Automatic Information Object Identifier Assignment

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1. Background and Justification

Accredited Standards Committee X9 (X9) develops standards that may specify information and communications technology objects that require unambiguous identification. These objects include policies, protocols, data formats, document versions, and cryptographic techniques. External standards development organizations that reference our standards, implementers and users of standards-based products, as well as system auditors, legislators, and regulators rely on X9 standards. All of these groups benefit from the clear and concise identification of concepts and objects specified in X9 standards.

The joint ISO/IEC 9834-1 | ITU-T X.660 standard for naming, addressing, and registration defines "a tree structure that supports international object identifiers (OIDs)" [1]. This structure is commonly referred to as "the OID tree" and each branch to a node on the tree is referred to as an "arc" [1]. All arcs in the OID tree are unambiguously identified by an integer value.

The root values in the tree are allocated to ISO, ITU-T and jointly to ISO/IEC and ITU-T. These organizations each serve as a Registration Authority and assign OIDs under their respective arcs, (i.e., ISO/TC 68 was assigned an arc by ISO). Each arc in the hierarchical OID tree can be considered a globally unique identifier of an information object and can be used in an instance of communication for ensure unambiguous information exchange.

X9 obtained an international object identifier (OID) value from ISO/TC 68, an OID arc assigned to X9 for the management of its own international object identifier tree [1]. The TC 68 Secretariat assigned an OID for each member country, uniquely identified by their country code [2], assigning the integer 840 value that identifies the United States (US). The complete OID value assigned to X9 as the US National Body is defined as follows:

iso(1) identified-organization(3) tc68(133) country(16) x9(840)

This value can be represented in a number of useful formats. Representations in both compact binary formats and in human-readable text are possible. Commonly used representations include the 'dotted notation' (1.3.133.16.840) format, and the Uniform Resource Name (URN) format [3] used to specify a namespace in the W3C XML (Extensible Markup Language) standard. Every OID value has multiple representations and the format used in a given instance depends is at the choice of the user. X9 can be identified by the following URN:

urn:oid:1.3.133.16.840

X9 develops standards, technical reports (TR) and technical specification (TS)[1] documents. X9 has established an OID arc for each of the following document types:

iso(1) identified-organization(3) tc68(133) country(16) x9(840) x9Standards(9)

iso(1) identified-organization(3) tc68(133) country(16) x9(840) x9TRs(8)

iso(1) identified-organization(3) tc68(133) country(16) x9(840) x9TSs(7)

When ANSI approves a new X9 project, a unique integer value is assigned to identify and manage the work by X9 staff. This value is used by X9 to assign a unique OID to each of its projects. This assignment is achieved by adding the X9 assigned project number to the end of the appropriate X9 arc.

For example, for the project assigned to develop the X9.73 standard, the X9 staff assigned the project number 73 to the arc for X9 standards, " x9-73(73) ". This resulted in the following OID assignment for the X9.73 standard:

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[1] Note that as of this writing, X9 had not been approved by ANSI to develop TS documents.

iso(1) identified-organization(3) tc68(133) country(16)
    x9(840) x9Standards(9) x9-73(73)

For the project assigned to develop the X9 Technical Report (TR) Quantum Techniques in Cryptographic Message Syntax (CMS), X9 staff assigned the project number 50 to the arc for X9 technical reports, " qcms(50) ". This resulted in the following OID assignment for X9 TR-50 technical report

iso(1) identified-organization(3) tc68(133) country(16)
    x9(840) x9TRs(8) qcms(50)

X9 document editors are assigned authority by X9 to define additional identifiers under the arc assigned to their project. The unique arc assignment per project is intended to ensure there are no OID collisions between projects. Editors should take care not to assign the same OID value to identify more than a single, distinct information object or concept. However, OIDs are 'names' and more than one name, a synonym, can be used for identification of the same object or concept.

References

[1] ISO/IEC 9834-1 | ITU-T X.660 Information technology – Procedures for the operation of object identifier registration authorities: General procedures and top arcs of the international object identifier tree. Retrieved October 17, 2017, from http://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11336

[2] ISO 31166-1 Codes for the representation of names of countries and their subdivisions - Part 1: Country codes, Retrieved October 17, 2017, from https://www.iso.org/standard/63545.html

[3] ISO/IEC 8825-5 | ITU-T X.694 Information technology - ASN.1 encoding rules: Mapping W3C XML schema definitions into ASN.1