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OSI MANAGEMENT

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – STRUCTURE OF MANAGEMENT INFORMATION: REQUIREMENTS AND GUIDELINES FOR IMPLEMENTATION CONFORMANCE STATEMENT PROFORMAS ASSOCIATED WITH OSI MANAGEMENT

ITU-T Recommendation X.724

(Previously "CCITT Recommendation")

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. Some 179 member countries, 84 telecom operating entities, 145 scientific and industrial organizations and 38 international organizations participate in ITU-T which is the body which sets world telecommunications standards (Recommendations).

The approval of Recommendations by the Members of ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, 1993). In addition, the World Telecommunication Standardization Conference (WTSC), which meets every four years, approves Recommendations submitted to it and establishes the study programme for the following period.

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. The text of ITU-T Recommendation X.724 was approved on 16th of November 1993. The identical text is also published as ISO/IEC International Standard 10165-6.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

CONTENTS

Summary

This draft Recommendation provides guidance for the production of Conformance statements for management information including managed objects. Proformas to document these statements are included.

Introduction

OSI management standardization inevitably involves coordinated work by a number of standards bodies. ITU-TS SG 7 and ISO/IEC JTC1/SC21/WG4 are jointly responsible for the development of Recommendations | International Standards that describe the architecture for OSI management, the services, protocols and functions that are used for systems management, and the structure of management information. Other working groups, in ITU-TS, ISO/IEC JTC1/SC21, ISO/IEC JTC1/SC6 and elsewhere, are responsible for the development of Recommendation | International Standards that describe the management aspects of particular layers of the OSI Basic Reference Model; these may describe (N)-layer management protocols, management aspects of (N)-layer operation, and managed objects that provide a “management view” of aspects of the layer operation and are visible to systems management.

This Recommendation | International Standard provides requirements and guidelines for Management Conformance Summary (MCS) proformas, Managed Object Conformance Statement (MOCS) proformas, Management Information Definition Statement (MIDS) proformas, and Managed Relationship Conformance Statement (MRCS) proformas and for the specification of these proformas. These proformas are applicable to standards for OSI management including definitions of managed objects. The MCS proforma provides a summary of PICS proforma, MOCS proforma and MRCS proforma. The PICS is a statement made by an implementor to claim conformance to a protocol specification. The MOCS is a statement made by an implementor to claim conformance to a managed object class definition. The MRCS is a statement made by an implementor to claim conformance to a managed relationship definition, such as a name binding definition.

CCITT Rec. X.700 | ISO/IEC 7498-4 and CCITT Rec. X.701 | ISO/IEC 10040 define the architecture for OSI management, and describe the content of and relationships between OSI management standards.

CCITT Rec. X.720 | ISO/IEC 10165-1 describes the model of management information in terms of managed objects.

CCITT Rec. X.721 | ISO/IEC 10165-2 (DMI) defines generic managed object classes and characteristics. Where a suitable definition of management information exists in DMI, it is recommended that this definition be referenced in preference to defining a new information element with the same structure.

CCITT Rec. X.208 | ISO/IEC 8824 defines the notation used to express the abstract syntax of the data elements associated with managed object characteristics that shall be carried in systems management protocol.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – STRUCTURE OF MANAGEMENT INFORMATION: REQUIREMENTS AND GUIDELINES FOR IMPLEMENTATION CONFORMANCE STATEMENT PROFORMAS ASSOCIATED WITH OSI MANAGEMENT

1 Scope

This Recommendation | International Standard provides requirements and guidelines for Management Conformance Summary (MCS) proformas, Managed Object Conformance Statement (MOCS) proformas, Management Information Definition Statement (MIDS) proformas, and Managed Relationship Conformance Statement (MRCS) proformas and for the specification of these proformas. These proformas are applicable to standards for OSI management including definitions of managed objects. The MCS proforma provides a summary of PICS proforma, MOCS proforma and MRCS proforma. The PICS is a statement made by an implementor to claim conformance to a protocol specification. The MOCS is a statement made by an implementor to claim conformance to a managed object class definition. The MRCS is a statement made by an implementor to claim conformance to a managed relationship definition, such as a name binding definition.

2 Normative references

The following ITU-T Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and International Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions of the Recommendations and International Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The TSB (Telecommunications Standardization Bureau) Secretariat maintains a list of currently valid ITU-T Recommendations.

2.1 Identical ITU-T Recommendations | International Standards

– CCITT Recommendation X.701 (1992) | ISO/IEC 10040:1992, *Information technology – Open Systems Interconnection – Systems management overview.*

– CCITT Recommendation X.720 (1992) | ISO/IEC 10165-1:1993, *Information technology – Open Systems Interconnection – Structure of management information: Management information model.*

– CCITT Recommendation X.722 (1992) | ISO/IEC 10165-4:1992, *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*

2.2 Paired ITU-T Recommendations | International Standards equivalent in technical content

– CCITT Recommendation X.208 (1989), *Specification of abstract syntax notation one (ASN.1).*

ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1).*

– CCITT Recommendation X.290 (1992), *OSI conformance testing methodology and framework for protocol recommendations for CCITT applications – General concepts.*

ISO/IEC 9646-1:1991, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts.*

– CCITT Recommendation X.291 (1992), *OSI conformance testing methodology and framework for protocol recommendations for CCITT applications – Abstract test suite specification.*

ISO/IEC 9646-2:1991, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract test suite specification.*

– ITU-T Recommendation X.296[1)], *OSI conformance testing methodology and framework for protocol recommendations for ITU-T applications – Implementation conformance statements – Requirements and guidance on ICS and ICS proforma.*

  ISO/IEC 9646-7[1)], *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation conformance statements – Requirements and guidance on ICS and ICS proformas.*

– CCITT Recommendation X.700 (1992), *Management Framework Definition for Open Systems Interconnection (OSI) for CCITT Applications.*

  ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework.*

– CCITT Recommendation X.710 (1991), *Common Management Information Service Definition for CCITT Applications.*

  ISO/IEC 9595:1991, *Information technology – Open Systems Interconnection – Common management information service definition.*

3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1 ASN.1 definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.208 | ISO/IEC 8824:

object identifier

3.2 Management framework definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.700 | ISO/IEC 7498-4:

managed object

3.3 Conformance testing methodology definitions

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.290 | ISO/IEC 9646-1:

a) protocol implementation conformance statement (PICS);

b) PICS proforma;

c) system conformance statement.

3.4 Systems management overview definitions

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.701 | ISO/IEC 10040:

a) managed object class;

b) managed object conformance statement;

c) MOCS proformas;

d) notification.

1) Presently at the stage of draft.

3.5 CMIS definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.710 | ISO/IEC 9595:

attribute

3.6 Management information model definitions

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.720 | ISO/IEC 10165-1:

a) action;

b) actual class;

c) attribute group;

d) behaviour;

e) characteristic;

f) conditional package;

g) instantiation;

h) name binding;

i) package;

j) parameter;

k) superclass;

l) uninstantiable managed object class.

3.7 Guidelines for the definition of managed objects definitions

This Recommendation | International Standard makes use of the following term defined in CCITT Rec. X.722 | ISO/IEC 10165-4:

template

3.8 Implementation conformance statements definitions

This Recommendation | International Standard makes use of the following terms defined in ITU-T Rec. X.296 | ISO/IEC 9646-7:

a) (ICS) item;

b) (ICS) question;

c) status (value);

d) (support) answer.

3.9 Additional definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.9.1 managed relationship conformance statement (MRCS): A statement by a supplier of a managed relationship implementation, stating the capabilities and options which have been implemented, and any features which have been omitted.

3.9.2 management conformance summary (MCS): A statement by a supplier that identifies an implementation and provides information on whether the implementation claims conformance to any of the listed set of documents that specify conformance requirements to OSI management.

3.9.3 management information definition statement (MIDS) proforma: A document, in the form of a questionnaire which is used in the construction of a MOCS proforma.

3.9.4 MCS proforma: A document, in the form of a questionnaire that when completed by the supplier of an implementation becomes the MCS.

3.9.5 MRCS proforma: A document, in the form of a questionnaire that when completed by the supplier of an implementation becomes the MRCS.

3.9.6 proforma specification: Standardized procedures for constructing a questionnaire that when completed by the supplier of an implementation becomes an implementation conformance statement.

4 Abbreviations

GDMO Guidelines for the Definition of Managed Objects

ICS Implementation Conformance Statement

MCS Management Conformance Summary

MIDS Management Information Definition Statement

MOCS Managed Object Conformance Statement

MRCS Managed Relationship Conformance Statement

PICS Protocol Implementation Conformance Statement

5 Requirements and guidelines for specification and completion of proformas

Proforma specifications shall follow the style as documented in the annexes of this Recommendation | International Standard. Proforma specifications shall provide the information required by this Recommendation | International Standard. Additional tables may be included for other information, if needed.

5.1 Structure of proformas

The annexes of this Recommendation | International Standard specify the formats for MCS proforma, MOCS proforma, MIDS proforma and MRCS proforma for name bindings. Thus, proforma specifications are provided by the annexes of this Recommendation | International Standard. MIDS proforma are used to construct MOCS proforma. The supplier of an implementation then fills in the blanks in the proforma to produce MCS, MOCS and MRCS for name bindings. Also, this Recommendation | International Standard specifies the format of MRCS proforma for name binding and that are summarized in a MCS proforma.

There are three levels of documentation pertaining to MCS, namely:

a) guidelines or Recommendation | International Standard tools for the production of MCS proformas;

b) a MCS proforma, associated with a standard related to OSI management, which is to be filled in by a supplier of the implementation and when filled in is a MCS – c) below;

c) a MCS prepared by a supplier of the implementation as part of a conformance claim to a standard related to OSI management.

It is a) that is the subject of this Recommendation | International Standard. MCS proformas b) will be expected to be produced in accordance with the MCS proforma specification in this Recommendation | International Standard.

Similarly, there are three levels of documentation pertaining to MOCS, namely:

a) guidelines or Recommendation | International Standard tools for the production of MOCS proformas;

b) a MOCS proforma, associated with a managed object class definition, which is to be filled in by a supplier of the implementation and when filled in is a MOCS – c) below;

c) a MOCS prepared by a supplier of the implementation as part of a conformance claim to a managed object definition.

It is a) that is the subject of this Recommendation | International Standard. MOCS proformas b) will be expected to be produced in accordance with the MOCS proforma specification in this Recommendation | International Standard. Uninstantiable managed object classes do not require MOCS proformas.

In addition, there are two levels of documentation pertaining to MIDS, namely:

a) guidelines or Recommendation | International Standard tools for the production of MIDS proformas;

b) a MIDS proforma, which is used to construct a MOCS proforma.

It is a) that is the subject of this Recommendation | International Standard. MIDS proformas b) will be expected to be produced in accordance with the MIDS proforma specification in this Recommendation | International Standard.

In addition, there are three levels of documentation pertaining to MRCS for name bindings, namely:

a) guidelines or Recommendation | International Standard tools for the production of MRCS proformas for name bindings;

b) a MRCS proforma for name bindings, associated with a name binding definition, which is to be filled in by a supplier of the implementation and when filled in is a MRCS [see c) below];

c) a MRCS for name bindings prepared by a supplier of the implementation as part of a conformance claim to a name binding definition.

It is a) that is the subject of this Recommendation | International Standard. MRCS proformas for name bindings b) will be expected to be produced in accordance with the MRCS proforma specification for name bindings in this Recommendation | International Standard.

5.2 General Instructions

This Recommendation | International Standard provides instructions to construct MCS proforma specification, MOCS proforma specification, MIDS proforma specification and MRCS proforma specification for name bindings. The Annexes of this Recommendation | International Standard contain specification for the MCS proforma, MOCS proforma, MIDS proforma, and MRCS proforma for name bindings in a tabular form, which uses the status and support columns as well as the notation used for filling in these columns introduced in CCITT Rec. X.291 | ISO/IEC 9646-2. The purpose of the MCS proforma, MOCS proforma, MIDS proforma, and MRCS proforma for name bindings is to provide a mechanism whereby a supplier of an implementation including OSI management may provide conformance information in a standard form. The purpose of the Annexes is to provide guidance for proforma specifications. Annex A of this Recommendation | International Standard contains a proforma for the MCS proforma. Annex B of this Recommendation | International Standard contains a proforma for the MOCS proforma. Annexes C, D, E, and F contain proformas for the MIDS proforma for attributes, attribute groups, actions, and notifications, respectively. Annex G contains a proforma for the MRCS proforma for name bindings. Annex H contains additional informative guidelines for proforma specification. Annex I provides an example of a MCS proforma specification, which is to be filled in by a supplier of an implementation. Annex J provides an example of a MOCS proforma specification, which is to be filled in by a supplier of an implementation. Annex K provides an example of a MRCS proforma specification for name binding, which is to be filled in by a supplier of an implementation.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the status value column:

m mandatory;

o optional;

c conditional;

x prohibited;

– not applicable or out of scope.

NOTES

1 The notations “c”, “m”, “o” and “x” are prefixed by a “c:” when nested under a conditional or optional item of the same table.

2 The notation“o” may be suffixed by “.n” (where “n” is a unique number) for mutually exclusive or selectable options among a set of status values. The requirement for this numbered set shall be explicitly stated, preferably in a footnote to the relevant table.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the support answer column:

Y implemented;

N not implemented;

– no answer required;

Ig the item is ignored (i.e. processed syntactically but not semantically).

In the status column, the static requirements shall be stated. The status will be as follows:

m for characteristics contained in mandatory packages or in conditional packages if the GDMO condition is always true;

o for characteristics of conditional packages with GDMO conditions that indicate static optionality, e.g. “if instance supports it”;

cn for all other conditions, where “n” is a unique integer and “cn” is a reference to a conditional status expression as defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7. (One possible form of this conditional status expression uses the answer to a textual question, such as “Does the implementation permit instantiation when {GDMO condition}?”. However, when more precise notation can be used, the use of such a textual question is not recommended.);

x for characteristic explicitly prohibited in the definition;

– for characteristics that are not mentioned in the definition.

When the status for a conditional package is or resolves to “m”, then the characteristics of the package shall be implemented; and the characteristics are instantiated according to the dynamic rules specified in the GDMO condition associated with the package.

The “Constraints and values” columns of the tables in the annexes (which are to be filled in in the proforma specification if applicable) contain the constraints and values of the specific management information (i.e. name binding, attribute, attribute group, action, action field, notification, and notification field).

The “Additional information” columns of the tables in the annexes (which are to be filled in by the supplier of the implementation if applicable) contain additional information that is necessary for the use of the tables regarding support of the specific management information (i.e. name binding, attribute, attribute group, action, action field, notification, and notification field). This information may include, **if applicable**:

a) any constraints regarding support of the management information;

b) specific values which are supported;

c) index information to reference an attribute, attribute group, action or notification of another MOCS, completed by the supplier of the implementation;

d) mapping of the values of the management information (available at the managed object boundary) to values visible at other interfaces to the underlying resource (of which the management information is an abstraction);

e) clarification of how constraints are met;

f) supported parameters;

g) sufficient information to reference the details of parameter(s), if a particular parameter or parameters are carried in a field of an action or notification;

h) implementation specific constraints of permitted, required, default values and matching rules for attributes;

i) implementation specific constraints of permitted and required values for action and notification arguments.

When management information available at a managed object boundary is claimed to correspond to information available via another interface, then how the value of a piece of management information available at the managed object boundary is related to the information available at the other interface shall be specified in one of the following ways:

a) specified by the standards and referenced as a footnote to the entry in the proforma, and therefore be part of what the supplier of the implementation indicates support of by filling in the support column;

b) required/recommended by the standards to be specified by the supplier of the implementation; in such cases the proforma includes a footnote to the entry that the supplier of the implementation shall/may state the details of availability in the "Additional information" column;

c) left unspecified in the proforma specification and by the supplier of the implementation.

Terminology, notation and concepts for conformance statements are described in CCITT Rec. X.290 | ISO/IEC 9646-1, CCITT Rec. X.291 | ISO/IEC 9646-2, and ITU-T Rec. X.296 | ISO/IEC 9646-7. The tables need to provide details of composite parameters to the level of detail that will remove ambiguity for the support of the subparameters. When the size of a proforma table exceeds the size of a page, the table can be either presented in landscape or split into a number of parts. Guidelines on how to split a table are given in the informative Annex H.

5.3 Instructions for MCS proforma specification

A MCS identifies an implementation and summarizes the PICS, MOCS and MRCS for which conformance is stated. The MCS proforma is formed by copying the MCS proforma specification in Annex A, and extending the tables of A.4, as required; this may include merging information from multiple other MCS proformas. Multiple MCS proformas can be merged into a single MCS (e.g. when combining proforma from more than one document).

The proforma specification shall have the "Status" columns of all the summary tables filled in according to the base specification requirements. To form a MCS from a MCS proforma, a supplier of the implementation shall provide appropriate information in the boxes provided and also fill in the "Support" and, if appropriate, the "Additional information" column of all the summary tables in the MCS proforma. The supplier of the implementation shall also fill in the table numbers of the completed tables which correspond to the table numbers of the identified source document, if the table numbers are different.

Refer to CCITT Rec. X.291 | ISO/IEC 9646-2 for instructions for PICS proforma specification. Refer to 5.4 for instructions for MOCS proforma specification. Also, 5.6 provides instructions for MRCS proforma for name bindings.

5.4 Instructions for MOCS proforma specification

The MOCS proforma specification is formed by copying Annex B, completing the tables except for the "Support" and "Additional information" columns, and extending the remaining tables to meet the requirements of the specification. MOCS for multiple managed object classes do not have to be documented in the same annex as long as the tables for each class are contiguous and separated from the tables for other classes. MOCS proforma shall provide tables for all the attributes, attribute groups, actions, notifications and parameters which are included in the managed object class definition whether derived from superclasses or added by refinement. The information in a MOCS proforma is obtained from base standards, MIDS proforma and other MOCS proforma. Refer to 5.5 for instructions for MIDS proforma specification.

To form a MOCS from a MOCS proforma, the supplier of the implementation shall fill in the "Support" and, if appropriate, "Additional information" columns of all the tables in the MOCS proforma:

a) *Managed object class support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Managed object class template label), and 3 (Value of object identifier for class). The supplier of the implementation shall state whether or not all the mandatory features of the identified managed object class are supported in Column 4 (Support of all mandatory features), and shall state whether or not the actual class is the same as the managed object class to which conformance is claimed in Column 5. If the answer to the actual class question is no, the supplier of the implementation shall fill in the actual class support table provided.

b) *Attribute support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Attribute template label), 3 (Value of object identifier for attribute), 5 (Status-Set by create), 7 (Status-Get), 9 (Status-Replace), 11 (Status-Add), 13 (Status-Remove), 15 (Status-Set to default) and, if applicable, 4 (Constraints and values). If the behaviour of the managed object specifies that a Create cannot set the value of the attribute or if a mandatory initial value is specified, then the proforma specification shall specify "x" for the status of the "Status-Set by create" column. Otherwise, if the attribute is replaceable or the behaviour of the managed object class specifies that the attribute is settable by Create, then the proforma specification shall specify "m" for the status of the "Status-Set by create" column. Otherwise, if the managed object class definition does not mention whether the attribute is settable by Create, the proforma shal specify "–" for the status of the "Status-Set by create" column. Otherwise, the proforma shall specify "o" or "cn" for the status of the "Status-Set by create" column as appropriate for the managed object class definition. The supplier of the implementation shall state whether or not the attributes specified by all the packages instantiated in a managed object class definition are supported and shall indicate support for each of the operations for each attribute supported by filling in Columns 6 (Support-Set by create), 8 (Support-Get), 10 (Support-Replace), 12 (Support-Add), 14 (Support-Remove), 16 (Support-Set to default) and, if appropriate, 17 (Additional information).

c) *Attribute group support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Attribute group template label), 3 (Value of object identifier for attribute group), 5 (Status-Get), 7 (Status-Set to default) and, if applicable, 4 (Constraints and values). The supplier of the implementation shall state whether or not the attribute groups specified by all the packages instantiated in a managed object class definition are supported and shall indicate support for each of the operations for each attribute group supported by filling in Columns 6 (Support-Get), 8 (Support-Set to default) and, if appropriate, 9 (Additional information).

d) *Action support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Action template label), 3 (Value of object identifier for action type), 5 (Status), 8 (Subindex), 9 (Action field name label), 11 (Status) and, if applicable, 4 (Constraints and values) and 10 (Constraints and values). For each action, the proforma specification shall specify the requirements for each action argument in the subindex rows. The supplier of the implementation shall state whether or not the actions specified by all packages instantiated in a managed object of this class are supported by filling in Columns 6 (Support), 12 (Support) and, if appropriate, 7 (Additional information) and 13 (Additional information).

e) *Notification support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Notification template label), 3 (Value of object identifier for notification type), 5 (Status), 9 (Subindex), 10 (Notification field name label), 11 (Value of object identifier of attribute type associated with field), 13 (Status) and, if applicable, 4 (Constraints and values) and 12 (Constraints and values). For each notification, the proforma specification shall specify the requirements for each notification argument in the subindex rows. The supplier of the implementation shall state whether or not the notifications specified by all packages instantiated in a managed object of this class are supported by filling in Columns 6 (Support-Confirmed), 7 (Support-Non-confirmed), 12 (Support) and, if appropriate, 8 (Additional information) and 13 (Additional information).

f) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The supplier of the implementation shall state whether or not the parameters specified by all the packages instantiated in a managed object of this class are supported by filling in Columns 6 (Support) and, if appropriate, 7 (Additional information).

5.5 Instructions for MIDS proforma specification

The MIDS proforma are specified to ensure consistent use of generic management information that is common to many managed object classes. MIDS proforma provide a means of specifying what a MOCS specification imports in order to comply with the document that specifies the MIDS proforma.

The status values specified within the MIDS proformas indicate what needs to be supported to comply with the generic definition. These requirements can only be made stronger (e.g. optional can be mandated) when imported into a specific MOCS proforma.

MIDS proforma by themselves do not specify a complete implementation conformance statement, and therefore cannot be used by the supplier of the implementation to state conformance.

Instructions for MIDS proforma specifications are given in the following subclauses.

5.5.1 Instructions for MIDS proforma specification for attributes

a) *Attribute support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Attribute template label), 3 (Value of object identifier for attribute), 5 (Status-Set by create), 7 (Status-Get), 9 (Status-Replace), 11 (Status-Add), 13 (Status-Remove), 15 (Status-Set to default) and, if applicable, 4 (Constraints and values). If the behaviour of the managed object specifies that a Create cannot set the value of the attribute or if a mandatory initial value is specified, then the proforma specification shall specify "x" for the status of the "Status-Set by create" column. Otherwise, if the attribute is replaceable or the behaviour of the managed object class specifies that the attribute is settable by Create, then the proforma specification shall specify "m" for the status of the "Status-Set by create" column. Otherwise, if the managed object class definition does not mention whether the attribute is settable by Create, the proforma shal specify "–" for the status of the "Status-Set by create" column. Otherwise, the proforma shall specify "o" or "cn" for the status of the "Status-Set by create" column as appropriate for the managed object class definition. The remaining columns shall remain blank.

b) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

5.5.2 Instructions for MIDS proforma specification for attribute groups

a) *Attribute group support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Attribute group template label), 3 (Value of object identifier for attribute group), 5 (Status-Get), 7 (Status-Set to default) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

b) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

5.5.3 Instructions for MIDS proforma specification for actions

a) *Action support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Action template label), 3 (Value of object identifier for action type), 5 (Status), 8 (Subindex), 9 (Action field name label), 11 (Status) and, if applicable, 4 (Constraints and values) and 10 (Constraints and values). For each action, the proforma specifier shall specify the requirements for each action argument in the subindex rows. The remaining columns shall remain blank.

b) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

5.5.4 Instructions for MIDS proforma specification for notifications

a) *Notification support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Notification template label), 3 (Value of object identifier for notification type), 5 (Status), 9 (Subindex), 10 (Notification field name label), 11 (Value of object identifier of attribute type associated with field), 13 (Status) and, if applicable, 4 (Constraints and values) and 12 (Constraints and values). For each notification, the proforma specifier shall specify the requirements for each notification argument in the subindex rows. The remaining columns shall remain blank.

b) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

5.6 Instructions for MRCS proforma specification for name bindings

The MRCS proforma specification for name bindings is formed by copying Annex G, completing the tables except for the "Support" and "Additional information" columns, and extending the tables to meet the requirements of the specification.

To form a MRCS for name bindings from a MRCS proforma for name bindings, the supplier of the implementation shall fill in the "Support" and, if appropriate, "Additional information" columns of all the tables in the MRCS proforma:

a) *Name binding support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Name binding template label), 3 (Value of object identifier for name binding), 5 (Status), 8 (Subindex), 11 (Status) and, if applicable, 4 (Constraints and values) and 10 (Constraints and values). The supplier of the implementation shall state which name bindings are supported. The supplier of the implementation shall fill in Columns 6 (Support), 12 (Support) and, if applicable 7 (Additional information) and 13 (Additional information).

b) *Parameter support table* – The proforma specification shall have filled in Columns 1 (Index), 2 (Parameter template label), 3 (Value of object identifier for parameter), 5 (Status) and, if applicable, 4 (Constraints and values). The remaining columns shall remain blank.

6 Compliance

To comply with this Recommendation | International Standard, a Recommendation | International Standard which specifies conformance requirements for a managed object class definition shall:

– contain or reference a MCS proforma, constructed as specified in 5.3;

– specify that implementations claiming to conform to a managed object class definition in the MCS shall be accompanied by a MOCS produced by completing a MOCS proforma, constructed as specified in 5.4, for this managed object class.

To comply with this Recommendation | International Standard, a Recommendation | International Standard which specifies conformance requirements for management information shall:

– contain or reference a MIDS proforma, constructed as specified in 5.5;

– specify that specifications of conformance requirements for managed object class definitions that use the management information shall include the requirements of the MIDS proforma in the MOCS proforma for that managed object class.

To comply with this Recommendation | International Standard, a Recommendation | International Standard which specifies conformance requirements for a name binding definition shall:

– contain or reference a MCS proforma, constructed as specified in 5.3;

– specify that implementations claiming to conform to a name binding definition in the MCS shall be accompanied by a MRCS produced by completing a MRCS proforma for name binding, constructed as specified in 5.6, for this name binding definition.

Annex A

MCS proforma[2)]

(This annex forms an integral part of this Recommendation | International Standard)

A.1 Introduction

A.1.1 Purpose and structure

The management conformance summary (MCS) is a statement by a supplier that identifies an implementation and provides information on whether the implementation claims conformance to any of the listed set of documents that specify conformance requirements to OSI management.

The MCS proforma is a document, in the form of a questionnaire that when completed by the supplier of an implementation becomes the MCS.

A.1.2 Instructions for completing the MCS proforma to produce an MCS[3)]

The supplier of the implementation shall enter an explicit statement in each of the boxes provided. Specific instruction is provided in the text which precedes each table.

A.2 Identification of the implementation

A.2.1 Date of statement

The supplier of the implementation shall enter the date of this statement in the box below. Use the format DD-MM-YYYY.

Date of statement

A.2.2 Identification of the implementation

The supplier of the implementation shall enter information necessary to uniquely identify the implementation and the system(s) in which it may reside, in the box below.

2) Users of this Recommendation | International Standard may freely reproduce the MCS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed MCS.

3) Instructions for MCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

A.2.3 Contact

The supplier of the implementation shall provide information on whom to contact if there are any queries concerning the content of the MCS, in the box below.

A.3 Identification of the document in which the management information is defined

The supplier of the implementation shall enter the title, reference number and date of the publication of the document which specifies the management information to which conformance is claimed, in the box below.

Document to which conformance is claimed

A.3.1 Technical corrigenda implemented

The supplier of the implementation shall enter the reference numbers of implemented technical corrigenda which modify the specification in the identified document, in the box below.

A.3.2 Amendments implemented

The supplier of the implementation shall state the titles and reference numbers of implemented addenda to the identified document, in the box below.

A.4 Management conformance summary

The supplier of the implementation shall provide information on whether the implementation claims conformance to any of the set of documents globally representing the implementation under claim. For each document the supplier of the implementation claims conformance to, the corresponding conformance statement(s) shall be filled in, or referenced by, the MCS. Columns 7 (Support), 8 (Table numbers of PICS/MOCS/MRCS) and 9 (Additional information) are to be filled in by the supplier of the implementation.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the status value column:

m mandatory;

o optional;

c conditional;

x prohibited;

– not applicable or out of scope.

NOTES

1 The notations “c”, “m”, “o” and “x” are prefixed by a “c:” when nested under a conditional or optional item of the same table.

2 The notation “o” may be suffixed by “.n” (where “n” is a unique number) for mutually exclusive or selectable options among a set of status values. The requirement for this numbered set shall be explicitly stated, preferably in a footnote to the relevant table.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the support answer column:

Y implemented;

N not implemented;

– no answer required;

Ig the item is ignored (i.e. processed syntactically but not semantically).

Table A.1 – PICS support summary

Index	Identification of the document that includes the PICS proforma	Table numbers of PICS proforma	Description	Constraints and values	Status	Support	Table numbers of PICS	Additional information

Table A.2 – MOCS support summary

Index	Identification of the document that includes the MOCS proforma	Table numbers of MOCS proforma	Description	Constraints and values	Status	Support	Table numbers of MOCS	Additional information

Table A.3 – MRCS support summary

Index	Identification of the document that includes the MRCS proforma	Table numbers of MRCS proforma	Description	Constraints and values	Status	Support	Table numbers of MRCS	Additional information

Annex B

MOCS proforma[4)]

(This annex forms an integral part of this Recommendation | International Standard)

B.1 Introduction

The purpose of this MOCS proforma is to provide a mechanism for a supplier of an implementation which claims conformance to a managed object class to provide conformance information in a standard form.

B.2 Instructions for completing the MOCS proforma to produce a MOCS2[5)]

The supplier of the implementation shall state which items are supported in Tables B.1 to B.7 and if necessary provide additional information.

B.3 Statement of conformance to the managed object class

See Table B.1.

Table B.1 – Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)

If the answer to the actual class question in the managed object class support table is no, the supplier of the implementation shall fill in the actual class support Table B.2.

Table B.2 – Actual class support

Index	Managed object class template label for actual class	Value of object identifier for managed object class definition of actual class	Additional information

4) Users of this Recommendation | International Standard may freely reproduce the MOCS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed MOCS.

5) Instructions for MOCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

B.4 Attributes

See Table B.3.

Table B.3 – Attribute support

				Set by create		Get		Replace	
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support

Table B.3 *(concluded)* – Attribute support

	Add		Remove		Set to default		
Index	Status	Support	Status	Support	Status	Support	Additional information

B.5 Attribute Groups

See Table B.4.

Table B.4 – Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information

B.6 Actions

See Table B.5.

Table B.5 – Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information

Table B.5 *(concluded)* – Action support

Index	Subindex	Action field name label	Constraints and values	Status	Support	Additional information

B.7 Notifications

See Table B.6.

Table B.6 – Notification support

					Support		
Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Confirmed	Non-confirmed	Additional information

Table B.6 *(concluded)* – Notification support

Index	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information

B.8 Parameters

See Table B.7.

Table B.7 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

Annex C

MIDS (attribute) proforma[6)]

(This annex forms an integral part of this Recommendation | International Standard)

C.1 Attributes

See Table C.1.

Table C.1 – Attribute support

				Set by create		Get		Replace	
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support

Table C.1 *(concluded)* – Attribute support

	Add		Remove		Set to default		
Index	Status	Support	Status	Support	Status	Support	Additional information

C.2 Parameters

See Table C.2.

Table C.2 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

6) Users of this Recommendation | International Standard may freely reproduce the MIDS proforma in this annex so that it can be used for its intended purpose. Instructions for constructing MIDS (action) proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

Annex D

MIDS (attribute group) proforma[7)]

(This annex forms an integral part of this Recommendation | International Standard)

D.1 Attribute groups

See Table D.1.

Table D.1 – Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information

D.2 Parameters

See Table D.2.

Table D.2 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

7) Users of this Recommendation | International Standard may freely reproduce the MIDS proforma in this annex so that it can be used for its intended purpose. Instructions for constructing MIDS (attribute group) proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

Annex E

MIDS (action) proforma[8)]

(This annex forms an integral part of this Recommendation | International Standard)

E.1 Actions

See Table E.1.

Table E.1 – Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information

Table E.1 *(concluded)* – Action support

Index	Subindex	Action field name label	Constraints and values	Status	Support	Additional information

E.2 Parameters

See Table E.2.

Table E.2 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

8) Users of this Recommendation | International Standard may freely reproduce the MIDS proforma in this annex so that it can be used for its intended purpose. Instructions for constructing MIDS (action) proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

Annex F

MIDS (notification) proforma[9)]

(This annex forms an integral part of this Recommendation | International Standard)

F.1 Notifications

See Table F.1.

Table F.1 – Notification support

					Support		
Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Confirmed	Non-confirmed	Additional information

Table F.1 *(concluded)* – Notification support

Index	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information

F.2 Parameters

See Table F.2.

Table F.2 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

9) Users of this Recommendation | International Standard may freely reproduce the MIDS proforma in this annex so that it can be used for its intended purpose. Instructions for constructing MIDS (notification) proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

Annex G

MRCS proforma for name bindings[10)]

(This annex forms an integral part of this Recommendation | International Standard)

G.1 Introduction

The purpose of this MRCS proforma for name bindings is to provide a mechanism for a supplier which claims conformance to a name binding to provide conformance information in a standard form.

G.2 Instructions for completing the MRCS proforma for name bindings to produce an MRCS for name bindings[11)]

The supplier of the implementation shall state which items are supported in Tables G.1 and G.2 and if necessary provide additional information.

G.3 Statement of conformance to the name binding

See Table G.1.

Table G.1 – Name binding support

Index	Name binding template label	Value of object identifier for name binding	Constraints and values	Status	Support	Additional information

Table G.1 *(concluded)* – Name binding support

Index	Subindex	Operation	Constraints and values	Status	Support	Additional information
		Create support				
		Create with reference object				
		Create with automatic instance naming				
		Delete support				
		Delete only if no contained objects				
		Delete contained objects				

10) Users of this Recommendation | International Standard may freely reproduce the MRCS proforma for name bindings in this annex so that it can be used for its intended purpose and may further publish the completed RCS for name bindings.

11) Instructions for MRCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

G.4 Parameters

See Table G.2.

Table G.2 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information

Annex H

Additional Informative Guidelines Proforma Specification

(This annex does not form an integral part of this Recommendation | International Standard)

H.1 Introduction

The purpose of this annex is to provide additional informative guidelines for proforma specification. The guidelines presented here are in compliance with the conventions in CCITT Rec. X.290 | ISO/IEC 9646-1, CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 and are repeated here for convenience.

H.2 Table labels and indexing

Tables in a document are labelled with consecutive numbers beginning with "1", such as Table 1, Table 2 to Table n. Tables in an annex are labelled with the annex label as the prefix followed by a ".", followed by consecutive numbers. For example, Tables in Annex X are labelled Table X.1, Table X.2, etc.

Index and subindex numbers for the rows of the tables are labelled according to the guidelines in CCITT Rec. X.291 | ISO/IEC 9646-2, that is, with consecutive numbers. For example, Table H.1 has rows 1, 2, 3, etc.

Table H.1 – Example of index

Index	Information
1	
2	
3	

The index for sub-rows (rows within rows) is the row label followed by consecutive numbers. For example in Table H.2, Row 1 has sub-rows 1.1, 1.2, 1.3, etc.

Table H.2 – Example of subindex

Index	Information for row	Information for sub-row
1		–
1.1	–	
1.2	–	
1.3	–	
2		–

H.3 Extending tables

There is a problem when the width of the information in a table will not fit on a sheet of paper. For example, suppose Table H.3 does not fit on a sheet of paper.

Table H.3 – Example of wide table

Index	Column 1	Column 2	Column 3	...	Column 9
1.1				...	
1.2				...	

One solution is to print the table using landscape mode instead of portrait mode. Another solution is to split the table into two or more blocks of columns, each of which will fit on a page.The index numbers of the rows of the first block of columns have index numbers identical to the index numbers of the same rows in the continuation tables. Immediately following the end of the first portion of the table that spans multiple pages, add the text “continued on next page”.

NOTE – The title of an extended table that spans multiple pages is “Table X (*continued*) – title”, and the title of the last portion of the table is “Table X (*concluded*) – title”.

An example of Table H.3 as an extented table is seen in Table H.4:

Table H.4 – Example of extended table

Index	Column 1	Column 2	Column 3
1.1			
1.2			

continued on next page

-- <page break> --

Table H.4 *(continued)* – Example of extended table

Index	Column 4	Column 5	Column 6
1.1			
1.2			

-- <page break> --

Table H.4 *(concluded)* – Example of extended table

Index	Column 7	Column 8	Column 9
1.1			
1.2			

Comments may be added in the up front material to give instructions on how to reconstitute the table. For example, the following is suggested to insert in the up front material:

x.x Table format

Some of the tables have been split because the information is too wide to fit on the page. Where this occurs, the index number of the first block of columns are the index numbers of the corresponding rows of the remaining blocks of columns. A complete table reconstructed from the constituent parts should have the following layout:

Index	First block of columns	Second block of columns	Etc.

In the document, the constituent parts of the table will appear consecutively starting with the first block of columns.

If a table is too long to fit on a page, the table is continued on the following page(s). The index numbers continue to increase. The labels for the last part of the table is "Table X (*concluded*) – title", while the parts of the table in between the first and last parts is "Table X (*continued*) – title".

If a table is too long and too wide, the first block of columns is completed in length before the second block of columns begins, and so on. A table which is too long and too wide appears in the document with the following order of its constituent parts:

a) first block of columns, rows 1 - n
b) first block of columns, rows (n+1) - last row
c) second block of columns, rows 1 - n
d) second block of columns, rows (n+1) - last row

The table is reconstructed from the constituent parts as follows:

a) first block of columns, rows 1 - n	c) second block of columns, rows 1 - n
b) first block of columns, rows (n+1) - last row	d) second block of columns, rows (n+1) - last row

Alternatively, if a table with sub-rows is too wide to fit on a page, it may be reduced in width by partitioning the information to be filled in the columns. That is, information for rows appears in the same column as the information for sub-rows and the index indicates whether the information is row or sub-row information. For example, the above table may be reduced in width by the following format:

Index	Info for row / Info for sub-row
1	
1.1	
1.2	
1.3	
2	

H.4 Condition statements

Conditions in the tables are referred to by conditional notation (cn), such as c1, c2, etc., where “n” is a unique integer and the condition label is followed by a colon “:”. The conditional must be followed by a predicate (IF THEN ELSE clause). For example:

c1: IF predicate THEN m ELSE –

In this case, if the predicate is true, what follows the “THEN” (in this case “m”) is the status; and if the predicate is false, what follows the “ELSE” (in this case “–”) is the status.

A predicate shall be one of the following:

a) an explicit reference to a support answer (in the Support column); if the entry is "Y" then the predicate is True, otherwise it is False;

b) a Boolean expression involving other predicates, e.g. p1 AND NOT p2.

Conditionals may be placed in the up front matter of the MOCS proforma if used throughout. For this case, the following is suggested:

x.x Symbols, abbreviations and terms

The following requirements are commonly used throughout the MOCS proforma:

c1: IF A/10a THEN m ELSE –

c2: IF B/3 THEN m ELSE –

If the conditionals are used for only one table, they are placed after the end of the table. For example:

Table H.5 – Example of conditions

Index	Status	Support
1	c1	
2	c2	
c1: IF D/10a THEN m ELSE – c2: IF B/3 THEN m ELSE –		

NOTE 1 – For the status column, “c”, “m”, “o” and “x” are prefixed by a “c:” when nested under a conditional or optional item of the same table. For example:

Table H.6 – Example of nested conditions

Index	Status
1	o
1.1	c:m
1.2	c:o
1.2.1	c:o

NOTE 2 – For the status column, “o” may be suffixed by “.n” (where “n” is a unique number) for mutually exclusive or selectable options among a set of status values. The requirement for this numbered set shall be explicitly stated, preferably in a footnote to the relevant table. For example, Table H.7 depicts a set of related options:

Table H.7 – Example of group of related options

Index	Status
1	o.5
2	o.5
3	o.5
4	o.5
o.5 Support of at least one of these options is required	

In the predicate, the explicit reference to a support answer (in the Support column) is specified using the following sequence:

a) a reference to the table containing the relevant item, e.g. C;

b) a solidus character, " ";

c) the index or subindex of the row in which the response appears;

d) if, and only if, more than one response support answer occurs in the row identified by the reference number, then each possible support answer is implicitly labelled a, b, c, etc., from left to right, and this letter is appended to the sequence.

For example, the referenced support answer "A/10c" references an individual support answer that corresponds to the index 10 in Table A in the tenth row in the third support answer column of that row.

H.5 No such characteristics in the managed object class definition

If a managed object class definition contains no such characteristics, the proforma specifier shall state so rather than omitting the section. This averts possible confusion arising from characteristic support tables which are not in the document.

For example, if a managed object class supports no attribute groups, the following should be placed instead of the Attribute group support table:

X.4 Attribute group support

There are no attribute groups specified for this managed object class.

H.6 Abbreviations for object identifiers

Object identifiers may be abbreviated in the proforma tables. These abbreviations should be specified within the MCS proforma if used in more than one proforma (i.e. MCS, MOCS, MIDS) or within the proforma where it is used if only used in one proforma. The abbreviations should be specified in a separate clause before it is used. The following is an example of how an object identifier for attributes could be abbreviated:

dmi-att joint-iso-ccitt ms(9) smi(3) part2(2) attribute(7)

When used in the table, the object identifier for an attribute that has the value 22 could be specified as "dmi-att 22".

Additional instructions for abbreviations and terms also may be specified within the MCS proforma if used in more than one proforma (i.e. MCS, MOCS, MIDS) or within the proforma where it is used if only used in one proforma.

H.7 Parameter tables

One or more parameter support tables could be included in a MOCS proforma. The status of the parameters should always be conditional, with the condition being if the associated management characteristic(s) is supported. The associated management characteristic could be referenced using an index number. If there are more than one associated management characteristics, then the conditions for all the associated management characteristics are combined by the logical "or" operation to determine the effective condition for the parameter. For example, a condition for support of a specific error parameter associated with two actions (X/1.1 and X/1.2) could be:

c11: IF (X/1.1 or X/1.2) THEN m ELSE –

H.8 Action and notification field name labels

The action field name labels are the labels in the ASN.1 syntax of the action information and reply information of the action. The notification field name labels are the labels in the ASN.1 syntax of the event information and reply information of the notification. These labels are commonly used in the service mapping tables however, in some cases there may not be labels in the syntax which can be used. In these cases, in order to avoid ambiguity, it will be necessary for the proforma specifier to assign labels. Following are some suggestions for assigning labels:

a) Use "field.n" where "n" is an increasing index number; for example, field.1, field.2, field.2.1 (if field.2 is degenerated), etc.

b) Use "TypeReference.n" where TypeReference is the type reference of the information syntax or reply syntax and "n" is an increasing index number; for example, for an action information syntax called ActivateReply, the field names could be ActivateReply.1, ActivateReply.2, ActivateReply.2.1 (if ActivateReply.2 is degenerated), etc.

c) Use the syntax of the fields, for example: OperationalState, INTEGER, OtherInfo where OperationalState and OtherInfo are type references.

NOTE: It is recommended that managed object definers assign labels in the ASN.1 syntax for action/notification information and reply.

H.9 Guidelines for package support tables

Table H.8 could be included in a MOCS proforma when the status values for certain characteristics of the managed object class can be simplified by making the status value conditional on the support indicated for the conditional packages:

Table H.8 – Package support table

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information

The proforma specification shall have filled in Columns 1 (Index), 2 (Package template label), 3 (Value of object identifier for package) and, if applicable, 4 (Constraints and values). The supplier of the implementation shall state whether or not the packages in a managed object class definition are supported and shall indicate support for each package supported by filling in Columns 6 (Support) and, if applicable, 7 (Additional information).

Annex I

Example of MCS proforma

(This annex does not form an integral part of this Recommendation | International Standard)

I.1 Introduction

The purpose of this annex is to provide an example of a MCS proforma as completed by a proforma specifier, which is to be in by a supplier of an implementation. The corresponding example of a MOCS proforma of the example managed object class definition, called exampleObjectClass, is found in Annex H.

I.1.1 Purpose and structure

The management conformance summary (MCS) is a statement by a supplier that identifies an implementation and provides information on whether the implementation claims conformance to any of the listed set of documents that specify conformance requirements to OSI management.

The MCS proforma is a document, in the form of a questionnaire that when completed by the supplier of an implementation becomes the MCS.

I.1.2 Instructions for completing the MCS proforma to produce an MCS[12)]

The supplier of the implementation shall enter an explicit statement in each of the boxes provided. Specific instruction is provided in the text which precedes each table.

I.2 Identification of the implementation

I.2.1 Date of statement

The supplier of the implementation shall enter the date of this statement in the box below. Use the format DD-MM-YYYY.

Date of statement

I.2.2 Identification of the implementation

The supplier of the implementation shall enter information necessary to uniquely identify the implementation and the system(s) in which it may reside, in the box below.

12) Instructions for MCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6

I.2.3 Contact

The supplier of the implementation shall provide information on whom to contact if there are any queries concerning the content of the MCS, in the box below.

I.3 Identification of the document in which the management information is defined

The supplier of the implementation shall enter the title, reference number and date of the publication of the document which specifies the management information to which conformance is claimed, in the box below.

Document to which conformance is claimed

I.3.1 Technical corrigenda implemented

The supplier of the implementation shall enter the reference numbers of implemented technical corrigenda which modify the specification in the identified document, in the box below.

I.3.2 Amendments implemented

The supplier of the implementation shall state the titles and reference numbers of implemented addenda to the identified document, in the box below.

I.4 Management conformance summary

The supplier of the implementation shall provide information on whether the implementation claims conformance to any of the set of documents globally representing the implementation under claim. For each document the supplier of the implementation claims conformance to, the corresponding conformance statement(s) shall be filled in, or referenced by, the MCS. Columns 7 (Support), 8 (Table numbers of PICS/MOCS/MRCS) and 9 (Additional information) are to be filled in by the supplier of the implementation.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the status value column:

- m mandatory;
- o optional;
- c conditional;
- x prohibited;
- – not applicable or out of scope.

NOTES

1 The notations “c”, “m”, “o” and “x” are prefixed by a “c:” when nested under a conditional or optional item of the same table.

2 The notation “o” may be suffixed by “.n” (where “n” is a unique number) for mutually exclusive or selectable options among a set of status values. The requirement for this numbered set shall be explicitly stated, preferably in a footnote to the relevant table.

The following common notations, defined in CCITT Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the support answer column:

Y implemented;

N not implemented;

– no answer required;

Ig the item is ignored (i.e. processed syntactically but not semantically).

Table I.1 – PICS support summary

Index	Identification of the document that includes the PICS proforma	Table numbers of PICS proforma	Description	Constraints and values	Status	Support	Table numbers of PICS	Additional information

Table I.2 – MOCS support summary

Index	Identification of the document that includes the MOCS proforma	Table numbers of MOCS proforma	Description	Constraints and values	Status	Support	Table numbers of MOCS	Additional information
1	CCITT Rec. X.722 | ISO/IEC 10165-4 : 1992	J.1 - J.7	example ObjectClass		o			

Table I.3 – MRCS support summary

Index	Identification of the document that includes the MRCS proforma	Table numbers of MRCS proforma	Description	Constraints and values	Status	Support	Table numbers of MRCS	Additional information

Annex J

Example of MOCS proforma

(This annex does not form an integral part of this Recommendation | International Standard)

J.1 Introduction

The purpose of this annex is to provide an example of a MOCS proforma as completed by a proforma specifier, which is to be filled in by a supplier of an implementation. The example managed object class definition, called exampleObjectClass, is found in Annex A of CCITT Rec. X.722 | ISO/IEC 10165-4.

The purpose of this MOCS proforma is to provide a mechanism for a supplier of an implementation which claims conformance to a managed object class to provide conformance information in a standard form.

J.2 Instructions for completing the MOCS proforma to produce a MOCS[13)]

The supplier of the implementation shall state which items are supported in Tables J.1 to J.7 and if necessary provide additional information.

J.3 Statement of conformance to the managed object class

See Table J.1.

Table J.1– Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	exampleObjectClass	{joint-iso-ccitt ms(9) smi(3) part4(4) managedObjectClass(3) exampleclass(0)}		

If the answer to the actual class question in the managed object class support table is no, the supplier of the implementation shall fill in the actual class support Table J.2.

Table J.2 – Actual class support

Index	Managed object class template label for actual class	Value of object identifier for managed object class definition of actual class	Additional information

13) Instructions for MOCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6

J.4 Attributes

See Table J.3.

Table J.3 – Attribute support

				Set by create		Get		Replace	
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support
1	objectClass	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(7) 65}		–		m		–	
2	nameBinding	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(7) 63}		o		m		–	
3	packages	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(7) 66}		o		m		–	
4	allomorphs	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(7) 50}		–		c1		–	
5	objectName	{joint-iso-ccitt ms(9) smi(3) part4(4) attribute(7) objectname(0)}		–		m		–	
6	qOS-Error-Cause	{joint-iso-ccitt ms(9) smi(3) part4(4) attribute(7) qoscause(1)}		–		m		–	
7	qOS-Error-Counter	{joint-iso-ccitt ms(9) smi(3) part4(4) attribute(7) qoscount(2)}		–		m		–	

Table J.3 *(concluded)* – Attribute support

	Add		Remove		Set to default		
Index	Status	Support	Status	Support	Status	Support	Additional information
1	–		–		–		
2	–		–		–		
3	–		–		–		
4	–		–		–		
5	–		–		–		
6	–		–		–		
7	–		–		–		
c1: IF (NOT J.1/1b) THEN m ELSE –							

J.5 Attribute Groups

See Table J.4.

Table J.4 – Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	qOS-Group	{joint-iso-ccitt ms(9) smi(3) part4(4) attributeGroup(8) qosgroup(0)}		m		x		

J.6 Actions

See Table J.5.

Table J.5 – Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	qOSResetAction	{joint-iso-ccitt ms(9) smi(3) part4(4) action(9) reset(0)}		o		

Table J.5 *(concluded)* – Action support

Index	Subindex	Action field name label	Constraints and values	Status	Support	Additional information
1	1.1	–		–		

J.7 Notifications

See Table J.6.

Table J.6 – Notification support

					Support		
Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Confirmed	Non-confirmed	Additional information
1	protocolError	{joint-iso-ccitt ms(9) smi(3) part4(4) notification(10) protoerror(1)}		m			
2	communicationError	{joint-iso-ccitt ms(9) smi(3) part4(4) notification(10) commerror(0)}		o			

Table J.6 *(continued)* – Notification support

Index	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	1.1	ProtocolError	–		m		
2	2.1	ProbableCause	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 18}		o		
	2.1.1	globalValue	–		c:o.1		
	2.1.1	localValue	–		c:o.1		
	2.2	PerceivedSeverity	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 17}		o		
	2.3	TrendIndication	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 30}		o		
	2.4	BackedUpStatus	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 11}		o		
	2.5	ProposedRepair Actions	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 19}		o		
	2.6	ThresholdInfo	{joint-iso-ccitt ms(9) smi(3) part2(2) attribute(2) 29}		o		
	2.6.1	triggeredThreshold	–		c:m		
	2.6.2	observedValue	–		c:m		
	2.6.2.1	integer	–		c:o.2		
	2.6.2.2	real	–		c:o.2		
	2.6.3	thresholdLevel	–		c:o		
	2.6.3.1	up	–		c:o.3		
	2.6.3.1.1	high	–		c:m		

Table J.6 *(concluded)* – Notification support

Index	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
	2.6.3.1.1.1	integer	–		c:o.4		
	2.6.3.1.1.2	real	–		c:o.4		
	2.6.3.1.2	low	–		c:o		
	2.6.3.1.2.1	integer	–		c:o.5		
	2.6.3.1.2.1	real	–		c:o.5		
	2.6.3.2	down	–		c:o.3		
	2.6.3.2.1	high	–		c:m		
	2.6.3.2.1.1	integer	–		c:o.6		
	2.6.3.2.1.2	real	–		c:o.6		
	2.6.3.2.2	low	–		c:m		
	2.6.3.2.2	integer	–		c:o.7		
	2.6.3.2.2	real	–		c:o.7		
	2.6.4	armTime	–		c:o		
	2.7	OtherInfo	–		o		
	2.8	ErrorResult	–		m		

NOTE – Within the above table, the "o.n" notation, e.g. "o.1", means that support of at least one of the option is required.

J.8 Parameters

See Table J.7.

Table J.7 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	pDUHeader	{joint-iso-ccitt ms(9) smi(3) part4(4) parameter(5) pduheaderparam(0)}		m		

Annex K

Example of MRCS proforma for name binding

(This annex does not form an integral part of this Recommendation | International Standard)

K.1 Introduction

The purpose of this annex is to provide an example of a MRCS proforma for name binding which is to be filled in by a supplier of an implementation. The example name binding definition, called exampleNameBinding, is found in Annex A of CCITT Rec. X.722 | ISO/IEC 10165-4.

K.2 Instructions for completing the MRCS proforma for name binding to produce a MRCS[14)])

The supplier of the implementation shall state which items are supported in table K.1 and if necessary provide additional information.

K.3 Statement of conformance to the name binding

Table K.1 – Name binding support

Index	Name binding template label	Value of object identifier for name binding	Constraints and values	Status	Support	Additional information
1	exampleNameBinding	{joint-iso-ccitt ms(9) smi(3) part4(4) nameBinding(6) examplenb(0)}		o		

14) Instructions for MRCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6

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