

INTERNATIONAL STANDARDIZED PROFILE

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

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

*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 9: Spécifications dépendantes du type de sous-réseau pour la
couche réseau, la couche liaison de données et la couche physique
concernant l'accès permanent à un réseau à commutation de paquets
employant appel virtuel*



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AVA Documents
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Contents	Page
Foreword-----	iii
Introduction -----	v
1 Scope -----	1
2 Normative references -----	1
3 Definitions -----	3
4 Abbreviations -----	3
5 Subnetwork-type dependent Requirements for Network Layer -----	3
6 Subnetwork-type dependent Requirements for Data Link Layer -----	4
7 Subnetwork-type dependent Requirements for Physical Layer -----	4
Annexes	
A International Standardized Profile Implementation	
Conformance Statement Requirements List (IPRL) -----	5
Introduction -----	5
A.1 Notation -----	5
A.2 Network Layer IPRL -----	6
A.3 Data Link Layer IPRL -----	16
A.4 Physical Layer IPRL -----	22
B List of Defect Reports -----	25

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. 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 for the elaboration 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.

International Standardized Profile ISO/IEC ISP 10609-9 was prepared with the collaboration of

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

ISO/IEC ISP 10609 consists of the following 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

ISO/IEC ISP 10609-9:1992(E)

- *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*

Annexes A and B form an integral part of this part of ISO/IEC ISP 10609.

Introduction

This part of ISO/IEC ISP 10609 (International Standardized Profile) is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000-1:1990. The context of Functional Standardization is one part of 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 International Standards, and provide a basis for the development of uniform, internationally recognized system tests.

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 tests and test centres. ISPs are produced not simply to "legitimate" a particular choice of base standards and options, but to promote real system interoperability. 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 9. ISO/IEC ISP 10609-1, ISO/IEC 10609-2, ISO/IEC 10609-3 and ISO/IEC ISP 10609-4 specify subnetwork-type independent requirements for Group TB, TC, TD and TE profiles, respectively. ISO/IEC ISP 10609-5, ISO/IEC 10609-6, ISO/IEC 10609-7 and ISO/IEC ISP 10609-8 define TB1111/TB1121, TC1111/TB1121, TD1111/TD1121 and TE1111/TE1121, respectively. ISO/IEC ISP 10609-9 specifies subnetwork-type dependent requirements concerning permanent access to packet switched data network using virtual calls.

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

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

1 Scope

This part of ISO/IEC ISP 10609 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 is applicable to the provision of the connection-mode Transport Service in end systems attached to any type of subnetwork from which the standardized connection-mode Network service can be made available.

This part of ISO/IEC ISP 10609 specifies the requirements for Network Layer, Data Link Layer and Physical Layer that apply specifically to configurations involving permanent access to a packet switched data network using virtual calls.

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 CCITT maintains published editions of its current Recommendations.

ISO 2110:1989, *Information technology - Data communication - 25-pole DTE/DCE interface connector and contact number assignments.*

ISO 2593:1984, *Information Processing Systems - Data communication - 34-pin DTE/DCE interface connector and pin assignments.*

ISO 4902:1989, *Information technology - Data communication - 37-pole DTE/DCE interface connector and contact number assignments.*

ISO 4903:1989, *Information technology - Data communication - 15-pole DTE/DCE interface connector and contact number assignments.*

ISO 7776:1986, *Information processing systems - Data communications - High-level data link control procedures - Description of the X.25 LAPB - compatible DTE data link procedures.*

ISO/IEC ISP 10609-9:1992(E)

ISO 7776/Cor.1:1989, *Information processing systems - Data communications - High-level data link control procedures - Description of the X.25 LAPB - compatible DTE data link procedures - Technical corrigendum 1.*

ISO 7776/Cor.2:1989, *Information processing systems - Data communications - High-level data link control procedures - Description of the X.25 LAPB - compatible DTE data link procedures - Technical corrigendum 2.*

ISO 7776/Cor.3:1991, *Information processing systems - Data communications - High-level data link control procedures - Description of the X.25 LAPB - compatible DTE data link procedures - Technical corrigendum 3.*

ISO/IEC 8208:1990, *Information technology - Data communications - X.25 Packet Layer Protocol for Data Terminal Equipment.* (See also CCITT Recommendation X.25-1988)

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

ISO 8348:1987, *Information processing systems - Data communications - Network service definition.* (See also CCITT Recommendation X.213-1988)

ISO 8348 /Add.2:1988, *Information processing systems - Data communications - Network service definition - Addendum 2 : Network layer addressing .* (See also CCITT Recommendation X.213-1988)

ISO 8878:1987, *Information processing systems - Data communications - Use of X.25 to provide the OSI connection-mode network service.* (See also CCITT Recommendation X.223-1988)

ISO 8878/Add.1:1990, *Information processing systems - Data communications - Use of X.25 to provide the OSI connection-mode network service - Addendum 1:Priority.*

ISO 8878/Amd.3: 1991, *Information processing systems - Data communications - Use of X.25 to provide the OSI connection-mode network service - Amendment 3:Conformance.*

ISO 8878/Cor.1:1990, *Information processing systems - Data communications - Use of X.25 to provide the OSI connection-mode network service - Technical corrigendum 1.*

ISO 8878/Cor.2:1990, *Information processing systems - Data Communications - Use of X.25 to provide the OSI Connection-mode Network Service - Technical corrigendum 2.*

ISO 8878/Cor.3:1990, *Information processing systems - Data Communications - Use of X.25 to provide the OSI Connection-mode Network Service - Technical corrigendum 3.*

ISO 8878/Cor.4:1991, *Information processing systems - Data Communications - Use of X.25 to provide the OSI Connection-mode Network Service - Technical corrigendum 4.*

CCITT V.10-1988, *Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications.*

CCITT V.11-1988, *Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications.*

CCITT V.24-1988, *List of definitions for interchange circuits between data terminal equipment(DTE) and data circuit-terminating equipment (DCE).*

CCITT V.27-1988, *4800 bits per second modem with manual equalizer standardized for use on leased telephone-type circuits.*

CCITT V.28-1988, *Electrical characteristics for unbalanced double-current interchange circuits.*

CCITT V.35-1988, *Data transmission at 48 kilobits per second using 60-108 kHz group band circuits.*

CCITT V.36-1988, *Modems for synchronous data transmission using 60-108 kHz group band circuits.*

CCITT X.1-1988, *International User Classes of Service in Public Data Networks and Integrated Services Digital Networks(ISDNs)*.

CCITT X.21-1988, *Interface Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Synchronous Operation on Public Data Networks*.

CCITT X.21bis - 1988, *Use on Public Data Networks of Data Terminal Equipment (DTE) which is Designed for Interfacing to Synchronous V-Series Modems*.

CCITT X.24 - 1988, *List of Definitions for Interchange Circuits Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) on Public Data Networks*.

CCITT X.26 - 1988, *Electrical Characteristics for Unbalanced Double-Current Interchange Circuits for General Use with Integrated Circuit Equipment in the Field of Data Communications*.

CCITT X.27 - 1988, *Electrical Characteristics for Balanced Double-Current Interchange Circuits for General Use with Integrated Circuit Equipment in the Field of Data Communications*.

3 Definitions

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

4 Abbreviations

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

5 Subnetwork-type dependent requirements for Network Layer

This clause specifies subnetwork-type dependent requirements for end system operation when the end system is attached by a dedicated (permanent) access line to a packet switched data network using virtual calls, to provide connection-mode Network Service as defined by ISO 8348.

The protocol used is CCITT Recommendation X.25 as described in ISO/IEC 8208 for end systems. A conforming implementation's constraints on functions and parameters for the Network Layer are as specified in clause A.2.

Annex B contains defect reports, if any, related to ISO 8878 along with the statement of any consequential requirements for implementations of these profiles.

5.1 Static conformance requirements

The OSI Network Service shall be provided as described in ISO 8878, excluding annexes A and B, the Expedited Data Transfer Service and the Receipt Confirmation Service.

A conforming implementation shall meet the static conformance requirements specified in ISO/IEC 8208/Amd.3 and ISO 8878/Amd.3.

NOTE - Included in these requirements is implementation of the Address Extension Facility(AEF) to carry up to a 40-digit NSAP Address. Furthermore, for the AEF, "split" NSAP Addresses, previously allowed in ISO 8208, are prohibited whereas non-BCD information, previously prohibited in ISO 8208, is allowed.

5.2 Dynamic conformance requirements

a) NSAP Address

The system shall support all the formats and syntaxes defined in ISO 8348/Add.2. A conforming implementation shall handle NSAP Address as defined in ISO 8878.

The use of the Called/Calling Address Extension Facilities is preferred for conveying the NSAP Addresses even when the three conditions described in ISO 8878, 6.2.2.1.1 are satisfied.

b) Treatment of use of the Expedited Data

The Expedited Data Transfer Service is not supported. If a conforming implementation receives an INTERRUPT packet during the data transfer phase, it is recommended to transmit a CLEAR REQUEST packet (cause code "DTE Originated" with a diagnostic code 44) across the DTE/DCE interface. If a CLEAR REQUEST packet is transmitted, an N-DISCONNECT indication primitive shall be signalled.

c) "Receipt Confirmation" for "D-bit"

The Receipt Confirmation Service is not supported. The D-bit shall always be set to 0. If a conforming implementation receives a DATA packet with the D-bit set to 1, then it is recommended to clear the logical channel with a cause indicating "DTE Originated" and with the diagnostic "D-bit Procedure Not Supported (code 166)".

d) Facilities agreed to for a period of time

A conforming implementation shall agree to the following facilities for a period of time:

- Fast Select Acceptance;
- Flow Control Parameter Negotiation ; and
- Throughput Class Negotiation.

6. Subnetwork-type dependent Requirements for Data Link Layer

A conforming implementation shall support CCITT Recommendation X.25 LAPB as described in ISO 7776 for end system.

A conforming implementation's constraints on functions and parameters for Data Link Layer are specified in clause A.3.

7. Subnetwork-type dependent Requirements for Physical Layer

A conforming implementation shall support physical interface, data signalling rates, electrical characteristics, connectors and interchange circuits as specified in CCITT X-series or V-series recommendations.

A conforming implementation's constraints on functions and parameters for Physical Layer are specified in clause A.4.

Annex A

(normative)

International Standardized Profile Implementation Conformance Statement Requirements List (IPRL)

Introduction

These IPRLs in this annex specify requirements for implementation of Network Layer, Data Link Layer and Physical Layer.

Network Layer IPRL in clause A.2 specifies the additional requirements for ISO/IEC 8208/Amd.3. The requirements of ISO/IEC 8208/Amd.3 apply to each item for which there is no entry in the IPRL (clause A.2).

These IPRLs specify subnetwork dependent requirements for an end system attached to a packet switched data network for virtual call service.

A conforming implementation shall satisfy the mandatory conformance requirements of the base standards referenced in this part of ISO/IEC ISP 10609.

A.1 Notation

Clauses A.2 to A.4 define the functions supported for which conformance is claimed, using the following keys.

a) Base Standard Status Notation

M	; mandatory
O	; optional
O.n	; optional, but support of at least one of the group of options labelled by the same numeral <i>n</i> is required.
[M]	; optional, but support of at least one of a set of requirements for Data Link Layer is required.
—	; not applicable
pred:	; conditional item symbol, including predicate identification.
pred::	; this group predicate symbol applies to the status of each of the items the follows, until another such group predicate occurs or until the next horizontal rule separating groups of items. The items are only completed when the predicate is true.

b) IPRL Status Notation

The Status column of Profile Features is entered up by the one character or the two character notation. The one character notation indicates the static requirements only. On the two character notation, the first character is the static requirements and the second is the dynamic requirements.

1) Static

m	; Mandatory, mandatory to be implemented.
o	; Optional, optional to be implemented.
o.n	; Optional, but at least one of the group of options labelled by the same numeral <i>n</i> is required.
i	; Out of Scope, not relevant to this Profile.

2) Dynamic

m	; Mandatory, mandatory to be used.
x	; Excluded, prohibited to be used in the context of this Profile.