INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

X.680
Corrigendum 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

Technical Corrigendum 1

ITU-T Recommendation X.680 – Corrigendum 1

(Previously CCITT Recommendation)

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INTERNATIONAL STANDARD 8824-1

ITU-T RECOMMENDATION X.680

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

TECHNICAL CORRIGENDUM 1

Summary

This technical corrigendum to ITU-T Rec. X.680 | ISO/IEC 8824-1:

    a)   clarifies what characters are in the ASN.1 character set;

    b)   clarifies what is meant by the terms "white-space character" and "new-line character";

    c)   clarifies the effect of subtype constraints when used in conjunction with the "COMPONENTS OF" and SelectionType notations;

    d)   corrects the production for "ElementSetSpecs" so that the syntax does not allow types that can have no value;

    e)   makes it clear that when a range is used in specifying a "PermittedAlphabet", the lower and upper bound must each be a single character;

    f)   clarifies the requirement for tag uniqueness when the extension insertion point is not at the end of the sequence type;

    g)   makes several editorial corrections.

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

TECHNICAL CORRIGENDUM 1

1)   Subclause 3.8.53

Change "Recursive definitions:" *to* "Recursive definition (of a type):"

2)   Subclause 10.1

Add to the end of the first sentence in 10.1:

In Table 2, characters are identified by the names they are given in ISO/IEC 10646-1.

Replace the contents of Table 2 with:

A to Z	(LATIN CAPITAL LETTER A to LATIN CAPITAL LETTER Z)
a to z	(LATIN SMALL LETTER A to LATIN SMALL LETTER Z)
0 to 9	(DIGIT ZERO to DIGIT 9)
:	(COLON)
=	(EQUALS SIGN)
,	(COMMA)
{	(LEFT CURLY BRACKET)
}	(RIGHT CURLY BRACKET)
<	(LESS-THAN SIGN)
.	(FULL STOP)
@	(COMMERCIAL AT)
(	(LEFT PARENTHESIS)
)	(RIGHT PARENTHESIS)
[	(LEFT SQUARE BRACKET)
]	(RIGHT SQUARE BRACKET)
-	(HYPHEN-MINUS)
'	(APOSTROPHE)
"	(QUOTATION MARK)
|	(VERTICAL LINE)
&	(AMPERSAND)
^	(CIRCUMFLEX ACCENT)

> *   (ASTERISK)
>
> ;   (SEMICOLON)
>
> !   (EXCLAMATION MARK)

3)   New subclause 11.1.6

Create a new subclause as follows:

11.1.6   This Recommendation | International Standard uses the terms "newline", "end of line", "white-space". In representing white-space and newline (end of line) in machine-readable specifications, any of the following characters may be used in any combination (characters are named and identified by a decimal value which is the value in the ISO/IEC 646 encoding of the character):

For white-space:

> HORIZONTAL TABULATION (9)
>
> SPACE (32)
>
> LINE FEED (10)
>
> VERTICAL TAB (11)
>
> FORM FEED (12)
>
> CARRIAGE RETURN (13)

For newline:

> LINE FEED (10)
>
> VERTICAL TAB (11)
>
> FORM FEED (12)
>
> CARRIAGE RETURN (13)

4)   Subclause 11.4

Replace, at the end of the first sentence "in 11.2" *by* "in 11.3".

5)   Subclause 12.17

Replace the word "exported" *by the word* "imported".

6)   Subclause 19.4

Replace:

> The value of each new "AdditionalEnumeration"

by:

> The value of each new "EnumerationItem"

7)   Subclause 19.5

Replace:

> When a "NamedNumber" is used in defining an "AdditionalEnumeration"

by:

> When a "NamedNumber" is used in defining an "EnumerationItem" in the "AdditionalEnumeration"

8)   Subclause 19.6

Replace:

> The value associated with the first "AdditionalEnumeration"

by:

> The value associated with the first "EnumerationItem" in the "AdditionalEnumeration"

9)   Subclause 21.15

Replace the hexadecimal string of the example:

> **'A8A'H**

by:

> **'A98A'H**

10)   Subclauses 24.4 and 26.2

Add the following to the end of 24.4 and to the end of 26.2, before the Note:

Any constraint applied to the referenced type is ignored by this transformation.

11)   Subclauses 24.5.2 and 24.5.3

Replace:

> "ComponentTypes"

by:

> "ComponentType"s

12)   Subclause 24.6

Replace 24.6 by:

When the third or the fourth alternative of "ComponentTypeLists" is used, all "ComponentType"s in extension additions shall have tags which are distinct from the tags of the textually following "ComponentType"s up to and including the first such "ComponentType" that is not marked OPTIONAL or DEFAULT in the trailing "RootComponentTypeList", if any.

13)   Subclause 24.9, NOTE 1

Replace:

> "TaggedTypes"

by:

> "TaggedType"s

14)   Subclause 26.3

Replace the reference "(see 6.4)" *by* "(see 8.4)"

15) Subclause 26.9

Replace:

"NamedValues"

by:

"NamedValue"s

16) Subclause 28.7

Replace:

"NamedTypes"

by:

"NamedType"s

17) New subclause 29.1 *bis*

Create a new subclause as follows:

29.1 *bis* When "Type" denotes a constrained type, the selection is performed on the parent type, ignoring the constraint.

18) New subclause 44.2 *bis*

Create a new subclause as follows:

44.2 *bis* When the "Constraint" notation follows the selection type notation, it applies to the choice type, and not to the type of the selected alternative.

> NOTE – In the following example, the constraint (WITH COMPONENTS {..., a ABSENT}) applies to the CHOICE type T, not to the selected SEQUENCE type (see 29.1 *bis*).

```
T ::= CHOICE {
    a SEQUENCE {
        a INTEGER OPTIONAL,
        b BOOLEAN
    },
    b NULL
}

V ::= a < T (WITH COMPONENTS {..., a ABSENT})
```


19) Clause 46

Add the following paragraph to the head of clause 46 in front of 46.1:

When performing set arithmetic involving subtype constraints and value sets, only abstract values that are defined by extension roots are used in the set arithmetic. All instances of value notation (including value references) used in these constructs are required to reference an abstract value of the extension root. Unless there is an extension marker at the outermost level of an "ElementSetSpecs", the result of the set arithmetic is not an extensible type.

When performing set arithmetic involving information object sets, all information objects (not only those in the extension roots) are used in the set arithmetic. If any of the information object sets contributing to the set arithmetic are extensible, or if there is an extension marker at the outermost level of an "ElementSetSpecs", the result of the set arithmetic is extensible.

20)   Subclause 46.1

Remove the following line from "ElementSetSpecs":

"..." "," AdditionalElementSetSpec |

so that the production becomes:

ElementSetSpecs ::=
  RootElementSetSpec |
  RootElementSetSpec "," "..." |
  RootElementSetSpec "," "..." "," AdditionalElementSetSpec

21)   Subclause 47.3

Replace subclause 47.3 and its Note with the following:

47.3   The result of set arithmetic involving subtype constraints, value sets or object sets that are extensible is specified in clause 46.

22)   Subclause 47.8.1

Replace:

```
A ::= SET  {
        a        A,
        b        CHOICE {
                c        C,
                ...,
                ...,
                d        D
        }
}
```

by:

```
A ::= SET {
        a        A,
        b        CHOICE {
                c        C,
                d        D,
                ...,
                ...
        }
}
```

23)   Subclause 47.8.2

Replace:

```
A ::= SET {
        a        A,
        b        CHOICE {
                c        C,
                ...,
                ...,
                d        D,
        },
        ...,
        e        E
}
```

by:

```
A ::= SET {
        a       A,
        b       CHOICE {
                c       C,
                d       D,
                ...,
                ...
        },
        ...,
        e       E
}
```

24)   Subclause 48.4.4

Add the following Note:

NOTE – When a "ValueRange" is used as a "PermittedAlphabet" constraint, "LowerEndValue" and "UpperEndValue" shall be of size 1.

25)   Subclause 48.8.2

Add the following Note to the end of 48.8.2:

NOTE – An "InnerTypeConstraints" applied to a set or sequence type is ignored by the COMPONENTS OF transformation (see 24.4 and 26.2).

26)   Annex D, subclause D.2.2

Replace:

(the first 62K characters)

by:

(the first 64K – 2 characters)

27)   Annex G

Remove the following line from "ElementSetSpecs":

"..." "," AdditionalElementSetSpec |

so that the production becomes:

```
ElementSetSpecs ::=
    RootElementSetSpec |
    RootElementSetSpec "," "..." |
    RootElementSetSpec "," "..." "," AdditionalElementSetSpec
```

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