



Advanced Messaging: Five Key Components of Converged Telephony

Legacy voicemail systems were built with system reliability and enterprise-grade voice response times. They were robust, and they served the enterprise well. But since legacy systems were designed before the existence of email and other technologies that are now core to business, their design did not capitalize on advancements that can now be used to provide enormous new business productivity gains.

New voice messaging systems, when architected right, retain the key elements legacy systems got right while delivering a step-function improvement in organizational responsiveness, user productivity, and IT cost savings. In their effort to capitalize on these new technologies, however, many new systems have abandoned the core elements that led to the success of legacy voicemail – built-in system reliability and enterprise-grade voice response times. Moreover, most new systems deliver new user productivity

features at the price of greatly increased IT overhead and costs. On top of this, some systems integrate with Active Directory and Exchange in a way that adds unnecessary risk to the email infrastructure.

It is the system architecture that determines the degree to which a converged messaging system enables significant new user productivity without trading off system reliability, voice quality, email stability, and IT costs. Telecom managers serve their organizations well by bringing their legacy systems expertise to bear on the voicemail replacement decision. This paper is designed to serve as a guide in this decision process. It outlines the architectural components required to find a new voice messaging system that retains the key advantages of legacy systems, that provides great new gains in user productivity, and that lowers rather than raises IT costs.

LEGACY VOICEMAIL GAVE US RELIABILITY & QUALITY

The designers of the original voicemail systems knew that voicemail would quickly become a business-critical application. As such, they rightly viewed rock-solid reliability as an indisputable product requirement, and they structured the system architecture to deliver “four 9’s” reliability. Likewise, they viewed voice quality to be an absolute requirement, and they baked enterprise-grade voice response times into the architecture. The huge success of voice messaging can be largely attributed to these two foundational design elements. The original architects developed a platform that provided system reliability and voice quality that enterprises now expect of voice messaging. They designed and built robust systems that served enterprise well for more than 20 years.

TECHNOLOGY ADVANCEMENTS NOW DELIVER NEW OPPORTUNITIES

When legacy systems were designed, email was not yet a mainstream corporate application, the GUI interface did not exist, and neither did laptops, portable devices like Treos and PDAs, or cellular phones. Since legacy systems were designed before the existence of these technologies – now standard fare in business – their design could not capitalize on the opportunities these technologies present for enormous new business productivity gains. These advancements include:

- Universal message addressing that dissolves the rigid communications borders of legacy voice messaging. Users can now voicemail anyone who has an email address.

- The GUI interface, which eliminates the need to process messages sequentially. Users can now see their voice messages, act on them in priority order, and organize them for later use as they do with email messages.

- Portable devices like Smartphones and Treos that eliminate the need for users to return to their desks to be notified that there is a voice message awaiting their attention. Users are now alerted to voice messages as the messages come in, and can play them directly on their wireless device without having to dial in.

- Mobile phones that eliminate the need for the voicemail system to give up on finding a user when he or she doesn’t answer the desk phone. With “Find Me” features, users can now define how callers are treated when they are away from their desk – who reaches them, how, and when.

- Microsoft Active Directory, which allows user information to be kept secure and clean, and to be used by multiple applications regardless of user location, while being managed once.

- Microsoft Exchange, which serves as the message store for the enterprise, eliminating the need for segmented message stores – one for email and one for each voicemail system.

Legacy systems need to be replaced, and the timing is right. New voice messaging systems can provide user capabilities that legacy voice messaging could not. In addition, choosing the right new system can carry the organization forward as IP-PBXs are rolled out and the migration to VoIP is carried through. However, without the right architecture, the new systems come with hidden costs that lead to a very high total cost of ownership, and they add complexity to VoIP migrations.

“Adomo presents an impressive capability for migrating voice messaging to Microsoft Exchange, a particularly important capability as legacy voicemail systems are replaced within an organization.”

Michael Osterman
OSTERMAN RESEARCH

NEW FEATURES OFTEN COME AT TOO HIGH OF A PRICE

In their effort to capitalize on these new technologies, many new systems have abandoned the core elements that led to the success of legacy voicemail – built-in four 9's system reliability and enterprise-grade voice response times. Moreover, most systems deliver new user productivity features at the price of greatly increased IT overhead and costs. To make matters worse, the way in which some systems integrate with Active Directory and Exchange adds unnecessary risk to the email infrastructure.

SYSTEM ARCHITECTURE DETERMINES THE ULTIMATE PRICE

When architected properly, new voice messaging systems retain the key elements legacy systems got right while delivering a step-function increase in organizational responsiveness, user productivity, and IT cost savings. It is the system architecture that determines the degree to which a voice messaging product can enable significant new user productivity without trading off system reliability, voice quality, email stability, and IT costs. The following section outlines the architectural components required to find a new unified messaging system that retains the key advantages of legacy systems, that provides great new gains in user productivity, and that lowers rather than raises IT costs.

1. PBX Independence Now Required

Since PBX-agnostic solutions took the lion's share of the legacy voicemail market, we know that customers place a high value on retaining their freedom to deploy any PBX. There has always been an overwhelming preference to retain maximum PBX flexibility and to avoid PBX vendor lock-in. Through mergers, acquisitions, local purchasing decisions, and changing needs, most businesses end up with a mix of PBX types. Having a voicemail system that is independent of any PBX (and now also any IP-PBX) gives telecom departments much needed operational freedom.

With new advanced messaging systems, this PBX independence is now even more critical. The tremendous added value of these systems can only be realized if they are integrated into Active Directory and Exchange. The voice messaging system now becomes the single point of integration into your standardized email platform. The enormous productivity and cost savings potential of new unified messaging systems comes as a result of their integration into the enterprise email environment – when this integration is done right. This requires that each organization must choose a single, standard methodology to integrate voice messaging into the mission-critical email environment. This methodology requires standardization on a voice messaging platform.

The alternative is to have different types of voice messaging systems – one for each brand of PBX – each trying to integrate in its own way into the mission-critical email environment. This would add untenable complexity and risk to the enterprise communications infrastructure. Figure 1 depicts this unworkable scenario.

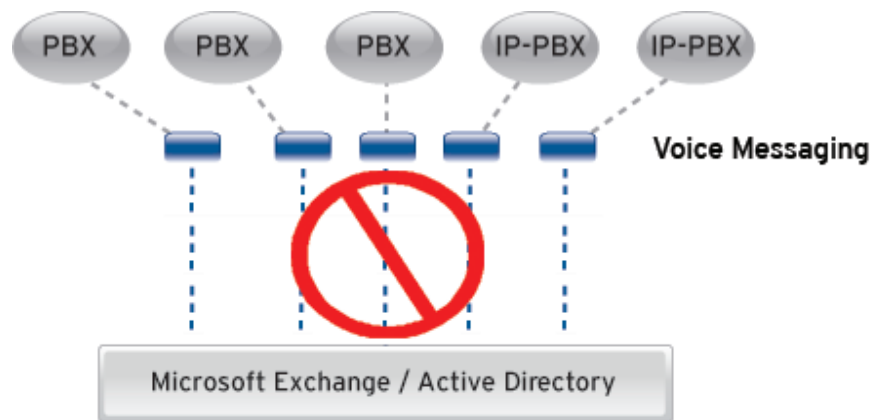


Figure 1. Multiple integration methodologies into Microsoft Exchange and Active Directory would add untenable complexity and risk.

“Adomo Voice Messaging promises to allow IT departments to provide voicemail services, based on Microsoft Exchange, with lower TCO than traditional black box approaches. It appears to be scalable, available, and simple to integrate with an existing Exchange network.”

David Ferris
FERRIS RESEARCH

2. Must be IP-ready

The ongoing, multi-year migration to VoIP virtually ensures that all organizations will have a mix of PBXs and IP-PBXs. New voice messaging systems need to not only work across any brand of legacy PBX, but they also need to be forward-compatible with any IP-PBX. Organizations need to deploy a voice messaging platform that is independent of any PBX brand or technology. The integration of voice messaging into Active Directory and Exchange requires a single, standard integration methodology deployed enterprise-wide, as depicted in Figure 2.

3a. Enterprise-Grade Voice Response Must Be Built-In

While legacy voicemail systems delivered enterprise-grade voice response, they did so at the expense of increased infrastructure. They required a full system – server, database, and message store – at each office in order to ensure voice response times. New systems with the right architecture build in these same enterprise-grade voice response times, but without requiring a full system at each office or any special network engineering or QoS over the WAN. A low-maintenance appliance at the end offices can deliver this critical balance. With a local data cache, all voice can be processed locally but without any data storage to maintain. In this way, an appliance architecture delivers voice response times that

meet the demanding performance standards enterprises have learned to expect, without added infrastructure or maintenance.

Architectures to be avoided:

- Any architecture that requires network engineering, traffic monitoring, or QoS over the WAN to ensure the consistently fast response times essential for voice message quality and user interface.
- Any architecture that stores user data or messages at each end location, as managing site-based data adds to overall system complexity and IT overhead.

3b. Ensure System Reliability by Controlling the Platform

Two aspects of the legacy voicemail systems led to their rock-solid reliability. The first was that they operated in a dedicated software and hardware environment with no independently changing hardware and software or hardware components. The second was that they were built to be completely self-reliant. That is, they operated as a fully functioning standalone system with no dependence on any other system or network to function. Legacy systems achieved these two ends, however, at the expense of increased infrastructure – that of a database and message store in each system.

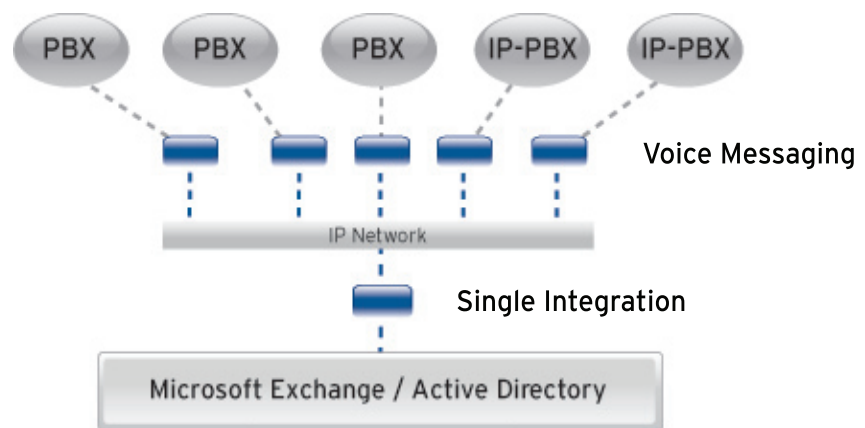


Figure 2. Single enterprise-wide integration into Microsoft Exchange and Active Directory, regardless of the mix of PBXs and IP-PBXs

New systems with the right architecture build in these same two design aspects — a controlled software and hardware environment with no independently maintained and upgraded parts, and a system that is fully functional even if the network or other systems go down — but without the burden of increased infrastructure or on-site maintenance. This fine balance can be accomplished with an appliance architecture. The appliance should operate in a dedicated software and hardware environment, and should offer full remote management and upgrades. It should use cache to store user data and messages, and operate standalone as a fully functional voicemail system if the network or Exchange goes down. The appliance should store no persistent data, eradicating the need to maintain or manage site-based data. In sum, the right appliance architecture can offer the reliability enterprises have learned to expect of voicemail, and do so without the burden of on-site maintenance or the increased overhead of having to store, maintain and manage user data and messages in multiple places.

Architectures to be avoided:

- Any architecture built on PC servers with off-the-shelf components, as these servers require on-site maintenance which is especially burdensome to smaller offices. They require administrators to maintain and troubleshoot independent hardware (such as telephony integration cards), operating systems, databases, and applications software — all with patches and upgrades on unpredictable schedules.
- Any architecture that is dependent on Microsoft Exchange, Active Directory, or the network to be available in order to provide full voicemail functionality at all times.

4. The Right Integration into Active Directory and Exchange

The step-function improvement in organizational responsiveness, user productivity, and IT cost savings that can be delivered by new voice messaging systems requires integration into Active Directory and Exchange. However, there is a right way and a wrong way to integrate into these mission-critical applications.

No Schema Changes in Active Directory

The right architecture does not require schema changes in order to add voicemail user profiles into Active Directory user records. Schema changes cannot be reversed, and it is not wise to make permanent changes to Active Directory, especially when those changes can be avoided.

No Administrative-Level Permissions

The right architecture allows the voicemail system to place voice messages in user email inboxes without requiring administrative-level permissions. Permission at

the administrative level allows the application to make global changes — that is, changes to all users in one fell swoop. Permissions at this level should be reserved for a select group of specialized, high level IT administrators.

Users Administered Exclusively in Active Directory

All user administration should be secure. Organizations establish an administrative structure within Active Directory, using distributed permissions to delegate the specific individuals or types of individuals that have permission to change each data field. This delegated administration allows organizations to streamline operations and keep data clean while retaining a security structure for their highly sensitive user data. With new voice messaging systems, the right architecture allows all user administration to be done directly in Active Directory, within your existing administrative structure. This ensures your security policies remain intact and enforced, and user data remains clean and safe.

Architectures to be avoided:

- Any architecture that requires schema changes in Active Directory, as these schema changes are permanent.
- Any architecture that requires administrative-level permission to place a voicemail in a user's email inbox.
- Any architecture that requires user changes to be made outside of Active Directory.

5. Must Be Client-free to Get IT Cost Savings

The architecture needs to enable the new advanced messaging system to place voice messages in the email inboxes of end-users, and to allow users to play, forward, reply to, save, and otherwise manage those messages. Some systems require client software to accomplish this. Others require plug-ins to be installed, or special Outlook accounts to be set up. Any change to the desktop adds significant IT overhead. The right architecture allows the user to manage their voice messages from within their email inbox without requiring any change to the desktop — no client software, no plug-ins, no special Outlook accounts.

Architectures to be avoided:

- Any architecture that requires changes to the desktop such as client software, plug-ins, or the set-up of a separate email account. The requirement to manage components on the user desktops adds significant IT overhead and erodes any potential IT cost savings.

CONCLUSION

In the time that has passed since legacy voicemail systems were designed, a number of core new technologies have emerged. These technologies present the opportunity for new voice messaging systems to significantly boost business productivity and organizational responsiveness. However, the system must be designed with the right architecture in order to deliver these new benefits without requiring critical tradeoffs. The architecture of new converged messaging systems determines the degree to which the system can enable new user productivity without trading off system reliability, voice quality, email stability, and IT costs. With the right architecture, new systems can retain the voice response times and system reliability enterprises have learned to expect of voice messaging, while also greatly improving business productivity and IT costs.

ABOUT ADOMO

Adomo, Inc. provides a new generation of advanced messaging and intelligent mobility solutions that enable organizations to more smoothly migrate to VoIP and wireless technologies. The company's open, hardened appliance platform gives customers freedom of choice in selecting the appropriate technology, vendor, and timing for their Voice over IP rollout. Deeply and seamlessly integrated with Microsoft Exchange and Active Directory, the Adomo solution eliminates the costs of maintaining separate servers, databases, and message stores.

With Adomo Voice Messaging, users have easy access to voice messages in their email inbox on their PC, or from any Microsoft Exchange compatible device or client. Adomo's enhanced speech recognition capability delivers a superior caller and user experience, while advanced caller applications such as Find Me/Follow Me increase organizational responsiveness.

Adomo is a privately held company, headquartered in Cupertino, California, and is backed by Menlo Ventures and Storm Ventures. For more information, please visit www.adomo.com, or call (408) 996-7086.



Adomo, Inc.
20401 Stevens Creek Blvd
Cupertino, CA 95014
408-996-7086
www.adomo.com