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Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: General procedures

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Procédures pour des organismes d'enregistrement particuliers: Procédures générales

CONTENTS

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Committee) 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 techncial 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 9834-1 was prepared by the Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in collaboration with the CCITT. The identical text is published as CCITT Recommendation X.660.

ISO/IEC 9834 consists of the following parts, under the general title *Information technology - Open Systems Interconnection - Procedures for the operation of OSI Registration Authorities*:

— *Part 1: General procedures*

— *Part 2: Registration procedures for OSI document types*

— *Part 3: Registration of object identifier component values for joint ISO/CCITT use*

— *Part 4: Register of VTE profiles*

— *Part 5: Register of VT control object definitions*

— *Part 6: Registration of application processes and application entities*

Annexes A, B and C form an integral part of this part of ISO/IEC 9834. Annex D is for information only.

Introduction

There is a requirement in the OSI environment for the assignment of unambiguous names to certain objects and, in some cases, for the recording of definitions of the instances to which those names are assigned. Application processes, application entities and the definitions of classes of information such as file formats are examples of this requirement.

Registration is the mechanism through which this requirement is met. This Recommendation I International Standard defines the procedures for this registration. The procedures defined apply to registration by a Recommendation I International Standard, by an International Registration Authority and by any organization that has a requirement to do so.

This Recommendation I International Standard defines those parts of the procedures which are generally applicable to registration independent of the type of object involved. In particular, it defines the name structure used and the procedures for the delegation of authority for the assignment of names in order to ensure that names are unambiguous. The name structure is intended to allow, where appropriate, for information about registered objects to be held in, and retrieved from, the Directory.

Related Recommendations I International Standards define procedures which are specific to a particular type of object. Such a Recommendation I International Standard may be required where

a)   some Recommendation I International Standard has identified the need for registration for some type of object but, because of the complexity of the information necessary to define instances of the type, it is judged to be desirable to specify this information in a separate document;

b)   an International Registration Authority is necessary or desirable because of the expected frequency of new or amended registrations at the international level1;

c)   procedures to be used by organizations requiring registration for their own purposes cannot be adequately defined by a reference only to this Recommendation I International Standard.

Another Recommendation I International Standard is not required where:

a)   the information necessary to define instances of the type is fully defined in the Recommendation I International Standard which has identified the need for registration; and

b)   registration only occurs

i)   in the Recommendation I International Standard which defined instances of the type or in Recommendations I International Standards which reference it, and/or

ii)   by the action of organizations which require registration for their own purposes and the procedures for doing this are adequately defined by reference to this Recommendation I International Standard.

INTERNATIONAL STANDARD

CCITT RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – PROCEDURES FOR THE OPERATION OF OSI REGISTRATION AUTHORITIES: GENERAL PROCEDURES

1 Scope

This Recommendation | International Standard:

a) specifies procedures which are generally applicable to registration of objects within the OSIE;

b) specifies the hierarchical structure of the naming-domain within which this registration occurs;

c) provides guidelines for the establishment and operation of International OSI Registration Authorities;

d) provides guidelines for additional Recommendations | International Standards which choose to reference the procedures in this Recommendation | International Standard.

NOTE – This Recommendation | International Standard does not exclude or disallow the use of any syntactic forms of names or any naming domains for registration purposes provided that the domains ensure nonambiguity within their scope. This Recommendation | International Standard is intended to cover those cases where the registration-hierarchical-name is appropriate.

Information about registration for specific objects in the OSIE is contained in separate Recommendations | International Standards.

This Recommendation | International Standard applies to registration within the OSIE by Recommendations | International Standards, by International Registration Authorities, and by any organization which requires to act as a registration authority.

2 Normative references

The following CCITT Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this CCITT 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 CCITT Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition 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.722 (1992) | ISO/IEC 10165-4: 1992, *Information technology – Open Systems International – Structure of management information: Guidelines for the definition of managed objects.*

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.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 (1988), *The Directory – Models.*

ISO/IEC 9594-2: 1990, *Information technology – Open Systems Interconnection – The Directory – Part 2: Models.*

– CCITT Recommendation X.520 (1988), *The Directory – Selected attribute types.*

ISO/IEC 9594-6: 1990, *Information technology – Open Systems Interconnection – The Directory – Part 6: Selected attribute types.*

– CCITT Recommendation X.650 (1992), *Open Systems Interconnection (OSI) – Reference Model for Naming and Addressing.*

ISO 7498-3: 1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and addressing.*

2.3 Additional references

– ISO 3166: 1988, *Codes for the representation of names of countries.*

– ISO 6523: 1984, *Data interchange – Structures for the identification of organizations.*

– ISO 8571-1: 1988, *Information processing system – Open Systems Interconnection – File transfer, access and management. Part 1: General introduction.*

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

– ISO/IEC 9834-3: 1990, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI Registration Authorities – Part 3: Registration of object identifier component values for joint ISO-CCITT use.*

3 Definitions

3.1   The following term is used in this Recommendation | International Standard and is defined in ISO 6523:

organization

3.2   The following terms are used in this Recommendation | International Standard, and are defined in CCITT Rec. X.200 | ISO 7498:

a)   Open Systems Interconnection environment;

NOTE – This term is not formally defined in the current version of ISO 7498-1. A definition will be given in the revision which is currently being prepared.

b)   protocol-control-information.

3.3   The following terms are used in this Recommendation | International Standard, and are defined in CCITT Rec. X.650 | ISO 7498-3:

a)   name;
b)   naming authority;
c)   naming domain;
d)   synonym.

3.4   The following terms are used in this Recommendation | International Standard, and are defined in ISO/IEC 9545:

a)   application-entity-title,

b)   application-process-title.

3.5   The following terms are used in this Recommendation | International Standard, and are defined in CCITT Rec. X.208 | ISO/IEC 8824:

a)   object,

b)   object identifier.

3.6 The following terms are used in this Recommendation | International Standard, and are defined in CCITT Rec. X.501 | ISO/IEC 9594-2:

a) attribute;

b) attribute type;

c) attribute value;

d) attribute value assertion;

e) Directory name;

f) object class;

g) relative distinguished name.

3.7 The following terms are used in this Recommendation | International Standard, and are defined here:

3.7.1 object (of interest): Anything in some world, generally the world of telecommunications and information processing or some part thereof,

a) which is identifiable (can be named); and
b) which may be registered.

NOTE – Examples of objects are information objects (defined in CCITT Rec. X.208 | ISO/IEC 8824), application-entities (defined in CCITT Rec. X.650 | ISO 7498-3) and managed objects (defined in CCITT Rec. X.722 | ISO/IEC 10165-4).

3.7.2 registration: The assignment of an unambiguous name to an object in a way which makes the assignment available to interested parties.

3.7.3 registration authority: An entity such as an organization, a standard or an automated facility that performs registration of one or more types of objects.

NOTE – For this Recommendation | International Standard the above definition of registration authority extends the term to cover registration by organizations acting at international, regional and national levels and by other means. For clarity, the term International Registration Authority is used in this Recommendation | International Standard to refer to an organization performing registration at the international level.

3.7.4 registration procedures: The specified procedures for performing registration and amending or deleting existing registrations.

3.7.5 sponsoring authority: An organization recognized by the requirements of this International Standard to receive proposals for registration and to submit applications accordingly to an International Registration Authority (see 7.2).

3.7.6 registration hierarchical-name: A name which is unambiguous within the OSIE and which is assigned by registration. The semantic form of this name is structured according to the rules in clause 6.

3.7.7 registration hierarchical-name-tree: A tree whose nodes correspond to objects that are registered and whose non-leaf nodes may be registration authorities.

3.7.8 administrative role (of a registration authority): Assigning and making available unambiguous names according to the Recommendation | International Standard defining the procedures for the authority.

3.7.9 technical role (of a registration authority): Recording definitions of the objects to which names are assigned and verifying that these definitions are in accordance with the Recommendation | International Standard defining the form of the definition.

3.7.10 International (OSI) Registration Authority: A registration authority acting at the international level according to the procedures for its operation defined in the relevant Recommendation | International Standard.

4 Abbreviations

FTAM	File Transfer, Access and Management	
ISP	International standardized profile	
OSI	Open Systems Interconnection	
OSIE	Open Systems Interconnection environment	
PCI	protocol-control-information	
RH-name	registration-hierarchical-name	
RH-name-tree	registration-hierarchical-name-tree	
RDN	relative distinguished name	

5 Registration

5.1 Overview

5.1.1 Many OSI Recommendations I International Standards define certain objects for which unambiguous identification within the OSIE is required. This is achieved by registration.

NOTE – Examples of these objects are an application-process, an application-entity and the definition of a class of information such as a file format.

5.1.2 Registration is the assignment of a name to an object in a way which makes the assignment available to interested parties. It is carried out by a registration authority.

5.1.3 Registration can be effected by a Recommendation I International Standard, by publishing in the Recommendation I Standard the names and the corresponding definitions of object. Such a mechanism requires amendment of the Recommendation I Standard for each registration, and hence is not appropriate in cases where the registration activity is high.

5.1.4 Alternatively, registration can be effected by permitting one or more organizations to act as registration authorities to perform registration on a flexible basis.

5.1.5 The form of name used and the management of the registration naming-domain ensures independent assignment of unambiguous names by different registration authorities.

5.2 Management of the registration naming-domain

5.2.1 The management of the entire registration naming-domain is accomplished by a process of delegation of authority. In this process the registration authority responsible for a given naming-domain may partition that naming-domain. In doing so, it may or may not delegate the registration responsibility for the naming-domain formed by each partition to a subordinate registration authority. The naming of a partition does not necessarily imply authority to register objects under that partition. This delegation of registration responsibility can be applied repeatedly with a subordinate registration authority partitioning further the naming domain for which it is responsible and delegating responsibility for those partitions to registration authorities subordinate to it.

5.2.2 The registration authority responsible for a given naming-domain must assign a name to the partition of that naming-domain that a given sub-authority will manage. The name assigned shall be globally unambiguous, and shall be concatenated as a prefix to all names assigned by that sub-authority. The repeated application of this process through a hierarchy of registration agents ensures the generation of unambiguous names. The generation of names for registration purposes is discussed further in clause 6.

NOTE – An organization, a Recommendation I International Standard or an automated facility can be the registration authority for more than one partition of a naming-domain.

5.3 Operation

5.3.1 A registration authority may concern itself only with unambiguous assignment of names (the administrative role) or may in addition need to concern itself with recording definitions of objects and verifying that these definitions are in accordance with the Recommendation | International Standard defining the form of the definition (the technical role).

5.3.2 The criteria for registering an object may vary among registration authorities. It is the responsibility of each authority to establish those criteria. A registration authority may also choose to define criteria for any authorities which are subordinate to it.

NOTE – Among the criteria to be considered in the registration of an object is the level at which registration is appropriate. For example it may be that the definition of an object registered by a particular registration authority may find wide use beyond the community serviced by that registration authority. Although the assigned name is globally unambiguous and can be used outside that community, it may be desirable to restate the definition in the style acceptable to the larger community of interest. If so, the restated definition should be registered with the registration authority appropriate for that larger community.

5.3.3 Synonyms are created when an instance of a type of object is registered more than once. There may be valid reasons for creating synonyms, e.g. Directory aliases. It is difficult to detect occurrences of synonyms. In case where synonyms are undesirable it may be possible to reduce the number by such means as technical review or administrative fees (in the case of registration authorities). It must be decided in each case whether this is necessary and practical.

NOTE – There is no practical way to ensure that the same object has not been registered by multiple registration authorities and the procedures in this Recommendation | International Standard do not ensure that only a single name is assigned to an object.

6 Registration-hierarchical-names

6.1 The RH-name-tree is a tree whose root corresponds to this Recommendation | International Standard and whose leaf and non-leaf nodes correspond to objects that are registered. Non-leaf nodes correspond to registration authorities where registration responsibility has been delegated to them by a superior node.

6.2 The arcs from a given node to its immediate subordinates are unambiguously identified within the scope of the node by each of one or more values of different types. These values are assigned by the registration authority corresponding to the superior node. Thus, any path from the root to a node provides an unambiguous name for that node by concatenating (in order) the values of a given type for the arcs on the path.

NOTE – If any arc is not assigned a value of a given type, then the node identified by the arc and all of its subordinates cannot be referenced using names constructed with values of that type.

6.3 The types of values assigned by a registration authority can include integer values, alphanumeric values and other types of values. The contents of character sets and composition rules for values formed at subordinate arcs should be defined in registration authority procedure standards. The contents of character sets and composition rules may be further constrained or extended by subordinate registration authorities taking into consideration the expected use of the resulting values in different forms of name.

NOTE – To keep to a minimum the number of values assigned to top-level arcs in the RH-name-tree, it is desirable that the types of values assigned to arcs be generic, i.e. applicable to many name forms.

6.4 Where a given set of registration authorities assigns values of more than one type, the significance, if any, of the relationship between the resultant names (generated as defined in 6.2) is outside the scope of this document.

6.5 The generation of some specific forms of name for registration purposes is defined in the Annexes to this Recommendation | International Standard. The generation of other forms of name is also defined in other registration authority documents or in relevant Recommendations | International Standards.

7 International Registration-Authorities

NOTE – Although this clause applies only to International Registration Authorities, other registration authorities may wish to implement similar rules for their operation.

7.1 Requirement for an International Registration Authority

The identification of, and formal agreement on the need for, an International Registration Authority is established in the Recommendation | International Standard which defines the type of object. Procedures which are generally applicable to the operation of International Registration Authorities are defined in this clause. Procedures which are specific to the type of object are defined in a separate Recommendation | International Standard developed for that purpose.

> NOTE – The identity of the organization operating any specific International Registration Authority can be obtained from the CCITT or ISO Secretariats.

7.2 Operation of International Registration Authorities

7.2.1 Each International Registration Authority shall maintain a register of the names assigned to objects and (where the registration authority performs a technical role) the associated definitions of the objects. The form of name to be used and the form of register entry are defined in a separate Recommendation | International Standard.

7.2.2 With regard to the initial assignment of names and definitions to objects and of subsequent additions to the register, the responsibilities of an International Registration Authority shall be as follows:

   a) to receive from Sponsoring Authorities (see 7.3) proposals for register entries;

   b) to process proposals for entries according to the procedures specified in the applicable Recommendation | International Standard;

   c) to record names for each register entry that is accepted, in accordance with the procedures specified in the applicable Recommendation | International Standard;

   d) to promulgate the register entries according to the procedures specified in the applicable Recommendation | International Standard; and

   e) to convey the results in a specified form to the appropriate Sponsoring Authority when the processing of a proposal has been completed.

7.2.3 With regard to deletions from the register, the responsibilities of an international Registration Authority shall be as follows:

   a) to receive proposals from Sponsoring Authorities (see 7.3);

   b) to process the proposals for deletion, according to the procedures specified in the applicable Recommendation | Part of this International Standard or separate International Standard;

   c) to promulgate the register deletions according to the procedures specified in the applicable Recommendation | International Standard; and

   d) to convey the results in a specified form to the appropriate Sponsoring Authority when the processing of a proposal has been completed.

7.3 Sponsoring Authorities

7.3.1 A Sponsoring Authority is the CCITT Secretariat | any JTC 1 Technical Committee or Subcommittee, an administration | national body, or a liaison organization.

7.3.2 The responsibilities of a Sponsoring Authority shall be as follows:

   a) to receive proposals concerning objects from within their respective countries or organization;

   b) to effect any necessary rationalizations or coordination of these proposals and to forward them to the International Registration Authority; and

   c) to make known within their respective countries or organizations the decisions taken on their proposals as transmitted to them by the International Registration Authority.

8 Contents of registration procedures for objects of a particular type

8.1 Registration procedures for objects of a particular type may be specified in a separate Recommendation | International Standard. A clear distinction shall be made in these registration procedures between those procedures which apply in general to registration for the type of object, and those which apply to the specific International Registration Authority (if any) established by the Recommendation | International Standard.

8.2 The contents of each Recommendation | International Standard shall include:

a) the justification of the need for the registration;

b) a statement of the scope of objects to be registered;

c) references to the Recommendation | International Standard in which the type of object is defined and to any other applicable Recommendations | International Standards, together with identification of the CCITT Study Group | JTC 1 Subcommittee responsible for the definition of the type of object;

d) definitions and abbreviations used in the registration procedures;

e) a statement whether the registration requires a registration authority to perform a technical role;

f) a specification of the contents of register entries, including at least:

    1) the name assigned to the object;

    2) the name of the organization that proposed the entry;

    3) the dates of submission/registration;

    4) the definition of the object (where the registration authority performs a technical role);

g) identification of those clauses of this Recommendation | International Standard which apply together with the specification of any necessary amendments to be applied to those clauses for the purposes of the specific registration;

h) for an International Registration Authority, a complete specification of the procedures (manual or automated) to be applied to create, interrogate, modify, delete or audit registered items. This includes any access restrictions imposed on these operations. In particular, the following are specified:

    1) the method used to determine whether a request for registration or deletion should be accepted.

        NOTE – This may include (but it is not limited to) administration approval | national body vote or national body exception (where silence means tacit acceptance), or automated processes. The following criteria for rejection of a proposal may be relevant:

        a) incomplete or incomprehensible definition;

        b) existence of an identical or similar entry in the register;

        c) the proposed entry is not one of the permitted entries;

        d) the proposed entry does not conform to a Recommendation | International Standard listed in the References of the appropriate Recommendation | International Standard;

        e) the justification for inclusion in the register is not adequate.

    2) how rejections shall be resolved;

    3) whether modification of register entries or reuse of the names of register entries is allowed and (if so) a specification of mechanisms to allow this to happen, and

    4) the procedures to be applied to determine whether and how the register shall be updated to include relationships to further Recommendation | International Standards,

i) identification of any propagation/notification requirements associated with registered items.

    NOTE – For example there should be a statement on whether the registered information is to be made available to users through a Recommendation | International Standard or an ISP, or by application to the International Registration Authority; and, in the case of application to the International Registration Authority, a description of the procedure to be followed by people or organizations which need to obtain registered information;

j) examples of register entries [in Annex(es) to the Recommendation | International Standard].