

# COMMUNICATING WITH SAM

## Productivity Gains Through Unified Communications



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### Question:

Recently our executives, and in particular sales management, have been asking our telecommunications manager about the ability to retrieve e-mails via the phone system. We have a significant number of mobile workers who often don't have the facility to remotely access their e-mail for several days at a time, which leads to delays in responding to important issues. However, they can easily access voice mails when out of the office, and tend to do so frequently. The thought of using text-to-speech technology to permit them to access e-mails as easily as voice mails through the phone system is a very compelling technology.

With the potential productivity gains, we are definitely interested in unifying our voice and e-mail systems through this exciting new technology. We currently have a PBX and voice mail system that is about five years old, while our e-mail platform is Exchange 5.5 on NT 4.0. Given this environment, what do we need to do to make this a reality? What will the implications be for our network?

### Answer:

Bringing together our e-mail and voice mail systems, or unified messaging as it is known, is a thought that appears recently to be picking up extreme momentum, much in the same manner that access to Internet mail exploded three or four years ago. The productivity gains associated with making e-mail accessible like voice mail is obvious. We all know how easy it is to access our voice mail when we are out of the office, and how cumbersome it is to find a way to access the corporate mail server to retrieve e-mail. Although this is the benefit that tends to tweak interest initially, once you dig into unified messaging you realize it is just the start of the benefits that extend to both the user and the telecommunications or information technology manager.

Given that voice and data communications have operated separately for many years, not surprisingly unified messaging, or the convergence of the two worlds, is often misunderstood. Human nature is to protect our turf, so the common perception is that unified messaging is a third messaging platform that links voice mail and e-mail, permitting the two worlds to coexist.

In reality, a unified messaging platform combines e-mail, voice mail, and even fax messaging into a single platform. Generally working in conjunction with the SMTP mail server, (which in your case is Exchange,) a unified messenger provides both a GUI (Graphical User Interface), or the data component, and a TUI (Telephone User Interface) for sending, receiving and managing e-mail, voice mail and fax messages. In your case, the Exchange Directory is utilized for

users of all message types, and the Exchange Message Store stores all the messages. In essence, unified messaging eliminates the need for your legacy voice mail system, and instead leverages your e-mail server to deliver all message types, converging voice and data.

Unified messaging should not be confused with integrated messaging, which is messaging that provides voice mail capabilities on a PC, whereby voice mails are moved to the PC for synchronization, or vice versa for e-mails. In this case, despite the single view, you retain separate voice and e-mail systems. While the integrated messaging client will permit users to view both voice mail and e-mail through a single client interface, the functionality is limited and may not result in the productivity gains expected. Although a single interface will display both e-mail and voice mail, users will not be able to respond to an e-mail with a voice mail, or vice versa, as the message stores will be in two different places. Further, the system administrator must maintain separate e-mail and voice mail directories and synchronize the two, which can hardly be called convergence.

As you noted in your question above, unified messaging is rapidly emerging as an important technology, but contrary to the view, it is not a new technology. Unified messaging has been with us for several years, quickly emerging during the e-mail deployment boom of the late 1990's. However, it appears that initially the technology was ahead of its time, and →

demand for the technology was low. Our hypothesis is that this was due more to human nature rather than technology limitations, and the lag in adoption was associated with the following:

- Until the recent emergence of the converged network, the thought of eliminating tried and true legacy voice technologies, be it voice mail systems or PBXs, in favour of the unknown of IP-based solutions, was viewed as high risk, low reward
- Until e-mail became entrenched as an essential, time sensitive communication tool, there was little need to treat it with the same priority as voice mail
- It has taken time for users to become entrenched e-mail users and to realize the productivity value of being able to prioritize mail handling, which is easily achieved via a mail browser, versus the traditional voice mail process of sequential handling, and to demand this tool for all messaging
- Exponential increases in access devices, such as cell phones and PDAs, has led to excessive complexity in corporate communication due to the number of devices and portals now available to users, which includes multiple voice mail boxes on cell phones, home offices and corporate voice mail, not to mention multiple e-mail addresses, and this needs to be simplified

The benefits of unified messaging improves corporate efficiency by delivering benefits to subscribers and administrators:

- As you have noted, subscribers can send, receive and manage their e-mail, voice mail and fax messages from a telephone. Road warriors will be able to read back e-mail messages over a phone using text-to-speech (TTS), creating voice mail responses to e-mail or voice mail.
- It also permits users to send, receive, and manage their e-mail and voice mail messages from a PC or other MS client device such as a PDA. This means that your road warriors can



reduce the number of devices they need to carry to collect messages from all their message points. They could even have an e-mail converted and faxed to their hotel room if the e-mail contained crucial information needed in a text format, thus eliminating two complicated issues for road warriors - remote access and printing.

- Unifying e-mail, voice mail, and potentially fax, depending on your fax server solution, in one place means your system administration is also in one place. All e-mail and voice mail administration resides on your mail server, meaning only one person and one system is touched to add or delete a user. In a large organization with hundreds or thousands of workers, this can be a significant saving. As well, given that most organizations also have sophisticated back-up processes for data servers, including e-mail, it means that by storing voice and fax messages on these servers they will be safely stored in a single centralized data repository securely backed-up for high availability.

All this means simplification for the user by a reduced number of message management points, and simplification for the customer as it reduces the number

of contact points they need to try to actually reach someone in your organization. As all messages reside in your mail server, which in your case is Exchange, it means that any user with Exchange access can be addressed in either voice mail or e-mail seamlessly. The user by seeing a single view of all messages can prioritize all messages, regardless of media, to ensure that urgent matters are dealt with first regardless of the source of contact, eliminating the dilemma of which do I check first – e-mail or voice mail?

The good news is that since you have Exchange already deployed throughout your organization, then the process of introduction may be fairly straightforward. The components you will need include the following:

**The mail server:** First off, you will need to be using an SMTP mail system like Exchange. The mail server will store voice mail, e-mail and fax messages in the same mail box, provide the personal greeting for voice mail, and keeps a common user directory of all subscribers.

**The unified messaging server:** In small organizations, this could reside on your mail server, but it is not recommended. This server provides the telephone access to the e-mail server. It also provides

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messaging server will contain traditional TDM interfaces, such as a PRI card, to connect the messaging environment to the PBX, which enables the unified messaging server to convert analog to digital, and vice versa, as well recognize and interpret DTMF tones.

**The fax server:** The fax server directs or forwards fax calls to the destination mailbox, where mail users can retrieve and manage fax messages via the PC GUI or the unified messaging TUI, letting road warriors to listen to their fax messages remotely. It maintains a database of fax-enabled mailboxes to route traffic appropriately.

**The unified messenger client:** This is the GUI client that resides on the user's PC and enables the handling of all messages (voice, e-mail, fax), and provides the capability of recording and retrieving voice messages. As this is the element that impacts the user most, you need to be cautious here, since not all unified messengers are created equal. What you

traditional voice mail system applications for the organization, such as Auto Attendants, the playing of greetings on inbound calls, and the appropriate voice mail prompts that guide callers or

subscribers through a call or session. The unified messaging server converts voice messages into a compressed format and sends them to the mail server for storage. To integrate the PBX, the unified



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are looking for here is tight integration to your mail client, as ideally the unified messenger should use in your case the Outlook client and simply add other media to the view. This reduces complexity for the user and makes it truly unified.

**MWI/Call Me System:** A shortcoming of many of the early unified messaging systems was the inability to light a Message Waiting Indicator (MWI) on the telephone, which is a crucial end user demand. The MWI server will ensure that the unified messaging server will indicate a message waiting on the traditional handset, and can also do call out notification to users of messages waiting based on criteria established by the user.

**PBX:** You will still need a PBX for call processing and to provide internal and external dial tone, and to accept both analog and digital signals from the Public Switched Telephone Network. The PBX also provides call handling and routing features necessary for voice mail integration. Although the unified messaging platform will leverage your IP infrastructure, there is no immediate need to eliminate the legacy PBX and circuit switched call processing, as clean integration paths exist to link the PBX and messaging environment. However, long-term, some of the same arguments that apply to unified over integrated messaging will apply here to adopting IP Call processing. As the IP call processing leverages Windows technology for user interfaces and administration, in an open system environment, it will bring the same simplification to providing dial tone, such as user extension set-up via Windows administration, reducing the cost and complexity of moving, adding or deleting a user.

This is a simplified view of what is needed to integrate the solution to your environment, and there could be other elements necessary to make it work for you. In your situation, there are three key things you should focus on in planning the introduction of unified messaging:

**Win2000:** Most unified messaging systems, which integrate to Exchange,

will run on either Exchange 5.5 or Exchange 2000. However, should you chose to migrate to Win2000 and deploy Active Directory, you will enable a single domain account for users to provide access to both voice mail and e-mail through a single account, simplifying system and user administration. Consequently, although it is not a must do, you would be wise to assess whether this is the appropriate time to migrate to Win2000.

**Server Farm:** There is no special preparation here, aside from the capacity planning associated with introducing a new application. You should estimate a 15-40% increase in mail server processor and disk usage, so understanding the current performance standards of your mail system is crucial. Further, given that voice messaging is mission critical and time sensitive relative to e-mail, you may need to assess your availability strategy for your mail server. Clustering to ensure that planned and unplanned outages of a single server do not impact messaging may be crucial to introduce at this time to ensure that the voice mail component does not suffer from reliability issues relative to the legacy environment.

**The Network:** Given that most local area networks are switched, with 100mb and even Gigabit interfaces, bandwidth is generally not an issue within the LAN. However, the transition to unified messaging can lead to substantial changes in data placement that impacts the network. As an example, many organizations that have many remote offices often centralize e-mail at the data centre that provides other data resources. Users receive internal and Internet e-mail through the corporate WAN, and given that e-mail is not a real-time application, bandwidth congestion on the WAN is not noticed by the user. Conversely, many organizations with a centralized data strategy still provision distributed voice mail systems at remote branches. As the unified environment consolidates voice and e-mails on a single mail server, you need to understand that architecture has to change. Either distributed mail servers will be necessary to localize voice mail, or a more robust WAN will be needed,

including the addition of QoS to ensure voice quality, to support the centralized voice messaging storage. Don't forget network security, as now your voice mails will be sitting on the Exchange server, and vulnerable to the same Internet attacks usually limited to e-mail. Remember, people are much more willing to leave confidential information on a voice mail thinking the user will not be able to easily copy and exploit the information, so protection is a must. Lastly, as the unified environment reduces message storage locations, it is also important to reduce the number of access portals to drive the corresponding network efficiencies and user simplification. This means the creation of common network gateways that aggregate voice, data, fax and even video traffic through a single port of entry.

Although convergence is not a must for introducing unified messaging, I think once you think through all the elements, it will become obvious that the well planned unified messaging project will start you down the convergence path. It is inevitable. Hence, although unified messaging on its own can be fairly inexpensive, the implications of adopting a truly converged world to leverage the technology may result in significant expenditures. Is it worth it? Without a doubt! Although the research you read will vary in estimates, the consensus appears to indicate that managers, professionals and executives can gain perhaps 30 minutes a day in productivity. Given that these workers represent a disproportionately high portion of an organization's salary structure, then the return on investment can be staggering.

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