International Telecommunication Union

ITU-T

TELECOMMUNICATION
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OF ITU

X.692

Amendment 2

(06/2006)

SERIES X: DATA NETWORKS, OPEN SYSTEM COMMUNICATIONS AND SECURITY

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

Information technology – ASN.1 encoding rules: Specification of Encoding Control Notation (ECN)

Amendment 2: Time type support

ITU-T Recommendation X.692 (2002) – Amendment 2

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INTERNATIONAL STANDARD ISO/IEC 8825-3
ITU-T RECOMMENDATION X.692

Information technology – ASN.1 encoding rules: Specification of Encoding Control Notation (ECN)

Amendment 2: Time type support

Summary

This amendment adds support to ECN for the **`TIME`** type and for the useful time types (**`DATE`**, **`TIME-OF-DAY`**, **`DATE-TIME`**, and **`DURATION`**) specified in ITU-T Rec. X.680 (2002)/Amd.2 (2004) | ISO/IEC 8824-1:2002/Amd.2:2005.

Source

Amendment 2 to ITU-T Recommendation X.692 (2002) was approved on 13 June 2006 by ITU-T Study Group 17 (2005-2008) under the ITU-T Recommendation A.8 procedure. An identical text is also published as ISO/IEC 8825-3, Amendment 2.

FOREWORD

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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.

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Amendment 2: Time type support

1) Subclause 8.5

Insert the following 5 new reserved encoding class names in subclause 8.5:

```
#DATE
#DATE-TIME
#DURATION
#TIME
#TIME-OF-DAY
```

2) Subclause 9.6.6

Replace 9.6.6 with the following:

9.6.6 The categories of encoding class (see 16.1.3) are:

- The alternatives category (classes that are derived by class assignment from **#ALTERNATIVES**).
- The concatenation category (classes that are derived by class assignment from **#CONCATENATION**).
- The repetition category (classes that are derived by class assignment from **#REPETITION**).
- The optionality category (classes that are derived by class assignment from **#OPTIONAL**).
- The tag category (classes that are derived by class assignment from **#TAG**).
- The boolean, bitstring, characterstring, integer, null, objectidentifier, octetstring, opentype, pad, ~~and~~ real, and time categories (categories for classes that are derived from the corresponding primitive classes).
- The encoding structure category (classes generated from ASN.1 type definitions, or by explicit definition of an encoding structure).

3) Table 2

Insert the following lines into Table 2 above "GeneralizedTime":

TIME	**#TIME**	**#TIME**
DATE	**#DATE**	**#TIME**
TIME-OF-DAY	**#TIME-OF-DAY**	**#TIME**
DATE-TIME	**#DATE-TIME**	**#TIME**
DURATION	**#DURATION**	**#TIME**

4) Subclause 16.1.7

Replace 16.1.7 with the following:

16.1.7 The "BitfieldClassReference" is:

BitfieldClassReference ::=
#NUL
| **#BOOL**
| **#INT**
| **#BITS**
| **#OCTETS**
| **#CHARS**
| **#PAD**
| **#BIT-STRING**
| **#BOOLEAN**
| **#CHARACTER-STRING**
| **#EMBEDDED-PDV**
| **#ENUMERATED**
| **#EXTERNAL**
| **#INTEGER**
| **#NULL**
| **#OBJECT-IDENTIFIER**
| **#OCTET-STRING**
| **#OPEN-TYPE**
| **#REAL**
| **#RELATIVE-OID**
| **#TIME**
| **#DATE**
| **#DATE-TIME**
| **#TIME-OF-DAY**
| **#DURATION**
| **#GeneralizedTime**
| **#UTCTime**
| **#ObjectDescriptor**
| **#BMPString**
| **#GeneralString**
| **#GraphicString**
| **#IA5String**
| **#NumericString**
| **#PrintableString**
| **#TeletexString**
| **#UniversalString**
| **#UTF8String**
| **#VideotexString**
| **#VisibleString**

The categories of the classes that these built-in names reference (see 16.1.14) are all defined to be in the bit-field group of categories.

5) Subclause 16.1.14

Insert the following lines in 16.1.14 above "#TRANSFORM":

#TIME	(primitive)	**time**
#DATE	**#TIME**	
#TIME-OF-DAY	**#TIME**	
#DATE-TIME	**#TIME**	
#DURATION	**#TIME**	

6) Subclause 16.2.6

Replace 16.2.6 with the following:

16.2.6 The "EncodingStructureField" is:

```
EncodingStructureField ::=
        #NUL
    |   #BOOL
    |   #INT                  Bounds?
    |   #BITS                 Size?
    |   #OCTETS               Size?
    |   #CHARS                Size?
    |   #PAD
    |   #BIT-STRING           Size?
    |   #BOOLEAN
    |   #CHARACTER-STRING
    |   #EMBEDDED-PDV
    |   #ENUMERATED           Bounds?
    |   #EXTERNAL
    |   #INTEGER              Bounds?
    |   #NULL
    |   #OBJECT-IDENTIFIER
    |   #OCTET-STRING         Size?
    |   #OPEN-TYPE
    |   #REAL
    |   #RELATIVE-OID
    |   #TIME
    |   #DATE
    |   #TIME-OF-DAY
    |   #DATE-TIME
    |   #DURATION
    |   #GeneralizedTime
    |   #UTCTime
    |   #ObjectDescriptor     Size?
    |   #BMPString            Size?
    |   #GeneralString        Size?
    |   #GraphicString        Size?
    |   #IA5String            Size?
    |   #NumericString        Size?
    |   #PrintableString      Size?
    |   #TeletexString        Size?
    |   #UniversalString      Size?
    |   #UTF8String           Size?
    |   #VideotexString       Size?
    |   #VisibleString        Size?
```

7) Subclause 16.2.8

Replace 16.2.8 with the following:

16.2.8 The ASN.1 values which can be associated with each primitive field are as follows:

#NUL	The null value
#BOOL	The boolean values
#INT	The integer values
#BITS	Bitstring values
#OCTETS	Octetstring values
#CHARS	Character string values
#PAD	None
#OBJECT-IDENTIFIER	Object identifier values
#OPEN-TYPE	Open type values
#REAL	Real values
#TIME	Time values
#TAG	Tag numbers

NOTE – The **#PAD** field cannot have associated ASN.1 values, and is never visible outside the encoding and decoding procedures.

8) Table 5

Insert the following in Table 5 below "real":

time	**"TimeValue"**
	(see ITU-T Rec. X.680 | ISO/IEC 8824-1, 34 *bis.* 3.2)

9) Subclause 23.15

Replace 23.15 with the following:

23.15 Defining encoding objects for classes in the other categories

In this version of this Recommendation | International Standard, there is no defined syntax for classes in the following categories:

objectidentifier
opentype
real
time

10) Annex G

In Annex G, replace the corresponding productions with the following:

```
BitfieldClassReference ::=
          #NUL
        | #BOOL
        | #INT
        | #BITS
        | #OCTETS
        | #CHARS
        | #PAD
        | #BIT-STRING
        | #BOOLEAN
        | #CHARACTER-STRING
        | #EMBEDDED-PDV
        | #ENUMERATED
        | #EXTERNAL
        | #INTEGER
        | #NULL
        | #OBJECT-IDENTIFIER
        | #OCTET-STRING
        | #OPEN-TYPE
        | #REAL
        | #RELATIVE-OID
        | #TIME
        | #DATE
        | #DATE-TIME
        | #TIME-OF-DAY
        | #DURATION
        | #GeneralizedTime
        | #UTCTime
        | #ObjectDescriptor
        | #BMPString
        | #GeneralString
        | #GraphicString
        | #IA5String
        | #NumericString
        | #PrintableString
        | #TeletexString
        | #UniversalString
        | #UTF8String
        | #VideotexString
        | #VisibleString
```

```
EncodingStructureField ::=
            #NUL
        |   #BOOL
        |   #INT                    Bounds?
        |   #BITS                   Size?
        |   #OCTETS                 Size?
        |   #CHARS                  Size?
        |   #PAD
        |   #BIT-STRING             Size?
        |   #BOOLEAN
        |   #CHARACTER-STRING
        |   #EMBEDDED-PDV
        |   #ENUMERATED             Bounds?
        |   #EXTERNAL
        |   #INTEGER                Bounds?
        |   #NULL
        |   #OBJECT-IDENTIFIER
        |   #OCTET-STRING           Size?
        |   #OPEN-TYPE
        |   #REAL
        |   #RELATIVE-OID
        |   #TIME
        |   #DATE
        |   #TIME-OF-DAY
        |   #DATE-TIME
        |   #DURATION
        |   #GeneralizedTime
        |   #UTCTime
        |   #ObjectDescriptor       Size?
        |   #BMPString              Size?
        |   #GeneralString          Size?
        |   #GraphicString          Size?
        |   #IA5String              Size?
        |   #NumericString          Size?
        |   #PrintableString        Size?
        |   #TeletexString          Size?
        |   #UniversalString        Size?
        |   #UTF8String             Size?
        |   #VideotexString         Size?
        |   #VisibleString          Size?
```

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