



# Unified Messaging

## Definition

Unified messaging is the integration of several different communications media, such that users will be able to retrieve and send voice, fax, and e-mail messages from a single interface, whether it be a wireline phone, wireless phone, PC, or Internet-enabled PC.

## Overview

In the last few years several companies have created products that they call unified messaging. This tutorial will present unified messaging less as a product and more as a powerful mode of communication. The benefits to subscribers will be discussed, along with considerations for service providers (both traditional telco and Internet service providers), and the ways in which they will benefit from unified messaging.

## Topics

1. The Concept of Unified Messaging
2. Benefits to Subscribers
3. Considerations for Service Providers
4. Benefits for Service Providers
5. Unified Messaging Sample Architecture
6. Examples of Unified Messaging Implementation Scenarios

Self-Test

Correct Answers

Glossary

# 1. The Concept of Unified Messaging

The essence of communication is breaking down barriers. The telephone breaks distance and time barriers so that people can communicate in real time or near-real time when they are not in the same place at once. There are now other barriers to be overcome. For example, people use different terminals to communicate, and there are new forms of communication, such as e-mail, voice mail, fax machines, and pagers. The unified messaging concept involves breaking down the terminal and media barriers so that people using different technologies, different media, and different terminals can still communicate to anyone, anywhere, at any time.

Frequently people have a message that they want to communicate, but the intended recipient of the message cannot be reached. Technology is helping people overcome this problem as well; products are available that are powerful as well as flexible to meet these needs. With the current developments in communication, standards are important. Also, products are needed that offer interoperability. These products may not be from the same vendor, but they must operate together to form powerful solutions for customers.

## 2. Benefits to Subscribers

Unified messaging is a personal agent for the individual user. It can help send and receive messages, whether they are voice, e-mail, or fax. It also will notify the user whenever mail arrives. The concept of notification is becoming a large part of messaging. Some people want to be reached at all costs, anywhere, anytime. Whether they are at home or on vacation, they want to be notified of messages. Others are more protective about their privacy. They do not want to be reached when, for example, they are sleeping or having dinner. Unified messaging technology provides the power to reach people almost anywhere at any time and the flexibility to allow people to control when they can be reached. This is based on a concept of "your time" communications, where subscribers can interface with messages how and when they want.

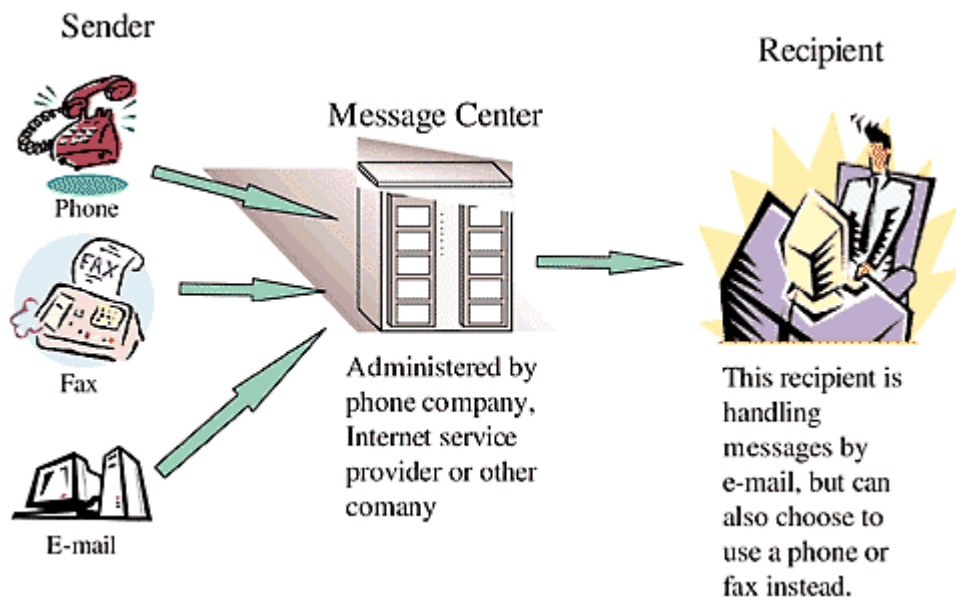
With unified messaging, subscribers reduce the number of places they must check for incoming voice, fax, and e-mail messages. From a single interface, they can check for all message types.

Technologies exist that enhance the integration of voice mail and e-mail, such as text-to-speech software that converts e-mail into spoken words. For example, at the airport a user could call in on a phone and hear e-mail messages, making it easy to reach important decisions without delay. Other enabling technologies, such as speech recognition, are becoming more reliable and cost-effective. For example, people who are behind the steering wheel a lot will find speech recognition a particularly convenient interface.

Technology also enables people to process and respond to their mail. It allows them to forward it to others and to use it for community messaging. The concept of community messaging began with the need for schoolteachers to reach parents. At first it involved the use of a phone tree to convey information. One person would call four parents, and then each of the four parents would call four more parents, and so on until everyone had been reached. This concept is a great technique for communication in the absence of better technology. However, the phone tree can break down. If one of the parents reaches an answering machine instead of a real person, the next four people will not receive the message. Community messaging involves a distribution list. With a distribution list, the message can be recorded in voice mail or e-mail and then be sent to a large number of people within a minute. On a distribution list where some of the subscribers do not have a voice mailbox, the way to reach them would be to place a call to their home. Community messaging helps people communicate better.

Easy-to-use user interfaces are essential to accessing the unified mailbox. Whether from the phone or from the Internet-enabled PC, the subscriber can navigate through the unified mailbox with ease and full control at all times (see *Figure 1*). Checking e-mail from the phone becomes intuitive, and likewise, hearing voice messages from the PC becomes second nature.

Figure 1. The Basic Concepts of Unified Messaging



Unified messaging is a business tool as well. It can provide a twenty-four-hour storefront. People can use the phone to get information or to make transactions. They can purchase merchandise or trade stock without talking to a live person. With the emergence of new technology, especially the Internet, the twenty-four-hour storefront has flourished. More information can be accessed and more shopping can be done than ever before. Through the Internet, people can search

for the merchandise that they need and find out more information about what they want to buy.

The phone and the personal computer have become transaction terminals. Newer technologies are emerging for the phone that will make it more than a device by which customers can listen and use the keys to order items. Canadian telephone companies have invested considerably to create services leveraging display phones using analog display services interface (ADSI) technology. This technology allows the phone to be switched from voice to data mode as needed during the connected session. This device has become a very useful transaction terminal. People can use it for banking transactions, brokerage transactions, and even to order a book or a pizza. On the other end of the network, a pizza restaurant, for example, would have a small database of users on a \$1,000 PC. Customers call in and enter the data mode. Their calling number is recognized immediately as a previous customer, and they can order their pizza with choices presented to them on the phone's display. The caller's address and telephone number is then retrieved from the database. This application is an example of technology yielding business solutions. The concept of community messaging has also been extended to the business world. Information can be sent to a group of people and feedback can be received. For the ADSI phone, messaging is the killer application.

Part of unified messaging is consolidating different mailboxes in a way that allows people to retrieve their messages through a single point of access and to have all their communication needs met. In the future, the barrier between, for example, the voice mailboxes at work, the voice mailbox at home, and all e-mail boxes will be seamlessly unified.

### 3. Considerations for Service Providers

From the standpoint of the traditional telco or Internet service provider, high service availability is important. It is imperative that the service reaches thousands of people, and that it is absolutely reliable. It must be available twenty-four hours per day, and it must be something on which people rely and take for granted. If a system suffers too many outages, people will complain and will wonder why they are not receiving the expected service levels.

Another important consideration is scalable systems. Some of the current technologies and products in the market only work well on a small scale. The unified messaging platform should reach thousands of customers. The network deployment cost for scaling up these systems must be manageable—merely having the technology to provide a user service is not sufficient. The service provider involvement requires that different infrastructure services be available. For example, users must be added to the system en masse rather than having to type them in one by one. The systems also must be integrated with the existing

service infrastructure of the service provider. A similar infrastructure service is needed, such as providing management reports, research data, or data-collection facilities to allow the service provider to know which part of the service is being used, what the popular services are, and which services or features are not as popular. This information helps service providers determine where to invest next. The data-collection facility is another feature that service providers want to integrate into their service and system.

For the subscribers, it is important that the interface is simple and intuitive. In a business environment, people are forced to learn to use a service—such as voice mail—that their company provides. There may be training sessions for employees to learn how to use the sophisticated features. For the individual subscriber, the situation is different. Service providers cannot offer a training session for all the people in the city, so the product must be intuitive from both the telephone- and PC-user interfaces. If it is simple and people can use it, they will benefit from it and will want to continue the service. If the service is less than satisfying, subscribers will drop it. Instead of making products and services ever more sophisticated, they must be made intuitive, simple, and useful in solving problems.

## 4. Benefits for Service Providers

Unified messaging offers several benefits for service providers. The first is subscriber-base growth. More people are subscribing because the provider is offering better solutions. Also, by using community messaging, more people appreciate this form of two-way communication. With unified messaging, service providers can increase messaging availability with maximum penetration in existing and new global segments via a wider deployment with networking.

Unified messaging provides a new source of revenue and the opportunity to streamline product and service offerings. By keeping the interfaces intuitive and the applications tailored to the market segments, service providers can build stronger customer loyalty and be more attractive to new customers, whether they are residential or small-business customers.

Unified messaging can also streamline operations. The Internet has changed technology and communications. It has shown how standards work and how they can benefit even competing products. With standards, less training is required. Different machines and different systems can work together based on common standards. The power of the standard will streamline products and services as well as operations. Fewer service reports are needed. With network-management standards, for example, an essential system of control by polling different machines can be established to find out how these machines work. Streamlining operations will provide large cost savings for service providers.

## 5. Unified Messaging Sample Architecture

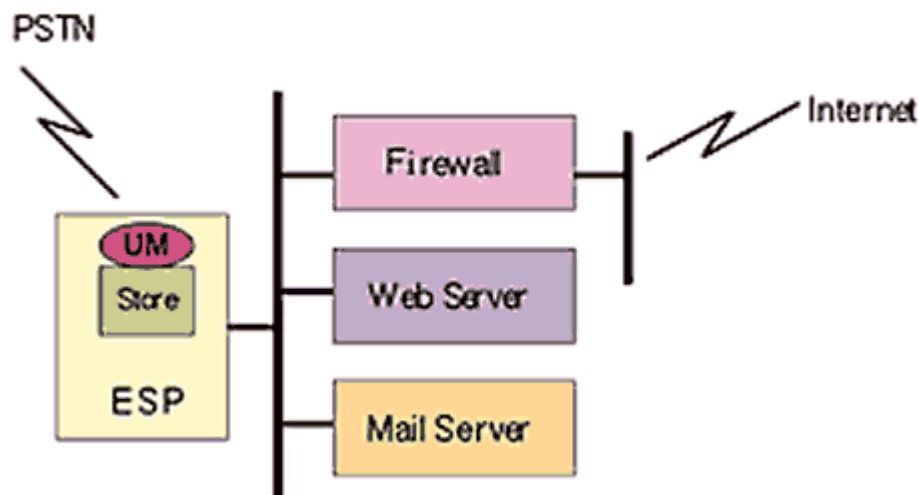
The unified messaging platform should be reliable enough to handle the traffic of both traditional service providers and Internet service providers (ISPs). It should also be scalable to grow as the service provider's market and subscriber demands grow.

Keeping the architecture open is essential. An open platform not only performs better in a network environment but places less restrictions on the service provider who wants to expand its network with new services or administration applications.

In addition to storing voice and fax messages, the unified messaging platform can also house the e-mail text messages. This would ensure real-time access to messages as well as a more tightly integrated robust architecture that would fit the needs of both telco and Internet service providers.

*Figure 2* illustrates a messaging media server in a unified messaging environment. It has been simplified in order to focus on the Internet elements required.

Figure 2. Messaging Media Server in a Unified Messaging Environment



## 6. Examples of Unified Messaging Implementation Scenarios

Essential to the success of deploying unified messaging to a market is understanding the needs of the diverse market segments. By mixing and matching various unified messaging applications, service providers can increase market penetration, maximize revenues, and stimulate interest for more unified messaging functionality.

### The Messaging-Savvy Subscriber

The premium-class subscriber will be one of the first to adopt fully enhanced unified messaging. Whether these subscribers are heavy messaging users at home or small office home office (SOHO) business entrepreneurs, with unified messaging they have a means of saving time and increasing productivity by having access to all their messages—voice, fax, and e-mail.

With text-to-speech technology, subscribers are able to hear their e-mail from any phone. Using standard voice protocols, they are able to hear their voice messages on a PC. Future services can tie even more applications into the unified mailbox. Consumers can have their unified mailbox become a personal agent, sending personalized information and notification preset by the subscriber. For example, the traveling salesperson who may be delayed at an airport is still able to stay in touch with the office. With unified messaging, the salesperson is able to check voice messages, e-mail, and faxes all from the convenience of an airport telephone.

### The Casual E-Mail Subscriber

More and more people are subscribing to e-mail at home because more and more companies are offering the service for free. Many of those subscribers may only be casual e-mail users. They check e-mail infrequently and do not depend on it for communication. This presents another market segment that can take advantage of unified messaging.

For these subscribers, service providers can offer added value through a more basic form of unified messaging by offering consumers a voice-mail service that notifies them of e-mail messages. These subscribers can be notified of any new e-mail messages through their phones. This can reduce the number of unnecessary log-ins and eliminate the frustration caused by wasted time checking empty e-mail boxes.

## The Single-Line Home

The majority of Internet households spend forty-five to seventy-four minutes in a single Internet session. (State of the Net, 1998). In a household with a single phone line, this means lost calls during Internet sessions. However, for a household subscribing to unified messaging, the calls can still be picked up.

With unified messaging, subscribers do not have to disconnect to know if a phone call has come in. They can access their voice mailboxes while on-line. With a visual interface, either through a Web browser or popular e-mail client, they can find out who left a message, when, and the length of the message. They also have the option of listening to their messages from their multimedia PC if they wish.

## Disparate Messaging Preferences

Building messaging communities means erasing mediacentric barriers. People who prefer using e-mail should be allowed to communicate with people who prefer voice mail, and vice versa. Unified messaging can be applied here to bridge e-mail and voice-mail communities, expanding the messaging network.

For example, the student who has a school-funded e-mail account wishes to message his parents. However, his parents do not have an e-mail account but do subscribe to voice mail. With a powerful unified messaging application, the student can record a voice message and send it via e-mail to his parents' voice mailbox. The parents receive that voice message and never even know that it was sent via e-mail. Instead they treat it as any voice message and can reply, forward, save, or delete it. If they reply, it is sent back to their son as an e-mail with a voice message attachment.

## Wireless Phone Subscribers

Subscribers of digital wireless phones can also take advantage of unified messaging to access their messages. Through the handset display they access their mailbox and see a listing of their voice, fax, and e-mail messages. They can then use the softkeys of the handset to select the message to which they wish to listen.

## Fax Subscribers

For subscribers who like to use a fax machine, having a unified mailbox will provide them with added fax functionality. Not only will they be able to print faxes to the destination of their choice, but they can also view their faxes directly from their PC. They can treat the fax as they would a voice message, with reply, forward, and save capabilities.



With unified messaging, subscribers can also have text-to-fax functionality—directing e-mail to a designated fax machine to be viewed in hardcopy. For example, a soccer coach has just e-mailed his assistant coach the new team roster. The assistant coach is at a clinic and has just heard the e-mail through text-to-speech technology. Instead of writing all of the names down on a separate sheet of paper, the assistant coach simply forwards the e-mail to the clinic's local fax number and picks up the fax when convenient.

## Self-Test

1. With unified messaging people will be able to \_\_\_\_\_.
  - a. listen to their e-mail over the phone
  - b. listen to their voice messages over the PC
  - c. both of the above
2. Community messaging involves a distribution list.
  - a. true
  - b. false
3. Text-to-speech technology converts \_\_\_\_\_.
  - a. spoken words to e-mail
  - b. e-mail to spoken words
  - c. fax to spoken words
4. For telcos and ISPs, what are some criteria to consider for a unified messaging platform?
  - a. reliability
  - b. scalability
  - c. user interfaces
  - d. all of the above
5. Wireless users can take advantage of unified messaging and see their voice mailbox via their \_\_\_\_\_.
  - a. handset displays

- b. handset antennas
6. E-mail notification means receiving e-mail waiting count via the voice mailbox.
- a. true
  - b. false
7. Firewall, SMTP server, and mail server are all Internet-related elements of a unified messaging architecture.
- a. true
  - b. false
8. The majority of Internet households spend how much time in one Internet session?
- a. twenty-six to forty-five minutes
  - b. forty-five to seventy-four minutes
  - c. seventy-four to ninety minutes
9. "Your time" communications is a messaging concept that allows \_\_\_\_\_.
- a. people to interface with their messages how and when it is convenient for the service provider
  - b. people to interface with their messages how and when they want to
10. Unified messaging can involve which of the following message types?
- a. voice mail
  - b. e-mail
  - c. fax
  - d. all of the above

# Correct Answers

1. With unified messaging people will be able to \_\_\_\_\_.

- a. listen to their e-mail over the phone
- b. listen to their voice messages over the PC
- c. both of the above**

See Definition and Overview.

2. Community messaging involves a distribution list.

- a. true**
- b. false

See Topic 2.

3. Text-to-speech technology converts \_\_\_\_\_.

- a. spoken words to e-mail
- b. e-mail to spoken words**
- c. fax to spoken words

See Topic 2.

4. For telcos and ISPs, what are some criteria to consider for a unified messaging platform?

- a. reliability
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b. handset antennas

See Topic 6.

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**a. true**

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7. Firewall, SMTP server, and mail server are all Internet-related elements of a unified messaging architecture.

**a. true**

b. false

See Topic 5.

8. The majority of Internet households spend how much time in one Internet session?

a. twenty-six to forty-five minutes

**b. forty-five to seventy-four minutes**

c. seventy-four to ninety minutes

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See Topic 2.

10. Unified messaging can involve which of the following message types?

a. voice mail

b. e-mail

c. fax

**d. all of the above**

See Definition and Overview.

## Glossary

### **ADSI**

analog display services interface

### **ISP**

Internet service provider

### **SOHO**

small office home office