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Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: Registration of object identifier arcs for applications and services using tag-based identification

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Procédures opérationnelles pour les organismes d'enregistrement de l'OSI: Enregistrement des arcs d'identificateur d'objet pour applications et services utilisant l'identification basée sur des tags

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 9834-9 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems* in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.668.

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 and top arcs of the ASN.1 Object Identifier tree*

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

— *Part 3: Registration of Object Identifier arcs beneath the top-level arc jointly administered by ISO and ITU-T*

— *Part 4: Register of VTE Profiles*

— *Part 5: Register of VT Control Object Definitions*

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

— *Part 7: Joint ISO and ITU-T Registration of International Organizations*

— *Part 8: Generation and registration of Universally Unique Identifiers (UUIDs) and their use as ASN.1 Object Identifier components*

— *Part 9: Registration of object identifier arcs for applications and services using tag-based identification*

Introduction

This Recommendation | International Standard enables the registration of object identifiers (OIDs) for applications and services using tag-based identification (see 3.2.) under the OID arc **{joint-iso-itu-t(2) tag-based(27)}**.

NOTE – For historical reasons, the secondary identifier **nid** is a synonym for **tag-based** on arc 27.

Tag-based applications and services may (if necessary) request from the Registration Authority an OID for their identification scheme that encodes in only two octets. This Recommendation | International Standard specifies the operation of the Registration Authority for the allocation of such OIDs.

For tag-based applications and services, the OID is stored in a transponder which has limited memory size and the length of the OID encoding needs to be minimized.

INTERNATIONAL STANDARD
RECOMMENDATION ITU-T

Information technology – Open Systems Interconnection – Procedures for the operation of OSI Registration Authorities: Registration of object identifier arcs for applications and services using tag-based identification

1 Scope

This Recommendation | International Standard specifies the procedures for operating the Registration Authority for object identifiers under the arc **{joint-iso-itu-t(2) tag-based(27)}**, that supports tag-based applications and services.

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

2.1 Identical Recommendations | International Standards

– Recommendation ITU-T X.660 (2004) | ISO/IEC 9834-1:2005, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI Registration Authorities: General procedures and top arcs of the ASN.1 Object Identifier tree.*

– Recommendation ITU-T X.680 (2002) | ISO/IEC 8824-1:2002, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

3 Definitions

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

3.1 Imported definitions

3.1.1 This Recommendation | International Standard uses the following term defined in Rec. ITU-T X.680 | ISO/IEC 8824-1:

a) object identifier.

3.1.2 This Recommendation | International Standard uses the following terms defined in Rec. ITU-T X.660 | ISO/IEC 9834-1:

a) administrative role;

b) primary integer value;

c) registration;

d) registration authority;

e) registration procedures;

f) secondary value;

g) technical role.

3.2 Additional definitions

3.2.1 **relevant Rapporteur**: The ITU-T Rapporteur and/or the ISO/IEC Convenor responsible for the maintenance of this Recommendation | International Standard.

3.2.2 **tag-based applications and services**: Applications or services which use tag-based identification.

3.2.3 **tag-based identification**: An identification mechanism in which the identifier is stored in a memory-limited area of a tag.

NOTE – The tag-based identifier is stored in the tag, and a reader/writer reads/writes the identifier from/to the tag via an optical scanner (read-only), camera (read-only), IrDA (read/write), RF technique (read/write) or other similar methods.

4 Abbreviations and acronyms

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

IrDA	Infrared Data Association
OID	Object Identifier
RA	Registration Authority
RF	Radio Frequency
RFID	Radio Frequency Identification

5 General

5.1 This Recommendation | International Standard defines procedures for an RA that allocates OIDs under the arc **{joint-iso-itu-t(2) tag-based(27)}** as the identifier for tag-based applications and services.

5.2 The Registration Authority whose operation is specified by this Recommendation | International Standard performs both an administrative and a technical role (see Rec. ITU-T X.660 | ISO/IEC 9834-1).

5.3 It is within the mandate of ITU-T | ISO/IEC to organize registration as specified in this Recommendation | International Standard. In order to do this, ITU-T | ISO/IEC appoints, according to their internal requirements and rules, an organization to act as the RA for this Recommendation | International Standard.

NOTE 1 – The technical role is performed by the relevant Rapporteur.

NOTE 2 – The administrative role is performed by the National Internet Development Agency of Korea (NIDA).

NOTE 3 – NIDA can be contacted at: Phone Number (+82-2-2186-4668), E-mail Address (RA-nid@nida.or.kr), Postal Address (3F, 398, Seochoro, Seocho-gu, Seoul, Korea, 137-857), Web page (http://www.nida.or.kr/english/).

5.4 The RA is responsible for the assignment of primary values and secondary values to identification schemes for tag-based applications and services under the OID arc **{joint-iso-itu-t(2) tag-based(27)}**.

5.5 It is not expected that subsequent arcs will be added to arcs assigned by this Registration Authority, as this would be evidence that there is no requirement for the short OID that is provided by this Recommendation | International Standard.

NOTE – There may be tag-based identification schemes where the scheme itself is based on a registration-hierarchical-name-tree, and can therefore be logically described as further nodes beneath the OID identifying the scheme, although this information is likely to be in a separate location in the transponder.

6 Responsibilities of the RA

6.1 The Registration Authority shall maintain a Register of the primary integer value and secondary identifiers assigned to the arc identifying the tag-based application or service.

6.2 With regard to the initial assignment of primary values, the responsibilities of the Registration Authority shall be as follows:

a) to receive applications for the allocation of an arc (the required content of the application is specified in 8.1);

b) for each assigned arc, to keep a record of the assigned primary value, any secondary values and the specification of the identification scheme for tag-based applications and services that is being registered.

6.3 If the application is accepted according to the criteria of clause 7, the arc shall be allocated and a registration announcement shall be sent to the applicant as specified in 8.2.

6.4 If the application does not contain the information specified in 8.1, the application shall be rejected by sending a notice of rejection as specified in 8.4.

6.5 The permitted fee structure is specified in 8.6.

7 Criteria for acceptance

7.1 An application shall be accepted if, in the technical judgment of the relevant Rapporteur, the allocation requested is to be used for an identification scheme supporting one or more tag-based applications or services.

7.2 It is a requirement that the identification scheme be identified in a publicly available specification produced by a standardization body recognized by ITU-T, ISO or IEC, or by an internationally recognized consortium.

NOTE – This excludes specifications produced by a single company or organization.

7.3 The applications shall identify the time-scale within which the relevant identification scheme is to be applied within applications or services. The application shall be rejected if the time-scale exceeds 12 months, and can be voided if it is not in use within that time-scale.

NOTE – The primary integer value of a voided application shall not be reused within the next five years.

7.4 The applications or services for which the allocation is requested shall be applications or services which require interchange between multiple vendors in an open environment.

7.5 An application for registration, containing the information specified in 8.1 shall be sent to the organization providing the administrative role for the RA (see 5.3 Note 2). The application shall be submitted by the standardization body (recognized by ITU-T, ISO or IEC), or by the internationally recognized consortium (see 7.2).

8 Detailed procedures for the operation of the RA

8.1 Registration application

The application shall include at least the following information:

a) name of the organization submitting the application;

b) name, postal mail address, e-mail address, and optionally telephone and fax numbers for the contact point within the requesting organization;

c) full identification of the person submitting the application (including their role in the organization);

d) a reference to an openly accessible specification (see 7.2) of the identification scheme for the tag-based application or service for which an arc is being requested; and

e) (optionally) desired secondary identifier(s).

NOTE – The registration application can be made through the OID repository at http://www.oid-info.com/get/2.27 (or by contacting NIDA – see 5.3). The use of the OID repository is recommended as the interface ensures that all required information is provided.

8.2 Registration announcement

The Registration Authority shall send a registration announcement to an applicant when the assignment of a new arc has been agreed. The registration announcement shall include at least the following information:

a) the name of the organization submitting the application and the reference number of the application;

b) the name, postal/electronic mail address and telephone/facsimile number for the contact point within the requesting organization;

c) full identification of the person submitting the application (including their role in the organization);

d) the primary value assigned; and

e) any confirmed secondary identifier(s).

8.3 Time-scale for processing applications and publication

8.3.1 The technical evaluation by the relevant Rapporteur is expected to be completed within 8 weeks of receipt of the application by the RA and the allocation and the results of the application shall then be sent to the applicant and added to as an entry in the Register.

8.3.2 The RA shall make best efforts to provide a publicly available Web page detailing entries in the Register (see 6.2 b), with the email address protected against robot harvesting.

NOTE – It is recommended that this be done using the OID repository at http://www.oid-info.com/get/2.27.

8.4 Notice of rejection

The Registration Authority shall send a notice of rejection to an applicant when the assignment of a new arc has been rejected. The notice of rejection shall include at least the following information:

a) the name of the organization submitting the application and the reference number of the application;

b) the name, postal/electronic mail address and telephone/facsimile number for the contact point within the requesting organization;

c) full identification of the person submitting the application (including their role in the organization);

d) the desired secondary identifier(s); and

e) the reason for rejection.

8.5 Change of registration information

The scheme identified by an allocated OID shall not change significantly from the scheme identified in the original application, but supporting information, such as the information provided in 8.1 b, may change from time to time. The RA shall be notified of all such changes, and shall update the Register, maintaining an audit trail of earlier information.

NOTE – It is recommended that this be done using the OID repository at http://www.oid-info.com/get/2.27.

8.6 Fees

8.6.1 The organization providing this RA shall do so on a cost-recovery basis. The fee structure shall be designed to recover the expenses of operating the RA, to cover Web publication of registrations, to support enquiry requests, and to discourage frivolous and multiple requests.

8.6.2 The fee values shall be determined by the RA, subject to the approval of the relevant ITU-T Study Group | ISO/IEC JTC 1 Subcommittee. Fees can apply to:

a) registration;

b) inquiry request;

c) request for update.

8.6.3 Fees shall be independent, subject to exchange rate fluctuations, of the country that the application is made from.

8.6.4 Once the fee associated with making an initial register entry has been charged, there shall be no further charges for the maintenance of that entry or its Web publication.

9 Appeals process

9.1 In response to a notice of rejection, the applicant can submit to the RA a supplement to its original application that responds to the reason(s) for rejection.

9.2 Any subsequent appeal shall be resolved by the ITU-T Question and/or ISO/IEC Working Group responsible for the maintenance of this Recommendation | International Standard.

10 Re-appointment of the RA

If the ITU-T Question and/or ISO/IEC Working Group responsible for the maintenance of this Recommendation | International Standard determine that the RA be discharged of its duties, it is expected that register entries held by the RA will be made available to any subsequently appointed RA.

Annex A

Example of tag-based applications and services

(This annex does not form an integral part of this Recommendation | International Standard)

Figure A.1 illustrates the operation of tag-based applications and services.

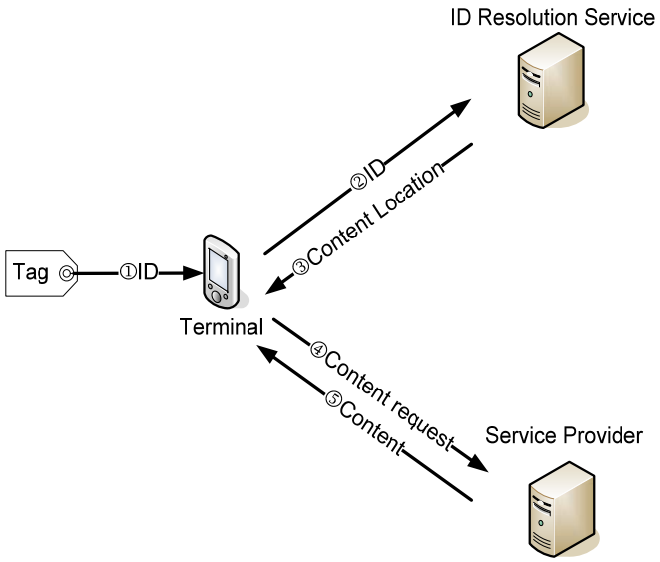

Figure A.1 – Operation of tag-based applications and services

In tag-based applications and services, an identifier is associated with a service or content. This identifier is used as a key to access the related service or content.

Typical tag-based applications and services are provided in three steps:

1) Acquiring identifier: A user terminal reads the identifier from a tag.
2) Identifier resolution: The user terminal sends the identifier to an identifier resolution server to get the location information for the service or content.
3) Service access: The user terminal accesses the service or content.

The identifier is stored in a tag and the user terminal reads this identifier from the tag using any data capturing technique. Currently the most popular data capturing technique is RFID, but any data capturing technique can be used (such as an optical scanner, IrDA, or camera) based on the kind of tag.

The identifier should be unique within a specific identification scheme, and it should be uniquely identified from different identification schemes. For this purpose, OIDs are used.

For example, OID **{joint-iso-itu-t(2) tag-based(27) scheme-A(m)}** could be used for identification scheme "A" and **{joint-iso-itu-t(2) tag-based(27) scheme-B(n)}** for identification scheme "B".

In the RFID area, an identifier is always recorded with an OID into an RFID tag to identify what kind of identification scheme is used in this RFID tag.

NOTE – The documents listed in the Bibliography (see [1], [2], [3], [4]) provide a more complete description of this architecture, and of tag-based applications and services.

Most RFID tags have small memory sizes and require the use of a short OID for encoding into the tag. The OID defined in this Recommendation | International Standard can be used for any identification carrier which has a limited memory size (such as an RFID tag or a barcode). Such carriers have a requirement for root object identifiers that are as small as possible. Allocation of OID **{joint-iso-itu-t(2) tag-based(27)}** to this registration authority makes available object identifiers using only 2 octets to identify the tag-based identification scheme.

Bibliography

[1] ISO/IEC 15962:2004, *Information technology – Radio frequency identification (RFID) for item management – Data protocol: data encoding rules and logical memory functions.*

[2] Recommendation ITU-T Y.2213 (2008), *NGN service requirements and capabilities for network aspects of applications and services using tag-based identification.*

[3] Recommendation ITU-T F.771 (2008), *Service description and requirements for multimedia information access triggered by tag-based identification.*

[4] Recommendation ITU-T H.621 (2008), *Architecture of a system for multimedia information access triggered by tag-based identification.*

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