International Telecommunication Union

ITU-T

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G.997.1
Amendment 5
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SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Digital sections and digital line system – Access networks

Physical layer management for digital subscriber line (DSL) transceivers

Amendment 5

Recommendation ITU-T G.997.1 (2009) – Amendment 5

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

Recommendation ITU-T G.997.1

Physical layer management for digital subscriber line (DSL) transceivers

Amendment 5

Summary

Amendment 5 to Recommendation ITU-T G.997.1 (2009) contains the following additions:

– New parameters for the control and reporting of the ATTNDR.

– New parameters for the reporting of the aggregate achievable net data rate.

– Modify MDOSPLIT to take into account the extension of MAXDELAYOCTET

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.997.1	1999-07-02	15
2.0	ITU-T G.997.1	2003-05-22	15
2.1	ITU-T G.997.1 (2003) Amd. 1	2003-12-14	15
2.2	ITU-T G.997.1 (2003) Amd. 2	2005-01-13	15
3.0	ITU-T G.997.1	2005-09-06	15
4.0	ITU-T G.997.1	2006-06-06	15
4.1	ITU-T G.997.1 (2006) Cor. 1	2006-12-14	15
4.2	ITU-T G.997.1 (2006) Amd. 1	2006-12-14	15
4.3	ITU-T G.997.1 (2006) Amd. 2	2007-11-22	15
4.4	ITU-T G.997.1 (2006) Amd. 3	2008-08-22	15
5.0	ITU-T G.997.1	2009-04-22	15
5.1	ITU-T G.997.1 (2009) Cor. 1	2009-11-13	15
5.2	ITU-T G.997.1 (2009) Amd. 1	2010-06-11	15
5.3	ITU-T G.997.1 (2009) Amd. 2	2010-11-29	15
5.4	ITU-T G.997.1 (2009) Amd. 3	2011-06-22	15
5.5	ITU-T G.997.1 (2009) Cor. 2	2011-10-29	15
5.6	ITU-T G.997.1 (2009) Amd. 4	2011-12-16	15
5.7	ITU-T G.997.1 (2009) Amd. 5	2012-02-13	15

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). 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.

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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/.

Recommendation ITU-T G.997.1

Physical layer management for digital subscriber line (DSL) transceivers

Amendment 5

1) Addition of parameters for the control and reporting of the ATTNDR

Add clause 7.3.1.15:

7.3.1.15 ATTNDR configuration parameters

7.3.1.15.1 ATTNDR Method (ATTNDR_METHOD)

This parameter specifies the method to be used for the calculation of the ATTNDR in the downstream and upstream direction**.**

The parameter can take three values 0, 1 and 2.

For detailed definition see clause 11.4.1.1.7 of [ITU-T G.993.2].

7.3.1.15.2 ATTNDR MAXDELAYOCTET-split parameter (ATTNDR_MDOSPLIT)

The line configuration parameter, ATTNDR_MDOSPLIT, defines the percentage of the MAXDELAYOCTET_ext, if operating in ITU-T G.998.4, or of MAXDELAYOCTET, in other cases, allocated to the downstream direction to be used in the improved method for calculation of the ATTNDR. All of the remaining MAXDELAYOCTET_ext or MAXDELAYOCTET shall be allocated for use in the upstream direction.

The detailed specification is in [ITU-T G.993.2] and [ITU-T G.998.4].

The valid values are identical to the values of the line configuration parameter MDOSPLIT (see clause 7.3.1.14).

Add clause 7.5.1.41:

7.5.1.41 ATTNDR diagnostic parameters

7.5.1.41.1 ATTNDR actual method (ATTNDR_ACTMETHOD)

This parameter indicates the actual ATTNDR method used for calculation of the ATTNDR in the downstream and upstream direction.

The valid values are identical to the values of the line configuration parameter ATTNDR_METHOD.

7.5.1.41.2 ATTNDR downstream actual impulse noise protection (ATTNDR_ACTINPds)

If retransmission is not used in the downstream direction, this parameter indicates the actual impulse noise protection used in the improved calculation of the ATTNDR in the downstream direction.

If retransmission is used in the downstream direction, this parameter indicates the actual impulse noise protection against SHINE used in the improved calculation of the ATTNDR in the downstream direction.

The format and valid values are identical to the values of the channel status parameter ACTINP.

7.5.1.41.3 ATTNDR upstream actual impulse noise protection (ATTNDR_ACTINPus)

If retransmission is not used in the upstream direction, this parameter indicates the actual impulse noise protection used in the improved calculation of the ATTNDR in the upstream direction.

If retransmission is used in the upstream direction, this parameter indicates the actual impulse noise protection against SHINE used in the improved calculation of the ATTNDR in the upstream direction.

The format and valid values are identical to the values of the channel status parameter ACTINP.

7.5.1.41.4 ATTNDR downstream actual impulse noise protection against REIN (ATTNDR_ACTINP_REINds)

If retransmission is used in the downstream direction, this parameter reports the actual impulse noise protection (INP) against REIN used in the improved calculation of the ATTNDR in the downstream direction.

The format and valid values are identical to the values of the channel status parameter ACTINP_REIN.

7.5.1.41.5 ATTNDR upstream actual impulse noise protection against REIN (ATTNDR_ACTINP_REINus)

If retransmission is used in the upstream direction, this parameter reports the actual impulse noise protection (INP) against REIN used in the improved calculation of the ATTNDR in the upstream direction.

The format and valid values are identical to the values of the channel status parameter ACTINP_REIN.

7.5.1.41.6 ATTNDR downstream actual delay (ATTNDR_ACTDELAYds)

This parameter indicates the actual delay used in the improved calculation of the ATTNDR in the downstream direction.

The value is coded in with a granularity of 0.1 ms. The range is from 0 to 25.4 ms. A special value indicates an actual delay higher than 25.4 ms.

7.5.1.41.7 ATTNDR upstream actual delay (ATTNDR_ACTDELAYus)

This parameter indicates the actual delay used in the improved calculation of the ATTNDR in the upstream direction.

The value is coded in with a granularity of 0.1 ms. The range is from 0 to 25.4 ms. A special value indicates an actual delay higher than 25.4 ms.

Add following rows to Table 7-14:

Table 7-14– Line configuration profile

Category/Element	Defined in:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface
…					
MDOSPLIT	7.3.1.14	R/W(O)			
ATTNDR configuration parameters					
ATTNDR_METHOD	7.3.1.15.1	R/W(O)			
ATTNDR_MDOSPLIT	7.3.1.15.2	R/W(O)			

Add following rows to Table 7-15:

Table 7-15– Support of Line configuration parameters per Recommendation

Category/ Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4
…							
MAXDELAYOCTET SPLIT							
MDOSPLIT						Y	Y
ATTNDR configuration parameters							
ATTNDR_ METHOD						Y	Y (Note)
ATTNDR_ MDOSPLIT						Y	Y (Note)
NOTE – Those parameters apply only to [ITU-T G.998.4] when used in conjunction with [ITU-T G.993.2].							

Modify Table 7-28 as follows:

Table 7-28 – Line test, diagnostic and status parameters

Category/Element	Defined in:	Q-Interface	U-C Interface	U-R Interface	T-/S-Interface	G-Interface
...						
Actual RI_POLICY						
ACTRIPOLICYus	7.5.1.40.1	R(O)				
ACTRIPOLICYds	7.5.1.40.2	R(O)				
ATTNDR Diagnostic parameters						
ATTNDR_ACT_METHOD	7.5.1.41.1	R(O)				
ATTNDR_ACTINPds	7.5.1.41.2	R(O)		R(O)		
ATTNDR_ACTINPus	7.5.1.41.3	R(O)	R(O)			
ATTNDR_ACTINP_REINds	7.5.1.41.4	R(O)		R(O)		
ATTNDR_ACTINP_REINus	7.5.1.41.5	R(O)	R(O)			
ATTNDR_ACTDELAYds	7.5.1.41.6	R(O)		R(O)		
ATTNDR_ACTDELAYus	7.5.1.41.7	R(O)	R(O)			

Add the following rows to Table 7-29:

Table 7-29 – Support of Line test, diagnostic and status parameters per Recommendation

Category/ Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4
...							
Actual RI_POLICY							
ACTRIPOLICYus						Y	
ACTRIPOLICYds						Y	

Table 7-29 – Support of Line test, diagnostic and status parameters per Recommendation

Category/ Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4
ATTNDR diagnostic parameters							
ATTNDR_ ACTMETHOD						Y	Y (Note 1)
ATTNDR_ ACTINPds						Y	Y (Note 1)
ATTNDR_ ACTINPus						Y	Y (Note 1)
ATTNDR_ ACTINP_REINds							Y (Note 1)
ATTNDR_ ACTINP_REINus							Y (Note 1)
ATTNDR_ ACTDELAYds						Y	Y (Note 1)
ATTNDR_ ACTDELAYus						Y	Y (Note 1)
NOTE 1 – Those parameters apply only to [ITU-T G.998.4] when used in conjunction with [ITU-T G.993.2].							

2)   Add reporting of the aggregate achievable net data rate

Add following clause 7.5.1.42:

7.5.1.42   Aggregate achievable net data rate

7.5.1.42.1 Near-end aggregate achievable net data rate (AGGACHNDR_NE)

This parameter reports the aggregate achievable net data rate of the VTU-O as specified in [ITU-T G.998.4]. The value is coded in step of 1000 bit/s. A special value indicates that the aggregate achievable net data rate value is reported as being undefined.

7.5.1.42.2 Far-end aggregate achievable net data rate (AGGACHNDR_FE)

This parameter reports the aggregate achievable net data rate of the VTU-R as specified in [ITU-T G.998.4]. The value is coded in step of 1000 bit/s. A special value indicates that the aggregate achievable net data rate value is reported as being undefined.

Modify Table 7-28 as follows:

Table 7-28 – Line test, diagnostic and status parameters

Category/Element	Defined in:	Q- Interface	U-C Interface	U-R Interface	T-/S- Interface	G- Interface
...						
ATTNDR_ACTDELAYus	7.5.1.41.7	R(O)	R(O)			
Aggregate Achievable Net Data Rate						
AGGACHNDR_NE	7.5.1.42.1	R(O)				
AGGACHNDR_FE	7.5.1.42.2	R(O)			R(O)	

Add the following rows to Table 7-29:

Table 7-29 – Support of Line test, diagnostic and status parameters per Recommendation

Category/ Element	ITU-T G.992.1	ITU-T G.992.2	ITU-T G.992.3	ITU-T G.992.4	ITU-T G.992.5	ITU-T G.993.2	ITU-T G.998.4
...							
ATTNDR_ ACTDELAYus						Y	Y (Note 1)
Aggregate Achievable Net Data Rate							
AGGACHNDR_ NE							Y (Note 2)
AGGACHNDR_ FE							Y (Note 2)
NOTE 1 – Those parameters apply only to [ITU-T G.998.4] when used in conjunction with [ITU-T G.993.2]. NOTE 2 – Those parameters apply only to [ITU-T G.998.4] when [ITU-T G.993.5] is selected.							

3)   Modify MDOSPLIT to take into account the extension of MAXDELAYOCTET

Modify 7.3.1.14 as follows:

7.3.1.14   MAXDELAYOCTET-split parameter (MDOSPLIT)

The line configuration parameter, MAXDELAYOCTET-split (MDOSPLIT), defines the percentage of the MAXDELAYOCTET_ext, if operating in ITU-T G.998.4, or MAXDELAYOCTET, in other cases, allocated to the downstream direction. All of the remaining MAXDELAYOCTET_or MAXDELAYOCTET_ext shall be allocated for use in the upstream direction.

The detailed specification is in [ITU-T G.993.2] and [ITU-T G.998.4].

MDOSPLIT shall be expressed as a percentage, with valid range from 5 percent to 95 percent inclusive, in steps of 1 percent. The value 0% is valid only if the maximum downstream interleaving delay is configured with the special value S1 (see clause 7.3.2.2) and retransmission is disabled in the downstream direction. The value 100% is valid only if the maximum upstream interleaving delay is configured with the special value S1 (see clause 7.3.2.2) and retransmission is disabled in the upstream direction. A special value shall indicate that the VTU-O is allowed to use a vendor discretionary algorithm.

NOTE – The special value is introduced to ensure backwards compatibility.

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