

INTERNATIONAL STANDARDIZED PROFILE

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Part 5: ADI31 — DUA Support for Distributed Operations

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Partie 5: ADI31 — Support DUA d'opérations réparties



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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 10615-5 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 10615 consists of the following parts, under the general title *Information technology — International Standardized Profiles ADInn — OSI Directory*:

- Part 1: ADI11 — DUA Support of Directory Access
- Part 2: ADI12 — DSA Support of Directory Access
- Part 3: ADI21 — DSA Performer Role
- Part 4: ADI22 — DSA Invoker Role
- Part 5: ADI31 — DUA Support for Distributed Operations
- Part 6: ADI32 — DSA Support for Distributed Operations
- Part 7: ADI41 — Specific Digital Signature Schemes
- Part 8: ADI4X — Use of Strong Authentication

Annexes A and B form an integral part of this part of ISO/IEC ISP 10615. 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 10615 specifies application profile ADI31 as defined in the Technical Report ISO/IEC TR 10000-2.

This part of ISO/IEC ISP 10615 is one of a set of International Standardized Profiles relating to the Directory (see TR 10000-2).

This part of ISO/IEC ISP 10615 profiles the manner in which DUAs are to behave when they are autonomously initiating and continuing operations in which multiple DSAs are to be contacted (as a result of receiving back referrals or continuation-references in list or search results) in the course of accessing the Directory. This part of ISO/IEC ISP 10615 also clarifies certain elements of behaviour which are unclear or are insufficiently defined in the base standard.

Information technology — International Standardized Profiles ADInn — OSI Directory —

Part 5:

ADI31 — DUA Support for Distributed Operations

1 Scope

1.1 General

Although ISO/IEC 9594-4 | CCITT X.518 describes the DSA procedures relating to referrals and Search Continuation References, this part of ISO/IEC ISP 10615 does not define the DUA's role in acting upon these procedures.

This part of ISO/IEC ISP 10615 specifies the behaviour of DUAs when they use DAP to access multiple DSAs in the course of making a single original enquiry without human intervention in the formulation of protocol. Multiple enquiries result from receiving continuation references embedded in referrals, list results or search results).

DUAs which do not have the capability of following referrals or Search Continuation References without human intervention in the formulation of protocol are not within the scope of this part of ISO/IEC ISP 10615 for the purposes of conformance, although its recommendations may be of value.

NOTE – The conformance requirements of this part of ISO/IEC ISP 10615 presume the scenario depicted in Figure 1: human intervention (if any) is restricted to the possibility of a "go/no-go" decision; in the case of conformance testing, each such decision is presumed to be "go".

The scope of this part of ISO/IEC ISP 10615 is limited to matters of procedure in exercising the DAP protocol, and does not cover enhancements of service. It does not cover any (DAP) protocol encoding issues.

NOTE – In the absence of this part of ISO/IEC ISP 10615, the implementor of a DUA with the capability of following continuation references automatically will need to make design decisions about the behaviour of the DUA when doing so. An aim of this part of ISO/IEC ISP 10615 is to minimise uncertainty and enhance consistency in making design solutions by means of functional standardisation. This part of ISO/IEC ISP 10615 adds no spurious complexity, given that the requirement pre-exists to follow continuation references automatically

1.2 Position within the taxonomy

This part of ISO/IEC ISP 10615 is identified in ISO/IEC TR 10000-2 as ADI31 "Directory—Distributed Operations—DUA Support of Distributed Operations".

1.3 Scenario

This part of ISO/IEC ISP 10615 profiles the autonomous behaviour of DUAs when Referrals or Search Continuation References are used by the Directory.

A DUA creates an association to a DSA of its choice, and invokes an operation. The DSA may return a referral instead of a result, or the result may contain continuation references. The latter occur in the case of List or Search operations in which the DSA is unwilling or unable to complete the search, but is able to advise which other DSAs may be able to assist.

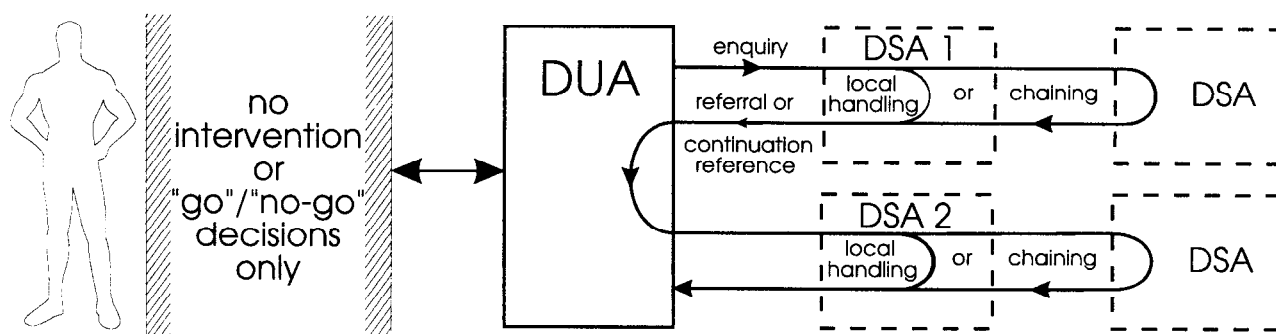


Figure 1: DUA Behaviour for Distributed Operations

The possible actions which may then be taken by a DUA, without human intervention except possibly the taking of a "go/no-go" decision, are specified in this part of ISO/IEC ISP 10615.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10615. 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 10615 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.

2.1 Paired CCITT Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208:1988, *Data Communications – Open Systems Interconnection (OSI) – 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.209:1988, *Data Communications – Open Systems Interconnection (OSI) – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*.
ISO/IEC 8825:1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*.
- CCITT Recommendation X.219:1988, *Data Communications – Open Systems Interconnection (OSI) – Remote Operations: Model, notation and service definition*.
ISO/IEC 9072 – 1:1989, *Information processing systems – Text communication – Remote Operations – Part 1: Model, notation and service definition*.
- CCITT Recommendation X.229:1988, *Data Communications – Open Systems Interconnection (OSI) – Remote Operations: Protocol Specification*.
ISO/IEC 9072 – 2:1989, *Information processing systems – Text communication – Remote Operations – Part 2: Protocol specification*.
- CCITT Recommendation X.500:1988, *Data Communication Networks – 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*.

- ISO/IEC 9594-2:1990, *Information technology – Open Systems Interconnection – The Directory – Part 2: Models.*
- CCITT Recommendation X.509:1988, *Data Communication Networks – 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, *Data Communication Networks – 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, *Data Communication Networks – 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, *Data Communication Networks – The Directory – Protocol Specification.*
- ISO/IEC 9594-5:1990, *Information technology – Open Systems Interconnection – The Directory – Part 5: Protocol specifications.*
- CCITT Recommendation X.520:1988, *Data Communication Networks – The Directory – Selected Attribute Types.*
- ISO/IEC 9594-6:1990, *Information technology – Open Systems Interconnection – The Directory – Part 6: Selected attribute types.*

2.2 Normative Amendments and Technical Corrigenda

In accordance with TR10000-1 clause 6.3.2 c), attention is drawn to normative Amendments and Technical Corrigenda affecting the Directory Standards documents IEC 9594:1990 and the CCITT X.500:1988 recommendations.

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 10615. It also identifies those which appear to be relevant to this ISP.

The following subset of these have been identified as particularly relevant to this part of ISO/IEC ISP 10615:

ISO/IEC 9594-3:1988/Cor.3:1992
 ISO/IEC 9594-4:1988/Cor.1:1991
 ISO/IEC 9594-4:1988/Cor.2:1992
 ISO/IEC 9594-4:1988/Cor.3:1993
 ISO/IEC 9594-5:1988/Cor.1:1992

2.3 Additional normative references

- CCITT Recommendation X.581:1992, *Directory Access Protocol – Protocol Implementation Conformance Statement (PICS) Proforma.*
- 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 clauses 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 CCITT equivalent (see also Clause 2).

Table 1: Definitions and references

Term	Part	Reference
Continuation reference	4	12.9
List (I) Procedure	4	18.7.2.1.1
List (II) Procedure	4	18.7.2.1.2
Partial Outcome Qualifier	3	10.1.3.3
Presentation address	6	5.9.1
Referral	4	3.5.16
Search (I) Procedure	4	18.7.2.2.1
Search (II) Procedure	4	18.7.2.2.2

For the purposes of this part of ISO/IEC ISP 10615, the following definitions apply:

3.1.1 Search Continuation Reference: The use of one or more Continuation References, embedded in the Partial Outcome Qualifier of a list or search result, to indicate information within the scope of the list or search that may not previously have been accessed in preparing the result. Search Continuation References, if followed, give rise to further operations;

3.1.2 Operation Sequence: The series of operations (possibly just one) which are invoked by a DUA (possibly fully automatically, but not excluding the possibility of user intervention) in fulfilment of a single User enquiry or update. These operations can sometimes be considered nested-for example, a search operation can result in a number of Continuation-References which can be followed; these in turn can give rise to further Search Continuation References (or Referrals);

3.1.3 User: The human or application user which is concerned with obtaining entry information from the Directory;

NOTE – A DUA may provide additional functions to support the user, but the specification of these functions is outside the scope of this part of ISO/IEC ISP 10615.

3.1.4 Manager: The human or application user which is concerned with maintaining a useful communications relationship between the User and the Directory;

NOTES:

1. DUAs may embody facilities to support the Manager, such as:
 - Configuration facilities
 - Logs
 - Protocol relationships not using DAP
2. The Manager may be the same as or distinct from the User.

3.1.5 Protocol Action: Action taken by a DUA (possibly as a result of user action) which is expressed in terms of DAP or ROSE/ACSE protocol elements;

3.1.6 User Advice Action: Action taken by a DUA which is expressed in terms of information or advice to the user;

3.1.7 Manager Advice Action: Action taken by a DUA which is expressed in terms of information or advice to the Manager (for example, information which is subsequently logged for later examination by the Manager);

NOTE – How User Advice Action or Manager Advice Action is actually taken is outside the scope of this part of ISO/IEC ISP10615;

3.1.8 User Intervention: Voluntary action by the user (e.g. following observation of results returned during an Operation Sequence), which causes the content of the Operation Sequence to be modified, or the Operation Sequence to be terminated or truncated.

3.2 Support Level

To specify the support level of protocol features for ISO/IEC ISP 10615-5, the following terminology is defined.

3.2.1 Mandatory: m: Mandatory requirement for support

A feature is supported by a DUA implementation if the DUA is able to process the feature in accordance with the base standard or as specified in ISO/IEC ISP 10615-5.

3.2.2 Optional: o: Optional requirement for support

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

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.

4 Abbreviations

The following abbreviations are used as defined in ISO/IEC 9594 | CCITT Rec. X.500 series 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
DAP	Directory Access Protocol
DIB	Directory Information Base
DIT	Directory Information Tree
DMD	Directory Management Domain
DSA	Directory System Agent
DSP	Directory System Protocol
DUA	Directory User Agent
ISP	International Standardized Profile
NSSR	Non-Specific Subordinate Reference
PDU	Protocol Data Unit
POQ	Partial outcome qualifier
PRL	Profile Requirements List
RDN	Relative Distinguished Name
ROSE	Remote Operations Service Element

5 Conformance

Primary DUA conformance requirements are stated in the Directory Standards. However, these documents contain no statements that cover conformance to Distributed Operations.

Conformance to this part of ISO/IEC ISP 10615 concerns the optional implementation of procedures which DUAs shall support when they follow referrals or Search Continuation Reference automatically. When conformance to these procedures is claimed, the conformance requirements apply to the case where no user intervention applies (i.e. the DUA applies a sequence of operations in the absence of any user action).

Conformance to these procedures is signified below by the phrase "*conformance to autonomous DUA procedures*".