

Information technology — International Standardized Profiles AOM3nn — OSI Management —

**Part 2: AOM312 — Lower layer systems
and network management ensemble for
TB/TC/TD/TE/RB/RC profiles**

ICS 35.100.05

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO/IEC ISP title page, pages ii to iv, pages 1 to 30 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

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**Information technology — International
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Management —**

Part 2:

**AOM312 — Lower Layer Systems and
Network Management Ensemble for
TB/TC/TD/TE/RB/RC profiles**

*Technologies de l'information — Profils normalisés internationaux
AOM3nn — Gestion OSI —*

*Partie 2: AOM312 — Systèmes de couche inférieure et ensemble de
gestion de réseau pour profils TB/TC/TD/TE/RB/RC*



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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 a 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 15122-2 was prepared with the collaboration of

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

ISO/IEC ISP 15122 consists of the following part, under the general title *Information technology — International Standardized Profiles AOM3nn — OSI Management*:

- *Part 2: AOM312 — Lower Layer Systems and Network Management Ensemble for TB/TC/TD/TE/RB/RC profiles.*

Annex A and Annex B form an integral part of this part of ISO/IEC ISP 15122. Annex C is for information only.

1 Scope

The Lower Layer System and Network Management Ensemble for **TB/TC/TD/TE/RB/RC** Profiles (LLSNME), AOM312, identifies how to manage connection oriented OSI environments using OSI Management. The scope of AOM312 is management of resources in the OSI transport layer, network layer, data link layer as specified by profiles for the OSI connection mode environment. The set of lower layer ISPs address interoperable stacks within the connection mode OSI environment. Certain connection mode ISPs interoperate with others. For example, a TB1111-compliant end system can communicate with TC1111-compliant end system through a RB51.1111-compliant system.

Transport and Relay International Standardized Profiles (ISPs) currently profile OSI Communication Stacks enabling End Systems and Intermediate Systems to interoperate. These Lower Layer profiles specify the management capability of OSI stacks. There also exists a set of System Management Function (SMF) ISPs (AOM2x) that specify how to use CMIP to perform remote management. The scope of AOM312 is to identify how to manage OSI resources by referencing and placing management requirements on Lower Layer Profiles and SMF Profiles. Conformance requirements for Managed Objects and SMF Profiles is addressed.

AOM312 addresses how to perform fault and configuration management of the OSI connection mode environment.

AOM312 specifically address how to accomplish the following systems management tasks:

- Configure Data Link, Network, or Transport Resources
- Determine current Data Link, Network, or Transport Configuration
- Determine Logical Data Link, Network, or Transport Connectivity
- Detect Data Link, Network, or Transport Errors and Changes

AOM312 is applicable in an environment in which end systems are able to take a manager role, an agent role or both.

AOM312 does not place any requirements on, or specify any conformance requirements for, the resources themselves (which is in the realm of the respective lower layer ISP).

AOM312 is based on OSI standard protocols, OSI Systems Management Information Standards, and ISPs.

AOM312 has been developed in accordance with the “Guidelines for the Scope and Content of Ensembles” (RWS-TR 005 Part 1).

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 15122. 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 15122 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 ITU-T maintains published editions of its current Recommendations.

2.1 Identical CCITT/ITU-T

Recommendations | International Standards

- CCITT Recommendation X.701 (1992) | ISO/IEC 10040:1992, *Information technology — Open Systems Interconnection — Systems management overview.*
- CCITT Recommendation X.720 (1992) | ISO/IEC 10165-1:1993, *Information technology — Open Systems Interconnection — Structure of management information: Management information model.*
- CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology — Open Systems Interconnection — Structure of management information: Definition of management information.*
- CCITT Recommendation X.722 (1992) | ISO/IEC 10165-4:1992, *Information technology — Open Systems Interconnection — Structure of management information: Guidelines for the definition of managed objects.*
- ITU-T Recommendation X.723 (1994) | ISO/IEC 10165-5:1994, *Information technology — Open Systems Interconnection — Structure of Management information: Generic management information.*
- ITU-T Recommendation X.724 (1994) | ISO/IEC 10165-6:1994, *Information technology — Open Systems Interconnection — Structure of Management information: Requirements and guidelines for implementation conformance statement proformas associated with OSI management.*

2.2 Paired CCITT/ITU-T Recommendations | International Standards equivalent in technical content

— CCITT Recommendation X.290 (1992), *OSI conformance testing methodology and framework for protocol Recommendations for CCITT applications — General concepts.*

ISO/IEC 9646-1:1991, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts.*

— CCITT Recommendation X.291 (1992), *OSI conformance testing methodology and framework for protocol Recommendations for CCITT applications — Abstract test suite specification.*

ISO/IEC 9646-2:1991, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 2: Abstract test suite specification.*

— ITU-T Recommendation X.296 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications — Implementation Conformance Statements.*

ISO/IEC 9646-7:1995, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation Conformance Statements.*

— CCITT Recommendation X.700 (1992), *Management Framework Definition for Open Systems Interconnection (OSI).*

ISO/IEC 7498-4:1989, *Information processing systems — Open Systems Interconnection — Basic Reference Model — Part 4: Management framework.*

— CCITT Recommendation X.710 (1991), *Common Management information Service Definition for CCITT Applications.*

ISO/IEC 9595:1991, *Information technology — Open Systems Interconnection — Common management information service definition.*

— CCITT Recommendation X.711 (1991), *Common Management Information protocol specification for CCITT Applications.*

ISO/IEC 9596-1:1991, *Information technology — Open Systems Interconnection — Common Management Information Protocol — Part 1: Protocol Specification.*

— ITU-T Recommendation X.284 (1993), *Elements of Management Information Related to OSI Transport Layer Standards for ITU-T applications.*

ISO/IEC 10737:1994, *Information technology — Telecommunications and information exchange between systems — Elements of Management Information Related to OSI Transport Layer Standards.*

— ITU-T Recommendation X.283 (1993), *Elements of Management Information Related to OSI Network Layer Standards for ITU-T applications.*

ISO/IEC 10733:1993, *Information technology — Telecommunications and information exchange between systems — Elements of Management Information Related to OSI Network Layer standards.*

— ITU-T Recommendation X.282 (1993), *Elements of Management Information Related to OSI Data Link Layer Standards for ITU-T applications.*

ISO/IEC 10742:1994, *Information technology — Telecommunications and information exchange between systems — Elements of management information related to OSI Data Link Layer standards.*

2.3 Additional references

— ISO/IEC 10589:1992, *Information technology — Telecommunications and information exchange between systems — Intermediate system to intermediate system intra-domain routing information exchange protocol for use in conjunction with the protocol for providing the connection mode-mode Network Service (ISO 8473).*

— ISO/IEC 10747:1994, *Information technology — Telecommunications and Information Exchange between Systems — Protocol for Exchange of Inter-domain Routing Information among Systems to support Forwarding to ISO 8473 PDUs.*

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

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

— ISO/IEC ISP 12060-1:1995, *Information technology — International Standardized Profiles — OSI Management — Management functions — Part 1: AOM211 — General management capability.*

— ISO/IEC ISP 12060-4:1995, *Information technology — International Standardized Profiles — OSI Management — Management functions — Part 4: AOM221 — General event report management.*

— ISO/IEC ISP 12060-5:1995, *Information technology — International Standardized Profiles — OSI Management — Management functions — Part 5: AOM231 — General log control*.

— ISO/IEC ISP 12059-0:1995, *Information technology — International Standardized Profiles — OSI Management — Common Information for Management Functions — Part 0: Common definitions for management function profiles*.

— ISO/IEC ISP 10609-1:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 1: Subnetwork-type independent requirements for Group TB*.

— ISO/IEC ISP 10609-2:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 2: Subnetwork-type independent requirements for Group TC*.

— ISO/IEC ISP 10609-3:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 3: Subnetwork-type independent requirements for Group TD*.

— ISO/IEC ISP 10609-4:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 4: Subnetwork-type independent requirements for Group TE*.

— ISO/IEC ISP 10609-5:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 5: Definition of profiles TB1111/TB1121*.

— ISO/IEC ISP 10609-6:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 6: Definition of profiles TC1111/TC1121*.

— ISO/IEC ISP 10609-7:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 7: Definition of profiles TD1111/TD1121*.

— ISO/IEC ISP 10609-8:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 8: Definition of profiles TE1111/TE1121*.

— ISO/IEC ISP 10609-9:1992, *Information technology — International Standardized Profiles TB, TC, TD and TE — Connection Mode Transport Over Connection Mode Network Service — Part 9: Subnetwork-type dependent requirements for Network Layer, Data Link Layer and physical Layer concerning permanent access to a packet switched data network using virtual calls*.

— ISO/IEC ISP 12067-1:1996, *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service — Part 1: Subnetwork independent requirements*.

— ISO/IEC ISP 12067-2:1996, *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service — Part 2: LAN Subnetwork-dependent media-independent requirements*.

— ISO/IEC ISP 12067-3:1996, *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service — Part 3: PSDN subnetworks-dependent media-dependent requirements for virtual calls over a permanent access*.

— ISO/IEC ISP 12067-4:1996, *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service — Part 4: Definition of profile RB51.1111, relaying the connection-mode Network Service CSMA/CD LAN subnetworks and PSDNs using virtual calls over a PSTN leased line permanent access*.

— ISO/IEC ISP 12067-5:1996, *Information technology — International Standardized Profile RB — Relaying the connection-mode Network Service — Part 5: Definition of profile RB51.1121, relaying the connection-mode Network Service CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access*.

— ISO/IEC ISP 10614-1:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 1: Relaying functions, General overview and Subnetwork independent requirements*.

— ISO/IEC ISP 10614-2:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 2: LAN subnetwork-dependent, media-independent requirements*.

— ISO/IEC ISP 10614-3:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 3: CSMA/CD subnetwork-dependent, media-dependent requirements.*

— ISO/IEC ISP 10614-4:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 4: PSDN subnetwork-dependent, media-dependent requirements for virtual calls over a permanent access.*

— ISO/IEC ISP 10614-5:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 5: Definition of profile RC51.1111, X.25 protocol relaying between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access.*

— ISO/IEC ISP 10614-6:1995, *Information technology — International Standardized Profile RC — X.25 protocol relaying — Part 6: Definition of profile RC51.1121, X.25 protocol relaying between CSMA/CD LAN subnetworks and PSDNs using virtual calls over a digital data circuit/CSDN leased line permanent access.*

— RWS-TR005-1:1995, *Guidelines of Management Profiles — Part 1: Guidelines for the Scope and Content of Ensembles.*

3 Definitions

The terms used in this part of ISO/IEC ISP 15122 are defined in the base standards referenced in the referenced ISPs.

4 Abbreviations

CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
CMISE	Common Management Information Service Element
CSMA/CD	Carrier Sense Multiple Access/Collision Detection
EFD	Event Forwarding Discriminator
FDDI	Fiber Distributed Data Interface
ICS	Implementation Conformance Statement
ISP	International Standardized Profile
IVMO	Initial Value Managed Object
LAN	Local Area Network
LLSNME	Lower Layer Systems and Network Management Ensemble

MAC	Media Access Control
MCS	Management Conformance Summary
MICS	Management Information Conformance Statement
MO	Managed Object
MOCS	Managed Object Conformance Statement
MRCS	Management Relationship Conformance Statement
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PSDN	Packet Switched Data Network
PT	Pass Through
QOS	Quality of Service
SMF	Systems Management Function

5 Conventions

The common conventions used in this part of ISO/IEC ISP 15122 are defined in ISO/IEC ISP 12059-0, ISO/IEC 9646-2, and ISO/IEC 9646-7.

6 Requirements

6.1 Resources

The resources to be managed that are within the scope of AOM312 are those that provide support for protocols and services within the OSI Transport, Network, and Data Link Layers. These resources, which are visible in the relevant standards for the service and protocol, include protocol machines, connections, entities, etc. A set of profiles (ISPs) has been specified that select the elements of the base standards that are necessary to provide a particular mode of transport service over a mode of network service over a physical media. These T (Transport) and R (Relay) profiles identify a set of resources needed to provide the particular service.

AOM312 requires support of the management option in the profile. AOM312 specifies how to complete remote management functionality supported by these ISPs across and OSI interface. If a system supports one or more of the following ISPs, AOM312 provides the associated management capability. Table 1 lists T and R profiles that can be managed by AOM312.