INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10608-4

First edition
1994-05-15

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

Part 4:
Definition of profile TA53, operation over a Token Ring 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 4: Définition du profil TA53, mise en service sur un sous-réseau LAN en anneau à jeton

Reference number
ISO/IEC ISP 10608-4:1994(E)

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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 JTC1. In addition to developing International Standards, ISO/IEC JTC1 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 10608-4 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)*
- *Part 4: Definition of profile TA53, operation over a Token Ring LAN subnetwork*
- *Part 5: TA1111/TA1121 profiles including subnetwork-type 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 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 for an FDDI LAN subnetwork*

Annex A forms an integral part of this part of ISO/IEC ISP 10608.

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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 10608 consists of several parts of which this is part 4. This part of ISO/IEC ISP 10608 defines Profile TA53.

Other parts specify the subnetwork-type independent requirements (i.e. Transport Layer requirements), the LAN independent requirements for the Network Layer and the LLC Sublayer, and LAN specific requirements. This part of ISO/IEC ISP 10608 references and, where necessary, amends other parts that collectively constitute the TA53 profile.

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

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

1 Scope

1.1 General

ISO/IEC ISP 10608 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 connectionless-mode Network Service.

This part of ISO/IEC ISP 10608 is applicable to the provision of the connection-mode Transport Service in End Systems attached to a Token Ring LAN subnetwork from which the standardized connectionless-mode Network Service can be made available.

1.2 Position within the Taxonomy

The taxonomy of profiles is defined in ISO/IEC TR 10000-2. This part of ISO/IEC ISP 10608 defines the profile:

TA53: Connection-mode Transport Service over connectionless-mode Network Service over a Token Ring LAN subnetwork

1.3 Scenario

Figure 1 illustrates the End System configurations to which the TA53 profile is applicable.

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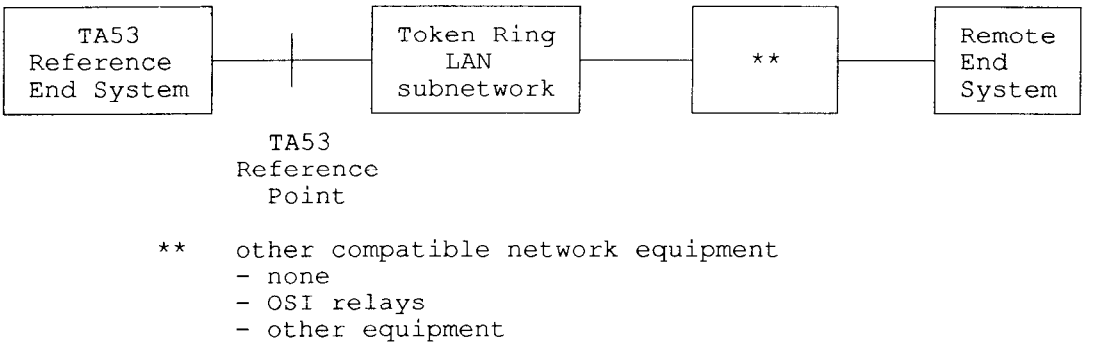

Figure 1 - Scenario of applicability of the TA53 profile

This part of ISO/IEC ISP 10608 specifies the required functions from the supporting protocol stack shown in table 1.

Table 1 - TA53 protocol stack for an End System

Transport Layer	ISO/IEC 8073, 8073/Add.2
Network Layer	ISO 8473, ISO 9542
Data Link Layer	ISO 8802-2, ISO/IEC 8802-5
Physical Layer	ISO/IEC 8802-5

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this International Standardized Profile. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this International Standardized Profile 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 8802-2:1989, *Information processing systems - Local area networks - Part 2: Logical link control.*

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 10608, wherever ISO 9542 itself is referenced.

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ISO/IEC TR 9577:1990, *Information technology - Telecommunications and information exchange between systems - Protocol identification in the network layer.*

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

ISO/IEC ISP 10608-1:1992, *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service - Part 1: General overview and Subnetwork-type independent requirements.*

ISO/IEC ISP 10608-2:1992, *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service - Part 2: TA51 profile including subnetwork-type dependent requirements for CSMA/CD Local Area Networks (LANs).*

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 TR 10735:1993, *Information technology - Telecommunications and information exchange between systems - Standard Group MAC Addresses.*

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 10608 are defined in the base standards 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 base standards that are referenced in clause 2.

5 Requirements for Profile TA53

5.1 Transport Layer

The requirements for the Transport Layer shall be as specified in ISO/IEC ISP 10608-1, subclause 5.2.

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5.2 Network Layer

The requirements for the Network Layer shall be as specified in ISO/IEC ISP 10608-1, subclause 5.3.

An implementation that conforms to this part of ISO/IEC ISP 10608 shall

- be capable of restricting the maximum transmitted LLC-PDU size to 1500 octets if the TA53 Reference End System is communicating, through a MAC sublayer bridge, over an ISO/IEC 8802-3 CSMA/CD LAN;

- be capable of restricting the maximum transmitted LLC-PDU size to 4399 octets if two TA53 End Systems are commmunicating, through a MAC sublayer bridge, at different data rates (4 and 16 Mbps).

The following additional constraints are applicable for the use of the ES-IS routeing exchange protocol (ISO 9542) over a Token Ring LAN subnetwork:

5.2.1 Network Layer Requirements for ES-IS protocol

The IPRL for the ES-IS protocol is defined in clause A.3, item (c), of this part of ISO/IEC ISP 10608. The requirements listed below apply to the ISO 9542 ES-IS protocol when used in conjunction with a Token Ring LAN.

5.2.1.1 ES-IS Addresses

The LSAP address used with ISO 9542 shall be the same as the LSAP address used with ISO 8473 (see subclause 5.3.1 below).

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.

The system implementation's All End System network entities multicast address shall be, 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.

The system implementation's All Intermediate System Network Entities multicast address shall be, 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 MAC addresses, using the encoding of ISO/IEC 10039, is as follows:

03-00-00-00-02-00 All End System network entities multicast address

03-00-00-00-01-00 All Intermediate System network entities multicast address

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NOTE - The ES-IS addresses specified above are derived from the Token Ring Functional Address space as indicated in ISO/IEC TR 10735. The above addresses represent an assignment arising from the current restriction of Token Ring implementations for support of general Group MAC Addresses.

The above addresses are different from those specified in the TA51 profile (ISO/IEC ISP 10608-2). It is recommended that implementations of TA53 also support the ES-IS Group MAC Addresses as used by profile TA51 and as indicated in ISO/IEC TR 10735. However, all End Systems on a single ring must use the same set of ES-IS addresses (based entirely on either Functional Addresses or Group Addresses).

The assignment of ES-IS Functional Addresses will require Transparent MAC Bridging Relays of profile types RD5x.53 (x = 1, 2 or 4) to support some additional MAC address mappings which may reduce performance.

5.2.1.2 ES-IS Functions

Both Configuration Information and Redirect Information shall be supported when ISO 9542 is used in conjunction with this profile.

5.2.1.3 Additional ES-IS Requirements

Implementations may optionally support the Configuration Notification function described in ISO 9542, subclause 6.7, for system initialization. If supported, an implementation shall provide the ability to enable or disable this function. If supported in End Systems listening to both Intermediate System Hellos (ISHs) and End System Hellos (ESHs), this function shall only be invoked upon receipt of an ISH.

5.2.1.4 ES-IS Parameters

The initial value of the following parameters shall be configurable:

Holding Time
Configuration Time

5.2.1.5 SNPA Address

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 described in ISO/IEC 10039.

5.3 Logical Link Control Sublayer (LLC)

The detailed LLC conformance requirements for this profile are contained in ISO/IEC 10608-2, annex B.

5.3.1 Link Service Access Point (LSAP)

The LSAP value 0111 1111, in which the leftmost bit is the first transmitted bit, shall be used in all cases in order to allow Network Layer protocol discrimination to be performed in accordance with ISO/IEC TR 9577. This value would be represented according to the convention established in ISO 8802-2 as hexadecimal **FE**.

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5.3.2 LLC Type

Only Type 1 operation, providing an unacknowledged connectionless-mode service, is specified.

5.4 Medium Access Control Sublayer

The requirements for the Medium Access Control sublayer shall be as specified in ISO/IEC ISP 10608-13, subclauses 5.1 and 5.2.

5.5 Physical Layer

The requirements for the Physical Layer shall be as specified in ISO/IEC ISP 10608-13, subclause 5.3.

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Annex A
(normative)

ISPICS Requirements List

A.1 General Options of the Profile

There are no general options in this profile.

A.2 Standards Selected and Combined in the Profile

This profile makes use of the following base standards:

- ISO/IEC 8073
- ISO 8473
- ISO 9542
- ISO 8802-2
- ISO/IEC 8802-5

A.3 Constraints on Base Standards

An implementation that conforms to this part of ISO/IEC ISP 10608 shall

a) meet all subnetwork-type independent constraints on operation of ISO/IEC 8073 as specified in the ISPICS Requirements List in ISO/IEC ISP 10608-1, clause A.2;

b) meet all subnetwork-type dependent, media-independent constraints on the operation of ISO 8473 as specified in the ISPICS Requirements List in ISO/IEC ISP 10608-1, clause C.2;

c) meet the following requirements of ISO 9542. These constraints are specified in terms of Protocol Functions and PDU fields identified in the End System tables of ISO 9542, annex A. The notation and conventions used in this subclause are defined in ISO/IEC ISP 10608-1, clause A.2:

Base item	Protocol function	Constraint
CI	Is configuration information supported	m
RI	Is redirection information supported	m

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Base item	PDU field	Constraint
Scty-s	<s> Security	i
Scty-r	<r> Security	i
Pty-s	<s> Priority	i
Pty-r	<r> Priority	i
QoSM-r	<r> QoS maintenance	i
AdMk-r	<r> Address Mask	i
SNMk-r	<r> SNPA Mask	i

d) meet all subnetwork-type dependent, media independent constraints on the operation of ISO 8802-2 as specified in the ISPICS Requirements Lists in ISO/IEC 10608-2, annex B;

e) meet all Token Ring subnetwork-type dependent constraints on the operation of ISO/IEC 8802-5 as specified in the ISPICS Requirements List in ISO/IEC ISP 10608-13, annex A.

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