

A Summary of the X.500(93) User Schema for use with LDAPv3
<[draft-ietf-asid-ldapv3schema-x500-00.txt](#)>

1. Status of this Memo

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2. Abstract

This document provides an overview of the attribute types and object classes defined by the ISO and ITU-T committees in the X.500 documents, in particular those intended for use by directory clients. It does not cover attributes used for the administration of X.500 directory servers themselves.

3. General Issues

This document references syntaxes given in [section 6](#) of this document and section 6 of [\[1\]](#). Matching rules are listed in [section 8](#) of [\[1\]](#).

The attribute type and object class definitions are written using the BNF form of AttributeTypeDescription and ObjectClassDescription given in [\[1\]](#). Lines have been folded for readability.

4. Source

The schema definitions in this document are based on those found in X.500 [\[2\]](#), [\[3\]](#), [\[4\]](#), [\[5\]](#), and updates to these documents, specifically:

Sections
=====

Source
=====

5.1 - 5.2	X.501(93)
5.3 - 5.36	X.520(88)
5.37 - 5.41	X.509(93)
5.42 - 5.52	X.520(93)
5.53 - 5.54	X.509(96)

(Table continued on next page)

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Sections	Source
=====	=====
6.1	RFC 1274
6.2	(new syntax)
6.3 - 6.5	RFC 1274
7.1 - 7.2	X.501(93)
7.3 - 7.18	X.521(88)
7.19 - 7.22	X.501(93)
7.23 - 7.25	X.509(96)

Some attribute names are different from those found in X.520(93).

[5. Attribute Types](#)

An LDAP server implementation SHOULD recognize the attribute types described in this section.

[5.1. objectClass](#)

The values of the objectClass attribute describe the kind of object which an entry represents. The objectClass attribute is present in every entry, with at least two values. One of the values is either "top" or "alias".

(2.5.4.0 NAME 'objectClass' EQUALITY objectIdentifierMatch SYNTAX 'OID')

[5.2. aliasedObjectName](#)

The aliasedObjectName attribute is used by the directory service if the entry containing this attribute is an alias.

(2.5.4.1 NAME 'aliasedObjectName' EQUALITY distinguishedNameMatch SYNTAX 'DN' SINGLE-VALUE)

[5.3. knowledgeInformation](#)

This attribute is no longer used.

(2.5.4.2 NAME 'knowledgeInformation' EQUALITY caseIgnoreMatch

SYNTAX 'DirectoryString{32768}')

[5.4.](#) cn

This is the X.500 commonName attribute, which contains a name of an object. If the object corresponds to a person, it is typically the person's full name.

(2.5.4.3 NAME 'cn' SUP name)

[5.5.](#) sn

This is the X.500 surname attribute, which contains the family name of a person.

(2.5.4.4 NAME 'sn' SUP name)

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[5.6.](#) serialNumber

This attribute contains the serial number of a device.

(2.5.4.5 NAME 'serialNumber' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'PrintableString{64}')

[5.7.](#) c

This attribute contains a two-letter ISO 3166 country code (countryName).

(2.5.4.6 NAME 'c' SUP name SINGLE-VALUE)

[5.8.](#) l

This attribute contains the name of a locality, such as a city, county or other geographic region (localityName).

(2.5.4.7 NAME 'l' SUP name)

[5.9.](#) st

This attribute contains the full name of a state or province (stateOrProvinceName).

(2.5.4.8 NAME 'st' SUP name)

[5.10.](#) street

This attribute contains the physical address of the object to which the entry corresponds, such as an address for package delivery (streetAddress).

```
( 2.5.4.9 NAME 'street' EQUALITY caseIgnoreMatch  
  SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{128}' )
```

[5.11.](#) o

This attribute contains the name of an organization (organizationName).

```
( 2.5.4.10 NAME 'o' SUP name )
```

[5.12.](#) ou

This attribute contains the name of an organizational unit (organizationalUnitName).

```
( 2.5.4.11 NAME 'ou' SUP name )
```

[5.13.](#) title

This attribute contains the title, such as "Vice President", of a person in their organizational context. The "personalTitle" attribute would be used for a person's title independent of their job function.

```
( 2.5.4.12 NAME 'title' SUP name )
```

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[5.14.](#) description

This attribute contains a human-readable description of the object.

```
( 2.5.4.13 NAME 'description' EQUALITY caseIgnoreMatch  
  SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{1024}' )
```

[5.15.](#) searchGuide

This attribute is for use by X.500 clients in constructing search filters. It is obsoleted by enhancedSearchGuide, described below in 5.48.

```
( 2.5.4.14 NAME 'searchGuide' SYNTAX 'Guide' )
```

[5.16.](#) businessCategory

This attribute describes the kind of business performed by an organization.

```
( 2.5.4.15 NAME 'businessCategory' EQUALITY caseIgnoreMatch
```

SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{128}')

[5.17.](#) postalAddress

(2.5.4.16 NAME 'postalAddress' EQUALITY caseIgnoreListMatch
SUBSTR caseIgnoreListSubstringsMatch SYNTAX 'PostalAddress')

[5.18.](#) postalCode

(2.5.4.17 NAME 'postalCode' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{40}')

[5.19.](#) postOfficeBox

(2.5.4.18 NAME 'postOfficeBox' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{40}')

[5.20.](#) physicalDeliveryOfficeName

(2.5.4.19 NAME 'physicalDeliveryOfficeName' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{128}')

[5.21.](#) telephoneNumber

(2.5.4.20 NAME 'telephoneNumber' EQUALITY telephoneNumberMatch
SUBSTR telephoneNumberSubstringsMatch SYNTAX 'TelephoneNumber{32}')

[5.22.](#) telexNumber

(2.5.4.21 NAME 'telexNumber' SYNTAX 'TelexNumber')

[5.23.](#) teletexTerminalIdentifier

(2.5.4.22 NAME 'teletexTerminalIdentifier'
SYNTAX 'TeletexTerminalIdentifier')

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[5.24.](#) facsimileTelephoneNumber

(2.5.4.23 NAME 'facsimileTelephoneNumber'
SYNTAX 'FacsimileTelephoneNumber')

[5.25.](#) x121Address

(2.5.4.24 NAME 'x121Address' EQUALITY numericStringMatch
SUBSTR numericStringSubstringsMatch SYNTAX 'NumericString{15}')

[5.26.](#) internationalISDNNumber

```
( 2.5.4.25 NAME 'internationaliSDNNumber' EQUALITY numericStringMatch
  SUBSTR numericStringSubstringsMatch SYNTAX 'NumericString{16}' )
```

[5.27.](#) registeredAddress

This attribute holds a postal address suitable for reception of telegrams or expedited documents, where it is necessary to have the recipient accept delivery.

```
( 2.5.4.26 NAME 'registeredAddress' SUP postalAddress
  SYNTAX 'PostalAddress' )
```

[5.28.](#) destinationIndicator

This attribute is used for the telegram service.

```
( 2.5.4.27 NAME 'destinationIndicator' EQUALITY caseIgnoreMatch
  SUBSTR caseIgnoreSubstringsMatch SYNTAX 'PrintableString{128}' )
```

[5.29.](#) preferredDeliveryMethod

```
( 2.5.4.28 NAME 'preferredDeliveryMethod' SYNTAX 'DeliveryMethod'
  SINGLE-VALUE )
```

[5.30.](#) presentationAddress

This attribute contains an OSI presentation address.

```
( 2.5.4.29 NAME 'presentationAddress' EQUALITY presentationAddressMatch
  SYNTAX 'PresentationAddress' SINGLE-VALUE )
```

[5.31.](#) supportedApplicationContext

This attribute contains the identifiers of OSI application contexts.

```
( 2.5.4.30 NAME 'supportedApplicationContext'
  EQUALITY objectIdentifierMatch SYNTAX 'OID' )
```

[5.32.](#) member

```
( 2.5.4.31 NAME 'member' SUP distinguishedName )
```

[5.33.](#) owner

(2.5.4.32 NAME 'owner' SUP distinguishedName)

[5.34.](#) roleOccupant

(2.5.4.33 NAME 'roleOccupant' SUP distinguishedName)

[5.35.](#) seeAlso

(2.5.4.34 NAME 'seeAlso' SUP distinguishedName)

[5.36.](#) userPassword

(2.5.4.35 NAME 'userPassword' EQUALITY octetStringMatch
SYNTAX 'Password{128}')

[5.37.](#) userCertificate

(2.5.4.36 NAME 'userCertificate;binary' SYNTAX 'Certificate')

[5.38.](#) cACertificate

(2.5.4.37 NAME 'cACertificate;binary' SYNTAX 'Certificate')

[5.39.](#) authorityRevocationList

(2.5.4.38 NAME 'authorityRevocationList;binary'
SYNTAX 'CertificateList')

[5.40.](#) certificateRevocationList

(2.5.4.39 NAME 'certificateRevocationList;binary'
SYNTAX 'CertificateList')

[5.41.](#) crossCertificatePair

(2.5.4.40 NAME 'crossCertificatePair;binary' SYNTAX 'CertificatePair')

[5.42.](#) name

The name attribute type is the attribute supertype from which string attribute types typically used for naming may be formed. It is unlikely that values of this type itself will occur in an entry. LDAP server implementations which do not support attribute subtyping need not recognize this attribute in requests. Client implementations MUST NOT assume that LDAP servers are capable of performing attribute subtyping.

(2.5.4.41 NAME 'name' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{32768}')

[5.43.](#) givenName

The givenName attribute is used to hold the part of a person's name which is not their surname nor middle name.

(2.5.4.42 NAME 'givenName' SUP name)

[5.44.](#) initials

The initials attribute contains the initials of some or all of an individuals names, but not the surname(s).

(2.5.4.43 NAME 'initials' SUP name)

[5.45.](#) generationQualifier

The generationQualifier attribute contains the part of the name which typically is the suffix, as in "IIIrd".

(2.5.4.44 NAME 'generationQualifier' SUP name)

[5.46.](#) x500UniqueIdentifier

The x500UniqueIdentifier attribute is used to distinguish between objects when a distinguished name has been reused. This is a different attribute type from both the "uid" and "uniqueIdentifier" types.

(2.5.4.45 NAME 'x500UniqueIdentifier' EQUALITY bitStringMatch
SYNTAX 'BitString')

[5.47.](#) dnQualifier

The dnQualifier attribute type specifies disambiguating information to add to the relative distinguished name of an entry. It is intended to be used when merging data from multiple sources in order to prevent conflicts between entries which would otherwise have the same name. It is recommended that the value of the dnQualifier attribute be the same for all entries from a particular source.

(2.5.4.46 NAME 'dnQualifier' EQUALITY caseIgnoreMatch
ORDERING caseIgnoreOrderingMatch SUBSTR caseIgnoreSubstringsMatch
SYNTAX 'PrintableString')

[5.48.](#) enhancedSearchGuide

This attribute is for use by X.500 clients in constructing search filters.

(2.5.4.47 NAME 'enhancedSearchGuide' SYNTAX 'EnhancedGuide')

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[5.49.](#) protocolInformation

This attribute is used in conjunction with the presentationAddress attribute, to provide additional information to the OSI network service.

(2.5.4.48 NAME 'protocolInformation' EQUALITY protocolInformationMatch
SYNTAX 'ProtocolInformation')

[5.50.](#) distinguishedName

This attribute type is not used as the name of the object itself, but it is instead a base type from which attributes with DN syntax inherit.

It is unlikely that values of this type itself will occur in an entry. LDAP server implementations which do not support attribute subtyping need not recognize this attribute in requests. Client implementations MUST NOT assume that LDAP servers are capable of performing attribute subtyping.

(2.5.4.49 NAME 'distinguishedName' EQUALITY distinguishedNameMatch
SYNTAX 'DN')

[5.51.](#) uniqueMember

(2.5.4.50 NAME 'uniqueMember' EQUALITY uniqueMemberMatch
SYNTAX 'NameAndOptionalUID')

[5.52.](#) houseIdentifier

This attribute is used to identify a building within a location.

(2.5.4.51 NAME 'houseIdentifier' EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch SYNTAX 'DirectoryString{32768}')

[5.53.](#) supportedAlgorithms

(2.5.4.52 NAME 'supportedAlgorithms;binary' SYNTAX 'SupportedAlgorithm')

[5.54.](#) deltaRevocationList

(2.5.4.53 NAME 'deltaRevocationList;binary' SYNTAX 'CertificateList')

[6.](#) Syntaxes

Servers SHOULD recognize the syntax names defined in this section.

[6.1.](#) DeliveryMethod

Values with DeliveryMethod syntax are encoded according to the following BNF:

```
<delivery-value> ::= <pdm> | <pdm> '$' <delivery-value>

<pdm> ::= 'any' | 'mhs' | 'physical' | 'telex' | 'teletex' |
          'g3fax' | 'g4fax' | 'ia5' | 'videotex' | 'telephone'
```

Example:

telephone

[6.2.](#) EnhancedGuide

Values with the EnhancedGuide syntax are encoded according to the following BNF:

```
<EnhancedGuide> ::= <objectclass> '#' <criteria> '#' <subset>

<subset> ::= "baseobject" | "oneLevel" | "wholeSubtree"
```

The <criteria> production is defined in the Guide syntax below.
This syntax has been added subsequent to [RFC 1778](#).

Example:

```
person#(sn)#oneLevel
```

[6.3.](#) Guide

Values with the Guide syntax are encoded according to the following BNF:

```
<guide-value> ::= [ <object-class> '#' ] <criteria>

<object-class> ::= an encoded value with OID syntax

<criteria> ::= <criteria-item> | <criteria-set> | '!' <criteria>

<criteria-set> ::= [ '(' ] <criteria> '&' <criteria-set> [ ')' ] |
                  [ '(' ] <criteria> '|' <criteria-set> [ ')' ]

<criteria-item> ::= [ '(' ] <attributetype> '$' <match-type> [ ')' ]

<match-type> ::= "EQ" | "SUBSTR" | "GE" | "LE" | "APPROX"
```

This syntax should not be used for defining new attributes.

[6.4.](#) TeletexTerminalIdentifier

Values with the TeletexTerminalIdentifier syntax are encoded according to the following BNF:

```
<teletex-id> ::= <ttx-term> 0*('$' <ttx-param>)

<ttx-term> ::= <printablestring>

<ttx-param> ::= <ttx-key> ':' <ttx-value>

<ttx-key> ::= 'graphic' | 'control' | 'misc' | 'page' | 'private'

<ttx-value> ::= <octetstring>
```

In the above, the first <printablestring> is the encoding of the first portion of the teletex terminal identifier to be encoded, and

the subsequent 0 or more <octetstrings> are subsequent portions of the teletex terminal identifier.

[6.5.](#) TelexNumber

Values with the TelexNumber syntax are encoded according to the following BNF:

```
<telex-number> ::= <actual-number> '$' <country> '$' <answerback>
```

```
<actual-number> ::= <printablestring>
```

```
<country> ::= <printablestring>
```

```
<answerback> ::= <printablestring>
```

In the above, <actual-number> is the syntactic representation of the number portion of the TELEX number being encoded, <country> is the TELEX country code, and <answerback> is the answerback code of a TELEX terminal.

[6.6.](#) SupportedAlgorithm

No printable representation of values of the supportedAlgorithms attribute is defined in this document. Clients which wish to store and retrieve this attribute MUST use "supportedAlgorithms;binary", in which the value is transferred as a binary encoding.

[7.](#) Object Classes

LDAP servers SHOULD recognize the object classes listed here as values of the objectClass attribute.

[7.1.](#) top

```
( 2.5.6.0 NAME 'top' ABSTRACT MUST objectClass )
```

[7.2.](#) alias

```
( 2.5.6.1 NAME 'alias' SUP top STRUCTURAL MUST aliasedObjectName )
```

[7.3.](#) country

```
( 2.5.6.2 NAME 'country' SUP top STRUCTURAL MUST c  
MAY ( searchGuide $ description ) )
```

[7.4.](#) locality

```
( 2.5.6.3 NAME 'locality' SUP top STRUCTURAL
  MAY ( street $ seeAlso $ searchGuide $ st $ l $ description ) )
```

[7.5.](#) organization

```
( 2.5.6.4 NAME 'organization' SUP top STRUCTURAL MUST o
  MAY ( userPassword $ searchGuide $ seeAlso $ businessCategory $
    x121Address $ registeredAddress $ destinationIndicator $
    preferredDeliveryMethod $ telexNumber $ teletexTerminalIdentifier $
    telephoneNumber $ internationaliSDNNumber $ facsimileTelephoneNumber $
    street $ postOfficeBox $ postalCode $ postalAddress $
    physicalDeliveryOfficeName $ st $ l $ description ) )
```

[7.6.](#) organizationalUnit

```
( 2.5.6.5 NAME 'organizationalUnit' SUP top STRUCTURAL MUST ou
  MAY ( userPassword $ searchGuide $ seeAlso $ businessCategory $
    x121Address $ registeredAddress $ destinationIndicator $
    preferredDeliveryMethod $ telexNumber $ teletexTerminalIdentifier $
    telephoneNumber $ internationaliSDNNumber $ facsimileTelephoneNumber $
    street $ postOfficeBox $ postalCode $ postalAddress $
    physicalDeliveryOfficeName $ st $ l $ description ) )
```

[7.7.](#) person

```
( 2.5.6.6 NAME 'person' SUP top STRUCTURAL MUST ( sn $ cn )
  MAY ( userPassword $ telephoneNumber $ seeAlso $ description ) )
```

[7.8.](#) organizationalPerson

```
( 2.5.6.7 NAME 'organizationalPerson' SUP person STRUCTURAL
  MAY ( title $ x121Address $ registeredAddress $ destinationIndicator $
    preferredDeliveryMethod $ telexNumber $ teletexTerminalIdentifier $
    telephoneNumber $ internationaliSDNNumber $ facsimileTelephoneNumber $
    street $ postOfficeBox $ postalCode $ postalAddress $
    physicalDeliveryOfficeName $ ou $ st $ l ) )
```

[7.9.](#) organizationalRole

```
( 2.5.6.8 NAME 'organizationalRole' SUP top STRUCTURAL MUST cn
  MAY ( x121Address $ registeredAddress $ destinationIndicator $
    preferredDeliveryMethod $ telexNumber $ teletexTerminalIdentifier $
    telephoneNumber $ internationaliSDNNumber $ facsimileTelephoneNumber $
    seeAlso $ roleOccupant $ preferredDeliveryMethod $ street $
    postOfficeBox $ postalCode $ postalAddress $
    physicalDeliveryOfficeName $ ou $ st $ l $ description ) )
```

[7.10.](#) groupOfNames

```
( 2.5.6.9 NAME 'groupOfNames' SUP top STRUCTURAL MUST ( member $ cn )
  MAY ( businessCategory $ seeAlso $ owner $ ou $ o $ description ) )
```

[7.11.](#) residentialPerson

```
( 2.5.6.10 NAME 'residentialPerson' SUP person STRUCTURAL MUST l
  MAY ( businessCategory $ x121Address $ registeredAddress $
    destinationIndicator $ preferredDeliveryMethod $ telexNumber $
    teletexTerminalIdentifier $ telephoneNumber $ internationaliSDNNumber $
    facsimileTelephoneNumber $ preferredDeliveryMethod $ street $
    postOfficeBox $ postalCode $ postalAddress $
    physicalDeliveryOfficeName $ st $ l ) )
```

[7.12.](#) applicationProcess

```
( 2.5.6.11 NAME 'applicationProcess' SUP top STRUCTURAL MUST cn
  MAY ( seeAlso $ ou $ l $ description ) )
```

[7.13.](#) applicationEntity

```
( 2.5.6.12 NAME 'applicationEntity' SUP top STRUCTURAL
  MUST ( presentationAddress $ cn )
  MAY ( supportedApplicationContext $ seeAlso $ ou $ o $ l $
    description ) )
```

[7.14.](#) dSA

```
( 2.5.6.13 NAME 'dSA' SUP applicationEntity STRUCTURAL
  MAY knowledgeInformation )
```

[7.15.](#) device

```
( 2.5.6.14 NAME 'device' SUP top STRUCTURAL MUST cn
  MAY ( serialNumber $ seeAlso $ owner $ ou $ o $ l $ description ) )
```

[7.16.](#) strongAuthenticationUser

```
( 2.5.6.15 NAME 'strongAuthenticationUser' SUP top AUXILIARY
```

MUST userCertificate)

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[7.17.](#) certificationAuthority

```
( 2.5.6.16 NAME 'certificationAuthority' SUP top AUXILIARY
  MUST ( authorityRevocationList $ certificateRevocationList $
    cACertificate ) MAY crossCertificatePair )
```

[7.18.](#) groupOfUniqueNames

```
( 2.5.6.17 NAME 'groupOfUniqueNames' SUP top STRUCTURAL
  MUST ( uniqueMember $ cn )
  MAY ( businessCategory $ seeAlso $ owner $ ou $ o $ description ) )
```

[7.19.](#) subentry

This object class has special significance for administering X.500(93) servers, as described in [section 13.2](#) of X.501 [2].

```
( 2.5.17.0 NAME 'subentry' SUP top STRUCTURAL
  MUST ( cn $ subtreeSpecification ) )
```

[7.20.](#) accessControlSubentry

This object class has special significance for administering X.500(93) servers. It is used in conjunction with the "subentry" object class.

```
( 2.5.17.1 NAME 'accessControlSubentry' AUXILIARY )
```

[7.21.](#) collectiveAttributeSubentry

This object class has special significance for administering X.500(93) servers. It is used in conjunction with the "subentry" object class.

```
( 2.5.17.2 NAME 'collectiveAttributeSubentry' AUXILIARY )
```

[7.22.](#) subschema

This object class is used for the subschema subentry in X.500(93) servers.

```
( 2.5.20.1 NAME 'subschema' AUXILIARY
  MAY ( dITStructureRules $ nameForms $ ditContentRules $
    objectClasses $ attributeTypes $ matchingRules $ matchingRuleUse ) )
```

7.23. userSecurityInformation

```
( 2.5.6.18 NAME 'userSecurityInformation' SUP top AUXILIARY
  MAY ( supportedAlgorithms ) )
```

7.24. certificationAuthority-V2

```
( 2.5.6.16.2 NAME 'certificationAuthority-V2' SUP certificationAuthority
  AUXILIARY MAY ( deltaRevocationList ) )
```

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7.25. cRLDistributionPoint

```
( 2.5.6.19 NAME 'cRLDistributionPoint' SUP top STRUCTURAL
  MUST ( cn ) MAY ( certificateRevocationList $ authorityRevocationList $
  deltaRevocationList ) )
```

8. Security Considerations

Security issues are not discussed in this memo.

9. Acknowledgements

The definitions on which this document have been developed by committees for telecommunications, international standards, and the Internet community.

10. Bibliography

- [1] M. Wahl, A. Coulbeck, T. Howes, S. Kille, W. Yeong, C. Robbins, "Lightweight X.500 Directory Access Protocol Attribute Syntax Definitions", INTERNET-DRAFT <[draft-ietf-asid-ldapv3-attributes-04.txt](#)>, March 1997.
- [2] The Directory: Models. ITU-T Recommendation X.501, 1993.
- [3] The Directory: Authentication Framework. ITU-T Recommendation X.509, 1993.
- [4] The Directory: Selected Attribute Types. ITU-T Recommendation X.520, 1993.
- [5] The Directory: Selected Object Classes. ITU-T Recommendation

X.521, 1993.

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