A Cost-Effective Approach for Migrating Enterprise Electronic Mail Systems

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ABSTRACT

Electronic mail (E-mail) is one of the most utilized application software systems in modern-day organizations. The major messaging application programs used in the enterprise are IBM Lotus Notes also known as Domino, Microsoft Exchange Servers, and Novel GroupWise. For various reasons – such as high cost of maintenance, undeliverable e-mail issue and loss of attachments, companies find it necessary to either migrate to newer versions of their messaging software or to an entirely different software. In either case, the process must be carefully planned, well designed and properly implemented to avoid disaster. In this paper, we present a cost-effective approach for migrating a particular messaging software. The approach was implemented and tested for the migration of GroupWise 5.5 to Exchange Server 2003. We present our success story and lessons learned from the case. A six-week and one-year post migration system-audits indicated that the organization derived several benefits including significant cost savings as a result of this particular approach. Chief information/technology officers and e-mail administrators will benefit immensely from the "best practice" strategy hereby presented.

Keywords: Messaging Software, Migration, Mailbox, Email, GroupWise, and Exchange 2003.

INTRODUCTION

Messaging software systems tend to be the most utilized application programs in organizations. However, they are also in the top list of computer network components that can cause a low Return on Investments (ROI) because of high cost of maintenance, interoperability problems with other applications and operating systems, low network bandwidth, lack of security and un-scalability problems. Common problems associated with corporate messaging software include: frequent loss of e-mail attachments; delivery and storing email messages that are infected with viruses on corporate e-mail servers, thus propagating viruses to users' desktops; inability to send e-mails and the undeliverable e-mail issue. These problems among others, may necessitate or even compel an organization to migrate from its current messaging software to another or to upgrade to a newer version of the existing e-mail software.

Migrating from one messaging system to another is a process that requires careful planning, analysis, design and implementation. To do otherwise can lead to unintended consequences including significant loss of revenue. In this paper, we present a cost-effective approach for e-mail migration. The approach was implemented and tested for the migration of GroupWise 5.5 to Exchange Server 2003. Also presented are the benefits and the lessons learned from this particular case.

LITERATURE REVIEW

Several researchers have studied electronic mail migration, but most had focused attention on the implementation, at migration time, of security measures such as the prevention of viruses and spams. Examples are discussed in Zhenhai Duan, Yinfei Dong, Kartik Gopalan [1], Lee Benjamin [2], and in a 2005 IT-Research white paper [3]. Real-world migrations from one e-mail software to another and upgrading from an older version to a newer version have been discussed by Ferris Research [5] and the Radicati Group [6]. Ferris Research presented data on e-mail migrations by associating monetary value with each migration cost element (labor, hardware, software, tools, travel and training). They did not address post-migration costs, however, it was determined that the typical industry migration cost averages $282 per mailbox.

Radicati Group [6] presented an assessment of the acquisition and the operational costs of migration to Microsoft Exchange 2003 in enterprise environments. The Radicati Group surveyed many corporations and government organizations across the globe, to analyze and establish migration cost information. The typical industry's migration tasks include the acquisition of hardware and software, migration (labor), administration, storage, downtime and training. In addition, the Group determined the cost of maintaining Exchange 2003 annually for a period of three years after migration. For the first year, the Radicati Group obtained a maintenance cost of $136.67 per mailbox; and $92.20 for each of the second and third years.

THE MIGRATION APPROACH

The approach described hereafter, is simple, and was designed primarily to cut costs. It emulates the traditional systems development life cycle (SDLC) methodology – planning, analysis, design, systems installation, configuration and implementation "best practices" approach. The methodology is presented in a step-by-step process below:

- Evaluate the current information technology environment of the organization
- Select the right messaging software.
- Select the right server hardware and server operating system that is compatible with the messaging software. For example, GroupWise messaging software runs only on server hardware with NetWare server operating systems. Also, Exchange 2003 is not supported by Windows NT 4.0, but rather – by Windows Server 2003.
- Develop a migration plan, procedures and schedule; and execute the plan.

A more detailed description of the migration approach follows:

Evaluate the current environment
It is important to evaluate the current infrastructure to determine its attendant problems. The evaluator must check for the following:

- Legacy servers and the unreliability of their platforms.
- Inadequacy of the servers' storage.
- Lack of redundancy for servers and other systems modules.
- Inability to secure in-coming and out-going e-mail messages from viruses and spams.
- Inadequacy of network bandwidth

The above issues must be corrected during migration in order to have a problem-free environment for the new messaging application.

Select the right messaging software
To select the appropriate messaging software, a thorough understanding of available enterprise messaging systems and the enterprise-wide information systems infrastructure is important. This is because any decision to select new messaging software should consider the following criteria: interoperability issues – ease of integration with current infrastructure, stability and robustness of the software, return on investment, reliability, ease of use, total cost of ownership, and security.

Select right server hardware and Operating System
Based on reports of the evaluation phase, a decision should be made whether or not new servers and operating systems will be required. Furthermore, it necessary to resolve all incompatibility issues at this point. For example, Exchange server 2003 is not supported on a Windows NT server. Therefore, an organization running Windows NT server must upgrade to Windows Server 2003 operating systems or a more current version before migrating to Exchange 2003.

Develop a migration plan and execute it
Developing and executing a migration plan involves several steps. In the first step, the project team must generate a list of messaging software components that will be migrated. The Chief Information/Technology Officer and the end-users are the best sources to generate the required data. The importance of this exercise cannot be over-emphasized given that enterprise messaging systems consists of several components and features that may not always be of interest to all users. Commonly used messaging software components include inbox (mailbox), sent (outbox), personal address book, contact lists, calendars, personal distribution list, archived e-mail messages, tasks, reminders, user settings or preferences, folders and subfolders, attachments, and bulletin boards.

The second step of the migration plan is to select an appropriate migration tool. Several migration tools are currently available to facilitate the process. While many of these tools have the capability to perform the migration automatically without intervention, others require attention during the migration process. Typical migration tools include E-mail Shuttle by Compusven, [8], UniAccess by ComAxis Technology [10], Microsoft Exchange Migration Wizard [11], and Transend Migrator [13]. In addition, some of the messaging software systems include free migration tools that are available for use by the migrating team. For example, Microsoft Exchange server 2003 has Exchange wizard migration tool that comes free with the software. It is essential to note that some migration tools may have the advantage of un-attended migration process but, they are very usually expensive, complicated to setup, and also may require additional server hardware. Other tools that are relatively simple and easy to setup and use, in most cases, require performing the mailbox migration on each of the users' desktops. Therefore, a good knowledge of the tool is inevitable and critical.

The third step is to develop the procedures for setting up and configuring all new hardware servers and operating systems that may be needed and then, design the directory services on the new servers. The fourth step is the development of the procedures for installing the new messaging software on the appropriate server(s), migrating user accounts and setting up security measures. The next step is the deployment of the client software on users' desktops. The last step is to test the entire installation and train the users. The approach described above was successfully applied to a real world case that is presented in the following sections.

SCOPE OF A CASE STUDY PROJECT

This case study was performed on the Housing Finance Agency of a state government. The mission of the agency is to encourage and expand homeownership and rental housing opportunities in the state. The agency has about 50 employees. Their need was to implement a messaging software infrastructure upgrade. The project team which consists of the authors of this paper, served as consultants to the agency. Our evaluation of the current environment revealed several problems and issues that assisted the Chief Technology Officer (CTO) to determine the correct scope of the project. They include the following:

- The majority of the organization's applications ran under Windows Server operating systems while the messaging software was the only application that ran on NetWare platform. This evidently caused increased maintenance cost due to the fact that both Windows and Netware network administrators were kept by the agency.
- Hardware servers were aging, servers had insufficient storage capacity and therefore, users were required to

delete e-mail messages that were more than 15 days old from their mailboxes.

- Each user had multiple logins – one to the primary domain controller, and the others were to each application including the e-mail server. This led to users' dissatisfaction with the system.
- The organization was running GroupWise 5.5 which Novell had ceased to support since 2002.
- Most of the in-coming e-mail attachments were not delivered to the intended mailboxes.
- Spam messages were not controlled.

In order to cut costs and also reduce the total cost of ownership of the agency's e-mail system, we strongly recommended that migration from GroupWise messaging software to Exchange was inevitable. This would eliminate the cost of maintaining NetWare servers. Therefore, the project requirement and scope were simply stated by the CTO as follows: "Perform the migration of the organization's messaging software from Novell GroupWise 5.5 to a reliable e-mail software that would eliminate the problems listed above." We were also required to provide training to users after the completion of the project.

CASE STUDY IMPLEMENTATION

In line with the approach described above, the project progressed by selecting the right messaging software. Microsoft Exchange Server 2003 was selected as the new messaging software because it interoperates seamlessly with the Windows 2003 server's active directory and it is compatible with the company's desktop applications. Moreover, since Exchange runs on Windows server operating systems, therefore, selection of Exchange eliminated NetWare platform and the cost of maintaining multiple platforms by the organization. Based on the results of our evaluation and analysis of the current infrastructure, we recommended the purchase of two new servers to replace two very old ones. The two new servers were utilized as follows: one new server was needed for the Exchange 2003 messaging software and the other server replaced the aging primary domain controller (PDC).

Two Compaq Proliant ML 370 G3 hardware servers were acquired running Windows Server 2003 operating systems. The decision to select Compaq servers was based on the well-known robustness and high fault tolerance features. The servers were configured with the following main components: Pentium IV with dual Xeon processors, 4.0GB random access memory (RAM), two network interface cards for better performance, and six slots of SCSI hard disk storage – each slot containing 72GB hot pluggable hard disk drives. Software items included two server licenses of Microsoft Windows Server 2003 installed on the PDC and the Exchange hardware server as the underlying operating systems; one server license of Exchange server 2003 with 50 client access licenses; Veritas backup software; and one server license of Computer Associates' E-trust anti-virus/anti-spam software with 50 client access licenses.

Other aspects of the implementation included designing an Active Directory (AD) and policies for the new hardware that served as the new primary domain controller – taking into consideration, the structure of the organization's network. Installation phase proceeded by setting-up Windows Server 2003 on the PDC and configuring AD on it. Subsequent steps are as follows: a) setup and configure Internet Information Services (IIS) on the PDC because Exchange relies heavily on AD and IIS; b) install a new server-based anti-virus software on the PDC and deploy the desktop version from the server to all desktops; c) setup and install the other new server hardware as a member server with Windows Server 2003 as its underlying operating system; d) install and configure Exchange Server 2003 on the member server; e) install and configure Microsoft Outlook on each client; f) migrate individual user inbox, calendars and other messaging related folders from the GroupWise server to the new Exchange Server using UniAccess migration tool from ComAxis [10]; g) test all servers and desktops and h) provide training to users.

Although the case involved migration from GroupWise 5.5 to Microsoft Exchange Server 2003 and, in spite of the fact that Exchange Migration Wizard is capable of automatically performing the users' mailboxes migration phase, it is evident from [8] that third party migration tool may be preferred over the free Exchange migration wizard. We utilized UniAccess because of its simplicity, low cost, ease of use, and its suitability for the size of the contracting organization. UniAccess requires that the migration of each user's e-mail folder and inbox be performed from the user's desktop or from any workstation using the user's network domain login account. This is because UniAccess utilizes the user's profile for migration. Therefore, the user is expected to first login to the primary domain controller (PDC) that contains the Active Directory (AD) before the migration commences on the user's computer. Secondly, once the user has logged in, and has been authenticated by the PDC as a network authorized user, the user or migrator will run the tool separately on each messaging folder that is on the GroupWise server creating a personal storage outlook (.PST) file that is converted to the corresponding folder name in Outlook installed on the user's computer. The same procedure applies to inbox, calendars, contact lists and other messaging related folders that will be migrated.

SUCCESS STORY

The migration project from GroupWise 5.5 to Exchange Server 2003 with Outlook client was very successful. This was evident from the fact that the messaging infrastructure for the organization was not disrupted during the migration period; the entire migration was completed ahead of schedule and without incurring any additional cost. In addition, the administration and users' pleasant experiences and overall satisfaction after the migration, revealed a very successful migration effort. Moreover, a six-week post migration system-audit indicated that the organization derived several additional direct benefits, including:

- Increased employee productivity.
- Reduced Information Technology (IT) administrative overhead because the network administration became less cumbersome. NetWare platform was completely eliminated.
- Savings derived for not supporting and administering multiple network operating system platforms.

The total cost of the migration from GroupWise 5.5 to Exchange 2003 is presented in the Table 1. There were no costs associated with user disruptions (also known as down-time due to migration) because the conversion from GroupWise to Exchange infrastructure was performed after hours and on weekends when the organization is normally closed.

Table 1: Migration and One Year Maintenance Costs

ITEM	QTY	UNIT PRICE	MIGRATION COST	FIRST YEAR COST
Server Hardware	2	2,600	5,200	0
Exchange Software Server License	1	800	800	0
Exchange Software : Client Access License (CAL) for Non-profit Organization	50	17	850	0
Other Software: Anti-Virus, Anti-Spam, and Mailbox Migration Tools	50	15	750	300
Implementation Labor: Fixed Contract Price	1	3,500	3,500	0
User Disruptions. There were no user disruptions since Conversion was performed after hours and on weekend	0	0	0	0
Training	20	50	1,000	0
Exchange Maintenance (User Support, Server Backup, Mailbox and Hardware Maintenance). Fixed Contract Price	N/A	N/A	N/A	3,600
TOTAL			**$ 12,100**	**$ 3,900**
Cost Per Mailbox			**$ 242**	**$ 78**

The table also contains the cost of maintaining the messaging software for the first year.

LESSONS LEARNED

In order to ensure a successful e-mail migration effort, a team is expected to:

- Establish a compromise between what users want to migrate and what the CTO would like to be migrated before migration begins. In this implementation, users wanted every folder and all messages in GroupWise to be migrated to Exchange. Whereas, the CTO would allow only twenty most important and job-related e-mail messages and their address books to be migrated. A decision to migrate all users' folders and messages was eventually taken. Migrating old messages accumulated for several years could result in storage waste.
- Configure Exchange Server Spam Filtering as soon as the migration is completed. In less than 24 hours after the migration was completed, the Exchange server was filled with over six hundred thousand spam messages. The Exchange server was configured to store spam messages in a folder designated "Bad" automatically. We had to move the "Bad" folder to a larger disk volume away from the systems' volume, then carefully deleted the spam messages and configured the spam filtering feature of the Exchange Server 2003. This incident was detected on time and was corrected before the entire systems volume was populated with spam messages. Otherwise, the e-mail server could have shut down when the entire system disk storage is fully utilized. That is, there was no down-time associated with the situation.

SUMMARY AND CONCLUSIONS

Migration from one e-mail application software to another is an arduous task that must be carefully planned, well designed and properly implemented in order to avoid failure. Moreover, lowering the total cost of ownership should be highly taken into consideration. We presented an approach for migrating from an existing e-mail infrastructure to another, implemented the approach on a real-world case and discussed the lessons learned from the case study. The solution is cost-effective based on Table 1. This strategy's average migration-cost of $242 per mailbox is much lower than the typical industry migration cost of $282 per mailbox. Also, the first year average maintenance cost of $78 per mailbox is significantly lower than $136.67 presented by the Radicati Group [6]. Chief information officers, network engineers and administrators who plan to embark on a similar project, should benefit from this prudent approach, experiences and lessons learned.

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