INTERNATIONAL STANDARD

ISO/IEC 9594-7

Second edition
1995-09-15

Information technology — Open Systems Interconnection — The Directory: Selected object classes

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — L'Annuaire: Classe d'objets sélectionnés

Reference number
ISO/IEC 9594-7:1995(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. 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 9594-7 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.521.

Implementors should note that a defect resolution process exists and that corrections may be applied to this part of ISO/IEC 9594 in the form of technical corrigenda. A list of approved technical corrigenda for this part of ISO/IEC 9594 can be obtained from the subcommittee secretariat. Published technical corrigenda are available from your national standards organization.

This second edition technically revises and enhances ISO/IEC 9594-7:1990. It also incorporates technical corrigendum 1:1991 and technical corrigendum 2:1992. Implementations may still claim conformance to the first edition of this part of ISO/IEC 9594. However, at some point, the first edition will no longer be supported (i.e. reported defects will no longer be resolved). It is recommended that implementations conform to this second edition as soon as possible.

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*
- *Part 9: Replication*

Annex A forms an integral part of this part of ISO/IEC 9594. Annexes B and C are for information only.

Introduction

This Recommendation | International Standard, together with other Recommendations | International Standards, has been produced to facilitate the interconnection of information processing systems to provide directory services. A set of 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 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.

This Recommendation | International Standard defines a number of attribute sets and object classes which may be found useful across a range of applications of the Directory.

This second edition technically revises and enhances, but does not replace, the first edition of this Recommendation | International Standard. Implementations may still claim conformance to the first edition.

This second edition specifies version 1 of the Directory service and protocols. The first edition also specifies version 1. Differences between the services and between the protocols defined in the two editions are accommodated using the rules of extensibility defined in this edition of X.519 | ISO/IEC 9594-5.

Annex A, which is an integral part of this Recommendation | International Standard, provides an ASN.1 module containing all of the type and value definitions which appear in this document.

Annex B, which is not an integral part of this Recommendation | International Standard, provides some common naming and structure rules which may or may not be used by administrative authorities.

Annex C, which is not an integral part of this Recommendation | International Standard, lists the amendments and defect reports that have been incorporated to form this edition of this Recommendation | International Standard.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – THE DIRECTORY: SELECTED OBJECT CLASSES

SECTION 1 – GENERAL

1 Scope

This Recommendation | International Standard defines a number of object classes and name forms which may be found useful across a range of applications of the Directory. The definition of an object class involves listing a number of attribute types which are relevant to objects of that class. The definition of a name form involves naming the object class to which it applies and listing the attributes to be used in forming names for objects of that class. These definitions are used by the administrative authority which is responsible for the management of the directory information.

Any administrative authority can define its own object classes or subclasses and name forms for any purpose.

NOTES

1 Those definitions may or may not use the notation specified in ITU-T Rec. X.501 | ISO/IEC 9594-2.

2 It is recommended that an object class defined in this Recommendation | International Standard, or a subclass derived from one, or a name form defined in this Recommendation | International Standard, be used in preference to the generation of a new one, whenever the semantics is appropriate for the application.

Administrative authorities may support some or all the selected object classes and name forms, and may also add additional ones.

All administrative authorities shall support the object classes which the directory uses for its own purpose (the top, alias and DSA object classes).

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard part. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions 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.500 (1993) | ISO/IEC 9594-1:1995, *Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models and services.*
- ITU-T Recommendation X.501 (1993) | ISO/IEC 9594-2:1995, *Information technology – Open Systems Interconnection – The Directory: Models.*
- ITU-T Recommendation X.511 (1993) | ISO/IEC 9594-3:1995, *Information technology – Open Systems Interconnection – The Directory: Abstract service definition.*
- ITU-T Recommendation X.518 (1993) | ISO/IEC 9594-4:1995, *Information technology – Open Systems Interconnection – The Directory: Procedures for distributed operation.*
- ITU-T Recommendation X.519 (1993) | ISO/IEC 9594-5:1995, *Information technology – Open Systems Interconnection – The Directory: Protocol specifications.*

- ITU-T Recommendation X.520 (1993) | ISO/IEC 9594-6:1995, *Information technology – Open Systems Interconnection – The Directory: Selected attribute types.*
- ITU-T Recommendation X.509 (1993) | ISO/IEC 9594-8:1995, *Information technology – Open Systems Interconnection – The Directory: Authentication framework.*
- ITU-T Recommendation X.525 (1993) | ISO/IEC 9594-9:1995, *Information technology – Open Systems Interconnection – The Directory: Replication*
- ITU-T Recommendation X.680 (1994) | ISO/IEC 8824-1:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- ITU-T Recommendation X.681 (1994) | ISO/IEC 8824-2:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Information object specification.*
- ITU-T Recommendation X.682 (1994) | ISO/IEC 8824-3:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Constraint specification.*
- ITU-T Recommendation X.683 (1994) | ISO/IEC 8824-4:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Parametrization of ASN.1 specifications.*

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.200 (1988), *Reference Model of Open Systems Interconnection for CCITT Applications.*

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

3 Definitions

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

3.1 OSI Reference Model definitions

The following terms are defined in CCITT Rec. X.200 | ISO 7498:

a) *application-entity*;

b) *application-process*.

3.2 Directory Model definitions

The following terms are defined in ITU-T Rec. X.501 | ISO/IEC 9594-2:

a) *attribute*;

b) *attribute type*;

c) *Directory Information Tree (DIT)*;

d) *Directory System Agent (DSA)*;

e) *attribute set*;

f) *entry*;

g) *name*;

h) *object class*;

i) *subclass*;

j) *name form*;

k) *structure rule*.

4 Conventions

With minor exceptions this Directory Specification has been prepared according to the "Presentation of ITU-T | ISO/IEC common text" guidelines in the Guide for ITU-T and ISO/IEC JTC 1 Cooperation, March 1993.

The term "Directory Specification" (as in "this Directory Specification") shall be taken to mean CCITT Rec. X.521 | ISO/IEC 9594-7. The term "Directory Specifications" shall be taken to mean the X.500-Series Recommendations and all parts of ISO/IEC 9594.

This Directory Specification uses the term "1988 edition systems" to refer to systems conforming to the previous (1988) edition of the Directory Specifications, i.e. the 1988 edition of the series of CCITT X.500 Recommendations and the ISO/IEC 9594:1990 edition. Systems conforming to the current Directory Specifications are referred to as "1993 edition systems".

Object classes and name forms are defined in this Directory Specification as values of the OBJECT-CLASS and NAME-FORM information object classes defined in ITU-T Rec. X.501 | ISO/IEC 9594-2.

SECTION 2 – SELECTED OBJECT CLASSES

5 Definition of useful attribute sets

5.1 Telecommunication attribute set

This set of attributes is used to define those which are commonly used for business communications.

```
TelecommunicationAttributeSet    ATTRIBUTE ::= {
        facsimileTelephoneNumber |
        internationalISDNNumber |
        telephoneNumber |
        teletexTerminalIdentifier |
        telexNumber |
        preferredDeliveryMethod |
        destinationIndicator |
        registeredAddress |
        x121Address }
```

5.2 Postal attribute set

This set of attributes is used to define those which are directly associated with postal delivery.

```
PostalAttributeSet      ATTRIBUTE ::= {
        physicalDeliveryOfficeName |
        postalAddress |
        postalCode |
        postOfficeBox |
        streetAddress }
```

5.3 Locale attribute set

This set of attributes is used to define those which are commonly used for search purposes to indicate the locale of an object.

```
LocaleAttributeSet      ATTRIBUTE ::= {
        localityName |
        stateOrProvinceName |
        streetAddress }
```

5.4 Organizational attribute set

This set of attributes is used to define the attributes that an organization or organizational unit may typically possess.

```
OrganizationalAttributeSet      ATTRIBUTE ::= {
        description |
        LocaleAttributeSet |
        PostalAttributeSet |
        TelecommunicationAttributeSet |
        businessCategory |
        seeAlso |
        searchGuide |
        userPassword }
```

6 Definition of selected object classes

6.1 Country

A *Country* object class is used to define country entries in the DIT.

```
country         OBJECT-CLASS        ::=    {
        SUBCLASS OF             { top }
        MUST CONTAIN            { countryName }
        MAY CONTAIN             { description | searchGuide }
        ID                      id-oc-country }
```

6.2 Locality

The *Locality* object class is used to define locality in the DIT.

```
locality        OBJECT-CLASS        ::=    {
        SUBCLASS OF             { top }
        MAY CONTAIN             { description |
                                  searchGuide |
                                  LocaleAttributeSet |
                                  seeAlso }
        ID                      id-oc-locality }
```

At least one of Locality Name or State or Province Name must be present.

6.3 Organization

The *Organization* object class is used to define organization entries in the DIT.

```
organization OBJECT-CLASS           ::=    {
        SUBCLASS OF             { top }
        MUST CONTAIN            { organizationName }
        MAY CONTAIN             { OrganizationalAttributeSet }
        ID                      id-oc-organization }
```

6.4 Organizational Unit

The *Organizational Unit* object class is used to define entries representing subdivisions of organizations.

```
organizationalUnit              OBJECT-CLASS::=    {
        SUBCLASS OF             { top }
        MUST CONTAIN            { organizationalUnitName }
        MAY CONTAIN             { OrganizationalAttributeSet }
        ID                      id-oc-organiationalUnit }
```

6.5 Person

The *Person* object class is used to define entries representing people generically.

```
person          OBJECT-CLASS      ::=   {
        SUBCLASS OF             { top }
        MUST CONTAIN            { commonName | surname }
        MAY CONTAIN             { description |
                                  telephoneNumber |
                                  userPassword |
                                  seeAlso }
        ID                      id-oc-person }
```

6.6 Organizational Person

The *Organizational Person* object class is used to define entries representing people employed by, or in some other important way associated with, an organization.

```
organizationalPerson            OBJECT-CLASS::=   {
        SUBCLASS OF             { person }
        MAY CONTAIN             { LocaleAttributeSet |
                                  PostalAttributeSet |
                                  TelecommunicationAttributeSet |
                                  organizationalUnitName |
                                  title }
        ID                      id-oc-organizationalPerson }
```

6.7 Organizational Role

The *Organizational Role* object class is used to define entries representing an organizational role, i.e. a position or role within an organization. An organizational role is normally considered to be filled by a particular organizational person. Over its lifetime, however, an organizational role may be filled by a number of different organizational people in succession. In general, an organizational role may be filled by a person or a non-human entity.

```
organizationalRole              OBJECT-CLASS      ::=   {
        SUBCLASS OF             { top }
        MUST CONTAIN            { commonName }
        MAY CONTAIN             { description |
                                  LocaleAttributeSet |
                                  organizationalUnitName |
                                  PostalAttributeSet |
                                  preferredDeliveryMethod |
                                  roleOccupant |
                                  seeAlso |
                                  TelecommunicationAttributeSet }
        ID                      id-oc-organizationalRole }
```

6.8 Group of Names

The *Group Of Names* object class is used to define entries representing an unordered set of names which represent individual objects or other groups of names. The membership of a group is static, i.e. it is explicitly modified by administrative action, rather than dynamically determined each time the group is referred to.

The membership of a group can be reduced to a set of individual object's names by replacing each group with its membership. This process could be carried out recursively until all constituent group names have been eliminated, and only the names of individual objects remain.

```
groupOfNames        OBJECT-CLASS      ::=   {
        SUBCLASS OF             { top }
        MUST CONTAIN            { commonName | member }
        MAY CONTAIN             { description |
                                  organizationName |
                                  organizationalUnitName |
                                  owner |
                                  seeAlso |
                                  businessCategory }
        ID                      id-oc-groupOfNames }
```

6.9 Group of Unique Names

The *Group Of Unique Names* object class is used to define entries representing an unordered set of names whose integrity can be assured and which represent individual objects or other groups of names. The membership of a group is static, i.e. it is explicitly modified by administrative action, rather than dynamically determined each time the group is referred to.

```
groupOfUniqueNames          OBJECT-CLASS      ::=   {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName | uniqueMember }
        MAY CONTAIN         { description |
                              organizationName |
                              organizationalUnitName |
                              owner |
                              seeAlso |
                              businessCategory }
        ID                  id-oc-groupOfUniqueNames }
```

6.10 Residential Person

The *Residential Person* object class is used to define entries representing a person in the residential environment.

```
residentialPerson       OBJECT-CLASS      ::=   {
        SUBCLASS OF         { person }
        MUST CONTAIN        { localityName }
        MAY CONTAIN         { LocaleAttributeSet |
                              PostalAttributeSet |
                              preferredDeliveryMethod |
                              TelecommunicationAttributeSet |
                              businessCategory }
        ID                  id-oc-residentialPerson }
```

6.11 Application Process

The *Application Process* object class is used to define entries representing application processes. An application process is an element within a real open system which performs the information processing for a particular application (see ISO 7498).

```
applicationProcess          OBJECT-CLASS      ::=   {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName }
        MAY CONTAIN         { description |
                              localityName |
                              organizationalUnitName |
                              seeAlso }
        ID                  id-oc-applicationProcess }
```

6.12 Application Entity

The *Application Entity* object class is used to define entries representing application entities. An application entity consists of those aspects of an application-process pertinent to OSI.

```
applicationEntity       OBJECT-CLASS      ::=   {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName | presentationAddress }
        MAY CONTAIN         { description |
                              localityName |
                              organizationName |
                              organizationalUnitName |
                              seeAlso |
                              supportedApplicationContext }
        ID                  id-oc-applicationEntity }
```

NOTE – If an application-entity is represented as a Directory object that is distinct from an application-process, the **commonName** attribute is used to carry the value of the Application Entity Qualifier.

6.13 DSA

The *DSA* object class is used to define entries representing DSAs. A DSA is as defined in ISO/IEC 9594-2.

```
dSA    OBJECT-CLASS        ::=  {
       SUBCLASS OF         { applicationEntity }
       MAY CONTAIN         { knowledgeInformation }
       ID                  id-oc-dSA }
```

6.14 Device

The *Device* object class is used to define entries representing devices. A device is a physical unit which can communicate, such as a modem, disk drive, etc.

```
device      OBJECT-CLASS        ::=  {
       SUBCLASS OF         { top }
       MUST CONTAIN        { commonName }
       MAY CONTAIN         { description |
                           localityName |
                           organizationName |
                           organizationalUnitName |
                           owner |
                           seeAlso |
                           serialNumber }
       ID                  id-oc-device }
```

NOTE – At least one of **localityName**, **serialNumber**, **owner**, should be included. The choice is dependent on device type.

6.15 Strong Authentication User

The *Strong Authentication User* object class is used in defining entries for objects which participate in strong authentication, as defined in ISO/IEC 9594-8.

```
strongAuthenticationUser    OBJECT-CLASS    ::=  {
       SUBCLASS OF         { top }
       KIND                auxiliary
       MUST CONTAIN        { userCertificate }
       ID                  id-oc-strongAuthenticationUser }
```

6.16 Certification Authority

The *Certification Authority* object class is used in defining entries for objects which act as certification authorities, as defined in ISO/IEC 9594-8.

```
certificationAuthority      OBJECT-CLASS    ::=  {
       SUBCLASS OF         { top }
       KIND                auxiliary
       MUST CONTAIN        { cACertificate |
                           certificateRevocationList |
                           authorityRevocationList }
       MAY CONTAIN         { crossCertificatePair }
       ID                  id-oc-certificationAuthority }
```


SECTION 3 – SELECTED NAME FORMS

7 Definition of selected name forms

7.1 Country name form

The *Country* name form specifies how entries of object class **country** may be named.

```
countryNameForm  NAME-FORM  ::= {
       NAMES               country
       WITH ATTRIBUTES     { countryName }
       ID                  id-nf-countryNameForm }
```

7.2 Locality name form

The *Locality* name form specifies how entries of object class **locality** may be named.

```
locNameForm NAME-FORM ::= {
        NAMES                   locality
        WITH ATTRIBUTES { localityName }
        ID                      id-nf-locNameForm }
```

7.3 State or Province name form

The *State or Province* name form specifies how entries of object class **locality** may be named.

```
sOPNameForm NAME-FORM ::= {
        NAMES                   locality
        WITH ATTRIBUTES { stateOrProvinceName }
        ID                      id-nf-sOPNameForm }
```

7.4 Organization name form

The *Organization* name form specifies how entries of object class **organization** may be named.

```
orgNameForm NAME-FORM ::= {
        NAMES                   organization
        WITH ATTRIBUTES { organizationName }
        ID                      id-nf-orgNameForm }
```

7.5 Organizational Unit name form

The *Organizational Unit* name form specifies how entries of object class **organizationalUnit** may be named.

```
orgUnitNameForm NAME-FORM ::= {
        NAMES                   organizationalUnit
        WITH ATTRIBUTES { organizationalUnitName }
        ID                      id-nf-orgUnitNameForm }
```

7.6 Person name form

The *Person* name form specifies how entries of object class **person** may be named.

```
personNameForm NAME-FORM ::= {
        NAMES                   person
        WITH ATTRIBUTES { commonName }
        ID                      id-nf-personNameForm }
```

7.7 Organizational Person name form

The *Organizational Person* name form specifies how entries of object class **organizationalPerson** may be named.

```
orgPersonNameForm NAME-FORM ::= {
        NAMES                   organizationalPerson
        WITH ATTRIBUTES { commonName }
        AND OPTIONALLY  { organizationalUnitName }
        ID                      id-nf-orgPersonNameForm }
```

7.8 Organizational Role name form

The *Organizational Role* name form specifies how entries of object class **organizationalRole** may be named.

```
orgRoleNameForm NAME-FORM ::= {
        NAMES                   organizationalRole
        WITH ATTRIBUTES { commonName }
        ID                      id-nf-orgRoleNameForm }
```

7.9 Group of Names name form

The *Group of Names* name form specifies how entries of object class **groupOfNames** may be named.

```
gONNameForm NAME-FORM ::= {
        NAMES                groupOfNames
        WITH ATTRIBUTES { commonName }
        ID                   id-nf-gONNameForm }
```

7.10 Residential Person name form

The *Residential Person* name form specifies how entries of object class **residentialPerson** may be named.

```
resPersonNameForm NAME-FORM ::= {
        NAMES                residentialPerson
        WITH ATTRIBUTES { commonName }
        AND OPTIONALLY  { streetAddress }
        ID                   id-nf-resPersonNameForm }
```

7.11 Application Process name form

The *Application Process* name form specifies how entries of object class **applicationProcess** may be named.

```
applProcessNameForm NAME-FORM ::= {
        NAMES                applicationProcess
        WITH ATTRIBUTES { commonName }
        ID                   id-nf-applProcessNameForm }
```

7.12 Application Entity name form

The *Application Entity* name form specifies how entries of object class **applicationEntity** may be named.

```
applEntityNameForm NAME-FORM ::= {
        NAMES                applicationEntity
        WITH ATTRIBUTES { commonName }
        ID                   id-nf-applEntityNameForm }
```

7.13 DSA name form

The *DSA* name form specifies how entries of object class **dSA** may be named.

```
dSANameForm NAME-FORM ::= {
        NAMES                dSA
        WITH ATTRIBUTES { commonName }
        ID                   id-nf-dSANameForm }
```

7.14 Device name form

The *Device* name form specifies how entries of object class **device** may be named.

```
deviceNameForm NAME-FORM ::= {
        NAMES                device
        WITH ATTRIBUTES { commonName }
        ID                   id-nf-deviceNameForm }
```

Annex A

Selected object classes and name forms in ASN.1

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

This annex includes all of the ASN.1 type and value definitions contained in this Directory Specification in the form of the ASN.1 module **SelectedObjectClasses**.

```
SelectedObjectClasses {joint-iso-ccitt ds(5) module(1) selectedObjectClasses(6) 2}
DEFINITIONS ::=
BEGIN

-- EXPORTS All --

-- The types and values defined in this module are exported for use in the other ASN.1 modules contained
-- within the Directory Specifications, and for the use of other applications which will use them to access
-- Directory services. Other applications may use them for their own purposes, but this will not constrain
-- extensions and modifications needed to maintain or improve the Directory service.

IMPORTS
        objectClass, informationFramework, authenticationFramework, selectedAttributeTypes,
        id-oc, id-nf
                FROM  UsefulDefinitions {joint-iso-ccitt ds(5) module(1) usefulDefinitions(0) 2 }

        OBJECT-CLASS,ATTRIBUTE, NAME-FORM, top, alias
                FROM  InformationFramework informationFramework

        businessCategory, commonName, countryName, description, destinationIndicator,
        facsimileTelephoneNumber, internationalISDNNumber, knowledgeInformation, localityName,
        member, organizationName, organizationalUnitName, owner, physicalDeliveryOfficeName,
        postOfficeBox, postalAddress, postalCode, preferredDeliveryMethod, presentationAddress,
        registeredAddress, roleOccupant, searchGuide, seeAlso, serialNumber, stateOrProvinceName,
        streetAddress, supportedApplicationContext, surname, telephoneNumber, teletexTerminalIdentifier,
        telexNumber, title, uniqueMember, x121Address
                FROM SelectedAttributeTypes selectedAttributeTypes

        authorityRevocationList, cACertificate, certificateRevocationList, crossCertificatePair,
        userCertificate, userPassword
                FROM AuthenticationFramework authenticationFramework   ;

-- Attribute sets --

TelecommunicationAttributeSet   ATTRIBUTE ::= {
        facsimileTelephoneNumber |
        internationalISDNNumber |
        telephoneNumber |
        teletexTerminalIdentifier |
        telexNumber |
        preferredDeliveryMethod |
        destinationIndicator |
        registeredAddress |
        x121Address}

PostalAttributeSet   ATTRIBUTE ::= {
        physicalDeliveryOfficeName |
        postalAddress |
        postalCode |
        postOfficeBox |
        streetAddress}

LocaleAttributeSet   ATTRIBUTE ::= {
        localityName |
        stateOrProvinceName |
        streetAddress}
```

```
OrganizationalAttributeSet     ATTRIBUTE ::= {
        description |
        LocaleAttributeSet |
        PostalAttributeSet |
        TelecommunicationAttributeSet |
        businessCategory |
        seeAlso |
        searchGuide |
        userPassword}
```

-- Object classes --

```
country        OBJECT-CLASS        ::=     {
        SUBCLASS OF             { top }
        MUST CONTAIN            { countryName }
        MAY CONTAIN             { description | searchGuide }
        ID                      id-oc-country }

locality       OBJECT-CLASS        ::=     {
        SUBCLASS OF             { top }
        MAY CONTAIN             { description |
                                searchGuide |
                                LocaleAttributeSet |
                                seeAlso }
        ID                      id-oc-locality }

organization           OBJECT-CLASS        ::=     {
        SUBCLASS OF             { top }
        MUST CONTAIN            { organizationName }
        MAY CONTAIN             { OrganizationalAttributeSet }
        ID                      id-oc-organization }

organizationalUnit   OBJECT-CLASS        ::=     {
        SUBCLASS OF             { top }
        MUST CONTAIN            { organizationalUnitName }
        MAY CONTAIN             { OrganizationalAttributeSet }
        ID                      id-oc-organiationalUnit }

person         OBJECT-CLASS        ::=     {
        SUBCLASS OF             { top }
        MUST CONTAIN            { commonName | surname }
        MAY CONTAIN             { description |
                                telephoneNumber |
                                userPassword |
                                seeAlso }
        ID                      id-oc-person }

organizationalPerson           OBJECT-CLASS        ::=     {
        SUBCLASS OF             { person }
        MAY CONTAIN             { LocaleAttributeSet |
                                PostalAttributeSet |
                                TelecommunicationAttributeSet |
                                organizationalUnitName |
                                title }
        ID                      id-oc-organizationalPerson }
```

```
organizationalRole  OBJECT-CLASS        ::=     {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName }
        MAY CONTAIN         { description |
                              LocaleAttributeSet |
                              organizationalUnitName |
                              PostalAttributeSet |
                              preferredDeliveryMethod |
                              roleOccupant |
                              seeAlso |
                              TelecommunicationAttributeSet }
        ID                  id-oc-organizationalRole }

groupOfNames      OBJECT-CLASS        ::=     {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName | member}
        MAY CONTAIN         { description |
                              organizationName |
                              organizationalUnitName |
                              owner |
                              seeAlso |
                              businessCategory }
        ID                  id-oc-groupOfNames }

groupOfUniqueNames        OBJECT-CLASS      ::=   {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName | uniqueMember}
        MAY CONTAIN         { description |
                              organizationName |
                              organizationalUnitName |
                              owner |
                              seeAlso |
                              businessCategory }
        ID                  id-oc-groupOfUniqueNames }

residentialPerson   OBJECT-CLASS ::=    {
        SUBCLASS OF         { person }
        MUST CONTAIN        { localityName }
        MAY CONTAIN         { LocaleAttributeSet |
                              PostalAttributeSet |
                              preferredDeliveryMethod |
                              TelecommunicationAttributeSet |
                              businessCategory}
        ID                  id-oc-residentialPerson }

applicationProcess  OBJECT-CLASS        ::=     {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName }
        MAY CONTAIN         { description |
                              localityName |
                              organizationalUnitName |
                              seeAlso}
        ID                  id-oc-applicationProcess }

applicationEntity   OBJECT-CLASS ::=    {
        SUBCLASS OF         { top }
        MUST CONTAIN        { commonName | presentationAddress }
        MAY CONTAIN         { description |
                              localityName |
                              organizationName |
                              organizationalUnitName |
                              seeAlso |
                              supportedApplicationContext}
        ID                  id-oc-applicationEntity  }
```

```
dSA    OBJECT-CLASS        ::=     {
       SUBCLASS OF         { applicationEntity }
       MAY CONTAIN         { knowledgeInformation }
       ID                          id-oc-dSA }

device         OBJECT-CLASS        ::=     {
       SUBCLASS OF         { top }
       MUST CONTAIN        { commonName }
       MAY CONTAIN         { description |
                           localityName |
                           organizationName |
                           organizationalUnitName |
                           owner |
                           seeAlso |
                           serialNumber}
       ID                  id-oc-device }

strongAuthenticationUser    OBJECT-CLASS      ::=    {
       SUBCLASS OF         { top }
       KIND                auxiliary
       MUST CONTAIN        { userCertificate }
       ID                  id-oc-strongAuthenticationUser }

certificationAuthority      OBJECT-CLASS      ::=    {
       SUBCLASS OF         { top }
       KIND                auxiliary
       MUST CONTAIN        { cACertificate |
                           certificateRevocationList |
                           authorityRevocationList  }
       MAY CONTAIN         { crossCertificatePair }
       ID                  id-oc-certificationAuthority }
```

-- Name forms --

```
countryNameForm  NAME-FORM ::= {
       NAMES               country
       WITH ATTRIBUTES     {countryName}
       ID                  id-nf-countryNameForm }

locNameForm  NAME-FORM ::= {
       NAMES               locality
       WITH ATTRIBUTES     {localityName}
       ID                  id-nf-locNameForm }

sOPNameForm  NAME-FORM ::= {
       NAMES               locality
       WITH ATTRIBUTES{stateOrProvinceName}
       ID                  id-nf-sOPNameForm }

orgNameForm  NAME-FORM ::= {
       NAMES               organization
       WITH ATTRIBUTES     {organizationName}
       ID                  id-nf-orgNameForm }

orgUnitNameForm  NAME-FORM ::= {
       NAMES               organizationalUnit
       WITH ATTRIBUTES     {organizationalUnitName}
       ID                  id-nf-orgUnitNameForm }

personNameForm  NAME-FORM ::= {
       NAMES               person
       WITH ATTRIBUTES     {commonName}
       ID                  id-nf-personNameForm }
```

```
orgPersonNameForm NAME-FORM ::= {
        NAMES                   organizationalPerson
        WITH ATTRIBUTES         {commonName }
        AND OPTIONALLY          {organizationalUnitName}
        ID                      id-nf-orgPersonNameForm }

orgRoleNameForm NAME-FORM ::= {
        NAMES                   organizationalRole
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-orgRoleNameForm }

gONNameForm NAME-FORM ::= {
        NAMES                   groupOfNames
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-gONNameForm }

resPersonNameForm NAME-FORM ::= {
        NAMES                   residentialPerson
        WITH ATTRIBUTES         {commonName}
        AND OPTIONALLY          {streetAddress}
        ID                      id-nf-resPersonNameForm }

applProcessNameForm NAME-FORM ::= {
        NAMES                   applicationProcess
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-applProcessNameForm }

applEntityNameForm NAME-FORM ::= {
        NAMES                   applicationEntity
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-applEntityNameForm }

dSANameForm NAME-FORM ::= {
        NAMES                   dSA
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-dSANameForm }

deviceNameForm NAME-FORM ::= {
        NAMES                   device
        WITH ATTRIBUTES         {commonName}
        ID                      id-nf-deviceNameForm }

-- Object identifier assignments --

-- object identifiers assigned in other modules are shown in comments

-- Object classes --

-- id-oc-top                            OBJECT IDENTIFIER ::=   {id-oc 0}
-- id-oc-alias                          OBJECT IDENTIFIER ::=   {id-oc 0}
id-oc-country                           OBJECT IDENTIFIER ::=   {id-oc 2}
id-oc-locality                          OBJECT IDENTIFIER ::=   {id-oc 3}
id-oc-organization                      OBJECT IDENTIFIER ::=   {id-oc 4}
id-oc-organiationalUnit                 OBJECT IDENTIFIER ::=   {id-oc 5}
id-oc-person                            OBJECT IDENTIFIER ::=   {id-oc 6}
id-oc-organizationalPerson              OBJECT IDENTIFIER ::=   {id-oc 7}
id-oc-organizationalRole                OBJECT IDENTIFIER ::=   {id-oc 8}
id-oc-groupOfNames                      OBJECT IDENTIFIER ::=   {id-oc 9}
id-oc-residentialPerson                 OBJECT IDENTIFIER ::=   {id-oc 10}
id-oc-applicationProcess                OBJECT IDENTIFIER ::=   {id-oc 11}
id-oc-applicationEntity                 OBJECT IDENTIFIER ::=   {id-oc 12}
id-oc-dSA                               OBJECT IDENTIFIER ::=   {id-oc 13}
id-oc-device                            OBJECT IDENTIFIER ::=   {id-oc 14}
id-oc-strongAuthenticationUser          OBJECT IDENTIFIER ::=   {id-oc 15}
id-oc-certificationAuthority            OBJECT IDENTIFIER ::=   {id-oc 16}
id-oc-groupOfUniqueNames                OBJECT IDENTIFIER ::=   {id-oc 17}
```

-- Name forms --

```
id-nf-countryNameForm                OBJECT IDENTIFIER ::=   {id-nf 0}
id-nf-locNameForm                    OBJECT IDENTIFIER ::=   {id-nf 1}
id-nf-sOPNameForm                    OBJECT IDENTIFIER ::=   {id-nf 2}
id-nf-orgNameForm                    OBJECT IDENTIFIER ::=   {id-nf 3}
id-nf-orgUnitNameForm                OBJECT IDENTIFIER ::=   {id-nf 4}
id-nf-personNameForm                 OBJECT IDENTIFIER ::=   {id-nf 5}
id-nf-orgPersonNameForm              OBJECT IDENTIFIER ::=   {id-nf 6}
id-nf-orgRoleNameForm                OBJECT IDENTIFIER ::=   {id-nf 7}
id-nf-gONNameForm                    OBJECT IDENTIFIER ::=   {id-nf 8}
id-nf-resPersonNameForm              OBJECT IDENTIFIER ::=   {id-nf 9}
id-nf-applProcessNameForm            OBJECT IDENTIFIER ::=   {id-nf 10}
id-nf-applEntityNameForm             OBJECT IDENTIFIER ::=   {id-nf 11}
id-nf-dSANameForm                    OBJECT IDENTIFIER ::=   {id-nf 12}
id-nf-deviceNameForm                 OBJECT IDENTIFIER ::=   {id-nf 13}

END
```

Annex B

Suggested name forms and DIT structures

(This annex does not form an integral part of this Recommendation | International Standard)

This annex suggests a DIT structure shown in Figure B.1 and related DIT structure rules using the name forms defined in clause 3. The rules cover an unconstrained DIT structure.

The integer identifiers assigned in this annex and used in Figure B.1 are arbitrary and have no global (or standardized) significance. A particular structure rule identifier only has significance within the scope of the subschema in which it applied. Each DMD is responsible for creating its own DIT structure and structure rules that may differ from this example.

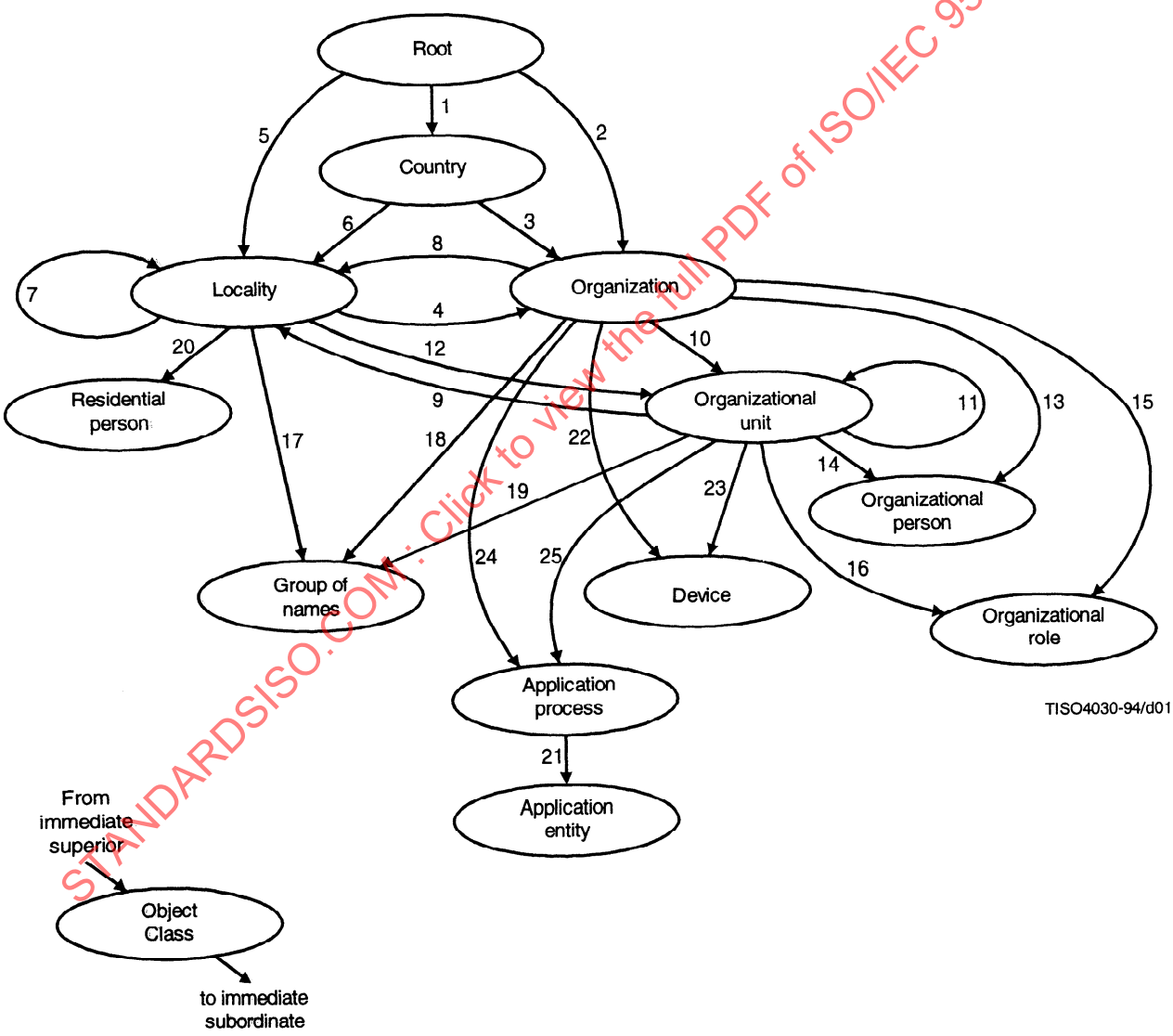

Figure B.1 – Suggested DIT structure

B.1 Country

Attribute **countryName** is used for naming.

The root is the immediate superior to entries of object class **country**.

```
sr1   STRUCTURE-RULE  ::= {
      NAME FORM       countryNameForm
      ID              1 }
```

B.2 Organization

Attribute **organizationName** is used for naming.

The root, **country** or **locality** can be the immediate superior of entries of object class **organization**.

NOTE – When the organization is directly under the root, this denotes an international organization. The naming values of the **organizationName** attribute for international organizations must all be distinct.

```
sr2   STRUCTURE-RULE  ::= {
      NAME FORM       orgNameForm
      ID              2 }

sr3   STRUCTURE-RULE  ::= {
      NAME FORM       orgNameForm
      SUPERIOR RULES  { sr1 }
      ID              3 }

sr4   STRUCTURE-RULE  ::= {
      NAME FORM       orgNameForm
      SUPERIOR RULES  { sr5 | sr6 | sr7 | sr8 | sr9 }
      ID              4 }
```

B.3 Locality

Attribute **localityName** or **stateOrProvinceName** is used for naming.

NOTE – For naming locality using stateOrProvinceName, see B.12.

The root, **country**, **locality**, **organization** or **organizationalUnit** can be the immediate superior of entries of object class **locality**.

```
sr5   STRUCTURE-RULE  ::= {
      NAME FORM       locNameForm
      ID              5 }

sr6   STRUCTURE-RULE  ::= {
      NAME FORM       locNameForm
      SUPERIOR RULES  { sr1 }
      ID              6 }

sr7   STRUCTURE-RULE  ::= {
      NAME FORM       locNameForm
      SUPERIOR RULES  { sr5 | sr6 | sr7 | sr8 | sr9 }
      ID              7 }

sr8   STRUCTURE-RULE  ::= {
      NAME FORM       locNameForm
      SUPERIOR RULES  { sr2 | sr3 | sr4 }
      ID              8 }

sr9   STRUCTURE-RULE  ::= {
      NAME FORM       locNameForm
      SUPERIOR RULES  { sr10 | sr11 | sr12 }
      ID              9 }
```

B.4 Organizational Unit

Attribute **organizationalUnitName** is used for naming.

organization, **organizationalUnit** or **locality** can be the immediate superior of entries of object class **organizational Unit**.

sr10 STRUCTURE-RULE ::= {
NAME FORM orgUnitNameForm
SUPERIOR RULES { sr2 | sr3 | sr4 }
ID 10 }

sr11 STRUCTURE-RULE ::= {
NAME FORM orgUnitNameForm
SUPERIOR RULES { sr10 | sr11 | sr12 }
ID 11 }

sr12 STRUCTURE-RULE ::= {
NAME FORM orgUnitNameForm
SUPERIOR RULES { sr5 | sr6 | sr7 | sr8 | sr9 }
ID 12 }

B.5 Organizational Person

Attribute **commonName** and optionally **organizational UnitName** is used for naming.

organization or **organizationalUnit** can be the immediate superior of entries of object class **organizational Person**.

sr13 STRUCTURE-RULE ::= {
NAME FORM orgPersonNameForm
SUPERIOR RULES { sr2 | sr3 | sr4 }
ID 13 }

sr14 STRUCTURE-RULE ::= {
NAME FORM orgPersonNameForm
SUPERIOR RULES { sr10 | sr11 | sr12 }
ID 14 }

B.6 Organizational Role

Attribute **CommonName** is used for naming.

organization or **organizationalUnit** can be the immediate superior of entries of object class **organizationalRole**.

sr15 STRUCTURE-RULE ::= {
NAME FORM orgRoleNameForm
SUPERIOR RULES { sr2 | sr3 | sr4 }
ID 15 }

sr16 STRUCTURE-RULE ::= {
NAME FORM orgRoleNameForm
SUPERIOR RULES { sr10 | sr11 | sr12 }
ID 16 }

B.7 Group of Names

Attribute **commonName** is used for naming.

locality, **organization** or **organizationalUnit** can be the immediate superior of entries of object class **groupOf Names**.

sr17 STRUCTURE-RULE ::= {
NAME FORM gonNameForm
SUPERIOR RULES { sr5 | sr6 | sr7 | sr8 | sr9 }
ID 17 }

sr18 STRUCTURE-RULE ::= {
NAME FORM gonNameForm
SUPERIOR RULES { sr2 | sr3 | sr4 }
ID 18 }

sr19 STRUCTURE-RULE ::= {
NAME FORM gonNameForm
SUPERIOR RULES { sr10 | sr11 | sr12 }
ID 19 }