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INTERNATIONAL STANDARD

ISO/IEC 10164-20

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Information technology — Open Systems Interconnection — Systems Management: Time management function

*Technologies de l'information — Interconnexion de systèmes ouverts
(OSI) — Gestion-systèmes: Fonction de gestion du temps*



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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 10164-20 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 33, *Distributed application services*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.743.

ISO/IEC 10164 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — Systems Management*:

- *Part 1: Object management function*
- *Part 2: State management function*
- *Part 3: Attributes for representing relationships*
- *Part 4: Alarm reporting function*
- *Part 5: Event report management function*
- *Part 6: Log control function*
- *Part 7: Security alarm reporting function*
- *Part 8: Security audit trail function*
- *Part 9: Objects and attributes for access control*
- *Part 10: Usage metering function for accounting purposes*
- *Part 11: Metric objects and attributes*
- *Part 12: Test management function*
- *Part 13: Summarization function*
- *Part 14: Confidence and diagnostic test categories*
- *Part 15: Scheduling function*
- *Part 16: Management knowledge management function*
- *Part 17: Change over function*

- *Part 18: Software management function*
- *Part 19: Management domain and management policy management functions*
- *Part 20: Time management function*
- *Part 21: Command sequencer for Systems Management*
- *Part 22: Response time monitoring function*

Annexes A, B, D and F to G form a normative part of this part of ISO/IEC 10164. Annexes C, H and I are for information only.

Introduction

ITU-T Rec. X.700 series | ISO/IEC 10164 is a Series of Recommendations | International Standards developed according to ITU-T Rec X.200 | ISO/IEC 7498-1 and ITU-T Rec. X.700 | ISO/IEC 7498-4. ITU-T Rec. X.700 series | ISO/IEC 10164 is related to the following International Standards:

- CCITT X.710 | ISO/IEC 9595:1990, Information technology – Open System Interconnection – Common management information service definition;
- CCITT X.711 and CCITT X.712 | ISO/IEC 9596:1990, Information technology – Open System Interconnection – Common management information protocol specification;
- CCITT X.701 | ISO/IEC 10040:1992, Information technology – Open Systems Interconnection – Systems management overview;
- CCITT Recs. X.730, X.740 series and ITU-T Rec. X.750 series | ISO/IEC 10064:1992, Information technology – Open Systems Interconnection – Systems Management.

OSI management standardization inevitably involves coordinated work by a number of standards bodies. ITU-T SG 7 and ISO/IEC JTC 1 SC 21/WG 4 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 ITU-T, ISO/IEC JTC 1 SC 21, ISO/IEC JTC 1 SC 6 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.

INTERNATIONAL STANDARD**ITU-T RECOMMENDATION****INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION –
SYSTEMS MANAGEMENT: TIME MANAGEMENT FUNCTION****1 Scope**

This Recommendation | International Standard defines a Systems Management Function that may be used by an application process in a centralized or decentralized management environment to interact for the purpose of systems management, as defined by ITU-T Rec. X.200 | ISO/IEC 7498-1. This Recommendation | International Standard defines a function which consists of generic definitions, services, and functional units. This function is positioned in the application layer of ITU-T Rec.X.200 | ISO/IEC 7498-1 and is defined according to the model provided by ISO 9545. The role of systems management functions is described by CCITT Rec. X.701 | ISO /IEC 10040.

This Recommendation | International Standard:

- defines a service for the management of clocks for use by OSI management and available for use by OSI applications and others;
- establishes user requirements for this Recommendation | International Standard;
- establishes a time management function model, addressing the components of a generic time service involving communication between systems, that relates the service and generic definitions provided by this function to the user requirements;
- defines generic object classes, attribute types, operation types, notification types, and parameters documented in accordance with CCITT Rec. X.722 | ISO/IEC 10165-4;
- specifies compliance requirements placed on other standards that make use of these generic definitions;
- defines the services provided by the function;
- specifies the management protocol that is necessary in order to provide the services;
- defines the relationship between these services and systems management operations and notifications;
- specifies the abstract syntax necessary to identify and negotiate the function unit in the protocol;
- defines relationships with other systems management functions;
- specifies conformance requirements to be met by implementation of this Recommendation | International Standard;
- identifies time synchronization protocols.

This Recommendation | International Standard does not:

- address the provision of time information within a local system;
- define the nature of any implementation intended to provide the Time Management Function;
- specify the manner in which management is accomplished by the user of the Time Management Function;
- define the nature of any interaction which results in the use of the Time Management Function;
- specify the services necessary for the establishment, use, and normal or abnormal release of a management association.

2 Normative references

The following 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 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunications Standardizations Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open Systems Interconnection – Basic Reference Model – Conventions for the definition of OSI services.*
- CCITT Recommendation X.701 (1992) | ISO/IEC 10040:1992, *Information technology – Open Systems Interconnection – Systems management overview¹⁾.*
- 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 (1993) | ISO/IEC 10165-5:1994, *Information technology – Open Systems Interconnection – Structure of management information: Generic management information.*
- ITU-T Recommendation X.724 (1996) | ISO/IEC 10165-6:1997, *Information technology – Open Systems Interconnection – Structure of management information: Requirements and guidelines for implementation conformance statement proformas associated with OSI management.*
- CCITT Recommendation X.730 (1992) | ISO/IEC 10164-1:1993, *Information technology – Open Systems Interconnection – Systems Management: Object management function.*
- CCITT Recommendation X.731 (1992) | ISO/IEC 10164-2:1993, *Information technology – Open Systems Interconnection – Systems Management: State management function.*
- CCITT Recommendation X.732 (1992) | ISO/IEC 10164-3:1993, *Information technology – Open Systems Interconnection – Systems Management: Attributes for representing relationships.*
- ITU-T Recommendation X.738 (1993) | ISO/IEC 10164-13:1995, *Information technology – Open Systems Interconnection – Systems Management: Summarization function.*
- ITU-T Recommendation X.739 (1993) | ISO/IEC 10164-11:1994, *Information technology – Open Systems Interconnection – Systems Management: Metric objects and attributes.*
- CCITT Recommendation X.740 (1992) | ISO/IEC 10164-8:1993, *Information technology – Open Systems Interconnection – Systems Management: Security audit trail function.*
- ITU-T Recommendation X.741 (1995) | ISO/IEC 10164-9:1995, *Information technology – Open Systems Interconnection – Systems Management: Objects and attributes for access control.*
- ITU-T Recommendation X.742 (1995) | ISO/IEC 10164-10:1995, *Information technology – Open Systems Interconnection – Systems Management: Usage metering function for accounting purposes.*
- ITU-T Recommendation X.745 (1993) | ISO/IEC 10164-12:1994, *Information technology – Open Systems Interconnection – Systems Management: Test management function.*
- ITU-T Recommendation X.746 (1995) | ISO/IEC 10164-15:1995, *Information technology – Open Systems Interconnection – Systems Management: Scheduling function.*

¹⁾ As amended by ITU-T Rec. X.701/Cor.2 | ISO/IEC 10040/Cor.2.

2.2 Paired Recommendations | International Standards equivalent in technical content

- 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.209 (1988), *Specification of basic encoding rules for 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)*
- ITU-T Recommendation X.291 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Abstract test suite specification*.
ISO/IEC 9646-2:1994, *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 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 9595:1991, *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: Specification*.

2.3 Additional references

- ITU-T Recommendation M.3100 (1995), *Generic Network Information Model*.
- ITU-T Recommendation M.3101 (1995), *Managed object conformance statements for the Generic Network Information Model*.
- ISO/TR 8509:1987, *Information processing systems – Open Systems Interconnection – Service conventions*.