INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10608-2

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

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

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

Partie 2: Profil TA51 y compris spécifications dépendantes du sous-réseau pour les réseaux locaux CSMA/CD

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 10608-2 was prepared with the collaboration of

— OSI Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— OSI Implementors Workshop (OIW).

ISO/IEC ISP 10608 consists of the following 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-independent requirements*

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

— *Part 4: Definition of profile TA53 for operation over a Token Ring LAN subnetwork*

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

— *Part 13: MAC sublayer and physical layer dependent requirements for Token Ring local area network*

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

This part of ISO/IEC ISP 10608 (International Standardized Profile) is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/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 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 centers. ISPs are produced not simply to legitimize 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 10608 consists of several parts, of which this is Part 2. ISO/IEC 10608-1 specifies subnetwork-type independent requirements for Group TA profiles. ISO/IEC 10608-2 specifies subnetwork-type dependent requirements for Profile TA51. ISO/IEC ISP 10608-3 specifies subnetwork-type dependent requirements for Profile TA52. ISO/IEC ISP 10608-4 specifies subnetwork-type dependent requirements for Profile TA53. ISO/IEC ISP 10608-5 specifies subnetwork-type dependent requirements for Profiles TA1111 and TA1121.

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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)

1 Scope

1.1 General

This part of ISO/IEC ISP 10608 specifies subnetwork-type dependent requirements for end system operation when the end system is attached to a carrier-sense multiple access with collision detection (CSMA/CD) local area network. The Directory of Profiles and ISPs in ISO TR10000 identifies this TA profile configuration as TA51. The complete set of requirements for TA51 consists of the requirements specified in ISO/IEC ISP 10608-1 and ISO/IEC ISP 10608-2.

1.2 Position of profile within the taxonomy

ISO/IEC ISP10608 covers the taxonomy elements identified as "TA" in the *Directory of Profiles and ISPs* contained in ISO/IEC TR 10000-2. These elements constitute Transport profiles, group A: Connection-mode Transport Service over Connectionless-mode Network Service.

1.3 Scenario

This clause specifies requirements for the profile identified in ISO/IEC TR 10000 as TA51, Connection-mode Transport Service provided over the Connectionless-mode Network Service on a CSMA/CD LAN.

Figure 1 illustrates the standards which comprise the TA51 profile.

Transport Layer	ISO 8073	ISO 8073/Add.2
Network Layer	ISO 8473	ISO 9542
Data-link Layer	ISO 8802-2 ISO 8802-3	
Physical Layer	ISO 8802-3	

Figure 1 - Standards comprising the TA51 Profile

Figure 2 illustrates the configuration of systems to which TA51 is applicable.

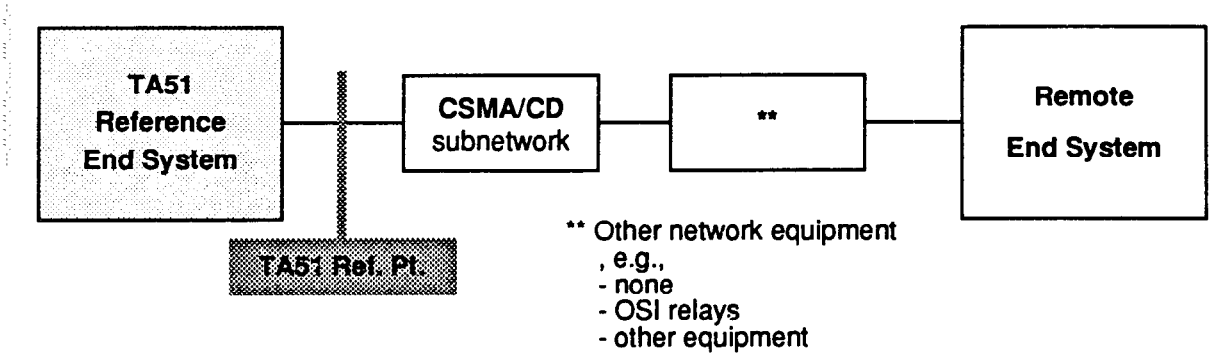

Figure 2 - Scenario of applicability of the TA51 Profile

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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 the CCITT maintains published editions of its current Recommendations.

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

ISO 8802-2:1988, *Information processing systems - Open Systems Interconnection - Local area networks - Logical link control.*

ISO/IEC 8802-3:1990, *Information processing systems - Open Systems Interconnection - Local area networks - Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications - Part 3.*

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/IEC ISP10608-1:1992, *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 10039:1990, *Information technology - Open Systems Interconnection - Local area networks - Medium Access Control (MAC) service definition.*

3 Definitions

All of the terms used in this part of ISO/IEC ISP 10608 are defined either in the referenced base standards (see clause 2) or in the International Standards listed in annex C.

4 Abbreviations

All of the abbreviations and acronyms used in this part of ISO/IEC ISP 10608 are defined either in the referenced base standards (see clause 2) or in the International Standards listed in annex C.

5 Profile TA51 - CSMA/CD LAN subnetworks

5.1 Subnetwork-type independent requirements

The requirements for the transport protocol are as specified in ISO/IEC ISP 10608-1.

The requirements for the connectionless-mode network protocol are as specified in ISO/IEC ISP 10608-1.

Subnetwork-type independent requirements of the end system to intermediate system protocol are as specified in ISO/IEC ISP 10608-1.

5.2 Subnetwork-type dependent requirements

This clause specifies additional subnetwork-type dependent requirements for end system operation when the end system is attached to a CSMA/CD local area network. The subnetwork-type specific requirements concern both the way in which specific subnetwork services are provided by individual real subnetworks and the way in which those specific services are used to provide the *underlying service* assumed by ISO 8473.

5.2.1 Network Layer requirements (for ES-IS protocol)

All of the requirements for the ES-IS protocol specified in ISO/IEC ISP 10608-1 apply to this profile. The IPRL for the ES-IS protocol is defined in clause A.1. The requirements listed below apply to the ISO 9542 ES-IS protocol when used in conjunction with a CSMA/CD LAN.

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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 5.2.2.1.1 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 subnetwork. 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):

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

where the least significant bit (the first bit transmitted to or received from the underlying subnetwork medium) is on the left.

The system implementation's All Intermediate System Network Entities multicast address shall be (in binary):

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

where the least significant bit (the first bit transmitted to or received from the underlying subnetwork medium) is on the left.

The above addresses in terms of ISO/IEC 8802-3 may be represented in hexadecimal as **09-00-2B-00-00-04** and **09-00-2B-00-00-05** respectively.

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 Clause 6.7 of ISO 9542 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

The SNPA address carried in a Redirect PDU (RD) is a MAC address, which shall be conveyed in the form of the binary representation of MAC addresses specified in ISO/IEC 10039.

5.2.2 LLC requirements

The data-link protocol is defined by ISO 8802-2. ISO 8802-2 recognizes two distinct sublayers within the data-link layer; the Logical Link Control sublayer (LLC) and the Medium Access Control (MAC) sublayer. No IPRL for the MAC sublayer is included in ISO/IEC ISP 10608-2. All items not mentioned specifically below are as specified in the standards ISO 8802-2 and ISO/IEC 8802-3.

5.2.2.1 Logical Link Control

The following implementation constraints on LLC apply to operation in the configurations covered by this part of ISO/IEC ISP 10608-2.

The detailed LLC conformance requirements for this profile are contained in clause B.3.

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5.2.2.1.1 Link Service Access Point (LSAP)

The LSAP value 0111 1111, in which the leftmost bit is the least significant bit, shall be used in all cases. This value would be represented according to the convention established in ISO 8802-2 as hexadecimal **FE**.

5.2.2.1.2 Type and Class

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

5.2.3 Medium Access Control (MAC) requirements

5.2.3.1 Addressing

The MAC address length shall be 48 bits.

5.2.3.2 Frame size

The minimum frame size shall be 512 bits (64 octets). The maximum frame size shall be 1518 octets.

5.2.4 Physical Layer requirements

The Physical Layer is specified in ISO 8802-3.

5.2.4.1 Physical signalling

Only the physical layers known in ISO 8802-3 as 10BASE5 and 10BASE2 are included in this profile. This profile makes no additional requirements on the physical layer, so no IPRL has been included for the physical layer.

5.2.4.2 Cable technology

The planning, design, installation, and testing of cable systems suitable for CSMA/ CD technology are beyond the scope of this profile.

Note that a system that only operates over 10BASE5 cannot directly interwork with a system that only operates over 10BASE2, however, they may interwork by means of a suitable repeater.

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

A.1 ES-IS protocol IPRL

A.1.1 General

The IPRL in this annex specifies the additional requirements for ISO 9542. These requirements are generated by applying the following modifications to the PICS proforma given in annex A of ISO 9542. This IPRL specifies an implementation of the ES-IS protocol for end systems. Intermediate system operation is not specified.

A conforming implementation shall satisfy the mandatory conformance requirements of the base standard referenced in this part of the profile.

A.1.2 Protocol functions

The protocol functions Redirection Information and Configuration Information (CI) are mandatory for this profile.

A.1.3 Supported parameters

The following parameters for both send and receive are outside the scope of the profile defined in ISO/IEC ISP 10608-2.

Security

Priority

QoS maintenance

Address mask

SNPA mask

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

B.1 Introduction

The IPRL in this annex specifies the additional requirements for ISO 8802-2. The requirements of ISO 8802-2 apply to each item for which there is no entry in this IPRL. The IPRL in this annex has been generated for ISO/IEC ISP 10608-2 based on the ISO 8802-2 standard. When the ISO 8802-2 base standard is amended to include a PICS proforma, that PICS proforma will be referenced.

A conforming implementation shall satisfy the mandatory conformance requirements of the base standard referenced in this part of the profile.

B.2 Notation

The following tables define the functions supported for which conformance is claimed, using the following keys.

a) Base standard status notation

1) base standard status

M	; Mandatory.
O	; Optional.
O.<n>	; Optional, but support of at least one of the group of options labeled by the same numeral <n> is required.
X	; Excluded.

b) IPRL status notation

The Status column of Profile features entries use a one character or a two character notation. A one character notation indicates the static requirements only. If a two character notation is used, the first character is the static requirement and the second character is the dynamic requirement.

1) static

m	; Mandatory (implementation is mandatory).
o	; Optional (implementation is optional).
i	; Out of scope (not relevant to this profile).

2) dynamic

m	; Mandatory (use is mandatory).

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B.3 LLC Protocol IPRL

NOTE - This IPRL includes an interim version of the PICS proforma. When a standardized PICS proforma is published, this IPRL will refer to it.

B.3.1 Supported PDUs

- Transmission

Base Standard Features				Profile Features	
Index	Supported PDUs transmitted	Reference	Status	ISP Reference	Status
LT1	UI command	5.4.1.1.1	M		&
LT2	XID command	5.4.1.1.2	O		i
LT3	XID response	5.4.1.2.1	M		&
LT4	TEST command	5.4.1.1.3	O		i
LT5	TEST response	5.4.1.2.2	M		&

- Reception

Base Standard Features				Profile Features	
Index	Supported PDUs received	Reference	Status	ISP Reference	Status
LR1	UI command	5.4.1.1.1	M		&
LR2	XID command	5.4.1.1.2	M		&
LR3	XID response	5.4.1.2.1	LT2:M		&
LR4	TEST command	5.4.1.1.3	M		&
LR5	TEST response	5.4.1.2.2	LT4:M		&

&: same as base standard

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B.3.2 Supported parameters

- Transmission

	Base Standard Features			Profile Features	
Index	Supported parameters transmitted	Reference	Status	ISP Reference	Status
UICT1	UI command - DSAP address	6.2	M		&
UICT2	UI command - SSAP address	6.2	M		&
UICT3	UI command - P-bit = 1	6.3	X		&
UICT4	UI command - P-bit = 0	6.3	M		&
UICT5	UI command - Information	6.5	O		m
XIDRT1	XID response - DSAP address	6.6	M		&
XIDRT2	XID response - SSAP address	6.6	M		&
XIDRT3	XID response - F-bit = P-bit	6.3	M		&
XIDRT4	XID response - Information	6.6	M		&
TESRT1	TEST response - DSAP address	6.2	M		&
TESRT2	TEST response - SSAP address	6.2	M		&
TESRT3	TEST response - F-bit = P-bit	6.3	M		&
TESRT4	TEST response - Information	6.7	M		&
XIDCT1	XID command - DSAP address	6.6	M		&
XIDCT2	XID command - SSAP address	6.6	M		&
XIDCT3	XID command - P-bit = 1	6.3	O.1		&
XIDCT4	XID command - P-bit = 0	6.3	O.1		&
XIDCT5	XID command - Information	6.6	M		&
TESCT1	TEST command - DSAP address	6.2	M		&
TESCT2	TEST command - SSAP address	6.2	M		&
TESCT3	TEST command - P-bit = 1	6.3	O.2		&
TESCT4	TEST command - P-bit = 0	6.3	O.2		&
TESCT5	TEST command - Information	6.7	O		&

&: same as base standard

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- Reception

	Base Standard Features			Profile Features	
Index	Supported parameters received	Reference	Status	ISP Reference	Status
UICR1	UI command - DSAP address	6.2	M		&
UICR2	UI command - SSAP address	6.2	M		&
UICR3	UI command - P-bit = 1	6.3	X		&
UICR4	UI command - P-bit = 0	6.3	M		&
UICR5	UI command - Information	6.5	O		m
XIDRR1	XID response - DSAP address	6.6	M		&
XIDRR2	XID response - SSAP address	6.6	M		&
XIDRR3	XID response - F-bit = P-bit	6.3	M		&
XIDRR4	XID response - Information	6.6	M		&
TESRR1	TEST response - DSAP address	6.2	M		&
TESRR2	TEST response - SSAP address	6.2	M		&
TESRR3	TEST response - F-bit = P-bit	6.3	M		&
TESRR4	TEST response - Information	6.7	TESTCT5:M		&
XIDCR1	XID command - DSAP address	6.6	M		&
XIDCR2	XID command - SSAP address	6.6	M		&
XIDCR3	XID command - P-bit = 1	6.3	M		&
XIDCR4	XID command - P-bit = 0	6.3	M		&
XIDCR5	XID command - Information	6.6	M		&
TESCR1	TEST command - DSAP address	6.2	M		&
TESCR2	TEST command - SSAP address	6.2	M		&
TESCR3	TEST command - P-bit = 1	6.3	M		&
TESCR4	TEST command - P-bit = 0	6.3	M		&
TESCR5	TEST command - Information	6.7	M		&

&: same as base standard

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Annex C
(informative)
Bibliography

This annex contains references to ISO standards that provide useful information beyond that which is available from the directly-referenced standards identified in clause 2 of this part.

ISO 8648:1988, *Information processing systems - Open Systems Interconnection - Internal organization of the Network Layer.*

ISO 8880-1:1990, *Information technology - Telecommunications and information exchange between systems - Protocol combinations to provide and support the OSI network service - Part1: General principles.*

ISO/IEC 8880-3:1990, *Information technology - Telecommunications and information exchange between systems - Protocol combinations to provide and support the OSI Network Service - Ppart3: Provision and support of the connectionless-mode Network Service.*

ISO/IEC TR 10000-1: 1990, *Information technology - Framework and Taxonomy of International Standardized Profiles - Part 1: Framework.*

ISO/IEC TR 10000-2: 1990, *Information technology - Framework and Taxonomy of International Standardized Profiles - Part 2: Taxonomy of Profiles.*

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