INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10608-12

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Information technology — International Standardized Profile TAnnnn — Connection-mode Transport Service over Connectionless-mode Network Service —

Part 12:
MAC sublayer and physical layer dependent requirements for a CSMA/CD LAN subnetwork

Technologies de l'information — Profil normalisé international TAnnnn — Service de transport en mode connexion sur service de réseau en mode sans connexion —

Partie 12: Prescriptions MAC dépendantes de la sous-couche et de la couche physique pour un sous-réseau CSMA/CD RLE

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Contents

Page

Foreword iii

Introduction v

1 Scope 1
1.1 General 1
1.2 Position within the taxonomy 1

2 Normative references 1

3 Definitions 2

4 Abbreviations 2

5 Conformance 2
5.1 Static conformance requirements 2
5.2 Dynamic conformance requirements 3

Annex A: Profile Requirements List 4
A.1 Introduction 4
A.2 Notation and conventions 4
A.3 Profile RL for ISO/IEC 8802-3 5

Annex B: Assumed base standard PICS proforma 7
B.1 Introduction 7
B.2 ISO/IEC 8802-3 7

Annex C: Recommendations 9
C.1 Introduction 9
C.2 Recommendations relating to implementation of the AUI 9

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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 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.

International Standardized Profile ISO/IEC ISP 10608-12 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 10608 consists of several parts, under the general title *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service:*

- *Part 1:* *General overview and subnetwork-type independent requirements*

- *Part 2:* *TA51 profile including subnetwork-type dependent requirements for CSMA/CD Local Area Networks (LANs)*

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- *Part 4: Definition of profile TA53, operation over a Token Ring LAN subnetwork*

- *Part 5: TA1111/TA1121 profiles including subnetwork-dependent requirements for X.25 packet-switched data networks using virtual calls*

- *Part 6: Definition of profile TA54, operation over an FDDI LAN subnetwork*

- *Part 12: MAC sublayer and physical layer dependent requirements for a CSMA/CD LAN subnetwork*

- *Part 13: MAC sublayer and physical layer dependent requirements for a Token Ring LAN subnetwork*

- *Part 14: MAC, PHY and PMD sublayer dependent and Station Management requirements over an FDDI LAN subnetwork*

Annexes A and B form an integral part of this part of ISO/IEC ISP 10608. Annex C is for information only.

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Introduction

ISO/IEC ISP 10608 is defined in accordance with the principles specified by ISO/IEC TR 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 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 10608 consists of several parts, of which this is part 12. ISO/IEC ISP 10608-1 specifies the profile requirements which are independent of the subnetwork and media. 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 10608 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 TAnnnn — Connection-mode Transport Service over Connectionless-mode Network Service —

Part 12:
MAC sublayer and physical layer dependent requirements for a CSMA/CD LAN subnetwork

1 Scope

1.1 General

This part of ISO/IEC ISP 10608 is applicable to end systems and relay systems operating over CSMA/CD LAN subnetworks in the Open Systems Interconnection (OSI) environment.

This part of ISO/IEC ISP 10608 specifies the subnetwork-type dependent requirements for the MAC sublayer and physical layer when the end system or relay system is attached to a CSMA/CD LAN subnetwork.

1.2 Position within the taxonomy

This part of ISO/IEC ISP 10608 relates to any of the transport (Tx, Ux) or relay (Rx) profiles defined in ISO/IEC TR 10000-2, Principles and Taxonomy for OSI Profiles, where such profile uses subnetwork type 51 (CSMA/CD Local Area Network). Specifically, this part of ISO/IEC ISP 10608 provides a common set of CSMA/CD subnetwork requirements whenever subnetwork identifier 51 is associated with a transport group or relay type.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10608. 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 10608 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 maintains published editions of its current Recommendations.

ISO/IEC 8802-3:1993, *Information technology - Local and metropolitan area networks - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications.*

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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.*

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

3 Definitions

All the terms used in this part of ISO/IEC ISP 10608 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 10608 as defined in the documents that are referenced in clause 2.

5 Conformance

5.1 Static conformance requirements

5.1.1 General requirements

An implementation conforming to this part of ISO/IEC ISP 10608 shall meet the requirements for ISO/IEC 8802-3 below. It shall implement all the features identified as requirements for ISO/IEC 8802-3 in the ISPICS requirements list in annex A.

The implementation shall:

a) meet the requirements for 10BASE5 specified in 5.1.2 below, and/or the requirements for 10BASE2 specified in 5.1.3 below, and/or the requirements for 10BASE-T specified in 5.1.4 below;

b) support the functions of the Media Access Control protocol defined in ISO/IEC 8802-3;

c) meet the Physical layer requirements defined in ISO/IEC 8802-3, clause 7: Physical Signalling (PLS) and Attachment Unit Interface (AUI) Specifications;

d) if an AUI cable is supplied, meet the requirements specified in ISO/IEC 8802-3, clause 7;

5.1.2 Requirements for 10BASE5

The implementation shall:

a) if an MAU is supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 8.1, 8.2, 8.3, 8.5 and 8.7;

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if an MAU is not supplied, then provide an externally accessible AUI;

b) if components of the media are supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 8.4, 8.5, 8.6, and 8.7.

5.1.3 Requirements for 10BASE2

The implementation shall:

a) if an MAU is supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 10.1, 10.3, 10.4, 10.6 and 10.8;

if an MAU is not supplied, then provide an externally accessible AUI;

b) if components of the media are supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 10.5, 10.6, 10.7 and 10.8.

5.1.4 Requirements for 10BASE-T

The implementation shall:

a) if an MAU is supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 14.1, 14.2, 14.3, 14.5 and 14.7;

if an MAU is not supplied, then provide an externally accessible AUI;

b) if components of the media are supplied, meet the requirements specified in ISO/IEC 8802-3, subclauses 14.4, 14.5, 14.6 and 14.7.

5.2 Dynamic conformance requirements

An implementation conforming to this part of ISO/IEC ISP 10608 shall carry out the supported ISO/IEC 8802-3 functions in accordance with the procedures specified in ISO/IEC 8802-3. It shall behave in accordance with the requirements of the ISPICS requirements list in annex A.

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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 10608 which are specific to individual profiles. But each part of ISO/IEC ISP 10608 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 10608 the former method is used.

A.2 Notation and conventions

A.2.1 Introduction

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 10608 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

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

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a) Symbols directly specifying status:

Symbol	*Meaning*
m	mandatory
o	optional
-	not applicable

b) Other associated notation:

Symbol	*Meaning*
<item>:<status>	conditional (see below)
o.<*n*>	mutually exclusive or selectable option (see below)
¬	logical negation

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 -".

Symbols of the form o.<*n*> are used when one or more of a set of options may be selected. In this case, <*n*> is a number which groups the set of selectable options together and it also refers to a definition at the end of the subclause in which it is used. The definition specifies whether the options are mutually exclusive and any other conditions which apply.

A.2.3 Identification of 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 within the same subclause, the subclause number and solidus are not necessarily present.

A.3 Profile RL for ISO/IEC 8802-3

Since the base standard does not itself have a stable PICS proforma, interim base standard PICS proforma information is provided in annex B. This part of ISO/IEC ISP 10608 imposes the following constraints:

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Functions and interfaces

Base item	Description	Constraint
B.2.4/10BASE5	10BASE5	o.1
B.2.4/10BASE2	10BASE2	o.1
B.2.4/10BASE-T	10BASE-T	o.1
B.2.4/MAUs	Is an MAU supplied?	AUIa:o ¬AUIa:m
B.2.4/AUIa	Is an AUI externally accessible?	MAUs:o ¬MAUs:m

Definition of selectable or mutually exclusive options:

o.1 selectable option - at least one shall be selected (at least one of the media options shall be selected)

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Annex B

(normative)

Assumed base standard PICS proforma

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 8802-3

B.2.1 Introduction

Where base standard PICS proformas are not adequate for profile definition purposes, ISO/IEC 9646-7 provides for the necessary material to be supplied within the profile definition either by supplying the specific questions needed in addition to whatever may already be available, or by supplying a complete PICS proforma. In the case of ISO/IEC 8802-3, the constraints imposed by this ISP relate only to a very small portion of the total standard, and therefore, in this clause, the approach of supplying only the relevant questions, rather than the whole proforma, has been adopted.

B.2.2 Notation and conventions

The status of PICS proforma items is indicated by the use of the symbols "M" and "O", which have the same significance as the corresponding lower case symbols defined in subclause A.2.2, but are used in upper case in line with common conventions for base standard PICS information in profile definitions. The symbols "-" and "<item>:<status>" are also used with the same meaning as in subclause A.2.2.

B.2.3 Instructions for completion

The PICS proforma consists of a number of tables of labelled items, with information on the requirements applicable to each item (e.g. whether support is mandatory, what ranges of values are permitted, etc., as appropriate). Where necessary to clarify the meaning of an item, references to the relevant clauses of the base standard are given. Note that some items listed may be applicable in more than one context (for example, the requirements for support of a PDU field may differ according to whether the PDU is transmitted or received). In this case, the requirements for each context are identified separately. The tables also contain columns in which the support for each item provided by the implementation is to be recorded. Again, where items cover more than one context, columns for recording support are provided for each context. These columns are to be completed as follows:

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a) In each column headed "Support", an indication is to be given of whether the item is supported or not by marking the answer:

Yes to mean it is supported
No to mean it is not supported

b) Additional information may be attached to the completed proforma to assist in interpretation of the PICS. This should take the form of a numbered list of items of information. Where there is such an item of additional information associated with a PICS proforma item, a reference to it should be included in the columns of the PICS proforma in which support of the item is recorded. This reference should be of the form "An", where "n" is the number of the item of additional information referenced.

c) If for some reason the requirements indicated in the PICS proforma are not met by the implementation (e.g. if a mandatory capability is not implemented), an explanation should be given. Such explanations should be in the form of a numbered list attached to the completed PICS proforma, and referenced from the relevant item in a manner similar to that described above for additional information, but using the notation "Xn" instead of "An".

d) For administrative purposes, a cover page is to be attached to the completed PICS proforma identifying the implementation and the system in which it resides, the supplier of the system, information on whom to contact if there are any queries concerning the content of the PICS, and the relationship of the PICS to the System Conformance Statement for the system.

B.2.4 Functions and interfaces

Item	Function	Status	Reference	Support
10BASE5	10BASE5	O	8	Yes ☐ No ☐
10BASE2	10BASE2	O	10	Yes ☐ No ☐
10BASE-T	10BASE-T	O	14	Yes ☐ No ☐
MAUs	Is an MAU supplied?	O	8, 10, 14	Yes ☐ No ☐
AUIa	Is an AUI externally accessible?	O	7	Yes ☐ No ☐

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Annex C
(informative)

Recommendations

C.1 Introduction

This annex provides recommendations concerning the use of certain control messages between the PLS sublayer in the DTE and the PMA sublayer in the MAU, across the AUI.

C.2 Recommendations relating to implementation of the AUI

It is recommended that the following optional messages not be used since their use may cause interoperability problems.

Optional message	**Base standard reference**
Control Out *isolate* *mau_request*	7.2.1.1
Control In *mau_not_available*	7.2.1.2

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