INTERNATIONAL STANDARD

ISO/IEC 8473-2

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Information technolgy — Protocol for providing the connectionless-mode network service —

Part 2:
Provision of the underlying service by an ISO/IEC 8802 subnetwork

Technologies de l'information — Protocole pour la fourniture du service de réseau en mode sans connexion —

Partie 2: Fourniture du service sous-jacent par un sous-réseau ISO/CEI 8802

Reference number
ISO/IEC 8473-2:1996(E)

Contents

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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 8473-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology,* Subcommittee SC 6, *Telecommunications and information exchange between systems.*

ISO/IEC 8473 consists of the following parts, under the general title *Information technology — Protocol for providing the connectionless-mode network service*:

— *Part 1: Protocol specification*

— *Part 2: Provision of the underlying service by an ISO/IEC 8802 subnetwork*

— *Part 3: Provision of the underlying service by an X.25 subnetwork*

— *Part 4: Provision of the underlying service by a subnetwork that provides the OSI data link service*

— *Part 5: Provision of the underlying service for operation over ISDN circuit-switched B-channel*

Annex A forms an integral part of this part of ISO/IEC 8473.

Introduction

This is one of a set of International Standards produced to facilitate the interconnection of open systems. The set covers the services and protocols required to achieve such interconnection.

This International Standard is positioned with respect to other related International Standards by the layers defined in ISO/IEC 7498-1. In particular, it defines the way in which a local area network that conforms to ISO/IEC 8802 may be used as a subnetwork within the Network layer to provide the abstract underlying service with respect to which the protocol defined by ISO/IEC 8473-1 is specified.

In order to evaluate the conformance of a particular implementation of this protocol, it is necessary to have a statement of which of the protocol's capabilities and options have been implemented. Such a statement is called a Protocol Implementation Conformance Statement (PICS), as defined in ISO/IEC 9646-1. A PICS proforma, from which a PICS may be prepared for a specific implementation, is included in this International Standard as normative Annex A.

Information technology — Protocol for providing the connectionless-mode network service —

Part 2:
Provision of the underlying service by an ISO/IEC 8802 subnetwork

1 Scope

This part of ISO/IEC 8473 specifies the way in which the underlying service assumed by the protocol defined by ISO/IEC 8473-1 is provided by a subnetwork that conforms to ISO/IEC 8802 through the operation of a subnetwork dependent convergence function (SNDCF) as described in ISO/IEC 8648. The SNDCF specified by this part of ISO/IEC 8473 may be used with any ISO/IEC 8802 compliant subnetwork that provides the logical link control sublayer interface service defined by ISO/IEC 8802-2.

This part of ISO/IEC 8473 also provides the PICS proforma for this protocol, in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 8473. At the time of publication, the editions indicated were valid. All International Standards are subject to revision, and parties to agreements based on this part of ISO/IEC 8473 are encouraged to investigate the possibility of applying the most recent editions of the Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 7498-1:1994, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model.*

ISO/IEC 8348:1993, *Information technology — Open Systems Interconnection — Network service definition.*

ISO/IEC 8648:1988, *Information processing systems — Open Systems Interconnection — Internal organization of the network layer.*

ISO/IEC TR 8802-1:1994, *Information technology — Telecommunications and information exchange between systems — Data communications — Local and metropolitan area networks — Specific requirements — Part 1: Overview of Local Area Network Standards.*

ISO/IEC 8802-2:1994, *Information technology — Telecommunications and information exchange between systems — Data communications — Local and metropolitan area networks — Specific requirements — Part 2: Logical link control.*

ISO/IEC 9646-1:1991, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts.*

3 Definitions

3.1 Reference model definitions

This part of ISO/IEC 8473 makes use of the following terms defined in ISO/IEC 7498-1:

a) network entity
b) Network layer
c) service
d) service data unit
e) protocol control information

3.2 Network layer architecture definitions

This part of ISO/IEC 8473 makes use of the following terms defined in ISO/IEC 8648:

a) subnetwork
b) subnetwork dependent convergence protocol
c) subnetwork dependent convergence function
d) subnetwork access protocol

3.3 Network layer addressing definitions

This part of ISO/IEC 8473 makes use of the following terms defined in ISO/IEC 8348:

a) subnetwork point of attachment

3.4 Local area network definitions

This part of ISO/IEC 8473 makes use of the following terms defined in ISO/IEC 8802-1:

a) local area network
b) logical link control
c) logical link control sublayer
d) media access control

4 Abbreviations

CLNP	connectionless-mode network protocol
LLC	logical link control
MAC	medium access control
PDU	protocol data unit
PICS	protocol implementation conformance statement
QoS	quality of service
SDU	service data unit
SN	subnetwork
SNDCF	subnetwork dependent convergence function
SNPA	subnetwork point of attachment
SNSDU	subnetwork service data unit
UI	unnumbered information

5 Subnetwork dependent convergence function

5.1 General model

The general model for providing the underlying service assumed by the protocol in conjunction with a real subnetwork that uses a connectionless subnetwork access protocol is as follows. The generation of an SN-UNITDATA Request by the CLNP results in the generation of a corresponding subnetwork-specific UNITDATA request by the subnetwork dependent convergence function. The receipt of a subnetwork-specific UNITDATA indication associated with delivery of a connectionless data unit to its destination causes the SNDCF to generate an SN-UNITDATA Indication to the CLNP.

The general model for providing the underlying service assumed by the CLNP in conjunction with a real subnetwork that uses a connection-mode subnetwork access protocol is as follows. The generation of an SN-UNITDATA Request by the CLNP causes a connection (logical channel, logical link, or the equivalent) to be made available for the transmission of SN-User-data. If a connection cannot be made available, the SN-UNITDATA Request is discarded. The receipt of subnetwork-specific PDUs containing SN-User-data causes the SNDCF to generate an SN-UNITDATA Indication to the CLNP.

Where a real subnetwork is designed to use either a connectionless-mode or a connection-mode subnetwork access protocol, the provision of the underlying service assumed by the CLNP is achieved by using the connectionless-mode alternative.

5.2 Subnetwork user data

The SN-User-data consists of an ordered multiple of octets, and is transferred transparently between the specified subnetwork points of attachment.

The underlying service assumed by the CLNP is required to support a service data unit size of at least 512 octets.

If the minimum service data unit sizes supported by all of the subnetworks involved in the transmission of a particular PDU are known to be large enough that segmentation is not required, then either the full protocol or the non-segmenting protocol subset may be used.

Data received from a subnetwork with protocol identification specifying the CLNP protocol (ISO/IEC 8473) shall be processed according to ISO/IEC 8473-1.

NOTE — Data with other protocol identification should be ignored, since it may have been sent by an implementation supporting additional protocols intended for use with this protocol.

5.3 Subnetwork dependent convergence functions used with ISO/IEC 8802 subnetworks

ISO/IEC 8802-2 describes two classes of logical link control (LLC). Class 1 provides an unacknowledged connectionless-mode service only. Class 2 provides both connectionless-mode and connection-mode services. For stations which conform to either of these two classes of service, the unacknowledged connectionless-mode service is used to provide the underlying service assumed by ISO/IEC 8473-1.

The unacknowledged connectionless-mode service described in ISO/IEC 8802-2 is precisely that required by the CLNP. This service, with the exception of QoS, is summarized in Table 1.

Primitive		Parameters
DL-UNITDATA	.Request .Indication	DL-Source-Address, DL-Destination-Address, DL-Priority, DL-Data

Table 1 — ISO/IEC 8802-2 LLC sublayer service primitives

Subnetwork dependent convergence functions perform a mapping of the unacknowledged connectionless-mode service provided by a LLC Class 1 or Class 2 subnetwork onto the underlying service assumed by the CLNP. The mapping is as follows. The generation of an SN-UNITDATA request by the CLNP results in a DL-UNITDATA request (as described in ISO/IEC 8802-2) being generated by the subnetwork dependent convergence function. A corresponding DL-UNITDATA indication prompts the SNDCF to generate an SN-UNITDATA indication to the CLNP. No explicit subnetwork dependent convergence protocol control information is exchanged between network entities to provide this mapping of service.

The addresses used in the SN-UNITDATA request and indication primitives are the seven-octet LAN station addresses described in ISO/IEC 8802-2, consisting of the six-octet medium access control (MAC) address plus the one-octet LLC service access point address.

NOTE — In order to provide the underlying service assumed by ISO/IEC 8473-1, the underlying service shall be able to support a minimum service data unit size of 512 octets. While no SDU size restriction is imposed by ISO/IEC 8802-2, the minimal requirement for a MAC is that it be capable of conveying unnumbered information (UI) PDUs containing 128 octets in the information field. The additional constraint is therefore imposed on the SNDCF in such circumstances that it be able to convey at least 512 octets of user data in UI PDUs.

Annex A[1]

(normative)

PICS proforma

A.1 Introduction

The supplier of a protocol implementation which is claimed to conform to this part of ISO/IEC 8473 shall complete the following Protocol Implementation Conformance Statement (PICS) proforma.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number of uses, including use

— by the protocol implementor, as a check-list to reduce the risk of failure to conform to the standard through oversight;

— by the supplier and acquirer — or potential acquirer — of the implementation, as a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma;

— by the user — or potential user — of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking can never be guaranteed, failure to interwork can often be predicted from incompatible PICSs);

— by a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

A.2 Abbreviations and special symbols

A.2.1 Status symbols

M	mandatory
O	optional
O.<n>	optional, but support of at least one of the group of options labelled by the same numeral <n> is required
X	prohibited
<pred>:	conditional-item symbol, including predicate identification (see A.3.4)
^	logical negation, applied to a conditional item's predicate

A.2.2 Other symbols

<r>	receive aspects of an item
<s>	send aspects of an item

[1] Copyright release for PICS proformas

Users of this part of ISO/IEC 8473 may freely reproduce the PICS proforma in this Annex so that it can be used for its intended purpose and may further publish the completed PICS.