

**Implementation of
ISO/IEC 9594-3:1990**

Information Technology — Open Systems Interconnection — The Directory —

Part 3: Abstract service definition

UDC 681.3:621.39

Committees responsible for this British Standard

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- Association for Payment Clearing Services
- British Computer Society
- British Gas plc
- British Railways Board
- British Telecommunications plc
- Computing Services Association
- Department of Trade and Industry (Alvey — Advanced Network Systems Architecture)
- Department of Trade and Industry (Information Technology Division)
- Department of Trade and Industry (National Physical Laboratory)
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- HM Treasury (Central Computer and Telecommunications Agency)
- Institute of Chartered Secretaries and Administrators
- Institution of Electrical Engineers
- Inter-universities Computing Committee
- Joint Network Team
- Ministry of Defence
- National Health Services
- United Kingdom Atomic Energy Authority
- University of London Computer Centre

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National foreword

This British Standard reproduces verbatim ISO/IEC 9594-3:1990, including Technical Corrigenda 1, 2, 3 and 4 and implements it as the UK national standard.

This British Standard is published under the direction of the Information Systems Technology Standards Policy Committee whose Technical Committee IST/21 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO/IEC title page, pages ii to iv, pages 1 to 32 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

INTERNATIONAL STANDARD

ISO/IEC 9594-3

First edition
1990-12-15

Information technology — Open Systems Interconnection — The Directory —

Part 3: Abstract service definition

*Technologies de l'information — Interconnexion de systèmes ouverts — L'annuaire —
Partie 3: Définition du service abstrait*



Reference number
ISO/IEC 9594-3 : 1990 (E)

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Descriptors: Data processing, information interchange, network interconnection, open systems interconnection, directories.

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 9594-3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

ISO/IEC 9594 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — The Directory*:

- *Part 1: Overview of concepts, models and services;*
- *Part 2: Models;*
- *Part 3: Abstract service definition;*
- *Part 4: Procedures for distributed operation;*
- *Part 5: Protocol specifications;*
- *Part 6: Selected attribute types;*
- *Part 7: Selected object classes;*
- *Part 8: Authentication framework.*

Annex A and Annex B form an integral part of this part of ISO/IEC 9594.

Section 1. General

Introduction

0.1 This part of ISO/IEC 9594, together with the other parts, 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.

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

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

0.3 This part of ISO/IEC 9594 defines the capabilities provided by the Directory to its users.

0.4 Annex A provides the ASN.1 module which contains all the definitions associated with the Abstract Service

1 Scope

1.1 This part of ISO/IEC 9594 defines in an abstract way the externally visible service provided by the Directory.

1.2 This part of ISO/IEC 9594 does not specify individual implementations or products.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 9594. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 9594 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7498:1984, *Information Processing Systems — Open Systems Interconnection — Basic Reference Model*.

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

ISO/IEC 9072-1:1989, *Information Processing Systems — Text Communication — Remote Operations — Part 1: Model, Notation and Service Definition*.

ISO/IEC 9072-2:1989, *Information Processing Systems — Text Communication — Remote Operations — Part 2: Protocol Specification*.

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*.

ISO/IEC 9594-4:1990, *Information Technology — Open Systems Interconnection — The Directory — Part 4: Procedures for Distributed Operation*.

ISO/IEC 9594-5:1990, *Information Technology — Open Systems Interconnection — The Directory — Part 5: Protocol Specifications*.

ISO/IEC 9594-6:1990, *Information Technology — Open Systems Interconnection — The Directory — Part 6: Selected Attribute Types*.

ISO/IEC 9594-7:1990, *Information Technology — Open Systems Interconnection — The Directory — Part 7: Selected Object Classes*.

ISO/IEC 9594-8:1990, *Information Technology — Open Systems Interconnection — The Directory — Part 8: Authentication Framework*.

ISO/IEC 10021-3:1990, *Information Technology — Text Communication — Message Oriented Text Interchange System (MOTIS) — Part 3: Abstract Service Definition*.

3 Definitions

3.1 Basic Directory Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-1:

- a) Directory;
- b) Directory Information Base;
- c) (Directory) User.

3.2 Directory Model Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-2:

- a) Directory System Agent;
- b) Directory User Agent.

3.3 Directory Information Base Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-2:

- a) alias entry;
- b) Directory Information Tree;
- c) (Directory) entry;
- d) immediate superior;
- e) immediately superior entry/object;
- f) object;
- g) object class;
- h) object entry;
- i) subordinate;
- j) superior.

3.4 Directory Entry Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-2:

- a) attribute;
- b) attribute type;
- c) attribute value;
- d) attribute value assertion.

3.5 Name Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-2:

- a) alias, alias name;
- b) distinguished name;
- c) (directory) name
- d) purported name;
- e) relative distinguished name.

3.6 Distributed Operations Definitions

This part of ISO/IEC 9594 makes use of the following terms defined in ISO/IEC 9594-4:

- a) chaining;
- b) referral.

3.7 Abstract Service Definitions

For the purpose of this part of ISO/IEC 9594 the following definitions apply:

3.7.1**filter**

an assertion about the presence or value of certain attributes of an entry in order to limit the scope of a search

3.7.2**service controls**

parameters conveyed as part of an abstract-operation which constrain various aspects of its performance

3.7.3**originator**

the user that originated an operation

4 Abbreviations

This part of ISO/IEC 9594 makes use of the following abbreviations:

AVA	Attribute Value Assertion
DIB	Directory Information Base
DIT	Directory Information Tree
DSA	Directory System Agent
DUA	Directory User Agent
DMD	Directory Management Domain
RDN	Relative Distinguished Name

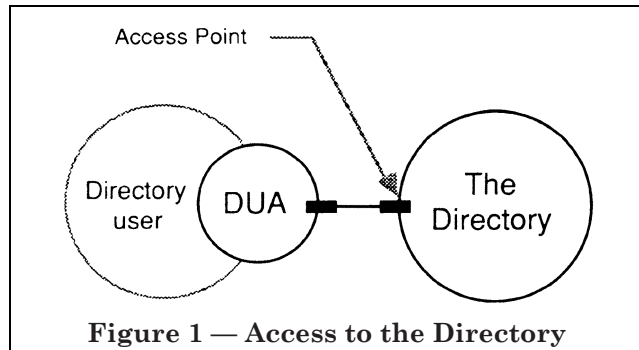
5 Conventions

This part of ISO/IEC 9594 makes use of the abstract service definition conventions defined in ISO/IEC 10021-3.

Section 2. Abstract service

6 Overview of the Directory Service

6.1 As described in ISO/IEC 9594-2, the services of the Directory are provided through access points to DUAs, each acting on behalf of a user. These concepts are depicted in Figure 1.



6.2 In principle, access points to the Directory may be of different types, providing different combinations of services. It is valuable to consider the Directory as an *object*, supporting a number of types of port. Each port defines a particular kind of interaction which the Directory can participate in with a DUA. Each access point corresponds to a particular combination of port types.

6.3 Using the notation defined in ISO/IEC 8505-3, the Directory can be defined as follows:

```

directory
  OBJECT
    PORTS {      readPort [S],
                  searchPort [S],
                  modifyPort [S]}
  ::= id-ot-directory
  
```

The Directory supplies operations via: Read Ports, which support reading information from a particular named entry in the DIB; Search Ports, which allow more “exploration” of the DIB; and Modify Ports, which enable the modification of entries in the DIB.

NOTE It is intended that in the future there may be other types of Directory port.

6.4 Similarly, a DUA (from the viewpoint of the Directory) can be defined as follows:

```

dua
  OBJECT
    PORTS {      readPort [C],
                  searchPort [C],
                  modifyPort [C]}
  ::= id-ot-dua
  
```

The DUA consumes the services provided by the Directory.

6.5 The ports cited from 6.2 through 6.4 can be defined as follows:

```

readPort
  PORT
    CONSUMER INVOKES {
      Read, Compare, Abandon}
  ::= id-pt-read
  
```

```

searchPort
  PORT
    CONSUMER INVOKES {
      List, Search}
  ::= id-pt-search
  
```

```

modifyPort
  PORT
    CONSUMER INVOKES {
      AddEntry, RemoveEntry,
      ModifyEntry, ModifyRDN}
  ::= id-pt-modify
  
```

6.6 The operations from the **readPort**, **searchPort** and the **modifyPort** are defined in clauses **9**, **10**, and **11** respectively.

6.7 These ports are used only as a method of structuring the description of the Directory service. Conformance to Directory operations is specified in ISO/IEC 9594-5.

7 Information Types

7.1 Introduction

7.1.1 This clause identifies, and in some cases defines, a number of information types which are subsequently used in the definition of Directory operations. The information types concerned are those which are common to more than one operation, are likely to be in the future, or which are sufficiently complex or self-contained as to merit being defined separately from the operation which uses them.

7.1.2 Several of the information types used in the definition of the Directory service are actually defined elsewhere. Subclause **7.2** identifies these types and indicates the source of their definition. Each of the remaining subclauses (**7.3** through **7.11**) identifies and defines an information type.

7.2 Information Types Defined Elsewhere

7.2.1 The following information types are defined in ISO/IEC 9594-2:

- a) **Attribute**;
- b) **AttributeType**;
- c) **AttributeValue**;
- d) **AttributeValueAssertion**;
- e) **DistinguishedName**;
- f) **Name**;
- g) **RelativeDistinguishedName**.

7.2.2 The following information type is defined in ISO/IEC 9594-6:

- a) **PresentationAddress**.

7.2.3 The following information types are defined in ISO/IEC 9594-8:

- a) **Certificate**;
- b) **SIGNED**;
- c) **CertificationPath**.

7.2.4 The following information types are defined in ISO 9072-1:

- a) **InvokeID**.

7.2.5 The following information types are defined in ISO 9594-4:

- a) **OperationProgress**;
- b) **ContinuationReference**.

7.3 Common Arguments

7.3.1 The CommonArguments information may be present to qualify the invocation of each operation that the Directory can perform.

```
CommonArguments ::= SET {
    [30] ServiceControls DEFAULT {},
    [29] SecurityParameters OPTIONAL,
    requestor [28] DistinguishedName
                OPTIONAL,
    [27] OperationProgress DEFAULT {notStarted},
    aliasedRDNs [26] INTEGER OPTIONAL,
    criticalExtensions [25] BIT STRING OPTIONAL
}
```