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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Systems and  
terminal equipment for audiovisual services

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**Directory services architecture for H.320**

ITU-T Recommendation H.350.3

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# **ITU-T Recommendation H.350.3**

## **Directory services architecture for H.320**

### **Summary**

This Recommendation describes an LDAP schema to represent H.320 endpoints. It is an auxiliary class related to ITU-T Rec. H.350 and derives much of its functionality from that architecture. Implementors should review ITU-T Rec. H.350 in detail before proceeding with this Recommendation. Its attributes include basic H.320 address elements. These addresses can be downloaded to an endpoint for automatic configuration or published to white pages to create user dialling directories.

The scope of this Recommendation does not include normative methods for the use of the LDAP directory itself, or the data it contains. The purpose of the schema is not to represent all possible data elements in the H.320 protocol, but rather to represent the minimal set required to accomplish the design goals enumerated in ITU-T Rec. H.350.

### **Source**

ITU-T Recommendation H.350.3 was approved by ITU-T Study Group 16 (2001-2004) under the ITU-T Recommendation A.8 procedure on 6 August 2003.

### **Keywords**

Directory Services, H.235, H.320, H.323, LDAP, SIP.

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# ITU-T Recommendation H.350.3

## Directory services architecture for H.320

### 1 Scope

This Recommendation describes an LDAP schema to represent H.320 endpoints. It is an auxiliary class related to ITU-T Rec. H.350 and derives much of its functionality from that architecture. Implementors should review ITU-T Rec. H.350 in detail before proceeding with this Recommendation. Its attributes include basic H.320 address elements. These addresses can be downloaded to an endpoint for automatic configuration or published to white pages to create user dialling directories.

The scope of this Recommendation does not include normative methods for the use of the LDAP directory itself, or the data it contains. The purpose of the schema is not to represent all possible data elements in the H.320 protocol, but rather to represent the minimal set required to accomplish the design goals enumerated in ITU-T Rec. H.350.

#### 1.1 Extending the schema

The h320Identity classes may be extended as necessary for specific implementations. See the base H.350 document for a discussion on schema extension.

### 2 References

The following ITU-T Recommendations and other references contain provisions, which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation

#### 2.1 Normative references

- ITU-T Recommendation E.164 (1997), *The international public telecommunication numbering plan*.
- ITU-T Recommendation H.320 (1999), *Narrow-band visual telephone systems and terminal equipment*.
- ITU-T Recommendation H.350 (2003), *Directory services architecture for multimedia conferencing*.
- IETF RFC 3377 (2002), *Lightweight Directory Access Protocol (v3): Technical Specification*.

#### 2.2 Informative references

- HOWES (Timothy A.), PhD, SMITH (Mark C.), GOOD (Gordon S.): *Understanding And Deploying LDAP Directory Services*, New Riders Publishing, 1999, ISBN: 1578700701.
- HOWES (Timothy A.), PhD, SMITH (Mark C.): *LDAP Programming Directory-Enabled Applications with Lightweight Directory Access Protocol*, New Riders Publishing, 1997, ISBN: 1578700000.

### 3 Definitions

This Recommendation defines the following terms:

**3.1 commObject:** An LDAP object class defined in ITU-T Rec. H.350 that represents generic multimedia conferencing endpoints.

**3.2 endpoint:** A logical device that provides video and/or voice media encoding/decoding, and signalling functions. Examples include:

- 1) a group teleconferencing appliance that is located in a conference room;
- 2) an IP telephone;
- 3) a software program that takes video and voice from a camera and microphone, encodes it and applies signalling using a host computer.

Note that from the perspective of most signalling protocols, gateways and MCUs are special cases of endpoints.

**3.3 white pages:** An application that allows end users to look up the address of another user.

### 4 Abbreviations

This Recommendation uses the following abbreviation:

**LDAP** Lightweight Directory Access Protocol (as defined in RFC 3377).

### 5 Conventions

In this Recommendation, the following conventions are used:

"Shall" indicates a mandatory requirement.

"Should" indicates a suggested but optional course of action.

"May" indicates an optional course of action rather than a recommendation that something take place.

References to clauses, subclauses, annexes and appendices refer to those items within this Recommendation unless another specification is explicitly listed.

### 6 Object class definitions

The h320Identity object class represents H.320 terminals. It is an auxiliary class and is derived from the commObject class in ITU-T Rec. H.350. The only attribute is described is the GSTN address of the terminal. Note that in this architecture, an international public telecommunications number is broken down into its component parts of CC+NDC+SN as defined in ITU-T Rec. E.164.

#### 6.1 h320Identity

```
OID: 0.0.8.350.1.1.5.2.1
objectclasses: (0.0.8.350.1.1.5.2.1
NAME 'h320Identity'
DESC 'h320Identity object'
SUP top AUXILIARY
MAY ( h320IdentityCC $ h320IdentityNDC $ h320IdentitySN $
h320IdentityServiceLevel $ h320IdentityExtension)
)
```



## 6.2 h320IdentityCC

```
OID: 0.0.8.350.1.1.5.1.1
attributetypes: (0.0.8.350.1.1.5.1.1
NAME 'h320IdentityCC'
DESC 'Country Code'
EQUALITY caseIgnoreIA5Match
SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{3}
)
```

Application utility class

standard

Number of values

multi

Definition

Country Code portion of the terminal address as defined in ITU-T Rec. E.164.

Notes

May also be used for voice numbers.

Semantics

Example applications for which this attribute would be useful

A white pages directory that displays a user's ISDN visual telephone address.

Example (LDIF fragment)

```
h320IdentityCC: 1
```

## 6.3 h320IdentityNDC

```
OID: 0.0.8.350.1.1.5.1.4
attributetypes: (0.0.8.350.1.1.5.1.4
NAME 'h320IdentityNDC'
DESC 'National Destination Code'
EQUALITY caseIgnoreIA5Match
SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{15}
)
```

Application utility class

standard

Number of values

multi

Definition

National Destination Code portion of the terminal address as defined in ITU-T Rec. E.164.

Notes

May also be used for voice numbers. For example, in the US, the NDC is the area code.

Semantics

Example applications for which this attribute would be useful

A white pages directory that displays a user's ISDN visual telephone address.

Example (LDIF fragment)

```
h320IdentityNDC: 919
```

## 6.4 h320IdentitySN

```
OID: 0.0.8.350.1.1.5.1.5
attributetypes: (0.0.8.350.1.1.5.1.5
NAME 'h320IdentitySN'
DESC 'Subscriber Number'
EQUALITY caseIgnoreIA5Match
SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{15}
)
```

Application utility class

standard

Number of values

multi

Definition

Subscriber Number portion of the terminal address as defined in ITU-T Rec. E.164.

Notes

May also be used for voice numbers.

Semantics

Example applications for which this attribute would be useful

A white pages directory that displays a user's ISDN visual telephone address.

Example (LDIF fragment)

```
h320IdentitySN: 1234567
```

## 6.5 h320IdentityExtension

```
OID: 0.0.8.350.1.1.5.1.3
attributetypes: (0.0.8.350.1.1.5.1.3
NAME 'h320IdentityExtension'
DESC 'Extension of terminal required to dial after initial PSTN address is
connected.'
EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch
SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{120}
)
```

Application utility class

standard

Number of values

multi

Definition

Specifies an optional extension to be dialled after the PSTN address.

Notes

May also be used for voice numbers. This attribute can accommodate non-numeric characters, allowing for automatic dialling of extensions. For example, an extension of 1234 that is reachable via Interactive Voice Response, followed by a pound sign, could be represented as ,1234# where the comma indicates the automatic dialler should pause, and the pound sign indicates end of dial string to the IVR. The specific function of digits and characters is not defined here. Note that if the CC+NDC+SN address terminates in a

gateway to an IP network, it may be desirable to dial a valid IP address or URL for call completion on the Internet.

#### Semantics

Example applications for which this attribute would be useful

A white pages directory that displays a user's ISDN visual telephone address, including instructions for dialling through an IVR.

#### Example (LDIF fragment)

```
h320IdentityExtension: 71002
h320IdentityExtension: ,1234#
h320IdentityExtension: h323:user@gatekeeper.foo.com
h320IdentityExtension: 127.0.0.1
```

## 6.6 h320IdentityServiceLevel

```
OID: 0.0.8.350.1.1.5.1.2
attributetypes: (0.0.8.350.1.1.5.1.2
NAME 'h320IdentityServiceLevel'
DESC 'To define services that a user can belong to.'
EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch
SYNTAX 1.3.6.1.4.1.1466.115.121.1.15
)
```

#### Application utility class

Standard

Number of values

multi

#### Definition

This describes the type of services a user can belong to.

Permissible values (if controlled)

#### Notes

This attribute does not represent a data element found in ITU-T Rec. H.320. Instead, it provides a mechanism for the storage of authorization information directly in LDAP. For larger applications, it may be desirable to ignore this attribute and instead utilize an external authorization server

#### Semantics

Example applications for which this attribute would be useful

Specifying whether certain terminals are authorized to make MCU calls.

#### Example (LDIF fragment)

```
h320IdentityServiceLevel: premium
```

## 7 h320Identity LDIF Files

This clause contains a schema configuration file for h320Identity that can be used to configure an LDAP server to support this class.

```
# h320Identity Object Schema
#
# Schema for representing h320Identity Object in an LDAP Directory
#
```

```

# Abstract
#
# This Recommendation defines the schema for representing h320Identity
# object in an LDAP directory [LDAPv3]. It defines schema elements
# to represent an h320Identity object [h320Identity].
#
#           .1 = Communication related work
#           .1.5 = h320Identity
#           .1.5.1 = attributes
#           .1.5.2 = objectclass
#           .1.5.3 = syntax
#
#
# Attribute Type Definitions
#
#   The following attribute types are defined in this Recommendation:
#
#       h320IdentityCC
#       h320IdentityNDC
#       h320IdentitySN
#       h320IdentityServiceLevel
#       h320IdentityExtension
dn: cn=schema
changetype: modify
#
# if you need to change the definition of an attribute,
#       then first delete and re-add in one step
#
# if this is the first time you are adding the h320Identity
# objectclass using this LDIF file, then you should comment
# out the delete attributetypes modification since this will
# fail. Alternatively, if your ldapmodify has a switch to continue
# on errors, then just use that switch -- if you are careful
#
delete: attributetypes
attributetypes: (0.0.8.350.1.1.5.1.1 NAME 'h320IdentityCC' )
attributetypes: (0.0.8.350.1.1.5.1.4 NAME 'h320IdentityNDC' )
attributetypes: (0.0.8.350.1.1.5.1.5 NAME 'h320IdentitySN' )
attributetypes: (0.0.8.350.1.1.5.1.2 NAME 'h320IdentityServiceLevel' )
attributetypes: (0.0.8.350.1.1.5.1.3 Name 'h320IdentityExtension' )
-
#
# re-add the attributes -- in case there is a change of definition
#
#
add: attributetypes
attributetypes: (0.0.8.350.1.1.5.1.1
    NAME 'h320IdentityCC'
    DESC 'Country Code'
    EQUALITY caseIgnoreIA5Match
    SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{3} )
attributetypes: (0.0.8.350.1.1.5.1.4
    NAME 'h320IdentityNDC'
    DESC 'National Destination Code'
    EQUALITY caseIgnoreIA5Match
    SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{15} )
attributetypes: (0.0.8.350.1.1.5.1.5
    NAME 'h320IdentitySN'
    DESC 'Subscriber Number'
    EQUALITY caseIgnoreIA5Match
    SYNTAX 1.3.6.1.4.1.1466.115.121.1.26{15} )
attributetypes: (0.0.8.350.1.1.5.1.2
    NAME 'h320IdentityServiceLevel'

```

```

DESC 'To define services that a user can belong to.'
EQUALITY caseIgnoreMatch
SUBSTR caseIgnoreSubstringsMatch
SYNTAX 1.3.6.1.4.1.1466.115.121.1.15 )
attributetypes: (0.0.8.350.1.1.5.1.3
  NAME 'h320IdentityExtension'
  DESC 'Extension of terminal required to dial after initial PTSN
address is connected.'
  EQUALITY caseIgnoreMatch
  SUBSTR caseIgnoreSubstringsMatch
  SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{120} )
-
# Object Class Definitions
#
#   The following object class is defined in this Recommendation:
#
#       h320Identity
#
# h320Identity
#
delete: objectclasses
objectclasses: (0.0.8.350.1.1.5.2.1 NAME 'h320Identity' )
-
add: objectclasses
objectclasses: (0.0.8.350.1.1.5.2.1
  NAME 'h320Identity'
  DESC 'h320Identity object'
  SUP top AUXILIARY
  MAY ( h320IdentityCC $ h320IdentityNDC $ h320IdentitySN $
    h320IdentityServiceLevel $ h320IdentityExtension )
)
-
#
# end of LDIF
#

```

## Annex A

### Indexing profile

Indexing of attributes is an implementation-specific activity and depends upon the desired application. Non-indexed attributes can result in search times sufficiently long to render some applications unusable. Notably, user and alias lookup should be fast. The Annex A Indexing Profile describes an indexing configuration for h320Identity directories that will be optimized for use in directory of directories applications. Use of this profile is optional.

h320IdentityCC: presence, equality, sub

h320IdentityNDC: presence, equality, sub

h320IdentitySN: presence, equality, sub

h320IdentityExtension: presence, equality, sub

h320IdentityServiceLevel: equality

## Appendix I

### Electronic attachment<sup>1</sup>

The attached file `h320Identity.ldif.txt` contains a text only version of the LDIF file described in clause 7.



`h320Identity.ldif.t  
xt`

---

<sup>1</sup> In order to help paper copy users, the content of this appendix is available for free download from the ITU publication website at:

<http://www.itu.int/rec/recommendation.asp?type=folders&lang=e&parent=T-REC-H.350.3>



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