

Information technology — International Standardized Profiles TB, TC, TD and TE — Connection-mode Transport Service over connection-mode Network Service —

Part 10: LAN subnetwork-dependent, media-independent requirements

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National foreword

This British Standard has been prepared by Technical Committee IST/6 and is the English language version of EN ISP 10609-10 *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection-mode Transport Service over connection-mode Network Service — Part 10: LAN subnetwork-dependent, media-independent requirements* published by the European Committee for Standardization (CEN). It is identical with ISO/IEC ISP 10609-10:1994 published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). It supersedes DD ENV 41103-1:1993, which is withdrawn.

This British Standard is published under the direction of the Information Systems Technology Assembly whose Technical Committee IST/6 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISP title page, page 2, the ISO/IEC ISP title page, pages ii to iv, pages 1 to 34 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Descriptors: Data processing, information interchange, network interconnection, open systems interconnection, local area networks, data transmission, connectionless mode transmission, communication procedure, control procedures, transport layer, network layer, profiles

English version

Information technology — International Standardized
Profiles TB, TC, TD and TE — Connection-mode Transport
Service over connection-mode Network Service —
Part 10: LAN subnetwork-dependent, media-independent
requirements

(ISO/IEC ISP 10609-10:1994)

Technologies de l'information — Profils
normalisés internationaux TB, TC, TD et TE —
Service de transport en mode connexion sur
service de réseau en mode connexion —
Partie 10: Prescriptions dépendantes du
sous-réseau du RLE, indépendantes des
supports
(ISO/IEC ISP 10609-10:1994)

This European Standard was approved by CEN on 1995-10-04. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

The text of the International Standard from ISO/IEC/JTC 1, Information Technology, of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) has been taken over as a European Standard by CEN Technical Board.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1996, and conflicting national standards shall be withdrawn at the latest by July 1996.

According to CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE EN ISP 10609 Part 10 replaces ENV 41103-1:1992 which shall be withdrawn.

For the time being, this document exists in the English version only.

INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC
ISP
10609-10

First edition
1994-12-15

Information technology — International Standardized Profiles TB, TC, TD and TE — Connection-mode Transport Service over connection-mode Network Service —

Part 10:

LAN subnetwork-dependent,
media-independent requirements

*Technologies de l'information — Profils normalisés internationaux TB, TC,
TD et TE — Service de transport en mode connexion sur service de
réseau en mode connexion —*

*Partie 10: Prescriptions dépendantes du sous-réseau du RLE,
indépendantes des supports*



Reference number
ISO/IEC ISP 10609-10:1994(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization (ISO/IEC JTC 1/SGFS) for the processing of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

S-liaison may be established with JTC 1/SGFS by specialized organizations involved in the work of functional standardization. This part of ISO/IEC ISP 10614 was prepared with the collaboration of the following S-liaisons:

- Asia-Oceania Workshop (AOW);
- European Workshop for Open Systems (EWOS);
- Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 10609 consists of several parts, under the general title *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection-mode Transport Service over connection-mode Network Service*:

- *Part 1: Subnetwork-type independent requirements for Group TB;*
- *Part 2: Subnetwork-type independent requirements for Group TC;*
- *Part 3: Subnetwork-type independent requirements for Group TD;*
- *Part 4: Subnetwork-type independent requirements for Group TE;*
- *Part 5: Definition of profiles TB1111/TB1121;*
- *Part 6: Definition of profiles TC1111/TC1121;*
- *Part 7: Definition of profiles TD1111/TD1121;*
- *Part 8: Definition of profiles TE1111/TE1121;*
- *Part 9: Subnetwork-type dependent requirements for Network Layer, Data Link Layer and Physical Layer concerning permanent access to a packet switched data network using virtual calls;*
- *Part 10: LAN subnetwork-dependent, media-independent requirements;*
- *Part 11: CSMA/CD LAN subnetwork-dependent, media-dependent requirements;*
- *Part 12: Definition of profile TC51, provision of the OSI connection-mode Transport Service using the OSI connection-mode Network Service in an End System attached to a CSMA/CD LAN;*
- *Part 14: Definition of profile TC53, provision of the OSI connection-mode Transport Service using the OSI connection-mode Network Service in an End System attached to a Token Ring LAN.*

This part of ISO/IEC ISP 10609 contains four annexes. Annex A and Annex B are normative, Annex C and Annex D are informative.

Introduction

This International Standardized Profile (ISP) is defined in accordance with the principles specified by ISO/IEC Technical Report 10000, "Information technology — Framework and taxonomy of International Standardized Profiles".

The context of Functional Standardization is one area in the overall field of Information Technology (IT) standardization activities, covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a base for the development of uniform, internationally recognized system tests.

ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real system interoperability. One of the most important roles for an ISP is to serve as the basis for the development (by organizations other than ISO and IEC) of internationally recognized test methods. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realization of this goal.

ISO/IEC ISP 10609 consists of several parts, of which this is part 10. Parts 1 to 4 of ISO/IEC ISP 10609 specify profile requirements that are subnetwork-independent, for each of the transport groups TB, TC, TD and TE, respectively. There are further parts which specify subnetwork-dependent and media-dependent requirements. In addition, for each individual profile there is a part of ISO/IEC ISP 10609 which identifies the specific requirements of that profile, making reference to appropriate material from the relevant subnetwork-independent and subnetwork-dependent parts.

1 Scope

This International Standardized Profile is applicable to end systems concerned with operating in the Open Systems Interconnection (OSI) environment. It specifies a combination of OSI standards, which collectively provide the connection-mode Transport Service using the connection-mode Network Service.

This part of ISO/IEC ISP 10609 specifies subnetwork-type dependent requirements applicable to an end system attached to a local area network (LAN) subnetwork and using the ISO 8802-2 LLC type 2 protocol, irrespective of the LAN medium.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10609. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 10609 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO/IEC 8208:1990, *Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment*.

ISO/IEC 8208:1990/Amd.3:1991, *Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment — Amendment 3: Conformance requirements*.

ISO/IEC 8208:1990/Amd.3:1991/Cor.1:1993, *Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment — Amendment 3: Conformance requirements — TECHNICAL CORRIGENDUM 1*.

ISO/IEC 8348:1993, *Information technology — Open Systems Interconnection — Network Service Definition*.

ISO 8802-2:1989, *Information processing systems — Local area networks — Part 2: Logical link control*.

ISO 8802-2:1989/Amd.1:—, *Information processing systems — Local area networks — Part 2: Logical link control — Amendment 1: Flow control techniques for bridged local area networks¹⁾*.

ISO 8802-2:1989/Amd.2:—, *Information processing systems — Local area networks — Part 2: Logical link control — Amendment 2: Acknowledged connectionless-mode service and protocol — Type 3 operation¹⁾*.

ISO 8802-2:1989/Amd.3:—, *Information processing systems — Local area networks — Part 2: Logical link control — Amendment 3: Conformance requirements¹⁾*.

ISO 8802-2:1989/Amd.4:—, *Information processing systems — Local area networks — Part 2: Logical link control — Amendment 4: Editorial changes and technical corrections¹⁾*.

¹⁾ To be published

ISO 8802-2:1989/Amd.5:—, *Information processing systems — Local area networks — Part 2: Logical link control — Amendment 5: Bridged LAN source routing operation by end systems*²⁾.

ISO/IEC 8878:1992, *Information technology — Telecommunications and information exchange between systems — Use of X.25 to provide the OSI Connection-mode Network Service*.

ISO/IEC 8881:1989, *Information processing systems — Data communications — Use of the X.25 packet level protocol in local area networks*.

ISO/IEC 8881:1989/Cor.1:1991, *Information processing systems — Data communications — Use of the X.25 packet level protocol in local area networks — TECHNICAL CORRIGENDUM 1*.

NOTE This Technical Corrigendum to ISO/IEC 8881 is to apply throughout in this part of ISO/IEC ISP 10614, wherever ISO/IEC 8881 itself is referenced.

ISO/IEC TR 10000-1:1992, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: Framework*.

ISO/IEC TR 10000-2:1992, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Taxonomy of OSI Profiles*.

3 Definitions

The terms used in this part of ISO/IEC ISP 10609 are defined in the referenced base standards (see clause 2).

4 Abbreviations

Abbreviations used in this part of ISO/IEC ISP 10609 are defined in the referenced base standards (see clause 2).

5 Requirements

5.1 Introduction

The requirements in this clause specify the subnetwork-type dependent, media-independent requirements for end system operation when the end system is attached to a local area network (LAN).

5.2 Static conformance requirements

5.2.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 10609 shall:

- a) meet the requirements for ISO/IEC 8878 in subclause 5.2.2 below;

- b) meet the requirements for ISO/IEC 8208, as modified for operation over LLC type 2 in a LAN environment by ISO/IEC 8881, in subclause 5.2.3 below;

- c) meet the requirements for ISO 8802-2 in subclause 5.2.4 below;

- d) support all the features identified as requirements in the ISPICS requirements list in Annex A.

5.2.2 ISO/IEC 8878

The implementation shall:

- a) meet the requirements for the provision of the OSI Network Service as defined in ISO/IEC 8878 excluding: the Receipt Confirmation Service (clause 9), the Expedited Data Transfer Service (clause 10), and Annex A;

- b) be capable of using the source and destination OSI network addresses of any of the formats and values defined in ISO/IEC 8348.

5.2.3 ISO/IEC 8208

5.2.3.1 General requirements

The implementation shall:

- a) meet the static conformance requirements specified in clause 21 of ISO/IEC 8208/Amd.3;
- b) implement the Virtual Call Service;
- c) implement the following capabilities identified in Table 37 of ISO/IEC 8208/Amd.3:

- Virtual Call setup; initiating an outgoing VC, with subsequent acceptance or rejection, or receiving an incoming VC and responding by acceptance, and receiving an incoming VC and responding by rejection;

NOTE An implementation may do one or the other or both.

- Aborting an outgoing VC attempt, by clearing;

- Clearing an established VC as initiator and as responder;

- Resetting a logical channel as responder;

- d) implement the following options from subclause 21.1.2 of ISO/IEC 8208/Amd.3:

- support of transfer of user data in call setup packets, for both transmission and reception;

- support of DATA packet transfer;

- support of DATA packets with M-bit set to 1 for reception;

- transmit updated window rotation information;

- transmit RR packets;

²⁾ To be published

e) be capable of accepting incoming VCs as fast select calls;

f) support the following optional facilities:

- Throughput Class Negotiation;
- Fast Select;
- Fast Select Acceptance;
- Transit Delay Selection and Indication;
- Calling Address Extension;
- Called Address Extension;
- Minimum Throughput Class Negotiation;
- End-to-End Transit Delay Negotiation;
- Expedited Data Negotiation;

g) meet the requirements on network addresses in subclause 5.2.3.2 below.

5.2.3.2 Network addresses

A system conforming to this part of ISO/IEC ISP 10609 shall be capable of using source and destination OSI network addresses of any of the formats and values defined in ISO/IEC 8348.

The calling, called and responding NSAP addresses shall be conveyed in their entirety, using the preferred binary encoding, in the facility parameter field of the Called and Calling Address Extension Facility.

NOTE If a conformant implementation receives an INCOMING CALL packet which does not conform to this specification, it is recommended that a CLEAR REQUEST packet is transmitted, using cause code "DTE Originated" and either diagnostic code 235 or diagnostic code 232.

5.2.4 ISO 8802-2

The implementation shall:

- a) support the functions required by ISO 8802-2 for the support of the Logical Link Control Type 2 protocol;
- b) in order to achieve intercommunication, agree the values of N1 and the Ack Timer on a LAN-wide basis;
- c) support an Ack Timer value of 5 ± 1 seconds, and it is recommended that the Ack Timer be configurable.

5.3 Dynamic conformance requirements

5.3.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 10609 shall:

- a) meet the requirements for ISO/IEC 8208 in the subclause 5.3.2 below;
- b) meet the requirements for ISO 8802-2 in the subclause 5.3.3 below;
- c) behave in accordance with the requirements of the ISPICS requirements list in Annex A.

5.3.2 ISO/IEC 8208

5.3.2.1 General requirements

The implementation shall:

a) carry out the supported ISO/IEC 8208 functions in accordance with the procedures for the X.25 Packet Layer Protocol of ISO/IEC 8208, as modified for operation over LLC type 2 in a LAN environment by ISO/IEC 8881, sections 1 and 2;

b) not make use of the procedures for the operation of ISO/IEC 8208 over LLC type 1 defined in ISO/IEC 8881, section 3, as they are prohibited by this International Standardized Profile;

NOTE This does not apply to the use of the ISO/IEC 10030 routing protocol which can make use of LLC type 1 in a LAN environment.

c) meet the requirements on expedited data in subclause 5.3.2.2 below;

d) meet the requirements on receipt confirmation in subclause 5.3.2.3 below;

e) support the method for determining the range of logical channels detailed in subclause 5.3.2.4 below.

The implementation may:

a) ignore the X.25 PLP called-DTE and calling-DTE addresses as this part of ISO/IEC ISP 10609 does not require their use.

5.3.2.2 Expedited data

The expedited data-service is not supported.

The Expedited Data Negotiation (EDN) facility of ISO/IEC 8208 is used to negotiate non-use of expedited data service.

i) When a network layer entity receives an N-CONNECT request primitive from a Network Service user, the CALL REQUEST packet sent may contain the EDN facility set to "no use of expedited data" or, alternatively, the EDN facility may be omitted which this implies "no-use" of the facility;

ii) When a network layer entity receives an N-CONNECT response primitive from a Network Service user, the CALL ACCEPTED packet sent may contain the EDN facility set to "no use of expedited data" or, alternatively, the EDN facility may be omitted which implies "no-use" of the facility.

NOTE 1 If an implementation, operating according to this part of ISO/IEC ISP 10609, receives an INTERRUPT packet during the data transfer phase, it is recommended that the virtual call is cleared using the CLEAR REQUEST packet (and associated procedures defined in ISO/IEC 8208) using the cause code "DTE Originated" and diagnostic code 44.

NOTE 2 When operating certain other profiles, for instance to support X.29 terminal access, then the support of single octet INTERRUPT packets will be required.

5.3.2.3 Receipt confirmation

The receipt confirmation service is not supported.
Bit 7 of octet 1 (the D-bit) in the GFI of ISO/IEC 8208 call setup packets is used to negotiate the non-use of the receipt confirmation service.

- i) CALL REQUEST packets sent by the DTE shall have the D-bit set to 0;
- ii) When a network layer entity receives an N-CONNECT response primitive, the receipt confirmation selection parameter shall be set to “No use of Receipt Confirmation” and consequently bit 7 of the GFI in the CALL ACCEPTED packet is set to 0.

NOTE If a conformant implementation receives a DATA packet with the D-bit set to 1, it is recommended that the virtual call is cleared using the CLEAR REQUEST packet (and associated procedures defined in ISO/IEC 8208) using the cause code “DTE Originated” and either the diagnostic code 225 or diagnostic code 166.

5.3.2.4 Method for the determination of the range of logical channels

The logical channel ranges (LIC, HIC, LTC, HTC, LOC and HOC) to be used are determined by local knowledge. If local knowledge is not available, then by default only a single two-way logical channel will be used (i.e. LTC and HTC will be set to 1, while LIC, HIC, LOC and HOC will be set to zero). If more than one channel is available, a higher value of HTC may be negotiated using the On-line Facility Registration facility.

If a DTE is capable of initiating a REGISTRATION REQUEST packet, then the registration parameter fields shall be set as follows:

- i) The LIC, HIC, LOC and HOC parameters shall be set to zero. The LTC shall be set to the value 1. The value in the total number of logical channels parameter field shall be set equal to the value in the HTC parameter field;
- ii) No other optional user facilities shall be identified in the REGISTRATION REQUEST packet, and may be ignored by a responder if they are present;

If a DTE is capable of responding with a REGISTRATION CONFIRMATION packet, the maximum number of two-way logical channels allowed between the two DTEs shall be indicated in the HTC parameter field. The value in the HTC parameter field shall be less than or equal to the value requested in the HTC parameter field in the REGISTRATION REQUEST packet.

Registration of facilities normally applies in one direction only for the DTE/DTE case (i.e. registration of facilities is performed independently for each direction), but for the logical channel range negotiation it applies to both directions.

NOTE A REGISTRATION REQUEST packet may be ignored by a responder. However, it is recommended that DTEs are capable of responding with a REGISTRATION CONFIRMATION packet even if they support only a single two-way logical channel. This will prevent unnecessary delays for the initiator in transmitting a CALL REQUEST packet. Such delays are determined by the initiator’s values for timer T28 and retry counter R28.

5.3.3 ISO 8802-2

5.3.3.1 General requirements

The implementation shall:

- a) carry out the supported ISO 8802-2 functions in accordance with the procedures specified in ISO 8802-2;
- b) use the LLC actual address value of “111 1110”. Table 1 illustrates the coding of the DSAP and the SSAP address fields;

Table 1 — LLC address values

	DSAP address field	SSAP address field
Field format	I/G D D D D D D D	C/R S S S S S S S S
Value	0 1 1 1 1 1 1 0	C/R 1 1 1 1 1 1 1 0

- c) if a value of k other than 7 is to be used, negotiate the value to be used by XID frames according to the procedures specified in subclause 5.3.3.2 below.

5.3.3.2 Use of XID

This part of ISO/IEC ISP 10609 does not require an implementation to transmit XID command frames, except for the negotiation of values of k other than 7.

NOTE ISO 8802-2 requires that the receipt of an XID command frame is responded to with an XID response frame.

An implementation receiving an XID command frame addressed to the individual actual address value specified in subclause 5.3.3.1 b) above is required to respond with an XID response frame using the individual actual address. The implementation shall act as follows:

- i) Take note of the initiator’s receive window size. If the default value is in use this would be 7. However, if the value is different the implementation shall not use a transmit window size greater than the value indicated in the received XID command. If a transmit window size is used which is greater than the receive window size, it can lead to LLC connection resets. There is no requirement to actually use the full window size indicated in the received XID command;