INTERNATIONAL STANDARD

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Information technology — Open Systems Interconnection — Systems Management: Log control function

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Gestion-système: Fonction de contrôle de journal

Contents

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 10164-6 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Sub-Committee SC21, *Open Systems interconnection, data management and open distributed processing*, in collaboration with CCITT. The identical text is published as CCITT Recommendation X.735.

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: Accounting metering function*

- *Part 11: Workload monitoring function*

- *Part 12: Test management function*

- *Part 13: Summarization function*

- *Part 14: Confidence and diagnostic test categories*

- *Part 15: Scheduling function*

Annexes A and B of this International Standard are for information only.

Introduction

ISO/IEC 10164 is a multipart standard developed according to ISO 7498 and ISO/IEC 7498-4. ISO/IEC 10164 is related to the following International Standards

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

– ISO/IEC 9596-1:1991, *Information technology – Open Systems Interconnection – Common management information protocol – Part 1: Specification*;

– ISO/IEC 10040:1992, *Information technology – Open Systems Interconnection – Systems management overview*;

– ISO/IEC 10165:1992, *Information technology – Open Systems Interconnection – Structure of management information*.

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INTERNATIONAL STANDARD

CCITT RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – SYSTEMS MANAGEMENT: LOG CONTROL FUNCTION

1   Scope

This Recommendation | International Standard defines a Systems Management Function which 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 CCITT Rec. X.700 | ISO/IEC 7498-4. This CCITT Recommendation | International Standard defines the Log Control function and consists of services and two functional units. This function is positioned in the application layer of the CCITT Rec. X.200 | ISO/IEC 7498-1 and is defined according to the model provided by ISO/IEC 9545. The role of systems management functions is described by CCITT Rec. X.701 | ISO/IEC 10040.

This CCITT Recommendation | International Standard

    –   establishes user requirements for the Log Control function;

    –   establishes models that relate the services provided by the function to user requirements;

    –   defines the services provided by the function;

    –   specifies the protocol that is necessary in order to provide the services;

    –   defines the relationship between the services and SMI operations and notifications;

    –   defines relationships with other systems management functions;

    –   specifies conformance requirements.

This CCITT Recommendation | International Standard does not

    –   define the nature of any implementation intended to provide the Log Control function;

    –   specify the manner in which management is accomplished by the user of the Log Control function;

    –   define the nature of any interactions which result in the use of the Log Control function;

    –   specify the services necessary for the establishment, normal and abnormal release of a management association;

    –   specify the authorization requirements for the use of the Log Control function or for any associated activity;

    –   define the definitions of managed objects related to the management of particular protocol machines.

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 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 editions of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The CCITT Secretariat maintains a list of currently valid CCITT Recommendations.

2.1   Identical Recommendations | International Standards

– 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 – Part 2: Definition of management information.*

– CCITT Recommendation X.730 (1992) | ISO/IEC 10164-1:1993, *Information technology – Open Systems Interconnection – Systems Management – Part 1: Object management function.*

– CCITT Recommendation X.731 (1992) | ISO/IEC 10164-2:1993, *Information technology – Open Systems Interconnection – Systems Management – Part 2: State management function.*

– CCITT Recommendation X.733 (1992) | ISO/IEC 10164-4:1992, *Information technology – Open Systems Interconnection – Systems Management – Part 4: Alarm reporting function.*

– CCITT Recommendation X.734 (1992) | ISO/IEC 10164-5:1993, *Information technology – Open Systems Interconnection – Systems Management – Part 5: Event report management function.*

2.2   Paired 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.210 (1988), *Open Systems Interconnection Layer Service Definition Conventions.*

ISO/TR 8509:1987, *Information processing systems – Open Systems Interconnection – Service conventions.*

– 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).*

– CCITT Recommendation X.700 (1992), *Management Framework Definition for 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.710 (1991), *Common Management Information Service Definition for CCITT Applications.*

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

– 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.*

2.3 Additional references

- ISO/IEC 9545:1989, *Information technology – Open Systems Interconnection – Application Layer structure.*

3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1 Basic reference model definitions

This Recommendation | International Standard makes use of the following term defined in Recommendation X.200 | ISO 7498.

systems management

3.2 Service convention definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.210 | ISO/TR 8509.

primitive

3.3 Management framework definitions

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.700 | ISO/IEC 7498-4.

a) management information;

b) managed object;

c) systems-management-application-entity.

3.4 Systems management overview definitions

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.701 | ISO/IEC 10040.

a) agent role;

b) dependent conformance;

c) general conformance;

d) manager role;

e) management application protocol;

f) management support object;

g) notification;

h) systems management operation;

i) systems management functional unit.

3.5 Event report management function definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.734 | ISO/IEC 10164-5.

discriminator input object

3.6 Common management information service definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.710 | ISO/IEC 9595.

attribute

3.7 OSI conformance testing definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.290 | ISO/IEC 9646-1.

system conformance statement

3.8 Additional definitions

3.8.1 log: A management support object class that models resources used as a repository for log records.

3.8.2 log record: A management support object class that models units of information stored in a log.

3.8.3 potential log record: A type of discriminator input object that is defined for the purpose of discriminating information to be included in the log. A potential log record consists of all information required for the inclusion of a log record in the log.

4 Abbreviations

ASN.1   Abstract Syntax Notation One

CMIS   Common management information service

CMISE   Common management information service element

Id   identifier

MAPDU   management application protocol data unit

PDU   Protocol data unit

SMAE   systems management application entity

SMFU   systems management functional unit

SMI   structure of management information

5 Conventions

This Recommendation | International Standard uses some of the descriptive conventions in the OSI Service Conventions in ISO/IEC TR 8509.

6 Requirements

For the purpose of many management functions it is necessary to be able to preserve information about events that may have occurred or operations that may have been performed by or on various objects. In a real open system various resources may be allocated to store such information. In OSI management these resources are modeled by **logs** and **log records** contained in the logs.

The management needs for the type of information that is to be logged may change from time to time. Furthermore, when such information is retrieved from a log the manager must be able to determine whether any records were lost or whether the characteristics of the records stored in the log where modified at any time.

The above needs give rise to the following requirements to be satisfied:

a) the definition of a flexible log control service which will allow selection of records that are to be logged by a management system in a particular log;

b) the ability for an external system to modify the criteria used in logging records;

c) the ability for an external system to determine whether the logging characteristics were modified or whether log records have been lost;

d) specification of a mechanism to control the time during which logging occurs, for example, by suspending and resuming logging;

e) the ability for an external system to retrieve and delete log records;

f) the ability for an external system to create and delete logs.

7   Model for the log control function

7.1   Introduction

The model for the log control function describes the conceptual components that provide for the logging of information in open systems. The model also describes the messages for the control of these components. Figure 1 is a schematic description of the logging capability of a system.
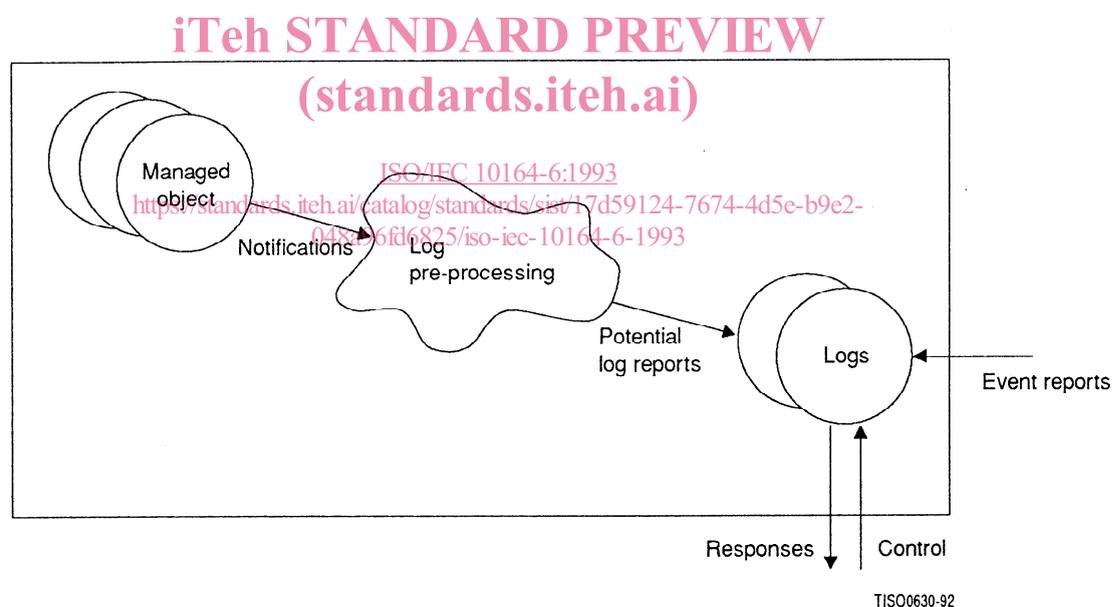

Figure 1 – Log management model

Conceptually, logs store incoming event reports and local system notifications. However, logs can be used to store information that is derived from notifications in the local open system, incoming event reports and PDUs received or transmitted by the open system. These three sources of information are modelled in two basic ways, so that conceptually the log only deals with event reports and local system notifications.

–   The conceptual log preprocessing function receives notifications from managed objects within the local system and forms potential log records. Conceptually these potential log records are distributed to all logs that are contained within the local open system. A potential log record is perceived as a discriminator input object for the purpose of discrimination by the log only and is not visible outside the local system.