SLOVENSKI STANDARD
SIST ETS 300 835 E1:2003

01-december-2003

Multimedijski terminali in aplikacije (MTA) – Programirljivi komunikacijski vmesnik (PCI) za prenos datotek prek digitalnega omrežja z integriranimi storitvami (ISDN)

Multimedia Terminals and Applications (MTA); Programmable Communication Interface (PCI) for file transfer over Integrated Services Digital Network (ISDN)

Ta slovenski standard je istoveten z: **ETS 300 835 Edition 1**

ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)
35.180	Terminalska in druga periferna oprema IT	IT Terminal and other peripheral equipment

SIST ETS 300 835 E1:2003 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 835

September 1998

Source: MTA

Reference: DE/MTA-001043

ICS: 33.020

Key words: API, FT, ISDN, PCI, terminal

Multimedia Terminals and Applications (MTA); Programmable Communication Interface (PCI) for file transfer over Integrated Services Digital Network (ISDN)

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
Internet: secretariat@etsi.fr - http://www.etsi.fr - http://www.etsi.org

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

Contents

Foreword

This European Telecommunication Standard (ETS) has been produced by the Multimedia Terminals and Applications (MTA) Project of the European Telecommunications Standards Institute (ETSI).

Transposition dates	
Date of adoption of this ETS:	18 September 1998
Date of latest announcement of this ETS (doa):	31 December 1998
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 June 1999
Date of withdrawal of any conflicting National Standard (dow):	30 June 1999

Blank page

1 Scope

This European Telecommunication Standard (ETS) specifies the Programmable Communication Interface (PCI) for interactive services, i.e. for file transfer services over Integrated Services Digital Network (ISDN). In particular it defines the access to and administration of the file transfer services:

- File Transfer, Access and Management (FTAM) simple file transfer as defined in ETS 300 388 [5];
- Eurofile transfer as defined in ETS 300 383 [4].

The simple file transfer teleservice over ISDN was specified in ETS 300 388 [5] in conformance with the international standard FTAM (ISO/IEC 8571, parts 1 to 5 [9]) and the ISO/IEC profile specification AFT11 (see ISO/IEC 10607-3 [10]). The FTAM simple file transfer over ISDN is a subset of FTAM (File Transfer, Access and Management) and is called SimpleFTAM in the present document.

Eurofile is an ISDN teleservice specified in ETS 300 383 [4], in which end-to-end compatibility between terminals is guaranteed and which supports file exchanges between different types of equipment. This teleservice is also called Easyfile.

This ETS completes the work related to the need for a standardized simple file transfer protocol over ISDN by fulfilling the part 3 of the overall project. The outcome of part 1 of this overall project was ETR 074 [8], the outcome of part 2 was ETS 300 383 [4] and ETS 300 388 [5]. This ETS is therefore based upon the documents ETR 074 [8], ETS 300 383 [4] and ETS 300 388 [5].

Additionally the PCI of this ETS was specified according to the philosophy, the general principles and rules of the APPLI/COM interface. APPLI/COM is a PCI which was designed to unify the access and the administration of facsimile group 3, facsimile group 4, teletex, telex, e-mail and file transfer in the master-slave relationship. This ETS establishes therefore an extension of ETS 300 243-1 [3], the APPLI/COM specification, for interactive services, i.e. for file transfer services, defining:

- the services offered at the PCI;
- the information exchanged at the PCI;
- the method how the information are exchanged at the PCI.

The exchange method of this ETS shall be a general mechanism applicable to different types of interactive services. Therefore this ETS shall be used as a framework for future recommendations which addresses other file transfer protocols or interactive services and other networks than ISDN.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 075: "Terminal Equipment (TE); Processable data, File transfer".

[2] ETS 300 079 (1991): "Integrated Services Digital Network (ISDN); Syntax-based videotex End-to-end protocols, circuit mode DTE-DTE".

[3] ETS 300 243-1 (1995): "Terminal Equipment (TE); Programmable Communication Interface (PCI) APPLI/COM for facsimile group 3, facsimile group 4, teletex and telex services; Part 1: CCITT Recommendation T.611 (1992) [modified]".

[4] ETS 300 383 (1995): "Integrated Services Digital Network (ISDN); File transfer over the ISDN EUROFILE transfer profile".

[5] ETS 300 388 (1995): "Integrated Services Digital Network (ISDN); File Transfer Access Management (FTAM) over ISDN based on simple file transfer profile".

[6] ETS 300 409 (1995): "Integrated Services Digital Network (ISDN); Eurofile transfer teleservice; Service description".

[7] ETS 300 410 (1995): "Integrated Service Digital Network (ISDN): File Transfer & Access Management (FTAM) teleservice; Service description".

[8] ETR 074 (1993): "Terminal Equipment (TE); File transfer over the Integrated Services Digital Network (ISDN)".

[9] ISO/IEC 8571 (1988): "Information processing systems - Open Systems Interconnection - File Transfer, Access and Management:
Part 1: General introduction;
Part 2: Virtual Filestore Definition;
Part 3: File Service Definition;
Part 4: File Protocol Specification;
Part 5: Protocol Implementation Conformance Statement Proforma (1990)".

[10] ISO/IEC 10607-3 (1995): "Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management; Part 3: AFT11 - Simple File Transfer Service (unstructured)".

[11] ITU-T Recommendation Q.931: "Digital Subscriber Signalling System No 1 (DSS 1); ISDN user-network interface layer 3 specification for basic call control".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

m: Any feature denoted by "m" (mandatory) shall be supported by all implementations claiming conformance to this ETS.

o: Any feature denoted by "o" (optional) is left to the implementations claiming conformance to this ETS whether this feature is implemented or not.

c: Any feature denoted by "c" (conditional) shall be supported under the conditions specified in this ETS by all implementations claiming conformance to this ETS.

x: Any feature denoted by "x" (excluded) shall not be implemented by all implementations claiming conformance to this ETS.

i: Any feature denoted by "i" (outside the scope) is outside the scope of this ETS.

-: Any feature denoted by "-" (not applicable) is not applicable for the context of this ETS.

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ASE	Application Service Element
CA	Communication Application
DLL	Dynamic Link Library
FADU	File Access Data Unit
FTAM	File Transfer, Access and Management
FTP	File Transfer Protocol
FU	Functional Unit
ICE	Interface Configuration Environment
IDU	Interface Data Unit
ISDN	Integrated Service Digital Network
LA	Local Application
LAN	Local Area Network

MSN	Multiple Subscriber Number
NBS	National Bureau of Standards
NSAP	Network Service Access Point
PCI	Programmable Communication Interface
RIC	Redirection of Incoming Calls
UA	User Agent
VFS	Virtual File Store (FTAM)

4 Overview

The interface specified in this ETS is designed for interactive communications services, i.e. for the file transfer services SimpleFTAM and Easyfile.

The general model, the general principles and aspects which have guided the specification of the Programmable Communication Interface (PCI) for file transfer over ISDN are described in clause 5.

Clause 6 contains a description of the flow of information at the interface specified in this ETS.

The functions which shall be used to exchange information at the interface, the parameters which shall be used independently from the file transfer service at the interface and principles which shall be used to handle and manage the exchange of information at the interface are specified in clause 7.

The service primitives used to exchange information at the interface are defined in clause 8.

The meaning, the structure and the data types of the Interface Data Units are defined in clause 9. This clause contains:

- the specification of general, service independent parameters of each Interface Data Unit (IDU);
- the SimpleFTAM service definition comprising the Interface Data Units (IDUs) and their parameters as applicable for SimpleFTAM;
- the Easyfile service definition comprising the Interface Data Units (IDUs) and their parameters as applicable for Easyfile.

The interface of this ETS was specified independently from programming languages, hardware platforms and operating systems. Implementors who wants to develop a product according to this ETS will face parts which are product specific and which depend on the real computing environment. The decisions how to realize such parts are left to the product developers. To guarantee that the components of a communications system are capable of communicating with each other, those product specific features and services shall be provided by the manufacturer of a product as described in clause 10.

The binary encoding scheme of the IDUs are specified in clause 11 using the programming language C as a formal description language.

Clause 12 contains the most important platform dependencies to assist implementors to develop their product according to this ETS.

Annex A contains the description of error codes.

Two informative annexes are provided in this ETS:

- Annex B: File Transfer Protocol (FTP) service definition. The file transfer service FTP is a widely spread and accepted standard. Annex A shows how to use the FTP service at the PCI of this ETS.
- Annex C: Examples of information exchange. This annex illustrates the exchange of information at the PCI using concrete examples.

5 General principles

The general model, the general principles and aspects which have guided the specification of the PCI of this ETS are defined in the following subclauses.

5.1 General model

The interface specified in this ETS was designed to be independent from:

- operating systems;
- hardware platforms;
- programming languages.

The interface of this ETS is a Programmable Communication Interface (PCI) in an open communications system. Such a communications system comprises a set of components which are located either on the same physical medium (one computer) or on distributed physical media (more than one computer connected via e.g. an LAN). The basic components of a communications system addressed in this ETS are:

- Communication Application (CA): the CA is the component of a communications system which provides communications services;

- Local Application (LA): the LA is the component of a communications system which uses the communications services offered by the CA.

Different products as a realization of the CA may offer their services in many different ways. This PCI was specified to abstract from such individual properties, to unify the access and performance of the services offered by the CA, and to make LA and CA independent from each other.

The following figure illustrates in a simplified way the main components of a communications system addressed in this ETS.

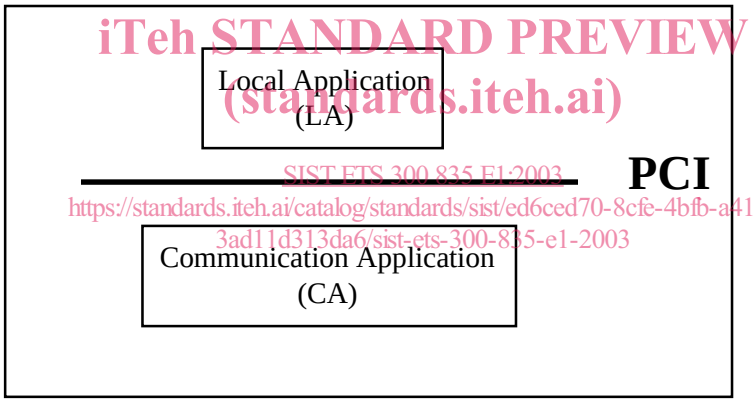

Figure 1: Simplified general model

The relationship between LA and CA as presented in figure 1 is called one-to-one relationship (1:1 relationship). This simple relationship between LA and CA does not cover the need of communications systems as they are commonly used and widely spread today. Different LAs may want to use the services of a CA at the same time. Furthermore, an LA may want to access the services of different CAs over the same PCI simultaneously.

Therefore, the LA-CA relationships which shall be supported at the PCI of this ETS are:

- one-to-one relationship (1:1 relationship): one LA uses the offered services of one CA exclusively;

- many-to-one relationship (m:1 relationship): more than one LA use the offered services of one CA at the same time;

- one-to-many relationship (1:n relationship): one LA uses the services of different CAs at the same time;

- many-to-many relationship (m:n relationship): more than one LA use the services of different CAs at the same time.

The many-to-many relationship is the superset of the possible LA-CA relationships in a communications system which shall be supported by implementations claiming to be conformant to this ETS. The following picture shows an example of the many-to-many relationship.

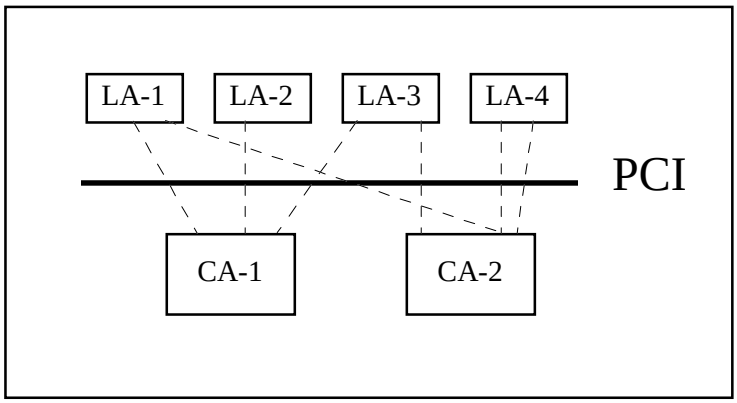

Figure 2: m:n relationships

The communications system in this example consists of four LAs (LA-1, LA-2, LA-3, LA-4) and two CAs (CA-1, CA-2) communicating with each other through the same PCI.

LA-1 and LA-3 communicate with CA-1 and CA-2. That means that both LAs have established one local communications channel with CA-1 and one local communications channel with CA-2 to access the services offered by CA-1 and CA-2. LA-1 and LA-3 shall be able to handle these local communication channels and the flow of information exchanged. LA-2 has established one communications channel with CA-1, whereas LA-4 has established two communications channels with CA-2 to access the services offered by CA-2.

CA-1 shall be able to handle the local communications channels with LA-1, LA-2 and LA-3 and to offer its services to the three LAs through the PCI at the same time. In addition, CA-2 shall be able to handle the local communications channels with LA-1, LA-3 and LA-4, and to offer its services to the three LAs through the PCI at the same time.

A communications system designed according to this ETS provides benefits for both LAs and CAs:

- interoperability:
  components which are developed by different manufacturers and which are conformant with this ETS work well together if they are used in the same communications system;

- compatibility:
  components which offer the same service(s) and which are developed in conformance with this ETS are compatible in their behaviour; they can be exchanged with each other without affecting the other components of the system;

- extensibility:
  a system built according to this ETS is easily extendible:

  - new CA(s) may be incorporated in an existing communications system which offer the same or different communications service(s) and/or access to the same or different communications network(s) through the PCI;

  - an existing system may be extended by new applications (i.e. new LAs) using the service(s) offered at the PCI;

- ease of use and understandability:
  from the viewpoint of an LA, the PCI of this ETS simplifies the access to the communications service(s) and network(s); this means that no exhaustive knowledge of the corresponding communications protocols is necessary.