

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.994.1

Amendment 7

(04/2011)

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

Digital sections and digital line system – Access networks

Handshake procedures for digital subscriber
line (DSL) transceivers

Amendment 7

Recommendation ITU-T G.994.1 (2007) – Amendment 7

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

Recommendation ITU-T G.994.1

Handshake procedures for digital subscriber line (DSL) transceivers

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Summary

Amendment 7 to Recommendation ITU-T G.994.1 (2007) contains the following changes:

- Addition of a code point to indicate the support of downstream virtual noise during diagnostic mode.
- Correction to the code point for the support of ITU-T G.993.5-friendly operation in the downstream direction.
- Addition of a code point to indicate the support of an alternative electrical length estimation method.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.994.1	1999-07-02	15
1.1	ITU-T G.994.1 (1999) Cor. 1	2000-04-04	15
2.0	ITU-T G.994.1	2001-02-09	15
3.0	ITU-T G.994.1	2002-07-29	15
4.0	ITU-T G.994.1	2003-05-22	15
4.1	ITU-T G.994.1 (2003) Amend. 1	2004-02-22	15
4.2	ITU-T G.994.1 (2003) Amend. 2	2004-06-13	15
4.3	ITU-T G.994.1 (2003) Amend. 3	2005-01-13	15
4.4	ITU-T G.994.1 (2003) Amend. 4	2006-01-13	15
5.0	ITU-T G.994.1	2007-02-13	15
5.1	ITU-T G.994.1 (2007) Amend. 1	2007-11-22	15
5.2	ITU-T G.994.1 (2007) Amend. 2	2008-04-13	15
5.3	ITU-T G.994.1 (2007) Amend. 3	2009-03-22	15
5.4	ITU-T G.994.1 (2007) Amend. 4	2009-06-29	15
5.5	ITU-T G.994.1 (2007) Amend. 5	2010-04-22	15
5.6	ITU-T G.994.1 (2007) Amend. 6	2010-11-29	15
5.7	ITU-T G.994.1 (2007) Amend. 7	2011-04-13	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.

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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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Recommendation ITU-T G.994.1

Handshake procedures for digital subscriber line (DSL) transceivers

Amendment 7

1) Addition of a code point to indicate the support of downstream virtual noise during diagnostic mode

Modify the 5 Tables 11.x with $x = 29, 31, 33, 35, 49$ (Annex A/L, B, I, J, and M, respectively) as follows:

Table 11.29 – Standard information field – G.992.3 Annexes A/L NPar(2) coding – Octet 1

Bits								G.992.3 Annexes A/L NPar(2)s – Octet 1
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	NTR
x	x	x	x	x	x	1	x	Short initialization
x	x	x	x	x	1	x	x	Diagnostics mode
x	x	x	x	1	x	x	x	Reserved for allocation by the ITU-T
x	x	x	1	x	x	x	x	Support of downstream virtual noise
x	x	1	x	x	x	x	x	<u>Support of downstream virtual noise in diagnostics mode</u> Reserved for allocation by the ITU-T
x	x	0	0	0	0	0	0	No parameters in this octet

Modify the 5 Tables 11.x with $x = 43, 45, 47, 51, 57$ (Annex A, B, I, J, and M respectively) as follows:

Table 11.43 – Standard information field – G.992.5 Annex A NPar(2) coding

Bits								G.992.5 Annex A NPar(2)s
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	NTR
x	x	x	x	x	x	1	x	Short initialization
x	x	x	x	x	1	x	x	Diagnostics mode
x	x	x	x	1	x	x	x	Reserved for allocation by the ITU-T
x	x	x	1	x	x	x	x	Support of downstream virtual noise
x	x	1	x	x	x	x	x	<u>Support of downstream virtual noise in diagnostics mode</u> Reserved for allocation by the ITU-T
x	x	0	0	0	0	0	0	No parameters in this octet

2) **Correction to the code points for the support of ITU-T G.993.5-friendly operation in the downstream direction**

Modify Table 11.67 as follows and add Table 11.67.1:

Table 11.67 – Standard information field – G.993.2 NPar(2) coding – Octet 1

Bits								G.993.2 NPar(2)s
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	All-digital mode
x	x	x	x	x	x	1	x	Support of downstream virtual noise
x	x	x	x	x	1	x	x	Lineprobe
x	x	x	x	1	x	x	x	Loop diagnostic mode
x	x	x	1	x	x	x	x	Support of PSD shaping in US0
x	x	1	x	x	x	x	x	<u>Support of equalized FEXT UPBOG.993.5 friendly G.993.2 operation in the downstream direction</u>
x	x	0	0	0	0	0	0	No parameters in this octet

Table 11.67.1 – Standard information field – G.993.2 NPar(2) coding – Octet 2

Bits								G.993.2 NPar(2)s
8	7	6	5	4	3	2	1	
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</u>	<u>G.993.5-friendly G.993.2 operation in the downstream direction</u>
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</u>	<u>x</u>	<u>x</u>	<u>Reserved for allocation by ITU-T</u>
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>Reserved for allocation by ITU-T</u>
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>Reserved for allocation by ITU-T</u>
<u>x</u>	<u>x</u>	<u>x</u>	<u>1</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>Reserved for allocation by ITU-T</u>
<u>x</u>	<u>x</u>	<u>1</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>Reserved for allocation by ITU-T</u>
<u>x</u>	<u>x</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>No parameters in this octet</u>

3) **Addition of a code point to indicate the support of an alternative electrical length estimation method**

Modify Table 11.67.1 as follows:

Table 11.67.1 – Standard information field – G.993.2 NPar(2) coding – Octet 2

Bits								G.993.2 NPar(2)s
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	G.993.5-friendly G.993.2 operation in the downstream direction
x	x	x	x	x	1	x	x	<u>Alternative electrical length estimation method</u> Reserved for allocation by ITU-T
x	x	x	x	1	x	x	x	Reserved for allocation by ITU-T
x	x	x	x	1	x	x	x	Reserved for allocation by ITU-T
x	x	x	1	x	x	x	x	Reserved for allocation by ITU-T
x	x	1	x	x	x	x	x	Reserved for allocation by ITU-T
x	x	0	0	0	0	0	0	No parameters in this octet

SERIES OF ITU-T RECOMMENDATIONS

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