INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 11188-3

First edition
1996-03-01

Information technology — International Standardized Profile — Common upper layer requirements —

Part 3:
Minimal OSI upper layer facilities

Technologies de l'information — Profil normalisé international — Prescriptions communes pour la couche supérieure —

Partie 3: Facilités minimales pour la couche supérieure OSI

Reference number
ISO/IEC ISP 11188-3:1996(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 or 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 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/ISP 11188-3 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 11188 consists of the following parts, under the general title *Information technology - International Standardized Profile - Common upper layer requirements:*

- *Part 1: Basic connection oriented requirements*
- *Part 2: Basic connection oriented requirements for ROSE-based Profiles*
- *Part 3: Minimal OSI upper layer facilities*

Annexes A , B, C , D, E and F form an integral part of this part of ISO/IEC ISP 11188. Annexes G and H are for information only.

Introduction

This part of ISO/IEC ISP 11188 is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000, *Framework and Taxonomy of International Standardized Profiles*. 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.

A profile (e.g., an ISO/IEC ISP) or the specification of a basic communications application may reference this part of ISO/IEC ISP 11188. In addition, a referencing ISP may specify further requirements on the protocols, provided it does not contradict this part of ISO/IEC ISP 11188. A specification of an implementation may also reference this part of ISO/IEC ISP 11188.

The purpose of ISO/IEC ISP 11188 is to provide common text for ISPs or other referencing specifications which specify A-profiles. In addition to simplifying their drafting, it also facilitates the common implementation of the protocols for use in different A-profile contexts.

This part of ISO/IEC 11188 specifies a profile of the minimal OSI facilities supporting basic connection-oriented communications applications. These facilities are comprised of a subset of the facilities defined by the ACSE, Presentation, and Session service definitions.

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Information technology—International Standardized Profile—Common upper layer requirements—

Part 3:
Minimal OSI upper layer facilities

1 Scope

This part of ISO/IEC ISP 11188 introduces the concept of the minimal set of OSI upper layer facilities[1] for basic communications applications. A **basic communications application** simply requires the ability to open and close connection-oriented communications with a peer and to send and receive messages with the peer. It is expected that a large portion of potential OSI applications will be basic communications applications.

1.1 General

This part of ISO/IEC ISP 11188 specifies the minimal set of upper layer facilities required for the support of basic communications applications. The minimal OSI facilities are referred to as **mOSI**.

This part of ISO/IEC ISP 11188 defines the mOSI facilities in terms of identified features of the upper layer PICS proformas – the ACSE (ISO/IEC 8650-2), the Presentation layer (ISO/IEC 8823-2), and the Session layer (ISO/IEC 8327-2). The identified features of these PICS proformas are specified in annexes A, B, and C, respectively.

This part of ISO/IEC ISP 11188 complies with the requirements stated in ISO/IEC ISP 11188-1, Basic connection oriented requirements.

This part of ISO/IEC ISP 11188 may be referenced by two classes of entities: upper layer *users* and upper layer *providers*.

— mOSI *users* represent basic communications applications. mOSI users may be profiles (such as A-profiles identified in ISO/IEC TR 10000-2) or specifications of basic communications applications that are not represented by a formal profile. An API specification is a special case of the latter. The term **referencing specification** is used in this part of ISO/IEC ISP 11188 to represent this set of mOSI users.

— mOSI *providers* represent implementations of the upper layer facilities that provide (at a minimum) the facilities defined in this part of ISO/IEC ISP 11188. The term **referencing implementation** is used in this part of ISO/IEC ISP 11188 to represent this set of mOSI providers.

A referencing specification (a mOSI user) may claim **compliance**[2] to this part of ISO/IEC ISP 11188. It may do so if the OSI upper layer facilities that it requires can be expressed by the facilities of this part of ISO/IEC ISP 11188. Subclause 2.1 summarizes the requirements for making such a statement. Annex D provides a proforma for a profile requirements list (PRL) for a compliant application.

A referencing implementation (a mOSI provider) may claim **conformance**[3] to this part of ISO/IEC ISP 11188. It may do so if the OSI upper layer facilities that it provides include those expressed in this part of ISO/IEC ISP 11188. That is, an implementation may contain more upper layer facilities than those required to be conformant to this part of ISO/IEC ISP 11188. However, they must contain at least those of this part of ISO/IEC ISP 11188.

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1 The upper layer facilities considered in this part of ISO/IEC ISP 11188 are ACSE, Presentation, and Session.

2 **Compliance** deals with one specification referencing another specification.

3 **Conformance** deals with a physical implementation that references a particular specification.

Annex F assigns object identifier values for specific generic definitions of application context, abstract syntax, and transfer syntax.

1.2 Position within the taxonomy

This part of ISO/IEC ISP 11188 does not specify a full A-profile, and therefore is not included in the taxonomy of ISO/IEC TR 10000-2.

2 Compliance and conformance

2.1 Profile or specification of a basic communications application

A specification may reference this part of ISO/IEC ISP 11188 to identify its upper layer requirements and may claim compliance to this part of ISO/IEC ISP 11188.

To be compliant, a referencing specification shall do the following:

a) require that all of the mandatory ("m") features for this part of ISO/IEC ISP 11188 are also mandatory for the referencing specification;

b) require that all of the out of scope ("i") features for this part of ISO/IEC ISP 11188 are also out of scope for the referencing specification;

c) require that all of the optional ("o") features for this part of ISO/IEC ISP 11188 are kept as optional, i.e., they are not redefined by the referencing specification;

d) require that all of the open ("*") features for this part of ISO/IEC ISP 11188 are kept as open or are re-defined as mandatory ("m"), optional ("o") or out of scope ("i"); and

e) comply with the requirements of ISO/IEC ISP 11188-1 and not conflict with the requirements of this part of ISO/IEC ISP 11188.[4]

NOTES

1 The meaning of the status indicators (see 6.1) when used by a referencing specification is given in table 1 column 3.

2 It is recommended that a referencing specification use the tables in annex D to specify its profile requirements list.

A referencing specification may be compliant with this part of ISO/IEC ISP 11188 by either of the following ways:

a) It may repeat all of the specifications contained in this part of ISO/IEC ISP 11188. To claim compliance to this part of ISO/IEC ISP 11188, a referencing specification shall assure that its specification of the ACSE, Presentation, and Session features does not violate those in this part of ISO/IEC ISP 11188.

b) It may claim compliance by reference to this part of ISO/IEC ISP 11188 instead of repeating the provisions of this part of ISO/IEC ISP 11188.

NOTE

3 It is recommended that a referencing specification claim compliance with this part of ISO/IEC ISP 11188 by referencing it instead of repeating its provisions.

2.2 OSI upper layer stack implementation

An implementation may reference this part of ISO/IEC ISP 11188 to claim that it supports some or all of the features specified herein. The referencing implementation may in fact support additional upper layer features—without violating any of those in this part of ISO/IEC ISP 11188.

To be conformant, a referencing implementation shall do the following:

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[4] See clause 2 and Annex B in ISO/IEC ISP 11188-1.

a) support all of the mandatory ("m") features in this part of ISO/IEC ISP 11188;

b) follow the guidelines for support of the out of scope ("i") features outlined in table 1;

c) follow the guidelines for support of the optional ("o") features outlined in table 1;

d) follow the guidelines for support of the open ("*") features outlined in table 1; and

e) conform to the requirements of ISO/IEC ISP 11188-1.

NOTE — It is recommended that a referencing implementation use the tables in annex E to summarize its profile implementation conformance statement.

2.3 Facilities, roles and options

This part of ISO/IEC ISP 11188 defines **mOSI compliance and conformance** in terms of facilities, roles and options. This part of ISO/IEC ISP 11188 has three facilities:

a) association establishment;

b) user data transfer; and

c) association release.

Association establishment includes two optional facilities:

a) authentication; and

b) application context negotiation.

Each facility has roles (Initiator/Responder and Requestor/Acceptor). Within this part of ISO/IEC ISP 11188, each role (or an optional facility) is referenced by a variable (see 6.1). For example, the variable name used to describe the capability to establish an association is *establishment-initiator*.

The referencing specification assigns each variable one of the following values:

— mandatory ("m")

— optional ("o")

— out of scope ("i")

The meanings of these values are defined in table 1.

mOSI compliance and conformance can be determined by specifying values ("m", "o", or "i") for all of these variables.

2.4 Relationship to base standards

2.4.1 ACSE

This part of ISO/IEC ISP 11188 includes rules for incorporating the Kernel functional unit. Optionally, it also includes the Authentication functional unit and Application Context Name Negotiation functional unit. This part of ISO/IEC ISP 11188 allows the roles for association establishment and release identified in ISO/IEC 8650.

The required facilities of ACSE are specified in annex A. A default value for application context name is defined in annex F. The requirements expressed in ISO/IEC ISP 11188-1 also apply to the ACSE aspects of this part of ISO/IEC ISP 11188.

2.4.2 Presentation layer

This part of ISO/IEC ISP 11188 includes rules for incorporating the Presentation Kernel functional unit.

The required facilities of Presentation layer are specified in annex B. Default values for user abstract syntax name and user transfer syntax name are defined in annex F. The requirements expressed in ISO/IEC ISP 11188-1 also apply to the Presentation layer aspects of this part of ISO/IEC ISP 11188.

2.4.3 Session layer

This part of ISO/IEC ISP 11188 includes rules for incorporating the Session Kernel and Duplex functional units.

The required facilities of Session layer are specified in annex C. The requirements expressed in ISO/IEC ISP 11188-1 also apply to the Session layer aspects of this part of ISO/IEC ISP 11188.

2.5 Transport-provider

This part of ISO/IEC ISP 11188 does not address the lower four OSI layers (Transport, Network, Link, and Physical layers). They are outside of the scope of this part of ISO/IEC ISP 11188 (see also clause 7).

A transport-provider is needed to support the exchange of ACSE, Presentation, and Session PDUs for a conformant mOSI implementation. To meet this requirement, the transport-provider shall supply services equivalent to those defined in the OSI Transport layer service definition (ITU-T Rec. X.214 | ISO 8072).

3 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 these 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.

3.1 Identical Recommendations | International Standards

— ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1 : 1994, *Information technology—Open Systems Interconnection: Basic Reference Model.*

— ITU-T Recommendation X.207 (1993) | ISO/IEC 9545 : 1994, *Information technology—Open Systems Interconnection—Application layer structure.*

— ITU-T Recommendation X.210 (1993) | ISO/IEC 10731 : 1994, *Information technology —Open Systems Interconnection—Basic Reference Model—Conventions for the definition of OSI services.*

— ITU-T Recommendation X.214 (1993) | ISO/IEC 8072 : 1994, *Information technology —Open Systems Interconnection—Transport service definition.*

— ITU-T Recommendation X.215 (1994) | ISO/IEC 8326 : 1996, *Information technology —Open Systems Interconnection— Session service definition.*

— ITU-T Recommendation X.216 (1994) | ISO/IEC 8822 : 1994, *Information technology—Open Systems Interconnection—Presentation service definition.*

— ITU-T Recommendation X.217 (1995) | ISO/IEC 8649 : 1996, *Information technology —Open Systems Interconnection—Service definition for the Association Control Service Element.*

— ITU-T Recommendation X.225 (1995) | ISO/IEC 8327-1 : 1996, *Information technology—Open Systems Interconnection—Connection-oriented session protocol: Protocol specification.*

— ITU-T Recommendation X.226 (1994) | ISO/IEC 8823-1 : 1994, *Information technology—Open Systems Interconnection—Connection-oriented presentation protocol: Protocol specification.*

— ITU-T Recommendation X.227 (1995) | ISO/IEC 8650-1 : ____[5], *Information technology — Open Systems Interconnection—Connection-oriented protocol for the Association Control Service Element: Protocol specification.*

— ITU-T Recommendation X.245 (1995) | ISO/IEC 8327-2 : ____[6], *Information technology — Open Systems Interconnection—Connection-oriented session protocol : Protocol Implementation Conformance Statement (PICS) proforma.*

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5 To be published. (Revision of ISO 8650:1988)

6 To be published.

— ITU-T Recommendation X.246 (1994) | ISO/IEC 8823-2 : 1995, *Information technology—Open Systems Interconnection—Connection-oriented presentation protocol : Protocol Implementation Conformance Statement (PICS) proforma.*

— ITU-T Recommendation X.247 (1994) | ISO/IEC 8650-2 : 1995, *Information technology—Open Systems Interconnection—Protocol specification for the Association Control Service Element : Protocol Implementation Conformance Statement (PICS) proforma .*

— ITU-T Recommendation X.690 (1994) | ISO/IEC 8825-1 : 1995, *Information technology—ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*

3.2 Paired Recommendations | International Standards equivalent in technical content

— CCITT Recommendation X.650 (1992), *Open Systems Interconnection (OSI)—Reference model for naming and addressing.*

ISO 7498-3 : 1989, *Information processing systems—Open Systems Interconnection—Basic Reference Model—Part 3 : Naming and addressing.*

3.3 Additional references

— ISO/IEC TR 10000-1 : 1995, *Information technology—Framework and taxonomy of International Standardized Profiles—Part 1 : General principles and documentation framework.*

— ISO/IEC TR 10000-2 : 1995, *Information technology—Framework and taxonomy of international standardized profiles—Part 2 : Principles and Taxonomy for OSI profiles.*

— ISO/IEC ISP 11188-1 : 1995, *Information technology—International Standardized Profile—Common upper layer requirements—Part 1 : Basic connection-oriented requirements.*

4 Definitions

This part of ISO/IEC ISP 11188 makes use of the following definitions.

4.1 Reference model definitions

4.1.1 Basic Reference Model definitions

This part of ISO/IEC ISP 11188 is based on the concepts developed in ITU-T Rec. X.200 | ISO/IEC 7498-1. It makes use of the following terms defined in them:

a) application-entity;

b) Application layer;

c) application-process;

d) application-protocol-control-information;

e) application-protocol-data-unit;

f) application-service-element;

g) compliance;

h) presentation-connection;

i) Presentation layer;

j) presentation-service;

k) session-connection;

l) Session layer;

m) session-protocol;

n) session-service;

o) Transport layer

4.1.2 Naming and addressing definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ISO 7498-3:

a) application-process title;

b) application-entity qualifier;

c) application-entity title;

d) application-process invocation-identifier;

e) application-entity invocation-identifier; and

f) presentation address.

4.2 Service conventions definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ITU-T Rec. X.210 | ISO/IEC 10731:

a) primitive;

b) request (primitive);

c) indication (primitive);

d) response (primitive); and

e) confirm (primitive).

4.3 Presentation definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ITU-T Rec. X.216 | ISO/IEC 8822 and ITU-T Rec. X.226 | ISO/IEC 8823-1:

a) abstract syntax;

b) abstract syntax name;

c) default context;

d) defined context set;

e) functional unit [Presentation];

f) normal mode [Presentation];

g) presentation context;

h) presentation data value; and

i) presentation selector

4.4 Session definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ITU-T Rec. X.215 | ISO/IEC 8326 and ITU-T Rec. X.225 | ISO/IEC 8327-1:

a) session selector.

4.5 Application layer structure definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ISO/IEC 9545:

a) application-context;

b) application-entity invocation;

c) control function; and

d) application-service object.

4.6 ACSE service definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ITU-T Rec. X.217 | ISO/IEC 8649 and ITU-T Rec. X.227 | ISO/IEC 8650-1:

a) application-association; association;

b) Association Control Service Element;

c) requestor;

d) acceptor;

e) association-initiator; and

f) association-responder.

4.7 Taxonomy of profile definitions

This part of ISO/IEC ISP 11188 makes use of the following terms defined in ISO/IEC TR 10000-1:

a) A-Profile;

b) profile requirements list;

c) profile implementation conformance statement; and

d) PICS Proforma.

4.8 Definitions of this part of ISO/IEC ISP 11188

For the purposes of this part of ISO/IEC ISP 11188, the following definitions apply.

4.8.1 basic communications application: An application program that simply requires the ability to open and close communications with a peer and to send and receive messages with that peer.

4.8.2 conformance: The referencing implementation supports an identified and consistent set of dynamic conformance requirements specified in a set of related OSI protocol, profile, abstract syntax, encoding rule and information object specifications.[7]

4.8.3 mOSI specification; mOSI stack specification: This specification that defines the minimal facilities of the Session layer, Presentation layer, and ACSE.

4.8.4 mOSI stack: An implementation that supports, at a minimum, the facilities defined in the mOSI stack specification.

4.8.5 mOSI platform specification: The functional specification of a formal programmatic interface and a set of supporting local services for the mOSI stack specification.

4.8.6 mOSI platform: An implementation of the mOSI platform specification.

4.8.7 non-basic communications application: An application program that requires the ability to support functions other than those specified in the definition a basic communications application.

4.8.8 platform: An implementation of an identified platform specification.

4.8.9 platform-based application: An application program that conforms to a platform specification.

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[7] This definition may be removed at such a time when a definition of conformance is made available in the OSI Reference Model, or some other governing specification.

4.8.10 PDV-processor: part of an implementation which wraps and unwraps the "PDV envelope" around the syntax sent and received in the identified presentation context.

4.8.11 platform specification: The functional specification of a formal programmatic interface and a set of supporting local services for an identified stack specification.

4.8.12 referencing implementation: A specification of an implementation which references mOSI for defining its upper layer requirements.

4.8.13 referencing specification: A specification of an ISO/IEC ISP or the specification of a basic communications application which references mOSI for defining its upper layer requirements.

4.8.14 specific basic communications application: an application that is not referenced by any ISP.

4.8.15 stack; stack implementation: An implementation of an identified stack specification

4.8.16 stack specification: The functional specification of a set of interrelated standards for the purpose of providing a common service (set of facilities).

4.8.17 standalone application: Any application program which is not a platform-based application.

4.8.18 transport-provider: A provider of those transport services which are defined in ITU-T Rec. X.214 | ISO/IEC 8072.

5 Abbreviations

The following abbreviations are used in this part of ISO/IEC ISP 11188.

ACSE	Association Control Service Element
APDU	application-protocol-data-unit
API	application programmatic interface
ASN.1	Abstract Syntax Notation One
BCA	basic communications application
CCITT	International Telegraph and Telephone Consultative Committee
CULR	Common Upper Layers Requirements
ICS	implementation conformance statement
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ISP	International Standardized Profile
ITU-T	International Telecommunications Union — Telecommunications Systems and Services
mOSI	minimal OSI upper layer facilities
OSI	Open Systems Interconnection
PDU	protocol-data-unit
PDV	presentation data value
PICS	protocol implementation conformance statement
PPDU	presentation-protocol-data-unit
PRL	profile requirements list
SPDU	session-protocol-data-unit
TSDU	transport-service-data-unit

6 Conventions

6.1 Profile status indicators

This part of ISO/IEC ISP 11188 states mOSI functionality by defining rules for forming a mOSI Profile Requirements List (PRL) based on the PICS proformas of ACSE, Presentation, and Session. The rules for defining a mOSI PRL are contained in annexes A, B, and C. The rules are specified by a series of tables in each annex. Each table in an annex refers to one identified table in the respective PICS Proforma. Each row in an annex table refers to a row in the corresponding PICS Proforma table.

Annexes A, B, and C consist of rules that determine the status indicator for each entry in the ACSE, Presentation, Session PICS Proformas. A **status indicator** defines rules that a referencing application or a referencing implementation must follow as it relates to the associated entry in annex A, B, or C. The Profile status indicators used in this part of ISO/IEC ISP 11188 are presented in table 1.

The upper layer PICS proforma and consequently an upper layer PRL contain over 120 tables with almost 1000 entries (questions). For BCA applications, a large number of the PICS proforma entries do not apply—they are out of scope (i). Others are obviously required—they are mandatory (m). Some are considered internal and left to the discretion of the implementor—they are optional (o).

The remaining entries of annexes A, B, and C are determined by a referencing specification or a referencing implementation. This is done by assigning status indicators (those defined in table 1) to mOSI variables and open parameters (see 2.3 and 6.2). An open parameter is a variable that is only referenced in one table entry. An open parameter is assigned the profile status of "*" (see table 1).

An **application PRL** results when status identifiers are assigned to mOSI variables and open parameters and they are applied to annexes A, B, and C. Table 1 definitions apply to the resultant status identifiers of the application PRL.

Column 2 of table 1 defines rules for a referencing specification. They define how a referencing specification shall view an entry in annexes A, or B, or C. It also defines the meaning of a status indicator when assigned to a mOSI variable or to an open parameter.

Column 3 of table 1 defines rules for a referencing implementation. They define how a referencing implementation shall view an entry in annexes A, or B, or C or that of an applications PRL.