INTERNATIONAL STANDARD

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Information technology — ASN.1 encoding rules: Registration and application of PER encoding instructions

Technologies de l'information — Règles de codage ASN.1: Enregistrement et application des instructions de codage PER

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CONTENTS

Page

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 8825-6 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.695 (11/2008).

This second edition cancels and replaces the first edition (ISO/IEC 8825-6:2008), which has been technically revised.

ISO/IEC 8825 consists of the following parts, under the general title *Information technology — ASN.1 encoding rules*:

— *Part 1: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*

— *Part 2: Specification of Packed Encoding Rules (PER)*

— *Part 3: Specification of Encoding Control Notation (ECN)*

— *Part 4: XML Encoding Rules (XER)*

— *Part 5: Mapping W3C XML schema definitions into ASN.1*

— *Part 6: Registration and application of PER encoding instructions*

Introduction

ITU-T Rec. X.680 | ISO/IEC 8824-1 makes syntactic provision for the application of encoding instructions to modify the behaviour of a particular set of encoding rules, identified by an encoding reference (see ITU-T Rec. X.680 | ISO/IEC 8824-1).

ITU-T Rec. X.691 | ISO/IEC 8825-2 specifies the BASIC-PER and CANONICAL-PER encoding rules, each with two variants: the ALIGNED variant and the UNALIGNED variant. The PER encoding instructions allow minor variations to be made in parts of the UNALIGNED variant of a BASIC-PER and CANONICAL-PER encoding. They have no effect on the ALIGNED variant of these encodings.

NOTE – The purpose of PER encoding instructions is to ease the task of producing an ASN.1 specification, which when encoded by the UNALIGNED variant of a PER encoding produces bit-patterns that exactly match those of a legacy protocol. It is unusual for the ALIGNED variant to be used for this purpose, and so for simplicity all PER encoding instructions have no affect on the ALIGNED variant.

This Recommendation | International Standard specifies the use of type prefixes and encoding control sections (see ITU-T Rec. X.680 | ISO/IEC 8824-1, 31.3 and clause 54) to associate one or more PER encoding instructions with an ASN.1 type. Where an encoding instruction is associated with an ASN.1 type, specific clauses in ITU-T Rec. X.691 | ISO/IEC 8825-2 are amended according to the specification of the encoding instruction. These mechanisms are similar to those for the application of XER encoding instructions specified in ITU-T Rec. X.693 | ISO/IEC 8825-4.

This Recommendation | International Standard also specifies the procedures for the operation of a Registration Authority to receive, record and publish the specification of PER encoding instructions that are agreed from time to time. The Registration Authority is the ITU Telecommunication Standardization Bureau, and the form of publication is an Implementors' Guide for ASN.1. This Guide will be available freely on an ITU-T web-site.

This Recommendation | International Standard also specifies the procedures to be used for the approval of new PER encoding instructions. Broadly, these procedures involve the prior publication in the Implementors' Guide of a proposed new encoding instruction, with a later publication announcing that the new encoding instruction has been approved by a simple resolution of the relevant Study Group of ITU-T and the relevant Sub-Committee of ISO/IEC JTC1.

Clauses 6 to 9 specify the operation of the Registration Authority for PER encoding instructions.

Clauses 10 to 13 specify the application of PER encoding instructions to an ASN.1 specification.

Annex A is informative and contains an example of the application of PER encoding instructions using encoding prefixes.

Annex B is informative and contains an example of the application of the same PER encoding instructions using an encoding control section.

Annex C is informative and summarizes the productions defined in this Recommendation | International Standard.

INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – ASN.1 encoding rules: Registration and application of PER encoding instructions

1 Scope

This Recommendation | International Standard:

a) specifies the information needed and the format to be used for specifying PER encoding instructions;

b) specifies the mechanisms for approving new PER encoding instructions from time to time and the operation of the Registration Authority for PER encoding instructions;

c) specifies the means of associating a PER encoding instruction with an ASN.1 type using both type prefixes and an encoding control section.

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

– ITU-T Recommendation X.680 (2008) | ISO/IEC 8824-1:2008, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*.

– ITU-T Recommendation X.691 (2008) | ISO/IEC 8825-2:2008, *Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*.