INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 11183-3

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

Part 3:
CMISE/ROSE for AOM11 — Basic Management Communications

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

Partie 3: CMISE/ROSE pour AOM11 — Gestion de base de communication

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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 11183-3 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*

Annex A forms 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 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: NIST Workshop for implementors of OSI (NIST OIW), the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). This ISP part is harmonized among these three Workshops and it was finally ratified by the Workshops' plenary assemblies.

This part of ISO/IEC ISP 11183 contains one normative annex : annex A, ISPICS Requirements List for AOM11.

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

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

Part 3:
CMISE/ROSE for AOM11 — Basic Management Communications

1 Scope

1.1 General

This part of ISO/IEC ISP 11183 specifies how the OSI Common Management Information Service Element (CMISE) combined with the OSI Remote Operation Service Element (ROSE) shall be used to provide a basic subset of operation and notification services to the CMISE-service-users of two end systems. It specifies the CMIP/ROSE protocol features for the definition of the Basic Management Communications profile, AOM11. This part of ISO/IEC ISP 11183 can be used together with the part 1 and any connection-mode Transport profile to specify the complete communication requirements for systems management.

This part of ISO/IEC ISP 11183 defines the support level of the OSI management communication features needed by implementations for providing the kernel functional unit only.

The support of this subset of operation and notification services, and of the corresponding protocol elements does not imply that all these features shall be used in all instances of communications. The selection of the features depends on the needs and dynamic requirements of the CMISE-service-users who may choose between :

application entity roles,
operation/notification services,
optional parameters.

It only implies that a conforming implementation of the CMISE/ROSE services provider does not restrict the capabilities of the CMISE-service-users and complies with the static CMIP requirements specified in ISO/IEC 9596-1 and ISO/IEC 9596-2.

This part of ISO/IEC ISP 11183 specifies a true subset of the capabilities included in ISO/IEC ISP 11183-2. Therefore, implementations conforming to the profile AOM11 shall be able to interoperate with implementations conforming to the profile AOM12, based on the subset of functions specified here.

NOTES

1 The operations and notifications relate to managed objects. The specification and the support of these managed objects are outside the scope of the profile AOM11.

2 This part of ISO/IEC ISP 11183 is based on ISO/IEC 9596-2, (SC21 N-7036, 2 June 1992).

1.2 CMIP/ROSE PDUs support

An implementation conforming to the profile AOM11 shall be able to support the following PDUs:

ROIV-m-Action
ROIV-m-Action-Confirmed
ROIV-m-Create
ROIV-m-Delete
ROIV-m-Get
ROIV-m-Set
ROIV-m-Set-Confirmed
ROIV-m-Event Report
ROIV-m-Event Report-Confirmed

RORS-m-Action-Confirmed
RORS-m-Create
RORS-m-Delete
RORS-m-Get
RORS-m-Set-Confirmed
RORS-m-Event Report-Confirmed

RORJ

ROER-accessDenied
ROER-classInstanceConflict
ROER-complexityLimitation
ROER-duplicateManagedObjectInstance
ROER-getListError
ROER-invalidArgumentValue
ROER-invalidAttributeValue
ROER-invalidObjectInstance
ROER-missingAttributeValue
ROER-noSuchAction
ROER-noSuchArgument
ROER-noSuchAttribute
ROER-noSuchEventType
ROER-noSuchObjectClass
ROER-noSuchObjectInstance
ROER-noSuchReferenceObject
ROER-processingFailure
ROER-setListError

1.3 CMIP functional units

The CMIP functional units are defined in ISO/IEC 9595 and ISO/IEC 9596-1. A conforming implementation shall be able to support only the kernel functional unit. All other functional units shall be out of the scope of the profile AOM11, as indicated by the table A.7 in annex A of this part of ISO/IEC ISP 11183.

NOTE - As defined in clause 7.2.3 of ISO/IEC 9595, multiple replies may be defined for an M-ACTION operation requested on single managed objects. Therefore, AOM11 profile may not meet all the requirements of such applications.

1.4 Position within the Taxonomy

This part of ISO/IEC ISP 11183 is the third part of a multipart ISP for OSI Management, which consists of the following parts :

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 .

The profile which is defined in this part of ISO/IEC ISP 11183 is identified in ISO/IEC TR 10000-2 as :
AOM1n - OSI Management - Management Communications -
Part 3: CMISE/ROSE for AOM11 - Basic Management Communications.

It may be combined with any A-Profiles AOM2n, Management Functions.
It may be combined with any T-Profiles (see ISO/IEC TR 10000) specifying the OSI connection-mode transport service.

1.5 Scenario

The general model used in the profile AOM11 is the complementary communications interactions between CMISE-service-users within two end Management Information systems as shown in figure below.

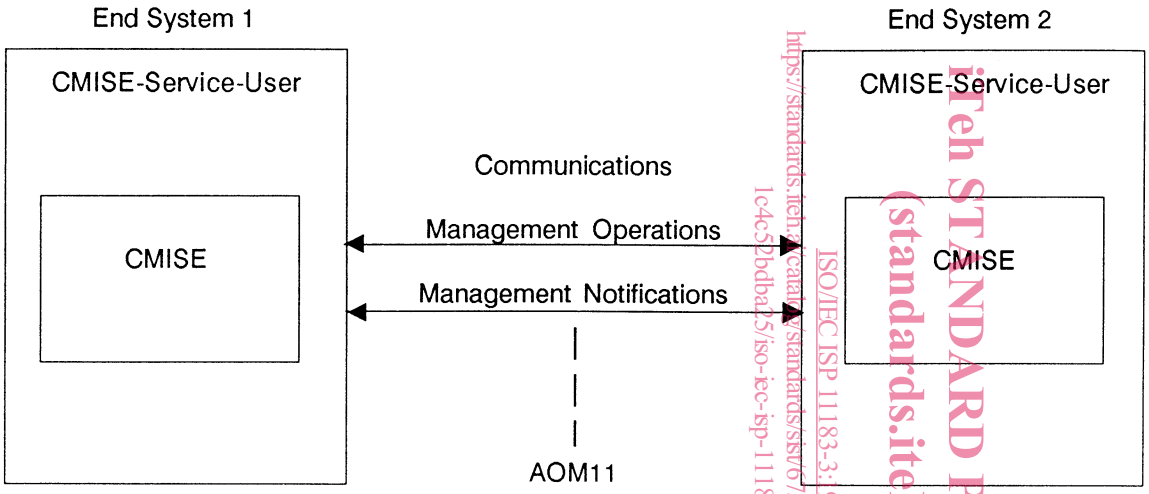

Figure 1 - Communications support for OSI management interactions between two CMISE-service-users

The specifications of the profile AOM11 apply only on the two lines between the end system boxes of the figure.

The common functions required from the supporting protocol stack of ACSE, Presentation and Session are specified in the part 1 of the multipart ISP AOM1n (see also the stack of standards in table 1).

Table 1 - Profile supporting stack

Application Layer	ISO 9595, 9596-1 ISO 9072-1, 9072-2 ISO 8649, 8650 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 7498:1984, *Information processing systems - Open Systems Interconnection - Basic Reference Model.* | CCITT Recommendation X.200:1988, *Reference Model of Open Systems Interconnection for CCITT applications.*

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 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 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 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 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/IEC 8824:1990, *Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1).* | CCITT Recommendation X.208:1988, *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.*

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.*

ISO/IEC 9596-2:1992, *Information technology - Open Systems Interconnection - Common management information protocol - Part 2: Protocol implementation conformance statement (PICS) proforma.* | CCITT Recommendation X.712:1992,*Common management information protocol:Protocol implementation conformance statement (PICS) proforma.*

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

1) To be published.

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 and conventions

For the purpose of this part of ISO/IEC ISP 11183, the following definitions apply.

3.1 Base standard

3.1.1 Definitions

For the purpose of this part of ISO/IEC ISP 11183, the definitions given in the normative references listed in clause 2 apply. Among those the following definitions particularly apply:

CMISE-service-user	:	see ISO/IEC 9595
Initiator	:	see ISO/IEC 9072-1
Invoker	:	see ISO/IEC 9072-1
Notification	:	see ISO/IEC 10040
Operation	:	see ISO/IEC 10040
Performer	:	see ISO/IEC 9072-1
Responder	:	see ISO/IEC 9072-1

3.1.2 PICS definitions and conventions

The notations used in the "Base Standard" column of the annex A of this part of ISO/IEC ISP 11183 are derived from the PICS proforma notations, specified in ISO/IEC 9596-2, such as follows:

m — mandatory function or feature or parameter specified in Base Standards text or in ASN.1 abstract syntax definitions.

o — optional function or feature or parameter specified in Base Standards text or in ASN.1 abstract syntax definitions.

o.1 — stands for "support of at least one of the choices is required". "o.1" replaces the notations "o.*N*" of the PICS, where *N* is an integer value from 1 up to 128.

c*n* — (*n* is an integer) stands for conditional parameters whose support depends on a predicate expression such as : c1 up to c15, and whose definitions are recalled in the clause 3.3.

p — stands for a partial support permitted.

x — prohibited feature or parameter.

i — stands for "out of the scope of this part of ISO/IEC ISP 11183".
This means that, for the corresponding element,
- implementations may use it outside the scope of this ISP part,
- conformance tests shall not be provided for it,
- implementations may conform to other profiles where it is required,
- no requirements are placed on either transmitter or receiver to support it,
- receiver actions are unspecified when present.

\- — (dash) for not applicable feature or parameter.

The notations set in the "Base Standard" column reflect the static conformance requirements.

3.2 Profile

The following subclauses specify the notation used for support requirements of Functional Units (FUs), PDUs associated with CMIS services and parameters within PDUs, in the "Profile" column of the annex A of this part of ISO/IEC ISP 11183.

3.2.1 Profile support requirement definitions

The Functional Units table A.7 of the annex A of this part of ISO/IEC ISP 11183 only specifies the static requirement of each additional functional unit in the "Profile" column.

The CMIP PDU tables relative to the support of PDUs associated with each CMIS service, (see tables A.15 up to A.28 of annex A), only specify the static requirement of each PDU in the "Profile" column.

In the profile AOM11, the static support of the PDUs relative to the kernel functional unit is always stated as "mandatory to be implemented".

The support notation used in the "Profile" column of the annex A, for each PDU parameter (see tables A.29 up to A.120), results from the association of :

a) the implementation static capabilities requirement, such as derived from the base standard, and
b) the implementation dynamic behaviour requirement, depending on the possible instanciations.

Such a notation complies with the recommendations provided in the annex C of ISO/IEC TR 10000-1.

3.2.2 ISPICS requirements list conventions

In order to express these compound requirements a two character notation is defined such as :

the first letter corresponds to the static capabilities requirement and states whether the element

must be
or may be } implemented
or must not be

the second letter corresponds to the dynamic behaviour requirement and states whether the element

must be
or may be } present in an instance of the PDU
or must not be

As a general rule, the static capabilities defined as optional in the Base Standard are made mandatory on the sending PDU tables of the annex A to maximize the usability of the profile AOM11.

The two character combinations used in the "Profile" column of the annex A of this part of ISO/IEC ISP 11183, with the respective requirements, static and dynamic, for the sending and the receiving sides, are specified as follows:

mm Sending
- Static: The implementation must be able to send the parameter
- Dynamic: The parameter must always be sent in each PDU instance

Receiving
- Static: The implementation must be able to receive the parameter
- Dynamic: The parameter must always be present in each PDU instance

mo Sending
- Static: The implementation must be able to send the parameter
- Dynamic: The parameter may optionally be sent in a given PDU instance

Receiving
- Static: The implementation must be able to receive the parameter
- Dynamic: The parameter may optionally be present in a given PDU instance

mc Sending
- Static: The implementation must be able to send the parameter
- Dynamic: The parameter may conditionally be sent in a given PDU instance

Receiving
- Static: The implementation must be able to receive the parameter
- Dynamic: The parameter may conditionally be present in a given PDU instance

mp Sending
- Static: The implementation must be able to send the parameter
- Dynamic: The parameter may be partially supported in a given PDU instance

Receiving
- Static: The implementation must be able to receive the parameter
- Dynamic: The parameter may be partially supported in a given PDU instance

oo Sending
- Static: The implementation may optionally be able to send the parameter
- Dynamic: The parameter may optionally be sent in a given PDU instance

Receiving
- Static: The implementation may optionally be able to receive the parameter
- Dynamic: The parameter may optionally be present in a given PDU instance

oc Sending
- Static: The implementation may optionally be able to send the parameter
- Dynamic: The parameter may conditionally be sent in a given PDU instance

Receiving
- Static: The implementation may optionally be able to receive the parameter
- Dynamic: The parameter may conditionally be present in a given PDU instance

xx excluded from any implementation. The feature should not be present.

ii stands for "out of the scope of profile AOM11", for static and dynamic requirements.

The conditions on which support and/or presence of a PDU element is required are stated in a note *n* associated with the 'c' abbreviation,
such as c*n*, when referring to a common condition *n*,
such as c(*n*), when referring to a specific condition *n*.

The list of the common conditions is provided in 3.3. The specific conditions c(*n*) are provided locally at the bottom of the PDU table which refers to it.

3.2.3 Nesting rules in ISPICS requirements list

In the annex A of this part of ISO/IEC ISP 11183, each entry of a table is identified by an index number. This index provides a unique reference to PDUs, Functional Units, and parameters. In the specific PDU tables, the level of numbering (1, 1.1, 1.1.1, etc) indicates parameters within constructed parameters and follows the embedded structures of abstract syntax definitions.

Rule 0
Based on ASN.1 rules, a contained element can only be present if its constructor element is present.

Rule 1
For static capabilities requirements, a mandatory element contained within an optional constructor element is mandatory only if the option is taken.