

ITU-T

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

Digital terminal equipments – Other terminal equipment

Signal processing functionality and performance of an IP-to-IP voice gateway optimized for the transport of voice and voiceband data

Recommendation ITU-T G.799.3



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

Recommendation ITU-T G.799.3

Signal processing functionality and performance of an IP-to-IP voice gateway optimized for the transport of voice and voiceband data

Summary

As a consequence of the growth of IP and of IP services, different operators have an increased need to support bulk interconnection of voice and voiceband data traffic at the IP level.

Recommendation ITU-T G.799.3 defines the signal processing functionality and performance of an IP-to-IP gateway that is optimized for the transport of voice and voiceband data. Such a gateway may be used by network operators for the bulk interconnection of voice and voiceband data traffic at the IP level. This Recommendation addresses the following areas of such an IP-to-IP gateway: codec transcoding packetization time, voice performance, facsimile, voiceband data and text telephone support, support and performance of in-band signalling tones, and jitter handling. This Recommendation does not define any new protocols but, where necessary, refers to existing protocols developed within the ITU or by other standards bodies such as the IETF.

The support of tandem-free operation (TFO) and other in-band mechanisms for improving speech quality by avoiding tandem codecs will be developed in future editions of this Recommendation.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T G.799.3	2011-05-14	16

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/>.

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Recommendation ITU-T G.799.3

Signal processing functionality and performance of an IP-to-IP voice gateway optimized for the transport of voice and voiceband data

1 Scope

This Recommendation defines the signal processing functionality and performance of an IP-to-IP gateway that is optimized for the transport of voice and voiceband data. Such a gateway may be used by network operators for the bulk interconnection of voice and voiceband data traffic at the IP level. This is not meant to restrict an IP-to-IP gateway from being used within one provider's network.

The following areas are addressed by this Recommendation:

- 1) Codec transcoding
- 2) Packetization time
- 3) Voice performance
- 4) Facsimile, voiceband data and text telephone support and performance
- 5) Support and performance of in-band signalling tones
- 6) Jitter handling.

This Recommendation does not define any new protocols but, where necessary, refers to existing protocols developed within the ITU or by other standards development organizations.

Support of tandem-free operation (TFO) and other in-band mechanisms for improving speech quality by avoiding tandem codecs is for further study in this Recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- | | |
|-----------------|---|
| [ITU-T G.107] | Recommendation ITU-T G.107 (2009), <i>The E-model: a computational model for use in transmission planning</i> . |
| [ITU-T G.113] | Recommendation ITU-T G.113 (2007), <i>Transmission impairments due to speech processing</i> . |
| [ITU-T G.114] | Recommendation ITU-T G.114 (2003), <i>One-way transmission time</i> . |
| [ITU-T G.177] | Recommendation ITU-T G.177 (1999), <i>Transmission planning for voiceband services over hybrid Internet/PSTN connections</i> . |
| [ITU-T G.711] | Recommendation ITU-T G.711 (1988), <i>Pulse code modulation (PCM) of voice frequencies</i> . |
| [ITU-T G.722] | Recommendation ITU-T G.722 (1988), <i>7 kHz audio-coding within 64 kbit/s</i> . |
| [ITU-T G.722.2] | Recommendation ITU-T G.722.2 (2003), <i>Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)</i> . |



Documents

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Rec. ITU-T G.799.3 (05/2011)

[ITU-T G.723.1]	Recommendation ITU-T G.723.1 (2006), <i>Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s.</i>
[ITU-T G.726]	Recommendation ITU-T G.726 (1990), <i>40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM).</i>
[ITU-T G.728]	Recommendation ITU-T G.728 (1992), <i>Coding of speech at 16 kbit/s using low-delay code excited linear prediction.</i>
[ITU-T G.729]	Recommendation ITU-T G.729.1 (2007), <i>Reduced complexity 8 kbit/s CS-ACELP speech codec.</i>
[ITU-T G.729.1]	Recommendation ITU-T G.729.1 (2006), <i>G.729-based embedded variable bit-rate coder: An 8-32 kbit/s scalable wideband coder bitstream interoperable with G.729.</i>
[ITU-T G.1020]	Recommendation ITU-T G.1020 (2006), <i>Performance parameter definitions for quality of speech and other voiceband applications utilizing IP networks.</i>
[ITU-T G.1050]	Recommendation ITU-T G.1050 (2007), <i>Network model for evaluating multimedia transmission performance over Internet Protocol.</i>
[ITU-T H.248]	Recommendation ITU-T H.248 (2000), <i>Gateway control protocol.</i>
[ITU-T H.248.1]	Recommendation ITU-T H.248.1 (2005), <i>Gateway control protocol: Version 3.</i>
[ITU-T H.248.30]	Recommendation ITU-T H.248.30 (2007), <i>Gateway control protocol: RTCP extended performance metrics packages.</i>
[ITU-T P.805]	Recommendation ITU-T P.805 (2007), <i>Subjective evaluation of conversational quality.</i>
[ITU-T P.862]	Recommendation ITU-T P.862 (2001), <i>Perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs.</i>
[ITU-T P.1010]	Recommendation ITU-T P.1010 (2004), <i>Fundamental voice transmission objectives for VoIP terminals and gateways.</i>
[ITU-T Q.3303.2]	Recommendation ITU-T Q.3303.2 (2007), <i>Resource control protocol No. 3 – Protocol at the interface between a Policy Decision Physical Entity (PD-PE) and a Policy Enforcement Physical Entity (PE-PE) (Rw interface):H.248 Alternative.</i>
[ITU-T T.38]	Recommendation ITU-T T.38 (2007), <i>Procedures for real-time Group 3 facsimile communication over IP networks.</i>
[ITU-T V.150.1]	Recommendation ITU-T V.150.1 (2003), <i>Modem-over-IP networks: Procedures for the end-to-end connection of V-series DCEs.</i>
[ITU-T V.151]	Recommendation ITU-T V.151 (2006), <i>Procedures for the end-to-end connection of analogue PSTN text telephones over an IP network utilizing text relay.</i>
[ITU-T V.152]	Recommendation ITU-T V.152 (2005), <i>Procedures for supporting voice-band data over IP networks.</i>