



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.691

Amendment 1
(10/2003)

SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS

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

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

Amendment 1: Support for EXTENDED-XER

ITU-T Recommendation X.691 (2002) – Amendment 1

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

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.399
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.899
OPEN DISTRIBUTED PROCESSING	X.900–X.999

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

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

Amendment 1

Support for EXTENDED-XER

Summary

An Amendment 1 is provided for ITU-T Rec. X.680 | ISO/IEC 8824-1, ITU-T Rec. X.681 | ISO/IEC 8824-2, ITU-T Rec. X.690 | ISO/IEC 8825-1, ITU-T Rec. X.691 | ISO/IEC 8825-2 and ITU-T Rec. X.693 | ISO/IEC 8825-4. These amendments provide the following:

- Correction of a bug in CXER resulting from allowing white-space between a minus sign and a following INTEGER or REAL value (CXER was not canonical). This is no longer permitted, in value notation, XML Value Notation or in XER and CXER. **This is a change and not an addition.**
- Addition of encoding instructions in an ASN.1 module, using either a type prefix or within an encoding control section, in order to specify variations of the BASIC-XER encodings. These encoding instructions are designed to support mappings from an XSD specification to an ASN.1 specification. This provision has meant a change of terminology, where a type with "[...]" in front of it is a prefixed type, and the "[...]" notation may or may not be a tag. This change of terminology results in changes to the text (but not the substance) of the BER and PER specifications.
- The addition of NaN (Not-a-Number) and minus zero as new values for REAL (support for encoding these new values is provided in Amendment 1 to ITU-T Rec. X.690 | ISO/IEC 8825-1 and to ITU-T Rec. X.691 | ISO/IEC 8825-2, as well as in Amendment 1 to ITU-T Rec. X.693 | ISO/IEC 8825-4).
- The addition of new XML Value Notations for **REAL**, **BOOLEAN**, **ENUMERATED**, and **INTEGER** that use text rather than empty-element tags for the values. These are available in XML Value Notation and in EXTENDED-XER, but not in BASIC-XER (for reasons of backwards-compatibility).
- Changes to the XML Value Notation for sequence-of (and the XER encodings) to provide delimitation of values where they are not XML elements (this occurs with the additional XML Value Notations, and only affects use of those additional XML Value Notations). This change is only concerned with use of XML Value Notations that have been added by this amendment, and these are not allowed in BASIC-XER, which is not affected.

This provides the necessary basic support for EXTENDED-XER.

Source

Amendment 1 to ITU-T Recommendation X.691 (2002) was approved by ITU-T Study Group 17 (2001-2004) under the ITU-T Recommendation A.8 procedure on 29 October 2003. An identical text is also published as ISO/IEC 8825-2, Amendment 1.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. 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.

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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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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CONTENTS

	<i>Page</i>
New subclauses 9.6.3 <i>bis</i> and 9.6.3 <i>ter</i>	1

INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

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

Amendment 1

Support for EXTENDED-XER

New subclauses 9.6.3 *bis* and 9.6.3 *ter*

Insert two new subclauses 9.6.3 bis and 9.6.3 ter as follows:

9.6.3 *bis* An encoding prefixed type is encoded according to the type which has been prefixed.

9.6.3 *ter* There are no encoding instructions (see ITU-T Rec. X.680 | ISO/IEC 8824-1, 3.6.22 *ter*) defined for PER encodings.

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure, Internet protocol aspects and Next Generation Networks
Series Z	Languages and general software aspects for telecommunication systems