INTERNATIONAL TELECOMMUNICATION UNION

ITU-T X.681

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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 – Abstract Syntax Notation One (ASN.1): Information object specification

Amendment 1: Support for EXTENDED-XER

ITU-T Recommendation X.681 (2002) – Amendment 1

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INTERNATIONAL STANDARD ISO/IEC 8824-2
ITU-T RECOMMENDATION X.681

Information technology – Abstract Syntax Notation One (ASN.1) – Information object specification

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.681 (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 8824-2, 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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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, 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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NOTE – All new or changed text in this amendment is underlined in the clauses being replaced. When merging all such text into the base Recommendation, the underlining is to be removed.

1) Subclause 14.6.1

In subclause 14.6, replace the production "XMLOpenTypeFieldValue" with the following:

XMLOpenTypeFieldVal ::=
XMLTypedValue
| xmlhstring

2) Subclause 14.9

Replace subclause 14.9 with the following three subclauses:

14.9 For a type field or a variable-type value or value set field defined by an "ObjectClassFieldType", the "XMLOpenTypeFieldVal" shall be used in any "XMLValue".

14.9.1 When used in an ASN.1 module, the type identified by the "XMLTypedValue" shall be any ASN.1 type (but see ITU-T Rec. X.680 | ISO/IEC 8824-1, 13.3) and the "XMLValue" in the "XMLTypedValue" shall be any value of that type.

NOTE – When the notation is used as specified in ITU-T Rec. X.693 | ISO/IEC 8825-4, 8.5, the type of the "XMLTypedValue" in an "XMLOpenTypeFieldVal" is identified by the protocol (for example, by a component relation constraint), the "NonParameterizedTypeName" in the "XMLTypedValue" is derived from this, and the "XMLValue" is a value of this type.

14.9.2 The "xmlhstring" alternative of "XMLOpenTypeFieldVal" shall not be used in an ASN.1 module. This alternative can be used only as specified in ITU-T Rec. X.693 | ISO/IEC 8825-4, 8.5, when the type is identified by the protocol and the "xmlhstring" is the hexadecimal value for the encoding of that type, using some (unspecified) encoding rules.

3) Subclause 14.12

Replace subclause 14.12 with the following:

14.12 For an "XMLOpenTypeFieldVal", if the "Type" specified in the information object (after ignoring any tags) is a "typereference" or an "ExternalTypeReference", then the "NonParameterizedTypeName" shall be that "typereference" or "ExternalTypeReference"; otherwise, it shall be the "xmlasn1typename" specified in ITU-T Rec. X.680 | ISO/IEC 8824-1, Table 4, corresponding to the built-in type specified in the information object, after application of the subclauses of ITU-T Rec. X.680 | ISO/IEC 8824-1, 25.11, if applicable.

4) Subclause 15.6

Replace subclause 15.6 with the following:

15.6 For a "TypeFromObject" and a "ValueSetFromObjects", the XML value notation for sequence-of and set-of (see ITU-T Rec. X.680 | ISO/IEC 8824-1, Table 5) and the "xmlasn1typename" (if required) shall be determined by the "Type" specified in the information object(s), after application of the subclauses of ITU-T Rec. X.680 | ISO/IEC 8824-1, 25.11, if applicable.

5) Annex F

In Annex F, replace the production "XMLOpenTypeFieldValue" with the following:

XMLOpenTypeFieldVal ::=
XMLTypedValue
| xmlhstring

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Geneva, 2004