

INTERNATIONAL
STANDARD

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**Information technology — Open Systems
Interconnection — Structure of management
information —**

Part 4:
Guidelines for the definition of managed objects

*Technologies de l'information — Interconnexion de systèmes ouverts —
Structures des informations de gestion —
Partie 4: Principes directeurs pour la définition des objets gérés*



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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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 10165-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in collaboration with the CCITT. The identical text is published as CCITT Recommendation X.722.

ISO/IEC 10165 consists of the following parts, under the general title *Information technology – Open Systems Interconnection – Structure of management information*:

- *Part 1: Management information model*
- *Part 2: Definition of management information*
- *Part 4: Guidelines for the definition of managed objects*
- *Part 5: Generic management information*
- *Part 6: Requirements and guidelines for implementation conformance statement proformas associated with management information*

Annex A is for information only.

Introduction

ISO/IEC 10165 is a multipart standard developed according to ISO 7498 and ISO/IEC 7498-4. ISO/IEC 10165 is related to the following International Standards

- ISO/IEC 9595 : 1990, *Information technology – Open Systems Interconnection – Common management information service definition*;
- ISO/IEC 9596 : 1990, *Information technology – Open Systems Interconnection – Common management information protocol*;
- ISO/IEC 10040 : 1992, *Information technology – Open Systems Interconnection – Systems management overview*;
- ISO/IEC 10164 : 1992, *Information technology – Open Systems Interconnection – Systems management*.

OSI management standardization inevitably involves coordinated work by a number of standards bodies. CCITT SGVII and ISO/IEC JTC1 SC21/WG4 are jointly responsible for the development of Recommendations | International Standards that describe the architecture for OSI management, the services, protocols and functions that are used for systems management, and the structure of management information. Other working groups, in CCITT, ISO/IEC JTC1 SC21, ISO/IEC JTC1 SC6 and elsewhere, are responsible for the development of Recommendations | International Standards that describe the management aspects of particular layers of the OSI Basic Reference Model; these may describe (N)-layer management protocols, management aspects of (N)-layer operation, and managed objects that provide a "management view" of aspects of the layer operation and are visible to systems management.

This Recommendation | International Standard provides the developers of managed object class definitions with the information and documentation tools required in order to produce complete managed object class definitions that are compatible with the OSI management standards developed jointly by ISO/IEC and CCITT. A beneficial side effect of the use of these guidelines will be that a common approach will be taken to the documentation of these Recommendations | International Standards, regardless of where the development takes place.

CCITT Rec. X.700 | ISO/IEC 7498-4 and CCITT Rec. X.701 | ISO/IEC 10040 define the architecture for OSI management, and describe the content of and relationships between OSI management standards.

CCITT Rec. X.720 | ISO/IEC 10165-1 describes the model of management information in terms of managed objects.

CCITT Rec. X.721 | ISO/IEC 10165-2 (DMI) defines generic managed object classes and characteristics. Where a suitable definition of management information exists in DMI, it is recommended that this definition be referenced in preference to defining a new information element with the same structure.

CCITT Rec. X.208 | ISO/IEC 8824 defines the notation used to express the abstract syntax of the data elements associated with managed object characteristics that shall be carried in systems management protocol.

INTERNATIONAL STANDARD
CCITT RECOMMENDATION

**INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION –
STRUCTURE OF MANAGEMENT INFORMATION :
GUIDELINES FOR THE DEFINITION OF MANAGED OBJECTS**

1 Scope

This Recommendation | International Standard provides developers of Recommendations and International Standards that contain managed object definitions with guidance that will

- a) encourage consistency between managed object definitions;
- b) ensure the development of such definitions in a manner compatible with the OSI management Recommendations and International Standards;
- c) reduce duplication of effort in other working groups by identifying commonly useful documentation layouts, procedures and definitions.

To this end, this Recommendation | International Standard specifies

- a) the relationships between the relevant OSI management Recommendations and International Standards and the definition of managed object classes, and how those Recommendations and International Standards should be used by managed object class definitions;
- b) the appropriate methods to be adopted for the definition of managed object classes and their attributes, notifications, actions and behaviour, including
 - 1) a summary of aspects that shall be addressed in the definition;
 - 2) the notational tools that are recommended to be used in the definition;
 - 3) consistency guidelines that the definition may follow.
- c) the relationship of managed object class definitions to management protocol, and what protocol-related definitions are required;
- d) the recommended documentation structure for managed object class definitions.

This Recommendation | International Standard is applicable to the development of any Recommendation | International Standard which defines

- a) management information which is to be transferred or manipulated by means of OSI management protocol;
- b) the managed objects to which that information relates.

This Recommendation | International Standard does not specify or imply

- a) any constraints on the development of managed object class definitions in terms of their functionality, the Recommendations | International Standards to which they relate, or the uses to which they are put in a particular management environment;
- b) guidelines for the definition of resources; it provides guidelines only for the definition of the managed objects which provide the management view of resources.

2 Normative references

The following CCITT Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and International Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and 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.

2.1 Identical CCITT Recommendations | International Standards

- CCITT Recommendation X.660¹⁾ | ISO/IEC 9834-1²⁾, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI registration authorities – Part 1: General procedures*.
- 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 : 1992, *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.732 (1992) | ISO/IEC 10164-3 : 1992, *Information technology – Open Systems Interconnection – Systems management : Attributes for representing relationships*.
- CCITT Recommendation X.733 (1992) | ISO/IEC 10164-4 : 1992, *Information technology – Open Systems Interconnection – Systems management : Alarm reporting function*.

2.2 Paired CCITT Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.200 (1988), *Reference Model of Open Systems Interconnection for CCITT Applications*.
ISO 7498 : 1984, *Information processing systems – Open Systems Interconnection – Basic Reference Model*.
- CCITT Recommendation X.208 (1988), *Specification of abstract syntax notation one (ASN.1)*.
ISO/IEC 8824 : 1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*.
- CCITT Recommendation X.501 (1989), *The Directory – Models*.

¹⁾ Presently at state of draft Recommendation.

²⁾ To be published.

- ISO/IEC 9594-2 : 1990, *Information technology – Open Systems Interconnection – The Directory – Part 2: Models*.
- CCITT Recommendation X.650 (1992), *Naming and Addressing for Open Systems Interconnection (OSI) for CCITT Applications*.
- ISO 7498-3 : 1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and Addressing*.
- CCITT Recommendation X.700¹⁾, *Management Framework Definition for Open Systems Interconnection (OSI) for CCITT Applications*.
- 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 : 1990, *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: Specification*.

¹⁾ Presently at state of draft Recommendation.