

INTERNATIONAL
STANDARD

ISO/IEC
14608-1

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**Information technology — Open Systems
Interconnection — The Directory: Directory
Access Protocol — Protocol
Implementation Conformance Statement
(PICS) proforma**

*Technologies de l'information — Interconnexion de systèmes ouverts
(OSI) — L'annuaire: Protocole d'accès à l'annuaire — Formulaire de
déclaration de conformité d'une instance de protocole (PICS)*



Reference number
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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.

International Standard ISO/IEC 14608-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 21, *Open systems interconnection, data management and open distributed processing*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.581.

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ISO/IEC 14608 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — The Directory*:

- *Part 1: Directory Access Protocol — Protocol Implementation Conformance Statement (PICS) proforma*
- *Part 2: Directory System Protocol — Protocol Implementation Conformance Statement (PICS) proforma*

Annex A forms an integral part of this part of ISO/IEC 14608.

Introduction

This Recommendation | International Standard, together with the others in the set, has been produced to facilitate the interconnection of information processing systems to provide directory services. The set of all such systems, together with the directory information which they hold, can be viewed as an integrated whole, called the **Directory**. The information held by the Directory, collectively known as the Directory Information Base (DIB), is typically used to facilitate communication between, with or about objects such as application entities, people, terminals and distribution lists.

The Directory plays a significant role in Open Systems Interconnection, whose aim is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of information processing systems:

- from different manufacturers;
- under different managements;
- of different levels of complexity; and
- of different technologies.

To evaluate the conformance of a particular implementation, it is necessary to have a description of the capabilities and options which have been implemented. Such a description is called a Protocol Implementation Conformance Statement (PICS).

This Recommendation | International Standard includes the PICS proforma for the Directory Access Protocol (DAP) as defined in the 1988 CCITT Rec. X.500-Series | ISO/IEC 9594:1990.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION –
THE DIRECTORY: DIRECTORY ACCESS PROTOCOL – PROTOCOL
IMPLEMENTATION CONFORMANCE STATEMENT (PICS) PROFORMA**

1 Scope

This Recommendation | International Standard provides the Protocol Implementation Conformance Statement (PICS) proforma for the Directory Access Protocol (DAP) specified in the 1988 CCITT Rec. X.500-Series | ISO/IEC 9594:1990. This PICS proforma is in compliance with the relevant requirements, and in accordance with the relevant guidance given in ITU-T Rec. X.296 | ISO/IEC 9646-7. Detail of the use of this proforma is provided in this Recommendation | International Standard.

The supplier of an implementation which is claimed to conform to CCITT Rec. X.500-Series | ISO/IEC 9594 is required to complete a copy of the PICS proforma provided in Annex A, and is required to provide the information necessary to identify both the supplier and the implementation.

This PICS proforma applies to either a Directory User Agent (DUA) or a Directory System Agent (DSA), but not both.

2 Normative references

The following Recommendations | 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 Standards are subject to revision, and the parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*.
- ITU-T Recommendation X.247 (1994) | ISO/IEC 8650-2:1995, *Information technology – Open Systems Interconnection – Protocol specification for the Association Control Service Element: Protocol Implementation Conformance Statement (PICS) proforma*.
- ITU-T Recommendation X.249¹⁾ | ISO/IEC 9072-4 ...¹⁾, *Information technology – Open Systems Interconnection – Remote Operations: Protocol Implementation Conformance Statement (PICS) proforma*.

2.2 Paired Recommendations | International Standards equivalent in technical content

- ITU-T Recommendation X.290 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts*.
ISO/IEC 9646-1:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts*.
- ITU-T Recommendation X.296 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Implementation conformance statements*.

¹⁾ To be published.

- ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements.*
- CCITT Recommendation X.500 (1988), *The Directory – Overview of concepts, models and services.*
 - ISO/IEC 9594-1:1990, *Information technology – Open Systems Interconnection – The Directory – Part 1: Overview of concepts, models and services.*
 - CCITT Recommendation X.501 (1988), *The Directory – Models.*
 - ISO/IEC 9594-2:1990, *Information technology – Open Systems Interconnection – The Directory – Part 2: Models.*
 - CCITT Recommendation X.509 (1988), *The Directory – Authentication framework.*
 - ISO/IEC 9594-8:1990, *Information technology – Open Systems Interconnection – The Directory – Part 8: Authentication framework.*
 - CCITT Recommendation X.511 (1988), *The Directory – Abstract service definition.*
 - ISO/IEC 9594-3:1990, *Information technology – Open Systems Interconnection – The Directory – Part 3: Abstract service definition.*
 - CCITT Recommendation X.518 (1988), *The Directory – Procedures for distributed operation.*
 - ISO/IEC 9594-4:1990, *Information technology – Open Systems Interconnection – The Directory – Part 4: Procedures for distributed operation.*
 - CCITT Recommendation X.519 (1988), *The Directory – Protocol specifications.*
 - ISO/IEC 9594-5:1990, *Information technology – Open Systems Interconnection – The Directory – Part 5: Protocol specifications.*
 - CCITT Recommendation X.520 (1988), *The Directory – Selected attribute types.*
 - ISO/IEC 9594-6:1990, *Information technology – Open Systems Interconnection – The Directory – Part 6: Selected attribute types.*
 - CCITT Recommendation X.521 (1988), *The Directory – Selected object classes.*
 - ISO/IEC 9594-7:1990, *Information technology – Open Systems Interconnection – The Directory – Part 7: Selected object classes.*

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3 Definitions

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

The following terms defined in ITU-T Rec. X.290 | ISO/IEC 9646-1:

- a) Implementation conformance statement;
- b) Implementation conformance statement proforma;
- c) Protocol Implementation Conformation Statement (PICS); and
- d) PICS proforma.

Additional terms:

- a) *Centralized DSA*: A DSA that has no knowledge of other DSAs.
- b) *Standalone DSA*: A DSA that cannot use the Directory System Protocol, but has knowledge of other DSAs. Such DSAs use the referral procedure only.
- c) *Cooperating DSA*: A DSA that has the capability of using the Directory System Protocol.

4 Abbreviations

For the purposes of this Recommendation | International Standard, the following abbreviations apply:

DAP	Directory Access Protocol
DSA	Directory System Agent
DUA	Directory User Agent
ICS	Implementation Conformance Statement
PICS	Protocol Implementation Conformance Statement

5 Conformance

A conforming PICS proforma shall be technically equivalent to the ITU-T | ISO/IEC published PICS proforma and shall preserve the numbering and ordering of the items in the ITU-T | ISO/IEC PICS proforma.

A PICS which conforms to this Recommendation | International Standard shall:

- a) describe an implementation which conforms to CCITT Rec. X.500-Series | ISO/IEC 9594;
- b) be a confirming PICS proforma, which has been completed in accordance with the instruction for completion given in A.2;
- c) include the information necessary to uniquely identify both the supplier and the implementation.

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Annex A

PICS proforma for the directory access protocol²⁾

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

A.1 Identification of PICS proforma corrigenda

The supplier of the PICS proforma shall identify any corrigenda (i.e. Technical Corrigenda or equivalent) to the published proforma that have been applied. Suppliers of the proforma should modify the proforma, or attach relevant additional pages in order to apply the corrigenda, and then record the application of the corrigenda in the table below.

Item	ITU-T Rec. X.581 (1995) ISO/IEC 14608-1:1996
1	Corr:
2	Corr:
3	Corr:
4	Implementors' Guide version:

A.2 Instructions**A.2.1 Purpose and structure of the proforma**

The purpose of this PICS proforma is to provide suppliers of implementations of CCITT Rec. X.500-Series | ISO/IEC 9594 with a consistent means of stating which capabilities have been implemented.

The proforma is in the form of a questionnaire and consists of a set of items. An item is provided for each capability for which an implementation choice is allowed. Items are also provided for major mandatory capabilities for which no implementation choice is allowed. Each item includes an item number, an item description, a status value specifying the support requirement, and room for a support answer to be provided by the supplier.

This subclause provides general information and instructions for completion of the proforma.

Subclause A.3 is for identification of the implementation.

Subclause A.4 contains the means of specifying, at a high level, the protocol and corrigenda that have been implemented.

Subclause A.5 contains the global statement of conformance.

Subclauses A.6 onwards contain tables in which the supplier specifies details of the implementation options chosen.

A.2.2 Symbols, terms and abbreviations**A.2.2.1 Introduction**

Notations have been introduced in order to reduce the size of tables in the PICS proforma. These have allowed the use of multi-column layout where the columns are headed 'Status', and 'Support'. The definition of each are given below.

Additionally, the following definitions apply.

A.2.2.1.1 (PICS) item: A row in a PICS proforma table.

A.2.2.1.2 (PICS) question: The question to be answered in the intersection of a PICS item and either a support column (i.e. "Is this item supported in the context applying to this table and column") or supported values column (i.e. "What values are supported for this item in the context applying to this table and column") in a PICS proforma table.

A.2.2.1.3 status (value): An allowed entry in the status column for an item in a PICS proforma table.

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

A.2.2.1.4 (support) answer: An allowed entry in the support or supported values columns for an item in a PICS, in answer to a PICS question.

A.2.2.2 Item numbering

Each line within the PICS proforma which requires implementation detail to be entered is given an item number in the first column. The item number column provides a means of uniquely referencing each possible answer within the PICS proforma. Such referencing is necessary for specifying conditional expressions, test suite parameters, and test suite selection expressions.

The means of referencing individual answers is to specify the following sequence:

- a) if, and only if, the reference is being made from another Specification, then start with an unambiguous identifier for the relevant ICS proforma specification, enclosed in parentheses – this identifier is stated in the PICS proforma specification and is updated whenever the PICS proforma is updated – it is recommended that this identifier be the relevant Specification number and year of publication, as is used in a Normative references clause, and this is the default for such identifiers;
- b) the number of the relevant table or, if the tables are not numbered, of the smallest subclause enclosing the relevant table;
- c) a solidus character, “/”;
- d) the item number of mnemonic reference to the item, to identify the row in which the answer appears;
- e) if, and only if, more than one question occurs in the row identified by the item number or mnemonic reference, then each possible answer is implicitly labelled a, b, c, etc., from left to right, and this letter is appended to the sequence, prefixed by a solidus character (“/”) if a mnemonic reference is used.

If mnemonic references are specified and each uniquely identify an item in the PICS proforma, then entries b) and c) in the above sequence may be omitted.

A.2.2.3 Status column

The ‘Status’ column indicates the level of support required for conformance to CCITT Rec. X.500-Series I ISO/IEC 9594. The values are as follows:

- ‘m’ The item is mandatory. The capability is required to be implemented.
- ‘o’ The item is optional. The capability may be implemented.
- ‘o.n’ The item is a mutually exclusive or selectable option among a set (where n is the number which identifies the group of optional items). The requirement for each numbered group is specified as part of the relevant tables.
- ‘c’ The item is conditional. The requirement on the capability depends on the selections of other optional or conditional items. The status (mandatory, optional, prohibited, or non-applicable) depends on the evaluation of a conditional expression which is specified as part of the relevant tables.
- ‘cn’ The item is conditional (where n is the number which identifies the condition which is applicable). The definitions for conditional statements are given as part of the relevant tables.
- ‘x’ The item is prohibited or excluded. There is a requirement not to use this capability in the given context.
- ‘n/a’ The item is not applicable. The capability is not applicable in the given context.

A.2.2.4 Support column

The ‘Support’ column shall be completed by the supplier or implementor to indicate the level of implementation of each capability. The proforma has been designed such that the only entries required in the ‘Support’ column are:

- ‘Y’ Yes, the capability is implemented in conformance with CCITT Rec. X.500-Series I ISO/IEC 9594.
- ‘N’ No, the capability is not implemented.
- ‘–’ No answer is required – it is unnecessary to answer the question with a yes or a no because the question has a status value of non-applicable.