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**Information technology — International
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Management — Management
Communications —**

Part 1:

Specification of ACSE, presentation and
session protocols for the use by ROSE and
CMISE

*Technologies de l'information — Profils normalisés internationaux AOM1n
pour la gestion OSI — Gestion de communication —*

*Partie 1: Spécification des protocoles ACSE, présentation et session pour
emploi par ROSE et CMISE*



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 11183-1 was prepared with the collaboration of

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

ISO/IEC ISP 11183 consists of the following parts under the general title *Information technology — International Standardized Profiles AOM1n OSI Management — Management Communications*:

- *Part 1: Specification of ACSE, presentation and session protocols for the use by ROSE and CMISE*
- *Part 2: CMISE/ROSE for AOM12 — Enhanced Management Communications*
- *Part 3: CMISE/ROSE for AOM11 — Basic Management Communications*

Annexes A, B and C form an integral part of this part of ISO/IEC ISP 11183.

Introduction

This International Standardized Profile (ISP) 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 conformance test suites.

One of the most important roles for an ISP is to serve as the basis for the development (by organizations other than ISO and IEC) of internationally recognized tests and test centres. ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real system interoperability. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realization of this goal.

The text for this part of ISO/IEC ISP 11183 was developed in close cooperation among the Network Management Expert Groups of the three International OSI Workshops: the European Workshop for Open Systems (EWOS), the NIST Workshop for Implementors of OSI (NIST OIW) and the OSI Asia-Oceania Workshop (AOW). This ISP is harmonized among these three Workshops and it was finally ratified by the Workshops' plenary assemblies.

This part of ISO/IEC ISP 11183 contains three normative annexes:

Annex A	ISPICS Requirements List of ACSE
Annex B	ISPICS Requirements List of Presentation
Annex C	ISPICS Requirements List of Session.

The expression "International Standardized Profile" is replaced by the abbreviation "ISP" in the following clauses and annexes.

Information technology — International Standardized Profiles AOM1n OSI Management — Management Communications —

Part 1:

Specification of ACSE, presentation and session protocols for the use by ROSE and CMISE

1 Scope

1.1 General

This part of ISO/IEC ISP 11183 specifies how the Association Control Service Element, the Presentation Layer, and the Session Layer standards shall be used to provide the required upper layer functions for the CMISE/ROSE functions (see also figure 1). These specifications are therefore the common basis for the application functions as defined in ISO/IEC ISP 11183-2, ISO/IEC ISP 11183-3 and any of the subsequent parts that might be developed.

NOTE - This part of ISO/IEC ISP 11183 will be aligned with the future ISO/IEC ISP 11188-1, Common Upper Layer Requirements - Part 1: Basic connection oriented requirements, which is currently under development.

1.2 Position within the Taxonomy

This part of ISO/IEC ISP 11183 is the first part, as common text, of a multipart ISP identified in ISO/IEC TR 10000-2 as "AOM, OSI Management Communications" (see also ISO/IEC TR 10000-1, 8.2 for the definition of multipart ISPs).

It may be combined with any T-Profiles (see ISO/IEC TR 10000) specifying the OSI connection-mode transport service.

1.3 Scenario

The model used is one of two end systems running an end-to-end association using the ACSE, Presentation and Session services and protocols (see figure 1).

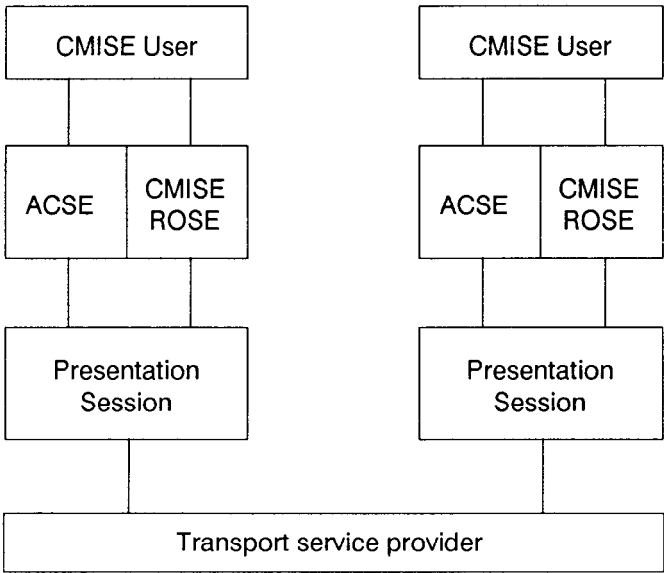


Figure 1 - Model of the supportive layers

Any systems management application entity (SMAE), located on each end system, may be association-initiator or association-responder, by agreeing on a common application context definition.

The upper layers functions required for supporting the OSI Management Communications functions are specified in the set of standards identified in table 1.

Table 1 - Supporting protocols set

Application Layer	ISO 9595, 9596-1 ISO 9072-1, 9072-2 ISO 8649, 8650 ISO 8649/Cor.1 ISO 8650/Cor.1 ISO 8649/Amd.1 ISO 8650/Amd.1
Presentation Layer	ISO 8822, 8823 ISO 8824, 8825
Session Layer	ISO 8326, 8327 ISO 8326/Amd.2 ISO 8327/Amd.2

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 11183. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 11183 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents, is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and CCITT maintains published editions of its current Recommendations.

ISO/IEC 7498-4:1989, *Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 4: Management Framework*. | CCITT Recommendation X.700, *Management Framework Definition for Open Systems Interconnection (OSI) for CCITT applications*.

ISO 8326:1987, *Information processing systems - Open Systems Interconnection - Basic connection oriented session service definition*. | CCITT Recommendation X.215:1988, *Session service definition for Open Systems Interconnection for CCITT applications*.

ISO 8326:1987/Amd.2: ¹⁾, *Information processing systems - Open Systems Interconnection - Basic connection oriented session service definition - Amendment 2: Unlimited user data*.

ISO 8327:1987, *Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification*. | CCITT Recommendation X.225:1988, *Session protocol specification for Open Systems Interconnection for CCITT applications*.

ISO 8327:1987/Amd.2: ¹⁾, *Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification - Amendment 2: Unlimited user data*.

ISO 8327-2: ¹⁾, *Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma*.

ISO 8649:1988, *Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element*. | CCITT Recommendation X.217:1988, *Association control service definition for Open Systems Interconnection for CCITT applications*.

ISO 8649:1988/Amd.1: 1990, *Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element - Amendment 1: Authentication during association establishment*.

ISO 8649:1988/Cor.1: 1991, *Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element - Technical Corrigendum 1*.

ISO 8650:1988, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element*. | CCITT Recommendation X.227:1988, *Association control protocol specification for Open Systems Interconnection for CCITT applications*.

ISO 8650:1988/Amd.1: 1990, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element - Amendment 1: Authentication during association establishment*.

ISO 8650:1988/Cor.1: 1990, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element - Technical Corrigendum 1*.

ISO 8650-2: ¹⁾, *Information technology - Open Systems Interconnection - Protocol specification for the Association Control Service Element - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma*.

ISO 8822:1988, *Information processing systems - Open Systems Interconnection - Connection oriented presentation service definition*. | CCITT Recommendation X.216:1988, *Presentation service definition for Open Systems Interconnection for CCITT applications*.

ISO 8823:1988, *Information processing systems - Open Systems Interconnection - Connection oriented presentation protocol specification*. | CCITT Recommendation X.226:1988, *Presentation protocol specification for Open Systems Interconnection for CCITT applications*.

ISO 8823-2: ¹⁾, *Information technology - Open Systems Interconnection - Connection oriented presentation protocol specification - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma*.

ISO/IEC 8824:1990, *Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)*. | CCITT Recommendation X.208:1989, *Specification of abstract syntax notation one (ASN.1)*.

ISO/IEC 8825:1990, *Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*. | CCITT Recommendation X.209:1988, *Specification of basic encoding rules for abstract syntax notation one (ASN.1)*.

ISO/IEC 9072-1:1989, *Information processing systems - Text Communication - Remote Operations - Part 1: Model, notation and service definition*. | CCITT Recommendation X.219:1988, *Remote Operations: Model, notation and service definition*.

¹⁾ To be published.

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ISO/IEC 9072-2:1989, *Information processing systems - Text Communication - Remote Operations - Part 2: Protocol specification*. | CCITT Recommendation X.229:1988, *Remote Operations: Protocol specification*.

ISO/IEC 9595:1991, *Information technology - Open Systems Interconnection - Common management information service definition*. | CCITT Recommendation X.710:1991, *Common management information service definition for CCITT applications*.

ISO/IEC 9596-1:1991, *Information technology - Open Systems Interconnection - Common management information protocol - Part 1 : Specification*. | CCITT Recommendation X.711:1991, *Common management information protocol specification for CCITT applications*.

CCITT Recommendation X.701:(1992) | ISO/IEC 10040:1992, *Information technology - Open Systems Interconnection - Systems Management Overview*.

CCITT Recommendation X.721:(1992) | ISO/IEC 10165-2:1992, *Information technology - Open Systems Interconnection - Structure of management information - Definition of management information*.

ISO/IEC TR 10000-1: 1992, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1: Framework*.

ISO/IEC TR 10000-2: 1992, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Taxonomy of Profiles*.

3 Definitions

For the purpose of this part of ISO/IEC ISP 11183, the following definitions apply in addition to those used in the base standards. Terms used in this part of ISO/IEC ISP 11183 are defined in the normative references given in clause 2.

3.1 Base standard support

To specify the support level of protocol features required for conformance to the base standards, respectively ISO/IEC 8650, ISO/IEC 8823 and ISO/IEC 8327, the following terms are defined. The corresponding abbreviations defined hereafter are used in the "Base" column of the tables in the annexes A, B and C.

- m : mandatory
- o : optional
- cn : conditional, where *n* is the number which identifies the applicable condition
- : not applicable

The meanings of conditional statements *cn* are specified respectively in the last clause of each annex A, B and C.

3.2 Profile support level

To specify the support level of protocol features for this part of ISO/IEC ISP 11183, the following terms are defined. The corresponding abbreviations defined in the subclauses 3.2.1 up to 3.2.6 are used in the "Profile" column of the tables in the annexes A, B and C.

3.2.1 Supported; m: Any feature denoted by "m" is mandatory, optional or conditional in the base standard. That feature shall be supported, i.e. its syntax and procedures shall be implemented as specified in the base standard or in this part of ISO/IEC ISP 11183 by all implementations claiming conformance to this part of ISO/IEC ISP 11183.

However, it is not a requirement that the feature shall be used in all instances of communication, unless mandated by the base standard or stated otherwise in this part of ISO/IEC ISP 11183.

NOTES

1 For features which are optional in the base standard, conforming implementations shall be able to interwork with other implementations not supporting this feature.

2 The support of a feature can be conditional, depending on the support of a class of features to which it belongs, e.g. a parameter in a PDU, a PDU in a functional unit, or with which a relationship exists, e.g. two inter-related functional units.

3.2.2 Optionally supported; o: The implementation and the use of a feature denoted by "o" are left open in this part of ISO/IEC ISP 11183. The final choice may be defined either by a requirement stated in another part of ISO/IEC ISP 11183 or by a decision of the implementor or the user of this part of ISO/IEC ISP 11183.

3.2.3 Conditionally supported; c: The implementation and the use of a feature denoted by "cn" or "c(n)" depend on an explicit condition which is specified but not resolved in this part of ISO/IEC ISP 11183. "n" is a number which identifies the applicable condition: "cn" refers to a common conditional statement specified in the base standards, "c(n)" refers to a specific conditional statement specified locally at the bottom of the table which uses it. The condition states two or more possibilities for the final status which will be resolved to one of the following: "m", "o", "i", "-" or "x".

3.2.4 Excluded; x.

NOTE - The "excluded" support level does not appear in this part of ISO/IEC ISP 11183.

3.2.5 Outside the scope; i: The implementation and the use of a feature denoted by "i" are not considered in this part of ISO/IEC ISP 11183. This means that:

- implementations may use it outside the scope of this part of ISO/IEC ISP 11183,
- ISP conformance tests shall not be provided for it,
- implementations may conform to other profiles where it is required,
- no requirements are placed on either sender or receiver to support it,
- receiver actions are unspecified when it is present.

3.2.6 Not applicable; -: This feature is not defined in the context where it is mentioned, e.g. a parameter which is not part of the respective PDU. The occurrence of "not applicable" features is mainly due to the format of the tables in the ISPICS Requirements List.

4 Abbreviations

ACSE	Association Control Service Element
AE	Application Entity
AET	Application Entity Title
AOM	Application OSI Management
AP	Application Process
APDU	Application Protocol Data Unit
ARP	Abnormal Release Provider
ARU	Abnormal Release User
ASE	Application Service Element
ASN.1	Abstract Syntax Notation One
CDO	Connect Data Overflow
CN	Connect
CP	Connect Presentation
CPA	Connect Presentation Accept
CPR	Connect Presentation Reject
CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
CMISE	Common Management Information Service Element
DT	Data Transfer
FU	Functional Unit
GT	Give Token
ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
OA	Overflow Accept
OSI	Open Systems Interconnection
PCI	Protocol Control Information
PGI	Parameter Group Identifier
PDU	Protocol Data Unit
PDV	Presentation Data Value
PICS	Protocol Implementation Conformance Statement
PPDU	Presentation Protocol Data Unit
PR	Prepare
ROSE	Remote Operation Service Element

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SMAE	Systems Management Application Entity
SPDU	Session Protocol Data Unit
TD	Typed Data

Support level for protocol features:

m	supported
o	optionally supported
c	conditionally supported
i	outside the scope
-	not applicable

5 Conformance

This part of ISO/IEC ISP 11183 states requirements upon implementations for the purpose of achieving interworking. A claim of conformance to this part of ISO/IEC ISP 11183 is a claim that all requirements in the relevant base standards are satisfied, and that all requirements specified in the clause 3, in the following clauses and in annexes A, B, C of this part of ISO/IEC ISP 11183 are satisfied. Annexes A, B, C state the relationship between these requirements and those of the base standards.

5.1 Conformance statement

For each implementation claiming conformance to this part of ISO/IEC ISP 11183 an appropriate set of PICs shall be made available stating support or non-support of each option identified in this part of ISO/IEC ISP 11183.

5.2 Relationships with base standards

5.2.1 ACSE conformance

To conform to the Association Control Service Element (ACSE) protocol used in this part of ISO/IEC ISP 11183, implementations shall implement the normal mode and shall implement all the supported (m) features (identified in annex A) unless they are part of an unimplemented optional feature. They shall state which optionally supported (o) features are implemented.

5.2.2 Presentation layer conformance

To conform to the Presentation protocol used in this part of ISO/IEC ISP 11183, implementations shall implement the normal mode and shall implement all the supported (m) features (identified in annex B) unless they are part of an unimplemented optional feature. They shall state which optionally supported (o) features are implemented.

5.2.3 Transfer syntax conformance

An implementation conforming to this part of ISO/IEC ISP 11183 shall support the "Basic Encoding of a single ASN.1 type" as specified in ISO 8825, together with the additional rules defined in clause 8 of this part of ISO/IEC ISP 11183, for the generation of protocol encodings specified in ASN.1

5.2.4 Session layer conformance

To conform to the Session protocol used in this part of ISO/IEC ISP 11183, implementations shall implement all the supported (m) features (identified in annex C) unless they are part of an unimplemented optional feature. They shall state which optionally supported (o) features are implemented.

5.2.5 Prerequisite requirement

A conforming implementation shall be able to receive all PDU elements of the supported PDUs.

5.3 Pragmatic PDU size limitation

The size of the "User Data" and "User Information" fields in a Session PDU shall be conformant with the following constraints:

- receiving implementations shall be capable of receiving at least 10240 octets;
- for sending implementations, a size larger than 10240 octets shall be out of scope of this part of ISO/IEC ISP 11183.

6 Association Control Service Element (ACSE)

The support of functions and parameters for the Association Control Service Element is as specified in annex A. The PICS applicable to an implementation may contain limitations on length or value aspects of a protocol, but it shall not contain limits more severe for receiving or less severe for sending than those specified in this clause. An implementation in conformance with this part of ISO/IEC ISP 11183 may abort an association, if the requirements as specified in 6.1 to 6.5 are violated.

6.1 Association establishment

A conforming implementation in an end system shall support either the association-initiator or the association-responder role or both.

The two end systems may share only one association or may use two or several associations depending on the application contexts. This part of ISO/IEC ISP 11183 does not impose a restriction on the number of associations between the two end systems.

The support of the authentication functional unit is optional. An implementation that supports the authentication functional unit shall conform to the requirements specified in ISO 8650/Amd.1 and this part of ISO/IEC ISP 11183.

6.2 Association normal release

A conforming implementation shall be able to request and accept an orderly release of the association, whatever its role, initiator or responder, during the association establishment.

6.3 Association abnormal release

A conforming implementation shall be able to request and accept an abnormal release of the association.

An implementation that support the authentication functional unit shall be able to support the requirements specified in ISO 8650/Amd.1 and this part of ISO/IEC ISP 11183.

6.4 Application entity title

Application entity titles shall be implemented as specified in ISO 8650/Cor.1.

This part of ISO/IEC ISP 11183 does not restrict either form of AET. Both forms shall be static mandatory/dynamically optional for receiving, and static optional for sending. If an implementation is capable of sending it, then it must support both forms for called AET, and either form for calling and responding AET.

Conforming implementations shall provide the syntax and the values of the AE-title form(s) they implemented.

NOTES

- 1 An AETitle encoding shall be formed by appending the AE-qualifier to the corresponding AP-title.
- 2 If the AE-title-form1 is used, it is recommended that the "SimpleNameType" ASN.1 definition, specified in clause 14.2 of ISO/IEC 10165-2, be used for the RDN attribute value syntax.
- 3 AE-title-form2 is an Object Identifier registered by an authorized Registration Authority.