INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10613-10

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

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

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

Partie 10: Prescriptions dépendantes du sous-réseau LAN en anneau à jeton, dépendantes du milieu

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 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.

This part of ISO/IEC ISP 10613 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 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*

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- *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*

- *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

ISO/IEC ISP 10613 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 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 10613 consists of several parts of which this is part 10. 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. This part of ISO/IEC ISP 10613 specifies the Token Ring LAN subnetwork-dependent and media-dependent requirements for a relay system attached to a Token Ring LAN.

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

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

1 Scope

ISO/IEC ISP 10613 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 media-dependent requirements applicable to an interworking unit attached to an ISO/IEC 8802-5 Token Ring LAN subnetwork. 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 communication over those subnetworks which are Token Ring LANs.

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 ITU-T maintains published editions of its current Recommendations.

NOTE - ISO 8473:1988 and ISO 8802-2:1989 have been superseded by new editions (ISO/IEC 8473-1:1994 and ISO/IEC 8802-2:1994 respectively). However, when this part of ISO/IEC ISP 10613 was under development, the previous editions were valid and this part of ISO/IEC ISP 10613 is therefore based on these editions.

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

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ISO 8802-2:1989, *Information processing systems - Local area networks - Part 2: Logical link control.*

ISO/IEC 8802-5:1992, *Information technology - Local and metropolitan area networks - Part 5: Token ring access method and physical layer specifications.*

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/Cor.1:-[1], *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 10000-2:1994, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and Taxonomy for OSI Profiles.*

ISO/IEC 10039:1991, *Information technology - Open Systems Interconnection - Local area networks - Medium Access Control (MAC) service definition.*

ISO/IEC ISP 10608-13:1994, *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service - Part 13: MAC sublayer and physical layer dependent requirements for a Token Ring LAN subnetwork.*

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

ISO/IEC ISP 10613-2:1994, *Information technology - International Standardized Profile RA - Relaying the Connectionless-mode Network Service - Part 2: LAN subnetwork-dependent, media-independent requirements.*

Additional normative references are found in each of the ISP parts listed above. These additional normative references are base standards used for development of the relevant ISP parts.

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.

1) To be published.

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4 Abbreviations

Abbreviations, including acronyms, are used in this part of ISO/IEC ISP 10613 as defined in the documents that are referenced in clause 2. In addition, the following abbreviations are used:

All_ES: All End Systems
All_IS: All Intermediate Systems
FA: Token Ring LAN Functional Address
GA: Group MAC Address

5 Requirements

5.1 Static conformance requirements

5.1.1 Overall requirements

An implementation conforming to this part of ISO/IEC ISP 10613 shall conform to the static conformance requirements of ISO/IEC ISP 10613-2, and in addition shall meet:

- the requirements for ISO 8473 in subclause 5.1.2 below;
- the requirements for ISO 9542 in subclause 5.1.3 below;
- the requirements for ISO 8802-2 in subclause 5.1.4 below;
- the requirements for Token Ring LAN in subclause 5.1.5 below.

It shall implement all the features identified as requirements in the ISPICS requirements list in annex A of this part of ISO/IEC ISP 10613.

5.1.2 ISO 8473

The implementation shall be capable of dealing with receipt of segments up to

a) 4396 octets in length when operating over a Token Ring LAN subnetwork with 4 Mbps data signalling rate;

b) 17746 octets in lenght when operating over a Token Ring LAN subnetwork with a 16 Mbps data signalling rate.

The implementation shall not transmit segments longer than 4396 octets when operating at 4 Mbps data signalling rate, and 17746 octets when operating at 16 Mbps data signalling rate.

5.1.3 ISO 9542

ISO 9542 defines two logical group addresses that are used to identify the group of all end systems and the group of all intermediate systems attached to a given network. The actual value and representation of these addresses are subnetwork specific, and are not specified by ISO 9542.

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The implementation shall support All End System (All_ES) Network Entities and All Intermediate System (All_IS) Network Entities multicast addresses in both Token Ring Functional Address (FA) format and Group MAC Address (GA) format, as specified below. The address format shall be configurable in the Relay System.

All Token Ring stations, whether End Systems, Bridge Systems or Intermediate Systems, that are attached to a particular ring shall use either the FA format or the GA format of All_ES and All_IS multicast MAC addresses for the operation of ISO 9542.

5.1.3.1 Group address format

When operating the ISO 9542 protocol with multicast addresses in GA format, the implementation shall

a) use the following as the All End System Network Entities multicast address, in binary:

1001 0000 0000 0000 1101 0100 0000 0000 0000 0000 0010 0000

where the left-most bit is the Individual/Group address bit;

b) use the following as the All Intermediate System Network Entities multicast address, in binary:

1001 0000 0000 0000 1101 0100 0000 0000 0000 0000 1010 0000

where the left-most bit is the Individual/Group address bit.

The hexadecimal representation of the above Group MAC Addresses, using the encoding of ISO/IEC 10039, is as follows:

09-00-2B-00-00-04 All End System Network Entities multicast address;

09-00-2B-00-00-05 All Intermediate System Network Entities multicast address.

5.1.3.2 Functional address format

When operating the ISO 9542 protocol with multicast addresses in FA format, the implementation shall

a) use the following as the All End System Network Entities multicast address, in binary:

1100 0000 0000 0000 0000 0000 0000 0000 0100 0000 0000 0000

where the left-most bit is the Individual/Group address bit;

b) use the following as the All Intermediate System Network Entities multicast address, in binary:

1100 0000 0000 0000 0000 0000 0000 0000 1000 0000 0000 0000

where the left-most bit is the Individual/Group address bit.

The hexadecimal representation of the above Token Ring MAC Functional Addresses, using the encoding of ISO/IEC 10039, is as follows:

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03-00-00-00-02-00	All End System Network Entities multicast address;
09-00-00-00-01-00	All Intermediate System Network Entities multicast address.

5.1.3.3 BSNPA field of RD PDUs

An implementation shall use, as the BSNPA field of Redirect PDUs (RD), the MAC address corresponding to the subnetwork point of attachment which it is desired to identify. The octets of the BSNPA field shall correspond to the octets of the MAC address in accordance with the hexadecimal representation of MAC addresses described in ISO/IEC 10039.

5.1.4 ISO 8802-2

The implementation shall be capable of

a) receiving LLC PDUs, including the LLC header, of any length up to the sizes specified in ISO/IEC ISP 10608-13;

b) limiting the size of LLC PDUs that are to be conveyed through MAC sublayer bridges and over different LAN subnetwork types to within the maximum size permitted by the LAN subnetwork type concerned.

NOTE - All currently relevant LAN subnetwork types can convey LLC PDUs of at least 1500 octets, so one way of meeting this requirement would be to limit all LLC PDUs to 1500 octets. However, implementations may usefully be able to transmit larger segments to many destinations, such as those on the same Token Ring LAN subnetwork.

5.1.5 ISO/IEC 8802-5

The implementation shall meet the requirements of ISO/IEC ISP 10608-13.

5.2 Dynamic conformance requirements

An implementation conforming to this part of ISO/IEC ISP 10613 shall conform to the dynamic conformance requirements of ISO/IEC ISP 10613-2, and in addition shall meet the dynamic conformance requirements of ISO/IEC ISP 10608-13.

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Annex A
(normative)

ISPICS requirements list

A.1 Introduction

ISO/IEC TR 10000-1 identifies 3 items to be included in an ISPICS Requirements List (IPRL). 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 ISO/IEC ISP 10613-1, subclause A.2.

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

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Multi-Layer Dependencies:

Base item	Description	Constraint
S802SSg-r	<r> Maximum SN data unit size (Rx) - at 4 Mbps data signalling rate - at 16 Mbps data signalling rate	 ≥ 4396 octets ≥ 17746 octets
S802SSg-t	<s> Maximum SN data unit size (Tx)	At least one supported value shall be between 512 and 1497 octets inclusive

A.4 IPRL for ISO 9542

This part of ISO/IEC ISP 10613 imposes the following additional IPRL constraints beyond those in ISO/IEC ISP 10613-2:

Base Item	Description	Constraint
FAGA	Is the multicast address format of All_ES and All_IS configurable	m

A.5 IPRL for ISO/IEC 8802-5

With respect to the Token Ring LAN subnetwork, a conforming implementation shall meet the constraints specified in the IPRL of ISO/IEC ISP 10608-13.

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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 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 9542 recommendations

Since the LAN subnetworks already provide checksumming, to avoid unnecessary overhead, header checksum generation should not be used.

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