INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10613-7

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AMENDMENT 2
1998-06-15

Information technology — International Standardized Profile RA — Relaying the Connectionless-mode Network Service —

Part 7:
PSDN subnetwork-dependent, media-dependent requirements for virtual calls over a permanent access

AMENDMENT 2: Reference Optional Security Requirements Specific to X.25 Subnetworks — RAnn.11n1

Technologies de l'information — Profil normalisé international RA — Relais de service de réseau en mode sans connexion —

Partie 7: Spécifications dépendantes du milieu, dépendantes du sous-réseau PSDN pour appels virtuels sur un accès permanent

AMENDEMENT 2: Spécifications de sécurité optionnelles de référence spécifiques aux sous-réseaux X.25 — RAnn.11n1

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Foreword

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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 a 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.

Amendment 2 to ISO/IEC ISP 10613-7:1994 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW).

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Add new Clause:

6 Location of Optional Security Requirements

Additional requirements are specified in subsequent parts of ISO/IEC ISP 10613 for the provision of security services (e.g. confidentiality, integrity, authentication) with the communications services provided by profiles using X.25 subnetworks. The provision of these security requirements is optional.

Optional requirements for provision of security services in a manner that is specific to X.25 packet switched networks using virtual calls are specified in:

> ISO/IEC ISP 10613-20: [1], *Information technology -- International Standardized Profile RA -- Relaying the Connectionless-mode Network Service -- Part 20: Security employing the Network Layer Security Protocol -- Connection-mode with SDT-PDU based Protection over X.25 packet switched data networks using virtual calls, for RA1111 / RA1121 profiles*

Note: An alternative set of security profile requirements, that are applicable to profiles employing any subnetwork but which potentially provides less protection (in particular, less protection against replay attacks), is specified in:

> ISO/IEC ISP 10613-19: [1] , *Information technology -- International Standardized Profile RA -- Relaying the Connectionless-mode Network Service -- Part 19: Security employing the Network Layer Security Protocol - Connectionless mode, for RAnn.nn profiles*

This part is referenced normatively from Part 1 of ISO/IEC ISP 10613.

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Descriptors: data processing, information interchange, network interconnection, open systems interconnection, data transmission, connectionless mode transmission, communication procedure, control procedures, network layer, profiles.

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

ISO/IEC ISP 10613 consists of several parts, under the general title *Information technology - International Standardized Profile RA - Relaying the Connectionless-mode Network Service:*

- *Part 1: Subnetwork-independent requirements*
- *Part 2: LAN subnetwork-dependent, media-independent requirements*
- *Part 3: CSMA/CD LAN subnetwork-dependent, media-dependent requirements*
- *Part 4: FDDI LAN subnetwork-dependent, media-dependent requirements*
- *Part 5: Definition of profile RA51.51, relaying the Connectionless-mode Network Service between CSMA/CD LAN subnetworks*
- *Part 6:Definition of profile RA51.54, relaying the Connectionless-mode Network Service between CSMA/CD LAN subnetworks and FDDI LAN subnetworks*
- *Part 7: PSDN subnetwork-dependent, media-dependent requirements for virtual calls over a permanent access*
- *Part 8: Definition of profile RA51.1111, relaying the Connectionless-mode Network Service between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent access*

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- *Part 9: Definition of profile RA51.1121, relaying the Connectionless-mode Network Service between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access*

- *Part 10: Token Ring LAN subnetwork-dependent, media-dependent requirements*

- *Part 11: Definition of profile RA51.53, relaying the Connectionless-mode Network Service between CSMA/CD LAN subnetworks and Token Ring LAN subnetworks*

- *Part 12: Definition of profile RA53.53, relaying the Connectionless-mode Network Service between Token Ring LAN subnetworks*

- *Part 13: Definition of profile RA53.54, relaying the Connectionless-mode Network Service between Token Ring LAN subnetworks and FDDI LAN subnetworks*

- *Part 14: Definition of profile RA54.54, relaying the Connectionless-mode Network Service between FDDI LAN subnetworks*

- *Part 15: Definition of profile RA53.1111, relaying the Connectionless-mode Network Service between Token Ring LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent access*

- *Part 16: Definition of profile RA53.1121, relaying the Connectionless-mode Network Service between Token Ring LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access*

- *Part 17: Definition of profile RA54.1111, relaying the Connectionless-mode Network Service between FDDI LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent access*

- *Part 18: Definition of profile RA54.1121, relaying the Connectionless-mode Network Service between FDDI LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access*

Annex A forms an integral part of this part of ISO/IEC ISP 10613. 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 basis 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 tests. 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 10613 consists of several parts of which this is part 7. ISO/IEC ISP 10613-1 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 10613 which identifies the specific requirements of that profile, making reference to appropriate material from part 1 and from the subnetwork dependent parts of ISO/IEC ISP 10613.

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Information technology - International Standardized Profile RA - Relaying the Connectionless-mode Network Service -

Part 7:
PSDN subnetwork-dependent, media-dependent requirements for virtual calls over a permanent access

1 Scope

This International Standardized Profile 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 Network Relay function for the connectionless-mode Network Service.

This part of ISO/IEC ISP 10613 specifies the subnetwork-type dependent, media dependent requirements that are 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 ISO/IEC ISP 10613 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 10613. 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 10613 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/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.*

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

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

ISO 7776:1986/Cor.1:1989, *Information processing systems - Data communication - High-level data link control procedures - Description of the X.25 LAPB-compatible DTE data link procedures - Technical Corrigendum 1.*

ISO 7776:1986/Cor.2:1989, *Information processing systems - Data communication - High-level data link control procedures - Description of the X.25 LAPB-compatible DTE data link procedures - Technical Corrigendum 2.*

ISO 7776:1986/Cor.3:1991, *Information processing systems - Data communication - 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.*

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 8473:1988, *Information processing systems - Data communications - Protocol for providing the connectionless-mode network service.*

ISO 8473:1988/Corr.1:1992, *Information processing systems - Data communications - Protocol for providing the connectionless-mode network service - Technical Corrigendum 1.*

NOTE - This Technical Corrigendum to ISO 8473 is to apply throughout in this part of ISO/IEC ISP 10613, wherever ISO 8473 itself is referenced.

ISO 9542:1988, *Information processing systems - Telecommunications and information exchange between systems - End system to Intermediate system routeing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service (ISO 8473).*

ISO 9542:1988/Corr.1:1991, *Information processing systems - Telecommunications and information exchange between systems - End system to Intermediate system routeing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service (ISO 8473) - Technical Corrigendum 1.*

NOTE - This Technical Corrigendum to ISO 9542 is to apply throughout in this part of ISO/IEC ISP 10613, wherever ISO 9542 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.*

ISO/IEC ISP 10608-5:1992, *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service - Part 5: TA1111/TA1121 profiles including subnetwork-dependent requirements for X.25 packet-switched data networks using virtual calls.*

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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.*

ISO/IEC ISP 10613-1:1994, *Information technology - International Standardized Profile RA - Relaying the Connectionless-mode Network Service - Part 1: Subnetwork-independent requirements.*

CCITT Recommendation X.25 (1988), *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

All the terms used in this part of ISO/IEC ISP 10613 are defined in the documents that are referenced in clause 2.

4 Abbreviations

All abbreviations, including acronyms, are used in this part of ISO/IEC ISP 10613 as defined in the documents referenced in clause 2.

5 Requirements

5.1 Static Conformance Requirements

5.1.1 Overall Requirements

An implementation conforming to this part of ISO/IEC ISP 10613 shall meet:

- the requirements for ISO 8473 in 5.1.2 below;
- the requirements for ISO 9542 in 5.1.3 below;
- the requirements for ISO/IEC 8208 in 5.1.4 below;
- the requirements for ISO 7776 in 5.1.5 below;
- the X.25 physical layer requirements in 5.1.6 below.

It shall implement all the features identified as requirements in the ISPICS Requirements List in annex A.

5.1.2 ISO 8473

The implementation shall:

a) meet the requirements of clause 8 of ISO 8473 for provision of the underlying service by means of the subnetwork dependent convergence functions used with ISO/IEC 8208 subnetworks;

b) be capable of dealing with receipt of segments up to 16K (16384) octets in length;

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c) not transmit segments longer than 16K (16384) octets.

5.1.3 ISO 9542

The implementation shall:

a) implement redirection information;

b) use, as the BSNPA field of Redirect PDUs (RD), the DTE address corresponding to the subnetwork point of attachment which it is desired to identify. Each digit of the address shall be encoded in a semi-octet in the same form as is used in the Called DTE Address field of an ISO/IEC 8208 call request packet, and if the address consists of an odd number of digits a final semi-octet with all bits set to 1 shall be added.

5.1.4 ISO/IEC 8208

The implementation shall:

a) meet the static conformance requirements specified in ISO/IEC 8208/Amd.3, subclause 21.1;

b) implement the Virtual Call service;

c) implement operation in a DTE/DCE environment;

d) implement the following capabilities identified in ISO/IEC 8208/Amd.3, table 37:

- Virtual Call setup; initiating an outgoing VC, with subsequent acceptance or rejection, and receiving an incoming VC and responding by acceptance, and receiving an incoming VC and responding by rejection;
- Aborting an outgoing VC attempt by clearing;
- Clearing an established VC as initiator and as responder;

e) implement the following options from ISO/IEC 8208/Amd.3, subclause 21.1.2:

- support transfer of user data in call setup packets, for both transmission and reception;
- support DATA packet transfer;
- support DATA packets with the M-bit set to 1, for both transmission and reception;
- transmit updated window rotation information;
- transmit RECEIVE READY packets;

f) be capable of accepting incoming VCs as non-Fast-Select calls;

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g) if it implements the initiation of Fast Select virtual calls, provide a means whereby its use can be inhibited.

5.1.5 ISO 7776

The implementation shall:

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

b) implement basic (modulo 8) operation.

5.1.6 X.25 Physical Layer

The implementation shall support physical access by one or more of the following interfaces:

a) an X.21 interface as specified in section 1.1 of CCITT X.25;

b) an X.21 bis interface as specified in section 1.2 of CCITT X.25;

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

Table 1 identifies connectors which are appropriate for X.21 and X.21 bis for various data signalling rates.

Table 1 - Connectors

Data Signalling Rate	X.21 bis	X.21
2400 bit/s	ISO 2110	ISO 4903
4800 bit/s	ISO 2110	ISO 4903
9600 bit/s	ISO 2110	ISO 4903
19200 bit/s	ISO 2110	ISO 4903
48000 bit/s	ISO/IEC 2593 ISO 4902	ISO 4903
64000 bit/s	ISO 4902	ISO 4903

NOTE - The use of integrated modems in DTEs is acceptable.

5.2 Dynamic Conformance Requirements

An implementation conforming to this part of ISO/IEC ISP 10613 shall:

- set the ISO/IEC 8208 Q-bit to 0 when transmitting ISO 8473 PDUs;

- set the ISO/IEC 8208 Q-bit to 0 when transmitting ISO 9542 PDUs;

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- conform to the dynamic conformance requirements specified in ISO/IEC 8208/Amd.3, subclause 21.3;
- carry out the supported ISO 7776 functions in accordance with the procedures specified in ISO 7776;
- behave in accordance with the requirements of the ISPICS Requirements List in annex A.

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Annex A
(normative)

ISPICS Requirements List

A.1 Introduction

ISO/IEC TR 10000-1 identifies three items to be included in an ISPICS Requirements List. These are:

- general options of the profile;
- list of base standards selected in the profile;
- constraints on the allowable answers in the PICS proforma of each such base standard.

The first two items relate to the profile as a whole, and so are included only in those parts of ISO/IEC ISP 10613 which are specific to individual profiles. But each part of ISO/IEC ISP 10613 contains the identification of those PICS proforma constraints which are within its scope.

ISO/IEC TR 10000-1 indicates that an ISPICS proforma 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 10613 the former method is used.

A.2 Notation and Conventions

The notation and conventions used in this IPRL are defined in subclause A.2 of ISO/IEC ISP 10613-1.

A.3 IPRL for ISO 8473

Since the base standard does not itself have a PICS proforma, interim base standard PICS proforma information for an intermediate system is provided in annex B of ISO/IEC ISP 10613-1. When a standardized base standard PICS proforma is available, this part of ISO/IEC ISP 10613 will be revised to refer to it.

This part of ISO/IEC ISP 10613 imposes the following constraints:

SNDCF Major Capabilities:

Base Item	Capability	Constraint
SX25	SNDCF for ISO/IEC 8208	m

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ISO/IEC 8208 SNDCF Multi-layer Dependencies

Base Item	Dependency	Constraint
XSSg-r XSSg-t	<r> Maximum SN data unit size (Rx) <s> Maximum SN data unit size (Tx)	≥ 16K (16384) octets ≤ 16K (16384) octets

A.4 IPRL for ISO 9542

The relevant base standard PICS proforma is the PICS proforma given in ISO 9542, annex A, for intermediate systems. This part of ISO/IEC ISP 10613 imposes the following constraints:

Protocol Function - Intermediate System:

Base Item	Protocol Function	Constraint
RI RqRd	Is redirection information supported Request Redirect	mm mm

PDUs - Intermediate System:

Base Item	PDU	Constraint
RD-s	<s> Redirect	m

PDU fields - Intermediate System:

Base Item	Function	Constraint
DA-s BSNPA-s	<s> Destination Address <s> Subnetwork Address	m m

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Parameter Ranges - Intermediate System:

Base Item	Parameter	Constraint
HTv	Holding Time Field	For RD PDUs, this field shall be able to be set at least to values that are within ±5% of each of the following: 5 s 30 s 65 s 105 s 900 s

A.5 IPRL for ISO/IEC 8208

With respect to ISO 8208, the IPRL constraints are the same as those listed in the IPRL for profiles TA1111 and TA1121 specified in ISO/IEC ISP 10608. Therefore, a conforming implementation shall meet the constraints specified in the X.25 Subnetwork IPRL in ISO/IEC ISP 10608-5.

A.6 IPRL for ISO 7776

With respect to ISO 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.7 IPRL for 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 section of this part of ISO/IEC ISP 10613.

In the absence of specific applications making alternative behaviour appropriate, it is recommended that the features described in this annex are implemented.

B.2 ISO 8473 Recommendations

To avoid unnecessary costs, it is recommended that idle Virtual Calls should be cleared after applying a timeout as described in ISO 8473, subclause 8.4.3.4, and that the length of the timeout should be adjustable by the system user.

NOTE - Unnecessary connections and disconnections may result if the value of this timer in a relay is very close to the time interval between periodic transmissions at a higher layer between end systems communicating via that relay. (One example of such periodic transmissions is the transmissions which occur on idle transport connections due to the window timer).

B.3 ISO 9542 Recommendations

Since PSDN access adequately preserves data integrity, to avoid unnecessary overhead, header checksum generation should not be used.

B.4 ISO/IEC 8208 Recommendations

Although the relevant end system profiles TA1111 and TA1121 require that the Q-bit shall be set to 0, the base standard ISO 8473 makes no mention whatever of it and so may be taken to allow either setting of the Q-bit. So to maximise interworking capability an implementation should accept packets with the Q-bit set to 1 so that the data contained therein can be processed according to ISO 8473 and ISO 9542.

NOTE - However, it is considered unlikely that a significant number of implementations do, in practice, set the Q-bit to 1 when operating these protocols.

B.5 ISO 7776 Recommendations

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 s, and for T3 is 30 to 60 s.

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

(a) For the ISO 7776 system parameter k, the maximum number of outstanding I frames, at least the value 7 should be supported;

(b) For the ISO 7776 system parameter N2, the maximum number of transmissions, at least the value 10 should be supported;

(c) The implementation should be capable of operating with a DCE whose value for the ISO 7776 system parameter T1 takes any value which exceeds by more than 0,285 s the time taken to transmit 3 frames whose length is the value of the system parameter N1;

(d) The implementation should be capable of setting the ISO 7776 system parameter T1 to a value which exceeds by at least 1,6 s the time taken to transmit 3 frames whose length is the value of the ISO 7776 system parameter N1.

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