

ISO/IEC 8825-4:2015-11 (E)

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

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.....	9
	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	14

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	18
	14.1 THE ENCODING INSTRUCTION ASSIGNMENT LIST	18
	14.2 IDENTIFICATION OF THE TARGETS FOR AN XER ENCODING INSTRUCTION USING A TARGET LIST	18
	14.2.1 GENERAL RULES	18
	14.2.2 TARGET IDENTIFICATION USING AN ASN.1 TYPE REFERENCE AND IDENTIFIERS	21
	14.2.3 TARGET IDENTIFICATION USING A BUILT-IN TYPE NAME	22
	14.2.4 USE OF IDENTIFIERS IN CONTEXT	23
	14.2.5 USE OF IMPORTED TYPES IDENTIFICATION	24
15	MULTIPLE ASSIGNMENT OF XER ENCODING INSTRUCTIONS	24
	15.1 ORDER IN WHICH MULTIPLE ASSIGNMENTS ARE CONSIDERED	24
	15.2 EFFECT OF ASSIGNING A NEGATING ENCODING INSTRUCTION	25
	15.3 MULTIPLE ASSIGNMENT OF ENCODING INSTRUCTIONS WITH MULTIPLE CATEGORIES	25
	15.4 MULTIPLE ASSIGNMENT OF XER ENCODING INSTRUCTIONS OF THE SAME CATEGORY	25
	15.5 PERMITTED COMBINATIONS OF FINAL ENCODING INSTRUCTIONS	26
16	XER ENCODING INSTRUCTION SUPPORT FOR XML NAMESPACES AND QUALIFIED NAMES	27
17	SPECIFICATION OF EXTENDED-XER ENCODINGS	28
	17.1 THE XML DOCUMENT ELEMENT	29
	17.2 THE "TYPENAMEORMODIFIEDTYPENAME" PRODUCTION	29
	17.3 THE "ATTRIBUTELIST" PRODUCTION	29
	17.4 THE "EXTENDEDXMLVALUE" PRODUCTION	29
	17.5 THE "EXTENDEDXMLCHOICEVALUE" PRODUCTION	31
	17.6 THE "EXTENDEDXMLSEQUENCEVALUE" AND "EXTENDEDXMLSETVALUE" PRODUCTIONS	31
	17.7 THE "EXTENDEDXMLSEQUENCEOFVALUE" AND "EXTENDEDXMLSETOFVALUE" PRODUCTIONS	32
	17.8 THE "MODIFIEDXMLINTEGERVERVALUE" PRODUCTION	33
	17.9 THE "MODIFIEDXMLREALVALUE" PRODUCTION	34
18	THE ANY-ATTRIBUTES ENCODING INSTRUCTION	34
	18.1 GENERAL	34
	18.2 RESTRICTIONS	35
	18.3 EFFECT ON ENCODINGS	36
19	THE ANY-ELEMENT ENCODING INSTRUCTION	36
	19.1 GENERAL	36
	19.2 RESTRICTIONS	36
	19.3 EFFECT ON ENCODINGS	37
20	THE ATTRIBUTE ENCODING INSTRUCTION	38
	20.1 GENERAL	38

	20.2 RESTRICTIONS	38
	20.3 EFFECT ON ENCODINGS.....	38
21	THE BASE64 ENCODING INSTRUCTION.....	40
	21.1 GENERAL	40
	21.2 RESTRICTIONS	40
	21.3 EFFECT ON ENCODINGS.....	40
22	THE DECIMAL ENCODING INSTRUCTION	41
	22.1 GENERAL	41
	22.2 RESTRICTIONS	41
	22.3 EFFECT ON ENCODINGS.....	42
23	THE DEFAULT-FOR-EMPTY ENCODING INSTRUCTION	42
	23.1 GENERAL	42
	23.2 RESTRICTIONS	43
	23.3 EFFECT ON ENCODINGS.....	44
24	THE ELEMENT ENCODING INSTRUCTION	44
	24.1 GENERAL	44
	24.2 RESTRICTIONS	44
	24.3 EFFECT ON ENCODINGS.....	44
25	THE EMBED-VALUES ENCODING INSTRUCTION	44
	25.1 GENERAL	44
	25.2 RESTRICTIONS	45
	25.3 EFFECT ON ENCODINGS.....	45
26	THE GLOBAL-DEFAULTS ENCODING INSTRUCTION	46
	26.1 GENERAL	46
	26.2 RESTRICTIONS	46
	26.3 EFFECT ON ENCODINGS.....	46
27	THE LIST ENCODING INSTRUCTION	47
	27.1 GENERAL	47
	27.2 RESTRICTIONS	47
	27.3 EFFECT ON ENCODINGS.....	47
28	THE NAME ENCODING INSTRUCTION	48
	28.1 GENERAL	48
	28.2 RESTRICTIONS	49
	28.3 EFFECT ON ENCODINGS.....	49
29	THE NAMESPACE ENCODING INSTRUCTION	50
	29.1 GENERAL	50
	29.2 RESTRICTIONS	50
	29.3 EFFECT ON ENCODINGS.....	51
30	THE PI-OR-COMMENT ENCODING INSTRUCTION	51
	30.1 GENERAL	51
	30.2 RESTRICTIONS	52
	30.3 EFFECT ON THE ENCODINGS.....	52
31	THE TEXT ENCODING INSTRUCTION.....	52

31.1	GENERAL	52
31.2	RESTRICTIONS	53
31.3	EFFECT ON ENCODINGS.....	53
32	THE UNTAGGED ENCODING INSTRUCTION.....	54
32.1	GENERAL	54
32.2	RESTRICTIONS	55
32.3	EFFECT ON ENCODINGS.....	55
33	THE USE-NIL ENCODING INSTRUCTION	56
33.1	GENERAL	56
33.2	RESTRICTIONS	56
33.3	EFFECT ON ENCODINGS.....	57
34	THE USE-NUMBER ENCODING INSTRUCTION	57
34.1	GENERAL	57
34.2	RESTRICTIONS	57
34.3	EFFECT ON ENCODINGS.....	57
35	THE USE-ORDER ENCODING INSTRUCTION.....	58
35.1	GENERAL	58
35.2	RESTRICTIONS	58
35.3	EFFECT ON ENCODINGS.....	59
36	THE USE-QNAME ENCODING INSTRUCTION.....	59
36.1	GENERAL	59
36.2	RESTRICTIONS	59
36.3	EFFECT ON ENCODINGS.....	60
37	THE USE-TYPE ENCODING INSTRUCTION	60
37.1	GENERAL	60
37.2	RESTRICTIONS	60
37.3	EFFECT ON ENCODINGS.....	61
38	THE USE-UNION ENCODING INSTRUCTION	61
38.1	GENERAL	61
38.2	RESTRICTIONS	61
38.3	EFFECT ON ENCODINGS.....	62
39	THE WHITESPACE ENCODING INSTRUCTION.....	63
39.1	GENERAL	63
39.2	RESTRICTIONS	63
39.3	EFFECT ON ENCODINGS.....	64
40	IDENTIFICATION OF THE ENCODING RULES	64
ANNEX A – EXAMPLES OF BASIC-XER AND CXER ENCODINGS.....		65
A.1	ASN.1 DESCRIPTION OF THE RECORD STRUCTURE.....	65
A.2	ASN.1 DESCRIPTION OF A RECORD VALUE.....	65
A.3	BASIC XML REPRESENTATION OF THIS RECORD VALUE	65
A.4	CANONICAL XML REPRESENTATION OF THIS RECORD VALUE.....	66
ANNEX B – PARTIAL XML CONTENT AND DETERMINISTIC ENCODINGS.....		67
B.1	PARTIAL XML CONTENT	67

B.2 RECOMMENDED RESTRICTIONS ON ENCODINGS PRODUCING PARTIAL XML ELEMENT CONTENT	67
ANNEX C – EXAMPLES OF EXTENDED-XER ENCODINGS USING XER ENCODING INSTRUCTIONS.....	70
C.1 INTRODUCTION	70
C.2 SIMPLE EXAMPLES.....	70
C.2.1 A BASE-BALL CARD	70
C.2.2 AN EMPLOYEE.....	71
C.3 MORE COMPLEX EXAMPLES	71
C.3.1 USING A UNION OF TWO SIMPLE TYPES.....	71
C.3.2 USING A TYPE IDENTIFICATION ATTRIBUTE.....	72
C.3.3 USING ENUMERATION VALUES	72
C.3.4 USING AN EMPTY ENCODING FOR A DEFAULT VALUE.....	72
C.3.5 USING EMBEDDED-VALUES FOR NOTIFICATION OF A PAYMENT DUE.....	72