

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.994.1
Amendment 2
(04/2008)

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 2

Recommendation ITU-T G.994.1 (2007) –
Amendment 2



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Recommendation ITU-T G.994.1

Handshake procedures for digital subscriber line (DSL) transceivers

Amendment 2

Summary

Amendment 2 to Recommendation ITU-T G.994.1 contains:

- New codepoints for the support of the erasure decoding in Recommendations ITU-T G.992.3 and G.992.5.
- New codepoints for the support of virtual noise in Recommendations ITU-T G.992.3 and G.992.5.

Source

Amendment 2 to Recommendation ITU-T G.994.1 (2007) was approved on 13 April 2008 by ITU-T Study Group 15 (2005-2008) under Recommendation ITU-T A.8 procedure.

FOREWORD

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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.

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Recommendation ITU-T G.994.1

Handshake procedures for digital subscriber line (DSL) transceivers

Amendment 2

1 Codepoints for the support of the erasure decoding in Recommendations ITU-T G.992.3 and G.992.5

a) *Modify the five Tables 11.x and add the five Tables 11.x.1 with x = 29, 31, 33, 35, 49*

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

		Bits						
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 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

Table 11.29.1 – Standard information field – G.992.3 Annexes A/L NPar(2) coding – Octet 2

		Bits						
8	7	6	5	4	3	2	1	
<u>x</u>	<u>1</u>	<u>Erasure decoding reporting</u>						
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</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>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>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>

- b) *Modify the 60 Tables 11.x.y.7 with x = 30, 32, 34, 36, 50 and y = 13, 15, 17, 25, 27, 29, 37, 39, 41, 49, 51, 53*

Table 11.30.13.7 – Standard information field – G.992.3 Annexes A/L downstream STM TPS-TC #0 NPar(3) coding – Octet 8

		Bits						
8	7	6	5	4	3	2	1	
x	x					x	x	Error_max (maximum bit error ratio)
x	x			x	x			INP_min (minimum impulse noise protection) (bits 2 and 1)
x	x		x					<u>Reserved for allocation by ITU-T</u> INP_no_erasure_not_required
x	x	x						Reserved for allocation by ITU-T

- c) *Modify the 5 Tables 11.x and add the 5 Tables 11.x.1 with x = 43, 45, 47, 51, 57*

Table 11.43 – Standard information field – G.992.5 Annex A NPar(2) coding – Octet 1

		Bits						
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 ITU-T
x	x	x	1	x	x	x	x	Reserved for allocation by ITU-T
x	x	1	x	x	x	x	x	Downstream spectrum shaping using time domain filtering only
x	x	0	0	0	0	0	0	No parameters in this octet

Table 11.43.1 – Standard information field – G.992.5 Annex A NPar(2) coding – Octet 2

		Bits						
8	7	6	5	4	3	2	1	
<u>x</u>	<u>1</u>	<u>Erasure decoding reporting</u>						
<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>1</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>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>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>

- d) Modify the 60 Tables 11.x.y.7 with $x = 44, 46, 48, 52, 58$ and $y = 13, 15, 17, 25, 27, 29, 37, 39, 41, 49, 51, 53$

Table 11.44.13.7 – Standard information field – G.992.5 Annex A downstream STM TPS-TC #0 NPar(3) coding – Octet 8

Bits		G.992.5 Annex A downstream STM TPS-TC #0 NPar(3)s – Octet 8						
8	7	6	5	4	3	2	1	
x	x					x	x	Error_max (maximum bit error ratio)
x	x			x	x			INP_min (minimum impulse noise protection) (bits 2 and 1)
x	x		x					INP_no_erasure_not_required Reserved for allocation by ITU-T
x	x	x						Reserved for allocation by ITU-T

2) Codepoints for the support of the virtual noise in G.992.3 and G.992.5

- a) Modify the 5 Tables 11.x with $x = 29, 31, 33, 35, 49$

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 ITU-T
x	x	x	1	x	x	x	x	Reserved for allocation by ITU-T Support of downstream virtual noise
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

- b) Modify the 5 Tables 11.x.0.1 with $x = 30, 32, 34, 36, 50$

Table 11.30.0.1 – Standard information field – G.992.3 Annexes A/L SPar(2) coding – Octet 2

Bits		G.992.3 Annexes A/L SPar(2)s – Octet 2						
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	Downstream overhead data rate
x	x	x	x	x	x	1	x	Upstream overhead data rate
x	x	x	x	x	1	x	x	Maximum number of downstream TPS-TC functions of each type
x	x	x	x	1	x	x	x	Maximum number of upstream TPS-TC functions of each type
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 Number of breakpoints for downstream virtual noise PSD (NBPds)
x	x	0	0	0	0	0	0	No parameters in this octet

c) Add the 5 new Tables 11.x.12 with $x = 30, 32, 34, 36, 50$

**Table 11.30.12 – Standard information field – G.992.3 Annexes A/L
number of breakpoints for downstream virtual noise PSD NPar(3) coding – Octet 1**

Bits							G.992.3 Annexes A/L number of breakpoints for downstream virtual noise PSD NPar(3)s – Octet 1	
8	7	6	5	4	3	2	1	
x	x		x	x	x	x	x	NBPs (coded in bits 1 to 5)
x	x	x						Reserved for allocation by ITU-T

d) Modify the 5 Tables 11.x with $x = 43, 45, 47, 51, 57$

Table 11.43 – Standard information field – G.992.5 Annex A NPar(2) coding – Octet 1

Bits							G.992.5 Annex A 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 ITU-T
x	x	x	1	x	x	x	x	Reserved for allocation by ITU-T Support of downstream virtual noise
x	x	1	x	x	x	x	x	Downstream spectrum shaping using time domain filtering only
x	x	0	0	0	0	0	0	No parameters in this octet

e) Modify the 5 Tables 11.x.0.1 with $x = 44, 46, 48, 52, 58$

Table 11.44.0.1 – Standard information field – G.992.5 Annex A SPar(2) coding – Octet 2

Bits							G.992.5 Annex A SPar(2)s – Octet 2	
8	7	6	5	4	3	2	1	
x	x	x	x	x	x	x	1	Downstream overhead data rate
x	x	x	x	x	x	1	x	Upstream overhead data rate
x	x	x	x	x	1	x	x	Maximum number of downstream TPS-TC functions of each type
x	x	x	x	1	x	x	x	Maximum number of upstream TPS-TC functions of each type
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 Number of breakpoints for downstream virtual noise PSD (NBPs)
x	x	0	0	0	0	0	0	No parameters in this octet

f) Add the 5 new Tables 11.x.12 with $x = 44, 46, 48, 52, 58$

**Table 11.44.12 – Standard information field – G.992.5 Annex A
number of breakpoints for downstream virtual noise PSD NPar(3) coding – Octet 1**

<u>Bits</u>							<u>G.992.5 Annex A number of breakpoints for downstream virtual noise PSD NPar(3)s – Octet 1</u>	
<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>	
<u>x</u>	<u>x</u>		<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>NBPs (coded in bits 1 to 5)</u>
<u>x</u>	<u>x</u>	<u>x</u>						<u>Reserved for allocation by ITU-T</u>

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