



INTERNATIONAL TELECOMMUNICATION UNION

Amendment 1

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

T.90

(11/94)

TERMINALS FOR TELEMATIC SERVICES

**CHARACTERISTICS AND PROTOCOLS FOR
TERMINALS FOR TELEMATIC SERVICES
IN ISDN**

**Amendment 1 to
ITU-T Recommendation T.90**

(Previously "CCITT Recommendation")

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union. The 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 their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

Amendment 1 to ITU-T Recommendation T.90 was prepared by the ITU-T Study Group 8 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 11th of November 1994.

The previous version of ITU-T Recommendation T.90 was approved on 25th of February 1992.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

© ITU 1995

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

CONTENTS

Amendment 1 (1994) to Recommendation T.90

CHARACTERISTICS AND PROTOCOLS FOR TERMINALS FOR TELEMATIC SERVICES IN ISDN

Summary

This Recommendation defines the functional profile for base standards ISO/IEC 7776, 8208 and 8885 to provide the lower layers of the telematic services stack when operating on the ISDN. Attention is also paid to the terminal selection procedure related to telematic services using protocols other than the above e.g. group 3 document facsimile transmission over the ISDN.

Parameter values are recommended to ensure good throughput when operating via long delay connections such as satellite routes. Backward compatibility with the *Blue Book* version has been maintained.

Three methods of negotiating the lower layer parameter values have been included to satisfy various connection scenarios, e.g. completely within the ISDN or between the ISDN and other digital networks.

This Recommendation supplies the network layer definition in Recommendation T.70 for telematic terminals but not the transport layer definition which is still retained as the telematic transport layer definition.

Modifications

- 1) In Table of Contents, add:

“Annex F – Terminal selection procedures for ISDN telematic terminal”

- 2) Modify 1.1 as follows:

“1.1 General

The Integrated services digital network (ISDN) supports a wide range of voice and non-voice services and applications in the same network via a multipurpose user-network interface.

This Recommendation describes the requirements for telematic terminals, developed for ISDN application, and connected to an ISDN via an I-Series interface.

For example, teletex (defined in Recommendation T.60), group 4 facsimile (defined in Recommendation T.563) and videotex (defined in Recommendations T.102 and T.103).

Telematic terminals supporting both teletex and group 4 facsimile in mixed mode of operation (defined in Recommendation T.561) are also covered by this Recommendation.

The terminal selection procedure is defined with particular regard to telematic terminals supporting protocol stacks other than those used by the above-mentioned terminals e.g. group 3 document facsimile transmission on the ISDN according to Annex C/T.30.

Terminal requirements to support other telematic services are for further study.

Terminals developed for the provision of telematic services in circuit switched public data networks (CSPDNs), packet switched public data networks (PSPDNs) and public switched telephone networks (PSTNs), using terminal adaptors to access the ISDN are not covered by this Recommendation (see Note 1).

Interworking with existing telematic terminals connected to CSPDNs, PSPDNs and PSTNs, thereby maintaining the telematic service integrity, should be possible, but is outside the scope of this Recommendation (see Note 2).

This Recommendation includes several negotiation mechanisms for selection of terminals and optional parameters.

NOTES

1 For implementation guideline, consideration of incoming calls and information elements for facsimile terminals are described in Appendix I.

2 For rate adaptation function, see Appendix V."

3) Add Annex F as follows:

Annex F

Terminal selection procedures for ISDN telematic terminals

(This annex forms an integral part of this Recommendation)

F.1 Introduction

This annex describes the terminal selection procedures for the telematic terminals, for example, the different types of digital facsimile terminals which may be attached to the ISDN. The annex extends the procedures defined in Annexes D and E. It does not replace these annexes but it is more flexible and should be used for future designs.

F.1.1 There are several mechanisms for terminal selection provided by the ISDN, e.g., sub-addresses or the full E.164 number used in a multiple subscriber number supplementary service.

In addition to the bearer capability, higher layer or lower layer compatibility checking can also be considered as mechanisms for terminal identification. However, these information fields are not universally available particularly on international connections or on calls which do not terminate in the ISDN at both ends. Therefore an in-band terminal identification mechanism has also been defined to maximize the probability of successful communication.

The in-band negotiation takes place by the exchange of XID frames. The format of these frames is defined in ISO/IEC 8885. A special XID format identifier (FI = 84H) has been allocated to telematic terminal negotiation by the ISO.

F.1.2 Terminal selection – General

Considering that there is more than one type of 64 kbit/s facsimile terminal in the ISDN, the following terminal selection procedure is specified. Figure F.1 shows the scope of selection for operation mode on ISDN.

This selection procedure includes backward compatibility to 64 kbit/s facsimile terminals based on the February 1992 version of Recommendation T.90 and the *Blue Book* 1988, and also provides function selection in multimode terminals.

F.1.3 ISDN facsimile calls are established via the D-channel and the terminal selection fields BC, LLC and HLC shall be used at the calling terminal. At the receiving terminal these fields may not be available. This procedure is referred to as out-band terminal selection. Tables F.1, F.2, F.3 define the parameter values for each type of terminal.

F.1.4 Once the ISDN connection has been established it is possible to undertake further negotiation via the B-channel. This negotiation process is based on the exchange of XID frames and is referred to as the in-band procedure. This is an extension of the technique described in Annex C and illustrated in Annex E. A different format identifier FI (FI = 84H) is used in the XID frame because it is carrying extra information to define telematic terminal types in addition to layer 2 parameters. The previous FI = 82H is defined for general usage, whereas the FI = 84H is defined for ITU-T Recommendations in the T-series.

The contents of the two types of XID frame are shown in Figure F.3 and the SDL diagrams illustrating the start-up procedure are in Figures F.5.

In the unusual case that there is some conflict between the in-band and out-band procedures, then, the in-band procedure has precedence because it takes place later in time.

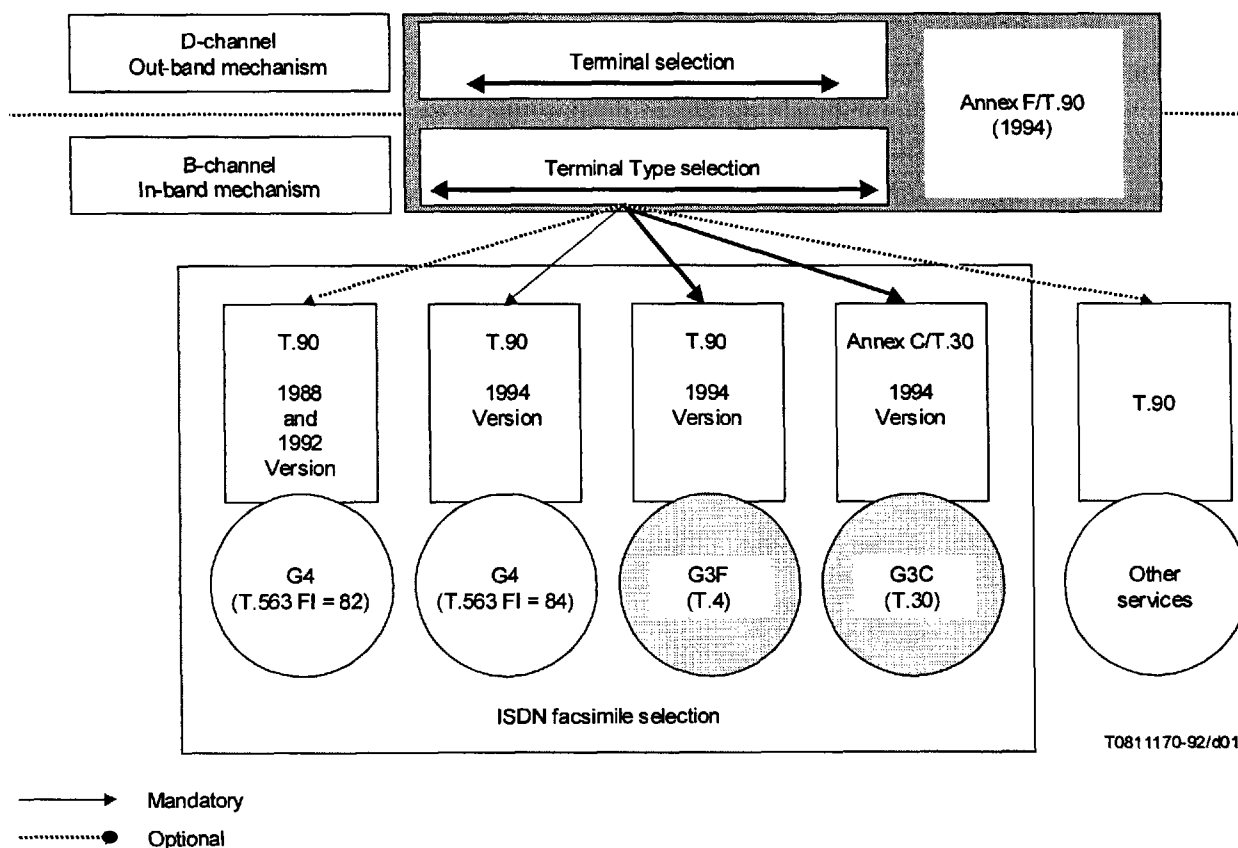


FIGURE F.1/T.90

The scope of selection procedure for mode of operation on ISDN

F.1.5 Where the D-channel information elements defining unambiguously the requested telematic service are not supported by the ISDN connection, the in-band procedure is required in the B-channel.

Terminal selection at the called side may have been performed on the Bearer Capability Information Element (BC-IE) only resulting from the only received BC-IE as the out-band compatibility information. The setting of the parameters of the BC-IE, however, is common to the various telematic services. Thus, unless at the calling side prior knowledge about the selection of the compatible terminal at the called side is available, this knowledge solely can be gained by applying the in-band negotiation procedure as per 1.4, which takes place after call establishment. However, this may lead to recognizing the non-availability of a compatible terminal, so that the required mode of communication cannot be established in this case. This results in the release of the potentially chargeable call, which, however, only lasted for the short time of the interrogation process.

Prior knowledge based on the called number or learned knowledge based on recent attempts to the same E.164 terminal number may be used to reduce the incidence of these occurrences.

F.2 D-channel aspects

F.2.1 The BC, LLC and HLC parameters for G3C and G3F facsimile terminals are given in Tables F.1, F.2 and F.3.

F.2.1.1 Table F.1 shows the BC (Bearer Capability) coding structure for G3C and G3F facsimile transmission.

TABLE F.1/T.90

BC coding structure for G3C and G3F facsimile transmission

Octet number	Information elements	Contents	G3C facsimile		G3F facsimile	
			Condition for calling side	Condition for called side	Condition for calling side	Condition for called side
1	Bearer capability information element identifier	Identifier	M	M	M	M
2	Length of the bearer capability contents	Length	M	M	M	M
3	Extension Coding standard	Extension CCITT standardized coding	M	M	M	M
	Information transfer capability	Unrestricted digital information	M	M	M	M
4	Extension Transfer mode	Extension Circuit mode	M	M	M	M
	Information transfer rate	64 kbit/s	M	M	M	M
5	Extension Layer 1 identification		N	N	N	N
	User information layer 1 protocol		N	N	N	N
6	Extension Layer 2 identification		N	N	N	N
	User information layer 2 protocol		N	N	N	N
7	Extension Layer 3 identification		N	N	N	N
	User information layer 3 protocol		N	N	N	N
M Sending is mandatory for calling side and checking of its presence and contents is mandatory for called side.						
N Calling side does not send the information elements and called side does not care for the information element.						