

INTERNATIONAL
STANDARDIZED
PROFILE

ISO/IEC
ISP
10614-1

First edition
1995-04-15

**Information technology — International
Standardized Profile RC — X.25 protocol
relaying —**

Part 1:

Subnetwork-independent requirements

*Technologies de l'information — Profil normalisé international RC —
Transmission du protocole X.25 —*

Partie 1: Prescriptions indépendantes du sous-réseau



Reference number
ISO/IEC ISP 10614-1:1995(E)

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Printed in Switzerland

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.

International Standardized Profile ISO/IEC ISP 10614-1 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 10614 consists of several parts, under the general title *Information technology - International Standardized Profile RC - X.25 protocol relaying*:

- *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: PSDN subnetwork-dependent, media-dependent requirements for virtual calls over a permanent access*
- *Part 5: Definition of profile RC51.1111, X.25 protocol relaying between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent access*
- *Part 6: Definition of profile RC51.1121, X.25 protocol relaying between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit / CSDN leased line permanent access*

Annexes A and B form an integral part of this part of ISO/IEC ISP 10614.

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 10614 consists of several parts, of which this is part 1. This part of ISO/IEC ISP 10614 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 10614 which identifies the specific requirements of that profile, making reference to appropriate material from part 1 and from the subnetwork-dependent parts.

Information technology — International Standardized Profile RC — X.25 protocol relaying —

Part 1: Subnetwork-independent requirements

1 Scope

ISO/IEC ISP 10614 is applicable to interworking units concerned with the use of ISO/IEC 8208 (X.25 Packet Layer Protocol). It specifies a combination of base standards that collectively provide an X.25 protocol relay. The current relay profile taxonomy contained in ISO/IEC TR 10000-2 identifies a limited number of subnetworks to which X.25 protocol relaying is applicable. An X.25 protocol relay provides the means for a system on one subnetwork to communicate with a system, or make use of facilities, on another subnetwork.

This part of ISO/IEC ISP 10614 specifies requirements which are applicable to X.25 protocol relays regardless of the types of subnetworks to which they are attached.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10614. 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 10614 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 TR 10000-1 : 1992, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: Framework*.

ISO/IEC TR 10000-2 : 1994, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and taxonomy for OSI Profiles.*

ISO/IEC TR 10029 : 1989, *Information technology - Telecommunications and information exchange between systems - Operation of an X.25 interworking unit.*

3 Definitions

The terms used in this part of ISO/IEC ISP 10614 are defined in the referenced base standards (see clause 2).

4 Abbreviations

Abbreviations used in this part of ISO/IEC ISP 10614 are defined in the referenced base standards (see clause 2).

5 Requirements

5.1 Introduction

The requirements in this clause apply to all conformant relay systems within the scope of ISO/IEC ISP 10614, and are to be implemented for all subnetwork attachments to which ISO/IEC ISP 10614 applies. Additional specific requirements apply with respect to attachments to certain types of subnetwork; these requirements are specified in subsequent parts of ISO/IEC ISP 10614.

5.2 Static conformance requirements

5.2.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 10614 shall:

- a) meet the requirements of ISO/IEC TR 10029;
- b) meet the requirements for ISO/IEC 8208 in clause 5.2.2 below;
- c) implement all the features identified as requirements in the ISPICS requirements lists in annex A.

5.2.2 ISO/IEC 8208

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, 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
 - Resetting a logical channel as initiator and as responder;
- d) implement the following options from clause 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 the M-bit set to 1, for both transmission and reception
 - transmit updated window rotation information
 - transmit RR packets;
- e) be capable of accepting incoming VCs both as fast select and as non-fast select calls;
- f) if it implements the initiation of fast select VCs, provide a means whereby its use can be inhibited;
- g) 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.

5.3 Dynamic conformance requirements

An implementation conforming to this part of ISO/IEC ISP 10614 shall:

- a) provide a relaying function using the procedures defined in clauses 5, 6, 7, 8 and 9 of ISO/IEC TR 10029;
- b) conform to the dynamic conformance requirements specified in clause 21 of ISO/IEC 8208/Amd.3;
- c) 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 standards selected in the profile;
- constraints on the allowable answers in the PICS proforma of each such standard.

The first two items relate to the profile as a whole, and so are included only in those parts of ISO/IEC ISP 10614 which are specific to individual profiles. Each part of ISO/IEC ISP 10614 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 10614 the former method is used.

A.2 Notation and conventions

A.2.1 Introduction

In many cases the constraints imposed by the IPRL are expressed in the form of symbols indicating the status, in the context of this part of ISO/IEC 10614, of those base standard PICS proforma items to which the constraints apply. The symbols used are defined in the following two subclauses.

A.2.2 Notation for static conformance

The following symbols are used to identify constraints on the capabilities to be supported by a conforming implementation:

a) Symbols directly specifying status

<u>Symbol</u>	<u>Meaning</u>
m	mandatory
o	optional
x	prohibited
-	not applicable
i	out of scope, not relevant to this profile

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.

b) Other associated notation

<u>Symbol</u>	<u>Meaning</u>
c<n>	conditional (see below)
<item>:<status>	conditional (see below)

Symbols of the form c<n> are used when the status of an item is dependent on the support of other items. In this case, <n> is a number which refers to a definition at the end of the subclause in which it is used. That definition specifies the conditional status, which may, for example, be in a form such as 'if ABC then m else x', which would indicate the status is mandatory if the item in the PICS proforma with reference ABC is supported, and otherwise prohibited.

Symbols of the form <item>:<status> are used as an abbreviated way of expressing a condition wherein the status is as identified if the specified item is supported, and otherwise the status is not applicable. So, for example, 'ABC:m' would be equivalent to a conditional status 'if ABC then m else -'.

A.2.3 Notation for dynamic conformance

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 the static conformance status symbol from A.2.2 (a) above is followed by an additional symbol to create a two-character status definition. The second symbol specifies the dynamic constraints, and the meanings are as follows:

<u>Symbol</u>	<u>Meaning</u>
m	mandatory - the implementation is required to use the capability whenever applicable
o	optional - use of the capability is optional
x	prohibited - use of the capability is not permitted
-	not applicable
i	outside the scope of this profile

Thus, for example, a status of 'mm' would mean that it is mandatory to provide the capability indicated by the PICS proforma item and that it is also mandatory to use that capability wherever applicable.

Where only a single status character is used, it specifies the static requirement and indicates that no additional constraint is placed upon the dynamic use of the capability.

A.2.4 Identification to PICS proforma items

PICS proforma items are identified by using the subclause number followed by a solidus followed by the item reference of the relevant PICS proforma line. When identifying an item which is within the same subclause, the subclause number and solidus are not necessarily present.

A.3 IPRL for ISO/IEC TR 10029

Since the base standard does not itself have a PICS proforma, interim base standard PICS proforma information is provided in annex B, clause B.2. This part of ISO/IEC ISP 10614 imposes the following constraints:

Facilities during call setup and clearing		
Base Item	Description	Constraint
B.2.8/4a	is the Transit Delay Selection and Indication facility provided?	m
B.2.8/5a	is the Called Address Extension facility provided?	m
B.2.8/6a	is the Calling Address Extension facility provided?	m
B.2.8/7a	is the Fast Select facility provided?	m
B.2.8/8a	is the End-to-End Transit Delay Negotiation facility provided?	m

A.4 IPRL for ISO/IEC 8208

The relevant base standard PICS proforma is the PICS proforma given in annex C of ISO/IEC 8208/Amd.3. This part of ISO/IEC ISP 10614 imposes the following additional constraints:

C.5 General DTE Characteristics		
Base Item	Description	Constraint
Vs	Virtual Call service	m

C.6.4.1 Call Setup		
Base Item	Description	Constraint
S1c	Non-Fast-Select call request	m
S2a	Accept Fast-Select call	m
S2c	Accept Non-Fast-Select call	m

C.6.4.2 Call clearing		
Base Item	Description	Constraint
C2a	Call clearing to abort outgoing VC	m
C2b	Call clearing to reject incoming VC	m
C2c	Originating clearing of established VC	m

C.6.5 Resetting of logical channels		
Base Item	Description	Constraint
RSi	Resetting as initiator	m
RSr	Resetting as responder	m

C.6.8.1 Sending data		
Base Item	Description	Constraint
DS1	Sending DATA packets	m
DS2	Send-window rotation	m
DS4b	Sending M=1 in DATA packets	m
DS5a	Sending Q=0 in DATA packets	m
DS5b	Sending Q=1 in DATA packets	m

C.6.8.2 Receiving data		
Base Item	Description	Constraint
DR1	Receiving DATA packets	m
DR2	Receive-window rotation	m
DR4b	Receive M=1 in DATA packets	m
DR5a	Receiving Q=0 in DATA packets	m
DR5b	Receiving Q=1 in DATA packets	m

C.8.1.1 Facilities sent in CALL REQUEST packets		
Base Item	Description	Constraint
FS2i	Throughput Class Negotiation	m
FS6a	Fast Select	m
FS12	Transit Delay Selection and Indication	m
FS20i	Facility Marker	m
FS21i	Calling Address Extension	m
FS22i	Called Address Extension	m
FS23i	Minimum Throughput Class Negotiation	m
FS24i	End-to-End Transit Delay Negotiation	m
FS25i	Expedited Data Negotiation	m

C.8.1.2 Facilities sent in CALL ACCEPT packets		
Base Item	Description	Constraint
FS2r	Throughput Class Negotiation	m
FS20r	Facility Marker	m
FS22r	Called Address Extension	m
FS24r	End-to-End Transit Delay Negotiation	m
FS25r	Expedited Data Negotiation	m

C.8.1.3 Facilities sent in CLEAR REQUEST packets		
Base Item	Description	Constraint
FS20d	Facility Marker	m
FS22d	Called Address Extension	m

C.8.2.1 Facilities received in INCOMING CALL packets		
Base Item	Description	Constraint
FR2i	Throughput Class Negotiation	m
FR6a	Fast Select	m
FR12i	Transit Delay Selection and Indication	m
FR20i	Facility Marker	m
FR21	Calling Address Extension	m
FR22i	Called Address Extension	m
FR23	Minimum Throughput Class Negotiation	m
FR24i	End-to-End Transit Delay Negotiation	m
FR25i	Expedited Data Negotiation	m

C.8.2.2 Facilities received in CALL CONNECT packets		
Base Item	Description	Constraint
FR2r	Throughput Class Negotiation	m
FR12r	Transit Delay Selection and Indication	m
FR20r	Facility Marker	m
FR22r	Called Address Extension	m
FR24r	End-to-End Transit Delay Negotiation	m
FR25r	Expedited Data Negotiation	m

Annex B¹
(normative)

Assumed base standard PICS proformas

B.1 Introduction

This annex contains the PICS proforma information assumed for those base standards which do not already have an internationally stable PICS proforma.

B.2 ISO/IEC TR 10029

B.2.1 General

ISO/IEC TR 10000-1, subclause 6.1, states that "Approval of an ISP by ISO/IEC members does not change the status of any documents referenced by it". The inclusion of this assumed base standard PICS proforma should not therefore be taken as raising the status of ISO/IEC TR 10029 to that of a full International Standard.

B.2.2 Relay capabilities

Index	Function	Status	Refer.	Support
1i	Restarting the packet level	M	5.2	Yes <input type="checkbox"/>
1r	- as responder	M	5.1	Yes <input type="checkbox"/>
2a	Virtual call set-up receiving an incoming VC on interface 1 and responding by:	M	6.1.1	Yes <input type="checkbox"/>
2b	- initiating an outgoing VC on interface 2, with subsequent acceptance or rejection	M	6.1.1	Yes <input type="checkbox"/>
3i	Clearing an established VC	M	6.2.2	Yes <input type="checkbox"/>
3r	- as responder	M	6.2.1	Yes <input type="checkbox"/>
4i	Resetting a logical channel	M	9.2	Yes <input type="checkbox"/>
4r	- as responder	M	9.1	Yes <input type="checkbox"/>

1) Copyright release for PICS proformas

Users of this International Standardized Profile may freely reproduce the PICS proforma in this annex so that it can be used for its intended purpose and may further freely publish the completed PICS.

B.2.3 Restarting the packet level

Index	Function	Status	Refer.	Support
li	Is restarting the packet level supported: - as initiator? send RESTART REQUEST on interface 1, receive RESTART CONFIRMATION / INDICATION on interface 1, and for any associated VCs on interface 2 initiate the clearing procedure on interface 2	M	5.2	Yes <input type="checkbox"/>
lr	- as responder? receive RESTART INDICATION on interface 1, send RESTART CONFIRMATION on interface 1, and for any associated VCs on interface 2 initiate the clearing procedure on interface 2	M	5.1	Yes <input type="checkbox"/>

B.2.4 Call setup

Index	Function	Status	Refer.	Support
lr	Is call setup supported: - as responder? <t> INCOMING CALL on interface 1 <s> CALL REQUEST on interface 2	M	6.1.1	Yes <input type="checkbox"/>
li	- as initiator? <s> CALL REQUEST on interface 2 <t> CALL CONNECTED on interface 2 <s> CALL ACCEPTED for associated VC on interface 1	M	6.1.2.1	Yes <input type="checkbox"/>

B.2.5 Call clearing

Index	Function	Status	Refer.	Support
li	Is call clearing supported: - as initiator? <s> CLEAR REQUEST on interface 1 <r> CLEAR CONFIRMATION on interface 1 <s> CLEAR REQUEST for any associated VC on interface 2 <r> CLEAR CONFIRMATION on interface 2	M	6.2.2	Yes <input type="checkbox"/>
lr	- as responder <r> CLEAR INDICATION on an interface <s> CLEAR CONFIRMATION on that interface <s> CLEAR INDICATION for any associated VC on that interface	M	6.2.1, 6.1.2.2	Yes <input type="checkbox"/>

B.2.6 Resetting of logical channels

Index	Function	Status	Refer.	Support
li	Is resetting supported: - as initiator? <s> RESET REQUEST on interface 1 <r> RESET CONFIRMATION / INDICATION on interface 1 <s> RESET REQUEST for any associated VC on interface 2 <r> RESET CONFIRMATION / INDICATION on interface 2	M	9.2	Yes <input type="checkbox"/>
lr	- as responder? <r> RESET REQUEST on interface 1 <s> RESET CONFIRMATION / INDICATION on interface 1 <s> RESET REQUEST for any associated VC on interface 2 <r> RESET CONFIRMATION / INDICATION on interface 2	M	9.1	Yes <input type="checkbox"/>