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AMENDMENT 3
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Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)

AMENDMENT 3: PER encoding instructions

Technologies de l'information — Règles de codage ASN.1: Spécification des règles de codage compact (PER)

AMENDEMENT 3: Instructions de codage PER

Reference number
ISO/IEC 8825-2:2002/Amd.3:2008(E)

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Amendment 3 to ISO/IEC 8825-2:2002 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.691 (2002)/Amd.3 (05/2007).

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INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)

Amendment 3: PER encoding instructions

1) Clause 1

Replace the text of clause 1 with the following:

This Recommendation | International Standard specifies a set of Packed Encoding Rules that may be used to derive a transfer syntax for values of types defined in ITU-T Rec. X.680 | ISO/IEC 8824-1. These Packed Encoding Rules are also to be applied for decoding such a transfer syntax in order to identify the data values being transferred.

The encoding rules specified in this Recommendation | International Standard:

- are used at the time of communication;
- are intended for use in circumstances where minimizing the size of the representation of values is the major concern in the choice of encoding rules;
- allow the extension of an abstract syntax by addition of extra values, preserving the encodings of the existing values, for all forms of extension described in ITU-T Rec. X.680 | ISO/IEC 8824-1;
- can be modified in accordance with the provisions of ITU-T Rec. X.695 | ISO/IEC 8825-6.

2) Subclause 2.1

Append the following to 2.1:

- ITU-T Recommendation X.695 (2007) | ISO/IEC 8825-6:2008, *Information technology – ASN.1 encoding rules: Registration and application of PER encoding instructions.*

3) Subclause 3.5 *bis*

Insert a new subclause 3.5 bis as follows:

3.5 *bis* PER Encoding Instructions

This Recommendation | International Standard makes use of the following term defined in ITU-T Rec. X.695 | ISO/IEC 8825-6:

- identifying keyword.

4) Subclause 7.10

Replace subclause 7.10 with the following:

7.10 The rules of this Recommendation | International Standard apply to both algorithms and to both variants unless otherwise stated (but see 8 *bis*.2 and 8 *bis*.3).

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5) Subclause 8.1

Replace subclause 8.1 with the following:

8.1 Dynamic conformance is specified by clause ~~9~~8 *bis* onwards.

6) Clause 8 *bis*

Insert a new clause 8 bis as follows:

8 *bis* PER encoding instructions

8 *bis*.1 PER encoding instructions can be associated with a type in accordance with the provisions of ITU-T Rec. X.680 | ISO/IEC 8824-1 and ITU-T Rec. X.695 | ISO/IEC 8825-6.

NOTE 1 – The application of some PER encoding instructions can make it impossible to encode all the abstract values of the type. Where this can arise, the specific PER encoding instruction identifies the problem. It is a designers decision, based on the possible need to use multiple encoding rules, whether to add an explicit constraint on the type in order to restrict the range of abstract values to those that can be handled by the encoding using the PER encoding instruction. This can make the specification less readable, but ensures that all encoding rules can encode all allowed abstract values, making relaying possible without errors.

NOTE 2 – Each PER encoding instruction starts with an identifying keyword that unambiguously identifies that encoding instruction.

8 *bis*.2 If the ALIGNED version of either BASIC-PER or CANONICAL-PER is in use, then all PER encoding instructions shall be silently ignored and have no affect on the encoding.

8 *bis*.3 If the UNALIGNED version of either BASIC-PER or CANONICAL-PER is in use, then if a type has an associated encoding instruction, the following subclauses shall apply.

8 *bis*.3.1 If the identifying keyword is not known, then a "not supported" error message shall be issued.

8 *bis*.3.2 If the identifying keyword is known, the procedures of this Recommendation | International Standard shall be modified by the amendments to those procedures that are specified by the PER encoding instruction (see ITU-T Rec. X.695 | ISO/IEC 8825-6).

NOTE 1 – If multiple PER encoding instructions are associated with a type, then the amendments specified for all of them shall be applied.

NOTE 2 – It is an error in the register of PER encoding instructions if amendments produced by two or more separate encoding instructions conflict and it is not stated that they are mutually exclusive.

7) Subclause 9.3.2 *bis*

Add a new subclause 9.3.2 bis as follows:

9.3.2 *bis* User-defined constraints (see ITU-T Rec. X.682 | ISO/IEC 8824-3, 9.1) are not PER visible.

8) Subclause 9.6.3 *ter*

Delete subclause 9.6.3 ter (which was added by Amendment 1).

9) Subclause 15.6

Replace subclause 15.6 with the following:

15.6 If the type is extensible for PER encodings (see 9.3.8), then a bit-field consisting of a ~~If an extension marker is present in the size constraint specification of the bitstring type, a~~ single bit shall be added to the field-list ~~in a bit-field of length one~~. The bit shall be set to 1 if the length of this encoding is not within the range of the extension root, and zero otherwise. In the former case, 15.11 shall be invoked to add the length as a semi-constrained whole number to the field-list, followed by the bitstring value. In the latter case, the length and value shall be encoded as if ~~the~~no extension ~~marker~~ is ~~not~~ present in the constraint.

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10) Subclause 16.3

Replace subclause 16.3 with the following:

16.3 If the type is extensible for PER encodings (see 9.3.8), then a bit-field consisting of a ~~If there is a PER-visible size constraint and an extension marker is present in it, a~~ single bit shall be added to the field-list ~~in a bit-field of length one~~. The bit shall be set to 1 if the length of this encoding is not within the range of the extension root, and zero otherwise. In the former case, 16.8 shall be invoked to add the length as a semi-constrained whole number to the field-list, followed by the octetstring value. In the latter case, the length and value shall be encoded as if ~~the~~no extension ~~marker~~ is ~~not~~ present in the constraint.

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