 1 has a single pointer, which refers to the entire set of line configuration parts).

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. All FAST line configuration profiles and extensions that pertain to a given physical path termination point xDSL UNI must share a common managed entity ID. (R, Set by create) (mandatory) (2 bytes)

Downstream los defect persistency (LOS_PERSISTENCYds): This attribute specifies the downstream los defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-R receiver, as part of the re-initialization policy. Valid values range from 1 (0.1 second) to 20 (2 seconds) in steps of 0.1 second. See clause 7.1.8.1 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Upstream los defect persistency (LOS_PERSISTENCYus): This attribute specifies the upstream los defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-O receiver, as part of the re-initialization policy. Valid values range from 1 (0.1 second) to 20 (2 seconds) in steps of 0.1 second. See clause 7.1.8.2 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Downstream lom defect persistency (LOM_PERSISTENCYds): This attribute specifies the downstream lom defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-R receiver, as part of the re-initialization policy. Valid values range from 2 to 20 seconds. See clause 7.1.8.3 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Upstream lom defect persistency (LOM_PERSISTENCYus): This attribute specifies the upstream lom defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-O receiver, as part of the re-initialization policy. Valid values range from 2 to 20 seconds. See clause 7.1.8.4 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Downstream lor defect persistency (LOR_PERSISTENCYds): This attribute specifies the downstream lor defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-R receiver, as part of the re-initialization policy. Valid values range from 1 (0.1 second) to 20 (2 seconds) in steps of 0.1 second. See clause 7.1.8.5 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Upstream lor defect persistency (LOR_PERSISTENCYus): This attribute specifies the upstream lor defect persistency for triggering a re-initialization (see clause 12.1.4.2 of [ITU-T G.9701]) at the FTU-O receiver, as part of the re-initialization policy. Valid values range from 1 (0.1 second) to 20 (2 seconds) in steps of 0.1 second. See clause 7.1.8.6 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Downstream re-initialization time threshold (REINIT_TIME_THRESHOLDds): This attribute specifies the downstream threshold for the SES and eoc timeout conditions for declaring a High_BER event (see clause 12.1.4.3.4 of [ITU-T G.9701]) at the FTU-R receiver, as part of the re-initialization policy.

Valid values range from 5 to 30 seconds. See clause 7.1.8.7 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Upstream re-initialization time threshold (REINIT_TIME_THRESHOLDus): This attribute specifies the upstream threshold for the SES and eoc timeout conditions for declaring a High_BER event (see clause 12.1.4.3.4 of [ITU-T G.9701]) at the FTU-O receiver, as part of the re-initialization policy. Valid values range from 5 to 31 seconds. See clause 7.1.8.8 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Downstream low ETR threshold (LOW_ETR_THRESHOLDds): This attribute specifies the downstream threshold for the low ETR condition for declaring a High_BER event See clause 12.1.4.3.4) at the FTU-R receiver, as part of the re-initialization policy. Valid values range from 1 to 30 seconds. The special value 0 indicates that no High_BER event is declared based on ETR being below the ETR_min. See clause 7.1.8.9 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Upstream low ETR threshold (LOW_ETR_THRESHOLDus): This attribute specifies the upstream threshold for the low ETR condition for declaring a High_BER event see clause 12.1.4.3.4) at the FTU-O receiver, as part of the re-initialization policy. Valid values range from 1 to 30 seconds. The special value 0 indicates that no High_BER event is declared based on ETR being below the ETR_min. See clause 7.1.8.10 of [ITU-T G.997.2]. (R, W) (optional) (1 byte)

Actions

Create, delete, get, set

Notifications

None.

9.7.53 FAST channel configuration profile

This managed entity contains the FAST channel configuration profile for an xDSL UNI. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of the physical path termination point xDSL UNI part 1.

Attributes

Maximum net data rate (MAXNDR): This attribute specifies the value of the maximum net data rate. See clause 11.4.2.2 of [ITU-T G.9701]. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.2.1.1 of [ITU-T G.997.2]. (R, W) (mandatory) (4 bytes)

Minimum Expected Throughput (MINETR): This attribute specifies the value of the minimum expected throughput. See clause 11.4.2.1 of [ITU-T G.9701]. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.2.1.2 of [ITU-T G.997.2]. (R, W) (mandatory) (4 bytes)

Maximum gamma data rate (MAXGDR): This attribute specifies the maximum value of the GDR (see clause 7.11.1.3). The GDR shall not exceed MAXGDR at the start of showtime and during showtime. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.2.1.3 of [ITU-T G.997.2]. (R, W) (mandatory) (4 bytes)

Minimum gamma data rate (MINGDR): This attribute specifies the minimum value of the GDR (see clause 7.11.1.3). The GDR may be lower than MINGDR. If the GDR is lower than MINGDR at initialization or when GDR becomes lower than MINGDR during showtime, a threshold crossing alert occurs. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.2.1.4 of [ITU-T G.997.2]. (R, W) (mandatory) (4 bytes)

Maximum delay (DELAYMAX): This attribute specifies the maximum allowed delay for retransmission. See clause 9.8 of [ITU-T G.9701]. The ITU-T G.9701 control parameter delay_max is set to the same value as the maximum delay. See clause 11.4.2.3 of [ITU-T G.9701]. Valid values range from 4 (1 milliseconds) to 252 (63 milliseconds) in steps of 0.25 milliseconds. See clause 7.2.2.1 of [ITU-T G.997.2]. (R, W) (mandatory) (4 bytes)

Minimum impulse noise protection against SHINE (INPMIN_SHINE): This attribute specifies the minimum impulse noise protection against SHINE. See clause 9.8 of [ITU-T G.9701]. The ITU-T G.9701 control parameter INP_min_shine is set to the same value as the minimum impulse noise protection against SHINE. See clause 11.4.2.4 of [ITU-T G.9701]. Valid values range from 0 to 520 (520 symbol periods). See clause 7.2.2.2 of [ITUT G.997.2]. (R, W) (mandatory) (2 bytes)

SHINE ratio (SHINERATIO): This attribute specifies the SHINE ratio that is used in the definition of the expected throughput rate (ETR). See clause 9.8 of [ITU-T G.9701]. The ITU-T G.9701 control parameter SHINEratio is set to the same value as the SHINE ratio. See clause 11.4.2.5 of [ITU-T G.9701]. The value is expressed in units of 0.001, Valid values range from 0 to 100 (0.01) in steps of 0.001. See clause 7.2.2.3 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Minimum impulse noise protection against REIN (INPMIN_REIN): This attribute specifies the minimum impulse noise protection against REIN. See clause 9.8 of [ITU-T G.9701]. The ITU-T G.9701 control parameter INP_min_rein is set to the same value as the minimum impulse noise protection against REIN. See clause 11.4.2.6 of [ITU-T G.9701]. Valid values range from 0 to 63 (63 symbol periods). See clause 7.2.2.4 of [ITU-T G.997.2]. (R, W) (mandatory) (1 bytes)

REIN Inter-arrival time (IAT_REIN): This attribute specifies the the REIN inter-arrival time. See clause 9.8 of [ITU-T G.9701]. The ITU-T G.9701 control parameter iat_rein_flag is set to the same value as the the REIN inter-arrival time. See clause 11.4.2.7 of [ITU-T G.9701].

The REIN inter-arrival time is specified via the following values:

1 100 Hz
2 120 Hz
3 360 Hz

See clause 7.2.2.5 of [ITU-T G.997.2].

(R, W) (mandatory) (1 bytes)

Minimum Reed-Solomon RFEC/NFEC ratio (RNRATIO): This attribute specifies the the minimal required ratio, RFEC/NFEC, of Reed-Solomon code parameters. The ITU-T G.9701 control parameter rnratio is set to the same value as the Minimum Reed-Solomon RFEC/NFEC ratio. See clause 11.4.2.8 of [ITU-T G.9701]. The value is expressed in units of 1/32, Valid values rang

from 0 to 8 (1/4). See clause 7.2.2.6 of [ITU-T G.997.2]. (R, W) (mandatory) (1 bytes)

RTX-TC testmode (RTX_TESTMODE): This Boolean attribute specifies whether the retransmission test mode defined in clause 9.8.3.1.2 [ITU-T G.9701] is enabled (true) or disabled (disabled). See clause 7.2.2.7 of [ITU-T G.997.2]. (R, W) (optional) (1 bytes)

Actions

Create, delete, get, set

Notifications

None.

9.7.54 FAST data path configuration profile

This managed entity contains FAST the data path configuration profile for an xDSL UNI. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of the physical path termination point xDSL UNI part 1.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. The value 0 is reserved. (R, Set by create) (mandatory) (2 bytes)

TPS-TC testmode (TPS_TESTMODE): This Boolean attribute specifies whether the TPS-TC test mode defined in clause 8.3.1 [ITU-T G.9701] is enabled (true) or disabled (disabled). See clause 7.3.1 of [ITU-T G.997.2]. (R, W) (mandatory) (1 bytes)

Actions

Create, delete, get, set

Notifications

None.

9.7.55 FAST vectoring line configuration extensions

This managed entity extends FAST line configuration MEs with attributes that are specific to vectoring. An instance of this managed entity is created and deleted by the OLT.

Relationships

An instance of this managed entity may be associated with zero or more instances of an xDSL UNI.

The overall FAST line configuration MEs is modelled in several parts, all of which are associated together through a common managed entity ID (the client physical path termination point xDSL UNI part 3 has a single pointer, which refers to the entire set of line configuration parts).

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. The value 0 is reserved. (R, Set by create) (mandatory) (2 bytes)

FEXT cancellation enabling/disabling upstream (FEXT_TO_CANCEL_ENABLEus): A value of 1 enables and a value of 0 disables FEXT cancellation in the upstream direction from all the other vectored lines into the line in the vectored group. See clause 7.1.7.2 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

FEXT cancellation enabling/disabling downstream (FEXT_TO_CANCEL_ENABLEds): A value of 1 enables and a value of 0 disables FEXT cancellation in the downstream direction from all the other vectored lines into the line in the vectored group. See clause 7.1.7.1 of [ITU-T G.997.2]. (R, W) (mandatory) (1 byte)

Actions

Create, delete, get, set

Notifications

None.

6.3) New FAST line inventory and status entities

In clause 9.7, add new clauses 9.7.56 through 9.47.59 for FAST line inventory and status data as follows:

9.7.56 FAST line inventory and status data

This managed entity extends the FAST line inventory and status data MEs with attributes specific to [ITU-T G.997.2]. The ONU automatically creates or deletes an instance of this managed entity upon the creation or deletion of a physical path termination point xDSL UNI part 1.

Relationships

This is one of the status data MEs associated with an xDSL UNI. It is required only if FAST is supported by the PPTP. The ONU automatically creates or deletes an instance of this managed entity upon creation or deletion of a PPTP xDSL UNI part 1 that supports these attributes.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. Through an identical ID, this managed entity is implicitly linked to an instance of the physical path termination point xDSL UNI part 1. (R) (mandatory) (2 bytes)

ITU-T G.9701 profile (PROFILE): This attribute reports for each profile whether operation according to that profile is enabled (0) or disabled (1). Only one profile can be enabled. See clause 7.10.1.1 of [ITU-T G.997.2] (R) (mandatory) (1 byte)

Gamma Data Rate (GDR): This attribute reports the net data rate as defined in clause 7.11.1.1, lowered by any throughput capability limitations remaining in the DRA or L2+ functions, assuming no user data is transmitted over all the other lines. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.11.1.3 of [ITU-T G.997.2] (R) (mandatory) (bytes)

Attainable Gamma Data Rate (ATTGDR): This attribute reports the attainable net data rate (as defined in clause 7.11.2.1), lowered by any throughput capability

limitations remaining in the DRA or L2+ functions, assuming no user data is transmitted over all the other Lines, and assuming MAXGDR (as defined in clause 7.2.1.3) is configured to its maximum valid value. Valid values range from 0 (0 kbit/s) to 4294967295 (2^32–1 kbit/s). See clause 7.11.2.3 of [ITU-T G.997.2] (R) (mandatory) (bytes)

DPU system vendor ID (DPU_SYSTEM_VENDOR): This attribute reports the DPU system vendor ID as inserted by the FTU-O in the embedded operations channel (see clause 11.2.2.10 of [ITU-T G.9701]) and as defined in clause 9.3.3.1 of [ITU-T G.994.1]. See clause 7.13.2.1 of [ITU-T G.997.2] (R) (optional) (8 bytes)

NT system vendor ID (NT_SYSTEM_VENDOR): This attribute reports the NT system vendor ID as inserted by the FTU-R in the embedded operations channel (see clause 11.2.2.10 of [ITU-T G.9701]) and as defined in clause 9.3.3.1 of [ITU-T G.994.1]. See clause 7.13.2.2 of [ITU-T G.997.2] (R) (optional) (8 bytes)

DPU serial number (DPU_SYSTEM_SERIALNR): This attribute reports the DPU serial number as inserted by the FTU-O in the embedded operations channel. See clause 11.2.2.10 of [ITU-T G.9701]. It is vendor specific information. The combination of DPU system vendor ID and DPU system serial number creates a unique number for each DPU. See clause 7.13.2.3 of [ITU-T G.997.2] (R) (optional) (32 bytes)

NT serial number (NT_SYSTEM_SERIALNR): This attribute reports the NT system serial number as inserted by the FTU-R in the embedded operations channel. See clause 11.2.2.10 of [ITU-T G.9701]. It shall contain the NT system serial number, the NT model and the NT firmware version. All shall be encoded in this order and separated by space characters, i.e., "<NT serial number><space><NT model><space><NT firmware version>". The combination of NT system vendor ID and NT system serial number creates a unique number for each NT. See clause 7.13.2.4 of [ITU-T G.997.2] (R) (optional) (32 bytes)

Actions

get

Notifications

None.

9.7.57 FAST line inventory and status data part 2

This managed entity contains part 3 of the the FAST line inventory and status data with attributes specific to [ITU T G.997.2]. The ONU automatically creates or deletes an instance of this managed entity upon the creation or deletion of a physical path termination point xDSL UNI part 1.

Relationships

This is one of the status data MEs associated with an xDSL UNI. It is required only if FAST is supported by the PPTP. The ONU automatically creates or deletes an instance of this managed entity upon creation or deletion of a PPTP xDSL UNI part 1 that supports these attributes.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. Through an identical ID, this managed entity is implicitly linked to an instance of the physical path termination point xDSL UNI part 1. (R) (mandatory) (2 bytes)

Date/time-stamping of last successful downstream FRA operation (STAMP-FRAds): This attribute reports the date/time of the last successful FTU-R initiated FRA execution that has modified the bits allocation. See clause 7.10.14.5 of [ITU-T G.997.2] . The format of this parameter is as follows:

Year	**2 bytes**
Month	1 byte (1..12)
Day	1 byte (1..31)
Hour	1 byte (0..23)
Minute	1 byte (0..59)
Second	1 byte (0..59)

(R) (optional) (7 bytes)

Date/time-stamping of last successful upstream FRA operation (STAMP-FRAus): This parameter reports the date/time of the last successful FTU-O initiated FRA execution that has modified the bits allocation. See clause 7.10.14.6 of [ITU-T G.997.2]. The format of this parameter is the same as STAMP-TEST-NE. (R) (optional) (7 bytes)

Date/time-stamping of last successful downstream RPA operation (STAMP-RPAds): This parameter reports the date/time of the last successful FTU-R initiated RPA execution that has modified the bits allocation for the RMC. See clause 7.10.14.7 of [ITU-T G.997.2]. The format of this parameter is the same as STAMP-TEST-NE. (R) (optional) (7 bytes)

Date/time-stamping of last successful upstream RPA operation (STAMP-RPAus): This parameter reports the date/time of the last successful FTU-O initiated RPA execution that has modified the bits allocation for the RMC. See clause 7.10.14.8 of [ITU-T G.997.2]. The format of this parameter is the same as STAMP-TEST-NE. (R) (optional) (7 bytes)

Date/time-stamping of last successful downstream TIGA operation (STAMP-TIGA): This parameter reports the date/time of the last successful FTU-O initiated TIGA execution. See clause 7.10.14.9 of [ITU-T G.997.2]. The format of this parameter is the same as STAMP-TEST-NE. (R) (optional) (7 bytes)

Actions

get

Notifications

None.

9.7.58 FAST xTU-C performance monitoring history data

This managed entity collects performance monitoring data on the xTU C to xTU R path as seen from the xTU-C. Instances of this managed entity are created and deleted by the OLT.

Relationships

An instance of this managed entity is associated with an xDSL UNI.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. Through an identical ID, this managed entity is implicitly linked to an instance of the physical path termination point xDSL UNI part 1. (R, set by create) (mandatory) (2 bytes)

Interval end time: This attribute identifies the most recently finished 15-minute interval. (R) (mandatory) (1 byte)

Threshold data 1/2 ID: This attribute points to an instance of the threshold data 1 and 2 managed entities that contain PM threshold values. (R, W, Set by create) (mandatory) (2 bytes)

Successful FRA counter: This attribute counts the successful FRA primitives (success_FRA). The successful FRA primitive (success_FRA) is defined in clause 11.3.1.6 of [ITU-T G.9701]. See clause 7.7.22 of [ITU-T G.997.2]. (R) (mandatory) (4 bytes)

Successful RPA counter: This attribute counts the successful RPA primitives (success_RPA). The successful RPA primitive (success_RPA) is defined in clause 11.3.1.6 of [ITU-T G.9701]. See clause 7.7.23 of [ITU-T G.997.2] (R) (optional) (4 bytes)

Successful TIGA counter: This attribute counts the successful TIGA primitives (success_TIGA). The successful TIGA primitive (success_TIGA) is defined in clause 11.3.1.6 of [ITU-T G.9701]. Reported only with the near-end measured time, invalid data flag and time stamp. See clause 7.7.24 of [ITU-T G.997.2] (R) (optional) (4 bytes)

Actions

Create, delete, get, set

Notifications

None.

9.7.59 FAST xTU-R performance monitoring history data

This managed entity collects performance monitoring data of the xTU C to xTU R path as seen from the xTU-R. Instances of this managed entity are created and deleted by the OLT. For a complete discussion of generic PM architecture, refer to clause I.4.

Relationships

An instance of this managed entity is associated with an xDSL UNI.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. Through an identical ID, this managed entity is implicitly linked to an instance of the physical path termination point xDSL UNI part 1. (R, set by create) (mandatory) (2 bytes)

Interval end time: This attribute identifies the most recently finished 15-minute interval. (R) (mandatory) (1 byte)

Threshold data 1/2 ID: This attribute points to an instance of the threshold data 1 and 2 managed entities that contain PM threshold values. (R, W, Set by create) (mandatory) (2 bytes)

Successful FRA counter: This attribute counts the successful FRA primitives (success_FRA). The successful FRA primitive (success_FRA) is defined in clause 11.3.1.6 of [ITU-T G.9701]. See clause 7.7.22 of [ITU-T G.997.2] (R) (mandatory) (4 bytes)

Successful RPA counter: This attribute counts the successful RPA primitives (success_RPA). The successful RPA primitive (success_RPA) is defined in clause 11.3.1.6 of [ITU-T G.9701]. See clause 7.7.23 of [ITU-T G.997.2] (R) (optional) (4 bytes)

Actions

Create, delete, get, set

Notifications

None.

7) Clause 9.9.1, Physical path termination point POTS UNI

Replace clause 9.9.1, Physical path termination point POTS UNI as follows:

9.9.1 Physical path termination point POTS UNI

This managed entity represents a POTS UNI in the ONU, where a physical path terminates and physical path level functions (analogue telephony) are performed.

The ONU automatically creates an instance of this managed entity per port:

- when the ONU has POTS ports built into its factory configuration;
- when a cardholder is provisioned to expect a circuit pack of POTS type;
- when a cardholder provisioned for plug and play is equipped with a circuit pack of POTS type. Note that the installation of a plug and play card may indicate the presence of POTS ports via equipment ID as well as type, and indeed may cause the ONU to instantiate a port mapping package that specifies POTS ports.

The ONU automatically deletes instances of this managed entity when a cardholder is neither provisioned to expect a POTS circuit pack, nor is equipped with a POTS circuit pack.

Relationships

An instance of this managed entity is associated with each real or pre-provisioned POTS port. Either a SIP or a VoIP voice CTP links to the POTS UNI. Status is available from a VoIP line status ME, and RTP and call control PM may be collected on this point.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. This two-byte number indicates the physical position of the UNI. The first byte is the slot id (defined in clause 9.1.5). If the UNI is integrated, this value is 0. The second byte is the port id, with range 1..255. (R) (mandatory) (2 bytes)

Administrative state: This attribute shuts down (2), locks (1) and unlocks (0) the functions performed by this managed entity. In case the administrative state is set to shut

down while the POTS UNI line state is non-idle, no action is taken until the POTS UNI line state changes to idle, whereupon the administrative state changes to locked. In case the administrative state is set to shut down and the POTS UNI line state is already idle, the administrative state is immediately set to locked. In both cases, the transition from shutting down to locked state is signalled with an AVC.

When the administrative state is set to lock, all user functions of this UNI are blocked, and alarms, TCAs and AVCs for this managed entity and all dependent managed entities are no longer generated. Selection of a default value for this attribute is outside the scope of this recommendation. (R, W) (mandatory) (1 byte)

Deprecated: This attribute is not used and should not be supported. (R, W) (optional) (2 bytes)

ARC: See clause A.1.4.3. (R, W) (optional) (1 byte)

ARC interval: See clause A.1.4.3. (R, W) (optional) (1 byte)

Impedance: This attribute specifies the impedance for the POTS UNI. Valid values include:

0 600 Ohms

1 900 Ohms

The following parameter sets from Annex C of [ETSI TS 101 270-1] are also defined:

2 C1=150 nF, R1=750 Ohm, R2=270 Ohm

3 C1=115 nF, R1=820 Ohm, R2=220 Ohm

4 C1=230 nF, R1=1050 Ohm, R2=320 Ohm

where C1, R1, and R2 are related as shown in figure 9.9.1-1. Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (optional) (1 byte)

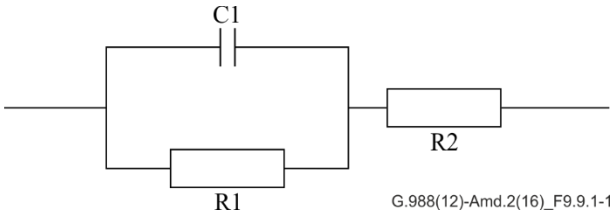

Figure 9.9.1-1 – Impedance model for POTS UNI

Transmission path: This attribute allows setting the POTS UNI either to full-time on-hook transmission (0) or part-time on-hook transmission (1). Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (optional) (1 byte)

Rx gain: This attribute specifies a gain value for the received signal in the form of a 2s complement number. Valid values are −120 (−12.0 dB) to 60 (+6.0 dB). The direction of the affected signal is in the D to A direction, toward the telephone set. Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (optional) (1 byte)

Tx gain: This attribute specifies a gain value for the transmit signal in the form of a 2s complement number. Valid values are −120 (−12.0 dB) to 60 (+6.0 dB). The direction of the affected signal is in the A to D direction, away from the

telephone set. Upon ME instantiation, the ONU sets this attribute to 0. (R, W) (optional) (1 byte)

Operational state: This attribute indicates whether or not the managed entity is capable of performing its function. Valid values are enabled (0) and disabled (1). (R) (optional) (1 byte)

Hook state: This attribute indicates the current state of the subscriber line: 0 = on hook, 1 = off hook (R) (optional) (1 byte)

POTS holdover time: This attribute determines the time during which POTS loop voltage is held up when a LOS or softswitch connectivity is detected (please refer to the below table for description of behaviours). ~~When the ONU is not ranged on the PON~~. After the specified time elapses, the ONU drops loop voltage, and may thereby cause premises intrusion alarm or fire panel circuits to go active. When the ONU ranges successfully on the PON or softswitch connectivity is restored, 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)

POTS holdover time	Loss of softswitch	Behaviour
0	Don't care	Vendor specific
POTS holdover time > 0	False	T/R will be brought down on expiration of the holdover timer. The holdover timer is started upon detection of LOS. T/R is restored immediately upon ONU ranging. This setting is recommended for burglar alarms.
POTS holdover time > 0	True	T/R will be brought down on expiration of the holdover timer. The holdover timer is started on detection of softswitch connectivity keep alive signal. T/R is restored immediately upon softswitch connectivity. This setting is recommended for fire panels.

Nominal feed voltage: This attribute indicates the designed nominal feed voltage of the POTS loop. It is an absolute value with resolution 1 Volt. This attribute does not represent the actual voltage measured on the loop, which is available through the test command. (R, W) (optional) (1 byte)

Loss of softswitch: This Boolean attribute controls whether the T/R holdover initiation criteria. False disables loss of softswitch connectivity detection as criteria for initiating the POTS holdover timer. True enables loss of softswitch connectivity detection as criteria for initiating the POTS holdover timer. This attribute is optional (if not implemented, the POTS holdover time is triggered on a LOS when POTS holdover is greater than zero). (R, W) (optional) (1 byte)

Actions

Get, set

Test: Request that the ONU perform one or more MLT tests or a dial tone make/break test. Vendor-specific tests are also supported by the test and test result message layouts in Annex A.

8) Clause 9.3.22, Dot1ag MEP

In clause 9.3.22 replace the Administrative state attribute as follows:

Administrative state: This attribute locks (1) and unlocks (0) the functions performed by this managed entity. Administrative state is further described in clause A.1.6. (R, W, Set-by-create) (mandatory) (1 byte)

9) Clause 8.1, Managed entities

In clause 8.1 modify Table 8-1 by adding the following new ME:

Table 8-1 – Managed entities of the OMCI

Clause	Managed entity	ITU-T G.984, ITU-T G.987	ITU-T G.986	IEEE 802.3, IEEE 802.3av
9.7.48	Physical path termination point xDSL UNI part 3			
9.7.49	FAST line configuration profile part 1			
9.7.50	FAST line configuration profile part 2			
9.7.51	FAST line configuration profile part 3			
9.7.52	FAST line configuration profile part 4			
9.7.53	FAST channel configuration profile			
9.7.54	FAST data path configuration profile			
9.7.55	FAST vectoring line configuration extensions			
9.7.56	FAST line inventory and status data			
9.7.57	FAST line inventory and status data part 2			
9.7.58	FAST xTU-C performance monitoring history data			
9.7.59	FAST xTU-R performance monitoring history data			
9.12.18	OpenFlow config data			

10) Clause 11.2.4, Managed entity identifier

In clause 11.2.4 modify Table 11.2.4-1 as follows:

Table 11.2.4-1 – Managed entity identifiers

Managed entity class value	Managed entity
427	Physical path termination point xDSL UNI part 3
428	FAST line configuration profile part 1
429	FAST line configuration profile part 2
430	FAST line configuration profile part 3
431	FAST line configuration profile part 4
432	FAST channel configuration profile
433	FAST data path configuration profile
434	FAST vectoring line configuration extensions
435	FAST line inventory and status data
436	FAST line inventory and status data part 2
437	FAST xTU-C performance monitoring history data
438	FAST xTU-R performance monitoring history data
439	OpenFlow config data
440-65279	Reserved for future standardization
65280-65535	Reserved for vendor-specific use

11) Clause 9.12.2, OLT-G

Modify clause 9.12.2 by replacing the Time of day information as following:

Time of day information: This attribute provides the information required to achieve time of day synchronization between a reference clock at the OLT and a local clock at the ONU. This attribute comprises two fields: the first field (4 bytes) is the sequence number of the specified GEM superframe. The second field (10 bytes) is TstampN as defined in clause 10.4.6 of [ITU-T G.984.3], clause 13.2 of [ITU-T G.987.3] and clause 13.2 of [ITU-T G.989.3], using the timestamp format of [IEEE 1588], clause 5.3.3. The value 0 in all bytes is reserved as a null value. (R, W) (optional) (14 bytes)

NOTE – In ITU-T G.987/ITU-T G.989 systems, the superframe count field of the time of day information attribute contains the 32 least significant bits of the actual counter.

12) Clause 9.15.1, Physical path termination point RS232/RS485 UNI

In clause 9.15.1, replace the entire ME with the following:

This managed entity represents an RS232/RS485 UNI in the ONU, where physical paths terminate and physical path level functions are performed.

The ONU automatically creates an instance of this managed entity per port:

- when the ONU has RS232/RS485 ports built into its factory configuration;
- when a cardholder is provisioned to expect a circuit pack of RS232/RS485 type;

- when a cardholder provisioned for plug and play is equipped with a circuit pack of RS232/RS485 type. Note that the installation of a plug and play card may indicate the presence of RS232/RS485 ports via equipment ID as well as its type, and indeed may cause the ONU to instantiate a port mapping package that specifies RS232/RS485 ports.

The ONU automatically deletes instances of this managed entity when a cardholder is neither provisioned to expect a RS232/RS485 circuit pack, nor is equipped with a RS232/RS485 circuit pack.

Relationships

An instance of this managed entity is associated with each real RS232/RS485 port.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. This two-byte number is directly associated with the physical position of the UNI. The first byte is the slot ID (defined in clause 9.1.5). The second byte is the port ID, with range 1..255. (R) (mandatory) (2 bytes)

Administrative state: This attribute locks (1) and unlocks (0) the functions performed by this managed entity. Administrative state is further described in clause A.1.6. (R, W) (mandatory) (1 byte)

Operational state: This attribute indicates whether or not the managed entity is capable of performing its function. Valid values are enabled (0) and disabled (1). (R) (optional) (1 byte)

Port mode: This attribute indicates the working mode of the RS232/RS485 controller chipset. Valid values are:

0 half-duplex

1 full duplex

(R, W) (mandatory) (1 byte)

Baud_rate: This attribute specifies the working baud rate of RS232/RS485 port. Valid values are:

0 300 bit/s

1 600 bit/s

2 1200 bit/s

3 2400 bit/s

4 4800 bit/s

5 9600 bit/s

6 19200 bit/s

7 38400 bit/s

8 43000 bit/s

9 56000 bit/s

10 57600 bit/s

11 115200 bit/s

(R, W) (mandatory) (1 byte)

Data_bits: This attribute specifies the bits of the data. Valid values are:

5 5 bits

6 6 bits

7 7 bits

8 8 bits

(R, W) (mandatory) (1 byte)

Parity: This attribute specifies the parity of the data. Valid values are:

0 no parity

1 odd parity

2 even parity

(R, W) (mandatory) (1 byte)

Stop_bits: This attribute specifies the number of stop bits of the data. Valid values are:

1 1 bit

2 2 bits

(R, W) (mandatory) (1 byte)

Flow_control: This attribute specifies the flow control of the data. Valid values are:

0 no flow control

1 hardware flow control (RTS/CTS)

2 software flow control（Xon/Xoff）

(R, W) (mandatory) (1 byte)

Min_send_payload: This attribute specifies the length of serial data acquisition by RS232/RS485 controller chipset in the fixed length mode. (R,) (mandatory) (4 bytes)

Min_send_time: This attribute specifies the time of serial data acquisition by RS232/RS485 controller chipset in the timing mode. (R, W) (mandatory) (4 bytes)

Reserve: This attribute is reserved for future use.

13) Clause 9.15.3, RS232/RS485 performance monitoring history data

Replace clause 9.15.3 RS232/RS485 performance monitoring history data with the following:

9.15.3 RS232/RS485 performance monitoring history data

This managed entity collects performance monitoring data for a RS232/RS485 interface. Instances of this managed entity are created and deleted by the OLT.

Relationships

An instance of this managed entity is associated with an instance of the PPTP RS232/RS485 UNI managed entity.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. Through an identical ID, this managed entity is implicitly linked to an instance of the physical path termination point RS232/RS485 UNI. (R, set by create) (mandatory) (2 bytes)

Interval end time: This attribute identifies the most recently finished 15-minute interval. (R) (mandatory) (1 byte)

Threshold data 1/2 id: This attribute points to an instance of the threshold data 1 and 2 managed entities that contains PM threshold values. (R, W, set by create) (mandatory) (2 bytes)

Received bytes on PON port: This attribute counts the bytes received on the PON port. (R) (optional) (4 bytes)

Transmitted bytes on PON port: This attribute counts the bytes transmitted on the PON port. (R) (optional) (4 bytes)

Received bytes on RS232/RS485 controller chipset: This attribute counts the bytes received on the RS232/RS485 chipset. (R) (optional) (4 bytes)

Transmitted bytes on RS232/RS485 controller chipset: This attribute counts the bytes transmitted on the RS232/RS485 chipset. (R) (optional) (4 bytes)

Actions

Create, delete, get, set

Notifications

Threshold crossing alert		
Number	**Threshold crossing alert**	**Threshold value attribute # (Note)**
1	Received bytes on PON port	1
2	Transmitted bytes on PON port	2
3	Received bytes on RS232/RS485 controller chipset	3
4	Transmitted bytes on RS232/RS485 controller chipset	4
NOTE – This number associates the TCA with the specified threshold value attribute of the threshold data 1/2 managed entities.		

14) Clause 9.12.17, Threshold data 64-Bit

Replace the entire clause 9.12.17 with the following:

9.12.17 Threshold data 64-Bit

An instance of this managed entity contains threshold values for counters in performance monitoring history data managed entities.

Instances of this managed entity are created and deleted by the OLT.

Relationships

An instance of this managed entity may be related to multiple instances of performance monitoring history data type managed entities.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this managed entity. (R, set by create) (mandatory) (2 bytes)

The following attributes specify threshold values for thresholded counters in associated PM history data MEs. The definition of each PM history ME includes a table that links each thresholded counter to one of these threshold value attributes. The default value of these attributes is all 1s.

Threshold value 1: (R, W) (mandatory) (8 bytes)
Threshold value 2: (R, W) (mandatory) (8 bytes)
Threshold value 3: (R, W) (mandatory) (8 bytes)
Threshold value 4: (R, W) (mandatory) (8 bytes)
Threshold value 5: (R, W) (mandatory) (8 bytes)
Threshold value 6: (R, W) (mandatory) (8 bytes)
Threshold value 8: (R, W) (mandatory) (8 bytes)
Threshold value 9: (R, W) (mandatory) (8 bytes)
Threshold value 10: (R, W) (mandatory) (8 bytes)
Threshold value 11: (R, W) (mandatory) (8 bytes)
Threshold value 12: (R, W) (mandatory) (8 bytes)
Threshold value 13: (R, W) (mandatory) (8 bytes)
Threshold value 14: (R, W) (mandatory) (8 bytes)

Actions

Create, delete, get, set

Notifications

None.

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