Working Implementation Agreements for Open Systems Interconnection Protocols: Part 5 - Upper Layers

Output from the September 1993 Open Systems Environment Implementors' Workshop (OIW)

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Foreword

This part of the Working Implementation Agreements was prepared by the Upper Layers Special Interest Group (ULSIG) of the for Open Systems Environment Implementors' Workshop (OIW). See Procedures Manual for Workshop charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject.

Only the pages that were changed in September 1993 are being printed. Please refer to the June 1993 Working Document for additional information.

Future changes and additions to this version of these Implementor Agreements will be published as a new part. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

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Editor's Note - All references to Stable Agreements in this section are to Version 5.

Editor's Note - Clauses 1 through 12 will be replaced by appropriate references to ISP 11188-1 (Common Upper Layers Requirements).

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NOTE -

11 Additions to ISP on Common Upper Layer Requirements

11.1 Service

Only the Kernel functional unit need be supported. The Context Management and Context Restoration functional units are outside the scope of these agreements.

The requirement that the Presentation kernel functional unit be implemented does not imply that any of the Session functional units for expedited data, typed data, and capability data and the corresponding Presentation service primitives are required to be implemented.

11.2 Provider Abort Parameters

No conformance requirements are implied by the use of either the Abort-reason or the Event-identifier component of the ARP-PPDU. The decision to include these parameters is left up to the implementation issuing the abort.

11.3 Concatenation

When a category 0 SPDU is concatenated with a category 2 SPDU, the category 0 SPDU shall not contain User Data.Extended concatenation is not required and can be refused using the normal negotiation mechanisms of the Session protocol.

11.4 Segmenting

Session segmenting is not required and can be refused using the normal negotiation mechanisms of the Session protocol. All conformant implementations shall be able to interwork without Session segmenting.

11.5 Reuse of Transport Connection

Reuse of a Transport connection is not required and can be refused.

11.6 Use of Transport Expedited Data

The Session use of Transport expedited service is optional.

12 Character Sets

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(Refer to Stable Agreements Document)

14.6 Transaction Processing

14.6.1 ACSE Requirements

ACSE Functional Units: Kernel

The application context is user-defined.

14.6.2 Presentation Requirements

Presentation Functional Units: Kernel

Presentation Contexts:

a) At least 3 must be supported if the commit functional unit of TP is not supported.

b) At least 4 must be supported if the commit functional unit of TP is supported.

Abstract Syntaxes: "ISO 8650-ACSE1" { joint-iso-ccitt(2) association-control(2) abstract-syntax(1) apdus(0) version1(1) }

Associated Transfer Syntax:

a) "Basic Encoding of a single ASN.1 type" { joint-iso-ccitt(2) asn1(1) basic-encoding(1) }

b) "ISO 10026-TP" { joint-iso-ccitt(2) transaction-processing(?) abstract-syntax(2) tp-apdus(1) }

c) If required, "ISO 9804-CCR" (TBD)

d) At least one user-defined abstract syntax.

14.6.3 Session Requirements

Session Functional Units:

a) kernel

b) duplex

c) Others as required by CCR (TBD) if the commit functional unit of TP is supported.

Version Number: 2

Maximum size of User Data parameter field: 10,240

14.7 Network Management

(Refer to Stable Agreements Document)

14.8 Remote Database Access

14.8.1 ACSE Requirements

ACSE Functional Units: Kernel

Application Contexts:

a) "RDA-SQL-BASIC-APPL-CONTEXT-V1" {iso(1) standard(0) rda(9579) part-2(2) basic-ac(2) version-1(1)} implies use of the ACSE and RDA SQL ASEs;

b) "RDA-SQL-TP-APPL-CONTEXT-V1" {iso(1) standard(0) rda(9579) part-2(2) tp-ac(3) version-1(1)} implies use of the ACSE, RDA SQL, TP, and optionally CCR ASEs.

14.8.2 Presentation Requirements

Presentation Functional Units: Kernel

14.8.2.1 Presentation Contexts for the RDA Basic Application Context

At least 2 presentation contexts must be supported;

Abstract Syntaxes:

a) "ISO 8650-ACSE1" {joint-iso-ccitt(2) association-control(2) abstract-syntax(1) apdus(0) version1(1)};

b) "RDA-SQL-ABSTRACT-SYNTAX-V1" {iso(1) standard(0) rda(9579) part-2(2) abstract-syntax(1) version-1(1)};

Associated Transfer Syntax: "Basic Encoding of a single ASN.1 type" {joint-iso-ccitt(2) asn1(1) basic-encoding(1)};

14.8.2.2 Presentation Contexts for the RDA TP Application Context

At least 3 presentation contexts must be supported, if the commit functional unit of TP is not supported. At least four presentation contexts must be supported, if the commit functional unit of TP is supported.

Abstract Syntaxes:

a) "ISO 8650-ACSE1" {joint--iso-ccitt(2) association-control(2) abstract-syntax(1) apdus(0) version1(1)};

b) "RDA-SQL-ABSTRACT-SYNTAX-V1" {iso(1) standard(0) rda(9579) part-2(2) abstract-syntax(1) version-1(1)};

c) "ISO 10026-TP" {joint-iso-ccitt(2) transaction processing(10) modules(1) apdus-abstract-syntax(1) version1 (0)};

d) If required, "ISO 9805-CCR" {joint-iso-ccitt(2) ccr(7) abstract-syntax(2) apdus(1) version1 (1)}.

Associated Transfer Syntax: "Basic Encoding of a single ASN.1 type" {joint-iso-ccitt(2) asn1(1) basic-encoding(1)}.

14.8.3 Session Requirements

Session Functional Units:

a) Kernel;

b) Duplex;

Version: 2:

Maximum size of User Data parameter field: 10,240.

Annex A (normative)

Object Identifier Register

A.1 Register Index

(Refer to Stable Agreements Document)

A.2 Object Identifier Descriptions

(Refer to Stable Agreements Document)

Annex B (informative)

Recommended Practices

(Refer to Stable Agreements Document.)

Annex C (informative)

Backward Compatibility

Version & Section		
Issue	Changed	Backward Compatibility
Restrictions on minimum number of octets implementations shall be able to receive.	V1E2 5.5.3.2	Interworking problems may occur, since implementations could send more than 128 octets. [An implementation that conforms to versions previous to V1E2 as an initiator and V3E1 as a responder will be able to interoperate.]
Agreements on AE Title, AP Title, and AE Qualifier changed.	V1E3 section 5.5.3.3 & V1E4 section 5.5.3.3	Interworking problems may occur between implementations that expect different forms of AP Title and AE Qualifier to be used. [Implementations that accept any form of these parameters will interwork with initiators that conform to earlier versions.]
Restrictions on encoding of "Presentation Context Identifier."	V2E1 section 5.8.3.3	Interworking problems may occur since implementations could encode negative numbers. [An implementation that conforms to versions previous to V2E1 as a responder and V3E1 as an initiator will be able to interoperate.]
Mode selector as first element in set	V1E4 section 5.6.3.4	This will cause interworking problems for those implementations that don’t encode "mode selector" as the first element in the set. [An implementation that conforms to versions previous to V1E4 as an initiator and V3E1 as a responder will be able to interoperate.]

Version & Section		
Issue	Changed	Backward Compatibility
Restrictions on encoding of "protocol version" and "presentation requirements."	V2E1 section 5.8.4.2	This will cause interworking problems for those implementations expecting "protocol version" and "presentation requirements" to be encoded in the primitive form. [An implementation that conforms to versions previous to V2E1 as an initiator and V3E1 as a responder will be able to interoperate.]
Restrictions on encoding of "presentation selector."	V2E1 section 5.8.4.3	This will cause interworking problems for those implementations expecting "presentation selector" to be encoded in the primitive form. [An implementation that conforms to versions previous to V2E1 as an initiator and V3E1 as a responder will be able to interoperate with either version.]
Use of default values for Minor syncpoint changed.	V2E3 section 5.11.1.1.1	No backwards compatibility
Addition and deletions of abstract syntaxes.	V2E1 section 5.11.1.3.1	No backwards compatibility
Value for session functional unit "resynchronize" changed.	V2E4 section 5.11.1.4.1	No backwards compatibility
Restrictions on inclusion of "Transfer-syntax-name" in CP PPDU and CPC type.	V3E1 section 5.8.6	Interworking problems will occur for those implementations that expect "Transfer-syntax-name" parameter to be present in the PDV-List even though one transfer syntax was negotiated. [An implementation conforming to V3E1 as an initiator and versions previous to V3E1 as a responder will be able to interoperate.]

Version & Section		
Issue	Changed	Backward Compatibility
Encoding restrictions on ASN.1 INTEGER type describing PCI.	V3E1 section 5.10.4	Interworking problems will occur since implementations conforming to previous versions could encode PCI integer lengths greater than 4. [Responders that accept integers describing PCI that are encoded in greater than 4 octets and Initiators that conform to V3E1 will be able to interoperate.]
Encoding restrictions on BIT STRING, OCTET STRING, and CHARACTER STRING.	V3E1 section 5.10.5	Implementations that conform to previous versions can expect these strings to have nested constructed encodings and therefore interworking problems will occur. [Responders that accept nested constructed encodings and Initiators that conform to V3E1 will be able to interoperate.]
No extra trailing bits allowed in BIT STRING.	V3E1 section 5.10.6	Interworking problems will occur when implementations that conform to previous versions send extra trailing bits. [Responders accepting extra trailing bits and Initiators that conform to V3E1 will be able to interoperate.]
Restriction on usage of "token item field" and "user data."	V3E1 section 5.9.3.1	Interworking problems will occur since implementations that conform to V1E1 do not expect the "token item field" to be encoded when a category 0 SPDU is concatenated to a category 2 SPDU.
Restrictions on CPC-type values when multiple transfer syntaxes are proposed.	V2E2 section 5.8.3.9	Interworking problems may occur between initiators that send CPC-type values and receivers that do not examine them.

Issue	Changed	Backward Compatibility
	Version & Section	
References to ISO 8649 and ISO 8650 changed.	V1E3 section "References."	Interworking problems will occur for those implementations that conform to ISO DIS 8649 and 8650. V1E3 references IS versions of 8649 and 8650.
References to ISO 8326, ISO 8327, ISO 8822, and ISO 8823 changed.	V1E4 section References.	Interworking problems will occur for those implementations that conform to 8326/DAD2, 8327/DAD2, DIS 8822, and DIS 8823. V1E4 referenced 8326/AD2, 8327/AD2, IS 8822, and IS 8823.
AE Title changed according to Amendment 1 to ISO 8650.	V3E1 section 5.5.3.2	Interworking problems will occur between initiators that use AE-title- form 1 and responders that accept only AE-Title-form 2.
Restrictions on usage of "direct references" in ABRT APDU.	V3E1 section 5.5.4	Interworking problems will occur for those implementations that expect the "direct reference" parameter to be included in the ABRT APDU. [An implementation that conforms to V3E1 as an initiator and versions previous to V3E1 as a responder will be able to interoperate.]

Annex D (normative)

Working Draft of new ISP on mOSI Specification

ULSIG-33-09/93

TITLE: Information technology -- International Standardized Profile -- Common Upper Layer Requirements -- Part 3: Minimal OSI upper layer facilities

SOURCE: OIW ULSIG

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Submitted to Regional Workshops for review.

This document is a draft for the profile of the minimal OSI facilities necessary to support basic connection-oriented communication applications. These facilities are comprised of a subset of the facilities defined in the ACSE, Presentation and Session service definitions.

The schedule for the progression of all parts of the Common Upper Layer Requirements to become ISP's is provided in an attachment.

International Standardized Profile
Common upper layer requirements—Part 3: Minimal OSI upper layers facilities

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Annexes

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 liason 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.

This part of ISO/ISP 11188 was prepared with the collaboration of

- -- Asia-Oceania Workshop (AOW);
- -- European Workshop for Open Systems (EWOS);
- -- OSE Implementors Workshop (OIW).

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

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 TR10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standarization 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.

ISO/IEC ISP 11188 as a multi-part ISP specifies general requirements on the use of OSI protocols by A-profiles. These are identified as "Common Upper Layer Requirements".

The parts of this multi-part ISP do not contain the definition of any complete profiles, but can be referenced normatively by other ISPs which do define A-profiles. In addition, a referencing ISP may specify further requirements on the protocols, provided it does not contradict this ISP.

The purpose of this multi-part ISP is to provide common text for ISPs or other referencing specifications which sopecify 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 to support basic connection-oriented communication applications. These facilities are comprised of a subset of the facilities defined by the ACSE, Presentation, and Session service definitions.

INTERNATIONAL STANDARDIZED PROFILE ISO/IEC 11188-3

Information technologyInternational Standardized Profile
Common upper layer requirementsPart 3: Minimal OSI upper layers facilities

1 Scope

This part of ISO/IEC ISP 11188[1] introduces the concept of a minimal set of OSI upper layer facilities for basic communications applications. A **basic communications application** simply requires the ability to open and close 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 Profile specifies the minimal set of upper layer functionality for identified categories, options and roles of basic communication applications. It does this by stating requirements for completing identified features of the upper layer PICS proformas — the ACSE (ISO/IEC 8650-2), the Presentation Layer (ISO 8823-2), and the Session Layer (ISO 8327-2). This Profile also supports the requirements stated in ISO/IEC ISP 11188-1, Basic Connection-oriented Requirements.

This Profile is not intended for reference by a physical implementation. For this reason, no requirement is made for conformance to this Profile.

This Profile is intended for reference by another specification.[2] Therefore, this Profile is concerned with compliance[3] rather than conformance. An implementation will not undergo conformance testing to this Profile. Rather, a static comparison may take place between the implementation's completed ACSE, presentation, and session PICSs and this Profile. Conformance testing, as such, is based on the contents of the completed PICSs — outside of the scope of this Profile.

A specification may claim compliance by referencing this Profile. Clause 82 defines the compliance statement that may be stated and summarizes the requirements for making such a statement. The detailed requirements for completing the ACSE, presentation, and session PICS

[1] In the remainder of this document, the term "Profile" is used to denote this "part of ISO/IEC ISP 11188."

[2] The following are examples of a specification that may refer to this Profile: the specification of an API; an ISP; the specification of a communications platform; and the specification of a basic communications application.

[3] **Compliance** deals with one specification referencing another specification; **conformance** deals with a physical implementation that references one or more specifications.

proformas are stated in Annexes A, B, and C, respectively. Annex D provides a proforma for a profile compliance statement which would specify the compliance of a referencing specification to this profile. Annex E assigns object identifier values for specific generic definitions of application context, abstract syntax, and transfer syntax.1.2 Position within the taxonomy

This Profile does not specify a full A-Profile, and therefore has no place within the taxonomy of ISO/IEC TR 10000-2.

2 Compliance

This clause presents the compliance statement that a specification may make relative to this Profile.

2.1 Referencing specifications

This Profile may be used by the designers of one of the following types of specifications that wish to claim compliance to the minimal OSI upper layers defined in this Profile:

a) ISP; or

b) API specification; or

c) Platform specification; or

d)‘ Specific basic communications application — either a platform-based application or a standalone application.

Each type of specification is discussed below.

2.1.1 ISP

An ISP is a specification that includes the requirements of the upper layers — ACSE, presentation, and session. An ISP that represents a basic communications application may contain a claim of compliance to this Profile. Such a claim indicates that the ISP's requirements for ACSE, presentation, and session features are satisfied by features specified in this Profile.

An ISP may claim compliance to this Profile if the ISP:

a) requires the Profile's mandatory and some or all optional features for the category, roles and options identified by the ISP; and

b) does not require any of the "out of scope" (i) or "excluded" (x) features specified by this Profile.

The specifications of an ISP are generic — an implementation of the ISP may result in either a standalone or a platform-based application (see clause 6).

An ISP may elect to repeat all of the specifications contained in this Profile. To claim compliance to this Profile, such an ISP shall assure that its specification of the ACSE. presentation, and session features does not violate those in this profile.

Likewise, an ISP may exclude within it all of the specifications contained in this Profile and reference this Profile. The conformance statement of such an ISP shall require that a referencing implementation of the ISP shall comply to the requirements of this profile when completing the implementation's ACSE, presentation, and session PICSs.

2.1.2 API specification

An API specification (or an identified subset of an API specification) may claim compliance to this Profile. Such a claim indicates that the API (or API subset) supports the features specified in this Profile.

An API specification[4] may claim compliance to this Profile if the API specification:

a) supports all Profile mandatory features and some or all optional features for the identified roles and categories; and

b) can be restricted in the support of the "out of scope" (i) features identified by this Profile.

c) excludes all "excludes" (x) features specified by this Profile.

2.1.3 Platform specification

A platform specification represents the description of a communications platform implementation. It is not expected that a platform specification would be the subject of International Standardization. Most likely, a platform specification would represent a proprietary (e.g., a Consortium) statement. A platform specification includes the completed PICSs for ACSE, presentation, and session.

A platform specification may claim compliance to this Profile. Such a claim indicates that the platform supports the features specified in this Profile.

A platform specification that exactly contains the features of this Profile (for the roles and category) selected is considered to define a **mOSI platform**. A platform specification that contains non-contradictory features in addition to those of this Profile is considered to be a **mOSI-compliant platform**.

A platform specification may claim compliance to this Profile if:

a) the completed ACSE, presentation, and session PICSs for the platform specification include all of the Profile's mandatory features and some or all of identified optional features for the roles and category supported by its API;

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[4] The "API specification" claiming compliance may represent the entirety of the API functionality or it may be an identified subset of an API specification. XTI/mOSI is an example of an "entire" API that may claim compliance. A subset of XAP could be an example of a subset of an API that could claim compliance.

b) the platform specification includes an API whose specification conforms to this Profile; and

c) the platform is capable of operating in a mode whereby all of the "out of scope" (i) and "excluded" (x) features specified by this Profile are not permitted (for a mOSI-complaint platform).

2.1.4 Specific basic communications application

For this discussion a s**pecific basic communications application** is one that is not addressed by any ISP. That is, a specific basic communications application is not the subject of International Standardization.

A platform-based specific basic communications application may reference this Profile to identify itself as a basic communications application. However, its main specification is the identification of a mOSI API.

The specification of a standalone specific basic communications application may reference this Profile as done for an ISP. That is, it may

a) repeat all of the specifications contained in this Profile; or

b) not include any of the specifications contained in this Profile and reference this Profile.

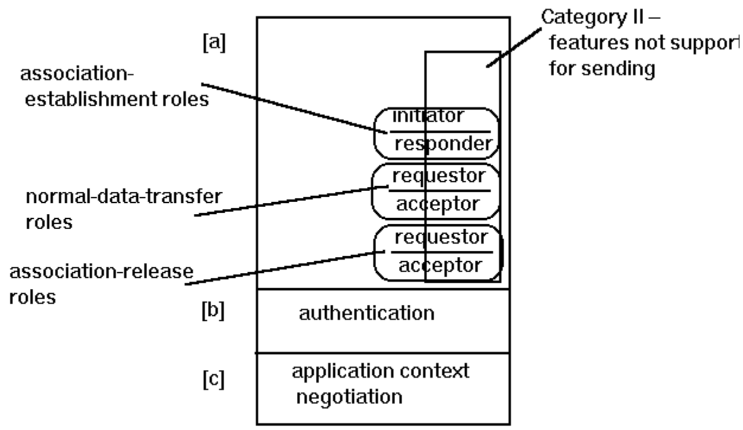

Figure 1 — Compliance possibilities

2.2 Categories, roles and options

Figure 2 illustrates the mOSI compliance possibilities. The "foundation" is **mOSI compliance** (box [a]). This consists of the Kernel functional units of ACSE, presentation, and session. It also includes the session Duplex functional unit. To this, two optional sets of features may be selected: **with authentication** (the ACSE Authentication functional unit — box [b]); and **with application context negotiation** (the ACSE Application Context Negotiation functional unit — box [c]).

mOSI compliance contains three sets of optional roles for association establishment, normal data transfer, and association-release.

2.2.1 Association Establishment

For association establishment, the following roles are possible [see Annex D]:

a) association initiator only; or

b) association responder only; or

c) both association initiator and association responder.

For the purposes of this Profile, this set of roles is expressed by the variable *Establishment-role.* The variable may assume one of the following values: "initiator", or "responder", or "both." This variable is used in Annexes A, B, and C to define conditionally the requirements of ACSE, presentation, and session.

2.2.2 Normal data transfer

For normal data transfer, the following roles are possible [see Annex D]:

a) normal data requestor only; or

b) normal data acceptor only; or

c) both normal data requestor and acceptor; or

d) neither normal data requestor nor acceptor.

For the purposes of this Profile, this set of roles is expressed by the variable *Normal-data-role*. The variable may either be null or it may assume one of the following values: "requestor", or "acceptor", or "both." The variable is used in Annexes B and C to define conditionally the presentation and session requirements.

2.2.3 Association Release

For association release, the following roles are possible [see Annex D]:

a) release-requestor only; or

b) release-acceptor only; or

c) both release-requestor and release-acceptor; or

d) neither release-requestor nor release-acceptor.

For the purposes of this Profile, this set of roles is expressed by the variable *Release-role*. The variable may either be null or it may assume one of the following values: "requestor", or "acceptor", or "both." The variable is used in Annexes A and C to define conditionally the ACSE and session requirements.

mOSI compliance has two categories: category I and category II.

Both category I and category II require support for receiving all features of the selected roles.

Category I requires support for sending all features of the selected roles. Category II allows that one or more identified features need not be supported for sending (see Annex D).

3Normative References

The following CCITT Recommendations | International Standards contain provisions which, through reference in this text, constitute provisions of this CCITT Recommendation | International Standard . At the time of publication, the editions indicated were valid. All Recommendation and Standards are subject to revision, and parties to agreements based on this CCITT Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions of the CCITT Recommendations | International Standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards. The CCITT Secretariat maintains a list of the currently valid CCITT Recommendations.

3.1 Identical Recommendations | International Standards

CCITT Recommendation X.227 (1993) | ISO 8650: 1993,[5] *Information processing systems–Open Systems Interconnection–Protocol specification for the Association Control Service Element.*

32 Paired Recommendations | International Standards equivalent in technical content

CCITT Recommendation X.200 (1984), Reference Model of Open Systems Interconnection for CCITT applications.
ISO 7498:1984, Information processing systems–Open Systems Interconnection–Basic Reference Model.
CCITT Recommendation X.210 (1988), OSI Layer Service Definition Conventions for CCITT applications.
ISO/TR 8509:1986, OSI Layer Service Definition Conventions.
CCITT Recommendation X.214 (1988), Transport service definition for Open Systems Interconnection for CCITT applications.
ISO 8072:1986, Information processing systems–Open Systems Interconnection–Transport service definition.
CCITT Recommendation X.225 (1988), Session protocol specification for Open Systems Interconnection for CCITT applications.
ISO 8327:1990, Information processing systems–Open Systems Interconnection–Connection oriented session protocol specification.
CCITT Recommendation X.226 (1988), Presentation protocol specification for Open Systems Connection for CCITT applications.
ISO 8822:1988, Information processing systems–Open Systems Interconnection–Connection oriented presentation protocol specification.

3.3 Additional references

ISO 7498-3:1988, Information processing systems–Open Systems Interconnection–Basic Reference Model–Part 3: Naming and Addressing.
ISO 8327-2:1992, *Information processing systems–Open Systems Interconnection–Connection oriented session protocol specification–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO 8650-2: 1992, *Information processing systems–Open Systems Interconnection–Protocol specification for the Association Control Service Element–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma* .
ISO 8823:1992, *Information processing systems–Open Systems Interconnection–Connection-oriented Presentation Protocol Specification–Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO/IEC 9545:1989, *Information technology–Open Systems Interconnection–Application Layer Structure*
ISO/IEC TR 10000-1:1992, *Information technology–Framework of taxonomy of International Standardized Profiles–Part 1: Framework.* .

[5] Currently under ISO/IEC national body review

ISO/IEC TR 10000-2:1992, *Information technology–Framework of taxonomy of International Standardized Profiles–Part 2: Taxonomy of Profiles.*
ISO/IEC ISP 11188-1, *Information technology–International Standardized Profile–Common upper layer requirements–Part 1: Basic connection-oriented requirements*.[6]

[6]Currently at level of working draft

4 Definitions

This Profile makes use of the following definitions.

4.1 Reference model definitions

4.1.1 Basic Reference Model definitions

This Profile is based on the concepts developed in CCITT Rec. X.200 | ISO 7498-1 and ISO 7498-1/AD1. It makes use of the following terms defined in them:

a) application-entity;

b) application-function;

c) Application Layer;

d) application-process;

e) application-protocol-control-information;

f) application-protocol-data-unit;

g) application-service-element;

h) connectionless-mode presentation-service;

i) (N)-connectionless-mode transmission;

j) (N)-function;

k) presentation-connection;

l) Presentation Layer;

m) presentation-service;

n) session-connection;

o) session layer;

p) session-protocol;

q) session-service;

r) Transport Layer

4.1.3 Naming and addressing definitions

This Profile 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 Profile makes use of the following terms defined in CCITT Rec. X.210 | ISO/TR 8509:

a) service-provider;

b) service-user;

c) confirmed service;

d) non-confirmed service;

e) provider-initiated service;

f) primitive;

g) request (primitive);

h) indication (primitive);

i) response (primitive); and

j) confirm (primitive).

4.3 Presentation definitions

This Profile makes use of the following terms defined in CCITT Rec. X.216 | ISO 8822 and ISO 8822/AD1 and CCITT Rec. X.226 | ISO 8823 and ISO 8823/AD2:

a) abstract syntax;

b) abstract syntax name;

c) connectionless-mode [presentation];

d) default context;

e) defined context set;

f) functional unit [presentation];

g) normal mode [presentation];

h) presentation context;

i) presentation data value; and

j) presentation selector

4.4 Session definitions

This Profile makes use of the following terms defined in CCITT Rec. X.215 | ISO 8326 and CCITT Rec. X.225 | ISO 8327:

a) session selector

4.5 Application Layer Structure definitions

This Profile 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 Profile makes use of the following terms defined in ISO/IEC 8649:

a) application-association; association

b) Association Control Service Element

c) ACSE service-user

d) ACSE service-provider

e) requestor

f) acceptor

g) association-initiator

h) association-responder

4.7 Definitions of this Profile

For the purpose of this Profile, the following definitions apply.

API specification; application programmatic interface specification: The functional specification of the local manifestation of the facilities of an identified stack specification. An API is normally defined as a set of procedure calls in a particular programming language.

API; application programmatic interface: An implementation of an identified API specification.

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.

category 1 compliance: The referencing specification supports all mandatory features listed in the category 1 columns of the tables in Annexes A, B and C.

category 2 compliance: The referencing specification supports all mandatory features listed in the category 2 columns of the tables in Annexes A, B, C.

mOSI API specification: A functional specification of the local manifestation of the facilities of the mOSI stack specification (CULR-3).

mOSI specification; mOSI stack specification: This specification that defines the minimal facilities of the Session Layer, Presentation Layer, and ACSE (CULR-3).

mOSI stack; mOSI stack implementation: An implementation that supports, at a minimum, the facilities defined in the mOSI stack specification (CULR-3).

mOSI platform specification: The functional specification of a formal programmatic interface and a set of supporting local services for the mOSI stack specification (CULR-3).

mOSI platform: An implementation of the mOSI platform specification.

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

platform: An implementation of an identified platform specification.

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

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

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

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

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

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

supported as receiver: The specified feature shall be acceptable to any receiving mOSI compliant implementation.

supported as sender: The specified feature shall be implemented by any sending mOSI compliant implementation.

transport-provider: A provider of those transport services which are defined in ISO 8072.

5 Abbreviations

The following abbreviations are used in this Profile.

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

mOSI minimal OSI upper layer facilities

OSI Open Systems Interconnection

PDU protocol-data-unit

PICS protocol implementation conformance statement

PPDU presentation-protocol-data-unit

SPDU session-protocol-data-unit

TSDU transport-service-data-unit

6 Conventions

This Profile defines a minimal set of facilities for basic communications applications. The facilities defined are those of the ACSE (ISO/IEC 8650-1), the Presentation Layer (ISO 8823-1), and the Session Layer (ISO 8327-1). This Profile states the required minimal functionality by stating requirements for completing the PICS Proforma of these three upper layer specifications.

The requirements for filling out the PICS Proformas are stated in Annexes A, B, and C. The requirements are specified by means of a series of tables in these annexes. Each table in an annex refers to one, identified table in the referenced PICS Proforma. Each row in an annex table refers to a corresponding row in the referenced PICS table. Each row identifies a particular feature of potential support.

In each table, the "Profile" column(s) indicates the requirements of this Profile for the support of a given item. For each item, the "Profile" is described by one of the identifiers ("Id") in table 1.

Table 1 — Profile column identifiers

	Id	**Name**	**Comment**
1	m	supported	Support for the feature is mandatory — as sender; as receiver; or as both sender and receiver. When completing the associated PICS Proforma table, the answer for the "Support" column shall be 'Y' — yes, the feature has been implemented.
2	o	optionally supported	Support for the item is the option of the referencing specification — as sender; as receiver; or as both sender and receiver. When completing the associated PICS Proforma table, the answer for the "Support" column shall either be: 'Y' — yes, the feature has been implemented; or 'N' — no, the feature has not been implemented.
3	c [n]	conditionally supported	Support for the feature is further defined by a condition ("n") identified with the table. Depending on the condition, when completing the associated PICS Proforma table, the answer for the "Support" column shall either be: 'Y' — yes, the feature has been implemented; or 'N' — no, the feature has not been implemented; or '-' — not applicable.
4	x	excluded	Support for the feature is not permitted — as sender; as receiver; or as both sender and receiver. When completing the associated PICS Proforma table, the answer for the "Support" column shall be 'N' — no, the feature has not been implemented.

5	i	out of scope	The requirement for the support of this feature is not covered by this Profile. When completing the associated PICS Proforma table, the answer for the "Support" column shall either be: 'Y' — yes, the feature has been implemented; or 'N' — no, the feature has not been implemented. 'out of scope' differs from conditionally supported." The receipt of a semantic of the "out of scope" feature may be treated as a protocol error.
6	n/a	not applicable	The feature is not defined by the base standard in the context where it is mentioned in a table.

Note: **[NOTE --** Mandatory support in a receiving column implies that the appropraite action is taken when the value of the feature is received. The appropraite action may be defined by a referencing specification. A default action is defined by the sucessful completion of the processing of the value by the protocol machine, i.e. the connection/association shall not be aborted.

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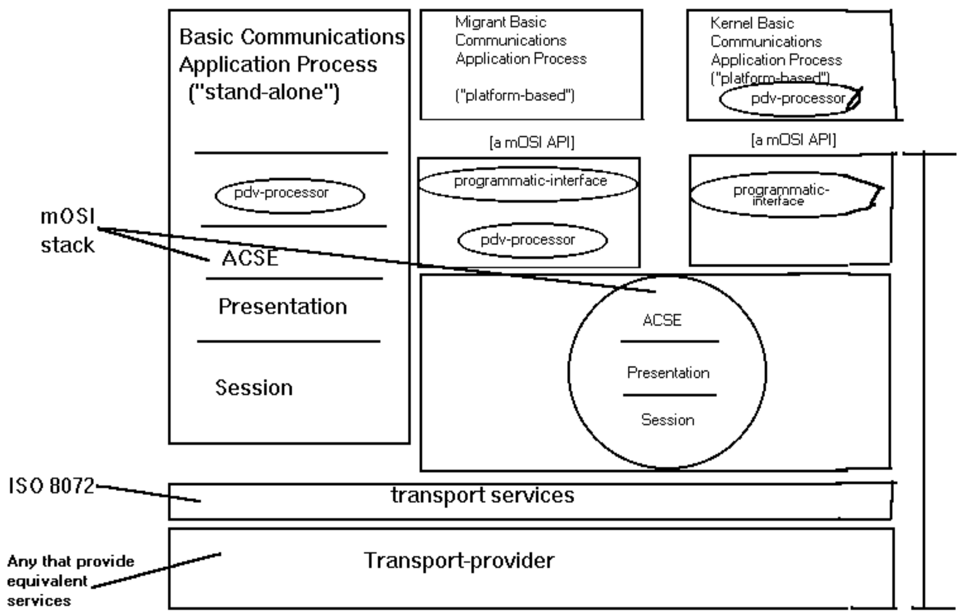

Figure 2 — mOSI model

7 Model

This clause presents the mOSI model and defines many of the terms used in this Profile. The mOSI model is shown in figure 1. It can be viewed in two contexts: it can be viewed abstractly — where the various elements represent abstract "specifications;" or it can be viewed concretely — where the elements represent those of an implementation.

7.1 Common elements

The common elements of the mOSI model are
basic communications application
pdv-processor
mOSI stack;
transport services and
transport provider

A **basic communications application (BCA)** simply requires the ability to open and close communications with a peer and to send and receive messages with the peer. This Profile addresses basic communication applications.

A stack represents a set of layered, interdependent communication standards (in the abstract sense) and their implementation (in the concrete sense). The **mOSI stack** represents the standards (protocol specifications) or their implementation with the features specified in this Profile.

Note: **[**NOTE — A stack does not necessary represent a layered implementation of the layered standards. On the contrary, it is recommended in annex F that the implementation of a mOSI stack is one protocol engine, not three — an ACSE protocol engine interfacing to a presentation protocol engine interfacing to a session protocol engine.
]

From the perspective of the presentation protocol (ISO 8823), the syntax (encoded data) sent from one application to its connected peer is a series of one or more presentation-data-values (pdv's). The ISO presentation protocol defines the encoding of the <u>outer envelope</u> of a pdv and the encoding for groups of pdv's (if any). The actual <u>contents</u> of a pdv is a function of the mutually agreed upon abstract syntax and transfer syntax of the pdv — its presentation context. ASN.1 (ISO 8824 — abstract syntax definition and ISO 8825 — transfer syntax encoding) is just one possible choice.

The selection, definition and encoding of syntax sent between connected applications is outside of the scope of the mOSI stack.[7] The **pdv-processor** represents the wrapping and unwrapping of the "pdv envelope" around the syntax sent or received in the identified presentation context. As shown in figure 1, the pdv-processor could be accomplished in several ways. The mOSI model assumes that pdv encoding and decoding is done outside of the mOSI stack.

This Profile does not address the four lower OSI layers (Transport, Network, Link, and Physical Layers). They are considered outside of the scope of this Profile. However, a **transport-provider** is needed to transport the ACSE, presentation, and session PDUs of an mOSI implementation. As such, the transport-provider supplies **transport services** equivalent to those defined in the OSI Transport Layer service definition (ISO 8072).

This specification does not place any requirements on the actual transport provider (layer 4 and below) used as long as the equivalent OSI transport services are provided.

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[7] It is also out of the scope of the presentation protocol (ISO 8823).

7.2 Standalone applications

For the purposes of this Profile, a **standalone application** is one that includes the mOSI stack and the pdv-processor as an integral part.[8] For an implementation, the mOSI stack may be a series of separate modules with its own internal programmatic interface. However, this separation and its interface are no different than any other structural division of the application.

7.3 Platform-based applications

A communications platform allows a division between an application program and its communications provider. A **platform** is the communication aspects of a distributed application in one system. A **platform-based application** represents the non-communication aspects of a distributed application in one system. An **application programmatic interface (API)** is the formal interface between a communication platform and its user [platform-based] applications. It is formal in the sense that the API is specified so as to allow the use of the platform by different types of applications — most often, in parallel. The **programmatic interface** represents the mapping of the API to the internals of the supporting system.

A **mOSI platform** consists of a mOSI stack, an API, programmatic-interface and other considerations (see 8.1.3). In figure 1 the mOSI stack is shown as an "egg" within a mOSI platform. This indicates that the mOSI stack could be a proper subset of a full OSI upper layer implementation (specification).

A **mOSI API** represents the interface to the mOSI stack (see 2.1.2). It provides the minimal features of the OSI upper layers as defined in this Profile.

As discussed in Annex F, mOSI identifies two types of basic communications applications: migrant applications and kernel applications. Depending on the type of application, the pdv-processor could either be a part of the platform or a part of each platform-based application.

7.3.1 Migrant application

OSI (and mOSI) has two required features that are not part of other transport providers:

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[8] Many ISP are written from the point of view of standalone applications. However, the actual implementation of the ISP could result in a platform-based application.

a) application context; and

b) presentation context — abstract syntax name and transfer syntax name pair.

Application context names may be hidden from the API user by having the programmatic interface provide default values (see Annex E).

A migrant application (see F.2.3.2) is unaware (or at least, not concerned) with identifying the presentation context of the data sent and received. Presentation context names may also be hidden from migrant applications by allowing the programmatic interface to provide default values (see Annex E). The encoding and decoding of the pdv's are hidden by placing the pdv-processor within the platform.

7.3.2 Kernel application

A kernel application (see F.2.3.1) is an OSI-based application. It is aware of the required features of application context names and presentation context.

Most likely, (but, not necessarily) the application's own protocol will be specified and encoded using ASN.1. For this reason the pdv-processor is shown in Figure 1 within the application itself — rather than part of the platform. It is not expected that a kernel application will use the default values for abstract syntax and transfer syntax defined in Annex E.

8 Summary of specifications

This clause summarizes the set of facilities that constitute the minimal OSI upper layers for Basic Communication applications.

8.1 Compliance to this Profile

The facilities defined in this Profile are those of the Session Layer (ISO 8327), the Presentation Layer (ISO 8823), and the ACSE (ISO/IEC 8650). This Profile specifies the minimal set of functionality by stating requirements for completing the PICS proforma of these three upper layer specifications.

Another specification may claim compliance[9] to this Profile. A specification does this by referencing this Profile. Clause 2 defines the compliance statement that may be stated and summarizes the requirements for making such a statement. The

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[9] **Compliance** deals with one specification referencing another specification; **conformance** deals with a physical implementation that references one or more specifications.

detailed requirements for completing the ACSE, Presentation, and Session PICS proformas are stated in Annexes A, B, and C. Annex D assigns object identifier values for generic definitions of application context, abstract syntax, and transfer syntax.

8.2 ACSE

This Profile specifies the Kernel functional unit. Optionally, the Profile also includes the Authentication functional unit and Application Context Name Negotiation Functional unit. The Profile allows the roles for association establishment and release identified in ISO 8650.

For ACSE, this specification allows two categories of support (see 2.2). For category I, the sending of all specified ACSE parameters shall be supported. For category II, identified parameters optionally may not be supported for sending. However, for both categories, support for the receiving of all parameters is required.

Specifically, for both categories, support for the receiving of both forms of the AE title datatypes (Directory Name and Object Identifier) is required.

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

8.3 Presentation Layer

This Profile specifies the presentation Kernel functional unit.

The required facilities of presentation are specified in Annex B. Default values for user abstract syntax name and user transfer syntax name are defined in Annex E. The requirements expressed in ISO/IEC ISP 11188-1 shall also apply to the Presentation Layer aspects of this Profile.

8.4 Session Layer

This Profile specifies the session Kernel and Duplex functional units.

The required facilities of session are specified in Annex C. The requirements expressed in ISO/IEC ISP 11188-1 shall also apply to the Session Layer aspects of this Profile.

8.5 Transport-provider

As mentioned in clause 5 (Model), this Profile does not address the lower four OSI layers (Transport, Network, Link, and Physical Layers). They are considered outside of the scope of this specification.

A transport-provider is needed to transport the ACSE, Presentation, and Session PDUs of an mOSI implementation. As such the transport-provider shall supply services equivalent to those defined in the OSI Transport Layer service definition (CCITT Rec. X.214 | ISO 8072).

Annex A
Requirements for ACSE facilities

(Normative)

This annex specifies the ACSE requirements for completing the ACSE PICS (ISO 8650-2) for the categories, roles, and options selected (see 8.2).

The specifications in this annex are based on the Proforma tables of the ACSE PICS Proforma. The clause numbers and tables referenced in this annex are those of the ISO 8650-2. If a clause number of ISO 8650-2 is not mentioned it is out of the scope of this Profile. It may be ignored and will, therefore, not be subject to the compliance statement of this Profile.

The specifications references the following variables: *Establishment-role*, and *Release-role*. These are discussed in 8.2.

Note: **[**NOTE—PICS clauses A.1-A.4 are outside of the scope of this Profile. **]**

A.1 Supported roles — [PICS clause A.5]

A.1.1 Association establishment — [PICS A.5.1]

	Role	Profile	PICS reference	Comment
1	Initiator	c[1]	A.5.1/1	
2	Responder	c[2]	A.5.1/2	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"

A.1.2 Normal release — [PICS A.5.2]

	Role	Profile	PICS reference	Comment
1	Requestor	c[1]	A.5.2/1	
2	Acceptor	c[2]	A.5.2/2	

[1]"m" if Release-role is "requestor" or "both"; otherwise "i"
[2]"m" if Release-role is "acceptor" or "both"; otherwise "i"

Note: **[**NOTE–Allowing neither Requestor nor Acceptor be selected is a violation of the ACSE PICS Proforma — currently at the DIS level. This is an arbitrary requirement — it is not mandated by ISO 8650-1 If this requirement in 8650-2 is not removed, a conditional similar to that of A.5.1 must be added. Allowing "neither" allows TCP/IP migrant applications that do their own graceful close and then an abort to be mOSI compliant–otherwise they are not compliant.

XWINDOWS is such an example.

]

A.2 Protocol mechanisms — [PICS clause A.6]

	Protocol mechanism	Profile	PICS reference	Comment
1	Normal mode	m	A.6/1	
2	X.410-1984 mode	i	A.6/2	Not used by BCA
3	Rules of extensibility	m	A.6/3	
4	Support of session version 2	m	A.6/4	

A.3 Functional units — [PICS clause A.7]

	ACSE functional unit	Profile	PICS reference	Comment
1	Kernel	m	A.7/1	
1b	AC Name Negotiation	o	not in yet	
2	Authentication	o	A.7/2	

A.4 Supported APDUs — [PICS clause A.8]

	APDU	Profile: Sender	Profile: Receiver	PICS reference	Comment
1	AARQ	c[1]	c[2]	A.8/1	
2	AARE	c[2]	c[1]	A.8/2	
3	RLRQ	c[3]	c[4]	A.8/3	
4	RLRE	c[4]	c[3]	A.8/4	
5	ABRT	m	m	A.8/5	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"
[3]"m" if Release-role is "requestor" or "both"; otherwise "i"
[4]"m" if Release-role is "acceptor" or "both"; otherwise "i"

A.5 Supporting APDU parameters — [PICS clause A.9]

A.5.1 A-associate-request (AARQ) — [PICS A.9.1]

	Parameter	Profile: Sender Cat I[a]	Profile: Sender Cat II[a]	Profile: Receiver [b]	PICS reference	Comment
1	Protocol Version	o	o	m	A.9.1/1	= version 1 for BCA
2	Application Context Name	m	m	m	A.9.1/2	
3	Calling AP Title	m	o[1]	m	A.9.1/3	
4	Calling AE Qualifier	m	o[1]	m	A.9.1/4	
5	Calling AP Invocation-identifier	m	o[2]	m	A.9.1/5	
6	Calling AE Invocation-identifier	m	o[2]	m	A.9.1/6	
7	Called AP Title	m	o[1]	m	A.9.1/7	
8	Called AE Qualifier	m	o[1]	m	A.9.1/8	
9	Called AP Invocation-identifier	m	o[2]	m	A.9.1/9	
10	Called AE Invocation-identifier	m	o[2]	m	A.9.1/10	
11	ACSE Requirements	c[3]	c[3]	m	A.9.1/11	
12	Authentication-mechanism Name	c[4]	c[4]	m	A.9.1/12	
13	Authentication-value	c[4]	c[4]	m	A.9.1/13	
13b	Application Context List	c[5]	c[5]	m	not in yet	
14	Implementation Information	o	o	m	A.9.1/14	
15	User Information	m	o	m	A.9.1/15	

[a]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.
[1]If either the AP title or AE qualifier is selected for sending, the other must also be selected.
[2]This value may be supported for sending only if the associated AP title and AE qualifier are supported for sending.

If supported, both the AP invocation identifier and the AE invocation identifier shall be supported for sending.
[3]"m" if Authentication or Application Context Name functional unit is supported; otherwise "i"
[4]"m" if Authentication functional unit is supported; otherwise "n/a"
[5]"m" if Application Context functional unit is supported; otherwise "n/a"

A.5.2 A-associate-response (AARE) — [PICS A.9.2]

	Parameter	Profile: Sender Cat I[a]	Profile: Sender Cat II[a]	Profile: Receiver [b]	PICS reference	Comment
1	Protocol Version	o	o	m	A.9.2/1	= version 1 for BCA
2	Application Context Name	m	m	m	A.9.2/2	
3	Responding AP Title	m	o[1]	m	A.9.2/3	
4	Responding AE Qualifier	m	o[1]	m	A.9.2/4	
5	Responding AP Invocation-identifier	m	o[2]	m	A.9.2/5	
6	Responding AE Invocation-identifier	m	o[2]	m	A.9.2/6	
7	Result	m	m	m	A.9.2/7	
8	Result Source-diagnostic	m	m	m	A.9.2/8	
9	ACSE Requirements	c[3]	c[3]	m	A.9.2/9	
10	Authentication-mechanism Name	c[4]	c[4]	m	A.9.2/10	
11	Authentication-value	c[4]	c[4]	m	A.9.2/11	
12	Implementation Information	o	o	m	A.9.2/12	
13	User Information	m	o	m	A.9.2/13	

[a]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[1]If either the AP title or AE qualifier is selected for sending, the other must also be selected.
[2]This value may be supported for sending only if the Responding AP title and AE qualifier are supported for sending. If supported, both the AP invocation identifier and the AE invocation identifier shall be supported for sending.
[3]"m" if Authentication or Application Context Name functional unit is supported; otherwise "i"
[4]"m" if Authentication functional unit is supported; otherwise "n/a"

A.5.3 A-release-request (RLRQ) — [PICS A.9.3]

	Parameter	Profile: Sender Cat I[a]	Profile: Sender Cat II[a]	Profile: Receiver [b]	PICS reference	Comment
1	Reason	m	m	m	A9.3/1	
2	User Information	m	o	m	A.9.3/2	

[a]This entire column has the value of "i" if Release-role is "acceptor" or "neither"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "requestor" or "neither"; otherwise the value is as marked.

A.5.4 A-release-response (RLRE) — [PICS A.9.4]

	Parameter	Profile: Sender Cat I[a]	Profile: Sender Cat II[a]	Profile: Receiver [b]	PICS reference	Comment
1	Reason	m	m	m	A9.4/1	
2	User Information	m	o	m	A.9.4/2	

[a]This entire column has the value of "i" if Release-role is "requestor" or "neither"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "acceptor" or "neither"; otherwise the value is as marked.

A.5.5 A-abort (ABRT) — [PICS A.9.5]

	Parameter	Profile: Sender Cat I	Profile: Sender Cat II	Profile: Receiver	PICS reference	Comment
1	Abort Source	m	m	m	A.9.5/1	
2	Diagnostic	m	m	m	A.9.5/2	
3	User Information	m	o	m	A.9.5/3	

A.6 Supported parameter forms — [PICS clause A.10]

A.6.1 AE Title name form — [PICS A.10.1]

Table A.10.1 need only be filled in if one or more AP Title/AE Qualifier parameters are supported on the AARQ and AARE (see tables A.9.1 and A.9.2).

	Syntax form	**Profile: Sender Cat I**	**Profile: Sender Cat II**	**Profile: Receiver**	**PICS reference**	**Comment**
1	Form 1 (Directory name)	m	o	m	A.10.1/1	
2	Form 2 (Object identifier and integer)	m	o	m	A.10.1/2	

NOTE—PICS subclause A.10.2 is out of the scope of this Profile.

Annex B
Requirements for Presentation Layer facilities

(Normative)

This annex specifies the presentation requirements for completing the Presentation PICS (ISO 8823-2) for the categories, roles and options selected (see 2.2).

The specifications in this annex are based on the Proforma tables of the Presentation Layer PICS Proforma. The clause numbers and tables referenced in this annex are those of ISO 8823-2. If a clause number of ISO 8823-2 is not mentioned it is out of scope of this Profile. It may be ignored and will, therefore, not be subject to the compliance statement of this Profile.

The specifications reference the following variables: *Establishment-role*, and *Normal-data-role*. These are discussed in 2.2.

NOTE—PICS clauses A.1-A.4 are outside of the scope of this Profile.

B.1 Protocol mechanisms and functional units — [PICS clause A.5]

B.1.1 Protocol mechanisms — [PICS A.5.1]

	Protocol mechanism	Profile	PICS reference	Comment
1	X.410 (1984)	i	A.5.1/1	Not used by BCA
2	Normal mode	m	A.5.1/2	

B.1.2 Functional units — [PICS A.5.2]

	Presentation functional units	Profile	PICS reference	Comment
1	Kernel	m	A.5.2/1	
2	Presentation Context management	i	A.5.2/2	Not used by BCA
3	Presentation Context Restoration	i	A.5.2/3	Not used by BCA

	Presentation functional units	Profile	PICS reference	Comment
4	Negotiated Release	i	A.5.2/4	Not used by BCA
5	Half Duplex	i	A.5.2/5	Not used by BCA
6	Duplex	m	A.5.2/6	
7	Expedited Data	i	A.5.2/7	Not used by BCA
8	Typed Data	i	A.5.2/8	Not used by BCA
9	Capability Data Exchange	i	A.5.2/9	Not used by BCA
10	Minor Synchronize	i	A.5.2/10	Not used by BCA
11	Symmetric Synchronize	i	A.5.2/11	Not used by BCA
12	Major Synchronize	i	A.5.2/12	Not used by BCA
13	Resynchronize	i	A.5.2/13	Not used by BCA
14	Exceptions	i	A.5.2/14	Not used by BCA
15	Activity Management	i	A.5.2/15	Not used by BCA

B.2 Elements of procedure related to the PICS — [PICS clause A.6]

B.2.1 Kernel functional unit — [PICS A.6.1]

B.2.1.1 Supported roles — [PICS A.6.1.1]

B.2.1.1.1 Presentation-connection – [PICS A.6.1.1.1]

	Role	Profile	PICS reference	Comment
1	Initiator	c[1]	A.6.1.1.1/1	
2	Responder	c[2]	A.6.1.1.1/2	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"

B.2.1.1.2 Normal data — [PICS A.6.1.1.2]

	Role	Profile	PICS reference	Comment
1	Requestor	c[1]	A.6.1.1.2/1	
2	Acceptor	c[2]	A.6.1.1.2/2	

[1]"m" if Normal-data-role is "requestor" or "both"; otherwise "i"
[2]"m" if Normal-data-role is "acceptor" or "both"; otherwise "i"

B.2.1.1.3 Orderly release — [PICS A.6.1.1.3]

	Role	Profile	PICS reference	Comment
1	Requestor	c[1]	A.6.1.1.3/1	
2	Acceptor	c[2]	A.6.1.1.3/2	

[1]"m" if Release-role is "requestor" or "both"; otherwise "i"
[2]"m" if Release-role is "acceptor" or "both"; otherwise "i"

B.2.1.2 Supported PPDUs associated with the kernel service — [PICS A.6.1.2]

	PPDU	Profile: sender Cat I	Profile: sender Cat II	Profile: receiv-er	PICS refer-ence	Comment
1	CP	c[1]	c[1]	c[2]	A.6.1.2/1	
2	CPA	c[2]	c[2]	c[1]	A.6.1.2/2	
3	CPR	c[2]	c[3]	c[1]	A.6.1.2/3	
4	ARP	m	m	m	A.6.1.2/4	send and receive
5	ARU	m	m	m	A.6.1.2/5	send and receive
6	TD	c[4]	c[4]	c[5]m	A.6.1.2/6	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"
[3]"o" if Establishment-role is "responder" or "both"; otherwise "i"
[4]"m" if Normal-data-role is "requestor" or "both"; otherwise "i"
[5]"m" if Normal-data-role is "acceptor" or "both"; otherwise "i"

NOTE--The remainder of the PICS subclauses in A.6 is out of the scope (i) of this Profile.

B.3 Supported PPDU parameters — [PICS clause A.7]

B.3.1 Connect presentation (CP) parameters — [PICS A.7.1]

	Parameter	Profile: Sender Cat I [a]	Profile: Sender Cat II [b]	Profile: Receiv-er	PICS refer-ence	Comment
1	Calling presentation selector	m	o	m	A.7.1/1	
2	Called presentation selector	m	m	m	A.7.1/2	
3	Mode selector	m	o	m	A.7.1/3	
4	Presentation context definition list	m	m	m	A.7.1/4	
5	Default context name	i	i	m	A.7.1/5	Not used by BCA
6	Protocol version	o	o	m	A.7.1/5	= version 1 for BCA
7	Presentation requirements	i	i	m	A.7.1/7	Not used by BCA
8	User session requirements	i	i	m	A.7.1/8	
9	User data	m	m	m	A.7.1/9	

[a]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.

NOTE—
Note: **[**The X.410 (1984) parameters are out of the scope (i) of this Profile.**]**

B.3.2 Connect presentation accept (CPA) PPDU — [PICS A.7.2]

	Parameter	Profile: Sender Cat I [a]	Profile: Sender Cat II [b]	Profile: Receiv-er	PICS refer-ence	Comment
1	Responding presentation selector	m	o	m	A.7.2/1	
2	Mode selector	m	m	m	A.7.2/2	= Normal for BCA

3	Presentation context definition result list	m	m	m	A.7.2/3	
4	Protocol version	o	o	m	A.7.2/4	= version 1 for BCA
5	Presentation requirements	i	i	m	A.7.2/5	Not used by BCA
6	User session requirements	i	i	m	A.7.2/6	
7	User data	m	m	m	A.7.2/7	

[a]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.

NOTE—
Note: **[**The X.410 (1984) parameters are out of the scope (i) of this Profile.**]**

B.3.3 Connect presentation reject (CPR) PPDU — [PICS A.7.3]

	Parameter	Profile: Sender [a]	Profile: Receiver [b]	PICS reference	Comment
1	Responding presentation selector	m	m	A.7.3/1	
2	Presentation context definition result list	m	m	A.7.3/2	
3	Protocol version	o	m	A.7.3/3	= version 1 for BCA
4	Default context result	i	m	A.7.3/4	Not used by BCA
5	Provider reason	m	m	A.7.3/5	limited number are mandatory
6	User data	m	m	A.7.3/6	

[a]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.

Note: [NOTE–The X.410 (1984) parameter is out of the scope (i) of this Profile.
]

B.3.4 Abnormal release user (ARU) PPDU — [PICS A.7.4]

	Parameter	Profile: Sender	Profile: Receiver	PICS reference	Comment
1	Presentation context identifier list	m	m	A.7.4/1	
2	User data	m	m	A.7.4/2	

Note: [
NOTE–The X.410 (1984) parameters are out of the scope (i) of this Profile.

]

B.3.5 Abnormal release provider (ARP) PPDU — [PICS A.7.5]

Parameter	Profile: Sender	Profile: Receiver	PICS reference	Comment

1	Provider reason	m	m	A.7.5/1	
2	Event identifier	o	m	A.7.5/2	

Note: [
NOTE–PICS subclauses A.7.6 through A.7.15 are out of the scope (i) of this Profile.**]**

B.4 Support of syntax's — [PICS clause A.8]

B.4.1 Transfer syntax's supported — [PICS A.8.1]

	Type	Detail	Profile	Reference to definition	Reference to restriction
1	Object identifier	= {joint-iso-ccitt asn1(1) basic-encoding(1)}	m	ISO 8825	ISO 11188-1
2	Object identifier	(see Annex E)	o	ISO 11188-3	none

Note: [
NOTE–Other transfer syntax's may be added to the above table based on the application(s) supported.**]**

B.4.2 Abstract syntax's supported — [PICS A.8.2]

	Type	Detail	Profile
1	Object identifier	{joint-iso-ccitt association-control(2) abstract-syntax(1) apdus(0) version1(1)	m
2	Object identifier	(see Annex E)	o

Note: [

NOTE–Other abstract syntax's may be added to the above table based on the application(s) supported.

]

B.4.3 Use of ASN.1 encoding — [PICS A.8.3]

The following table is used to indicate any coding restrictions for sending all ACSE's APDUs, PPDUs and User Information on ACSE APDU's (see PICS A.8.3).

	Restriction	Profile	Comment
1	Only definite form of length encoding used	ox	
2	Indefinite form of length encoding used for all constructed types	o	
3	Only minimal number of octets used for definite form of length encoding	o	
4	Only primitive encoding used for OCTET STRING	o	
5	Only primitive encoding used for BITSTRING	o	

Note: [
NOTE– PICS subclause A.8.4 is out of the scope (i) of this Profile.
]

Annex C
Requirements for Session Layer facilities

(Normative)

This annex specifies the session requirements for completing the Session PICS (ISO 8327-2) for the categories, roles, and options selected (see 8.2).

The specifications in this annex are based on the Proforma tables of the Session Layer PICS Proforma. The clause numbers and tables referenced in this annex are those of ISO 8327-2. If a clause number of ISO 8327-2 is not mentioned it is out of the scope of this Profile. It may be ignored and will, therefore, not be subject to the compliance statement of this Profile.

The specifications references the following variables: *Establishment-role*, *Normal-data-role*, and *Release-role*. These are discussed in 8.2.

Note: [NOTE–PICS clauses A.1-A.4 are outside of the scope of this Profile.
]

C.1 Global statement of conformance — [PICS A.5]

	Question	Answer	PICS reference
1	Are all mandatory features implemented?	yes	A.5/1

C.2 Supported functional units and protocol mechanisms — [PICS A.6]

C.2.1 Functional units — [PICS A.6.1]

	Functional unit	Profile	PICS reference	Comment
1	Kernel	m	A.6.1/1	
2	Negotiated Release	i	A.6.1/2	Not used by BCA
3	Half Duplex	i	A.6.1/3	Not used by BCA
4	Duplex	m	A.6.1/4	
5	Expedited Data	i	A.6.1/5	Not used by BCA
6	Typed Data	i	A.6.1/6	Not used by BCA
7	Capability Data	i	A.6.1/7	Not used by BCA
8	Minor Synchronize	i	A.6.1/8	Not used by BCA
9	Symmetric Synchronize	i	A.6.1/9	Not used by BCA

10	Major Synchronize	i	A.6.1/10	Not used by BCA
11	Resynchronize	i	A.6.1/11	Not used by BCA
12	Exceptions	i	A.6.1/12	Not used by BCA
13	Activity Management	i	A.6.1/13	Not used by BCA

C.2.2 Protocol mechanism — [PICS A.6.2]

	Mechanism	Profile	PICS reference	Comment
1	Use of transport expedited data (Extended control Quality Of Service)	o	A.6.2/1	
2	Reuse of transport-connection	i	A.6.2/2	Not required in CULR-1
3	Basic concatenation	m	A.6.2/3	
4	Extended concatenation (sending)	i	A.6.2/4	Not required in CULR-1
5	Extended concatenation (receiving)	i	A.6.2/5	Not used by BCA
6	Segmenting (sending)	i	A.6.2/6	Not used with BCA (see CULR-1)
7	Segmenting (receiving)	i	A.6.2/7	Not used by BCA
8	Max size of SS-user data 512	x	A.6.2/8	
9	Max size of SS-user data 10240	m	A.6.2/9	
10	Max size of SS-user data 9	x	A.6.2/10	

C.3 Elements of procedures related to the PICS — [PICS A.7]

C.3.1 Kernel functional unit — [PICS A.7.1]

C.3.1.1 Supported roles for the Kernel functional unit services — [PICS A.7.1.1]

C.3.1.1.1 Session-connection — [PICS A.7.1.1.1]

	Role	Profile	PICS reference	Comment
1	Initiator	c[1]	A.7.1.1.1/1	
2	Responder	c[2]	A.7.1.1.1/2	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"

C.3.1.1.2 Orderly release — [PICS A.7.1.1.2]

Role	Profile	PICS reference	Comment

1	Requestor	c[1]	A.7.1.1.2/1	
2	Acceptor	c[2]	A.7.1.1.2/2	

[1]"m" if Release-role is "requestor" or "both"; otherwise "i"
[2]"m" if Release-role is "acceptor" or "both"; otherwise "i"

C.3.1.1.3 Normal data transfer — [PICS A.7.1.1.3]

	Role	Profile	PICS reference	Comment
1	Requestor	c[1]	A.7.1.1.3/1	
2	Acceptor	c[2	A.7.1.1.3/2	

[1]"m" if Normal data-role is "requestor" or "both"; otherwise "i"
[2]"m" if Normal data-role is "acceptor" or "both"; otherwise "i"

C.3.1.2 Support for the SPDUs associated with the Kernel services—[PICSA.7.1.2]

	SPDU	Profile: Sender	Profile: Receive r	PICS reference	Comment
1	Connect (CN)	c[1]	c[2]	A.7.1.2/1	
2	Overflow accept (OA)	i	i	A.7.1.2/2	Not used by BCA
3	Connect Data Overflow (CDO)	i	i	A.7.1.2/3	Not used by BCA
4	Accept (AC)	c[2]	c[1]	A.7.1.2/4	
5	Refuse	c[2]	c[1]	A.7.1.2/5	
6	Finish	c[3]	c[4	A.7.1.2/6	
7	Disconnect (DN)	c[4]	c[3]	A.7.1.2/7	
8	Abort (AB)	m	m	A.7.1.2/8	
9	Abort Accept (AA)	o	o	A.7.1.2/9	
10	Data Transfer (DT)	c[5]	m	A.7.1.2/10	
11	Prepare (PR)	o	c[6]	A.7.1.2/11	

[1]"m" if Establishment-role is "initiator" or "both"; otherwise "i"
[2]"m" if Establishment-role is "responder" or "both"; otherwise "i"
[3]"m" if Release-role is "requestor" or "both"; otherwise "i"
[4]"m" if Release-role is "acceptor" or "both"; otherwise "i"
[5]"m" if Normal-data-role is "requestor" or "both"; otherwise "i"
[6]"m" if mOSI is supported by transport expedited; otherwise "i"

Note: **[**NOTE–The remainder of the PICS subclauses in A.7 is out of the scope (i) of this Profile.
]

C.4 Supported SPDU parameters — [PICS A.8]

C.4.1 Connect (CN) SPDU — [PICS A.8.1]

C.4.1.1 Connection Identifier — [PICS A.8.1.1]

	PGI "Connection Identifier"	Profile: Sender [a]	Profile: Receiver [b]	PICS reference	Comment
1	Calling SS-user Reference	i	m	A.8.1.1/1	Not used by BCA
2	Common Reference	i	m	A.8.1.1/2	Not used by BCA
3	Additional Reference Information	i	m	A.8.1.1/3	Not used by BCA

C.4.1.2 Connect/Accept Item — [PICS A.8.1.2]

C.4.1.2.1 Connect/Accept Item parameters — [PICS A.8.1.2.1]

	PGI "Connect/Accept Item"	Profile: Sender [a]	Profile: Receiver [b]	PICS reference	Comment
1	Protocol Options	m	m	A.8.1.2.1/1	For BCA, basic concatenation shall be indicated
2	TSDU maximum size	o	m	A.8.1.2.1/2	= 0 for BCA
3	Version Number	m	m	A.8.1.2.1/3	= version 2 for BCA
4	Initial Serial Number	i	m	A.8.1.2.1/4	Not used by BCA
5	Token Setting Item	i	m	A.8.1.2.1/5	Not used by BCA
6	Second Initial Serial Number	i	m	A.8.1.2.1/6	Not used by BCA

[a]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.

C.4.1.2.2 Presence of Connect/Accept Item — [PICS A.8.1.2.2]

		Profile: Sender [a]	Profile: Receiver [b]	PICS reference	Comment
1	Sending	m	i	A.8.1.2.2/1	
2	Receiving	i	m	A.8.1.2.2/2	

[a]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.

C.4.1.3 Single Items — [PICS A.8.1.3]

	Single Items	Profile: Sender Cat I [a]	Profile: Sender Cat II [a]	Profile: Receiver [b]	PICS reference	Comment
1	Session User Requirements	m	m	m	A.8.1.3/1	For BCA, shall include duplex

2	Calling Session Selector	o	o	m	A.8.1.3/2	
3	Called Session Selector	m	o	m	A.8.1.3/3	
4	Data Overflow	i	i	m	A.8.1.3/4	Not used by BCA
5	User Data	m	m	m	A.8.1.3/5	
6	Extended User Data	m	o	m	A.8.1.3/6	

[a]This entire column has the value of "i" if Establishment-role is "responder"; otherwise the value is as marked.
[b]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.

Note: [NOTE–The session PICS (ISO 8327-2) mandates that the Called Session Selector be sent. However, the session protocol specification (ISO 8327-1) indicates that this datatype is optional. This Profile has chosen to make this item optional ("o") for category II.
]

C.4.2 Accept (AC) SPDU — [PICS A.8.4]

C.4.2.1 Connection Identifier — [PICS A.8.4.1]

	PGI "Connection Identifier"	Profile: Sender	Profile: Receiver [a]	PICS reference	Comment
1	Calling SS-user Reference	i	m	A.8.4.1/1	Not used by BCA
2	Common Reference	i	m	A.8.4.1/2	Not used by BCA
3	Additional Reference Information	i	m	A.8.4.1/3	Not used by BCA

[a]This entire column has the value of "i" if Establishment-role is "initiator"; otherwise the value is as marked.

C.4.2.2 Connect/Accept Item — [PICS A.8.4.2]

C.4.2.2.1 Connect/Accept Item parameters — [PICS A.8.4.2.1]

	PGI "Connect/Accept Item"	Profile: Sender [a]	Profile: Receiver [b]	PICS reference	Comment
1	Protocol Options	m	m	A.8.4.2.1/1	Basic concatenation shall be indicated
2	TSDU maximum size	o	m	A.8.4.2.1/2	If sent , value shall be 0

3	Version Number	m	m	A.8.4.2.1/3