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Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Protocol Specification —

Part 1: Protocol specification

Information et documentation — Interconnexion de systèmes ouverts (OSI) — Spécification du protocole d'application pour les prêts entre bibliothèques —

Partie 1: Spécification du protocole



Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 46, *Information and documentation*, Subcommittee SC 4, *Technical Interoperability*.

This third edition cancels and replaces the second edition (ISO 10161-1:1997) of which it constitutes a minor revision.

It also incorporates the Amendents ISO 10161-1:1997/Amd 1:2002 and ISO 10161-1:1997/Amd 2:2002.

ISO 10161 consists of the following parts, under the general title *Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Protocol Specification*:

— *Part 1: Protocol specification*

— *Part 2: Protocol implementation conformance statement (PICS) proforma*

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Introduction

This part of ISO 10161 is one of a set of International Standards produced to facilitate the interconnection of computer systems. It is related to other international standards in the set as defined by the Reference Model for Open Systems Interconnection (ISO/IEC 7498). The Reference Model subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

The aim of Open Systems Interconnection is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of computer systems

a) from different manufacturers,

b) under different managements,

c) of different levels of complexity, and

d) of different ages.

This part of ISO 10161 provides a protocol specification for Interlibrary Loan (ILL) communication. The ILL Protocol operates in the Application Layer and allows the parties involved in an ILL-transaction to progress through the ILL-transaction in an orderly and defined way.

The ILL Protocol has been designed to support the ILL services defined in ISO 10160, the ILL Application Service Definition, which generally requires invocation of external delivery services to fulfill an ILL request. The ILL Protocol carries information that permits both automatic and operator-mediated invocation of external delivery services.

This part of ISO 10161 is one of a number of related standards supporting the interconnection of library systems. These standards can be used by themselves or in a cooperative manner to support library applications requiring a mixture of communications services. For example, ISO 23950, which supports remote access to bibliographic databases, could be used in conjunction with the ILL Protocol to obtain item identification information. The control and management of interactions among such bibliographic applications are local matters that are outside the scope of this International Standard.

Security and accounting issues as they relate to ILL operations are for further study.

The specification technique used in this part of ISO 10161 is consistent with techniques used in defining other OSI Protocols. Within most of this document, the technique is self-explanatory. The Abstract Syntax of the ILL Application Protocol Data Units (APDUs) is defined by means of the ASN.1 specification technique specified in ISO 8824.

This part of ISO 10161 contains seven annexes. Annexes A to D are normative. Annex A specifies the state tables for the ILL Protocol. Annex B specifies the encoding rules for generating a transfer syntax compatible with EDIFACT as defined in ISO 9735. Annex C specifies the object identifiers assigned in this standard and registration requirements. Annex D defines the registration procedures for ILL EXTERNAL data type definitions. Annex E is an example of an ILL EXTERNAL data type registry entry. Annex F describes the possible mappings of this protocol onto supporting services. Annex G describes possible methods of using a document delivery protocol in conjunction with the ILL Protocol.

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Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Protocol Specification —

Part 1: Protocol specification

1 Scope

This part of ISO 10161 defines the protocol for an ILL application-service-element (ASE). It specifies the behaviour which must be exhibited by a system in order to take part in the provision of the ISO interlibrary loan service.

It provides a formal statement of the rules of behaviour of each of the two or more entities participating in an ILL transaction. It specifies

a) the actions to be taken on receiving request service primitives issued by an ILL service-user,

b) the actions to be taken on receiving application-protocol-data-units (APDUs), and

c) the actions to be taken as a result of events within the local system.

It provides a specification (in Clause 9) of the abstract syntax required to convey the ILL Protocol APDUs.

It states the conformance requirements to be met by implementors of this protocol (in Clause 10).

The scope of the ILL Protocol is restricted to the interconnection of systems; it does not specify or restrict the possible implementation of interfaces within a computer system. Computer systems can range from stand-alone workstations to mainframes.

This part of ISO 10161 is intended for use by libraries, information utilities such as union catalogue centres, and any other system which processes bibliographic information. These systems can participate in an interlibrary loan transaction in the role of requester (i.e. an initiator of ILL requests), responder (i.e. a provider of bibliographic material or information) and/or intermediary (i.e. an agent that acts on behalf of a requester to find suitable responders).

Various interworking topologies are supported, ranging from simple two-party interactions, to multi-party interactions.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 646[1)], *Information processing — ISO 7-bit coded character set for information interchange*

ISO 2108:2005, *Information and documentation — International standard book number (ISBN)*

ISO 3297:2007, *Information and documentation — International standard serial number (ISSN)*

1) ISO/IEC 646:1991 supersedes ISO 646:1983. However, when this part of ISO 10161 was under development, the previous edition was valid and this part of ISO 10161 is therefore based on that edition.

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ISO 4217:2008, *Codes for the representation of currencies and funds*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO/IEC 8824-1:2008, *Information technology — Open Systems Interconnection — Specification of Abstract Syntax Notation One (ASN.1)*

ISO/IEC 8825, *Information technology — Open Systems Interconnection — Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*

ISO 9735, *Electronic data interchange for administration, commerce and transport (EDIFACT) — Application level syntax rules*

ISO/IEC 9834-1:2012, *Information technology — Procedures for the operation of object identifier registration authorities: General procedures and top arcs of the international object identifier tree — Part 1*

ISO/IEC 9834-2, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 2: Registration procedures for OSI document types*

ISO 10160, *Information and documentation — Open Systems Interconnection — Interlibrary Loan Application Service Definition*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Reference Model definitions

NOTE This part of ISO 10161 is based on the concepts developed in ISO 7498 and makes use of the following terms found in it. These terms are replicated here as a convenience to the reader.

3.1.1
application layer
seventh and highest layer in the Reference Model for Open Systems Interconnection (OSI), which serves as the window between correspondent application-processes which are using the OSI to exchange meaningful information

3.1.2
application-entity
aspects of an application-process pertinent to OSI

3.1.3
application-process
element within a real open system which performs the information processing for a particular application

3.1.4
application-protocol-data-unit
unit of data specified in an application-protocol and consisting of application-protocol-information and possibly application-user-data

3.1.5
application-service-element
that part of an application-entity which provides an OSI environment capability, using underlying services when appropriate

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3.1.6
(N)-service
capability of the (N)-layer and the layers beneath it, which is provided to (N+1)-entities at the boundary between the (N)-layer and the (N+1)-layer

Note 1 to entry: An application-service does not provide a capability to higher layer entities, but rather to application-processes.

3.1.7
presentation-service
capability of the Presentation Layer and the layers beneath it, which is provided to application-entities at the boundary between the Presentation and the Application Layer

3.1.8
transfer syntax
concrete syntax used in the transfer of data between open systems

3.2 Abstract Syntax Notation One definitions

NOTE This part of ISO 10161 makes use of the following terms defined in ISO/IEC 8824.

3.2.1
data type
type
named set of values

3.2.2
simple type
type defined by directly specifying the set of its values

3.2.3
structured type
type defined by reference to one or more other types

3.2.4
component type
one of the types referenced when defining a structured type

3.2.5
value
distinguished member of a set of values

3.3 Presentation Service definitions

NOTE This part of ISO 10161 makes use of the following term defined in ISO 8822.

3.3.1
abstract syntax
those aspects of the rules used in the formal specification of data which are independent of the encoding technique to represent the data

3.4 Application Layer Structure Definitions

NOTE This part of ISO 10161 makes use of the following terms defined in ISO/IEC 9545.

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3.4.1
application-association
cooperative relationship between two application-entity-invocations for the purpose of communication of information and coordination of their joint operation

Note 1 to entry: This relationship is formed by the exchange of application-protocol-control-information using the Presentation Service.

3.4.2
application-context
set of rules shared in common by two application-entity-invocations governing their behaviour in order to enable their cooperative operation

Note 1 to entry: An application-context is a shared conceptual schema for the universe of discourse for communication.

3.4.3
application-context-definition
description of an application-context

3.4.4
application-entity-invocation
specific utilization of part or all of the capabilities of a given application-entity in support of the communications requirements of an application-process-invocation

3.4.5
application-process-invocation
specific utilization of part or all of the capabilities of a given application-process in support of a specific occasion of information processing

3.5 Service convention definitions

3.5.1
indication primitive
representation of an interaction in which a service-provider either:

a) indicates that it has, on its own initiative, invoked some procedure; or

b) indicates that a procedure has been invoked by the service-user at the peer service-access-point.

3.5.2
non-confirmed service
distinct part of the total (N)-service which does not result in an explicit confirmation from the service-provider to the initiating service-user

3.5.3
provider-initiated service
distinct part of the total (N)-service which is initiated by the service-provider rather than the service-user

3.5.4
request primitive
representation of an interaction in which a service-user invokes some procedure

3.5.5
service primitive
abstract, implementation-independent representation of an interaction between service-user and the service-provider

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