

# Module 1: Introducing Live Communications Server 2005 with SP1

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# Overview

- 
- **Introducing Real-Time Communications**
  - **Introducing Live Communications Server**
  - **Integrating LCS 2005 with Client Applications**
  - **Identifying LCS 2005 with SP1 Server Roles**
  - **Reviewing LCS 2005 with SP1 Topologies**
  - **Identifying LCS 2005 with SP1 Deployment Scenarios**

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## Introduction

In this module, you will discuss the concepts of Real -Time Communications (RTC), and Microsoft® Live Communications Server 2005 with Service Pack 1 (LCS 2005 with SP1). You will also look at how LCS can integrate with other RTC products. You will discover the different server roles in LCS 2005 with SP1, discuss the topologies it supports, and survey the different deployment and usage scenarios for it.

## Objectives

After completing this module, you will be able to:

- Explain what Real-Time Communications means.
- Explain what LCS 2005 with SP1 is.
- Describe the integration options for LCS 2005 with SP1.
- Describe the server roles used in LCS 2005 with SP1.
- Explain the different LCS 2005 with SP1 topologies.
- Describe the deployment scenarios for LCS 2005 with SP1.

# Lesson: Introducing Real-Time Communications

- 
- **What Is Real-Time Communication (RTC)?**
  - **Instant Messaging**
  - **Presence**
  - **Audio and Video Conferencing**
  - **Data Collaboration**

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## Introduction

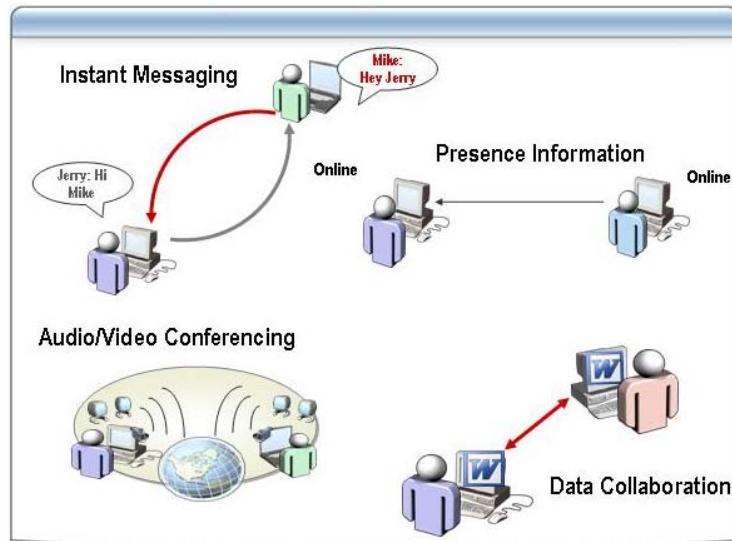
In this lesson, you will discuss the concept of Real-Time Communications (RTC) and review the different collaboration components of RTC.

## Lesson objectives

After completing this lesson, you will be able to:

- Define the concept of Real-Time Communication.
- Describe how instant messaging works.
- Define presence and explain its importance.
- Describe audio and video conferencing.
- Describe what data collaboration means.

## What is Real-Time Communication?



### Introduction

Real-Time Communications (RTC) is an extensible platform that connects people, information, and business processes, which enables users to make better decisions faster. RTC allows people to communicate instantly without the constraints of office location or time zone. RTC provides presence awareness within desktop and line-of-business applications. An RTC system is used in applications in which time is a critical factor.

RTC consists of communication modes such as instant messaging (IM), video and voice conferencing, data collaboration, and presence functionality. These enable people to communicate instantly using their computers and a common network infrastructure. For example, instant messaging provides the ability to transfer text messages in real time over IP network such as the Internet or a corporate network, and presence awareness enables an employee to detect another user's availability on one or more devices. These kinds of capabilities enhance productivity across an organization, providing immediate access to information and people, integrated communications, and collaborative workspaces.

### Collaboration Challenges

Today's information workers are not necessarily across the hall or around the corner from each other. Instead, companies have offices, partners, and customers around the world. Conducting meetings and efficiently communicating within the global marketplace often represents a logistical and financial burden, yet organizations increasingly want to reach new audiences or take advantage of expertise beyond geographical boundaries. Many organizations need to deliver comprehensive products or services that require them to rely on a global network of partners and suppliers with whom they must work closely in order to meet business demands.

### Need for Speed

Time has become one of our most precious commodities. There is a growing expectation that business will take place quickly, regardless of different locations, time zones, and organizational boundaries. Companies are under pressure to solve problems quickly to reduce time-to-market for new products and services, thereby gaining a competitive edge and increasing profits. An organization will stand out if customers, vendors, and partners can reach the

people they need and receive answers to their questions in a timely manner. Opening new lines of communication and conveying important information to coworkers, customers, and partners in an easy, time-efficient manner has become crucial to success in the marketplace.

#### Workplace Productivity

Training, negotiations, and project collaboration are often challenging. It may be ideal to assemble all stakeholders in a room, but what if they are in different cities, or even on different continents? Participating in person requires employees to spend time getting to and from a meeting, which can diminish the time they have to accomplish their work. Sharing documents through e-mail is an option, but it can lead to version control issues and delays as a document passes through e-mail from one reviewer to the next.

Finding the right person to answer questions can be extremely time-consuming, particularly in large organizations. Making a phone call might resolve the issue, but the right contact may be away from the office or involved in a critical task, making a phone call an unwanted interruption. Voice mail and e-mail messages work, but they do not necessarily indicate that the message was received, and it is difficult to know when to expect a response.

To foster efficient collaboration within the workforce, organizations need a way to streamline both one-to-one and one-to-many communications, giving employees access to the information they need, when they need it. Employees can be more effective when they can see instantly who is available to answer questions or to work together on projects and issues, and they can make the most of their time when they have a way to share information with many people at once. Companies can enhance overall productivity levels by providing new means of communication that facilitate rich interactions, faster achievement of project goals, and better decision-making.

#### Difficult to Reach

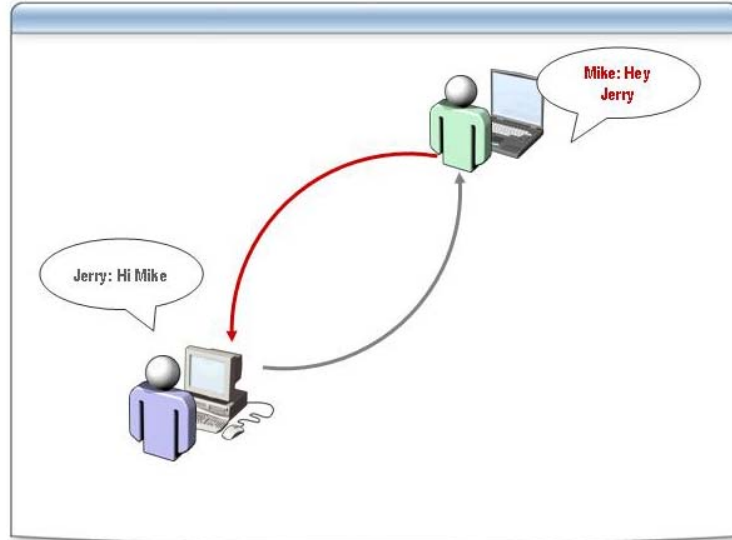
It is hard to connect with people outside a corporation—whether they are customers, prospects, partners, or suppliers—as frequently, deeply, and quickly as most companies would like. A lack of interaction can result in reduced sales, less customer loyalty, and, ultimately, lower profitability for the organization. Whether it is a quick product-pricing update or a global sales presentation, effective communication with those outside the company is essential. It is hard for a company to encourage strong relationships if it lacks the ability to exchange vital information and share ideas immediately.

#### Inefficient Use of Resources

Time is money. Business travel not only wastes valuable work hours, but can also consume financial resources that might be better spent in a more strategic way. Traveling to demonstrate a product or service to a single potential customer or leaving at the last minute to help a colleague deal with an unexpected problem can be expensive in terms of opportunity cost as well as actual money spent.

More and more companies are recognizing the benefits of virtual collaboration because traveling to work together in person is expensive. However, relying on the telephone as the primary means of communication can also be expensive. Increasingly aware of the bottom line, organizations frequently look for more cost-effective means of communication and collaboration across all boundaries. But the new methods must be more than just inexpensive; they have to be fully accessible and user-friendly, and they should not trigger extra costs such as additional IT support or staff requirements.

## Instant Messaging



### Introduction

Instant messaging (IM) enables users to create a private chat room with another individual or group of individuals to communicate in real time over the Internet or through a private network. Analogous to a telephone conversation, instant messaging provides text-based or voice-based communications in real time.

Unlike e-mail, messages are delivered instantly—users do not have to wait for messages to download from a server. Because of this real-time interaction, instant messages capture the nuances of communication that are often missing in e-mail messages.

When traditional communications methods come up short, instant messaging significantly decreases the time required to communicate with colleagues, eliminating lost productivity caused by calling and e-mailing without making contact. Users can look at an IM contact list to identify who is online, and having confirmed a contact's status, they can send instant messages with a question, or even a request to meet.

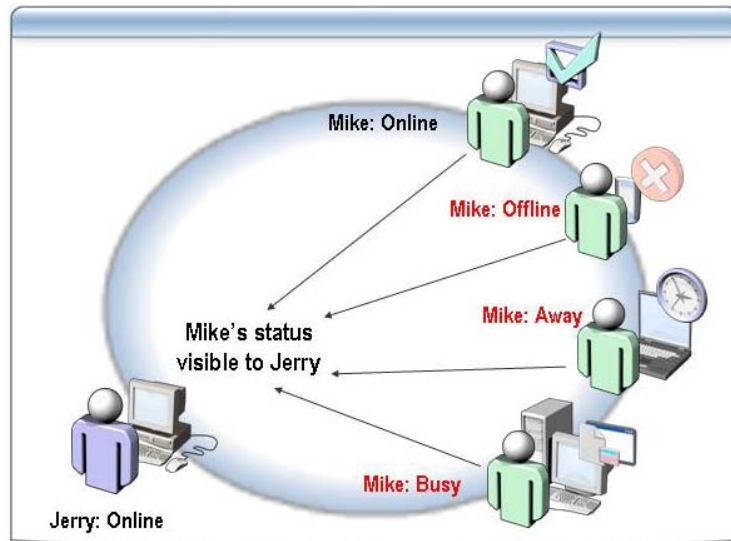
### Communicate Outside your Organization

IM has spread from the consumer arena to the workplace. It is now steadily gaining in importance as a means of communication and collaboration not only within the enterprise but also among the enterprise's suppliers, customers, outsourcing vendors, and other partners. IM integrates easily with the desktop environment and can be used as part of the portfolio of personal or business communications. With IM you can maintain a contact list of other known users whose presence or absence is indicated in a timely and clear way.

### IM Clients

Products such as Microsoft Windows® Messenger, MSN® Messenger, and Microsoft Office Communicator 2005 provide IM capabilities that allow you to communicate in real time with other information workers in your corporation. You initiate a live textual conversation with one or more people, which enables you to communicate with other IM users in a quick and efficient manner. These products also integrate the IM technology with other synchronous forms of person-to-person communication like voice, video, application sharing, group-conferencing, and data collaboration.

## Presence



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### Introduction

Instant messaging has seen a rapid expansion in the last few years, spurred mostly by the power of presence. Presence, more than any other factor, has propelled instant messaging to the level of necessity. Presence is the ability to display end user availability, allowing a user to participate in a real-time communications session.

### Defining Presence

Presence can be defined as constantly-updating status information that is linked to a user. This status information tells you whether that user is:

- Available to communicate.
- Busy doing other tasks.
- Away from the desk.
- Talking on the telephone.
- Involved in other work-related activities.

The capabilities of presence are provided by services based on Session Initiation Protocol (SIP). Presence information can be used to manage services across different platforms.

Presence information can be applied to a number of devices and contexts other than desktop computers, such as instant messaging clients, mobile devices, voice mail, e-mail, and telephones. Presence is also being extended to independent applications to generate automatic alerts and notifications, and is used to respond to database queries through an instant messaging interface. Presence enhances the utility of a telephone by adding dynamic information about the user to the static address of the device and placing it in a broader context of devices.

### Presence Awareness

Presence awareness, a closely related concept, is the knowledge of the person or device's presence. Presence awareness enables people to see contacts inside and outside the organization, identify who is online, and immediately contact them, thereby increasing the likelihood that the intended communication will yield positive results. For example, if you reach your colleague's voice mail, you



know the person is not answering the phone, but you do not yet know how you can reach him or her. In fact, your colleague might be sitting near the phone engrossed in another task. If people could share their level of availability, you would instantly know whether it was appropriate to interrupt them with your call. Today's instant messaging technology makes that possible.

With real-time communication, presence is clearly displayed through status flags, such as "Online", "Busy" or "On the Phone". If you notice your colleague is logged into an instant messaging client with a "busy" status, you immediately know both presence and availability for that person. By right-clicking the name of a user who is offline, a user can see if a contact is available via other forms of communication such as e-mail or telephone.

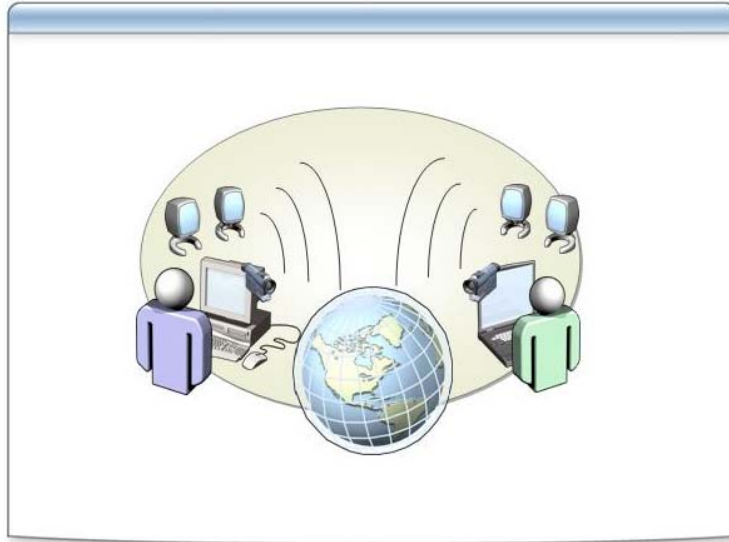
Using this method of communication, your colleague can convey his or her preferred method of communication through the status indicator. When you see the status change to "online," you know you can then reach your colleague instantly with a quick text message. This valuable type of intelligence can even be extended to determine the presence and availability of devices such as computer servers or printers.

#### Future Developments

As presence information becomes richer, application developers will need to make sure that presence information is consistent among environments. They will need to let applications have access to that information and use the context to make decisions about workflow and other business issues. Applications will need to be intuitive and allow you to control the visibility of that presence information.

With future RTC applications, any time a user sees the name of another user in an application, he or she should be able to hover over a name, see the presence information for that user, and simply right-click it to carry out whatever type of communication with the user. This type of functionality should provide presence information on any device in any place.

## Audio and Video Conferencing



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### Introduction

Audio and video conferencing over the Internet enables organizations to meet, present, train, and collaborate in real time and at a moment's notice. It helps businesses communicate with more people, more often, and more effectively without the time and cost of travel.

The audio and video features of an RTC system enhance the users' experience and give a real feeling of meeting in person. The users can send voice or other sounds to other devices or computers by using microphones and speakers through the audio feature while sending a video image through the video feature.

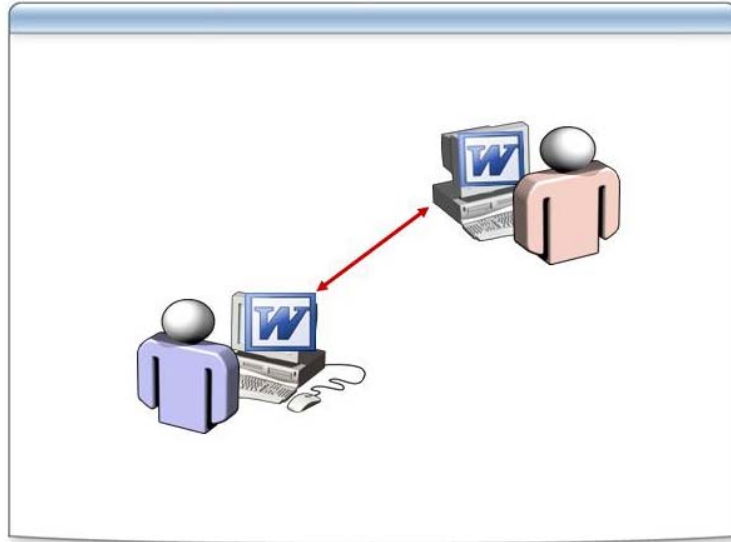
### VoIP

Voice over IP (VoIP) is one of the largest growing areas in Real-Time Communications, although today, voice communication is still primarily achieved through the traditional telephone or mobile phone. RTC products such as Microsoft Office Communicator 2005 enhance the traditional telephone handset experience by enabling remote control of the telephone handset through the desktop computer. This enables a user to make and receive calls using their computer.

The VoIP terminology used in this course includes the following:

- PC-to-PC – An end-to-end VoIP call between two computers, or between a computer and a physical SIP-enabled phone.
- PC-to-Phone – A call initiated from a computer connected to a SIP network and ending on a phone on the Public Switched Telephone Network (PSTN).
- PSTN Audio Conferencing – Audio conferencing using phones over the PSTN.

## Data Collaboration



### Introduction

Three elements contribute towards data collaboration in the real-time communications environment:

- Application sharing
- Whiteboard
- File transfer

### Application Sharing

Application Sharing allows you to invite someone to a session in which both of you can work on a common document. Through application sharing, users can share programs that are available on their computers with other users.

### Whiteboard

Similarly, whiteboard sessions allow a group of people to use a whiteboard to share and brainstorm ideas. Whiteboard provides a common space for a group of users to draw and type simultaneously. You can copy and paste items between the whiteboard and other programs, and from windows and areas of your desktop to the whiteboard. You can then use the whiteboard tools to illustrate the objects further. You can also add and delete whiteboard pages, draw shapes, type text, and emphasize items by using a highlighter or a remote pointer. Other users can then see your work without access to your desktop.

### File Transfer

Using file transfer capabilities, you can send and receive files while having an IM conversation with any of your contacts. You also have control over whether you decide to accept or reject any file being transferred to you.

### Presence

With Microsoft Office 2003 and Live Communications Server (LCS) 2005, presence starts to become a part of every application. For example, in Microsoft Outlook® 2003 you can receive e-mail and then view the presence state of the sender and decide how you want to communicate.

Similarly, in Microsoft SharePoint® Portal Server, you can view the author of a shared report document, check the presence information, and then ask a question about the contents of the report. You can also see a list of your team members, find out whether they are present at the moment, and if they are, you could start an audio conference with them.

|                              |  |
|------------------------------|--|
| Calendar Integration         | <p>With Office Communicator 2005 and the Public IM Connectivity component, you can connect to and communicate with AOL, Yahoo!, and MSN users on the Internet. LCS, Office Communicator, and Microsoft Exchange integrate with your contact's calendar to show free and busy presence information. This integration uses search capabilities to look up user information from Active Directory® and then queries users' calendars for presence information.</p>  |
| Voice and Telephony          | <p>With LCS, Office Communicator 2005, a Private Branch Exchange (PBX) system, and a PSTN gateway configured, you can right-click on a contact and dial a telephone number directly from within the Office Communicator 2005 interface. This action puts your desktop phone into speakerphone mode and calls your contact for you. You do not need to search for contact details, because Outlook retrieves this information, either from a corporate address book or from the local contacts folder. Similarly, you could right-click on a contact from an e-mail message you have received and call the sender directly from within your Inbox. This is because the rich presence information propagates throughout these RTC applications.</p> <p>Incoming calls are integrated into the LCS and Communicator system, so when a call comes in, you see a call notification pop-up window informing you of an incoming call. You can then decide whether to accept or reject the call, or you might decide that a call is not appropriate or convenient at this time, so you could respond with an IM message telling them to call you later. Alternatively, if you are away from your desktop phone, you could configure the system to transfer calls automatically to your cell phone or mobile device. You can then take the call on that device instead with one tap in the incoming call notification window.</p> |
| Audio and Video Conferencing | <p>Many people use audio conferencing already, but setup can be time-consuming and quite complex. With audio conferencing, you have to configure and remember the leader pass code and the attendee pass code and possibly configure your PBX system, and then you have to invite the attendees to the conference and wait for them to dial in. In Communicator, you can simply search the list for the attendees you wish to invite and click their names to add them quickly to the conference attendee list. You then simply initiate a conference with just a couple of mouse clicks. You also have control over the conference and can mute and disconnect people if required.</p> <p>Also, when you are in a one-to-one audio conference with a contact, you can quickly and simply switch over to a video conference instead.</p>   |
| Web Conferencing             | <p>You can also right-click a contact to integrate with users in an Office Live Meeting session for Web conferencing capabilities.</p> <p>In a Microsoft-based RTC environment, with improved tools for collaboration and information sharing, you can keep teams, organizations, partners, vendors, and customers in touch so they can work together more effectively, to provide more timely response and better-informed decisions with lower overall cost.</p>   |

## Lesson: Introducing Live Communications Server

- 
- **What Is Live Communications Server?**
  - **Reviewing LCS Product Evolution**
  - **Differences between LCS 2005 Editions**
  - **LCS 2005 with SP1 Advanced Feature Set**
  - **LCS 2005 with SP1 Protocols**

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### Introduction

In this lesson, you will discuss what Live Communications Server is and learn about the evolution of the product. You will also look at the different editions that are available and the differences between them. Lastly, you will discover the main product features and the protocols that it uses.

### Lesson objectives

After completing this lesson, you will be able to:

- Describe what Live Communications Server is.
- Explain the evolution of the Live Communications Server product lines.
- Explain the differences between the different editions of LCS 2005 with SP1.
- Describe the main product features of LCS 2005 with SP1.
- Describe the different protocols used by LCS 2005 with SP1.

## What Is Live Communications Server?



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### Introduction

A growing number of businesses today regard messaging systems as mission-critical systems. For this reason, companies place strict reliability and availability requirements on their messaging systems. Equally important is the heightened demand for new messaging system features. An increasingly mobile work force and more geographically dispersed businesses mean that user requirements are continually evolving. All of these factors place demands on information technology managers and system architects, who are charged with designing highly reliable and consistently available messaging systems that meet users' needs.

### Enterprise RTC Server

Microsoft Live Communications Server (LCS) is an enterprise real-time communications server that delivers instant messaging and presence as part of a scalable, enterprise-grade solution offering enhanced security and seamless integration with other Microsoft products.

### Extensible Platform

It is also an extensible, industry-standard development platform that provides a central facility for securely managing all real-time communication, such as instant messaging, audio conferencing, peer-to-peer video conferencing, and data collaboration in an enterprise environment.

### Connecting People and Information

LCS connects people, information, and business processes within a familiar, integrated user experience, enabling employees to make better decisions faster.

With Live Communications Server, your team can connect securely with co-workers, partners, suppliers, and customers in real time, share critical and time-sensitive information, and collaborate with other organizations as easily as they do today with co-workers, while taking advantage of built-in security measures to help safeguard your proprietary business information. LCS enables corporations to reach, collaborate, and respond to information more quickly than with e-mail messages and telephone calls.

Live Communications Server 2005 is a valuable new addition to the Microsoft Office system and adds presence awareness integration with Office desktop products.

## Reviewing LCS Product Evolution



### Introduction

Live Communications Server 2005 is the third generation in the legacy of Real Time Communications Solutions provided by Microsoft. Its predecessors were Microsoft Exchange Instant Messenger and Microsoft Live Communications Server 2003.

### Exchange Instant Messenger

Exchange Instant Messenger was a part of the Microsoft Exchange 2000 product family. Exchange Instant Messenger Server was extensively used by corporations for instant messaging and video conferencing solutions. However, the growing and changing needs of corporations, the importance of providing data encryption, and data archiving, and the necessity of providing connectivity to mobile devices paved the way for the next generation of Real Time Communications, namely Live Communications Server 2003. Moreover, unlike Live Communications Server, Exchange IM used its own implementation of the Rendez-Vous Protocol (RVP).

### Live Communications Server 2003

The need for a real-time collaboration solution that was standards-based, supported secure data transfers, and allowed the mobile workforce to remain in contact with the office led to the evolution of Live Communications Server 2003. Live Communications Server 2003 used standard protocols like Session Initiation Protocol (SIP), SIP Instant Messaging and Presence Leveraging Extensions (SIMPLE), and Real-Time Transport Protocol (RTP).

Live Communications Server 2003 supported connectivity to the PSTN and allowed for the development of customized solutions based on the Server API and RTC client APIs.

Live Communications Server 2003 only provided instant messaging and presence capabilities. It also had a controlled SIP namespace, so that the administrator could control the namespace and users could not employ other namespace extensions in their user IDs. It also used the Microsoft SQL Server™ Desktop Engine (MSDE) for its database, whereas later versions use a full SQL Server back-end.

LCS 2003 provided centralized management of all LCS servers in an enterprise using the Microsoft Management Console (MMC) and Windows Management

Instrumentation (WMI). Hence, you could manage the servers from any computer in your forest that had the Live Communications Server 2003 administration tools installed.

#### Live Communications Server 2005

When Live Communications Server 2005 was developed, it provided the following additional features:

- Enterprise Edition version for improved availability
- Improved manageability
- Federation support
- Enhanced Active Directory topology support

#### LCS 2005 with SP1

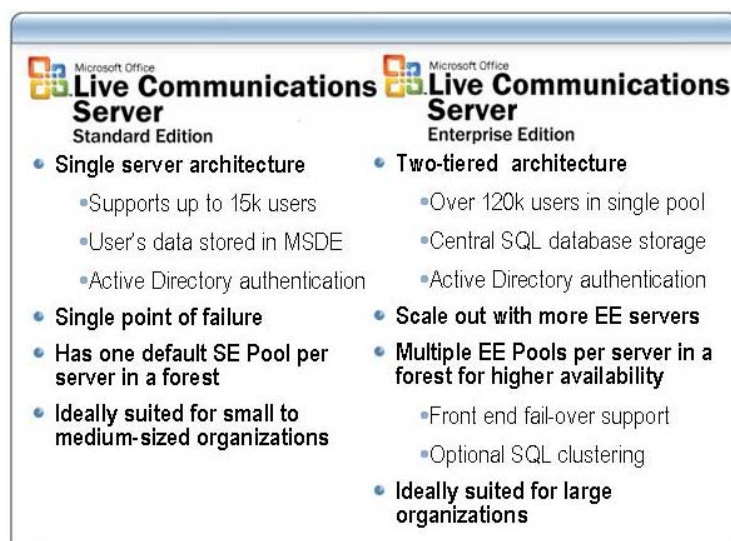
Service Pack 1 (SP1) for Live Communications Server 2005 improved on the features of LCS 2005 in both the Standard and Enterprise editions by extending the federation model, enhancing functionality, and increasing performance and infrastructure support. These improvements include:

- **Public IM connectivity component to connect to MSN, AOL, and Yahoo! Users.** Federation with public IM service providers enables your employees to use IM to communicate with users of instant messaging services provided by the MSN network of Internet services, Yahoo!®, and AOL®. You can authorize public IM connectivity on a per-user basis.
- **Enhanced Federation for simple enterprise-to-enterprise federation.** Live Communications Server 2005 Service Pack 1 (SP1) extends existing federation support to include Enhanced Federation, which eliminates the need to specify the Access Proxy of every federation partner, as well as to provide the FQDN of your organization's Access Proxy to those partners. Enhanced federation uses DNS SRV resolution to locate the Access Proxy of a federated partner, and it uses mutual TLS (Transport Layer Security) to secure the connection. If you are a network administrator, you can limit enhanced federation to explicitly designated external domains or you can extend it to all external domains.
- **Support for multiple-tree forests.** Multiple-tree forest topology is a structure that consists of two or more root domains that define independent tree structures and have separate DNS namespaces.
- **Enhanced Security and Spam over IM Control (SPIM).** The URL filter application IMFilter.am is installed on all Live Communication Servers except the Proxy and Archiving server and is enabled by default. IMFilter.am provides a way to block messages that contain clickable URLs or that attempt to initiate a file transfer. SP1 also provides new filters to control SPIM that can be configured to suit the particular needs of each organization so that the likelihood of receiving unsolicited messages is reduced.
- **Address Book Service.** This service performs two important functions. The first primary function is to provide global address list information from Active Directory to Microsoft Office Communicator 2005. To update address books faster and more efficiently, the Address Book Service acts as an intermediary to provide the updated local copy of the address list to the Communicator client. Its secondary and optional function is to perform phone number normalization for Communicator telephony integration.



- **Support for Microsoft Office Communicator 2005.** Microsoft Office Communicator 2005 is a secure enterprise-level messaging client that integrates instant messaging with telephony to create a complete solution to enterprise messaging.

## Differences between LCS 2005 Editions



### Introduction

Live Communications Server 2005 with Service Pack 1 (LCS 2005 with SP1) is available in two editions, Standard Edition and Enterprise Edition. Each edition meets specific organizational needs that customers have identified.

### Standard Edition

LCS 2005 with SP1 Standard Edition consists of a single, stand-alone IM and presence server together on the same computer with a local MSDE (Microsoft Desktop Engine) database for storing user data. A Standard Edition server is functionally the same as a Live Communications Server 2003 home server, but supports up to 15,000 rather than 10,000 concurrent connections. Standard Edition is the appropriate choice in small deployments where enterprise-level capacity and performance are not required.

Live Communications Server 2005 Standard Edition assigns users to a single 'home' server. Although a domain might contain two or more home servers, each user has only one home server. User data, such as contact lists and registration status, are stored in a SQL MSDE database on the same server.

### Enterprise Edition

LCS 2005 with SP1 Enterprise Edition incorporates a new concept called a server pool. A server pool consists of a group of Enterprise Edition front-end servers connected to a separate, shared back-end SQL Server database. With this two-tier architecture, Live Communications Server 2005 Enterprise Edition delivers substantial improvements in availability, scalability, performance, and data recovery, and is intended for large-scale deployments supporting up to 125,000 users per pool.

### Differences in Editions

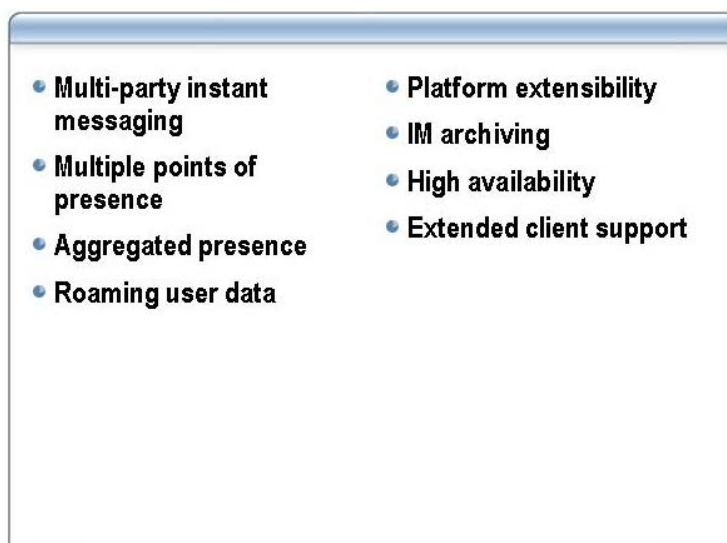
LCS 2005 with SP1 Enterprise Edition is different from Standard Edition in the following ways:

- **Availability.** Enterprise Edition uses a two-tier server architecture that enables users to find and connect to the next available Enterprise Edition server, even if one or more have failed. Some form of hardware load balancer is required for this capability.

- **Scalability.** In large deployments, numerous individual Standard Edition home servers may be necessary to manage users and direct traffic. Since all user data is stored in a central SQL Server with Enterprise Edition, you can simply add more Enterprise Edition front-end servers to handle any increasing load and capacity.
- **Two-Tier Architecture.** Live Communications Server 2005 with SP1 Enterprise Edition enables two new server roles:
  - A front-end pool of Enterprise Edition servers for handling client connections
  - A back-end database server (using SQL Server) for storing user data.
- **Data Recovery.** Because Enterprise Edition uses SQL Server to store user data, SQL can be clustered and/or backed up for improved data safety using standard SQL data recovery processes.

Live Communications Server 2005 with SP1 Enterprise Edition is appropriate for those enterprises with tens of thousands of employees, or those wishing to take advantage of a clustered architecture.

## LCS 2005 with SP1 Advanced Feature Set



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### Introduction

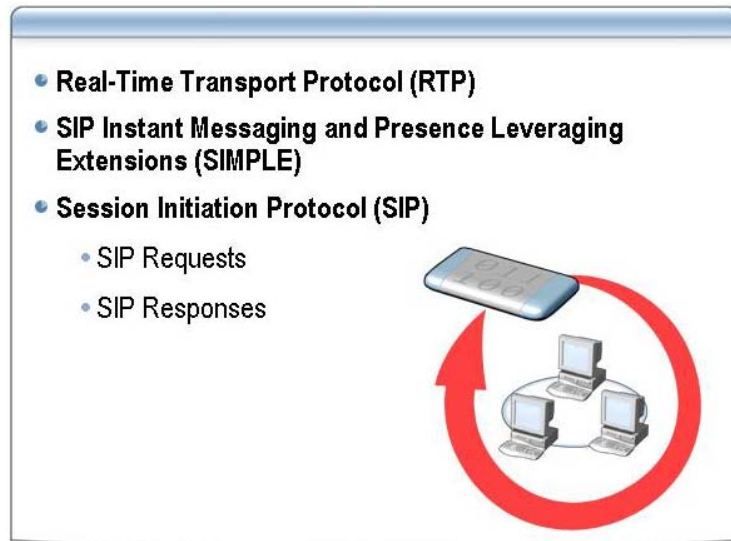
LCS 2005 with SP1 is a platform that supports several real-time communication mechanisms, such as instant messaging, audio and video sessions, and PC-to-phone. LCS 2005 with SP1 has a strong feature set that enables you to enhance the communication infrastructure in your enterprise.

Some of the advanced key features of LCS 2005 with SP1 are:

- **Multiparty instant messaging.** Multiparty instant messaging enables you to have an IM conversation with multiple participants. It allows participants to join or leave a session.
- **Multiple points of presence (MPOP).** MPOP allows users to log on to LCS simultaneously from more than one device. For example, users can log on to LCS from a laptop and a desktop at the same time. LCS 2005 with SP1 can support up to sixty-four devices for MPOP, although the default number is eight.
- **Aggregated presence.** LCS provides the aggregate presence for a user who is logged on to multiple devices. Aggregate presence is a feature that analyzes the status of the user on different devices to present to other users and to route messages to the most actively used device for that user.
- **Roaming data for users.** LCS uses a database to provide a persistent and centralized store of a user's contacts, groups, and Allow and Block lists. This feature allows users to sign in from different computers while preserving the same set of contacts.
- **Extensibility.** All the features of LCS are extensible. This means that enterprises can use these features to develop applications that provide additional features and functionality using client and server APIs.
- **IM Archiving.** IM Archiving can archive all IM dialogs for later use. This feature is particularly important for businesses that operate in a regulatory environment.

- **High Availability.** Another key feature of Live Communications Server 2005 is the ability to segregate a home server into a pool of front-end servers and a centralized SQL-Server back-end, providing improved service availability and resiliency. SQL provides a highly available back end to store user presence, routing and contact information, and supports clustering and locating data files on storage area networks (SANs). Independent front ends provide “fast failover” support for quickly recovering the service to thousands of users if a front-end server fails.
- **Extended Client Support.** Live Communications Server 2005 with SP1 supports the following clients:
  - Microsoft Windows Messenger 5.0 and later. This IM client is an integral component of Microsoft Windows XP. Windows Messenger provides instant messaging using text chat together with support for voice and video.
  - Microsoft Office Communicator 2005. This is an integrated communications client, enabling information workers to communicate in real time. As the recommended client for Microsoft Office Live Communications Server 2005, Communicator 2005 integrates with Microsoft Office applications and enterprise telephony infrastructure.
  - Microsoft Office Communicator Web Access. This is a browser-based instant messaging and presence client for Microsoft Office Live Communications Server 2005 SP1, with a look and feel similar to Microsoft Office Communicator 2005. It is designed to extend the reach of Live Communications Server 2005 to a broader base of information workers, requiring nothing more from a user than a Web browser. It enables information workers who cannot take advantage of the desktop client to connect to Live Communications Server 2005. It is available for download at the Microsoft Download Center, at [www.microsoft.com/downloads/details.aspx?familyid=A7499AC3-09A6-4491-BDD1-1E41F4719E90](http://www.microsoft.com/downloads/details.aspx?familyid=A7499AC3-09A6-4491-BDD1-1E41F4719E90).
  - Microsoft Office Communicator Mobile. This mobile client is designed to extend the reach of Live Communications Server 2005 to Windows Mobile powered devices. Communicator Mobile has a look and feel similar to the desktop version of Microsoft Office Communicator 2005 and ensures that access to the capabilities provided by Live Communications Server 2005 can continue when people are away from their desks. Office Communicator Mobile is available for download at the Microsoft Download Center, at [www.microsoft.com/downloads/details.aspx?familyid=BC89EC5E-5F3B-47D2-955B-B0C1DEAC94D8](http://www.microsoft.com/downloads/details.aspx?familyid=BC89EC5E-5F3B-47D2-955B-B0C1DEAC94D8).

## LCS 2005 with SP1 Protocols



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### Introduction

Live Communications Server 2005 with SP1 is based on the following standard protocols:

- Real-Time Transport Protocol (RTP)
- SIP Instant Messaging and Presence Leveraging Extensions (SIMPLE)
- Session Initiation Protocol (SIP)

### RTP

Real-time Transport Protocol (RTP) defines a standardized packet format for delivering audio and video over the Internet. It was developed by the Audio-Video Transport Working Group of the International Engineering Task Force (IETF) and first published in 1996 as RFC 1889. RTP provides end-to-end network transport functions suitable for applications that transmit real-time data, such as audio, video or simulation data over multicast or unicast network services. RTP does not address resource reservation and does not guarantee quality-of-service for real-time services.

### SIMPLE

SIMPLE (SIP Instant Messaging and Presence Leveraging Extensions) is a standard instant messaging protocol based on SIP that provides SIP-compliant support for instant messaging and presence functionality. This protocol targets the problems of registering for presence information and receiving notifications when such events occur, when a user logs in or comes back from lunch for example, and of managing a session of real-time messages between two or more participants.

### SIP

SIP is an industry-standard, application layer signaling protocol for starting, controlling, and ending communication sessions in an IP-based network. SIP is formally described in the IETF reference specification RFC 3261. Using SIP, one user can explicitly invite another to join a conversation or multimedia session. A SIP session begins when the second user accepts the invitation. SIP also supports inviting additional users to an already established session.

SIP is the core communications protocol used by Live Communications Server 2005, and is the preferred communications protocol for instant messaging, presence, voice-over-IP telephony, and conferencing across the Internet.

Because it is widely accepted and implemented, SIP provides a proven technological base for a diverse range of communications. Using a standard protocol for establishing and delivering communications allows for the development of applications that take advantage of existing Internet technologies while ensuring that the infrastructure can be secured and centrally controlled.

Although SIP sessions can include sharing real-time media, SIP does not handle the actual media data, such as audio, video, and application sharing. In practical terms, this separation means that SIP and various media protocols can evolve independently.

## SIP Requests

SIP is a request-response protocol and a SIP client is an entity (such as an Office Communicator 2005 client) that generates requests on behalf of SIP-enabled users. A SIP server, such as LCS 2005 with SP1, receives requests and generates responses.

SIP requests used in LCS 2005 with SP1 include, but are not limited to, the following:

- **INVITE**. Invites users to a SIP session.
- **ACK**. Acknowledges receipt of a final response to an INVITE request.
- **CANCEL**. Cancels a pending INVITE so long as an ACK request has not already been sent.
- **BYE**. Signals the request to terminate a session.
- **REGISTER**. Informs SIP server that a user has signed in or moved to a new location.
- **OPTION**. Queries a server about its capabilities.
- **NOTIFY**. Sends notification that a particular event has occurred.
- **SUBSCRIBE**. Requests notifications for particular user information; for example, presence, contact last, and ACL (access control list).
- **SERVICE**. Polls and requests updates to presence and modifies contact list and ACL.

A SIP request includes a request line, several headers, and the message body. The request line contains the Request-URI, which is the address of the next hop, and the version of the protocol being used.

## SIP Responses

SIP responses fall into the following six classes:

|                         |                          |
|-------------------------|--------------------------|
| 100-199 – Informational | 200-299 – Success        |
| 300-399 – Redirection   | 400-499 – Client Error   |
| 500-599 – Server Error  | 600-699 – Global Failure |

A SIP response is similar in structure to a SIP request except that it begins with a status line in the place of the request line. The status line includes the protocol version, status code, and text phrase describing the status.

In a LCS 2005 with SP1 SIP network, requests route to end points that represent SIP-enabled Windows user accounts. If there is no user account for a URI in Active Directory, routing is based on static routing tables or federation rules.

## Lesson: Integrating LCS 2005 with Client Applications



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### Introduction

In this lesson, you will discuss the various integration options available with Live Communications Server 2005 SP1.

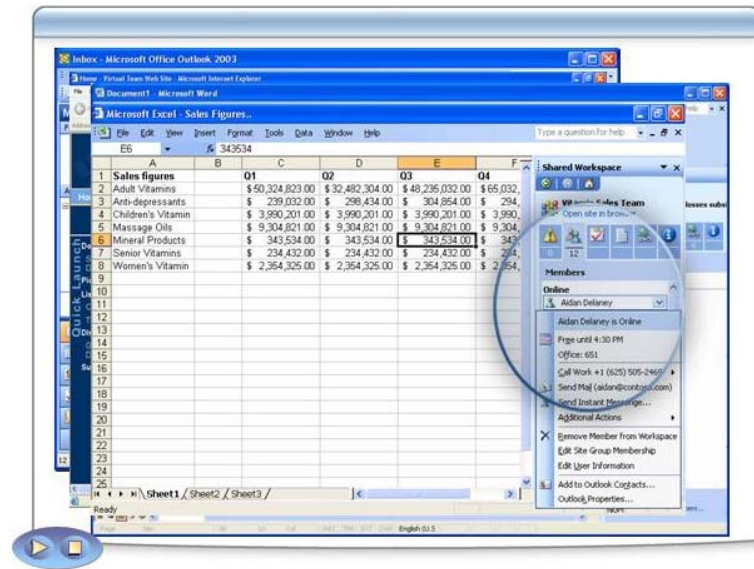
### Lesson objectives

After completing this lesson, you will be able to:

- Explain how LCS 2005 with SP1 integrates with Microsoft Office 2003.
- Explain how LCS 2005 with SP1 integrates with Microsoft Office Communicator 2005.
- Explain how LCS 2005 with SP1 integrates with telephony products.
- Explain how LCS 2005 with SP1 integrates with existing management tools.



## Microsoft Office 2003 Integration



### Introduction

Integrating presence with the Microsoft Office system is unique to Live Communications Server. Rather than forcing people to break concentration in order to get the information they need to complete their work, Live Communications Server provides in-context communication to keep your team on task and increase their productivity.

### Presence in Office Applications

Workers may instantly find and communicate with other people from within familiar programs such as Microsoft Outlook, Microsoft Excel®, and Microsoft Word. This integration occurs wherever the user sees a “paw,” the icon representing a person’s presence status. When co-workers have accurate information about team members’ availability, they do not waste time trying to contact them through inappropriate means. This translates into increased productivity and frequently reduces costs as well.

Presence icons automatically appear next to people’s names in several leading Microsoft products. This kind of information makes it clear when and where you can reach your colleagues at a moment’s notice.

Customers will find presence awareness already built into Microsoft Outlook 2003, a leading communication tool in today’s business world. Connecting with colleagues is as easy as hovering over a presence icon, so people can instantly see if someone is online or busy. This information is available for everyone who is connected, not just those listed in a contact list.

### Presence in SharePoint Portal Server

The advent of intranet and extranet portals allows people to share documents, calendars, contact lists and more without the problems of asynchronous collaboration. Rather than sending a document to several individuals, it is much faster and more efficient to publish it once, referring colleagues to a Web site. There, several people can work or provide comments on the same document; eliminating multiple outdated versions and cluttered e-mail strings.

To support these scenarios, Microsoft SharePoint Portal offers presence awareness throughout its interface. Presence icons show up in lists and XML-based Web parts. Meeting Workspaces (created on SharePoint team sites with the click of a button from Microsoft Outlook) provide dynamic presence icons

next to each team member's name. Member Lists, with presence icons for each person who is a member of that SharePoint site, are also conveniently visible to the users.

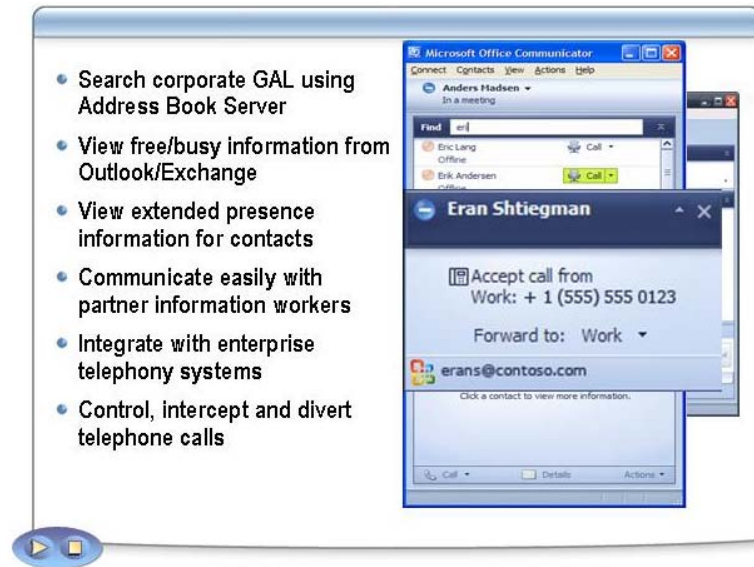
#### Presence in Exchange Server

Workers can instantly see who is online and available to discuss documents or upcoming meetings, regardless of time zone or location. With Microsoft Exchange integration, the user can even check other users' schedules and get up-to-date availability information directly from their calendars. This feature makes it easy to determine when someone will be free to communicate.

#### Smart Tags

Presence is integrated into other Microsoft Office system programs through Document Workspaces and Smart Tags. Smart Tags are XML-based tools that recognize certain names, phrases or numbers in Microsoft Word and Microsoft Excel. The item appears with a subtle dotted red underline, letting the user know that there is a range of actions that can be taken instantly with a click of the mouse. Examples include sending an e-mail message, checking a schedule, initiating an instant message, or finding out someone's job title. Adding presence information to these programs with Live Communications Server allows the user to communicate with relevant people directly within a familiar interface.

## Microsoft Office Communicator 2005 Integration



### Introduction

While Live Communications Server 2005 supports Microsoft Windows Messenger 5.1 for basic presence and IM scenarios, with the release of Service Pack 1 you can now get enhanced productivity benefits when LCS 2005 is combined with the new Microsoft Office Communicator 2005 client.

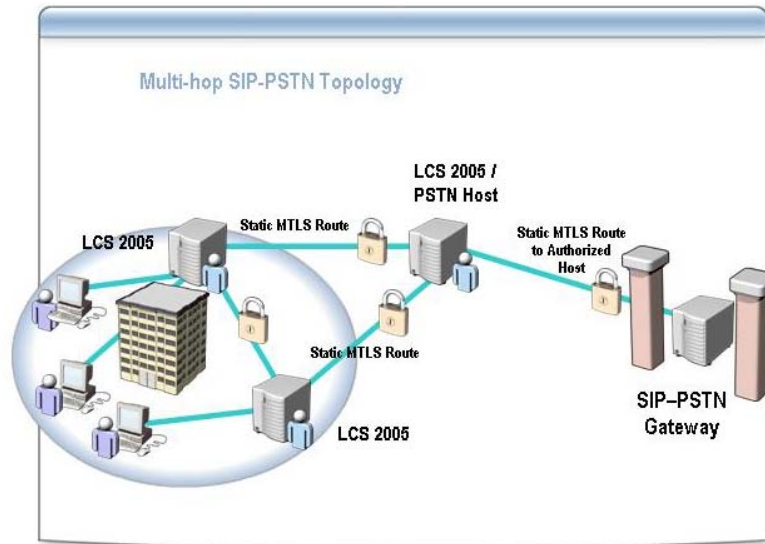
### New Features

Microsoft Office Communicator 2005 features supported by LCS 2005 with SP1 include:

- Easy-to-use contact search capabilities that use the new Live Communications Server Address Book Service. This service allows users to find other users in the corporate global address list (GAL), as well as from local address information.
- Integration with Microsoft Office Outlook and Microsoft Exchange Server to let users view other contacts' free/busy information from their schedules, as well as displaying their out-of-office (OOO) messages directly in Office Communicator 2005.
- Extended presence, including the ability to allow users to set "custom notes" that provide more detailed information to other contacts, enabling those contacts to make more informed decisions about how to interact. This additional information displays whether or not a user is online or offline, using the offline presence capabilities of Live Communications Server 2005.
- Conference calls with partner service providers can be started directly from Office Communicator 2005, making it much easier for information workers to communicate with others.
- With the appropriate PBX or PSTN gateway infrastructure in place, Office Communicator 2005 provides integration with enterprise telephony systems, allowing users to control their enterprise phones directly from their computers to initiate calls and even divert calls to remote locations when they are not at their desks.

- With Live Communications Server 2005 SP1 and partner solutions for telephony integration, Office Communicator 2005 supports some enterprise telephony scenarios, including call control, call intercept, and presence-enabled call forwarding, as well as easy-to-initiate PSTN conference calling and Microsoft Office Live Meeting sessions.

## Telephony Integration



### Introduction

Microsoft Office Live Communications Server 2005 with SP1 supports PC-to-phone calling by connecting your LCS 2005 with SP1 infrastructure to a SIP to PSTN gateway.

### Selecting a SIP-PSTN Gateway Topology

To provide PC-to-phone calling capabilities, you need to design a topology that includes a gateway that supports SIP over TCP. To direct the SIP traffic from your Live Communications Server network to the PSTN, you can create static routes from your servers to a SIP-PSTN gateway.

**Important** The figure on the slide is intended as a sample for building a SIP-PSTN topology. Adapt the topology you design to the specific needs of your organization. If you choose to use a dedicated PSTN host server, design your topology with network capacity and efficiency in mind. Call timeouts may be exceeded if requests and responses going to and from the gateway must travel through many servers.

In LCS 2005 with SP1, you have a choice between two supported topologies:

- **Designate a Live Communications Server as a PSTN host.** In this topology, you designate a Live Communications Server as a host for the PSTN gateway. All other Live Communications Servers in your topology route PC-to-phone calls through this PSTN host to the SIP-PSTN gateway. If you dedicate one server as a host for the gateway, on the PSTN host server, configure a static route to the SIP-PSTN gateway and add the SIP-PSTN gateway as an authorized host. On all other Live Communication Servers requiring access to this gateway for PC-to-phone calls, configure a static route and add an authorized host entry for the PSTN host server.
- **Use a direct route to the SIP-PSTN Gateway.** All Live Communications Servers that require PC-to-phone calls contain a direct route to the SIP-PSTN gateway. To help protect the network properly, configure the Live Communications Server PSTN host server as a Director, a server that contains no users. Do not use a Live Communications Server 2005 Proxy.

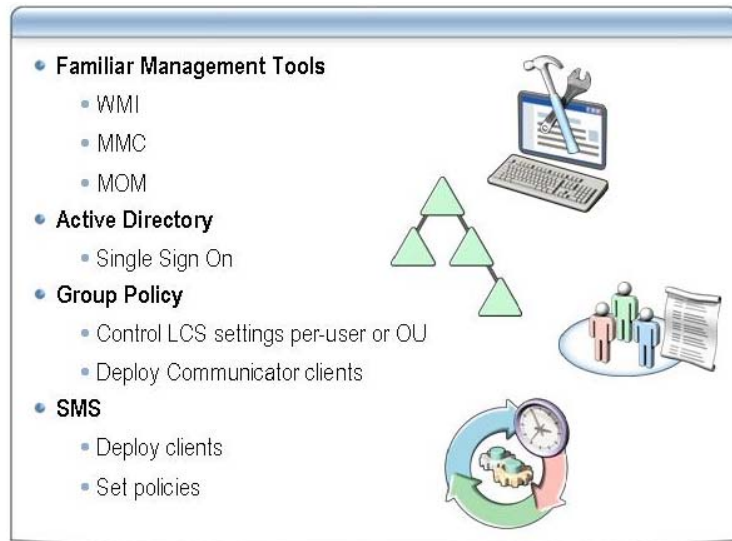
If you choose to create a direct route topology, configure a static route to the SIP-PSTN gateway on all Live Communications Servers that need to route PC-to-phone calls and add the gateway as an authorized host on those servers.

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**Note** For more information about server roles, see the Live Communications Server 2005 Deployment Overview and the Live Communications Server 2005 Planning Guide at <http://office.microsoft.com/en-us/FX011450741033.aspx>.

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## Management Integration



### Introduction

With the new management tools built into LCS 2005 with SP1, IT managers can get more of the information they need about their server environment at a glance. They save time and reduce training costs by using familiar Microsoft Windows GUI-based administration tools, including Windows Management Interface (WMI), Microsoft Management Console (MMC), and Microsoft Operations Manager (MOM) to manage users, servers and global settings, as well as monitoring the entire real-time collaboration system.

LCS 2005 with SP1 adds further administrative controls to the set of robust planning and deployment tools that were introduced in Live Communications Server 2005. These new tools allow IT managers to have control over the number of incoming and outgoing connections that are created on an individual Access Proxy.

Live Communications Server works seamlessly with existing Microsoft infrastructure elements such as Windows Active Directory and Windows Server® 2003. This arrangement makes it easy for the IT manager to consolidate network, server, and IM user resources, giving them more security and control over the network.

### Enterprise-Level Manageability

The ability to manage effectively the presence, behavior, and configuration of operating systems and applications on the corporate network is a key ingredient to building information systems that meet business requirements at a reasonable cost. LCS 2005 with SP1 delivers enterprise-grade manageability by providing superior integration with the Windows Server System™ platform. This integration provides a number of benefits, including single-sign-on, policy-based management, and management through familiar, extensible Windows tools.

### Single Sign-On through Active Directory

LCS 2005 with SP1 extends the Active Directory schema to provide additional functionality and features. User accounts in Active Directory can be granted or denied access to use Live Communications Server 2005 on a per-user or per-group basis. This provides a natural and seamless experience for end users, who log on once to access multiple resources on the internal network.

SP1 provides support for a complex Active Directory structure known as the multi-tree forest. In this configuration, there is a single Active Directory forest which contains multiple trees; each tree has a disjointed DNS namespace. With SP1, it is now possible to deploy LCS servers in different domains from the domain where you create users in this configuration.

#### Policy-Based Management

LCS 2005 with SP1 provides a complete set of policy controls, implemented through the Active Directory Group Policy mechanism. The policy controls allow selective control over bandwidth usage, allowed session types, and policies for updates; these controls can easily be applied to users, organizational units, or domains. Standard Windows tools (including the Windows Server 2003 Group Policy Management Console) can be used to apply and monitor policies that are specific to Live Communications Server. These policies allow for the ability to enable or disable any single feature of LCS 2005 with SP1 on a per-user basis, providing flexibility for staggered rollouts and bandwidth management.

#### SMS

Companies with an established Microsoft Systems Management Server (SMS) infrastructure can use SMS to deploy clients and set policies. An additional strength of SMS is the ability to set different deployment and installation policies on a per-user or per-group basis. Live Communications Server client deployment and management will benefit from this type of environment. With an Active Directory infrastructure, administrators can install and secure the client by using either group policy objects or SMS.



## Demonstration: Real-Time Collaboration with LCS 2005 SP1



### Introduction

This Click Through Interactive (CTI) Flash demonstration is designed to show the key features of the Real-Time Collaboration solution, including Microsoft Office Live Communications Server (LCS) 2005, Microsoft Office Communicator 2005, and Microsoft Office Live Meeting 2005. The demo offers a hands-on walkthrough of the core functionality of the products and key integration points with Microsoft Office. It demonstrates small, collaborative, ad hoc meetings as well as large, scheduled, structured interactive meetings.

In this demonstration, you will see how Microsoft Office Real-Time Collaboration technologies help organizations achieve better business results via an integrated real-time platform that includes Web Conferencing, Enterprise Instant Messaging, and PC-Phone integration. People can now easily share ideas and information more quickly and effectively, regardless of location. Furthermore, because it is part of the Microsoft Office System, RTC technologies are fully integrated into Microsoft Office applications.

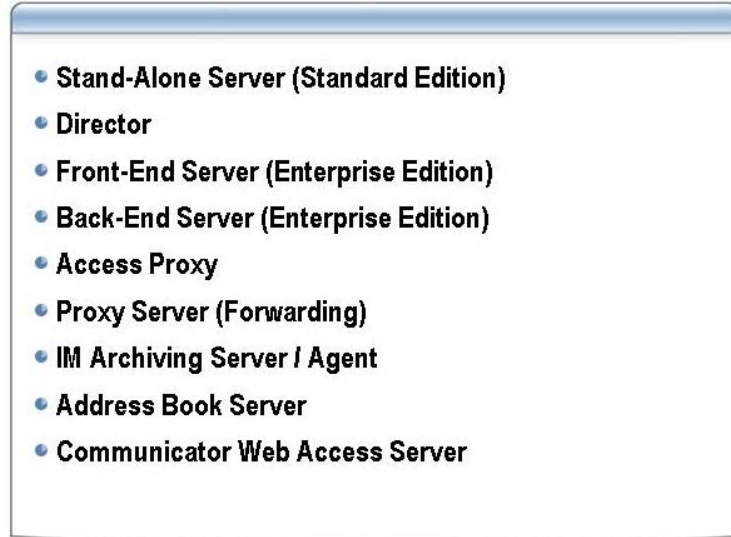
In this demonstration, we are at the desktop of "James Peters", who will interact with a variety of others via IM, voice-and-video, and telephony. It will show a small, collaborative meeting and a large, scheduled event. There is no specific vertical scenario associated with this demo, which allows flexibility in how you position the scenario to fit with information workers in your own business.

### Instructor Note

The demonstration files are located in **C:\Program Files\Microsoft Learning\7034\Module 1 Demo** folder, and you can start the demo by double-clicking **LCS 2005 CTI Demo.exe**.

You do not need to present the entire demonstration. The demo has five segments, and you can start at the beginning and go through the entire demo or skip to a particular section to demonstrate specific functionality. It is recommended that you read through the *RTC CTI Demo\_Getting Started.doc* and the *RTC\_CTI\_script\_FINAL.doc* documents, located in the Demo Files folder, before you present this demo.

## Lesson: Identifying LCS 2005 with SP1 Server Roles



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### Introduction

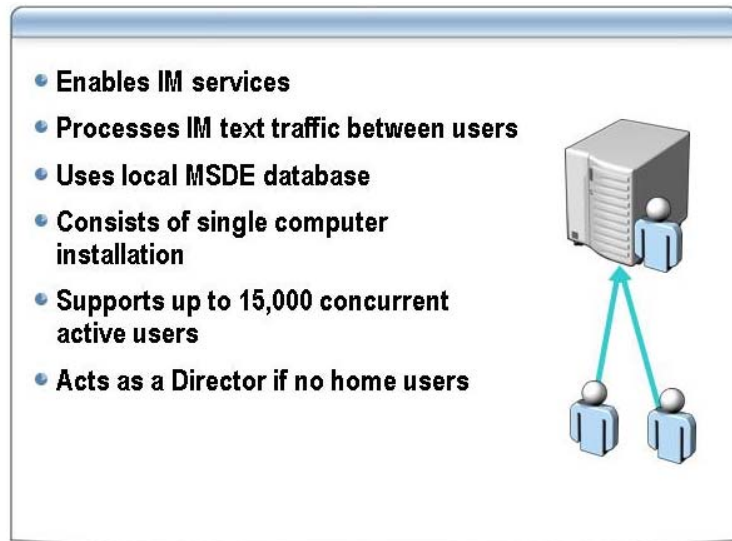
The Live Communications Server 2005 SP1 architecture consists of multiple roles, each serving a different function. These roles are described in this lesson.

### Lesson objectives

After completing this lesson, you will be able to:

- Describe the role of the Standard Edition server in LCS 2005 with SP1.
- Describe the role of the Director server in LCS 2005 with SP1.
- Describe the role of the Front-End Enterprise Edition server in LCS 2005 with SP1.
- Describe the role of the Back-End Enterprise Edition server in LCS 2005 with SP1.
- Describe the role of the Access Proxy server in LCS 2005 with SP1.
- Describe the role of the Proxy server in LCS 2005 with SP1.
- Describe the role of the IM Archiving server in LCS 2005 with SP1.
- Describe the role of the Address Book server in LCS 2005 with SP1.
- Describe the role of the Communicator Web Access server in LCS 2005 with SP1.

## Standard Edition Server



### Introduction

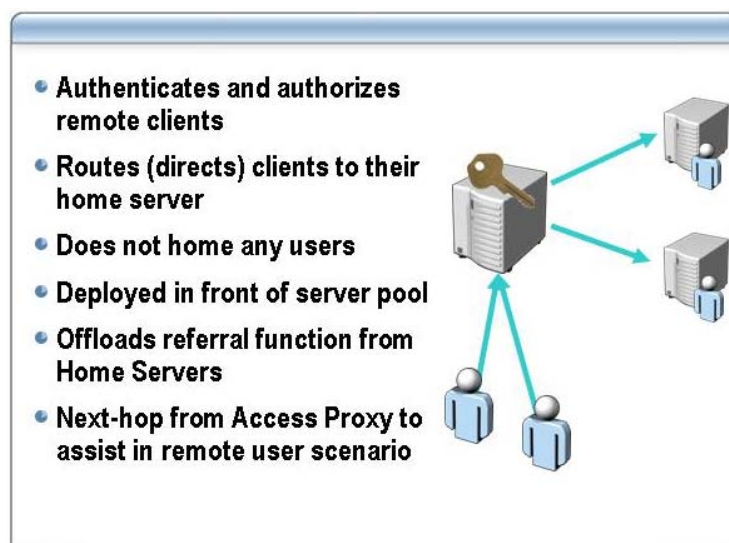
Live Communications Servers provide a simple way to enable presence and IM services for smaller, less complex networks. A Live Communications Server Standard Edition server is completely self-contained and does not require an external SQL Server to operate. It is designed for use in small- or medium-sized organizations; a single Standard Edition server can support up to 15,000 concurrent active users on the recommended high-end hardware and software. This server is a stand-alone server with a local MSDE (Microsoft Desktop Engine) database that stores user data.

Live Communications Server 2005 with SP1 Standard Edition assigns users to a single home server. Although a domain might contain two or more home servers, each user is assigned to only one home server. User data, such as contact lists and registration status, are stored in a SQL MSDE database on the same server.

If the server hosts no users on it, then it is effectively acting as a Director. The Director role is discussed on the next topic page.

A Standard Edition server is the appropriate choice in small deployments where enterprise-level capacity and performance are not required.

## Director



### Introduction

A Director is a Live Communications Server Standard Edition or Enterprise Edition server that does not host users, but is part of an Active Directory domain. A Director can access Active Directory to authenticate users and to route traffic to the appropriate server or enterprise pool. The Director is the recommended internal next hop server to which an Access Proxy routes inbound SIP traffic.

### Director Configurations

Live Communications Server supports the following Director configurations:

- A single Standard Edition server configured as a Director.
- An array of Standard Edition servers configured as a Director (Enterprise certification authority (CA) required).
- An Enterprise pool configured as a Director (Enterprise CA required).

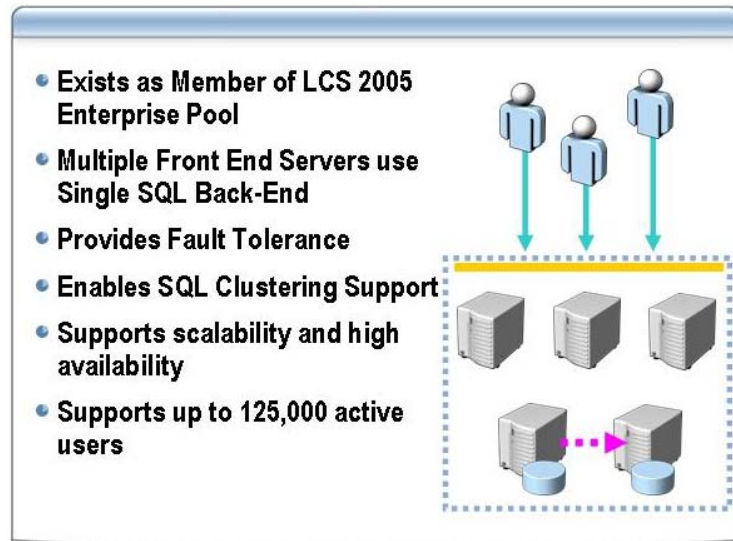
### Role of the Director

You must deploy an Access Proxy for federation, remote user, and branch office topologies. A Director is optional but strongly recommended in all topologies involving connections across the Internet, particularly those that support remote users. By authenticating inbound SIP traffic from federated partners and remote users, the Director insulates home servers and pools from potentially malicious traffic and removes the overhead of authentication.

You can deploy either a single Director or an array of Directors behind a load balancer. In a large deployment with considerable external traffic, the load balancer provides a significant improvement in performance. An array of Directors fronted by a load balancer is a recommended configuration for enterprise deployments. The Director server is placed behind the corporate network perimeter between the Access Proxy and the server pool.

It is also used to offload authentication for internal clients and to redirect them to their home server pool in a multiple-pool environment.

## Front-End Server



### Limitations in Previous Version

Live Communications Server 2003 assigned users to a single home server. User data, such as communication end points, contact lists, and registration status, were stored in an SQL MSDE database on the same server. This flat topology and static assignment of users to a specific server works well for small organizations, but presents two limitations for large enterprise deployments:

- **Availability.** When a home server fails, users assigned to it cannot log in and, therefore, are unable to either send or receive messages. Moreover, their data is unavailable to all other servers in the domain.
- **Scalability.** In large deployments with tens of thousands of employees, numerous individual home servers may be necessary to manage users and direct traffic. As the number of users increases, management overhead increases disproportionately.

### LCS 2005 Solution

Live Communications Server 2005 with SP1 Enterprise Edition solves both problems by distributing the original functionality of the Live Communications Server 2003 home server between two new server roles in Live Communications Server 2005:

- A front-end pool of Enterprise Edition Servers for handling client connections.
- A back-end database server for storing user data.

### Enterprise Pool

The Enterprise Edition Servers and the back-end database server together form an Enterprise pool. The Enterprise pool is the functional equivalent of a single Live Communications Server 2003 home server or Live Communications Server 2005 with SP1 Standard Edition server, but with significantly greater capacity, better performance, and faster fail-over support. Server pools also make it possible to upgrade server software on a server-by-server basis with minimal interruption to user services.

An Enterprise Edition pool consists typically of two or more Enterprise Edition Servers combined with a third-party load balancer for distributing user traffic among the servers in the pool. Users register with the Enterprise pool rather

than with any particular server, connecting to the load balancer through a virtual IP address. Individual servers in the pool are responsible for connection processing, message routing, security and authenticating, protocol processing, and applications. The load balancer distributes user traffic according to one of the well-known load-balancing algorithms. Servers in the pool must be configured with a static IP address, and each must have a certificate for server authentication.

#### **Load Balancing Benefits**

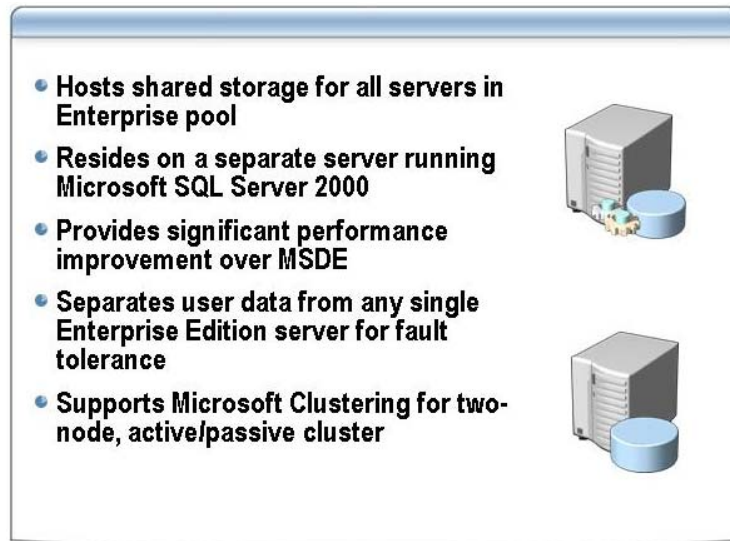
Separating users from any particular server and using a load balancer to distribute traffic permits Enterprise Edition deployments to handle up to 125,000 concurrently active clients, as compared to the 8,000 to 10,000 supported by a Live Communications Server 2003 home server or the 15,000 by a LCS 2005 with SP1 Standard Edition server. As a result, except for the very largest organizations, it is often possible to host all the users in the enterprise in a single pool. This is a significant advantage when compared to multi-pool deployments because there is additional overhead to sending presence notifications to clients hosted in different pools.

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**Note** Organizations requiring high availability should use hardware load balancers. Small organizations and test deployments can use Network Load Balancing (NLB), although this is not a recommended configuration.

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## Back-End Server



### Introduction

The back-end database server hosts the shared storage for all servers in the Enterprise pool. It resides on a separate computer on which Microsoft SQL Server 2000 has already been installed. SQL Server represents a significant improvement over MSDE by providing better performance, more threads, and optimizations for taking advantage of large, symmetric multiprocessing computers. In addition, existing SQL tools can be used for backup and restore operations and for performance monitoring.

Static data, such as contact lists and allow-block lists are stored as persistent data in the back-end database. The database also contains dynamic data and a set of SQL Server stored procedures. Enterprise Edition servers within the pool connect to the back-end database server by means of a high-speed network connection. Separating user data from any single Enterprise Edition server means that it will remain available to other servers in the pool if any single server fails or is removed from service.

For even greater reliability, the back-end database server takes advantage of MSCS (Microsoft Clustering Service), which is a feature of Microsoft Windows Server 2003, Enterprise Edition and Windows Server 2003, Datacenter Edition. Live Communications Server 2005 uses MSCS to support configuration of the back-end database as a two-node, active-passive cluster. SQL Server 2000 runs as a virtual server that can be controlled by either node. When the active node fails or is removed from service, the passive node takes over.

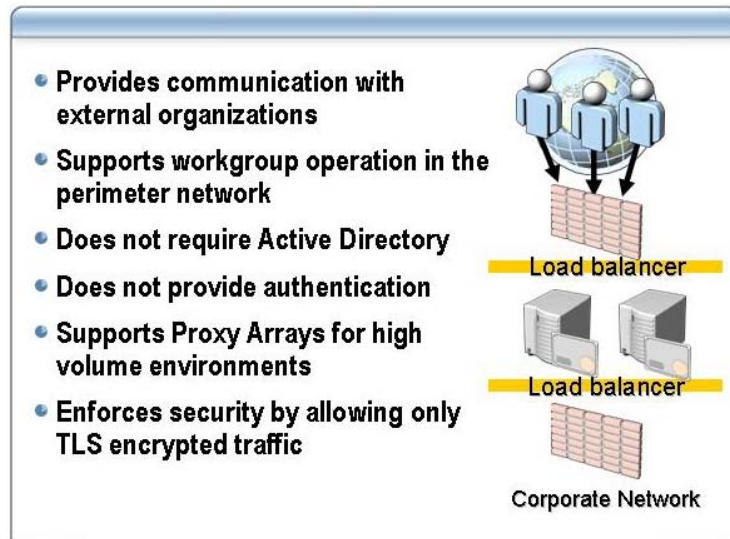
You can further enhance fault tolerance and facilitate troubleshooting by:

- Installing the operating system and applications on a different partition than the one used to store data files.
- Partitioning disks so that you can start from the command line in an emergency.

- Storing transaction log files and data files on separate physical disks. If the log files and database are on the same disk and it fails, all transactions since the last backup are lost.



## Access Proxy



### Introduction

An Access Proxy server provides secure Session Initiation Protocol (SIP) communications for both inbound and outbound traffic across Internet firewalls.

An Access Proxy server role is a prerequisite if you want to enable external communications for your LCS 2005 with SP1 deployment. External communications include federation, public IM connectivity, and support for remote users. Live Communications Server 2005 with SP1 features can be extended with an Access Proxy server.

**Important** Access Proxy servers do not provide authentication. They can use a Standard Edition server, an Enterprise Edition server or a Director to provide authentication services.

### Role of an Access Proxy

The Access Proxy straddles the boundary that separates an organization's internal network from the Internet. It provides a single, secure connection point for both remote and federated users, routing both incoming and outgoing SIP traffic. It does not authenticate connections, but it does validate incoming message headers. By design, the Access Proxy is deployed in an organization's perimeter network and is not part of the enterprise namespace. It has two separate network interfaces: one for accepting incoming Internet traffic, and another for accepting outgoing traffic from the internal network. Each network interface has its own listening port and set of routing rules.

- **External Interface (incoming traffic).** The Access Proxy marks each inbound message as having originated with an Internet client, branch office Proxy, direct partner, enhanced federation partner, public IM service provider, or clearinghouse. The Access Proxy then routes each message accordingly. Using a configured static route, the Access Proxy passes incoming traffic unchallenged to the internal next hop server—typically a Standard Edition server or an Enterprise Edition front-end server—for authentication. REGISTER and SERVICE requests are routed to the internal next hop only if the originating and terminating parties are both in a supported internal domain; otherwise, they are dropped. Traffic from

Internet clients and branch offices must be authenticated. Traffic from federation partners, clearinghouses, and public IM service providers are either passed along or dropped, depending on various client and server settings.

- **Internal Interface (outgoing traffic).** Depending on which federation model is employed, outbound requests may be routed to a federated partner's external SIP domain, a public IM service provider, an organization's branch office, or individual remote users who connect directly to the Access Proxy. In routing outbound requests to external domains, the Access Proxy first checks its Blocked SIP domains list. If the destination domain is on the list, the request is dropped. If the target domain is not on the Blocked SIP domains list, the Access Proxy determines whether it is a direct federation partner, enhanced federation partner, public IM service provider, clearinghouse, branch office Proxy, or remote user, and then routes the message accordingly.

The Access Proxy marks each outbound message with headers that indicate:

- Whether the originating domain can verify the user sending the message. This information can be useful in deterring or tracking SPIM or potentially malicious content.
- Whether the message is being archived (if archiving is turned on).
- Which application, server, or pool added the headers.

#### Access Proxy Arrays

If your organization anticipates a high volume of external SIP traffic, you can deploy multiple Access Proxy servers in one or more arrays behind both external and internal hardware load balancers. You can configure each array as the sole connection point for a specified set of federated partners, remote users, or branch offices.

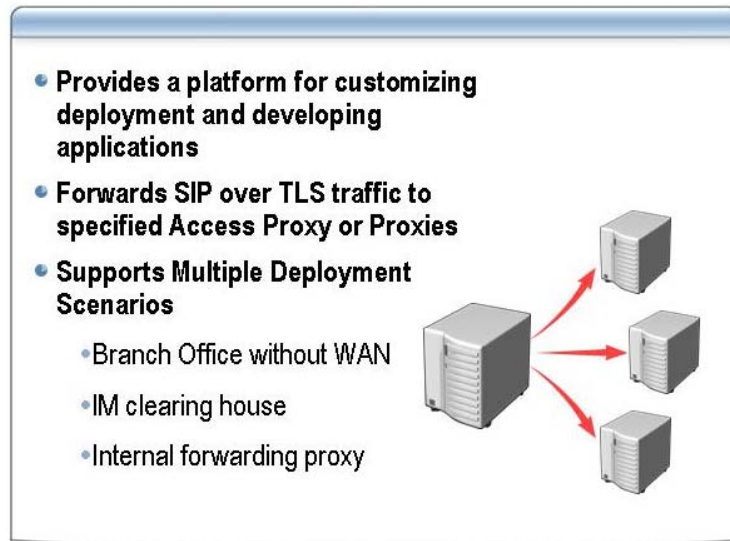
#### Securing Access Proxies

Live Communications Server 2005 with SP1 uses Transport Layer Security (TLS) and in some scenarios MTLS (Mutual TLS) to enforce end-to-end encryption along the route and to provide server-to-server authentication.

By design, the Access Proxy is deployed in an organization's perimeter network and is not part of the enterprise namespace. Because inherent risk is involved with exposing an entry point into the enterprise network, a firewall should be deployed on either side of the perimeter network to help protect the internal network.

Module 6, "Installing an Access Proxy Server in Live Communications Server 2005 with Service Pack 1" covers the Access Proxy Server role in more detail.

## Proxy Server (Forwarding)



### Introduction

The LCS 2005 with SP1 Proxy server role provides a platform for forwarding requests and optionally hosting applications in scenarios where authentication and user registration are not required.

Proxies are primarily deployed to act as a forwarding proxy within an IM clearinghouse to route messages to the Access Proxy or array of Access Proxies that is responsible for the specified destination domain. However, most enterprise deployments do not require the Proxy role.

The Proxy is a Standard Edition Server without user services installed, so the Proxy cannot host users or route messages based on user-specific settings in Active Directory. The Proxy also does not perform authentication, although it can mark connections as trusted.

Organizations can deploy Proxy servers in various ways. For example, they can function as application servers for customized routing of SIP traffic. Proxy servers can also forward messages, either within in the internal network or in a branch office, where there are no Live Communications Servers or pools.

### Customized Routing

The Proxy server role provides a platform for customizing deployment and developing applications. Static routing rules can be configured while more complex routing applications can be written by using Microsoft SIP Processing Language (MSPL) or by using managed code and the .NET Framework.

### Proxy Deployment Scenarios

A Proxy could be considered for deployment in the following situations:

- A branch office without a WAN connection to the home office
- A forwarding proxy within an IM (instant messaging) clearinghouse
- A forwarding proxy within an organization's internal network

### Proxy in a Branch Office

A Proxy server can be deployed in a branch office that is not directly connected to the main corporate network through a WAN link. The Proxy provides a single connection point through which SIP-enabled users in the branch office can register with and send requests to LCS 2005 with SP1 in the home office.

The Proxy uses a static route to connect to an Access Proxy deployed in an organization's perimeter network.

The deployment of a branch office Proxy is recommended in the following situations:

- A significant number of users are located in a branch office that is connected to the home office or data center by a slow network connection. The connections from the branch office Proxy to the Live Communications Server 2005 SP1 Access Proxy are compressed and will allow you to reduce the bandwidth usage.
- You want to archive all the content of the instant messages sent from and to users who are in the branch office.

Deploying a branch office Proxy optimizes SIP traffic between the branch office and the main office because only a few connections are opened, rather than one for each client. The Proxy also makes it possible to deploy server applications in the branch office. In general, most deployments do not involve the use of a Proxy because branch office users can simply log in as remote users through an Access Proxy.

#### Proxy in a Clearinghouse

In a clearinghouse environment, the Proxy is used to route messages to the Access Proxy or array of Access Proxies that is responsible for the specified destination domain.

The Proxy needs to be configured to send and receive all traffic to and from the Access Proxy located in the edge of the corporate network. Configuration consists of two tasks:

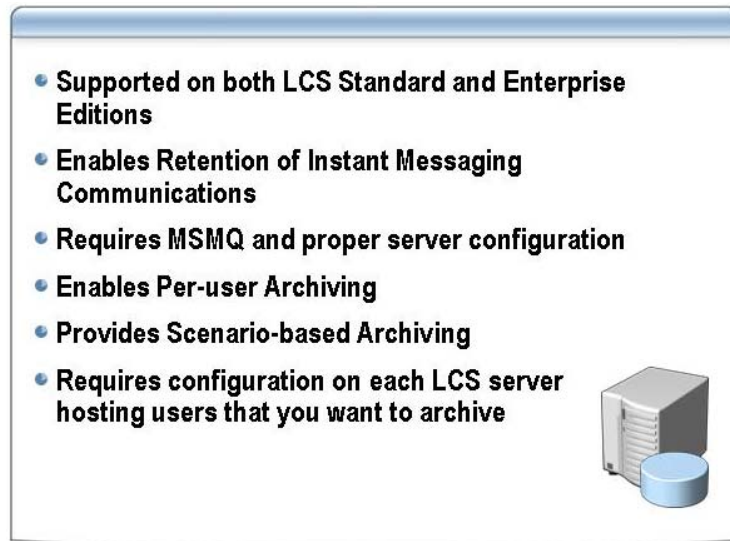
1. Specifying a static route to the internal edge of an Access Proxy or array of Access Proxies.
2. Listing the Access Proxy as an authorized host and configuring the Proxy's connection to the Access Proxy.

#### Internal Forwarding Proxy

The internal forwarding proxy may or may not host third-party applications. In general, most enterprise scenarios do not involve the use of a Proxy because applications can be deployed on Access Proxies, Directors, or Standard Edition Servers or Enterprise Edition Servers in a pool.

The Proxy does not host users, perform authentication, or enable federation, and where such services are required, other Live Communications Server roles are necessary. Where simple forwarding behavior is required without the overhead of hosting users or authenticating messages, the Proxy is a good choice.

## IM Archiving Server



### Introduction

Organizations that operate in a regulated environment may be required by law to keep track of any incoming or outgoing communications. To address this business requirement, LCS 2005 with SP1 includes IM archiving.

### IM Archiving Components

IM Archiving has the following components:

- Message Queuing (MSMQ)
- Microsoft SQL Server database
- IM Archiving Service
- IM Archiving Agent

### MSMQ

Depending on whether the IM Archiving Service is installed on a Live Communications Server, you might need to install MSMQ on separate computers. MSMQ needs to be present on computers where you are installing the IM Archiving Agent or the IM Archiving Service. This is because the IM Archiving Agent sends IM messages through the MSMQ installed on the agent to the MSMQ that the IM Archiving Service uses.

### SQL Server database

A SQL Server database stores all the archived instant messages.

### IM Archiving Service

IM Archiving Service uses MSMQ to retrieve the instant messages sent by the IM Archiving Agent. IM Archiving Service runs on a server that runs MSMQ and SQL Server 2000. The IM Archiving Service is a Windows service and appears in the Services snap-in as **Live Communications IM Archiving Service**.

### IM Archiving Agent

IM Archiving Agent is an application that runs on the Live Communications Server. When the client sends instant messages, the IM Archiving Agent stores them in a private queue in MSMQ. You should install the IM Archiving Agent on all Live Communications Servers where you want to archive messages.

### Deployment

There are recommended topologies that you can use to deploy IM Archiving Services. You can configure a Live Communications Server with IM Archiving Service in one of the following ways:

- One Live Communications Server with IM Archiving Service, IM Archiving Agent, MSMQ, and SQL Server database.
- One Live Communications Server with IM Archiving Agent and MSMQ and another Live Communications Server with IM Archiving Service, MSMQ, and SQL Server database.

It is recommended that you install IM Archiving Service on at least one server for every four Live Communications Servers that run the IM Archiving Agent. However, you can also configure a Live Communications Server to run the IM Archiving Service in a small-scale deployment of Live Communications Server.

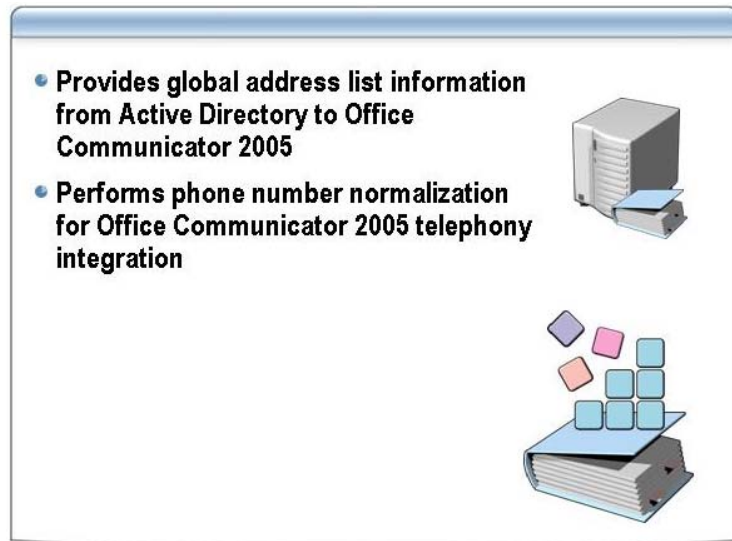
The server running the IM Archiving Service can log content from multiple Live Communications Servers. However, the archiving server can only log content from Live Communications Server servers within the same domain.

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**Note** It is recommended that you use a dedicated server for the Archiving service.

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## Address Book Server



### Introduction

The Address Book Service server performs two important functions:

- Its primary function is to provide Global Address List (GAL) information from Microsoft Active Directory to Microsoft Office Communicator 2005. To make address book updates faster and more efficient, the Address Book Service acts as an intermediary to provide the updated local copy of the address list to the Communicator client.
- Its secondary and optional function is to provide phone number normalization for Communicator telephony integration.

### Providing Global Address List

The Address Book Service provides GAL information to Office Communicator on a daily basis. Address Book Service is a standard Windows service that runs daily, and performs the following tasks:

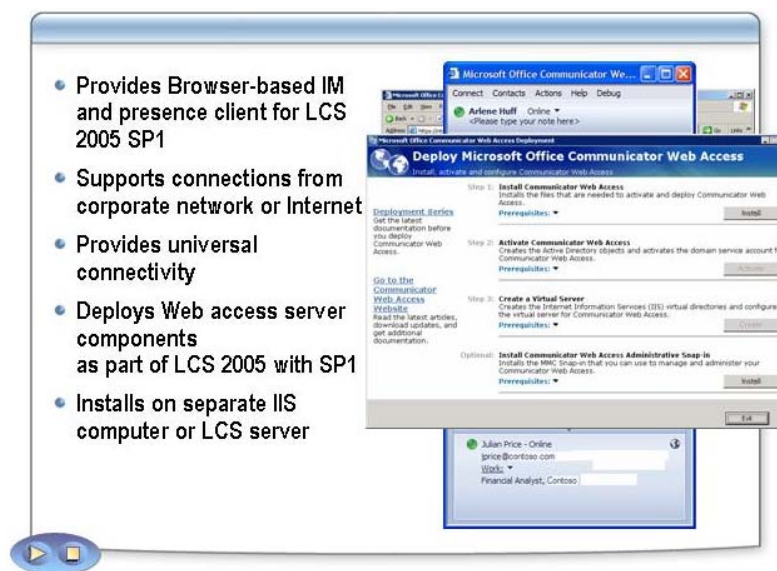
- Retrieves user and contact information from a SQL or MSDE database stored on a Standard Edition Server or Enterprise pool. The User Replicator (UR) component writes this data.
- Generates a set of compressed data files, which are stored in a standard NTFS folder. This data consists of full files and delta files.

The advantage of the full file and delta file generation is that it minimizes the impact of the client download. When an Office Communicator client logs on, it receives a URL to the NTFS folder, and retrieves a full file on the first day it connects to the server and delta files on subsequent days.

### Performing Phone Normalization

As a secondary role, the Address Book Service can perform normalization for the phone numbers stored in Active Directory user and contact objects. Phone numbers are normalized (stripped of extraneous formatting and characters) so that the Office Communicator client and telephony systems can use them. Normalization uses two standard normalization rules supplied along with the Address Book Service. Although the Address Book Service can perform phone normalization, this is not the recommended method. Normalizing numbers within Active Directory is the preferred method.

## Communicator Web Access Server



### Introduction

Communicator Web Access is a browser-based instant messaging and presence client for LCS 2005 with SP1, with a look and feel similar to Microsoft Office Communicator 2005.

Communicator Web Access provides IM and presence to users who are connecting either from within the corporate network or over the Internet using one of many supported Web browsers. The Communicator Web Access server components are deployed as part of a LCS 2005 with SP1 deployment. For users, there are no client components to install; all that is required is a Web browser and network connectivity to the Communicator Web Access server.

**Note** You can download the Office Communicator Web Access client from the Microsoft Download Center, at [www.microsoft.com/downloads/details.aspx?FamilyId=A7499AC3-09A6-4491-BDD1-1E41F4719E90](http://www.microsoft.com/downloads/details.aspx?FamilyId=A7499AC3-09A6-4491-BDD1-1E41F4719E90).

### Universal Connectivity

As the browser-based client for Live Communications Server 2005 SP1, Communicator Web Access requires only a Web browser and network connectivity. This enables more information workers to take advantage of the benefits of Live Communications Server 2005 and Communicator in several connection scenarios.

- Users who are away from the office can stay connected. With Communicator Web Access, information workers can access Live Communications Server 2005 SP1 with only a Web browser by using a communal computer, a kiosk, or even a home computer.
- Users who have locked-down computers, or computers running earlier-version operating systems that do not run the desktop version of Communicator, need only a Web browser to gain access to Live Communications Server 2005 via Communicator Web Access.
- For users running operating systems other than Microsoft Windows, Communicator Web Access provides access to Live Communications



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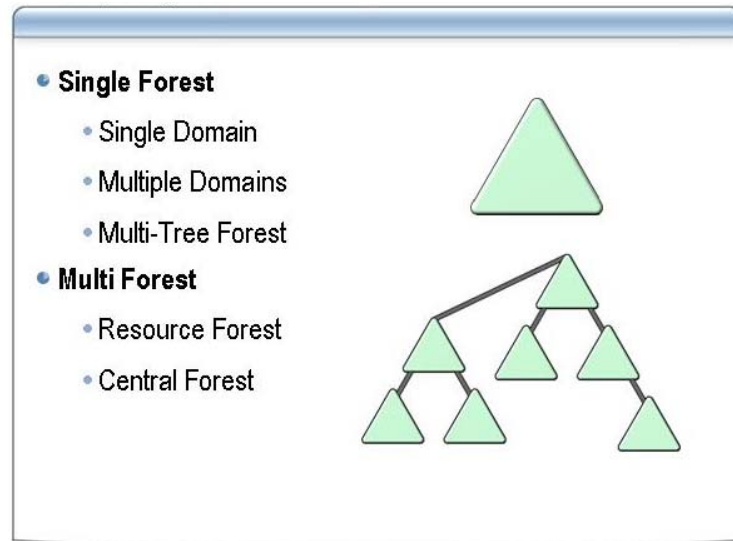
|   |  |
|---|--|
|   | Server 2005 with no platform dependencies and enables real-time collaboration.   |
| Simple and Integrated Deployment                    | Communicator Web Access is easily deployable by both end users and IT professionals. End users can connect to Communicator Web Access by simply typing a URL into their Web browsers. Users do not need to install platform-dependent components or other prerequisites on the client other than the supported Web browser. It is easy to incorporate Communicator Web Access into your existing Live Communications Server 2005 deployment; no schema or major infrastructural changes are required.  |
| System Requirements                                 | <p>The requirements to host a Communicator Web Access Server are as follows:</p> <ul style="list-style-type: none"><li>■ Microsoft Windows Server 2003 Service Pack 1</li><li>■ Microsoft .NET Framework version 2.0</li><li>■ ASP.NET 2.0</li><li>■ Public Key Certificates for transport layer security (TLS) and HTTPS</li><li>■ LCS 2005 with SP1</li></ul>  |
| Topology  | <p>Communicator Web Access is an extension of your existing LCS 2005 with SP1 deployment. Generally, you should install Communicator Web Access server software on separate IIS servers inside your corporate network and configure them so that both internal users and remote users have access.</p> <p>A Communicator Web Access Server can be located on a Live Communications Server or on a separate IIS server. Deployment costs can be reduced by co-locating server roles. Locating Microsoft Office Communicator Web Access on the same server as LCS 2005 with SP1, Standard Edition or Enterprise Edition is supported. However, you should deploy each server role on a separate physical server whenever possible.</p> |
| Internal and External Web Access on a Single Server | <p>To reduce deployment costs, you can host both internal and remote users on a single Communicator Web Access server. By using the application isolation feature that IIS 6.0 provides, you can run two instances of Communicator Web Access on a single server. You can create one virtual server instance during Communicator Web Access setup, and after setup is complete you can create other virtual server instances in Communicator Web Access Manager.</p>   |

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**Note** Although this scenario reduces hardware costs, it is recommended only for small deployments. Deploying two separate servers for physical isolation is the most secure mechanism and is recommended when your budget permits.

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## Lesson: Reviewing LCS 2005 with SP1 Topologies



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### Introduction

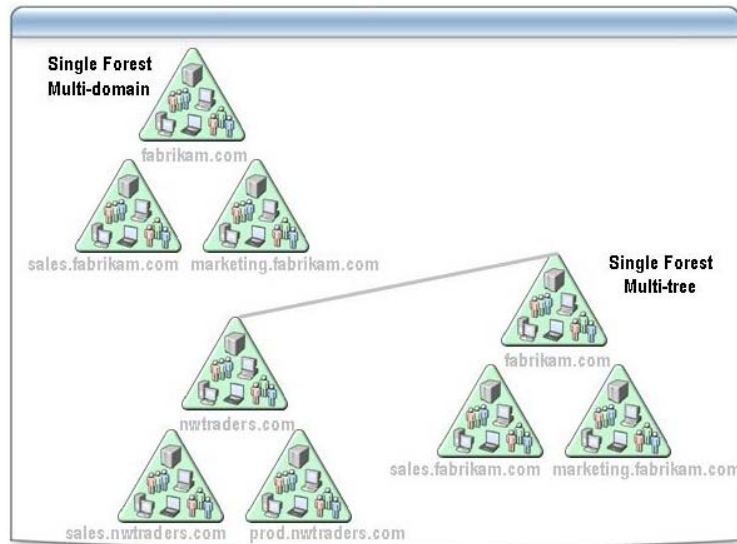
LCS 2005 with SP1 supports a greater number of domain topologies than previous versions. Depending on their needs and size, enterprises can deploy either a single forest for the entire organization or multiple forests for each business unit. Active Directory supports both topologies.

### Lesson objectives

After completing this lesson, you will be able to:

- Describe the domain options in a single forest topology.
- Describe the domain options in a multi-forest topology.

## Single Forest



### Introduction

You can use three variations of the single forest topology:

- Single domain
- Single forest with multiple domains
- Single forest with multiple trees

### Single Domain

Single domain is the simplest Active Directory topology in which Live Communications Server can be deployed. This topology is typical for smaller organizations.

### Single Forest with Multiple Domains

A more complex Active Directory topology is single forest with multiple domains. As shown in the slide figure, this configuration consists of a root domain and one or more child domains.

You can deploy servers in different domains from the domain in which you create users. However, if you are configuring an Enterprise pool, the servers that comprise the pool must be deployed across a single domain. This topology is appropriate for larger deployments where multiple forests are not required. In this configuration, Live Communications Server 2005 with SP1 would be deployed in the single domain. The single forest, single domain environment is based on a centralized management model, where only one set of administrators control and manage the forest.

### Single Forest with Multiple Trees

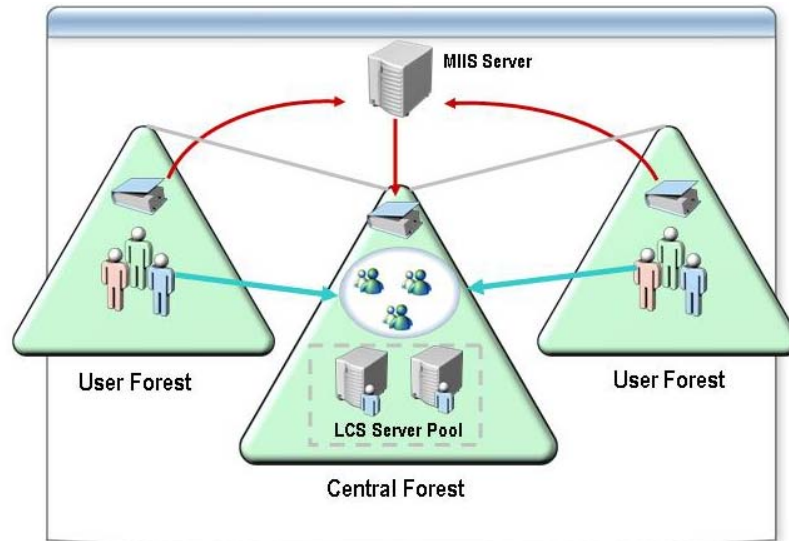
Another, more complex Active Directory topology is a single forest with multiple trees and disjointed namespaces. This configuration consists of one or more root domains and one or more child domains. You can deploy servers in different domains from the domain where you create users. This type of topology is also shown in the slide figure above.

**Server Placement**

In the single forest, single domain topology; it is best practice to place all Live Communications Servers in the same physical location on the same subnet.

You should also consider placing computers running Live Communications Server in different geographical locations if the single forest, single domain topology spans over multiple physical locations and the sites are linked with low bandwidth connections.

## Multi-Forest



### Introduction

Larger organizations that have multiple business units may prefer to deploy separate Active Directory forests for each unit. Using distinct Active Directory structures provides autonomy of the schema and security of each structure. Each forest can extend its schema without affecting other forests. Administrators in one forest are not administrators in another forest. There are two typical variations of the multiple forest topology.

### Resource Forest

The resource forest topology is a multi-forest configuration used typically by Microsoft Exchange. This topology dictates that one of the forests in the organization is dedicated for server applications only (for example, Exchange). As shown in the slide figure above, users from other forests are represented as disabled user accounts in the resource forest. These disabled user accounts are then enabled for a mailbox on the Exchange servers. Live Communications Server 2005 can take advantage of the investment in this particular topology. In the same way that disabled user accounts in the resource forest are enabled for Exchange, they can also be enabled for Live Communications Server. This provides the benefit of only extending the Active Directory schema in a single forest (the resource forest) and leveraging the existing Active Directory infrastructure. In this topology, GALsync (global address list synchronization) is required to synchronize information across forests.

For more information about resource forest topologies, see the Exchange Server 2003 Deployment Guide available on the Microsoft Web site at <http://www.microsoft.com/technet/prodtechnol/exchange/2003/library/depguide.msp>.

### Central Forest

The central forest topology is an improved variation of the resource forest topology. A central forest topology centralizes presence and instant messaging information for all users in the entire organization. A single forest is selected to host all Live Communications Server pools. Users in the central forest as well as other forests in the organization are enabled for Live Communications Server in the central forest. Instead of using disabled user accounts to represent external users from other forests, Active Directory Contact objects represent external users. Microsoft Identity Integration Server (MIIS) is required to

synchronize users as Contact objects in the central forest. In addition to the advantages that the resource forest provides, the use of MIIS automates the life-cycle management of users within the organization when new employees are hired or other employees leave. Additionally, the use of Active Directory Contact objects is more lightweight than Active Directory User objects. Finally, users within the central forest are not restricted from being enabled for Live Communications Server. The central forest topology is also shown in the slide figure above.

For very large organizations that have an environment with multiple forests for each business unit to provide Active Directory and security independence, it is recommended that you deploy Live Communications Server in a central forest topology.

The central forest option offers the following advantages:

- Live Communications servers are centralized in a single forest.
- Users are able to search for users in any forest.
- Users are able to view other users' presence in any forest.
- Users are able to communicate with users in any forest.
- Contact objects corresponding to a new user account created in any forest are automatically created in the central forest by MIIS.
- Contact objects corresponding to an existing user account are deleted in the central forest when the user account is deleted from its forest by MIIS.

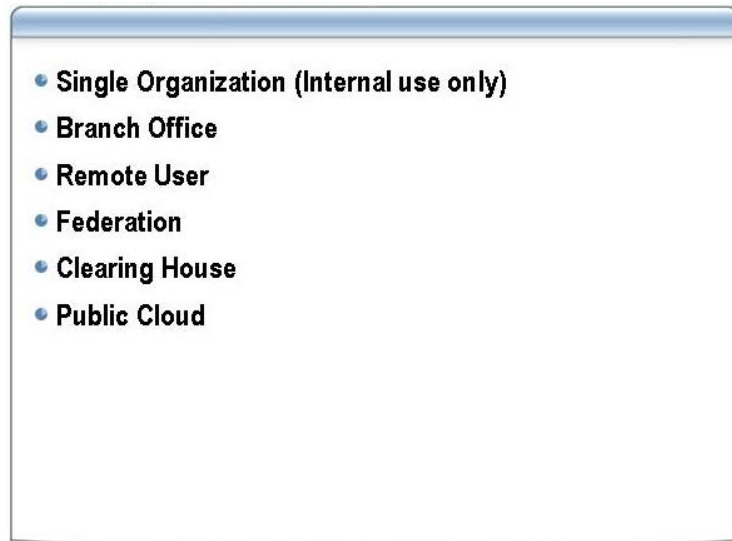
The main disadvantage associated with this option is that when a new contact object is created in the central forest, the administrator of the central forest must enable the contact for Live Communications Server before its corresponding user account can use the service.

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**Note** Live Communications Server Enterprise Edition is recommended for multiple forest topologies, to take advantage of its scalability and its high-availability offerings.

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## Lesson: Identifying LCS 2005 with SP1 Deployment Scenarios



### Introduction

Companies increasingly need to communicate in real time across the Internet with customers, partners, suppliers, and their own mobile employees. Live Communications Server 2005 with SP1 helps address these requirements by supporting a variety of Internet topologies, including federation, remote user access, branch office and public cloud connectivity.

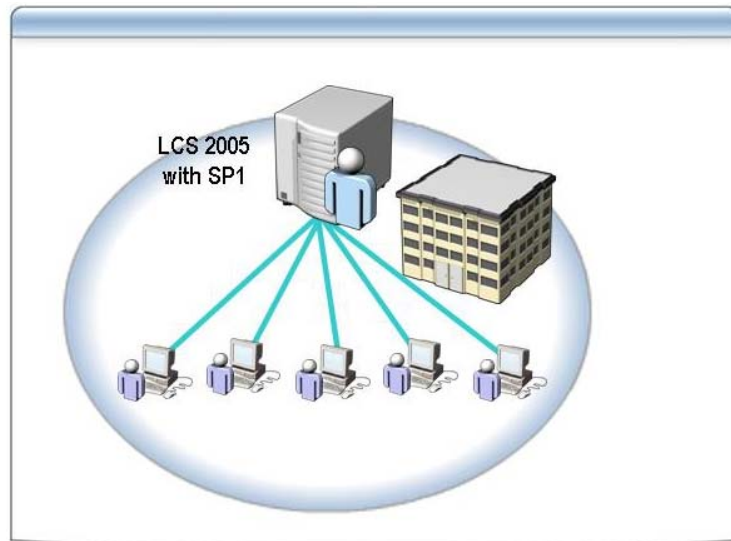
Live Communications Server 2005 with SP1 uses mutual TLS (Transport Layer Security) to enforce end-to-end encryption along the route and to provide server-to-server authentication. Live Communications Server 2005 with SP1 also provides tools for filtering potentially malicious or intrusive SIP traffic.

### Lesson objectives

After completing this lesson, you will be able to:

- Describe the Single Organization scenario.
- Describe the Branch Office scenario.
- Describe the Remote User scenario.
- Describe the Federation scenario.
- Describe the Clearinghouse scenario.
- Describe the Public Cloud scenario.

## Single Organization



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### Introduction

The simplest LCS deployment is within a small organization that simply wants to use LCS 2005 with SP1 to improve internal business communications. The company has decided to use LCS rather than a public service such as MSN Messenger.

### Company Setup

This organization only has one business location and no branch offices or remote users. It also does not connect to users of public IM services.

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**Note** Although this scenario is less common, it provides the basis for incorporating additional IM Services in the following topics.

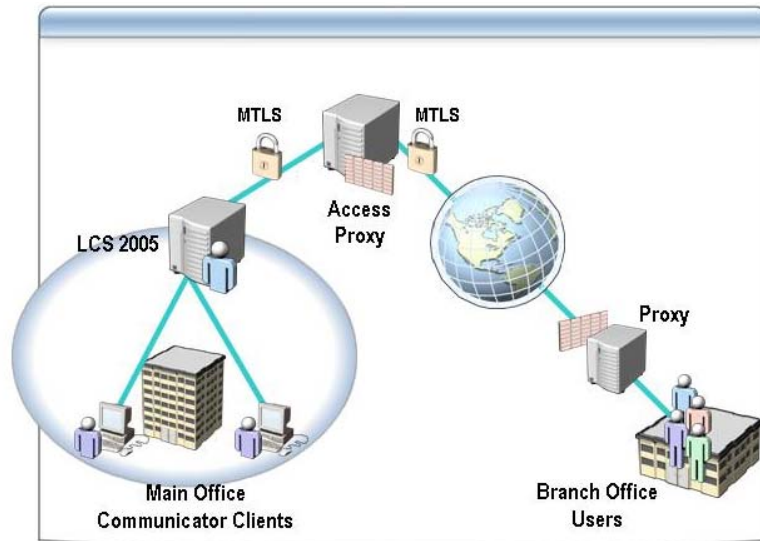
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### LCS Features

Using LCS 2005 with SP1 provides secure IM connectivity, reduces telephone costs, and provides the ability to find contact details and presence information about any employee in the company.



## Branch Office



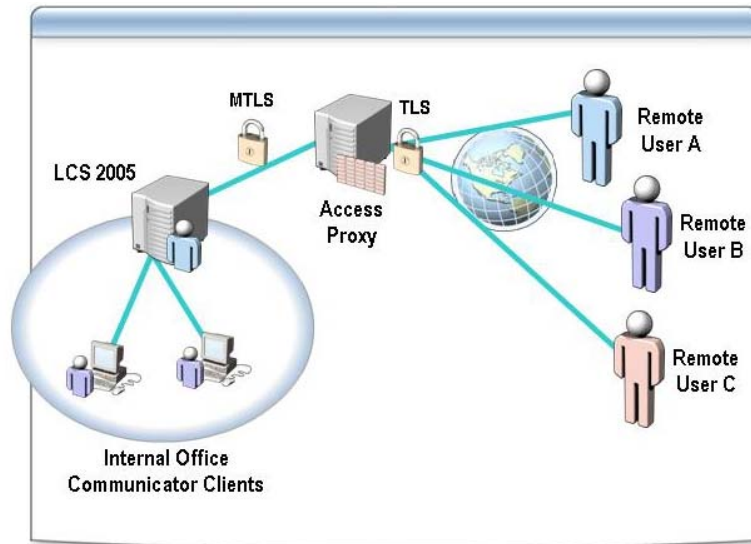
### Introduction

As the single organization grows, it may set up one or more branch offices. The corporate branch office is part of the enterprise internal network, but communications between it and the home office must traverse the Internet. A Proxy server deployed behind a firewall in the branch office perimeter network forwards all communications to an Access Proxy deployed in the perimeter network of the home office. All traffic destined for the branch office also goes through the Proxy server.

### Branch Office Connections

The company can use the Proxy server role in Live Communications Server 2005 to enable branch offices that are not attached to a domain to connect to the organization's internal SIP domain. The Proxy in the branch office is configured with the external DNS name of an Access Proxy, and the name of the Proxy is added to the Access Proxy's list of Proxy servers that are authorized to connect to it. SIP requests arriving on such connections are considered to be trusted. These requests arrive over Mutual Transport Layer Security (MTLS) and are passed unchallenged to an internal server—usually a Director—for authentication.

## Remote User



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### Introduction

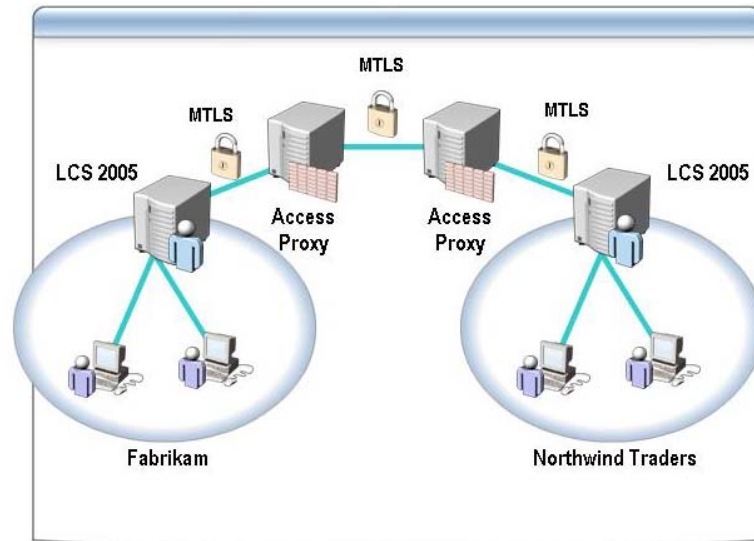
Moving beyond the branch office, the organization may now want to use LCS 2005 with SP1 to enable users working at home or on the road to access their internal SIP domains by connecting directly to the corresponding Access Proxies.

To support remote user access for your deployment, you must publish the correct domain name service (DNS) records on the appropriate DNS server for your organization.

### Remote User Access Connections

Remote user connections are sent to the Access Proxy over TLS and are forwarded by each Access Proxy to an internal SIP server (usually a Director) for authentication. After the incoming connections are authenticated, they are routed to the correct home server for delivery to the IM user.

## Federation



### Introduction

As the organization grows, it may create business relationships with one or more partners. Federation provides the ability to establish trust relationships between your organization and one or more external networks that allow users to initiate IM sessions, exchange notifications, and subscribe to user presence across network boundaries. All connections are encrypted using MTLS, in which each partner's Access Proxy must present a valid certificate to the other.

Federation makes it possible to extend the benefits of IM, presence awareness, and data sharing throughout your organization's business. Suppliers, partners, subsidiaries, and customers can all communicate with key employees in real time, just as if they were all residing in the same network domain.

The slide shows that Fabrikam and Northwind Traders have each deployed a single Access Proxy in their perimeter networks. Each Access Proxy knows the fully qualified domain name (FQDN) of its counterpart. They communicate by using an encrypted MTLS connection, in which each Access Proxy presents a valid certificate to the other and trusts either the other's certificate or the certification authority (CA) from which it was obtained.

### Administrative Control

Administrators in each domain can authorize or deny federated access for individual users or groups of users. Administrators can also block federated partners from obtaining presence information or from using IM with particular users. Where appropriate, administrators can also archive messages to federated partners and automatically include a notification of this action with each session.

### User Control

By default, individual users in each federated domain can exchange IM with users in other federated domains. If an individual user in your domain does not want to receive IM from a particular user in a federated partner's domain, the user in your domain can add the federated user to his or her Block list.

Also by default, users in a federated domain are blocked from seeing presence information about users in your domain. If an individual user in your domain wants to allow a user in a federated partner's domain to see his or her presence information, the user can add the federated user to the Allow list.

**Federation Requirements**

Federation requires that each partner deploy at least one Access Proxy and either a Standard Edition server or Enterprise Edition pool for hosting users. Deploying a Director for authenticating incoming SIP traffic is also highly recommended. Live Communications Server 2005 with SP1 provides several federation options. Choosing among them requires careful assessment of your organization's needs and requirements.

**Enhanced Federation**

Enhanced federation uses DNS SRV resolution to locate the Access Proxy of a federated partner, and mutual TLS to secure the connection, which means that the servers at both ends must present valid certificates. In this way, enhanced federation eliminates the need to request, specify, and update the Access Proxy FQDN of each federation partner. By using enhanced federation, you do not need to respond to requests for the FQDN of your organization's Access Proxy, nor do you have to notify partners if the FQDN changes.

Enhanced federation comes in two varieties:

- **Restricted Enhanced Federation.** This form of enhanced federation allows connections only with SIP domains that you specify. Restricted enhanced federation is the recommended model for enterprise-to-enterprise federation.
- **Unrestricted Enhanced Federation.** This form of enhanced federation allows connections with any SIP domain that presents a valid certificate. You can, however, block IM from unwelcome sources either by adding undesired domains to the Access Proxy's Block list or by copying their certificates from the Access Proxy's Microsoft Management Console (MMC) to the un-trusted certificates store on local computers.

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**Note** Enhanced federation is not enabled by default.

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**Caution** Allowing enhanced federation with any domain means that any computer that presents a valid certificate can connect to your internal SIP domain and send unsolicited messages to any user in that domain. For this reason, allowing enhanced federation only with domains listed in the enhanced federation table is both the default and the recommended configuration

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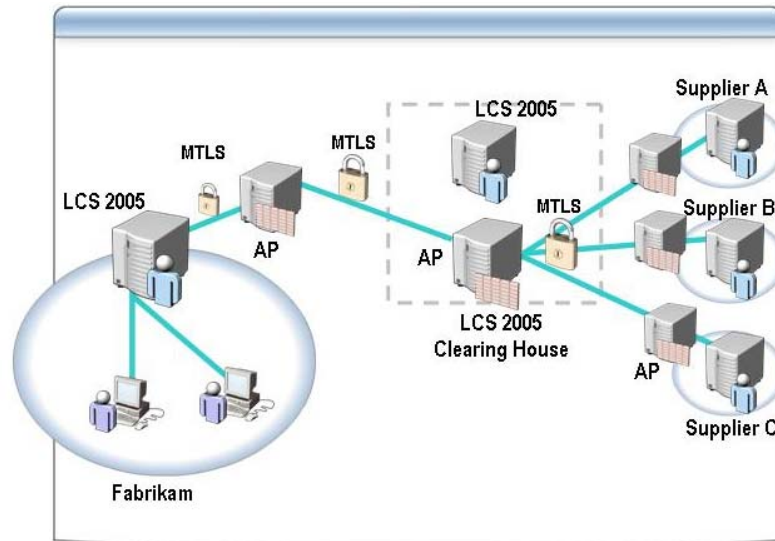
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**Direct Federation**

Direct federation is a trusted peer-to-peer connection between two SIP domains. It requires that both partners specify the Access Proxy and the SIP domain of the other federated partner. This procedure provides a high degree of security and control, but it entails a lot more work and ongoing attention than even restricted enhanced federation. For this reason, direct federation is recommended only for partners who have neither upgraded to SP1 nor published a SRV record for their domain. Direct federation may also remain attractive for organizations with particularly diligent security requirements.

LCS with SP1 supports direct federation with as many as 300 partners.

## Clearinghouse



### Introduction

The organization may want the benefits of IM communications with external organizations without having to set up enhanced federation. Clearinghouse (or Default Route) federation builds on federation by enabling an organization to connect to domains that are unreachable by using enhanced federation or an IM service provider. In this case, these business partners can federate with an SIP clearinghouse service.

**Note** If the external domain is not a member of a clearinghouse, then you must use direct federation.

Clearinghouses are particularly attractive for brokering SIP transactions among members of a particular vertical industry or other interest group, such as financial or insurance institutions.

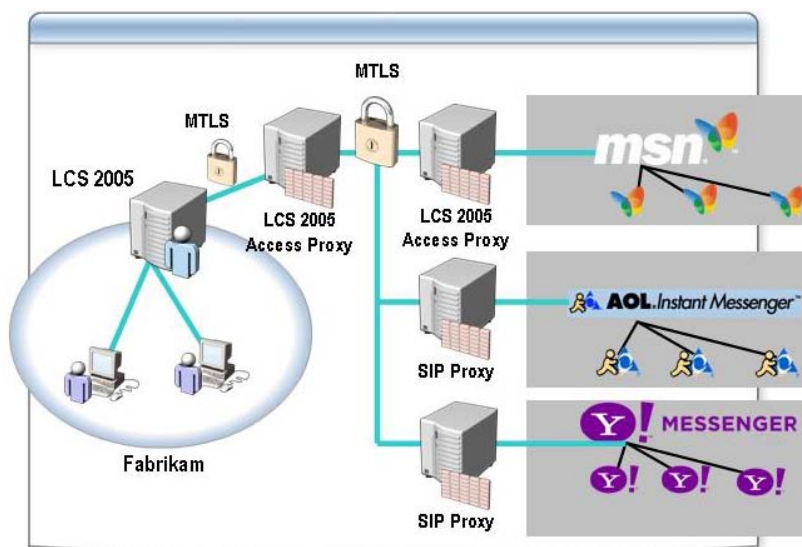
### Clearinghouses

The clearinghouse federates directly with each of its members and acts as a trusted broker for exchanging information among them. The clearinghouse's Access Proxy does not distribute SIP traffic directly, but instead passes it to internal servers that perform the necessary authentication and that possess the necessary routing logic. A clearinghouse member can typically accept federation with all other members, or it can deny access to certain organizations while allowing access to the rest.

Default route federation provides the same safeguards and measure of control as direct federation without the overhead of configuring and updating individual SIP domains and Access Proxies. You establish a trusted relationship with the clearinghouse and delegate responsibility to it for authenticating and validating SIP traffic from its members.

To configure an Access Proxy for default route federation, you specify the FQDN of the clearinghouse's Access Proxy. All outbound traffic that does not target a direct federation partner is routed by default to the clearinghouse. This behavior makes it possible for an organization to federate directly with some partners while using a clearinghouse for others.

## Public Cloud



### Introduction

Finally, the organization might want to communicate with clients, customers, or members of the public who do not connect to public IM services. LCS 2005 with SP1 provides the means for establishing IM connectivity with users of public IM services provided by MSN, Yahoo!®, and AOL®.

After a connection is established, authorized internal Live Communications Server users can add contacts, share presence information, and communicate in real time with users of these public IM network services. In addition, users in your organization can employ either Microsoft Office Communicator 2005 or Windows Messenger 5.1 or later to communicate with all their contacts, whether those contacts are internal colleagues, employees of federated partners, or users of public IM services.

### Provisioning Public IM Connectivity (PIC)

IM service providers are typically large networks that host multiple SIP domains and provide a single access point for connecting to those domains. Configuring a connection to an IM service provider requires entering the FQDN of its Access Proxy or other connection point in the IM Provider trusted server list on your Access Proxy.

If your organization wants to take advantage of public IM connectivity, you must obtain per-user licenses from Microsoft on an annual subscription basis. You must also provision the connections by using a dedicated Microsoft Web site to exchange connectivity information with one or more of the supported providers. Licensing covers all three of the supported providers, but you retain control over which providers to enable for your organization. You can enable one, two, or all three if you want to. You can also disable any or all of the connections at any time from your enterprise Access Proxy, and then re-enable them without having to repeat the provisioning process.

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**Note** IM service providers cannot be enabled on an Access Proxy that is acting as a clearinghouse or that is configured with a default route to a clearinghouse.

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**Enabling PIC**

To enable public IM connectivity for your organization, you must:

1. Place an order for LCS 2005 with SP1, according to the terms and conditions of your Microsoft Volume Licensing agreement.
2. Purchase service licenses for Live Communications 2005 public IM connectivity.
3. Provision connectivity with public IM service providers through the Microsoft provisioning page, at <https://www.livemeeting.com/LCSVL/pspublicim.html>.
4. Publish a DNS SRV record for your SIP namespace and a DNS A record for your Access Proxy. The DNS SRV record should point to the DNS A record.
5. Enable a mutual TLS connection by obtaining a certificate from a public certification authority. An enterprise certificate is not acceptable for public IM connectivity.
6. Enable one or more IM service providers on your Access Proxy.
7. Authorize users for public IM connectivity.

**PIC Security**

As with other types of federation, all IM traffic between an organization and a public IM service provider uses an encrypted MTLS connection. In order to connect to MSN, AOL, or Yahoo!, an organization must present a certificate from a public CA that is in the list of trusted root CAs in Windows Server 2003.

**Administrative Control**

Administrators have full control over precisely which users in their organization are enabled for public IM connectivity, but after that permission is granted, authorized users can communicate with all of the public IM service providers that are enabled for the organization.

Administrators can do the following:

- Authorize public IM connectivity on a per-user or group basis and change both individual and group authorizations as needed.
- Configure Access Proxies message filters on incoming IM traffic for the purpose of weeding out unsolicited commercial messages.
- Log SIP traffic with a public IM service provider.
- Archive SIP traffic with a public IM service provider.

**User Control**

As in other federation scenarios, users in your organization can add users of the public IM networks to their Allow and Block lists. Three scenarios are possible:

- A user of one of the public IM networks who is added to an Allow list can both exchange IM with, and see presence information for, the owner of the list.
- A public IM user who is not on either an Allow list or a Block list can exchange IM and presence information with an internal user, but the internal user can block all such requests.
- A user added to a Block list can neither exchange IM with, nor see presence information for, the owner of the list.

## Review

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- **Introducing Real-Time Communications**
  - **Introducing Live Communications Server**
  - **Integrating LCS 2005 with Client Applications**
  - **Identifying LCS 2005 with SP1 Server Roles**
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  - **Identifying LCS 2005 with SP1 Deployment Scenarios**
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