

# Benefits of H.350

## Interoperability

By standardizing the LDAP schema used to represent the underlying data, systems from different brands can be deployed together to create an application environment that avoids vendor lock-in. Collaborators do not need to purchase identical systems in order to communicate. For example, an address or white pages search engine developed by one vendor could serve directory information to IP telephones supplied by a second vendor, with signalling managed by a call server provided by yet a third vendor.

## Desktop support

H.350 provides each end user with the configuration information needed to start communicating. Providing simplified and even automated endpoint configuration solves a big user support issue and results in improved customer service.

## Network management

H.350's user authentication is based on an organization's trusted data sources. With authentication, it is possible to track calls and develop billing applications. H.350 uses the LDAP protocol, and many organizations already have staff who are trained to manage LDAP services. An extension of H.350 also supports X.500 directory services. H.350 organizes information about voice and video equipment and users in a central location. H.350 integrates with enterprise directory services. This means fewer staff can support more users.

## Making users' lives easier

H.350 gives the ability to easily find other video-conferencing or VoIP users anywhere in the world and contact them, with the click of a button. Users can publish and update their multimedia addresses so others can easily find them.

# H.350 features

- Provides secure, scalable identity management for video and voice over IP using LDAP (Lightweight Directory Access Protocol) and X.500 directory services.
- Provides a multimedia address book or white pages so that users can be looked up and their addresses found.
- Supports non-standard signalling protocols such as MPEG-2 or tele-immersion systems.
- Leverages an organization's trusted LDAP entries and avoids replication.
- Supports clickable dialling.
- Provides endpoint configuration parameters that can be downloaded to end users.
- Support for standards-based protocols SIP, H.235, H.320, H.323.
- Supports standard H.323 and SIP security features (authentication).
- Supports authorization and billing.
- Allows endpoint developers to easily change an internal directory look-up to an external look-up.
- Allows products from multiple vendors to interact together from a master data store, in order to enable large and dynamic service platforms.
- Supports Extensible Messaging and Presence Protocol (XMPP).

## ITU-T

**workshops:** [www.itu.int/ITU-T/worksem/](http://www.itu.int/ITU-T/worksem/)  
**e-flash and news:** [www.itu.int/ITU-T/news/](http://www.itu.int/ITU-T/news/)  
**membership:** [www.itu.int/ITU-T/membership/](http://www.itu.int/ITU-T/membership/)  
**Study Group 16:** [www.itu.int/ITU-T/studygroups/com16](http://www.itu.int/ITU-T/studygroups/com16)



# H.350

## Directory Services for Multimedia

# H.350 family of Recommendations

Videoconferencing via the Internet is now easier and less expensive using the new ITU-T H.350 series of Recommendations "Directory services architecture for multimedia conferencing". H.350 results from an Internet2 Video Middleware working group, and was endorsed by ITU Members from 191 countries.

Using LDAP (Lightweight Directory Access Protocol), H.350 provides a uniform way to store and locate user information related to VoIP, video and collaborative multimedia information in a way that integrates with directory and identity management systems already in place at universities, large enterprises and service provider networks. Extensions to support X.500 directory services are also available. The newly standardized technology enables providers to scale-up video and VoIP operations from a few hundred endpoints to full enterprise- and carrier-level deployments. Account configuration details, authentication and authorization are linked to the enterprise directory.

H.350 supports SIP (Session Initiation Protocol), H.320 and H.323, as well as proprietary or non-standardized collaborative and conferencing protocols.



H.350 allows multiple applications, call servers and protocols to access the same master directory information source

The H.350-series defines a standardized directory services support association of individuals with endpoints, searchable directories (a.k.a. white pages), and clickable dialling. Directory services can also assist in user authentication based on trusted data sources by providing standardized management and storage of authentication credentials.

## H.350 – Directory services architecture for multimedia conferencing

Describes a directory services architecture for multimedia conferencing and a standardized LDAP schema to represent endpoints on the network and associate those endpoints with users. It also discusses design and implementation considerations for the interconnection of video- and voice-specific directories, enterprise directories, call servers and endpoints.

### H.350.1 – Directory services architecture for H.323

Describes an LDAP schema to represent H.323 endpoints.

### H.350.2 – Directory services architecture for H.235

Describes an LDAP schema to represent H.235 elements.

### H.350.3 – Directory services architecture for H.320

Describes an LDAP schema to represent H.32 endpoints.

### H.350.4 – Directory services architecture for SIP

Describes an LDAP schema to represent SIP user agents.

### H.350.5 – Directory services architecture for non-standard protocols

Describes an LDAP schema to represent non-standard multimedia communications endpoints, and is meant to provide a very basic framework for representing these elements in a directory.

### H.350.6 – Directory services architecture for call forwarding and preferences

Describes simple LDAP and X.500 schemas to represent call forwarding and call preference information in an H.350 directory. It is intended to represent addresses to which calls should be forwarded in case an endpoint does not answer a call. It can also represent advanced functionality, such as directing a caller to a web page or e-mail screen when the called endpoint is not available.

### H.350.7 – Directory services architecture for XMPP

The Extensible Messaging and Presence Protocol (XMPP) is an IETF standard protocol for exchanging information between network endpoints using Extensible Markup Language (XML). It is used to enable instant messaging and presence applications and is growing in popularity. This Recommendation includes XMPP in the suite of protocols that is supported in [ITU-T H.350], so that an organization can directory-enable and manage XMPP resources in the same way that other multimedia protocols (e.g. H.320, H.323, SIP) are managed in [ITU-T H.350].

# What is needed to support H.350?

- Ability to operate an LDAP and/or X.500 directory service. Many large enterprises already use this service and have staff trained to manage it. Where there is an existing directory, the directory service manager must be willing to add a single line of text (an LDAP Uniform Resource Identifier) for each endpoint to users' existing directory entries. Experience at several organizations has shown that this request has met with no resistance.
- Minor modifications in the call server (H.323 Gatekeeper or SIP Proxy/Registrar Server). The call server's access to the external H.350 directory can be enabled with a single access control rule.

## Usage examples

<b>Name:</b>	Peter Law
<b>Organization:</b>	ITU
<b>Department:</b>	Finance
<b>E-mail:</b>	law@itu.int
<b>Title:</b>	Head of Finance
<b>Phone:</b>	+41 22 732 5000
<b>Street Address:</b>	Varembe 12
<b>City:</b>	Geneva
<b>State/Province:</b>	Geneva
<b>Country:</b>	Switzerland
<b>Postal Code:</b>	1211
<b>Videoconferencing Address:</b>	My Desktop Video

The figure above shows a directory entry for a person stored in an enterprise directory. The red arrow points to the multimedia information available for this person (commURI). The figure below shows the various dialling addresses that can be used to contact the person at the "My Desktop Video" endpoint.

My Desktop Video	
H.323 DialedDigits Alias:	+41 22 732 5000
H.323 ID Alias:	Peter Law
H.323 URL:	h323:law@itu.int
H.323 Transport ID Alias:	165.160.172.14
Owner:	plaw

Non-standard conferencing protocols such as MPEG-2 videoconferencing systems can also be listed in H.350 directories, providing useful contact information and instructions for end users, as illustrated below.

<b>genericIdentity ProtocolIdentifier:</b>	MPEG-2
<b>Generic Identity Message:</b>	See: <a href="http://www.itu.int/plaw/mpeg2/">www.itu.int/plaw/mpeg2/</a> for locations and connection instructions