International Telecommunication Union

ITU-T G.8261/Y.1361

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Amendment 1

(01/2015)

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

Packet over Transport aspects – Synchronization, quality and availability targets

SERIES Y: GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-GENERATION NETWORKS

Internet protocol aspects – Transport

Timing and synchronization aspects in packet networks

Amendment 1

Recommendation ITU-T G.8261/Y.1361 (2013) – Amendment 1

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Recommendation ITU-T G.8261/Y.1361

Timing and synchronization aspects in packet networks

Amendment 1

Summary

Amendment 1 to Recommendation ITU-T G.8261/Y.1361 (2013) provides the following updates:

– Addition of the network jitter limits for multilane interfaces consisting of 10 G lanes including 40GBASE-KR4/CR4/SR4/LR4 and 100GBASE-CR10/SR10 and multi-lane interfaces consisting of 25G lanes including 100GBASE-LR4/ER4.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.8261/Y.1361	2006-05-22	15	11.1002/1000/8787
1.1	ITU-T G.8261/Y.1361 (2006) Cor. 1	2006-12-14	15	11.1002/1000/9010
2.0	ITU-T G.8261/Y.1361	2008-04-29	15	11.1002/1000/9416
2.1	ITU-T G.8261/Y.1361 (2008) Amd. 1	2010-07-29	15	11.1002/1000/10908
3.0	ITU-T G.8261/Y.1361	2013-08-29	15	11.1002/1000/12015
3.1	ITU-T G.8261/Y.1361 (2013) Amd. 1	2015-01-13	15	11.1002/1000/12388

* 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 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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As of the date of approval of this Recommendation, ITU had not 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.8261/Y.1361

Timing and synchronization aspects in packet networks

1) Clause 9.2.1.3 – EEC interface network jitter limits

Modify clause 9.2.1.3 as shown below:

9.2.1.3 EEC interface network jitter limits

See Table 7 for EEC interface network jitter limits.

Table 7 – EEC interface network jitter limits

<table>
<tr><th>Interface</th><th colspan="2">Reference</th></tr>
<tr><td>2048 kbit/s</td><td rowspan="2">See [ITU-T G.823], clause 6.1: Network limits for output jitter at synchronization interfaces, SEC requirements</td><td rowspan="3">(Note 1)</td></tr>
<tr><td>2048 kHz</td></tr>
<tr><td>1544 kbit/s</td><td>See [ITU-T G.824], clause 6.1: Network limits for jitter</td></tr>
<tr><td>STM-n</td><td>See [ITU-T G.825], clause 5.1: Network limits for jitter</td><td></td></tr>
<tr><td>Ethernet (synchronous Ethernet)</td><td>See Table 7a</td><td>(Note 2)</td></tr>
<tr><td colspan="3">NOTE 1 – Jitter limits are taken from [ITU-T G.823], [ITU-T G.824] and [ITU-T G.825] in order to allow proper interoperability with SEC based synchronization networks and combined EEC-SEC functions.
NOTE 2 – In a chain of n ($n \leq 20$) connected EECs, the accumulated network jitter has to be low enough to allow all involved EECs to meet the output jitter specification at their synchronization outputs (e.g., 2048 kHz, 2048 kbit/s, 1544 kbit/s). See Figure 16 showing EECs in a chain; see also Annex D.</td></tr>
</table>

Table 7a – Maximum permissible jitter at synchronous Ethernet network interfaces

Interface	Measurement bandwidth, –3 dB frequencies	Peak-to-peak amplitude (UI~~pp~~)
1 G (Notes 1, 2, 5~~4~~)	2.5 kHz to 10 MHz	1.5
10 G (Notes 1, 3, 5~~4~~)	20 kHz to 80 MHz	1.5
25 G (Notes 1, 4, 5, 6)	20 kHz to 200 MHz	3.6

NOTE 1 – There is no specific high band jitter requirement for synchronous Ethernet. The relevant [IEEE 802.3] jitter requirements shall be met in addition to the specific synchronous Ethernet wideband jitter requirements specified in this table.

NOTE 2 – 1 G includes 1000BASE-KX, -SX, -LX; multi-lane interfaces are for further study.

NOTE 3 – 10 G includes 10GBASE-SR/LR/ER, 10GBASE-LRM, 10GBASE-SW/LW/EW; and multi-lane interfaces consisting of 10G lanes including 40GBASE-KR4/CR4/SR4/LR4 and 100GBASE-CR10/SR10~~multi-lane interfaces are for further study~~.

NOTE 4 – 25G includes multi-lane interfaces consisting of 25G lanes including 100GBASE-LR4/ER4.

NOTE 5~~4~~ – 1 G (1000BASE-KX, -SX, -LX): 1 UI = 0.8 ns

10 G (10GBASE-SR/LR/ER,-LRM, 40GBASE-KR4/CR4/SR4/LR4, 100GBASE-CR10/SR10~~)~~: 1 UI = 96.97 ps

10 G (10GBASE-SW/LW/EW): 1 UI = 100.47 ps

25 G (100GBASE-LR/ER): 1 UI = 37.89 ps

NOTE 6 – The peak-to-peak jitter amplitude for 25G lanes is increased from 1.5 UI to 3.6 UI, i.e., by a factor of 2.4. To compensate for this increase, the high-pass corner frequency used for 10G should first be increased by a factor of 2.5 to take account of the increase in line rate from 10G, and then decreased by a factor of 2.4 to take account of the increase in amplitude. This gives a high-pass corner frequency of 20.833 kHz, which has been rounded down to 20 kHz for convenience; this rounding to a lower value is slightly stricter.

Figure 16 shows the reference chain of n (n ≤ 20) EECs together with their synchronization outputs.

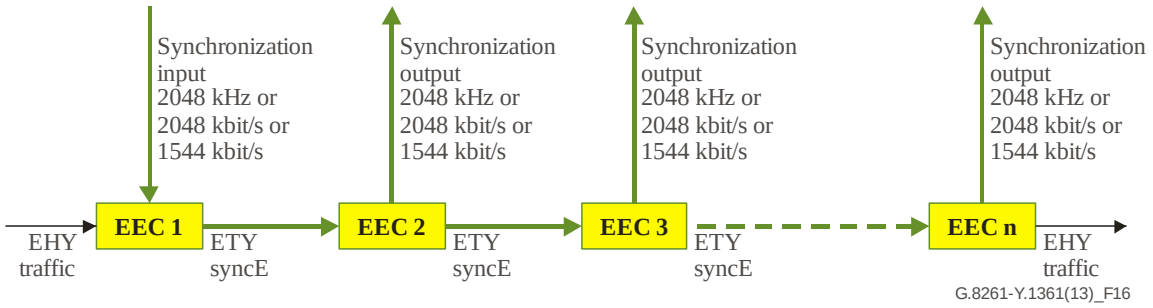

Figure 16 – EEC chain

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Printed in Switzerland
Geneva, 2015