

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 H.350 and derives much of its functionality from that architecture. Implementers should review 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 H.350.

Keywords

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

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1 Scope

This Recommendation describes an LDAP schema to represent H.320 endpoints. It is an auxiliary class related to H.350 and derives much of its functionality from that architecture. Implementers should review 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 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 H.350 (2003), *Directory Services Architecture for Multimedia Conferencing*.
- ITU-T Recommendation H.320 (1999), *Narrow-band visual telephone systems and terminal equipment*.
- ITU-T Recommendation E.164 (1997), *The International Public Telecommunication Numbering Plan*.
- IETF RFC 3377 (2002), *Lightweight Directory Access Protocol (v3): Technical Specification*.

2.2 Non-Normative References

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

3 Definitions

The following terms used throughout the document:

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

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 and 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.

White Pages: An application that allows end users to look up the address of another user.

4 Abbreviations

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, sub clauses, 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 derived in 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 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 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 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 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 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 section 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 document 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 document:
#
#     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're 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 document:
#
#       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

A 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

I Electronic Attachment

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



`h320Identity.ldif.t`
`xt`
