INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.680
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 – Abstract Syntax Notation One (ASN.1): Specification of basic notation

Amendment 1: Relative object identifiers

ITU-T Recommendation X.680 – 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.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 ITU-T List of Recommendations.

INTERNATIONAL STANDARD 8824-1

ITU-T RECOMMENDATION X.680

INFORMATION TECHNOLOGY – ABSTRACT SYNTAX NOTATION ONE (ASN.1): SPECIFICATION OF BASIC NOTATION

AMENDMENT 1
Relative object identifiers

Summary

Amendment 1 to ITU-T Rec. X.680 | ISO/IEC 8824-1 defines a new ASN.1 type, the relative object identifier. This type makes it possible to transmit object identifier values in a more compact form by transmitting only their trailing arcs when the leading arcs can be determined based on the context of use.

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.

CONTENTS

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – ABSTRACT SYNTAX NOTATION ONE (ASN.1): SPECIFICATION OF BASIC NOTATION

AMENDMENT 1
Relative object identifiers

1) Subclause 3.8

Add the definitions 3.8.53 bis and 3.8.53 ter as follows:

3.8.53 *bis* relative object identifier: A value which identifies an object by its position relative to some known object identifier (see 3.8.46).

3.8.53 *ter* relative object identifier type: A simple type each of whose abstract values is a list of object identifier components identifying the trailing part of an object identifier.

2) Table 1, subclause 8.2

Add another row to Table 1 after the row "UNIVERSAL 12 UTF8String type" *as follows:*

UNIVERSAL 13   Relative object identifier type

Change the row reading "UNIVERSAL 13-15 …" *to:*

UNIVERSAL 14-15   Reserved for future editions of this Recommendation | International Standard

3) Subclause 11.18

Add a new reserved word RELATIVE-OID *after* REAL *in 11.18.*

4) Subclause 16.2 and Annex G

Add a line in 16.2 and in Annex G after "**RealType |**" *as follows:*

RelativeOIDType |

Add a line in 16.2 after "RealType 20" *as follows:*

RelativeOIDType   31 bis

5) Subclause 16.8 and Annex G

Add a line in 16.8 and in Annex G after "**RealValue |**" *as follows:*

RelativeOIDValue |

6) New clause 31 *bis*

Add a new clause 31 bis after clause 31 as follows:

31 *bis*   Notation for the relative object identifier type

31 *bis* 1 The relative object identifier type (see 3.8.53 *ter*) shall be referenced by the notation "RelativeOIDType":

RelativeOIDType ::=
          RELATIVE-OID

31 *bis* 2   This type has a tag which is universal class, number 13.

31 *bis* 3   The value notation for a relative object identifier shall be "RelativeOIDValue":

> **RelativeOIDValue ::=**
> > **"{" RelativeOIDComponentsList "}"**
>
> **RelativeOIDComponentsList ::=**
> > **RelativeOIDComponents |**
> > **RelativeOIDComponents   RelativeOIDComponentsList**
>
> **RelativeOIDComponents ::=   NumberForm |**
> > **NameAndNumberForm |**
> > **DefinedValue**

31 *bis* 4   The productions "NumberForm", "NameAndNumberForm", and their semantics, are defined in 31.3 to 31.10.

31 *bis* 5   The "DefinedValue" of "RelativeOIDComponents" shall be of type relative object identifier, and shall identify an ordered set of arcs from some starting node in the object identifier tree to some later node in the object identifier tree. The starting node is identified by the earlier "RelativeOIDComponents"s (if any), and later "RelativeOIDComponents"s (if any) identify arcs from the later nodes.

31 *bis* 6   The first "RelativeOIDComponents" identifies one or more arcs from some starting node in the object identifier tree to some later node in the object identifier tree. The starting point can be defined by comments associated with the type definition. If there is no definition of the starting node within comments associated with the type definition, then it needs to be transmitted as an object identifier value in an instance of communication. See C.2.19. The starting node is required to be neither the root, nor a node immediately beneath the root.

> NOTE – A relative object identifier value has to be associated with a specific object identifier value so as to unambiguously identify an object. Object identifier values are required (by ITU-T Rec. X.660 | ISO/IEC 9834-1) to have at least two components. This is why there is a restriction on the starting node.

EXAMPLE

With the following definitions:

> **thisUniversity OBJECT IDENTIFIER   ::=**
> > **{iso member-body country(29) universities(56) thisuni(32)}**
>
> **firstgroup RELATIVE-OID   ::= {science-fac(4) maths-dept(3)}**

the relative object identifier:

> **relOID RELATIVE-OID ::= {firstgroup room(4) socket(6)}**

can be used instead of the OBJECT IDENTIFIER value {1 2 29 56 32 4 3 4 6} if the current root (known by the application or transmitted by the application) is "thisUniversity".

7)   Subclause 31.3 and Annex G

In 31.3 and in the productions in Annex G, change all occurrences of:

> **ObjIdComponentList**

to:

> **ObjIdComponentsList**

and all occurrences of:

> **ObjIdComponent**

to:

> **ObjIdComponents**

In 31.3 and in the productions of Annex G, modify the production "ObjIdComponents" *by changing:*

> **NameAndNumberForm**

to read:

> **NameAndNumberForm |**
>
> **DefinedValue**

8)   New subclause 31.5 *bis*

Add a new subclause 31.5 bis to clause 31 as follows:

31.5 *bis*   The "DefinedValue" of "ObjIdComponents" shall be of type relative object identifier, and shall identify an ordered set of arcs from some starting node in the object identifier tree to some later node in the object identifier tree. The starting node is identified by the earlier "ObjIdComponents"s, and later "ObjIdComponents"s (if any) identify arcs from the later node. The starting node is required to be neither the root, nor a node immediately beneath the root.

> NOTE – A relative object identifier value has to be associated with a specific object identifier value so as to unambiguously identify an object. Object identifier values are required (by ITU-T Rec. X.660 | ISO/IEC 9834-1) to have at least two components. This is why there is a restriction on the starting node.

9)   Subclause 31.9

Add a Note to 31.9:

> NOTE – ITU-T Rec. X.660 | ISO/IEC 9834-1 requires that an object identifier value shall contain at least two arcs.

10)   Table 6, subclause 48.1

Add the following entry after "Real" *in Table 6:*

Relative Object Identifier   Yes   Yes   No   No   No   No   No

Add a footnote to Table 6 as follows:

[b]   The starting node for all relative object identifier types or values in constraints or valuesets shall be the same as the starting node for the governor.

11)   New subclause C.2.19

Add a new subclause C.2.19 to Annex C as follows:

C.2.19   Relative Object Identifier

C.2.19.1 Use a relative object identifier type to transmit object identifier values in a more compact form in contexts where the early part of the object identifier value is known. There are three situations that can arise:

    a)   The early part of the object identifier value is fixed for a given specification (it is an industry-specific standard, and all OIDs are relative to an OID allocated to the standardising body. In this case, use:

> **RELATIVE-OID**   -- *The relative object identifier value is*
> -- *relative to {iso identified-organization set(22)}*

    b)   The early part of the object identifier value is frequently a value that is known at specification time, but may occasionally be a more general value. In this case, use:

> **CHOICE**
> **{a   RELATIVE-OID**   -- *The value is relative to {1 3 22}* --**,**
> **b   OBJECT IDENTIFIER**   -- *Any object identifier value* --**}**

    c)   The early part of the object identifier value is not known until communications time, but will frequently be common to many values that need to be sent, and quite often will be a value known at specification time. In this case, use (for example):

> **SEQUENCE**
> **{oid-root   OBJECT IDENTIFIER DEFAULT {1 3 22}**
> **reloids   SEQUENCE OF RELATIVE-OID** -- *relative to oid-root* --**}**

12)   Annex G

Add the following to Annex G after "REAL" *in the "list of items defined in clause 11":*

RELATIVE-OID

Add the productions of 31 bis 1 and 31 bis 3 to Annex G following the production "NameAndNumberForm".

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Series A   Organization of the work of the ITU-T

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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   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

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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

Series Z   Languages and general software aspects for telecommunication systems