

INTERNATIONAL STANDARD

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AMENDMENT 2
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Information technology — Open Systems Interconnection — Structure of management information: Guidelines for the definition of managed objects

AMENDMENT 2: Addition of the NO-MODIFY syntax element and guideline extensions

*Technologies de l'information — Interconnexion de systèmes ouverts —
Structures des informations de gestion: Principes directeurs pour la
définition des objets gérés*

*AMENDEMENT 2: Addition de l'élément de syntaxe «NO-MODIFY» et des
extensions de principe directeur*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Amendment 2 to ISO/IEC 10165-4:1992 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 33, *Distributed application services*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.722/Amd.2.

Introduction

This Amendment adds the NO-MODIFY syntax element to the attribute properties of the package template in order to clearly specify that an attribute cannot be modified in subclasses and compatible classes of the managed object class.

This Amendment proposes that the **use of ASN.1:1994 should not be forbidden** (i.e. normative specification of ASN.1:1994 may be employed) in new and developing OSI Systems Management standards for the following reasons:

- ASN.1:1990 bugs/defects;
- ASN.1:1994 enhancements.

ASN.1:1990 and ASN.1:1994 modules can be mixed and are completely compatible using the guidelines in A.2 of Rec. ITU-T X.680 | ISO/IEC 8824-1, ASN.1 Specification of Basic Notation. This "mixed mode" use of ASN.1 places certain restrictions on allowed productions of both ASN.1:1990 and ASN.1:1994. If these guidelines are maintained, not only are ASN.1:1990 and ASN.1:1994 completely compatible, they are virtually indistinguishable and have identical encoding. Using these guidelines, new and developing OSI Systems Management standards may use both ASN.1:1990 and ASN.1:1994 for normative specification of syntax.

This Amendment introduces conventions for the specification of ASN.1 and GDMO directives in order to clearly identify specification and user options associated with ASN.1 modules and GDMO templates.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION –
STRUCTURE OF MANAGEMENT INFORMATION: GUIDELINES FOR
THE DEFINITION OF MANAGED OBJECTS****AMENDMENT 2****Addition of the NO-MODIFY syntax element and guideline extensions****1) Subclause 2.1**

Insert the following references by numerical order:

- ITU-T Recommendation X.680 (1994) | ISO/IEC 8824-1:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- ITU-T Recommendation X.681 (1994) | ISO/IEC 8824-2:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Information object specification.*
- ITU-T Recommendation X.682 (1994) | ISO/IEC 8824-3:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Constraint specification.*
- ITU-T Recommendation X.683 (1994) | ISO/IEC 8824-4:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications.*
- ITU-T Recommendation X.690 (1994) | ISO/IEC 8825-1:1995, *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*
- ITU-T Recommendation X.691 (1995) | ISO/IEC 8825-2:1995, *Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER).*

2) Subclause 8.2

Add the following to the end of item m):

(Guidelines for the Production of Equivalent ASN.1:1990 and ASN.1:1994 Modules are given in clause 9.)

3) Subclause 8.4.2

Add the following to this subclause, following the [SET-BY-CREATE] property in the propertylist. (The [SET-BY-CREATE] property was added in by Amendment 1):

[NO-MODIFY]

4) Subclause 8.4.3.2

Add the following two new paragraphs before the last paragraph:

The absence of the REPLACE property may be used to specify that an attribute cannot be replaced for instances of a class but this absence does not preclude subclasses adding the REPLACE property. The NO-MODIFY property is present to explicitly specify that an attribute cannot be modified (is read-only) in the class having this property and in all

subclasses and in all compatible managed objects (i.e. managed objects behaving allomorphically to the class). This property is inconsistent with and shall not be present in a managed object class definition that has any of the REPLACE, GET-REPLACE, ADD, REMOVE, or ADD-REMOVE properties on the same attribute.

NOTE 3 – The NO-MODIFY property is not necessarily inconsistent with the REPLACE-WITH-DEFAULT property because this operation is often used with a meaning of “reset” that can be consistent with a manager’s inability to control the attribute’s value.

NOTE 4 – Before the NO-MODIFY property was added to GDMO, the convention was to specify that property in BEHAVIOUR templates or in documents referenced in BEHAVIOUR templates.

If it is desired that part of the definition of an attribute is that the attribute shall not be replaced in any class that specifies the attribute, then this constraint shall be specified in a BEHAVIOUR template referenced by the ATTRIBUTE template.

5) Index

Add new index entry:

NO-MODIFY 26-27

Change these index entries:

BEHAVIOUR 25-26, 30-32, 34-35, 37-40

REPLACE 14, 26-27

6) New clause 9

Add a new clause 9, following 8.11.3.5:

9 Guidelines for production of equivalent ASN.1:1994 and ASN.1:1990 modules

It is possible in developing standards, that normative ASN.1:1994 modules be provided. In order to allow the use of ASN.1:1994, it is recommended that an equivalent normative ASN.1:1990 module be provided subject to the following:

- 1) it has the same object identifier as the ASN.1:1994 module;
- 2) it is normative but the standard states that in the event of discrepancies between the ASN.1:1990 and ASN.1:1994 modules, the ASN.1:1994 module take precedence;
- 3) the standard states that use of ASN.1:1990 will be retained as long as needed.

NOTE 1 – ISO/IEC JTC 1/SC 21 rules dictate a periodic review for renewal of the ASN.1:1990 International Standards every one (1) year¹⁾. National Bodies are asked to consider the above when reviewing the ASN.1:1990 standards. This ensures that the ASN.1:1990 standards are retained as long as needed.

Also to reduce errors, it is recommended that the ASN.1:1990 module be a machine generated transformation of the ASN.1:1994 module since this transformation can be easily automated.

NOTE 2 – If an editor desires to use a commercial tool (e.g. made available to the standards community at virtually no cost, vendor XXX’s ASN.1 Tools) for converting ASN.1:1994 to ASN.1:1990 to reduce the possibility of errors, it has been suggested that the editor should add a comment at the top of the generated code that says something like:

```
-- XXX ASN.1 Tools used for conversion --
-- from ASN.1:1994 to ASN.1:1990 --
```

with the following Note:

NOTE – Although ISO cannot advertise that one software tool must be used as opposed to another, at present, XXX ASN.1 Tools is one of the software tools allowing the conversion from ASN.1:1994 to ASN.1:1990.

It should be noted that problems can be avoided if only the common subset of ASN.1:1990 and ASN.1:1994 is used. In this case, only the ASN.1:1994 module needs to be included in this standard.

¹⁾ ISO/IEC JTC 1/SC 21 (SC21) reaffirmed the continuation of availability of the ASN.1:1990 standards for reasons of conformance and interpretability (in SC21 N 9001 rev). SC21 requested its WGs to continue to maintain these standards. An SC21 resolution to continue maintenance will be conducted at each SC21 meeting (currently, once a year).