INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 15126-2

First edition
1999-04-15

Information technology — International Standardized Profiles FDY1n — Directory data definitions —

Part 2:
FDY12 — Directory system schema

Technologies de l'information — Profils normalisés internationaux FDY1n — Définitions de données de l'Annuaire —

Partie 2: FDY12 — Schéma du système de l'Annuaire

Reference number
ISO/IEC ISP 15126-2:199(E)

Contents

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. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or a set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 15126-2 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 15126 consists of the following parts, under the general title *Information technology — International Standardized Profiles FDY1n — Directory data definitions*:

— *Part 1: FDY11 — Common directory use (normal)*

— *Part 2: FDY12 — Directory system schema*

Annexes A to C form a normative part of this part of ISO/IEC ISP 15126.

Introduction

The concept and structure of International Standardized Profiles for Information Systems are laid down in the Technical Report ISO/IEC TR 10000. The purpose of an International Standardized Profile is to recommend when and how certain information technology standards shall be used. This International Standardized Profile ISO/IEC ISP 15126-2 specifies application profile FDY12 as defined in the Technical Report ISO/IEC TR 10000-2.

ISO/IEC ISP 15126-2 is one of a set of International Standardized Profiles relating to the Directory (see TR 10000-2) for the '93 standards.

ISO/IEC ISP 15126-2 covers information to be stored within the Directory that is common to a variety of applications.

Directory information may be classified as either:

— user information, placed in the Directory by, or on behalf of, users or

— administrative and operational information, held and managed by the Directory to meet various administrative and operational requirements.

This part of ISO/IEC ISP 15126 is only concerned with the administrative and operational information; user information is profiled by ISO/IEC ISP 15126-1: Common directory use (normal).

This part of ISO/IEC ISP 15126 specifies requirements that are applicable to implementations of DUAs and DSAs. Additionally, these requirements may guide Directory users and administrative authorities in defining their needs for the use of the Directory.

The primary aim of this profile is to define the minimum capabilities that a DUA and a DSA shall have to support for allowing a basic common view of the Directory administrative and operational information. It does this by specifying a minimum set of object classes, attribute types, name forms, structure rules and matching rules to be supported.

This part of ISO/IEC ISP 15126 does not limit DSAs to these minimum capabilities - a DSA that complies with this part of ISO/IEC ISP 15126 and has no additional information handling (storage, retrieval and modification) capabilities may not be adequate for many purposes, and implementors are strongly encouraged to provide such additional capabilities.

This part of ISO/IEC ISP 15126 is harmonized among these three Workshops and it was finally ratified by the Workshops' plenary assemblies.

Information technology — International Standardized Profiles FDY1n — Directory data definitions —

Part 2:
FDY12 — Directory system schema

1 Scope

1.1 General

This part of ISO/IEC ISP 15126 profiles Directory System Schema information to be stored within the Directory. This is the information, common to a variety of applications, which the Directory itself needs to know in order to operate correctly. This information is specified in terms of subentries and operational attributes.

To support the implementation of the Directory as defined by IUT-T Rec. X.500-series | ISO/IEC 9594 edition 1993, this part of ISO/IEC ISP 15126 gives requirements that are applicable to implementations of Directory System Agents (DSAs). Additionally, these requirements may guide Directory users and administrative authorities in use of the Directory.

The primary objective of this part of ISO/IEC ISP 15126 is to define the minimum capabilities that DUAs and DSAs shall support concerning the management and storing of operational and administrative information. It does this by specifying for a conformant DSA a minimum set of requirements concerning the specific tree structure for operational information and the operational content of the entries and subentries.

This part of ISO/IEC ISP 15126 does not limit DSAs to these minimum capabilities - a DSA that complies with this part of ISO/IEC ISP 15126 and has no additional information handling (storage, retrieval and modification) capabilities may not be adequate for many purposes, and implementors are strongly encouraged to provide such additional capabilities.

Therefore, contrary to ISO/IEC ISP 15126-1, this part of ISO/IEC ISP 15126 does not recommend Naming Authorities in any way not to restrict their selection of object classes or naming attributes for operational information to those which are required to be supported by this part of ISO/IEC ISP 15126. Rather, it guarantees that selections made within the scope of this part of ISO/IEC ISP 15126 will be within the capabilities of DSAs compliant with this International Standardized Profile.

Interworking between DSAs which comply with this part of ISO/IEC ISP 15126 will be greatly facilitated on this minimum basis.

Clause 6 deals with Name Forms and Structure Rules which may be used to constrain subentries belonging to a particular subtree. This is done by reference to and within the scope of ITU-T Rec. X.501 | ISO/IEC 9594-2. Subclause 7.1 deals with object classes for subentries. Subclauses 7.2 and 7.3 deal with operational attribute types, content rules for the directory system schema respectively.

The Directory Access Protocol (DAP) and the Directory System Protocol (DSP), as defined by ITU-T Rec. X.500 series | ISO/IEC 9594, can be used to access information stored in a Directory Information Base (DIB) fragment which is profiled by this part of ISO/IEC ISP 15126.

1.2 Position within the taxonomy

This part of ISO/IEC ISP 15126 is identified in ISO/IEC TR 10000-2 as ”FDY12 - Directory data definitions - Directory system schema”.

1.3 Scenario

A Directory user (e.g., an application-process), by means of its associated Directory User Agent (DUA), which has special administrative capabilities, obtains Directory administrative and operational information by accessing directly or indirectly one or more DSAs of the Directory (see figure 1).

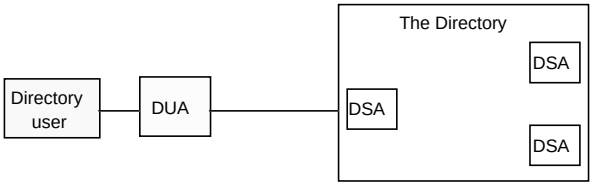

Figure 1 — Access to the Directory

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 15126. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 15126 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

Amendments and corrigenda to the base standards are referenced: see Annex B for a complete list of these documents which are used in this part of ISO/IEC ISP 15126.

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

ITU-T Rec. X.500 (1993) | ISO/IEC 9594-1:1995, *Information technology — Open Systems Interconnection — The Directory: Overview of concepts, models, and services.*

ITU-T Rec. X.501 (1993) | ISO/IEC 9594-2:1995, *Information technology — Open Systems Interconnection — The Directory: Models.*

ITU-T Rec. X.511 (1993) | ISO/IEC 9594-3:1995, *Information technology — Open Systems Interconnection — The Directory: Abstract service definition.*

ITU-T Rec. X.518 (1993) | ISO/IEC 9594-4:1995, *Information technology — Open Systems Interconnection — The Directory: Procedures for distributed operation.*

ITU-T Rec. X.519 (1993) | ISO/IEC 9594-5:1995, *Information technology — Open Systems Interconnection — The Directory: Protocol specifications.*

ITU-T Rec. X.520 (1993) | ISO/IEC 9594-6:1995, *Information technology — Open Systems Interconnection — The Directory: Selected attribute types.*

ITU-T Rec. X.521 (1993) | ISO/IEC 9594-7:1995, *Information technology — Open Systems Interconnection — The Directory: Selected object classes.*

ITU-T Rec. X.509 (1993) | ISO/IEC 9594-8:1995, *Information technology — Open Systems Interconnection — The Directory: Authentication framework.*

ITU-T Rec. X.525 (1993) | ISO/IEC 9594-9:1995, *Information technology — Open Systems Interconnection — The Directory: Replication.*

ITU-T Rec. X.680 (1994) | ISO/IEC 8824-1:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

ITU-T Rec. X.681 (1994) | ISO/IEC 8824-2:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Information object specification.*

ITU-T Rec. X.682 (1994) | ISO/IEC 8824-3:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Constraint specification.*

ITU-T Rec. X.683 (1994) | ISO/IEC 8824-4:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications.*

ITU-T Rec. X.690 (1994) | ISO/IEC 8825-1:1995, *Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*

ITU-T Rec. X.880 (1994) | ISO/IEC 13712-1:1995, *Information technology — Remote Operations: Concepts, model and notation.*

ITU-T Rec. X.881 (1994) | ISO/IEC 13712-2:1995, *Information technology — Remote Operations: OSI realizations — Remote Operations Service Element (ROSE) service definition.*

ITU-T Rec. X.882 (1994) | ISO/IEC 13712-3:1995, *Information technology — Remote Operations: OSI realizations – Remote Operations Service Element (ROSE) protocol specification.*

2.2 Normative Amendments and Technical Corrigenda

In accordance with TR10000-1 subclause 6.3.2 c), attention is drawn to normative Amendments and Technical Corrigenda affecting the Directory Standards documents IEC 9594:1994 and the ITU-T X.500:1993 recommendations.

It should be noted that references made to these standards are almost always invalid if taken as references to the '88 standards.

Annex B defines the references to the agreed amendments and corrigenda. Compliance with these amendments and corrigenda is necessary to achieve the interoperability requirements for this part of ISO/IEC ISP 15126.

The following subset of these have been identified as particularly relevant to this part of ISO/IEC ISP 15126:

Technical Corrigendum 1 to Recommendation X.501 (1993) | ISO/IEC 9594-2:1995 (addressing DRs 9594/088, 089, 090, 091, 102, 125)

Technical Corrigendum 2 to Recommendation X.501 (1993) | ISO/IEC 9594-2:1995 (addressing DRs 9594/134, 136)

Technical Corrigendum 1 to Recommendation X.511 (1993) | ISO/IEC 9594-3:1995 (addressing DR 9594/085)

Technical Corrigendum 2 to Recommendation X.511 (1993) | ISO/IEC 9594-3:1995 (addressing Defect Reports 9594/119, 133)

Technical Corrigendum 1 to Recommendation X.518 (1993) | ISO/IEC 9594-4:1995 (addressing DRs 9594/094, 106, 108, 109, 111, 112, 113, 114, 115)

Technical Corrigendum 2 to Recommendation X.518 (1993) | ISO/IEC 9594-4:1995 (addressing DRs 9594/116, 117, 118, 119, 120, 121, 130)

Technical Corrigendum 1 to Recommendation X.519 (1993) | ISO/IEC 9594-5:1995 (addressing DRs 9594/075, 124)

Technical Corrigendum 1 to Recommendation X.520 (1993) | ISO/IEC 9594-6:1995 (addressing DRs 9594/076, 122, 127)

Technical Corrigendum 1 to Recommendation X.509 (1993) | ISO/IEC 9594-8:1995 (addressing DR 9594/128)

Technical Corrigendum 2 to Recommendation X.509 (1993) | ISO/IEC 9594-8:1995 (addressing DRs 9594/077, 078, 083, 084)

Technical Corrigendum 3 to Recommendation X.509 (1993) | ISO/IEC 9594-8:1995 (addressing DRs 9594/080, 092, 100)

Technical Corrigendum 1 to Recommendation X.525 (1993) | ISO/IEC 9594-9:1995 (addressing DRs 9594/097, 099, 123)

Technical Corrigendum 2 to Recommendation X.525 (1993) | ISO/IEC 9594-9:1995 (addressing DR 9594/132)

2.3 Additional normative references

ISO/IEC TR 10000-1:1998, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework.*

ISO/IEC TR 10000-2:1998, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Principles and Taxonomy for OSI Profiles.*

ISO/IEC 13248-1:1998, *Information technology — Open Systems Interconnection — The Directory: Protocol Implementation Conformance Statement (PICS) proforma for the Directory Access Protocol.*

ISO/IEC 13248-2:1998, *Information technology — Open Systems Interconnection — The Directory: Protocol Implementation Conformance Statement (PICS) proforma for the Directory System Protocol.*

3 Definitions

3.1 General

Many of the definitions used may be found in the Standards. Since not all of the definitions are to be found in the Definitions clauses within the standards documents, references are listed in Table 1 below. The column "Part" refers to the part number within ISO/IEC 9594 or its ITU-T equivalent (see also clause 2). The column „Reference“ refers to the clause within this part of ISO/IEC ISP 15126.

Table 1 — Definitions and references

Term	Part	Reference
administrative area	2	10.1
autonomous administrative area	2	10.1
specific administrative area 2	10.1	
inner administrative area	2	10.1
administrative point	2	10.1
administrative entry	2	10.5.5
user attribute	2	8
operational attribute	2	8
collective attribute	2	8,11.2
subentry	2	11.6
directory system schema	2	13
DSA information model	4	19
DSA-shared attribute	2	19.1
DSA-specific attribute	2	19.1
DSE (DSA specific entry)	2	19.1

3.2 Support Level

To specify the support level of protocol features for this part of ISO/IEC ISP 15126, the following terminology is defined.

3.2.1 Mandatory: "m": Mandatory requirement for support

The support of the feature is mandatory for all implementations claiming compliance with this part of ISO/IEC ISP 15126.

3.2.2 Optional: "o": Optional requirement for support

The support of the feature is left to the implementor of the DSA.

3.2.3 Conditional: "c": Conditional requirement for support

The requirement to support the item depends on a specified condition. The condition and the resulting support requirements are stated separately.

3.2.4 Outside the scope: "i"

Support for the item is outside the scope of this part of ISO/IEC ISP 15126.

3.2.5 not applicable: "-"

The item is not defined in the context where it is mentioned. There is no support requirement. The occurrence of "not applicable" is mainly due to the format of the tables in the ISPICS Requirements List.

4 Abbreviations

Following abbreviations are used as defined in ITU-T Rec. X.500 series | ISO/IEC 9594 or in ISO/IEC TR 10000-1:

AA	Administrative Area
AAA	Autonomous Administrative Area
IAA	Inner Administrative Area
SAA	Specific Administrative Area
AAP	Autonomous Administrative Point
AVA	Attribute Value Assertion
DAP	Directory Access Protocol
DIB	Directory Information Base
DIT	Directory Information Tree
DMD	Directory Management Domain
DMO	Directory Management Organization
DSA	Directory System Agent
DSP	Directory System Protocol
DUA	Directory User Agent
ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
PRL	Profile Requirements List
RDN	Relative Distinguished Name

5 Conformance

Conformance to this part of ISO/IEC ISP 15126 concerns the type of operational and administrative information which DSAs shall support.

Call for support of a certain type of information (e.g. object classes, attribute types) means that the conforming DSA shall be able to handle the information as described by this part of ISO/IEC ISP 15126.

This ability of a DSA shall be capable of being tested by setting up suitable test suites. The conformance statements of this part of ISO/IEC ISP 15126 lay down the range of information for suitable DSA test suites.

In practice, the behaviour of an actual DSA may depend on multiple conditions, like access control, or schema or other restrictions applied for administrative reasons. Therefore test suites, even if applicable in principle, cannot be performed successfully in all situations. A DSA is conformant according to this part of ISO/IEC ISP 15126 if the DSA, after suitable set-up, is able to successfully carry out test suites within the range of information defined in this part of ISO/IEC ISP 15126.

Note: Suitable set-up is implied within this part of ISO/IEC ISP 15126.

5.1 DSA Conformance

DSA conformance requirements involve

a) the support of the specific DIT structure for operational information as specified in clause 6.

b) the support of object classes as specified in 7.1;

c) the support of operational attribute types as specified in 7.2;

d) the support of the specific content rules for operational information as specified in 7.3.

In addition, a PICS shall be provided stating support or non-support of each option on object classes and attribute types identified in A.6.4, and on name forms and matching rules identified in A.6.5.

The support of the Directory Administrative model is out of scope of this part of ISO/IEC ISP 15126.

The way the DSA information model is implemented, meaning how the DSA stores, accesses and retries DSA information, is out of scope of this part of ISO/IEC ISP 15126.

5.2 DUA conformance

DUA capabilities are necessarily tied to user needs, which may vary. DUAs handling with the Directory System Schema will require special administrative capabilities. Several features can be defined, to which such a DUA may claim conformance:

- A DUA claiming support of an object class shall do it by