WHITE PAPER

Understanding Your Unified Messaging Choices

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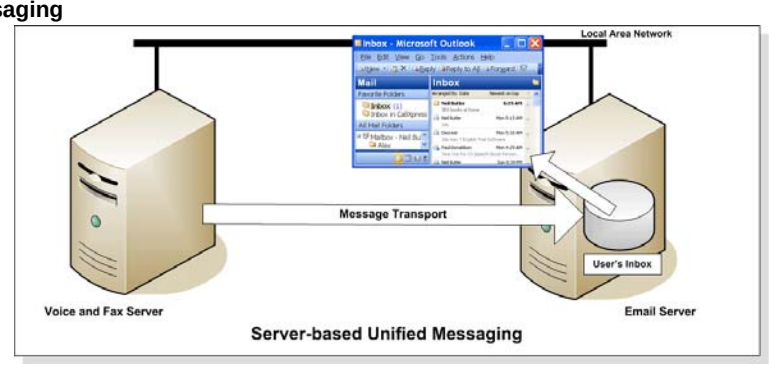
The AVST CallXpress® product is the leading unified messaging product on the market today. With over a twenty year heritage of supplying customers with call processing, voice messaging, unified messaging and unified communications solutions, CallXpress offers a wide range of solutions to a customer's communications problems. One area in which CallXpress excels is that of delivering robust, reliable, feature-rich unified messaging solutions that are geared toward improving employee productivity and making a company easier to do business with. While CallXpress was the very first product to offer unified messaging solutions to customers, starting over fifteen years ago, AVST has continually added new unified messaging functionality to the product with every new release of software. The latest software release, CallXpress 7.9, continues this tradition by adding a new type of unified messaging module, CallXpress Secure Unified Messaging. Through years of experience deploying unified messaging for our customers, AVST has come to the conclusion there is no single best deployment method for unified messaging, every customer has a different set of needs and requirements. This paper is intended to discuss the pros and cons of the various methods available to deploy unified messaging.

THE MANY FLAVORS OF UNIFIED MESSAGING

CallXpress is the most flexible unified messaging system on the market today. It offers a customer complete flexibility in how they wish to deploy and use unified messaging. Unlike all other competing products, CallXpress allows users to deploy any type and mix of unified messaging on a system as well as allowing users to mix unified messaging and traditional voice mail users on the same system. CallXpress supports all four of the popular unified messaging architecture types; Server-based unified messaging, Client-based unified messaging, Secure unified messaging and Simplified unified messaging.

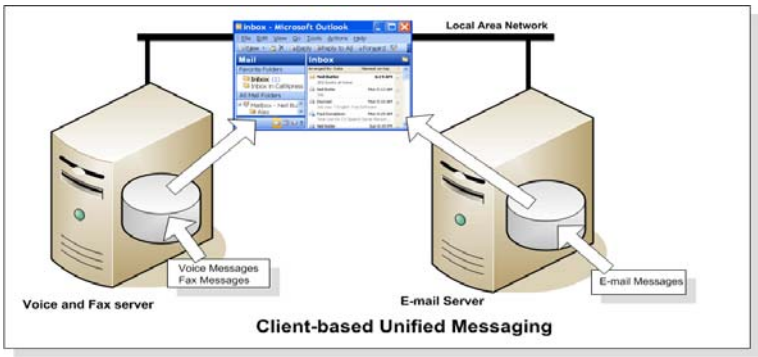
Server-based Unified Messaging

With Server-based unified messaging, all of the messages (voice, fax and e-mail) are placed into a single server, the e-mail server. This allows users to access their voice messages from all of their familiar e-mail clients; their desktop e-mail program, any web-based e-mail access program, their PDA e-mail program, etc.

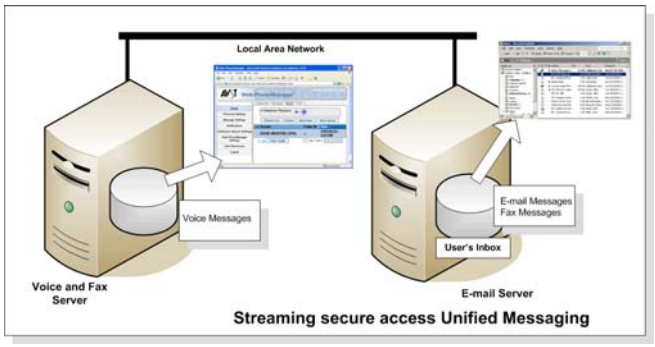


Client-based Unified Messaging

With Client-based unified messaging, the voice and fax messages remain on their separate servers, e-mail remains on the -email server. Common access to these messages is accomplished through a common e-mail client that is used to access both the e-mail inbox of the user and a new voice and fax message inbox on the voice server.



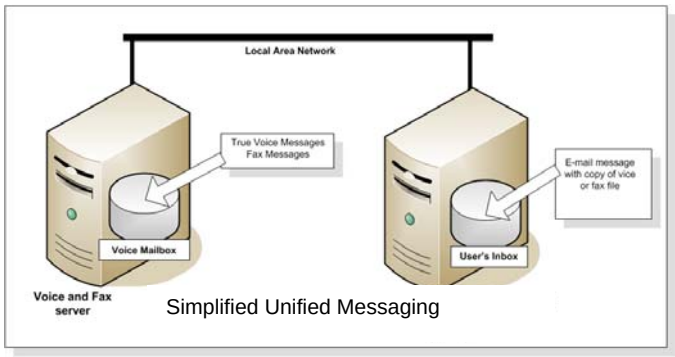
Secure Unified Messaging



With Secure Unified Messaging, the voice and fax messages remain on the voice mail server, e-mail remains on the e-mail server. Access to the voice and fax messages is accomplished through a web browser such as Internet Explorer or Firefox. Users can access their messages through the web client, play the messages through their telephone speakers or play their messages over the telephone. For secure access, administrators can enable specific security features for specific users including using secure audio streaming to deliver the messages to the web client and restricting the ability to save a copy of the voice message on their local systems.

Simplified Unified Messaging

With Simplified unified messaging, copies of the voice and fax messages are sent to the user at a specified e-mail address as e-mail messages with attachments. The true messages remain on the voice and fax servers. The two copies of the messages (the one on the voice server and the one in the user's email inbox) are not synchronized in any way. The user will have to delete each message separately.



Simplified Unified Messaging

As well as supporting all four types of unified messaging, individual users can be configured as to which message types they would like to have presented at each interface, the telephone and the desktop e-mail client. The following configurations are available on a per user basis:

- Voice mail user – E-mail messages only from the desktop e-mail client, voice messages only from the telephone interface.
- Full unified messaging user – Voice, fax and e-mail messages from the telephone interface; voice, fax and e-mail messages from the e-mail client.
- Desktop unified messaging user – E-mail, voice and fax messages from the desktop e-mail client, only voice messages from the telephone interface.
- Telephone unified messaging user – E-mail messages only from the desktop e-mail client, e-mail, voice and fax messages from the telephone interface.

THE ADVANTAGES OF SERVER-BASED UNIFIED MESSAGING

The four different methods of achieving unified messaging capabilities, Server-based Unified Messaging, Client-based Unified Messaging, Secure Unified Messaging and Simplified Unified Messaging, each offers a different feature set and can be best used by different groups of users. Server-based Unified Messaging offers the following advantages:

Easiest to use at the desktop
Since Server-based Unified Messaging places the voice and fax messages into the user's e-mail Inbox, where they are indeed just additional e-mail messages, processing their unified messaging messages is almost identical to processing their normal e-mail messages. Messages can be moved to other folders, forwarded to other recipients (internal or external), deleted, etc., all using the same commands as are used to process normal e-mail messages. When voice or fax messages are opened, special forms or templates are opened to help the user play a voice message, view a fax, etc.

Easiest to use remotely with a laptop computer
For users who travel with their laptop computer, it is as easy for them to access their voice and fax messages when they are offline as it is to access their regular e-mail messages. An offline user can listen to their voice messages record a reply, access their fax messages, forward them to other users, etc. all while they are offline. When they next go online (in the hotel, in the airport using a wireless connection, etc.) their changes will be sent as their new messages are down loaded.

Fully leverages e-mail system features
Server-based Unified Messaging users can fully leverage their knowledge of and the capabilities of their e-mail system. They can create folders to hold their voice, fax and e-mail messages. They can create e-mail rules to process their incoming voice and fax messages as they desire. If their e-mail system is subject to nightly backups, their voice and fax messages will automatically be backed up as well.

Supports a wider range of interfaces and devices
Since the voice and fax messages for Sever-based Unified Messaging users are in their e-mail Inbox, any client or application that accesses their Inbox can be used to access their voice and fax messages as well. This means users can use their web e-mail clients such as Microsoft® Outlook Web Access (OWA) and Lotus® Notes® iNotes to access their voice and fax messages as well as their e-mail messages. For PDA users who synchronize their PDAs with their e-mail Inbox will now receive their voice and fax messages to the device as well as their normal email messages. Microsoft Exchange users can setup their wireless PDAs to receive their voice and fax messages real--time using Microsoft Server Active Sync. Blackberry users will no receive their fax and voice messages real time along with their e-mail messages (although their ability to access these messages may be limited depending on their device type).

Ideal for mobile users
For users who travel, Server-based Unified Messaging will be the easiest version to use. They can take their messages with them without having to run any special software. They can process their messages offline. They can access their messages from any available internet connection. They can use their wireless phones and PDAs to monitor and track their messages.

THE ADVANTAGES OF CLIENT-BASED UNIFIED MESSAGING

Client-Based Unified Messaging offers a different feature set and is aimed at satisfying the needs of a different set of users. Client-Based Unified Messaging offers the following advantages to its users:

Less of a traffic load on the network
Since voice messages remain on the voice mail server and aren't moved over to the e-mail server for storage, Client-based Unified Messaging puts less of a load on the customer's local area network. While as attachments go, voice mail message attachments aren't very large (generally from 20k bytes to 250k bytes), leaving the messages on the voice mail server means both less traffic when a new message is received (since it doesn't have to be moved across the network to the e-mail server) and less round trips on the LAN when users call in to play their messages over the telephone.

Less storage load and activity on the email server
With Server-based unified messaging, voice messages are stored on the e-mail server in the user's inbox. With Client-based Unified Messaging, those messages remain on the voice mail system. While voice mail attachments aren't very large, it still removes any additional storage needs for handling the voice messages when users are configured for Client-based Unified Messaging as opposed to Server-based Unified Messaging. With messages stored on the voice mail server, this also means that when users access their messages over the telephone, there is no impact what so ever on the e-mail system.

Faster Message Waiting Indicator response
For Server-based Unified Messaging users, the voice mail system must access the e-mail system to find out when the status has changed in a user's mailbox that may require a change in the status of their MWI indicator. For those users with a large number of messages in their inbox (in the thousands), this may cause a delay in how fast their MWI indicators get updated. Since for Client-based Unified Messaging users, their voice messages are all stored locally on the voice mail server, this possible delay is eliminated.

Non-Windows Operating system support for clients
For most products, support for Client-based Unified Messaging is accomplished by having the voice mail system accept connections from industry-standard e-mail systems using the IMAP connection protocol. Since this connectivity is accomplished across the Local Area Network and is based on a standard, the vice mail system can support users with email clients running on any platform. If a user is running on an Apple® Macintosh®, a Linux® system or any other operating system, as long as they have a standards-compliant IMAP e-mail client, Client-based Unified Messaging will function properly.

E-mail server independence
As well as client operating system independence, since the voice mail only communicates with the user's e-mail client, not their actual e-mail system server, Client-based Unified Messaging functions regardless of the type of e-mail system being used by the customer. The customer can be using any type of e-mail system running on any type of operating system and Client-based Unified Messaging will still be able to function. As long as the user's e-mail client is capable of connecting to the voice mail system using IMAP, the solution will work. Indeed, most Client-based Unified Messaging systems can be used to give users access to their voice messages even if they don't have an e-mail system.

Ideal for local desktop users
With the exception of the new voice and fax messages being in a separate folder from the new e-mail messages, Client-based Unified Messaging offers virtually all of the same functionality to a desktop user as does Server-based Unified Messaging. Since Client-based Unified Messaging has a lower impact on the enterprise LAN and e-mail system, configuring local desktop users for Client-based Unified Messaging seems to make the most sense.

THE ADVANTAGES OF SECURE UNIFIED MESSAGING

Secure Unified Messaging offers the most secure version of unified messaging. It allows users to access their messages using a web browser and so eliminates the need for a trip to the desktop to install any software. It offers the following advantages:

Limited enterprise impact and deployment labor
With this version of unified messaging, voice (and optionally fax messages) remain on the voicemail server and are accessed using a typical web browser. This greatly simplifies deploying the solution as no client software needs to be installed. It also has no impact on the e-mail server and only limited impact on the network.

No ability to save a local copy of the message
For those customers who, for security reasons, wish to restrict users from having the ability to save local copies of their voice and fax messages, the system administrator can set this restriction on a user by user basis.

No ability to forward messages outside the voicemail system
For those customers who, for security reasons, wish to restrict certain users from having the ability to save forward messages out of the voice mail system, this integration only allows messages to be forwarded to other users on the voicemail system.

Secure audio streaming for message delivery
Administrators can configure the system to allow for audio streaming as a way to deliver messages to a Windows based client. This method is secure in that it does not even create a cache file on the local computer that can possibly be accessed and saved by the user.

Simplified remote access to messages
If the web server used to deploy Secure Unified Messaging is externally accessible, users can access their voice messages from any convenient web browser.

THE ADVANTAGES OF SIMPLIFIED UNIFIED MESSAGING

Simplified Unified Messaging offers the smallest feature set of the four methods but still offers the following advantages for some users:

Supports any e-mail system
Since the voice and fax messages are sent to the user via SMTP (normal email), Simplified Unified Messaging works for any user regardless of their email type. A user can have a Hot Mail account, a Yahoo® e-mail account, a Microsoft Exchange account, an account on an IMAP e-mail server, or any other type of e-mail account. As long as the account is capable of receiving email from an external source, Simplified Unified Messaging can send them their voice and fax messages. Most computers will already have the necessary tools to play their voice messages (such as Microsoft Media Player) and view their Faxes (such as Microsoft Image Viewer).

Requires virtually no maintenance
Once the user has been configured (generally requiring only an e-mail address to entered on their voice mail system), this type of unified messaging requires virtually no ongoing maintenance. The protocols used are already enabled at most sites (SMTP).

May be unlicensed
Some manufacturers of voice messaging systems include the capability as a no change feature. This allows users to try Simplified Unified Messaging first to see if they find the functionality useful. These users can later upgrade to one of the more powerful versions of unified messaging.

Ideal for casual unified messaging and SOHO users
Because of the wide range of e-mail systems supported and the low maintenance efforts required to deploy and maintain this version, Simplified Unified Messaging may be ideal for some small businesses. While it lacks the full functionality of the other methods used to deploy unified messaging, it is easy to deploy and relatively inexpensive. It is also a great way for corporate users to try out unified messaging before they commit the money for a full installation.

FLEXIBILITY IS THE KEY

As a customer is approaching the purchase of a unified messaging system, there are three elements to be considered. First, what business problems are they trying to solve by implementing unified messaging? Second, a prospective customer needs to feel comfortable that any solution they acquire will function in their existing environment and in any new environments that may come up with system upgrades, new acquisitions, etc. Lastly, they need to evaluate what the impact will be to their existing enterprise systems as they add these new solutions to their environment.

What customer problems will unified messaging solve for me?
Customers generally look at implementing unified messaging for two reasons. First, it is fairly obvious that there will be gains in productivity for both desktop and mobile users. Customers spend a good part of the buying cycle trying to determine just how much of a productivity gain is realistic to expect. While the exact number may be difficult to quantify, there are some good guideline studies available. See the *Unified Messaging Times Saving Study* on the AVST web site at:

www.avst.com/downloadcenter/index.asp

The second value of adding unified messaging involves improving the way employees can service new and existing customers. Unified messaging allows employees easier and more timely access to all their messages, regardless of their location. This allows them to be more responsive to the needs of their customers. With unified messaging, it is possible for an employee to be notified of a new message from a customer, to access and read that message, and even respond to that message, all while in car, at lunch or even in a meeting. The ability to better respond to messages translates to higher customer satisfaction and even better customer retention.

Does it fit in my current and future environments?
As a customer evaluates the purchase of a unified messaging system, they need to be concerned with how the proposed system will fit into their current environment. For unified messaging systems, this includes how well the system will work with their current e-mail system as well as how the system integrates to their current telephone system. Not every unified messaging system is designed to be truly independent and to work with any and all possible customer enterprise systems. Many unified messaging systems are manufactured by companies that also make telephone systems. These manufacturers focus on how well their systems work with their own phone systems, they are far less concerned with how they work with telephone systems from other manufacturers. Since in many enterprises there are multiple locations, often with dissimilar telephone systems, it may be risky to chose a system designed primarily to work only with systems from a single telephone system manufacturer. Likewise, some unified messaging systems are designed primarily to support a single e-mail system, generally Microsoft Exchange. While most manufacturers of unified messaging systems offer modified versions of their products to support other e-mail systems (such as Lotus Notes, IMAP e-mail systems, etc.), there systems usually offer less in the way of functionality when they are used with other e-mail systems. Choosing one of these systems may limit functionality or the ability to move to a different email system in the future.

Every bit as important as evaluating how a specific unified messaging system fits into a customer's current environment, for the sake of standardization and lowered ongoing maintenance costs, it's important to be sure the same solution will be appropriate for other customer sites, both current and future. Few customers have the luxury of supporting an environment where all of their locations have the same telephone system or, in some cases, the same e-mail system. Choosing a system that is completely independent of telephone or e-mail system type is the safest choice for the future.

How will it impact my current data infrastructure?
The implementation of unified messaging will have an impact on some existing enterprise data systems. The primary areas of concern in terms of impact on data systems include the impact of implementation of unified messaging on the Local Area Network and the e-mail servers. The amount of impact varies based on the type of unified messaging deployed as well as the manufacturer of the unified messaging system. The amount of impact felt on the e-mail server is controlled primarily by which types of unified messaging users a system will support. As discussed previously, there are four main architectures used to deploy unified messaging. While client-based unified messaging generally has less of an impact on the e-mail server, it does offer somewhat less in the area of functionality. The functionality available to normal users from their desktop is fairly equal to that offered by Server-based unified messaging. For mobile users, however, it's a different story. With Client-based unified messaging, mobile users don't have access to messages from the e-mail web client (such as Microsoft Outlook Web Access or Lotus Notes iNotes) or other e-mail interfaces such as their personal PDA devices. In many cases, it also requires additional software to allow mobile users to access their voice and fax messages from an offline laptop computer. In the area of impact on enterprise systems, unfortunately, many server-based unified messaging systems require all users, even those who only need simple telephone-based voice mail, to store all of their messages on the enterprise e-mail server.

The best solution is to use a system that supports all five types of users; voice mail only, Server-based unified messaging, Client-based unified messaging, Secure unified messaging and Simplified unified messaging. This type of system allows all voice messages stay on the voice mail server for voice mail only, Client-based unified messaging, Simplified unified messaging and Secure unified messaging users and there is no impact to the e-mail system or Local Area Network. Internal unified messaging users can be configured for Client-based unified messaging, giving them the productivity boost from handling their voice and fax messages from the desktop while minimizing the impact on the LAN and email system. For customers with high security concerns, users can be configured for secure unified messaging. Mobile users can be configured for server-based unified messaging, giving them the rich feature set required by mobile unified messaging users. This type of system allows each user to be configured for the maximum amount of functionality while minimizing the impact on the email system and Local Area Network.

It is also possible to design a unified messaging system to minimize impact on the LAN and e-mail system even when Server-based unified messaging is deployed. Raw copies of the message media can be kept on the voice server in a buffer that can be accessed when users call in over the telephone to access their messages. In this case, the messages are played directly from the voice server without the need to access and move them from the user's email server. This type of function can reduce the load on the e-mail server and LAN by up to 40% for users accessing their messages from the telephone. Systems can also be designed to support different types of voice files to be used in different environments. The codecs (wave file coders and decoders) used to create the voice messages can be configurable for highest fidelity or lowest file size, depending on the individual needs of the customer.

Many customers wish to use a single directory management tool to add and maintain users for all of their systems and applications, not just their network and e-mail systems. A tool such as Microsoft Active Directory can be used to provide this functionality. Many unified messaging systems can integrate with Active Directory by

extending the Active Directory schema to include all of the additional elements of information needed to configure a voice mail and unified messaging account. For each user, there are hundreds of pieces of information needed to configure the application and extending the Active Directory database to handle all of this new information can have an adverse effect on Active Directory performance. Some systems support an alternate method that still allows administrators to add and maintain users from Active Directory without extending the schema. These systems add a MMC menu 'snap in' to the Active Directory Administration program that will allow administrators to add new users and maintain existing users without the need to store all of the additional information in the Active Directory database. This approach delivers all of the desired functionality with none of the adverse effect.

The last piece of impact on the existing infrastructure involves how a unified messaging system will perform in the advent of a network (LAN) or e-mail system failure. For server-based, client-based and secure unified messaging implementations, there will be some loss of functionality during the failure of the network or e-mail server. All three types of users (Client-based, Server-based and Secure access) will lose access to e-mail messages from the telephone interface. Server-based unified messaging users will also lose access to existing voice messages until the connection is restored or the failure is repaired (client-based and secure access users will continue to have access to voice messages during a LAN or email failure). Even more important than this is how the unified messaging system functions while the failure is occurring. Many unified messaging system are very weak at handling calls during such a failure. Some systems answer calls but can't play the user's personal greetings when callers go to leave messages. Some systems take messages but force the user to use a different or less feature-rich interface to access those messages until the failure is repaired. At a minimum, you should expect a unified messaging system to do all of the following, even during a LAN or e-mail server failure:

- Answer all incomings calls
- Execute all call processing applications (menus, audio libraries, etc.)
- Play all user greetings
- Take new messages
- Allow users to login to their mailbox and access all messages received during the failure
- Support the same user interface and functionality for users during the failure

KNOW YOUR OPTIONS

As you approach implementing a unified messaging system, be aware of your choices in the market. There are many different products made by many manufacturers and they are not all equal. In order to pick the system that best meets your needs, you should evaluate numerous systems compare both the functionality offered and the impact to your organization to deploy the system. The key element in evaluating unified messaging systems is flexibility. Not all of your users need the same set of features. Not all of your sites necessarily have the same types of telephone systems and e-mail systems in place. Not all systems are flexible enough to meet your needs; now, and as they change in the future. Use the Unified Messaging Evaluation Checklist on the following page to help you evaluate the systems you are comparing.

Unified Messaging Evaluation Checklist		
Integration Questions	**Yes**	**No**
Does the system work on all telephone systems?	☐	☐
Does the system work on all e-mail systems?	☐	☐
Does the system support non-Windows clients (Mac, Linux, etc.)?	☐	☐
UM architecture questions		
Does the system support voice mail and UM users on a single system?	☐	☐
Does the system support Client-based UM users?	☐	☐
Does the system support Server-based UM users?	☐	☐
Does the system support Secure Unified Messaging users?	☐	☐
Does the system support Simplified UM users?	☐	☐
Does the system support a mix of Client and Server-based UM users on a single system?	☐	☐
Does the system offer secure message access through a web browser?	☐	☐
Enterprise impact questions		
Does the system support adding and maintaining users form Active Directory?	☐	☐
Does the system modify the Active Directory Schema?	☐	☐
Does the system support different types of codecs based on customer needs?	☐	☐
Does the system support a message buffer (cache) to reduce impact on LAN/Email?	☐	☐
Does the system offer web access using a variety of web servers and clients?	☐	☐
Functionality during a LAN/Email failure questions		
Does the system support all call processing applications during a failure?	☐	☐
Does the system take new messages during a failure?	☐	☐
Does the system support user greetings during a failure?	☐	☐
Does the system support new message notification during a failure?	☐	☐
Does the system give users access to new messages during a failure?	☐	☐
Does the system support the same user interface during a failure?	☐	☐
Does the system allow users to send new messages during a failure?	☐	☐
Does the system allow users to delete, forward, save and forward new messages during a failure?	☐	☐
Secure Message Access		
Can the administrator restrict certain users from saving copies of the message locally?	☐	☐
Can the administrator restrict certain users from forwarding messages?	☐	☐
Can the messages be delivered using a secure steaming technology?	☐	☐

FOR MORE INFORMATION: For 25 years, AVST has been shaping the evolution of communication, with more than 38,000 customers. Our award-winning CallXpress solution has been unifying communications for companies all over the world. So as the world of enterprise communications advances, you can be assured that AVST has your future covered. To learn more visit www.avst.com or contact us at +1.949.699.2300.