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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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

Directory services architecture for H.235

ITU-T Recommendation H.350.2

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ITU-T Recommendation H.350.2

Directory services architecture for H.235

Summary

This Recommendation describes an LDAP schema to represent H.235 elements. 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 H.235 identity, password and certificate elements. These elements can be downloaded to an endpoint for automatic configuration or accessed by a gatekeeper for call signalling and authentication.

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.235 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.350.2 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.350.2

Directory services architecture for H.235

1 Scope

This Recommendation describes an LDAP schema to represent H.235 elements. It is an auxiliary class related to ITU-T Rec. H.350 and derives much of its functionality from that architecture. Implementers should review ITU-T Rec. H.350 in detail before proceeding with this Recommendation. Its attributes include H.235 identity, password and certificate elements. These aliases can be downloaded to an endpoint for automatic configuration or accessed by a gatekeeper for call signalling and authentication.

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.235 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 h235Identity classes may be extended as necessary for specific implementations. See the base ITU-T Rec. H.350 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.225.0 (2003), *Call signalling protocols and media stream packetization for packet-based multimedia communications systems*.
- ITU-T Recommendation H.235 (2003), *Security and encryption for H-Series (H.323 and other H.245-based) multimedia terminals*.
- ITU-T Recommendation H.323 (2003), *Packet-based multimedia communications systems*.
- 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.

4 Abbreviations

This Recommendation uses the following abbreviations:

LDAP Lightweight Directory Access Protocol (as defined in RFC 1777).

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 h235Identity object class defines two attributes, h235IdentityEndpointID and h235IdentityPassword, which are needed to be able to implement Annex D/H.235. The remaining attributes that are used, and which are already defined in LDAP, are needed to be able to implement Annex E/H.235. Those attributes are userCertificate, cACertificate, authorityRevocationList, certificateRevocationList, and crossCertificatePair. The definitions and purpose of each of those attributes are defined in IETF RFC 2256.

6.1 h235Identity

```
OID: 0.0.8.350.1.1.4.2.1
objectclasses: (0.0.8.350.1.1.4.2.1
NAME 'h235Identity'
DESC 'h235Identity object'
SUP top AUXILIARY
MAY ( h235IdentityEndpointID $ h235IdentityPassword $
userCertificate $ cACertificate $ authorityRevocationList $
certificateRevocationList $ crossCertificatePair )
)
```

6.2 h235IdentityEndpointID

```
OID: 0.0.8.350.1.1.4.1.1
attributetypes: (0.0.8.350.1.1.4.1.1
NAME 'h235IdentityEndpointID'
DESC 'The Sender ID as defined in ITU-H235.'
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

The endpoint's senderID as defined in ITU-T Rec. H.235. This is always identical to endpointID.

Permissible values (if controlled)

Notes

In practice, there will always be one and only one h235IdentityEndpointID attribute for every endpoint. For applications where the endpoint authenticates against an LDAP directory, this value may be equal to the commUniqueID value defined in ITU-T Rec. H.350.

Semantics

Example applications for which this attribute would be useful

Example (LDIF fragment)

```
h235IdentityEndpointID: bobsmith
```

6.3 h235IdentityPassword

```
OID: 0.0.8.350.1.1.4.1.2
attributetypes: (0.0.8.350.1.1.4.1.2
NAME 'h235IdentityPassword'
DESC 'The endpoint password as defined in ITU-H325.'
EQUALITY octetStringMatch
SYNTAX 1.3.6.1.4.1.1466.115.121.1.40 )
```

Application utility class

Standard

Number of values

multi

Definition

The endpoint's H.323 password as defined in ITU-T Rec. H.235.

Permissible values (if controlled)

Notes

In practice, there will always be one and only one h235IdentityPassword attribute for every endpoint.

If the password is stored in LDAP in encrypted format, then the LDAP encryption algorithm should match the encryption algorithm for the gatekeeper and endpoint, i.e. the

gatekeeper and endpoint should support the same encryption format as the LDAP server, even as systems are upgraded over time. This is so the endpoint and gatekeeper may derive the unencrypted password in order to perform Annex D/H.235 operations. Since this may not always be possible, the password may be stored in LDAP in an unencrypted fashion. In this case, whenever the password is read by a gatekeeper or endpoint, that communication should be transacted over a secure transport mechanism, e.g. TLS.

Semantics

Example applications for which this attribute would be useful

Example (LDIF fragment)

```
h235IdentityPassword: 36zxJmCIB18dM0FVAj
```

7 h235Identity LDIF Files

This clause contains a schema configuration file for h235Identity that can be used to configure an LDAP server to support this class.

```
# h235Identity Object Schema
#
# Schema for representing h235Identity Object in an LDAP Directory
#
# Abstract
#
# This Recommendation defines the schema for representing h235Identity
# object in an LDAP directory [LDAPv3]. It defines schema elements
# to represent an h235Identity object [h235Identity].
#
#           .1 = Communication related work
#           .1.4 = h235Identity
#           .1.4.1 = attributes
#           .1.4.2 = objectclass
#           .1.4.3 = syntax
#
#
# Attribute Type Definitions
#
#   The following attribute types are defined in this Recommendation:
#
#       h235IdentityEndpointID
#       h235IdentityPassword
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 h235Identity
# 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: (0.0.8.350.1.1.4.1.1 NAME 'h235IdentityEndpointID' )
attributetypes: (0.0.8.350.1.1.4.1.2 NAME 'h235IdentityPassword' )
-
#
# re-add the attributes -- in case there is a change of definition
#
```

```

#
add: attributetypes
attributetypes: (0.0.8.350.1.1.4.1.1
  NAME 'h235IdentityEndpointID'
  DESC 'The Sender ID as defined in ITU-H235v2.'
  EQUALITY caseIgnoreMatch
  SUBSTR caseIgnoreSubstringsMatch
  SYNTAX 1.3.6.1.4.1.1466.115.121.1.15 )
attributetypes: (0.0.8.350.1.1.4.1.2
  NAME 'h235IdentityPassword'
  DESC 'The endpoint H.323 password as defined in ITU-H235v2.'
  EQUALITY octetStringMatch
  SYNTAX 1.3.6.1.4.1.1466.115.121.1.40 )
-
# Object Class Definitions
#
#   The following object class is defined in this Recommendation:
#
#       h235Identity
#
# h235Identity
#
delete: objectclasses
objectclasses: (0.0.8.350.1.1.4.2.1 NAME 'h235Identity' )
-
add: objectclasses
objectclasses: (0.0.8.350.1.1.4.2.1
  NAME 'h235Identity'
  DESC 'h235Identity object'
  SUP top AUXILIARY
  MAY ( h235IdentityEndpointID $ h235IdentityPassword $
    userCertificate $ cACertificate $
    authorityRevocationList $ certificateRevocationList $
    crossCertificatePair )
)
-
#
# 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 h235Identity directories that will be optimized for use in directory of directories applications. Use of this profile is optional.

h235IdentityEndpointID: no recommendation

h235IdentityPassword: equality

Appendix I

Electronic attachment¹

The attached file `h235Identity.ldif.txt` contains a text only version of the LDIF file described in clause 7.



`h235Identity.ldif.t`
`xt`

¹ 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.350.2>

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