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INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 12067-3

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Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service —

Part 3:
PSDN Subnetwork-dependent media-dependent requirements for virtual calls over a permanent access

Technologies de l'information — Profil normalisé international RB — Relais du service de réseau en mode connexion —

Partie 3: Prescriptions PSDN dépendantes du sous-réseau dépendantes du milieu pour appels virtuels sur un accès permanent



Reference number
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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 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.

International Standardized Profile ISO/IEC ISP 12067-3 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 12067 consists of the following parts, under the general title *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service*:

— *Part 1: Subnetwork-independent requirements*

— *Part 2: LAN Subnetwork-dependent media-independent requirements*

— *Part 3: PSDN Subnetwork-dependent media-dependent requirements for virtual calls over a permanent access*

— *Part 4: Definition of profile RB51.1111, relaying the connection-mode Network Service between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent acess*

— *Part 5: Definition of profile RB51.1121, relaying the connection-mode Network Service between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent acess*

Annex A forms an integral part of this part of ISO/IEC ISP 12067. Annex B is for information only.

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Introduction

This International Standardized Profile (ISP) is defined in accordance with the principles specified by ISO/IEC Technical Report 10000.

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 realisation of this goal.

ISO/IEC ISP 12067 consists of several parts, of which this is Part 3. ISO/IEC ISP 12067-1 specifies the profile requirements that are subnetwork-independent. 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 12067 which identifies the specific requirements of that profile, making reference to appropriate material from part 1 and from the subnetwork-dependent parts.

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Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service —

Part 3:
PSDN Subnetwork-dependent media-dependent requirements for virtual calls over a permanent access

1 Scope

ISO/IEC ISP 12067 is applicable to interworking units concerned with operating in the Open Systems Interconnection (OSI) environment. It specifies a combination of OSI base standards that collectively provide a relay function for the connection-mode Network Service.

This part of ISO/IEC ISP 12067 specifies subnetwork-dependent media-dependent requirements applicable to an interworking unit using virtual calls over a permanent access to a PSDN. The operation of an interworking unit may involve relaying from one subnetwork to another, and those subnetworks need not be of the same type. This part of the ISO/IEC ISP 12067 applies only to communications using PSDN subnetworks with permanent access on which virtual calls are used.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 12067. 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 12067 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 7776 : 1995, *Information technology - Telecommunications and information exchange between systems - High-level data link control procedures - Description of the X.25 LAPB-compatible DTE data link procedures*

ISO/IEC 8208 : 1995, *Information technology - Data communications - X.25 Packet Layer Protocol for Data Terminal Equipment*

ISO/IEC 9646-7:1995, *Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements*

ISO/IEC TR 10000-1 : 1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: General principles and documentation framework*

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ISO/IEC TR 10000-2 : 1995, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and Taxonomy for OSI profiles*

ISO/IEC ISP 10609-9 : 1992, *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*

ITU-T Rec. X.21 : 1992, *Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks*

CCITT Rec. X.21 *bis* : 1988, *Use on public data networks of data terminal equipment (DTE) which is designed for interfacing to synchronous V-series modems*

ITU-T Rec. X.25 : 1993, *Interface between data terminal equipment (DTE) and data circuit terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit*

3 Definitions

The terms used in this part of ISO/IEC ISP 12067 are defined in the referenced base standards (see clause 2).

4 Abbreviations

Abbreviations used in this part of ISO/IEC ISP 12067 are defined in the referenced base standards (see clause 2).

5 Requirements

5.1 Static conformance requirements

5.1.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 12067 shall:

a) support operation in a DTE/DCE environment according to ISO/IEC 8208;

b) meet the requirements for ISO/IEC 7776 in the subclause 5.1.2 below;

c) meet the requirements for the physical layer in subclause 5.1.3 below;

d) support all the features identified as requirements in the Profile Requirements List in annex A.

5.1.2 ISO/IEC 7776

The implementation shall:

a) support the functions required by ISO/IEC 7776 for DTE/DCE operation;

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b) support basic (Modulo 8) operation.

5.1.3 Physical layer

The implementation shall support the physical access by any of:

a) an X.21 interface as specified in section 1.1 of ITU-T Rec. X.25;

b) an X.21 bis interface as specified in section 1.2 of ITU-T Rec. X.25;

c) a V-series interface as specified in section 1.3 of ITU-T Rec. X.25.

NOTE - Built in modems are not excluded.

5.2 Dynamic conformance requirements

5.2.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 12067 shall:

a) meet the requirements for ISO/IEC 7776 in the subclause 5.2.2 below;

b) behave in accordance with the requirements of the Profile Requirements List in annex A.

5.2.2 ISO/IEC 7776

The implementation shall:

a) use the ISO/IEC 7776 functions specified in 5.1.2 in accordance with the procedures specified in ISO/IEC 7776;

b) use only the single link procedures.

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Annex A

(normative)

Profile Requirements List

A.1 Introduction

ISO/IEC 9646-7 requires that a Profile Requirements List is provided for each profile and captures:

a) the general options of the profile as a whole;

b) a list of specifications selected and combined in the profile; and references to the related ICS proforma;

c) for each of these referenced base specifications, a section of the profile RL expressing the restrictions upon allowed support answers in the corresponding PICS proforma and information object ICS proforma. This section of the profile RL is derived from the ICS proformas of the relevant base specifications, indicating the changes of status values necessary to express the profile requirements.

The first two items relate to the profile as a whole, and so are included only in those parts of ISO/IEC ISP 12067 which are specific to individual profiles. But each part of ISO/IEC ISP 12067 contains the identification of those PICS proforma constraints which are within its scope.

ISO/IEC 9646-7 indicates that a profile RL may consist either of a simple list of constraints or of amended copies of the base PICS proforma. In this part of ISO/IEC ISP 12067 the former method is used.

A.2 Notation and conventions

In many cases the constraints imposed by the profile RL are expressed in the form of symbols indicating the status in the context of this part of ISO/IEC ISP 12067 of those base standard PICS proforma items to which the constraints apply. The symbols used to identify constraints on the capabilities to be supported by a conforming implementation are defined in ISO/IEC 9646-7.

It should be noted that, in the context of received PDUs or fields or parameters of received PDUs, the capability to support them is the ability to interpret the significance of the PDU or field and act upon it in accordance with the dynamic conformance requirements of the protocol (which may in some cases mean generating an error report). PDUs or fields which are not supported are those whose receipt is ignored and have no impact on the protocol operation.

In some cases it is necessary to specify constraints not only on the capabilities which are implemented, but on whether they are used. When this is necessary, an additional profile specific ICS proforma is used to specify such additional requirements.

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A.3 Profile RL for ISO/IEC 8208

The relevant base standard PICS proforma is the PICS proforma given in annex B of ISO/IEC 8208. This part of ISO/IEC ISP 12067 imposes the following additional constraints:

B.5 General DTE Characteristics		
Base Item	Description	Constraint
	What environments are supported ?	
Ec/0	- DTE/DCE (1980)	x
Et/t	- DTE/DTE in fixed role as DTE	x
Et/c	- DTE/DTE in fixed role as DCE	x
Et/d	- DTE/DTE with dynamic role selection	x
M8	Modulo 8	m

A.4 Profile RL for ISO/IEC 7776

With respect to the standard ISO/IEC 7776, the IPRL constraints are the same as those listed in the IPRL for profiles TB1111 and TB1121 specified in ISO/IEC ISP 10609. Therefore a conforming implementation shall meet the constraints specified in the Data Link Layer ISPICS requirements list in ISO/IEC ISP 10609-9.

A.5 Profile RL for the physical layer

With respect to the physical layer, the IPRL constraints are the same as those listed in the IPRL for profiles TB1111 and TB1121 specified in ISO/IEC ISP 10609. Therefore a conforming implementation shall meet the constraints specified in the physical layer ISPICS requirements list in ISO/IEC ISP 10609-9.

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Annex B

(informative)

Recommendations

B.1 Introduction

The information in this annex is tutorial in nature. It does not constitute a normative part of this part of ISO/IEC ISP 12067. In the absence of specific applications making alternative behaviour appropriate, it is recommended that the features described in this annex are implemented.

B.2 Informative references

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

ISO/IEC 2593 : 1993, *Information technology - Telecommunications and information exchange between systems - 34-pole DTE/DCE interface connector mateability dimensions and contact number 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*

B.3 ISO/IEC 7776

1 To allow tuning of the protocol operation, the timers T1 and T3 (if supported) should be configurable. A suitable range for T1 is 0.1 to 15 seconds, and for T3 is 30 to 60 seconds.

2 To improve the ability to interwork with a variety of PSDNs, it is recommended that:

a) the implementation should support the parameters as depicted in table B.1;

Table B.1 - LAPB parameter values

Parameter	Value
Maximum number of bits in an I frame (N1)	2104
Maximum number of outstanding I frames (k)	7
Maximum number of transmissions (N2)	10

NOTE - Parameter N1 may take a value greater than 2104 depending on packet size.

b) the implementation should be capable of operating with a DCE whose value for the ISO/IEC 7776 system parameter T1 takes any value which exceeds by more than 0.285 seconds the time taken to transmit 3 frames whose length is the value of the system parameter N1;

c) the implementation should be capable of setting the ISO/IEC 7776 system parameter T1 to a value which exceeds by at least 1.6 seconds the time taken to transmit 3 frames whose length is the value of the system parameter N1.

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3 For faster recovery from line errors at high data-signalling rates, the timer T1 values in table B.2 are recommended.

Table B.2 - Recommended T1 values

Data signalling rate bit/s	Packets of up to 1024 octets of user data	Packets of up to 256 octets of user data
2400	10 seconds	5 seconds
4800-9600	3 seconds	1 second
19200	1 second	0,5 seconds
48000-64000	0,5 seconds	0,4 seconds

4 Table B.3 identifies connectors which are appropriate for X.21 and X.21 *bis* interfaces for various data signalling rates.

Table B.3 - Connectors

Data signalling rate bit/s	X.21 *bis*	X.21
2400	ISO 2110	ISO 4903
4800	ISO 2110	ISO 4903
9600	ISO 2110	ISO 4903
19200	ISO 2110	ISO 4903
48000	ISO/IEC 2593, ISO 4902	ISO 4903
64000	ISO 4902	ISO 4903

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