Information technology - ASN.1 encoding rules - Part 4: XML Encoding Rules (XER)

Contents

Page

1 Scope ... 1
2 Normative references ... 1
2.1 Identical Recommendations | International Standards ... 1
2.2 Additional references ... 2
3 Definitions ... 2
3.1 ASN.1 Basic Encoding Rules (BER) ... 2
3.2 Additional definitions ... 2
4 Abbreviations ... 4
5 Encodings specified by this Recommendation | International Standard ... 4
6 Encoding instructions specified by this Recommendation | International Standard ... 5
7 Conformance ... 5
8 Basic XML encoding rules ... 5
8.1 Production of a complete BASIC-XER encoding ... 5
8.2 The XML prolog ... 6
8.3 The XML document element ... 6
8.4 Encoding of the EXTERNAL type ... 7
8.5 Encoding of the open type ... 7
8.6 Decoding of types with extension markers ... 7
9 Canonical XML encoding rules ... 7
9.1 General rules for canonical XER ... 7
9.2 Real values ... 8
9.3 Bitstring value ... 8
9.4 Octetstring value ... 8
9.5 Sequence value ... 8
9.6 Set value ... 8
9.7 Set-of value ... 8
9.8 Object identifier value ... 9
9.9 Relative object identifier value ... 9
9.10 GeneralizedTime ... 9
9.11 UTCTime ... 9
9.12 Open type value ... 10
9.13 The TIME type and the useful time types ... 10
10 Extended XML encoding rules ... 10
10.1 General ... 10
10.2 EXTENDED-XER conformance ... 11
10.3 Structure of an EXTENDED-XER encoding ... 13
11 Notation, character set and lexical items used in XER encoding instructions ... 13
12 Keywords ... 14
13 Assigning an XER encoding instruction to an ASN.1 type using a type prefix ... 15
14 Assigning an XER encoding instruction using an XER encoding control section ... 17
14.1 The encoding instruction assignment list ... 17

14.2 Identification of the targets for an XER encoding instruction using a target list 18
15 Multiple assignment of XER encoding instructions 23
15.1 Order in which multiple assignments are considered 23
15.2 Effect of assigning a negating encoding instruction 24
15.3 Multiple assignment of encoding instructions with multiple categories 24
15.4 Multiple assignment of XER encoding instructions of the same category 24
15.5 Permitted combinations of final encoding instructions 25
16 XER encoding instruction support for XML namespaces and qualified names 26
17 Specification of EXTENDED-XER encodings 27
17.1 The XML document element 28
17.2 The "TypeNameOrModifiedTypeName" production 28
17.3 The "AttributeList" production 28
17.4 The "ExtendedXMLValue" production 28
17.5 The "ExtendedXMLChoiceValue" production 30
17.6 The "ExtendedXMLSequenceValue" and "ExtendedXMLSetValue" productions 30
17.7 The "ExtendedXMLSequenceOfValue" and "ExtendedXMLSetOfValue" productions 31
17.8 The "ModifiedXMLIntegerValue" production 32
17.9 The "ModifiedXMLRealValue" production 32
18 The ANY-ATTRIBUTES encoding instruction 33
18.1 General 33
18.2 Restrictions 34
18.3 Effect on encodings 34
19 The ANY-ELEMENT encoding instruction 35
19.1 General 35
19.2 Restrictions 35
19.3 Effect on encodings 36
20 The ATTRIBUTE encoding instruction 37
20.1 General 37
20.2 Restrictions 37
20.3 Effect on encodings 37
21 The BASE64 encoding instruction 39
21.1 General 39
21.2 Restrictions 39
21.3 Effect on encodings 39
22 The DECIMAL encoding instruction 40
22.1 General 40
22.2 Restrictions 40
22.3 Effect on encodings 40
23 The DEFAULT-FOR-EMPTY encoding instruction 41
23.1 General 41

23.2 Restrictions 41
23.3 Effect on encodings 42
24 The ELEMENT encoding instruction 43
24.1 General 43
24.2 Restrictions 43
24.3 Effect on encodings 43
25 The EMBED-VALUES encoding instruction 43
25.1 General 43
25.2 Restrictions 43
25.3 Effect on encodings 44
26 The GLOBAL-DEFAULTS encoding instruction 44
26.1 General 44
26.2 Restrictions 45
26.3 Effect on encodings 45
27 The LIST encoding instruction 45
27.1 General 45
27.2 Restrictions 45
27.3 Effect on encodings 46
28 The NAME encoding instruction 46
28.1 General 46
28.2 Restrictions 47
28.3 Effect on encodings 48
29 The NAMESPACE encoding instruction 48
29.1 General 48
29.2 Restrictions 49
29.3 Effect on encodings 49
30 The PI-OR-COMMENT encoding instruction 50
30.1 General 50
30.2 Restrictions 50
30.3 Effect on the encodings 50
31 The TEXT encoding instruction 51
31.1 General 51
31.2 Restrictions 51
31.3 Effect on encodings 52
32 The UNTAGGED encoding instruction 52
32.1 General 52
32.2 Restrictions 53
32.3 Effect on encodings 53
33 The USE-NIL encoding instruction 54
33.1 General 54
33.2 Restrictions 54
33.3 Effect on encodings 55
34 The USE-NUMBER encoding instruction 55
34.1 General 55
34.2 Restrictions 55

34.3 Effect on encodings 55
35 The USE-ORDER encoding instruction 56
35.1 General 56
35.2 Restrictions 56
35.3 Effect on encodings 57
36 The USE-QNAME encoding instruction 57
36.1 General 57
36.2 Restrictions 58
36.3 Effect on encodings 58
37 The USE-TYPE encoding instruction 58
37.1 General 58
37.2 Restrictions 58
37.3 Effect on encodings 59
38 The USE-UNION encoding instruction 59
38.1 General 59
38.2 Restrictions 59
38.3 Effect on encodings 60
39 The WHITESPACE encoding instruction 61
39.1 General 61
39.2 Restrictions 61
39.3 Effect on encodings 61
40 Identification of the encoding rules 62
Annex A Examples of BASIC-XER and CXER encodings 63
A.1 ASN.1 description of the record structure 63
A.2 ASN.1 description of a record value 63
A.3 Basic XML representation of this record value 63
A.4 Canonical XML representation of this record value 64
Annex B – Partial XML content and deterministic encodings 65
B.1 Partial XML content 65
B.2 Recommended restrictions on encodings producing partial XML element content 65
Annex C – Examples of extended-XER encodings using XER encoding instructions 68
C.1 Introduction 68
C.2 Simple examples 68
C.3 More complex examples 69