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

International telephone connections and circuits –
Transmission plan aspects of special circuits and
connections using the international telephone connection
network

Transmission planning for private/public network interconnection of voice traffic

ITU-T Recommendation G.175

(Formerly CCITT Recommendation)

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Transmission planning for private/public network interconnection of voice traffic

Summary

This ITU-T Recommendation deals with the digital interconnection of public ISDN/PSTN and private networks. The primary application is to the overall quality of speech transmission for 3.1 kHz voiceband telephony using handsets, independent of all other types of services (e.g. facsimile and voiceband data) provided by those networks. The intention is to give guidance for transmission planning purposes, not only for a given network operator, but also for negotiations between the involved network operators.

Source

ITU-T Recommendation G.175 was revised by ITU-T Study Group 12 (1997-2000) and approved under the WTSC Resolution 1 procedure on 18 May 2000.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. 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 Conference (WTSC), 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 WTSC 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 not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation G.175

Transmission planning for private/public network interconnection of voice traffic

1 Scope

Most of the ITU-T Recommendations in the G-series are presently based on configurations where the national part of an international connection is usually terminated by a single analogue telephone set or by a digital terminal. Consequently, these ITU-T Recommendations do not take into account PABXs (Private Automatic Branch Exchange) or private networks. However, modern private networks, mainly those of large size and/or using new technologies, will contribute in a specific, possibly significant amount to the overall transmission quality.

This ITU-T Recommendation deals with the digital interconnection of public ISDN/PSTN and private networks. The primary application is to the overall quality of speech transmission for 3.1 kHz voiceband telephony using handsets, independent of all other types of services (e.g. facsimile and voiceband data) provided by those networks. The intention is to give guidance for transmission planning purposes, not only for a given network operator, but also for negotiations between the involved network operators.

For the purpose of this ITU-T Recommendation, only call paths between the private network and other networks (private or public) including telephone sets or other speech terminals are considered. Consequently, the provision of through-connections between two interfaces to other networks, or a call path between two terminals inside the same network are not covered by this ITU-T Recommendation.

NOTE – Although in principle the planning of internal- and through-connections of the Private Network is not covered here, the methods and rules described in this ITU-T Recommendation may be used for those applications as well.

2 Normative 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; all 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.

- [1] ITU-T Recommendation G.100 (1993), *Definitions used in Recommendations on general characteristics of international telephone connections and circuits.*
- [2] ITU-T Recommendation G.101 (1996), *The transmission plan.*
- [3] ITU-T Recommendation G.107 (2000), *The E-Model, a computational model for use in transmission planning.*
- [4] ITU-T Recommendation G.108 (1999), *Application of the E-model: A planning guide.*
- [5] ITU-T Recommendation G.109 (1999), *Definition of categories of speech transmission quality.*
- [6] ITU-T Recommendation G.113 (1996), *Transmission impairments.*
- [7] ITU-T Recommendation G.122 (1993), *Influence of national systems on stability and talker echo in international connections.*

- [8] ITU-T Recommendation G.165 (1993), *Echo cancellers*.
- [9] ITU-T Recommendation G.168 (2000), *Digital network echo cancellers*.
- [10] ITU-T Recommendation G.703 (1998), *Physical/electrical characteristics of hierarchical digital interfaces*.
- [11] CCITT Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.

3 Abbreviations

This ITU-T Recommendation uses the following abbreviations:

ATM	Asynchronous Transfer Mode
DCME	Digital Circuit Multiplication Equipment
ETSI	European Telecommunication Standards Institute
%GoB	Percentage Good or Better
ICP	International Connection Point
ISDN	Integrated Services Digital Network
LSTR	Listener SideTone Rating
MOS	Mean Opinion Score
OLR	Overall Loudness Rating
PABX	Private Automatic Branch eXchange
PCM	Pulse Code Modulation
%PoW	Percentage Poor or Worse
PSTN	Public Switched Telephone Network
qdu	Quantizing Distortion Unit
RLR	Receiving Loudness Rating
SLR	Sending Loudness Rating
STMR	SideTone Masking Rating
TELR	Talker Echo Loudness Rating
VPN	Virtual Private Network
WEPL	Weighted Echo Path Loss

4 Definitions

This ITU-T Recommendation defines the following terms:

4.1 private network: The term "private" is normally used in conjunction with several PABXs forming a network, mainly in an application for a restricted user group. In complement, the term "public" is usually used to describe main national or regional telecommunication networks providing services to general public.

The following list, specifying in more detail the definition of a private network, is also based on the assumption that the call path within the private network is contributing a possibly significant amount of transmission impairments to the overall transmission quality, such as loss, transmission time, number of qdus, etc.