INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.690

Amendment 1

(06/99)

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 Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)

Amendment 1: Relative object identifiers

ITU-T Recommendation X.690 – Amendment 1

(Previously CCITT Recommendation)

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INTERNATIONAL STANDARD 8825-1

ITU-T RECOMMENDATION X.690

INFORMATION TECHNOLOGY – ASN.1 ENCODING RULES: SPECIFICATION OF BASIC ENCODING RULES (BER), CANONICAL ENCODING RULES (CER) AND DISTINGUISHED ENCODING RULES (DER)

AMENDMENT 1
Relative object identifiers

Summary

Amendment 1 to ITU-T Rec. X.690 | ISO/IEC 8825-1 specifies how the relative object identifier type is to be encoded in BER, DER and CER.

Source

Amendment 1 to the ITU-T Recommendation X.690 was approved on the 18th of June 1999. The identical text is also published as ISO/IEC International Standard 8825-1.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The 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 Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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 term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration*, *ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

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As of the date of approval of this Recommendation, the 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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AMENDMENT 1
Relative object identifiers

1) New subclause 8.19 *bis*

Add a new subclause 8.19 bis after 8.19 as follows:

8.19 *bis* Encoding of a relative object identifier value

NOTE – The encoding of the object identifier components in a relative object identifier is the same as the encoding of components (after the second) in an object identifier.

8.19 *bis* 1 The encoding of a relative object identifier value shall be primitive.

8.19 *bis* 2 The contents octets shall be an (ordered) list of encodings of sub-identifiers (see 8.19 *bis* 3 and 8.19 *bis* 4) concatenated together. Each sub-identifier is represented as a series of (one or more) octets. Bit 8 of each octet indicates whether it is the last in the series: bit 8 of the last octet is zero; bit 8 of each preceding octet is one. Bits 7-1 of the octets in the series collectively encode the sub-identifier. Conceptually, these groups of bits are concatenated to form an unsigned binary number whose most significant bit is bit 7 of the first octet and whose least significant bit is bit 1 of the last octet. The sub-identifier shall be encoded in the fewest possible octets, that is, the leading octet of the sub-identifier shall not have the value 80_{16}.

8.19 *bis* 3 The number of sub-identifiers (N) shall be equal to the number of object identifier arcs in the relative object identifier value being encoded.

8.19 *bis* 4 The numerical value of the ith sub-identifier ($1 \le i \le N$) is that of the ith object identifier arc in the relative object identifier value being encoded.

8.19 *bis* 5 **Example** – A relative object identifier value of:

{8571 3 2}

has sub-identifiers of 8571, 3, and 2. The resulting encoding is:

RELATIVE OBJECT IDENTIFIER	Length	Contents
$0D_{16}$	04_{16}	$C27B0302_{16}$

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