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

*Technologies de l'information — Règles de codage ASN.1: Règles de
codage XML (XER)*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

[https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-
20c608e90e23/iso-iec-8825-4-2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2015

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

This third edition cancels and replaces the second edition of ISO/IEC 8825-4:2008 which has been technically revised. It also incorporates ISO/IEC 8825-4:2008/Cor.1:2012 and ISO/IEC 8825-4:2008/Cor.2:2014.

ISO/IEC 8825-4 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 X.693 (08/2015).

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.693

(08/2015)

SERIES X: DATA NETWORKS, OPEN SYSTEM
COMMUNICATIONS AND SECURITY

OSI networking and system aspects – Abstract Syntax
Notation One (ASN.1)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/itu-iec-8825-4-2015)

[https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/itu-iec-8825-4-2015)

[20c608e90e23/itu-iec-8825-4-2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/itu-iec-8825-4-2015)

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

Recommendation ITU-T X.693



ITU-T X-SERIES RECOMMENDATIONS
DATA NETWORKS, OPEN SYSTEM COMMUNICATIONS AND SECURITY

PUBLIC DATA NETWORKS	
Services and facilities	X.1–X.19
Interfaces	X.20–X.49
Transmission, signalling and switching	X.50–X.89
Network aspects	X.90–X.149
Maintenance	X.150–X.179
Administrative arrangements	X.180–X.199
OPEN SYSTEMS INTERCONNECTION	
Model and notation	X.200–X.209
Service definitions	X.210–X.219
Connection-mode protocol specifications	X.220–X.229
Connectionless-mode protocol specifications	X.230–X.239
PICS proformas	X.240–X.259
Protocol Identification	X.260–X.269
Security Protocols	X.270–X.279
Layer Managed Objects	X.280–X.289
Conformance testing	X.290–X.299
INTERWORKING BETWEEN NETWORKS	
General	X.300–X.349
Satellite data transmission systems	X.350–X.369
IP-based networks	X.370–X.379
MESSAGE HANDLING SYSTEMS	X.400–X.499
DIRECTORY	X.500–X.599
OSI NETWORKING AND SYSTEM ASPECTS	
Networking	X.600–X.629
Efficiency	X.630–X.639
Quality of service	X.640–X.649
Naming, Addressing and Registration	X.650–X.679
Abstract Syntax Notation One (ASN.1)	X.680–X.699
OSI MANAGEMENT	
Systems management framework and architecture	X.700–X.709
Management communication service and protocol	X.710–X.719
Structure of management information	X.720–X.729
Management functions and ODMA functions	X.730–X.799
SECURITY	X.800–X.849
OSI APPLICATIONS	
Commitment, concurrency and recovery	X.850–X.859
Transaction processing	X.860–X.879
Remote operations	X.880–X.889
Generic applications of ASN.1	X.890–X.899
OPEN DISTRIBUTED PROCESSING	X.900–X.999
INFORMATION AND NETWORK SECURITY	X.1000–X.1099
SECURE APPLICATIONS AND SERVICES	X.1100–X.1199
CYBERSPACE SECURITY	X.1200–X.1299
SECURE APPLICATIONS AND SERVICES	X.1300–X.1399
CYBERSECURITY INFORMATION EXCHANGE	X.1500–X.1599
CLOUD COMPUTING SECURITY	X.1600–X.1699

iTech STANDARD PREVIEW
 (standards.itech.ai)

ISO/IEC 8825-4:2015
<https://standards.itech.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

For further details, please refer to the list of ITU-T Recommendations.

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

Summary

Recommendation ITU-T X.693 | ISO/IEC 8825-4 specifies rules for encoding values of ASN.1 types using the Extensible Markup Language (XML).

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T X.693	2001-12-22	7	11.1002/1000/5565
1.1	ITU-T X.693 (2001) Amd. 1	2003-10-29	17	11.1002/1000/7023
1.2	ITU-T X.693 (2001) Amd. 2	2006-06-13	17	11.1002/1000/8841
1.3	ITU-T X.693 (2001) Amd. 3	2007-05-29	17	11.1002/1000/9110
2.0	ITU-T X.693	2008-11-13	17	11.1002/1000/9611
2.1	ITU-T X.693 (2008) Cor. 1	2011-10-14	17	11.1002/1000/11381
2.2	ITU-T X.693 (2008) Cor. 2	2014-03-01	17	11.1002/1000/12148
3.0	ITU-T X.693	2015-08-13	17	11.1002/1000/12489

ISO/IEC 8825-4:2015

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2015

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

		<i>Page</i>
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

iTech STANDARD PREVIEW

(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>

1 Introduction

Rec. ITU-T X.680 | ISO/IEC 8824-1, Rec. ITU-T X.681 | ISO/IEC 8824-2, Rec. ITU-T X.682 | ISO/IEC 8824-3, Rec. ITU-T X.683 | ISO/IEC 8824-4 together describe Abstract Syntax Notation One (ASN.1), a notation for the definition of messages to be exchanged between peer applications.

This Recommendation | International Standard defines encoding rules that may be applied to values of ASN.1 types defined using the notation specified in Rec. ITU-T X.680 | ISO/IEC 8824-1 and Rec. ITU-T X.681 | ISO/IEC 8824-2. Application of these encoding rules produces a transfer syntax for such values. It is implicit in the specification of these encoding rules that they are also to be used for decoding.

There is more than one set of encoding rules that can be applied to values of ASN.1 types. This Recommendation | International Standard defines three sets of encoding rules that use the Extensible Markup Language (XML). These encoding rules all produce an XML document compliant to W3C XML 1.0. The first set is called the Basic XML Encoding Rules (BASIC-XER). The second set is called the Canonical XML Encoding Rules (CANONICAL-XER, or CXER) because there is only one way of encoding an ASN.1 value using these encoding rules. (Canonical encoding rules are generally used for applications using security-related features such as digital signatures.) The third set is called the extended XML Encoding Rules (EXTENDED-XER). The extended XML Encoding Rules allow additional encoders options, and take account of encoding instructions that specify variations of the BASIC-XER encodings in order to support specific styles of XML documents (see below). The extended XML Encoding Rules are not canonical, and there is no canonical form for these rules defined in this Recommendation | International Standard.

There are many aspects of an XML representation of data (such as the use of XML attributes instead of child elements, or the use of white-space delimited lists) whose use is a matter of style and XML designer choice. If a type defined in an ASN.1 specification is encoded by BASIC-XER or by CXER, then there is a single fixed style used for the XML representation, with no user control of stylistic features. This Recommendation | International Standard specifies the syntax and semantics of XER encoding instructions which specify the stylistic features of the XML in an EXTENDED-XER encoding. XER encoding instructions can also be used to determine the possible insertion of XML processing instructions in an EXTENDED-XER encoding. XER encoding instructions are ignored by BASIC-XER and by CXER, but are used by EXTENDED-XER.

NOTE – "Stylistic features", such as use of attributes or white-space delimited lists, can also affect the size of an encoding and the ease with which it can be processed, so use of such features is not just a matter of style. Where such issues are important, EXTENDED-XER with encoding instructions may be preferred over BASIC-XER or CXER.

Clause 8 specifies the BASIC-XER encoding of ASN.1 types.

Clause 9 specifies the CXER encoding of ASN.1 types.

Clause 10 specifies the EXTENDED-XER encoding of ASN.1 types, referencing later clauses which define the XER encoding instructions.

Clauses 11 to 14 list and categorize the XER encoding instructions and specify the syntax for their assignment to an ASN.1 type or component using either an XER type prefix (see Rec. ITU-T X.680 | ISO/IEC 8824-1, 31.3) or an XER encoding control section (see Rec. ITU-T X.680 | ISO/IEC 8824-1, clause 54).

Clause 15 defines the order of precedence if XER encoding instructions are present in both an XER type prefix and in an XER encoding control section.

Clause 16 specifies the XER encoding instruction support for XML namespaces when using EXTENDED-XER.

Clause 17 specifies EXTENDED-XER encodings.

Clauses 18 to 39 specify:

- a) the syntax of each XER encoding instruction used in a type prefix or an XER encoding control section;
- b) restrictions on the XER encoding instructions that can be associated with a particular ASN.1 type (resulting from inheritance and multiple assignments);
- c) modifications to the XER encoding rules that are required in an EXTENDED-XER encoding when an XER encoding instruction is applied.

Annex A is informative and contains examples of BASIC-XER and CXER encodings.

Annex B is informative and contains a description of the partial XML content that is produced when constructions such as sequence and sequence-of have their surrounding tags removed, together with restrictions on EXTENDED-XER specifications that enable easy determination of the ASN.1 component that an XML element is associated with.

Annex C is informative and contains examples of XER encoding instructions and of the corresponding EXTENDED-XER encodings.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 8825-4:2015](https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/936fb667-9900-4ccf-af52-20c608e90e23/iso-iec-8825-4-2015>