INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10609-4

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

Part 4:
Subnetwork-type independent requirements for Group TE

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 4: Spécifications indépendantes du type de sous-réseau pour groupe TE

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 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 10609-4 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*

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— *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.

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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 4. 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.

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

Part 4:
Subnetwork-type independent requirements for Group TE

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.

Profiles of the Connection-mode Transport Service over Connection-mode Network Service are grouped according to their required support of transport protocol class(es).

Group TB : Includes transport protocol classes 0, 2 and 4
Group TC : Includes transport protocol classes 0 and 2
Group TD : Includes transport protocol class 0
Group TE : Includes transport protocol class 2

This part of ISO/IEC ISP 10609 specifies the subnetwork-type independent requirements for Group TE.

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 8072:1986, *Information processing systems - Open Systems Interconnection - Transport service definition.* (See also CCITT Recommendation X.214-1988)

ISO/IEC 8073:1988, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification.* (See also CCITT Recommendation X.224-1988)

ISO/IEC 8073/Add.1:1988, *Information processing systems - Open Systems Interconnection- Connection oriented transport protocol specification - Addendum1:Network connection management subprotocol.* (See also CCITT Recommendation X.224-1988)

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ISO/IEC 8073/Amd.3:1992, *Information processing system-Open Systems Interconnection -Connection oriented transport protocol specification -Amendment 3:Protocol implementation conformance statement (PICS) proforma.*

ISO/IEC 8073/Cor.1:1990, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification - Technical corrigenddum 1.*

ISO/IEC 8073/Cor.2:1990, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification - Technical corrigenddum 2.*

ISO/IEC 8073/Cor.5:1991, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification - Technical corrigenddum 5.*

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

ISO/IEC ISP 10609-1:1992, *Information technology - International Standardized Profile TB, TC, TD and TE - Connection-mode Transport service over Connection-mode Network Service - Part 1:Subnetwork-type independent requirements for Group TB.*

3 Definitions

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

4 Abbreviations

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 Independent Requirements

5.1 General

The requirements stated in this clause apply uniformly to all conformant end systems, without regard to the type of subnetworks to which those systems might be attached. Additional requirements apply to end systems according to the type of subnetworks to which they are attached ; these requirements are specified in subsequent parts of this ISO/IEC ISP 10609.

5.2 Transport Layer Requirements

This part of ISO/IEC ISP 10609 specifies provision of the connection-mode Transport Service, as defined by ISO 8072, using class 2 of the connection-mode Transport Protocol, as defined by ISO/IEC 8073 which define the operation of classes 0, 1, 2, 3 and 4 over the connection-mode network service defined in ISO 8348. Annex B contains defect reports, if any, related to ISO/IEC 8073 along with the statement of any consequential requirements for implementations of these profiles.

A conforming implementatio's constraints are given in annex A which defines the IPRL for theTransport protocol.

5.2.1 Static conformance requirements

A conforming implementation shall

a) satisfy the conformance requirements as stated in ISO/IEC 8073, clause 14,

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b) support the mandatory features for class 2, as defined in ISO/IEC 8073,

NOTE - In order to conform to CCITT Recommendation X.224 it would also be necessary to implement class 0 and to observe the negotiation restrictions of CCITT Recommendation X.224, clause 14.4. a),

c) if it claims to be capable of initiating TC establishment, be capable of
1) transmitting a Called TSAP-ID field in a CR TPDU.
2) when necessary, transmitting a Calling TSAP-ID field in a CR TPDU that can convey any one of the Transport Selectors implemented by the system,

d) if it claims to be capable of responding to a TC establishment attempt, be capable of
1) transmitting a Calling TSAP-ID field in a CC TPDU.
2) when necessary, transmitting a Called TSAP-ID field in a CC TPDU that can convey any one of the Transport Selectors implemented by the system,

e) be capable to configure the initial values of TS1 and TS2 , if implemented.
It is strongly recommended that a conformant system should implement and use TS1 and TS2.

5.2.2 Dynamic conformance requirements

a) TSAP-ID

The implementation shall support remote TSAP-ID parameters of variable size up to and including 32 octets using any encoding and any value.

Local T-selectors shall not exceed 32 octets in length.

On receipt of a CR TPDU the absence of a Calling or Called TSAP-ID parameter shall be treated as equivalent to a zero length Calling or Called TSAP-ID parameter.

The absence of the CC Calling TSAP-ID parameter on receipt indicates that the value of CC Calling TSAP-ID parameter is equivalent to the value of CR Calling TSAP-ID parameter.

The absence of the CC Called TSAP-ID parameter on receipt indicates that the value of CC Called TSAP-ID parameter is equivalent to the value of CR Called TSAP-ID parameter.

Figure 1 summarizes the handling of Called and Calling TSAP-ID parameters in CR and CC TPDUs.

		CR Called		
		no param	0 len	len>0
CC Called	no param	NIL	NIL	note1
	0 len	NIL	NIL	invalid
	len>0	invalid	invalid	note2

		CR Calling		
		no param	0 len	len>0
CC Calling	no param	NIL	NIL	note4
	0 len	NIL	NIL	invalid
	len>0	invalid	invalid	note3

NOTES
1 - CC Called is equivalent to CR Called.
2 - CC Called must match in length and value to CR Called.
3 - CC Calling must match in length and value to CR Calling.
4 - CC Calling is equivalent to CR Calling.

Figure 1 - Handling of Called and Calling TSAP-ID parameters

b) Option selection on connection establishment

The option of non use of explicit flow control in class 2 shall never be proposed in the CR TPDU.

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c) Invalid Values in Known Parameters

Known parameters with invalid lengths in a CR or CC TPDU shall be handled as a protocol errors.
Known parameters with valid lengths but invalid values in a CR TPDU shall be handled as follows.

Parameter	Action
Called TSAP-ID	send DR TPDU

d) Treatment of protocol errors

If the ER TPDU is supported in class 2, it is recommended that an ER TPDU should contain the octets of the invalid TPDU up to and including the octet where the error was detected and TS2 timer, if implemented, shall be started.

e) Network Connection Management Subprotocol

(1) Transport Protocol Identification Procedure

Transport Protocol Identification Procedure for identifying the ISO 8073 protocol shall be performed in accordance with ISO/IEC 8073/Add.1 and CCITT Recommendation X.224, annex B.

(2) Network Connection Management Procedure

The network connection management function of ISO/IEC 8073 /Add.1 is outside the scope of this part of ISP 10609.

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Annex A
(normative)
International Standardized Profile Implementation Conformance Statement Requirements List (IPRL)

Introduction

The IPRL in this annex specifies the additional requirements for ISO 8073/Amd.3.

Group independent IPRL for Transport Layer is specified in ISO/IEC ISP 10609-1, annex A. Specification of each protocol class is applicable to all Transport profile groups which use a same protocol class.

This annex provides the Group dependent Transport Layer IPRL.

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

Clause A.2 defines the functions supported for which conformance is claimed, using the following keys.

a) Base Standard Status Notation

M	; Mandatory
O	; Optional to implement. If implemented, the feature may or may not be used.
O.<n>	; Optional, but support of at least one of the group of options labelled by the same numeral <n> in this PICS proforma is required.
<index>:	; This predicate symbol means that the status following it applies only when the PICS states that the feature identified by the index is supported. In the simplest case, <index> is the identifying tag of a single PICS item. <index> may also be a Boolean expression composed of several Indices.
<index>::	; When this group predicate is true the associated clause should be completed.

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.
i	; Out of Scope, not relevant to this Profile.

2)Dynamic

Not used in this IPRL.

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A.2 TE Dependent Transport Layer IPRL

A.2.1 Protocol Implementation

A.2.1.1 Classes Implemented

Base Standard Features				Profile Features	
Index	Class	References	Status	ISP References	Status
C0	Class 0	14	ISO:O.1		i
C1	Class 1	14	C0:O		i
C2	Class 2	14	ISO:O.1	5.2	m
C3	Class 3	14	C2:O		i
C4	Class 4 operation over CONS	14	C2:O		i
C4L	Class 4 operation over CLNS	14	ISO:C2:O		i

A.2.2 Negotiation

A.2.2.1 Class negotiation – responder side

Base Standard Features				Profile Features	
Index	Preferred class	References	Allowed Values	ISP References	Status
RC2	What classes can you respond with if CR proposes only class 2	6.5.4 h) Table 3	2 or connection refused depending on classes supported		2
RC2a	What classes can you respond with if CR proposes class 2 as preferred class and the alternative class parameter is present	6.5.4 h) Table 3	0, 2 or connection refused depending on classes supported and coding of alternative class		2
RC4a	What classes can you respond with if CR proposes class 4 as preferred class and the alternative class parameter is present	6.5.4 h) Table 3	0, 1, 2, 3, 4 or connection refused depending on classes supported and coding of alternative class		2

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Annex B
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List of defect reports

See ISO/IEC ISP 10609-1, annex B.

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UDC 831.3:621.39

Descriptors: data processing, information interchange, network interconnection, open systems interconnection, data transmission, communication procedure, control procedures, transport layer, protocols.

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