

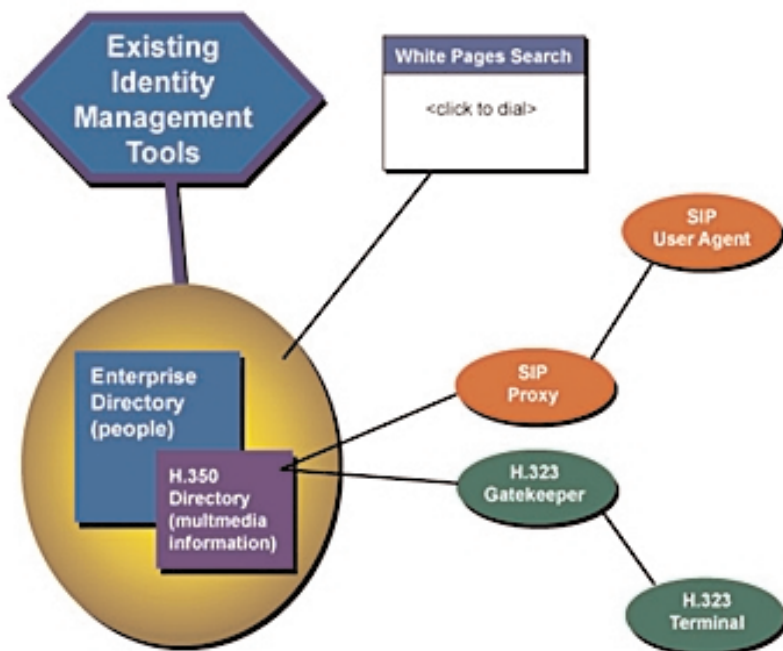
ConferencingBuyer

ITU-T H.350 Directory Services Architecture for Multimedia Conferencing

By Jill Gemmill

Overview of H.350

Videoconferencing with colleagues via the Internet is now easier and less expensive using the new H.350 “Directory Services Architecture for Multimedia Conferencing” standard ratified by the International Telecommunications Union (ITU) in September 2003. Resulting from an Internet2 Video Middleware working group, the new H.350 standard provides a uniform way to store and locate information related to video and voice over IP (VoIP) in directories that are linked seamlessly to enterprise directories.



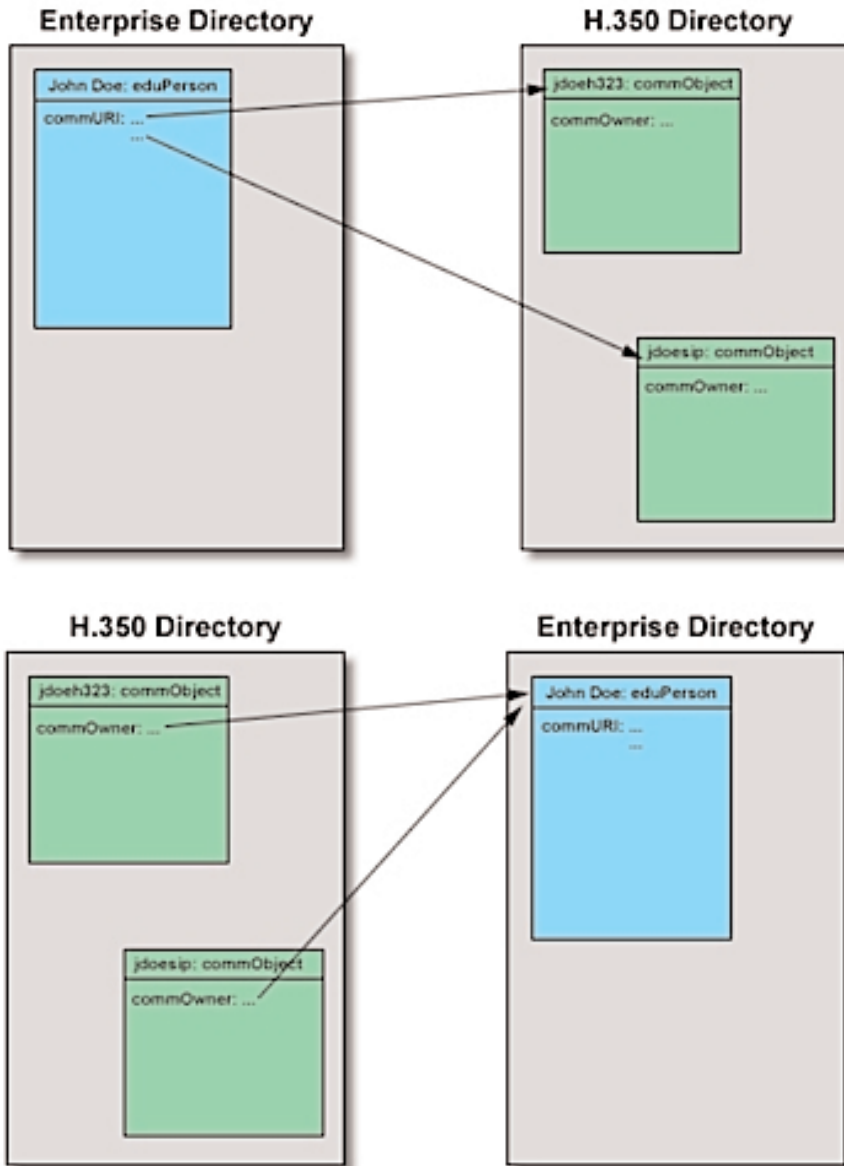
H.350 uses LDAP (Lightweight Directory Access Protocol) to store users' voice, video and collaborative multimedia information in a way that integrates with directory and identity management systems already in place at universities and large enterprises. Many of these enterprise systems also use LDAP and have staff who are familiar with this directory service. The newly standardized technology enables providers to scale up video and VoIP operations from a few hundred endpoints to full enterprise deployments without hiring additional systems administrators. Account configuration details, authentication and authorization are linked to the enterprise directory using LDAP.

H.350 improves security by providing standardized management and storage of authentication credentials. H.350 supports Session Initiation Protocol (SIP)-, H.323-, and H.320-based devices as well as proprietary or non-standardized collaborative and conferencing protocols.

H.350 Features

- Provides 'white pages' so that users and their dialing addresses can be discovered
- Leverages an institution's authoritative LDAP entries and avoids data replication

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H.350 DIRECTORY

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- Supports ‘clickable dialing’ where appropriate
- Provides endpoint configuration parameters that can be downloaded (via either ‘push’ or ‘pull’) to end users
- Provides support for standards-based protocols SIP, H.323, H.320, H.235
- Provides standardized white-pages listing for non-standard signaling protocols or other non-ITU protocols such as MPEG2
- Provides single database for managing multiple protocols and brands
- Supports standard H.323 and SIP authentication
- Supports authorization and billing

How H.350 Works

To achieve scalability in large-scale videoconferencing systems the H.350 object class is used to store and locate information related to video and VoIP in a uniform manner. Each device is represented by a ‘commObject’ H.350 object class. Call servers now have a standardized format and location that can house the protocol-specific configuration settings. A single directory can store information for multiple protocols, providing reliable and central storage for any number of call servers. Rather than replicating ‘person information’ already stored in the enterprise, H.350 provides an LDAP pointer

from each commObject back to the owner’s entry in the enterprise directory, which can even be located on a physically separate directory. Each person entry in the enterprise directory contains an LDAP pointer for each communications device owned or used by that person. Thus a single person entry can contain information about both SIP and H.323 methods for contacting the person. Linking person and device entries in this way provides ‘white pages’ services — when you look someone up in the enterprise directory, you now retrieve their multimedia conferencing information in addition to telephone, email, and so on. A videoconferencing ‘superdirectory’ can even be built upon a set of H.350-compliant directories.

Benefits of H.350

H.350 improves interoperability — for example, a white pages search engine developed by one vendor could serve directory information to IP telephones supplied by a second vendor, with signaling managed by a call server provided by yet a third vendor. Vendors who adopt and use H.350 may see some interesting business opportunities as a result.

H.350 DIRECTORY

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H.350 benefits conferencing system administrators by providing a single management database that can be used directly by H.350-aware call servers, to push proprietary vendor configurations to non-compliant call servers, and to manage migrations between vendors. Powerful LDAP-based tools exist to manage LDAP entries, although an H.350-specific LDAP management tool would be ideal – another example business opportunity. H.350’s user authentication is based on the institution’s authoritative data sources. With authentication, it is possible to meaningfully track calls and develop billing applications.

H.350 benefits end users by allowing them to easily publish their multimedia address in the enterprise’s main directory and easily find out how to contact others. H.350 also provides each end user with the configuration information needed to start communicating. Correct configuration information can be presented to users via web page for any endpoint, and H.350-aware endpoints can even automatically download the correct configuration information, solving a big user support issue and resulting in improved customer service.

Early Implementation and Deployment Experiences

The H.350 architecture has been deployed in the ViDeNet test bed to demonstrate that the concept is viable and to identify any problems in the architecture. ViDeNet interconnects over 100 advanced voice and video networks around the world; participants are primarily from higher education research institutions. The

ViDeNet H.350 project is fully functional. This example directory can be viewed at <https://videnet.unc.edu/>. You may learn more about ViDe at <http://www.vide.net/>.

End user organizations are already finding value in the early deployment of an H.350-enabled environment. “It is critical that we be able to securely manage all 25,000 of our SIP and H.323 users in a way that enables us to integrate products from many different vendors and allows our architecture to evolve without forcing us to rebuild our management architecture, and H.350 lets us do that,” said Tyler Johnson, a Telecommunications Systems Analyst at the University of North Carolina Chapel Hill.

Some multimedia product providers already have embraced H.350 and are incorporating this new standard into their products. Karen Krivaa, Product Manager for RADVISION’s ECS and company lead on its H.350 initiative, offers this comment. “RADVISION has already embraced the newly approved standard and is committed to fully implementing H.350. This standardization is important for vendors like RADVISION and the visual communications industry at large because the H.350 architecture addresses two very important issues in managing videoconferencing networks — easy scaling of video networks and implementing a vendor-agnostic, industry-wide directory standard.” ECS software supporting H.350 is currently in beta testing.

Pathangi Janardhana, Group Project Manager for HCL Technologies, said “H.350 provides important components of a framework for deployment and provisioning of SIP networks. It has incorporated features based on insights gained from understanding service provider and enterprise deployment experience. HCL Technologies feels that adding support for H.350 makes our SIP Server and User Agent products more acceptable and easier to deploy in large multi-vendor networks. Going forward, we feel H.350 support would not be just a desirable feature for VoIP products, but become more of a ‘must have’ function.”

A white pages search engine developed by one vendor could serve directory information to IP telephones supplied by a second vendor, with signaling managed by a call server provided by yet a third vendor.

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Possible roadblocks for H.350 include vendor resistance to supporting a directory external to their application; there is a persistent preference in the market to provide ‘silo in a can’ solutions where the vendor tries to use its directory services as a competitive differentiator....



Jill Gemmill is Assistant Director of Academic Computing at the University of Alabama at Birmingham. H.350 was born out of the Video Middleware Group, a joint initiative between Internet2 (<http://www.middleware.internet2/video>) and the Video Development Initiative (ViDe) <http://www.vide.net>. As a member of Internet2 and past-Chairperson of ViDe Jill was a contributing member of the team that brought H.350 from idea to international standard, and is principal investigator of National Science Foundation grant ANI-0222710 which funded much of this work.. She can be reached at JGemmill@uab.edu.

Will H.350 be widely adopted in the Marketplace?

H.350 will gain traction in the marketplace if both vendors and end users embrace the concept of an industry-wide directory standard that is beneficial for providing easy to locate, useful information to end users while streamlining systems management. E-mail addresses and telephone numbers used to be listed in separate directories, usually because separate organizations provided each service. Consider how useful it is that telephone numbers and e-mail addresses are now commonly listed together in a user’s on-line directory entry — shouldn’t videoconferencing and VoIP connection information be located in these same directories as well?

Possible roadblocks for H.350 include vendor resistance to supporting a directory external to their application; there is a persistent preference in the market to provide ‘silo in a can’ solutions where the vendor tries to use its directory services as a competitive differentiator and which results in

the vendor dictating how the customer will use the directory service. It is also true that even though video and VoIP deployments are growing rapidly, some enterprises may not have reached deployment sizes that exceed current manual or proprietary management methods.

In terms of the effort required to support H.350:

- The customer needs to know how to operate an LDAP directory service. Many large enterprises already have this service in operation and have staff with this expertise. Where there is an existing person 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. Our experience at several universities has been that this request has been met with no resistance.
- The call server (H.323 Gatekeeper or SIP Proxy/Registrar Server) developer needs to make relatively few code modifications. The call server’s access to the external H.350 directory can be enabled with a single access control rule.
- The endpoint developer can easily change an internal directory lookup to an external lookup. Use of H.350 for automated, authenticated endpoint configuration requires more difficult coordination between the directory service access control and the endpoint.

To clearly explain the H.350 design goals, attributes, and use, as well as to familiarize multimedia developers with LDAP installation, configuration and use for H.350, ViDeNet has developed a “Video Middleware Cookbook” that is available at <http://lab.ac.uab.edu/vnet/>. A one-day workshop on H.350, following the material in this cookbook, will be offered by ViDe on Thursday, March 25, 2004. Readers are invited to monitor the workshop website: <http://www.vide.net/conferences/spr2004/> for registration information, which should be posted by December 15. ♦

ConferencingBuyer
 December 2003 • Volume 1 Number 7
 112 Sumner Road, Brookline, MA 02445 • 617-975-0297
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