

# Integrated Messaging Approach to Voicemail

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*Single Messaging Infrastructure  
Saves up to 80% of Overhead Costs*

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Gartner Research Summary  
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## ***Executive Summary***

As enterprises seek to pinpoint major inefficiencies in IT operations, they would be wise to look at the corporate voicemail system. Maintenance and administration of legacy voicemail systems represents a significant IT cost – as high as 33% of the IT telecom budget. The inefficiencies caused by the voicemail system stem from the fact that it is standalone; requiring a separate network and separate storage systems. A company with 15 locations has 15 or more separate voicemail servers and databases to support and administer. This disparate infrastructure creates excessive overhead. But while enterprises have sought freedom from the administrative burden and high costs of standalone voicemail, viable alternatives have failed to materialize.

While voicemail solutions dubbed “unified messaging” have appeared, they have only worsened the situation. These newer solutions use the same standalone voicemail architecture and, from an infrastructure standpoint, are far from unified. In some cases they replace the existing standalone product like-for-like, and in some cases they simply add a layer on top of it. But in either case they use separate, proprietary voicemail network with a multitude of dedicated servers and databases. These standalone solutions simply “glue together” the disparate voicemail and email infrastructures so that voicemails appear alongside emails in the user’s email inbox. As such, unified messaging solutions maintain the very thing that drives high costs – two separate messaging infrastructures. In addition, because they often operate on generic PC servers with standard operating systems, they have introduced new security and reliability issues. Rather than relieving overhead, they add a new layer of complexity, increasing the overall IT burden. IT budgets have continued to be held hostage by voicemail that replicates rather than leverages the corporate infrastructure.

Very recently, however, a truly integrated solution has emerged, one that for the first time delivers voicemail from within the corporate messaging infrastructure and leaves enterprises with nothing to “unify.” This new breakthrough approach turns voicemail into a service under Microsoft Exchange, consolidating voice messaging into your existing environment. It stores all data in its rightful place – voice messages and greetings are stored with all other messages, in the corporate messaging server. User profiles are stored with all other user information, in Active Directory. It has none of the redundant overhead of previous solutions, eliminates the need for separate voicemail or user data stores, and reduces the cost of voicemail administration by up to 80%. Integrated messaging is designed from the ground up to finally deliver what enterprises have been seeking: a single Microsoft-centric messaging infrastructure that utilizes the administration and management processes the enterprise already has in place.

This paper outlines the technology approach of integrated messaging in the Microsoft environment and the significant impact integrated messaging can have on IT operations.

## ***Two Messaging Infrastructures: a Recipe for High Costs***

Legacy voicemail requires its own dedicated infrastructure for storing voicemail messages and a separate scheme to network the voicemail servers together. Moreover, the architecture mandates a separate user database for each corporate location, a problem that grows as the number of offices grows. Maintaining these disparate storage systems and networks drives up IT operating costs and depletes scarce resources. The overhead cost of legacy voicemail systems is often as high as 33% of the IT telecom budget.

Enterprises have sought freedom from the administrative burden and high costs of legacy voicemail, but viable alternatives have been absent.

## ***Standalone Voicemail Infrastructure Served a Purpose***

The infrastructure of today's voicemail systems once served a meaningful purpose. When voicemail was introduced in the early 1980's, the use of email was limited to a handful of enterprises who were early adopters. So it was voicemail that introduced the concept of asynchronous messaging to the business community. The ability to leave a message for someone when they weren't there – without having to find an administrative assistant – was revolutionary. Voicemail systems were designed to co-locate message storage and end-users in order to minimize network demands, maximize response times, and ensure security. This created the requirement for a separate voicemail server and database for each corporate office. The cost of this architecture was justified by the enormous productivity gains of the new asynchronous messaging.

Moreover, at the time voicemail was delivered, the corporate message server did not yet exist. So there was no consideration for storing voicemail messages anywhere but on their own separate servers, co-located with their user populations.

## ***IT Infrastructure Evolved; Voicemail Became an Albatross***

With the advent of email, however, the voicemail architecture started making less sense. The mail server began to dominate as the corporate data store for messaging, and Active Directory emerged as the central repository for all corporate user information. Voicemail vendors, however, were focused on delivering new revenue-generating capabilities rather than taking time out to revamp their architecture (and running the risk of cannibalizing recurring revenue streams). As a result, the voicemail architecture has remained unchanged since it was first delivered some 25 years ago. While the corporate infrastructure evolved into one of core structural components tied together via an IP network, the voicemail architecture, remaining separate and unchanged, became orphaned technology. Maintaining a disparate infrastructure for storage and management of voicemail users and messages has now become an albatross for IT departments.

Let's take a 5,000-person company with 15 offices and outline the costs associated with maintaining today's disparate voicemail infrastructure. A company with 15 offices has 15 voicemail servers, 15 voicemail databases that house the names, profiles, greetings, and messages of the local users in each office, and a separate network scheme so that each voicemail server knows how to find the other servers on the voicemail system. The result is shown in Figure 1.

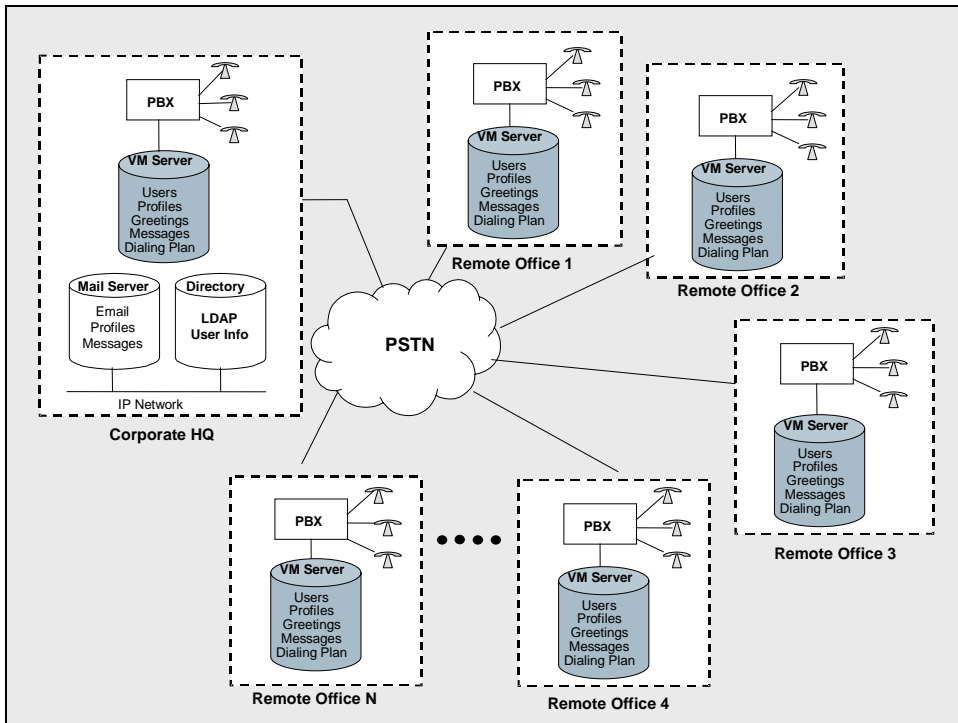


Figure 1. Legacy voicemail architecture for enterprise with multiple offices

The administration overhead of the legacy voicemail architecture shown here can be broken down into two major components: user administration and networking overhead. Before we get into the detail of each, it would be useful to outline how a voicemail system sends a message from a user in one location to a user in another location. Let's say John in Office 1 wants to send a voicemail to Mary in Office 2. John picks up his telephone handset, dials the extension for his local voicemail system, logs in, composes his voicemail message, and hits "send." The following activities then take place:

1. The local voicemail server captures John's message and the destination mailbox number.
2. The voicemail server then looks up the destination mailbox number in its network numbering plan. It determines the address of the voicemail server where the destination party is "homed."
3. Once it finds the destination server address, it goes off hook, dials the destination address via the PBX, and sends the message over the PSTN or VPN.

Now, let's take a closer look at the major overhead components of today's voicemail.

### User Administration

User administration involves setting up and managing the voicemail users in each corporate office. When a new employee joins the company, a central IT person, typically the email administrator, creates an account for that new person in Active Directory. Through some sort of defined corporate process, the voicemail administrator at the appropriate office is notified at the same time to set up that user in the voicemail system. The local (sometimes outsourced) voicemail administrator creates an account in the local voicemail database, and enters into that record the same core information that is already stored about the new employee in the

corporate directory – name, phone number, etc. If that employee moves to another office or leaves the company, the same redundant process occurs again – the email administrator enters the changes in the corporate directory, and the voicemail administrator enters the same changes in the voicemail directory.

If we use an annual employee turnover rate of 10%, a 5,000-person company would have 500 new employees and 500 departing employees during the course of a year. Disregarding moves and other changes, this would add up to 1,000 user transactions during the course of a year. That is 1,000 user changes made by the email administrator, and then those same 1,000 user changes made *again* by the local voicemail administrators. And 1,000 additional change notices opened, tracked, and closed. On the risk side, there are 1,000 chances for the two separate directories of the same users to get out of synch, which means loss of productivity in the case of new or re-located employees, and a security gap in the case of departing employees.

### **Networking Overhead**

Networked voicemail requires that every voicemail server in the enterprise knows how to find every other voicemail server in the enterprise. The servers find each other by looking up the address information in the company dialing plan stored in their local database. The voicemail administrator has to set up the dialing plan in each separate voicemail server, using the proprietary interface offered by the particular voicemail system. Once the dialing plan is set up, it has to be maintained. Each time an office is added all voicemail sites have to be adjusted to recognize the number change.

### ***Unified Messaging Only Made the Situation Worse***

In the mid-90's, unified messaging made its first appearance. The original unified messaging solutions were cumbersome, required significant maintenance, and relied on synchronizing standalone voicemail systems with the backend email environment. They also relied heavily on client applications to provide the necessary user interface on the desktop. These unified messaging solutions have recently been resurrected, but they continue to use the same telephony-centric standalone architecture rather than integrate within the corporate messaging environment. As such, from an infrastructure standpoint, they are far from unified. They maintain a disparate infrastructure for data storage and management. They carry not only the major overhead of legacy voicemail – user and networking overhead – but they also burden the organization with additional overhead, as outlined below.

### **Server Proliferation & Server Overhead**

Unified messaging solutions require a dedicated, IT-maintained, voicemail server in each corporate office. These unified messaging servers store the user records, profiles, greetings, and preferences. They also capture the voicemail messages from both internal and external callers. The voicemail messages are then forwarded to the user's email inbox, and in some cases are also stored on the voicemail server. Those systems that store the messages locally require a separate server for message storage.

Since unified messaging servers are based on PC server operating systems and standard off-the-shelf components, the administrative overhead is actually much greater than that required by the controlled software environment of a legacy voicemail server. The unified messaging administrator may have to install and maintain a plethora of independent pieces including voice cards, drivers, speech recognition software, operating system service packs, and the like. And since these PC's only support a minimum number of peripheral cards, capacity needs create

server proliferation. Finally, since users are bound to a “home” server, server failure cuts off service for those users.

### Resiliency Requires Twice the Servers (n\*2)

In order to deliver high availability in many unified messaging environments, enterprises must deploy a second, failover server at each office location or use expensive, fault tolerant, high availability platforms.

### New Client Overhead

Most unified messaging solutions require client administration and maintenance as well. These requirements can include setting up an account for the unified messaging application on each user desktop, and installing a client application or plug-in for Outlook on the desktop. The new desktop applications and plug-ins then need to be maintained as updates and new versions are released. This overhead component alone can easily require full-time IT resources.

Following is a diagram of a typical unified messaging architecture.

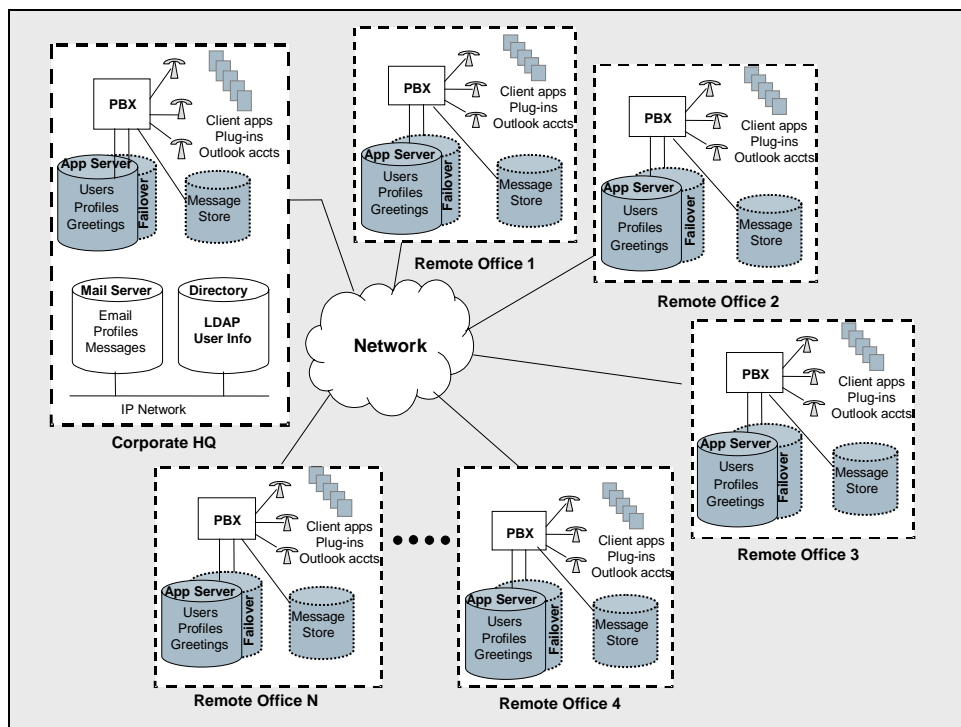


Figure 2. Unified messaging architecture for enterprise with multiple offices. Some systems require a 2<sup>nd</sup> application server for resiliency; some require a separate messaging server for storage of voice messages.

In sum, unified messaging solutions simply “glue together” the disparate voicemail and email infrastructures so that voicemails appear alongside emails in the user’s email inbox. They maintain the very thing that drives high costs – two separate messaging infrastructures. Rather than relieving overhead, they add a new layer of complexity, increasing the overall IT burden.

IT budgets have been held hostage by voicemail that replicates rather than leverages the corporate infrastructure.

## ***Integrated Messaging: Voicemail a Service of Exchange***

Now through a stateless appliance-based solution, voicemail is being delivered as a service under Microsoft Exchange. For the first time, voicemail is an integrated service under the corporate messaging infrastructure. This new approach gives enterprises exactly what they have been seeking: a truly integrated messaging solution that leaves them with nothing to “unify.”

### **A Single Messaging Infrastructure**

Integrated messaging stores all data in its rightful place – voice messages and greetings are stored with all other messages, in Microsoft Exchange – while user profiles and preferences are stored with all other user information, in Active Directory. Integrated messaging transforms voicemail from a PBX application to a data application, with voice messaging seamlessly integrated into Microsoft Exchange.

Integrated messaging uses a stateless appliance at each remote office to capture and route voice messages in real-time. This appliance stores no persistent data. It connects to both the PBX / VoIP PBX and to the corporate IP network. It captures messages from both internal and external callers via the PBX. It routes those messages over the IP network to a single connector application that communicates with Microsoft Exchange and Active Directory. The appliance also holds the messages in cache for 72 hours and provides always-on telephone answering and off-line subscriber services in the event that Exchange becomes unavailable or response times are delayed..

The integrated messaging architecture can be seen in Figure 3.

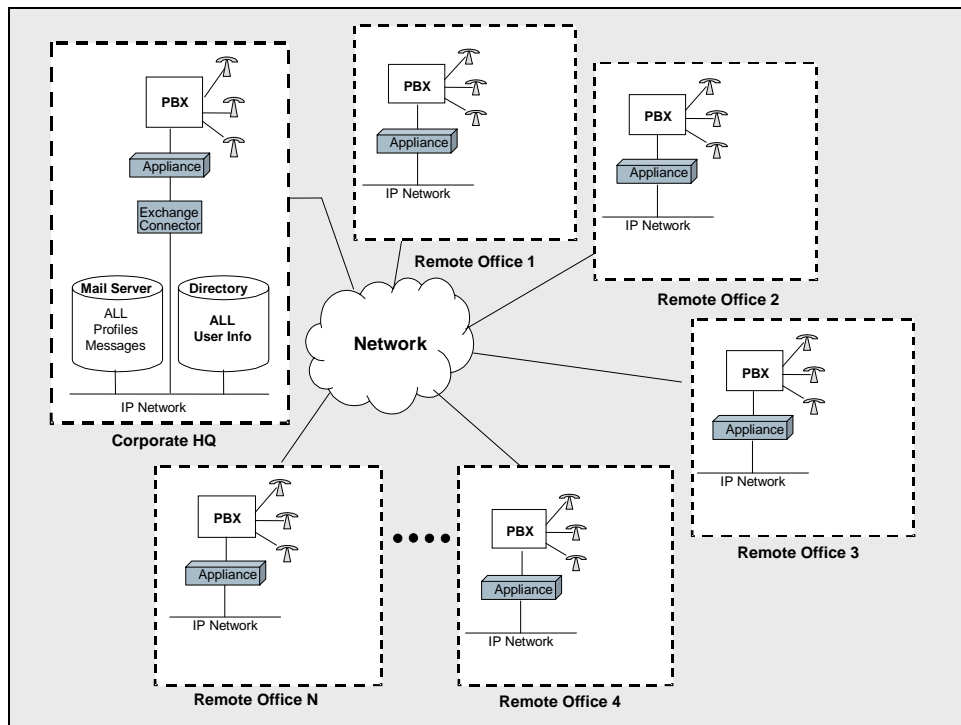


Figure 3. Integrated messaging architecture for enterprise with multiple offices.

Let's look again at John in Office 1, and what happens now when he sends a voicemail to Mary in Office 2, this time using integrated messaging. John picks up his telephone handset, dials the extension for the local messaging appliance, logs in, composes his voicemail message, and hits "send." The following activities then take place:

1. The integrated messaging appliance captures John's message and the destination mailbox number.
2. The appliance sends the message over the corporate IP network to the connector application co-located with Exchange and Active Directory.
3. The connector application sends the message to Exchange, which takes care of routing the voice message and depositing it in Mary's mailbox, just like it does with email messages.

### **No Separate Data Store, Network, or Users**

Integrated messaging requires no separate user database or data storage. User profile information and user preferences are all stored in Active Directory, in the user account, where they belong. All voice messages and greetings are stored in Exchange. There is no separate data store to back up, no separate network to manage, and no separate database of users to manage. Proprietary voicemail tools and the need for proprietary skill sets are eliminated.

### **No Client Overhead**

Integrated messaging requires no changes on the desktop; no client application, no plug-ins, and no special Outlook account.

### **Administration and Management Processes Are Already in Place**

The email administrator can now manage voice messaging via the administrative processes he or she already has underway. When the administrator adds a new user in Active Directory, a default voicemail profile can be generated with a single click. When a user is removed from Active Directory, their voicemail profile is simply gone.

### **Stateless Appliance at the Edge – No On-site Maintenance**

By replacing dedicated voicemail servers with stateless appliances at the edge of the network, the overhead of maintaining voicemail systems or unified messaging servers in each location goes away. The appliance has a built-in health monitor and performs its own internal clean-up. No on-site maintenance is required. A one-click upgrade process flushes and replaces the entire software image when new versions of software become available.

### ***80% Overhead Savings vs. Standalone Voicemail***

By eliminating a separate infrastructure and using administrative processes already in place in the enterprise, integrated messaging can reduce the cost of voicemail administration by up to 80%. Integrated messaging delivers what enterprises have been seeking: a single, Microsoft-centric messaging infrastructure.

## **Conclusion**

With Microsoft Exchange now the corporate data store for messaging and Active Directory the repository for all corporate user information, having a separate storage and management structure for voice messaging no longer makes business sense. Integrated messaging finally delivers what enterprises have been seeking: a single, Microsoft-centric messaging infrastructure that utilizes the administration and management processes the enterprise already has in place. By using stateless appliances at the edge, companies are now able to maintain the same always-on telephone answering and subscriber services they have enjoyed for almost 20 years with traditional voicemail systems – even if Exchange goes off-line. Integrated messaging eliminates a major source of inefficiencies in IT operations and can provide significant efficiency gains for end-users.



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