

INTERNATIONAL STANDARDIZED PROFILE

**ISO/IEC
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Information technology — International Standardized Profiles ADYnn — OSI Directory —

Part 4: ADY22 — DSA support of Distributed Operations

*Technologies de l'information — Profils normalisés internationaux
ADYnn — Annuaire OSI —*

Partie 4: ADY22 — Support DSA d'opérations distribuées



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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. 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 15125-4 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 15125 consists of the following parts, under the general title *Information technology — International Standardized Profiles ADYnn — OSI Directory*:

- Part 1–ADY11: DUA support of Directory Access Protocol
- Part 2–ADY12: DUA support of Distributed Operations
- Part 3–ADY21: DSA support of Directory Access
- Part 4–ADY22: DSA support of Distributed Operations
- Part 5–ADY41: DUA Authentication as DAP initiator
- Part 6–ADY42: DSA Authentication as DAP responder
- Part 7–ADY43: DSA to DSA Authentication
- Part 8–ADY44: DSA Simple Access Control
- Part 9–ADY45: DSA Basic Access Control
- Part 10–ADY51: Shadowing using ROSE
- Part 11–ADY52: Shadowing using RTSE
- Part 12–ADY53: Shadowing subset
- Part 13–ADY61: Administrative areas
- Part 14–ADY62: Establishment and utilisation of shadowing agreements
- Part 15–ADY63: Schema administration and publication
- Part 16–ADY71: Shadowing Operational Binding
- Part 17–ADY72: Hierarchical Operational Binding
- Part 18–ADY73: Non-specific Hierarchical Operational Binding

Annexes A and B form an integral part of this part of ISO/IEC ISP 15125. Annex C is for information only.

Introduction

The concept and structure of International Standardized Profiles for Information Systems are laid down in 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 part of ISO/IEC ISP 15125 specifies application profile ADY22 as defined in the Technical Report ISO/IEC TR 10000-2.

This part of ISO/IEC ISP 15125 is one of a set of International Standardized Profiles relating to the Directory (see TR 10000-2) for the '93 standards.

This part of ISO/IEC ISP 15125 profiles the behaviour of a DSA regarding the operation of the Directory System Protocol (DSP) when communicating with another DSA, and it defines the co-ordination of a DSA communication across several associations to perform a particular distributed operation.

ISO/IEC ISP 15125 is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The concept of Functional Standardization is one part of the overall field of Information technology (IT) standardization activities, covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a basis for the development of uniform, internationally recognized system tests.

One of the most important roles for an ISP is to serve as the basis for the development (by organizations other than ISO and IEC) of internationally recognized tests and test methods. ISPs are produced not simply to "legitimise" a particular choice of base standards and options, but to promote real system interoperability. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realisation of this goal.

The text of this part of ISO/IEC ISP 15125 was developed in close co-operation among the Directory Expert Groups of the three International OSI Workshops:

- OSE Implementors Workshop (OIW)
- The European Workshop for Open Systems (EWOS) and
- The OSI Asia-Oceania Workshop (AOW).

This part of ISO/IEC ISP 15125 is harmonised among these three Workshops and it was finally ratified by the Workshops' plenary assemblies.

Information technology — International Standardized Profiles ADYnn — OSI Directory —

Part 4: ADY22 — DSA support of Distributed Operations

1 Scope

1.1 General

This part of ISO/IEC ISP 15125 profiles the behaviour of a DSA regarding the operation of the Directory System Protocol (DSP) when communicating with another DSA, as an invoker, as a performer, or both. It also profiles the coordination of a DSA communication across several associations to perform a particular distributed operation. It also covers the behaviour of DSAs when acting in accordance with the rules of Distributed Operations (although, in this case, the interaction can be by means of returning referrals or continuation references to DUAs using the DAP protocol).

The objective of this part of ISO/IEC ISP 15125 is to define capabilities and constraints on support for DSP by DSAs so that DSAs will be able to interwork within the Directory.

It therefore profiles the following:

- DSAs as DSP invokers in terms of both protocol and functionality
- DSAs as DSP performers in terms of both protocol and functionality
- DSAs as users over (DAP or DSP) of Referrals and Continuation references
- DSAs as users of HOBS (Hierarchical Operational Bindings) and of Shadow Operational Bindings in so far as they affect distributed operations using DSP

Conformance to DOP (Directory Operational Protocol) is *outside* the scope of this part of ISO/IEC ISP 15125.

The objective of this part of ISO/IEC ISP 15125 is to ensure that DSAs will be able to interwork within the Directory in two respects:

- Correct protocol behaviour
- Correct behaviour in respect of the role that each DSA has to play in respect of Distributed Operations

Factors outside the scope of this part of ISO/IEC ISP 15125 include, but are not limited to:

- DIT structure
- The techniques of authentication more rigorous than simple authentication with passwords

DSAs that do not support the distributed Directory are outside the scope of this part of ISO/IEC ISP 15125.

1.2 Position Within the Taxonomy

This part of ISO/IEC ISP 15125 is identified in ISO/IEC TR 10000-2 as "ADY22–DSA support of Distributed Operations".

It may be combined with other parts of ISO/IEC ISP 15125, or with ISO/IEC ISP 15126-1 specifying the normal use of the directory, and with T-Profiles specifying the OSI connection-mode transport service.¹

1.3 Scenario

The model used is described in Overview of Concepts, Models, and Services in [ISO/IEC 9594-1 : 1995 | ITU-T Rec. X.500 (1993)]. The specifications of this part of ISO/IEC ISP 15125 apply to both the invoker and the performer roles of DSP, and also to the use of referrals and continuation references over DAP. All protocol aspects of DAP, however, are profiled by ISO/IEC ISP 15125-3.

¹ T-Profiles are relevant to protocol-information and its handling (see 8.14)

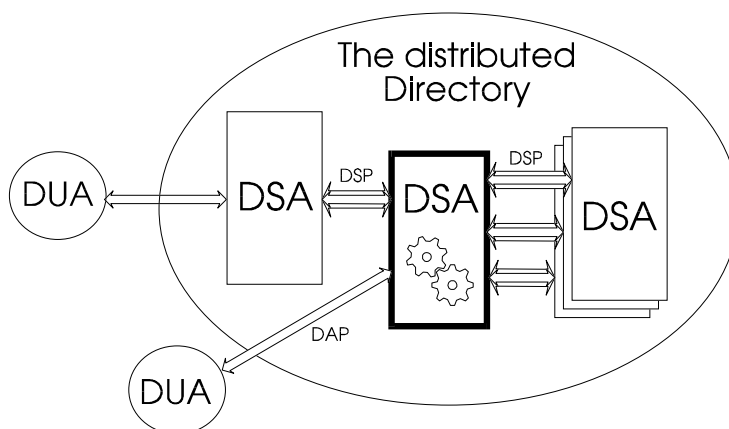


Figure 1 — DSA support of distributed operations

A DSA handles incoming DAP and DSP protocols, and creates chained and multi-chained operations in accordance with defined procedures.

2 Normative references

The following documents contain provisions which, through references in this text, constitute provisions of this part of ISO/IEC ISP 15125. 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 15125 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 15125.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.2 Normative Amendments and Technical Corrigenda

In accordance with ISO/IEC TR 10000-1 subclause 6.3.2 c), attention is drawn to normative Amendments and Technical Corrigenda affecting the Directory Standards documents ISO/IEC 9594:1995 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 document.

The following subset of these have been identified as particularly relevant to this part of ISO/IEC ISP 15125:

- Technical Corrigendum 1 to Recommendation X.501 (1993) | ISO/IEC 9594-2:1995 (addressing DRs 9594/088, 089, 090, 091, 102, 125)
- Draft 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)
- Draft 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)
- Draft 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)
- Draft (?) 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)
- Draft (?) Technical Corrigendum 2 to Recommendation X.509 (1993) | ISO/IEC 9594-8:1995 (addressing DRs 9594/077, 078, 083, 084)
- Draft (?) Technical Corrigendum 3 to Recommendation X.509 (1993) | ISO/IEC 9594-8:1995 (addressing DRs 9594/080,092,100)
- Draft (?) Technical Corrigendum 1 to Recommendation X.525 (1993) | ISO/IEC 9594-9:1995 (addressing DRs 9594/097, 099, 123)
- Draft (?) Technical Corrigendum 2 to Recommendation X.525 (1993) | ISO/IEC 9594-9:1995 (addressing DR 9594/132)

2.3 Additional normative references

- [ISO/IEC 9594-8 : 1990 | CCITT Rec. X.509 (1988)], *Information technology — Open Systems Interconnection — The Directory: Authentication framework*.²
- ISO/IEC 13248-2³ — *Information technology — Open Systems Interconnection — Protocol Implementation Conformance Statement (PICS) Proforma — Part 2: Directory System Protocol*
- ISO/IEC TR 10000-1:1995, *Information technology framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework*.
- ISO/IEC TR 10000-2:1995, *Information technology framework and taxonomy of International Standardized Profiles — Part 2: Principles and taxonomy for OSI profiles*.

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 subclauses within the standards documents, references are listed in Table 1 below. The "Part" reference refers to the part number within ISO/IEC 9594 or its ITU-T equivalent (see also clause 2).

Table 1 — Definitions and references

Term	Part	Reference
access control scheme	2	15.1
administrative model	2	11
administrative role	2	13.3
base object	4	3
Basic Access Control	2	16
category	2	18.1
chaining	4	3
commonly usable	2	18.1
context prefix information	4	3
cooperative state	2	22.1
cross reference	2	18.1
directory operational framework	2	22.1
distributed name resolution	4	3
DSA information tree	2	19.1.1
DSA-shared attribute	2	19.1.1
DSA-specific attribute	2	19.1.1
DSA-specific entry (DSE)	2	19.1.1
DSE Type	2	19.1.1

²This specification defines Version 1 Certificates.

³ To be published.

Term	Part	Reference
error	4	3
first level DSA	2	18.5
hard error	4	3
Hierarchical Operational Binding (HOB)	4	3
immediate superior reference	2	18.1
knowledge (information)	2	18.1
knowledge reference	2	18.1
master knowledge	2	18.1
modification operations	4	3
multi-chaining	4	3
multiple entry interrogation operations	4	3
name resolution	4	3
naming context	4	17.1
non-cooperative state	2	22.1
Non-specific Hierarchical Operational Binding (NHOB)	4	3
Non-specific Subordinate Reference (NSSR)	2	18.1
NSSR decomposition	4	3
operation progress	4	3
operational attribute	2	11.2
operational binding	2	22.1
operational binding establishment	2	22.1
operational binding instance	2	22.1
operational binding management	2	22.1
operational binding modification	2	22.1
operational binding termination	2	22.1
operational binding type	2	22.1
originator	4	3
performer	4	3
procedure	4	3
reference path	2	18.1
referral	4	3
relevant hierarchical operation binding (RHOB)	4	3
reply	4	3
request	4	3

Term	Part	Reference
request decomposition	4	3
shadow knowledge	2	18.1
Simplified Access Control	2	16
single entry interrogation operations	4	3
soft error	4	3
subentry	2	11.1
subordinate DSA	4	3
subordinate reference	2	18.1
subrequest	4	3
superior DSA	4	3
superior reference	2	18.1
target object name	4	3
uni-chaining	4	3

The terms in the following table are defined for the purposes of this part of ISO/IEC ISP 15125:

Table 2 — Definitions

Term	Definition
Acting DSA	The DSA which enters the evaluation phase as defined in subclause 15.2 of [ISO/IEC 9594-4 : 1995 ITU-T Rec. X.518 (1993)]. Such a DSA will have completed name resolution and also undertakes the merging of results.
APDU size (for sending/receiving)	The size of the sent/received transfer encoding, including the ROSE header
invoking DSA	The DSA that generates a DSP Invoke
performing DSA	The DSA that acts upon a DSP Invoke (perhaps by further chaining) and generates a DSP Return Result or Return Error
root context	The complete collection of knowledge information about first level DSAs
Signed DSP Operation	A DSP operation which uses the SIGNED option of the OPTIONALLY-SIGNED information object class, applied to chained operations as defined in [ISO/IEC 9594-4 : 1995 ITU-T Rec. X.518 (1993)] subclause 12.1. The enclosed DAP operation may or may not be signed, as defined in [ISO/IEC 9594-3 : 1995 ITU-T Rec. X.511 (1993)] subclauses 9.1.1, 9.2.1, 9.2.3, 10.1.1, 10.2.1, 11.1.1, 11.2.1, 11.3.1, 11.4.1.
Supported (for reception by an initiator)	A feature (capability, result, error or protocol element) is supported for reception by an initiator if the implementation is able to process the feature in accordance with the base standard and this part of ISO/IEC ISP 15125 to accomplish the function associated by the base standard with that feature. If a protocol element is claimed to be supported, the full range of values shall be supported, unless stated otherwise.

Term	Definition
Supported (for sending by an initiator)	A feature (capability, operation or protocol element) is supported for sending by an initiator if the implementation is able to generate the feature for chaining a request from a DUA or another DSA in order to complete it in accordance with the base standard and this part of ISO/IEC ISP 15125.

3.2 Support Level

To specify the support level of protocol features for this part of ISO/IEC ISP 15125, 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 15125.

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 15125.

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

The following abbreviations are used as defined in [ISO/IEC 9594 : 1995 | ITU-T Rec. X.500 (1993)] or in ISO/IEC TR 10000-1 :

ACSE	Association Control Service Element
APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
AVA	Attribute Value Assertion
CA	Certification Authority
CRL	Certificate revocation list
DAP	Directory Access Protocol
DIB	Directory Information Base
DIT	Directory Information Tree
DMD	Directory Management Domain
DSA	Directory System Agent
DSE	DSA specific entry
DSP	Directory System Protocol
DUA	Directory User Agent
HOB	Hierarchical operation binding
IPRL	ISPICS Requirements List

ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
IUT	Implementation under test
NHOB	Non-specific hierarchical operation binding
NSSR	Non-specific Subordinate Reference
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
POQ	Partial outcome qualifier
PRL	Profile Requirements List
RDN	Relative Distinguished Name
RHOB	Relevant hierarchical operation binding
ROSE	Remote Operations Service Element
SPDU	Session Protocol Data Unit
SSDU	Session Service Data Unit