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TERMINAL EQUIPMENT AND PROTOCOLS FOR TELEMATIC SERVICES

TERMINAL CHARACTERISTICS FOR THE TELEMATIC FILE TRANSFER WITHIN THE TELETEX SERVICE

Recommendation T.571

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT 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 Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation T.571 was prepared by Study Group VIII and was approved under the Resolution No. 2 procedure on the 18 September 1992.

CCITT NOTE

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

CONTENTS

INTRODUCTION

This Recommendation defines the general rules required for the implementation of the Telematic file transfer for Teletex applications.

It defines the technical mechanisms and coding used.

Note – The use of this Recommendation for Facsimile Group 4 is for further study.

Recommendation T.571

TERMINAL CHARACTERISTICS FOR THE TELEMATIC FILE TRANSFER WITHIN THE TELETEX SERVICE

(1992)

1 Scope

This Recommendation contains technical requirements for implementing the functionalities allowed by the telematic file transfer. The service requirements for telematic file transfer are described in Recommendation F.551. It explains the general and equipment features for the telematic file transfer which are required from a service point of view.

The objective is to allow the transmission of a data file using the telematic file transfer possibilities with or without additional information concerning the file to be transmitted.

2 Normative references

This Recommendation contains provision which, through references in the text, constitue provisions of this Recommendation.

At the time of publication, the editions indicated were valid. All Recommendations are subject to revision. The CCITT secretariat maintains a list of the currently valid CCITT Recommendations.

[1] CCITT Recommendation T.62 (1988), *Control procedures for Teletex and G.4 facsimile services*.

[2] CCITT Recommendation T.61 (1988), *Character repertoire and coded character sets for the international Teletex service.*

[3] CCITT Recommendation T.50 (1988), *International Alphabet No. 5*.

[4] CCITT Recommendation F.200 (1988), *Teletex service.*

[51 CCITT Recommendation X.209 (1988), *Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1)*.

[6] CCITT Recommendation T.434 (1992), *Specification of binary file transfer*.

[7] ISO/IEC 9735:1990, *Electronic data interchange for administration commerce and transport (EDIFACT) – Application level syntax rules*.

[8] CCITT Recommendation F.551 (1992), *Service Recommendation for the Telematic File Transfer within the Telefax 3, Telefax 4, Teletex and Message Handling Services.*

3 Definitions

For the purposes of this Recommendation, the following definitions apply.

3.1 basic transfer mode

It provides the user of a telematic equipment with a means to exchange files of any kind (binary files, wordprocessor native format documents, bitmaps, etc.) without additional information.

3.2 **document transfer mode**

It provides the user of a telematic equipment with a means to exchange file of any kind with additional information, readable by the user or possibly automatically processed, included in a control document.

In the Teletex environment the DTM is merged to the BTM feature.

3.3 **binary file transfer**

It provides the user of a telematic equipment with a means to exchange files of any kind with additional information automatically processed on the receiving side. The coding rules which apply to these additional information are technically aligned of those of FTAM (Recommendation X.209 [5]) coded.

The binary file transfer is described in Recommendation T.434. Within the context of this Recommendation the diagnostic message mentioned in Recommendation T.434 is not used.

3.4 **EDIFACT**

It provides the user of a telematic equipment with a means to exchange files according to ISO/IEC 9735 [8] rules.

3.5 **control document**

It is a structured document which can either be used for automatic processing or, for file in an end-to-end communication or within a communication with an intermediate store-and-forward equipment.

3.6 **mandatory**

The feature described shall be used.

3.7 **optional**

The feature described can be used.

4 Abbreviations

The following abbreviations shall apply:

BFT	Binary File Transfer
BTM	Basic Transfer Mode
CDC	Command Document Continue
CDCL	Command Document Capability List
CDS	Command Document Start
CDPB	Command Document Page Boundary
CIL	Communication Identification Line
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
IA5	International Alphabet No. 5
LI	Length Indicator
PGI	Parameter Group Identifier

PV Parameter Value

RDCLP Response Document Capability List Positive

RDEP Response Document End Positive

5 File Transfer

5.1 *Essential features*

a) The transmission of a data file using the telematic file transfer possibilities consists of the transmission of the data file itself and, on user requirement, the transmission of information describing the file.

b) The content of the data file may be any kind of coding. For the time being, three types of data files are taken into account. They are:

- Basic Transfer Mode (BTM);
- Binary File Transfer (BFT);
- EDIFACT.

c) The BTM mode is the minimum requirement that an equipment must provide for participating in the Telematic File Transfer.

d) Information describing the file may be found in Recommendation T.62 [1] session protocol element (i.e file name, tree user field).

e) Additional information concerning a more detailled file description are defined in a control document (e.g file type, file coding, editor program, etc.).

f) In case of BFT, the data structure contains attributes describing the file. These attributes are coded in ASN1 [5].

5.2 *Protocol aspects*

a) The telematic file transfer for Teletex equipments is based on Recommendation T.62 [1] session.

b) Teletex or group 4 facsimile equipments may negotiate one or more of the features mentioned above. The mechanism used is the same as the one used for the private mode negotiation [i.e CDCL (Command Document Capability List) or RDCLP (Response Document Capability List Positive)].

c) The actual transmission (invokation) of one of the data files (BTM, BFT, EDIFACT) is indicated by means of a parameter within the Command Document Start (CDS) or Command Document Continue (CDC) session protocol element.

Regarding to the case of the data file indication the following rules apply:

- the capability negotiation must have succeeded;
- only one data file indication per transmission.

The implementation of BTM is the minimum feature.

- When the use of BTM has been agreed between the terminal equipments, a BTM indication may be transmitted in the CDS/CDC protocol elements. Information like file name and free user field may also be transmitted in the CDS/CDC protocol elements.

  Additional information, associated to the file to be transmitted, are described in the control document.

- When the use of BFT has been agreed between the terminal equipments, a BFT indication may be transmitted in the CDS/CDC protocol elements.

  No additional information is transmitted in CDS/CDC protocol elements.

– When the use of EDIFACT has been agreed between the terminal equipments, an EDIFACT indication may be transmitted in the CDS/CDC protocol elements.

  Information like file name and free user field may also be transmitted in the CDS/CDC protocol elements.

d) The telematic file transfer allows to link automatically the different parts of a document when it is transmitted in several parts.

e) When telematic file transfer is used, the negotiation of the receiving memory capacity is strongly recommended.
Furthermore, a binary file which is not completely transmitted cannot be processed.

f) When the telematic file transfer is supported, it should have priority over the manufacturer private mode.

5.3 *Control document (optional)*

To transfer a file using the BTM mode, a control document containing additional information may be sent during the same communication, prior to the file (see clause 7).

The definition of the control document content is based on a standardized file description.

The coding shall be in line with Recommendation T.61 [2].

The additional information which may be transmitted using a control document is defined in Recommendation F.551 [8].

6 Mechanism used

6.1 *Capabilities exchange*

Before sending any kind of file by the telematic file transfer features, it is mandatory to check the transmitting capabilities.

6.1.1 *BTM capability negotiation (mandatory)*

After the session establishment, the calling equipment shall negotiate the BTM mode.

To this end, a BTM parameter (PGI = E3, PI = E9, PI = EA, see 9.1.1) shall be sent in the CDCL protocol element.

If the called equipment provides the BTM mode, it sends back this parameter in the response RDCLP. If there is no BTM parameter in the RDCLP, the Telematic File Transfer will not be allowed.

6.1.2 *BFT capability negotiation (optional)*

A BFT parameter (PG1 = E3, PI = E9, PI = EE, see 9.1.1.) is sent in the protocol element CDCL indicating the capability of the calling equipment to transfer BFT files. The rules applying on BFT are described in Recommendation T.434 [6].

If the called equipment provides the BFT capability, it sends back the same BFT parameter in the RDCLP protocol element.

If there is no BFT parameter in RDCLP, the binary file transfer will not be allowed.

6.1.3 *EDIFACT capability negotiation (optional)*

An EDIFACT parameter (PGI = E3, PI = E9, PI = EA, PI = EB, see 9.1.1) is sent in the protocol element CDCL indicating the capability of the calling equipment to be able to cope with EDIFACT files. The rules applying on EDIFACT are described in ISO/IEC 9735 [7].

If the called equipment provides the EDIFACT capability, it sends back the same EDIFACT parameter in the RDCLP protocol element.

If there is no EDIFACT parameter in RDCLP, the EDIFACT file shall not be sent. Nevertheless, this file can be transferred, on user request, without the EDIFACT parameter as any other kind of file by using the BTM mode.

6.2 *Invokation (start of a file)*

6.2.1 *BTM indication invokation (optional)*

One or several files may be transferred in the same session.

The BTM is invoked by CDS or CDC carrying the BTM indication parameter (PGI = E3, Pl = E9, PI = EA, see 9.1.2). The BTM parameter or any other additional information shall only be used in CDS or CDC when the BTM was successfully negotiated in the CDCL/RDCLP protocol elements.

6.2.2 *BFT indication invokation (optional)*

The terminal equipment invokes the BFT using the BFT indication parameter in CDS or CDC protocol elements (PGI = E3, PI = E9, PI = EE, see 9.1.2).

6.2.3 *EDIFACT indication invokation (optional)*

The terminal equipment invokes the EDIFACT using the EDIFACT indication parameter in CDS or CDC protocol elements (PGI = E3, PI = E9, PI = EA, PI = EB, see 9.1.2).

6.2.4 *File name indication invokation (optional)*

A file name may be transferred together with BTM parameter in order to identify a transparent file. The file name is also useful for facilitating the relationship between the file name attribut in the control document (if it is present) and the file. So, the file name used in the control document and the file name parameter in CDS or CDC should be identical.

This information is transferred in CDS or CDC (PI = EC, see 9.1.2).

Recommendation T.61 [2] coding shall be used. preferably with characters of the IA No. 5 Recommendation T.50 [3].

If the called equipment has already in its receiving memory file a file, the name of which is identical to the name contained in the file name parameter, it is necessary to avoid the destruction of these files.

For assignement of a filename to a basic Teletex document, (i.e. transmitted in the Teletex service) the “FILEname” parameter may also be used.

In this case the CDS/CDC command contains only the parameters “new mode”, “unique identification” and “file name”.

6.2.5 *Free user field invokation (optional)*

On the sending side, the user may need to input some additional information (e.g reference, which software is running, etc.) in order to help the recipient of the file. This information is transferred in CDS or CDC (PI = ED, see 9.1.2).

Recommendation T.61 [2] coding shall be used. preferably with characters of the IA No. 5 Recommendation T.50 [3].

On the receiving side, the information should be presented to the recipient (in the log book, somewhere on the screen when the file is locally selected, etc.). However, this information may be ignored by the receiving equipment. This information may also be automatically handled on the receiving side.

6.3 *File transfer*

The transfer procedure for the file transfer shall be fully in line with the Recommendation T.62 [1] (or X.215/X.225 and T.62 *bis*) (in particular the window mechanism). The checkpoints, Command Document Page Boundary (CDPB) should be set every 2 kilo-octets.

Note – In some cases (e.g. long transmission delay times due to satellite links) other values for the checkpointing or windowsize may be necessary.

6.3.1 *File management*

Any service rules concerning the management of received documents or files are not relevant for the telematic file transfer.

6.4 *End of the telematic file transfer*

The end of the telematic file transfer is indicated by reception of the Response Document End Positive (RDEP) at the side which initiated the file transfer (sending of CDS or CDC).

6.5 *Connection interrupt*

In case of failure, any information for automatic linking is available on the receiving side provided by the CDC command. If the linking is not possible on the receiving side, the file shall be retransmitted as a whole.

7 Log books (if available)

When the telematic file transfer is provided, a location should be available, in addition to the minimum content of the communication log book. It should contain the indication “telematic file transfer” in the local national language. Furthermore it is desirable that a location should be reserved for containing each of the information: “BTM”, “BFT”, “EDIFACT”. For the BTM file transfer, the file name or the free user field could be indicated in this place.

8 Communication Identification Line (CIL)

Service rules concerning the management of the Communication Identification Line (CIL) do not apply for the files transmitted within telematic file transfer.

9 Coding and structure of the control document

Note – Recommendation T.61 [2] coding shall be used with the provision that the “backslash” character should be replaced by the “solidus” character.

The definition of the parameters used below are described in Recommendation F.551 [8].

CR FF	6.1	: ADDITIONAL INFORMATION:	
CR LF	1	: FILE NAME:	
CR LF		[file name]	(72 characters maximum)
CR LF	2	: APPLICATION REFERENCE:	
CR LF		[application reference]	(72 characters maximum)
CR LF	3	: TYPE:	
CR LF		[coding]	(72 characters maximum)
CR LF	4	: ENVIRONMENT	
CR LF	4.1	: MACHINE:	
CR LF		[machine]	(72 characters maximum)
CR LF	4.2	: OPERATING SYSTEM:	
CR LF		[operating system]	(72 characters maximum)
CR LF	4.3	: PROGRAM:	
CR LF		[program]	(72 characters maximum)
CR LF	4.4	: CHARACTER SET:	
CR LF		[machine character set]	(72 characters maximum)
CR LF	5	: LAST REVISION:	
CR LF		[last revision]	(72 characters maximum)
CR LF	6	: LENGTH:	
CR LF		[file length]	(72 characters maximum)
CR LF	7	: PATH:	
CR LF		[path name]	(72 characters maximum)

CR LF	8	: RESERVED:	
CR LF		[reserved]	(72 characters maximum)
CR LF	9	: AUTHOR NAME:	
CR LF		[author's name]	(72 characters maximum)
CR LF	10	: USER VISIBLE STRING:	
CR LF		[[user's comments]]	(8 lines. 72 characters maximum per line)
CR LF	11	: FUTUR FILE LENGTH:	
CR LF		[futur file length]	(72 characters maximum)
CR LF	12	: STRUCTURE:	
CR LF		[structure]	(72 characters maximum)
CR LF	13	: PERMITTED ACTIONS:	
CR LF		[permitted actions]	(72 characters maximum)
CR LF	14	: LEGAL QUALIFICATION:	
CR LF		[legal qualification)	(72 characters maximum)
CR LF	15	: CREATION:	
		[date and time of creation]	(72 characters maximum)
CR LF	16	: LAST READ ACCESS:	
CR LF		[last read access]	(72 characters maximum)
CR LF	17	: IDENTITY OF THE LAST MODIFIER:	
CR LF		[identity of the last modifier]	(72 characters maximum)
CR LF	18	: IDENTITY OF THE LAST READER:	
CR LF		[identity of the last reader]	(72 characters maximum)
CR LF	19	: RECIPIENT:	
CR LF		[recipient]	(72 characters maximum)
CR LF	20	: TFT VERSION:	
		[TFT version]	(72 characters maximum)
CR LF	21	: COMPRESSED:	
		[compression]	(72 characters maximum)

When only one [ ] is used, this element is included in one line. When [[ ]] is used, this element can be included in several line.

9.1 *Telematic file transfer parameter coding*

To be in line with Recommendation T.62 [l], this parameter shall be formed from the "private use" parameter.

9.1.1 *Parameters used in CDCL/RDCLP*

The parameters described in Figure 1/T.571 allow the negotiation of the capabilities between Teletex equipments.

These parameters shall be sent in protocol element CDCL for exchange of the capabilities.

The called equipment sends back its capabilities in protocol element RDCLP.

Parameter		Content and status
PGI: LI:	E3 ?	NEW MODE (mandatory)
PI: LI: PV:	E9 04 54 2E 4D 2E	Unique identification (mandatory) "T.M."according to Rec. T.61
PI: LI: PV:	EA 01 00	BTM (mandatory)
PI: LI: PV:	EB (Note) 01 00	EDIFACT (optional)
PI: LI: PV:	EE 01 00	BFT (optional)

Note – This parameter shall be used together with the BTM PI when the terminal is able to support EDIFACT files.

FIGURE 1/T.571

Parameters used in CDCL/RDCLP

9.1.2 *Parameters used in CDS/CDC*

When the use of telematic file transfer has been agreed between the terminal equipments, the parameters described in Figure 2/T.571 should be transmitted in CDS or CDC commands.

Parameter		Content and status
PGI: LI:	E3 ?	NEW MODE (mandatory)
PI: LI: PV:	E9 04 54 2E 4D 2E	Unique identification (mandatory) "T.M." according to Rec. T.61
PI: LI: PV:	EA (1) 01 00	BTM (mandatory)
PI: LI: PV:	EB (1, 2) 01 00	EDIFACT indication (optional)
PI: LI: PV:	EE (1) 01 00	BFT indication (optional)
PI: LI: PV:	EC 01 XX	FILE NAME (optional) 12 octets maximum
PI: LI: PV:	ED (1) 01 XX	FREE USER FIELD (optional) 12 octets maximum

Note 1 – These PI's are absent if a basic document is to be indicated by means of the "file name" parameter. This allows the user to give a name to that document (see § 6.2.4).

Note 2 – This PI shall be used together with the BTM PI when an EDIFACT file is transferred.

FIGURE 2/T.571

Parameters used in CDS/CDC