Technical report:

Simplifying Microsoft Exchange Migration with IBM System Storage N series and Symantec Enterprise Vault

Best Practices

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Table of contents

Abstract

Many organizations today are replacing legacy mail systems with Microsoft Exchange or upgrading from older Exchange versions. Other companies are migrating to Microsoft Exchange to benefit from reduced management and infrastructure costs and to leverage the power of the Microsoft platform. This paper discusses how such migrations can be facilitated using technology from IBM System Storage N series in conjunction with Symantec Enterprise Vault. IBM N series storage solutions provide advanced data management that can help reduce the risks associated with a large-scale software migration and reduce ongoing operational costs by reducing storage costs and facilitating server consolidation. The combination of IBM N series technology and Symantec Enterprise Vault simplifies the migration process for a wide range of migration scenarios.

Introduction

Many organizations today are replacing legacy mail systems with Microsoft® Exchange or upgrading from older Exchange versions. Other companies are migrating to Microsoft Exchange to benefit from lower management and infrastructure costs and to leverage the power of the Microsoft platform.

Whatever the driver for moving to Exchange 2003 (the most common upgrade at the time of this paper writing), all migration projects face three major challenges:

- Long project duration
- Considerable infrastructure and other resource costs
- Increased business risk.

Since e-mail is arguably the most business-critical application in many organizations, reducing the risks associated with migration is paramount. Potential loss of valuable business data and downtime of the entire e-mail system should something go wrong are major areas of risk that must be managed. Recent regulatory changes mandating the retention of e-mail for set periods for many institutions raise the stakes even further. Technologies that can reduce the duration of projects, simplify infrastructure requirements, and ensure the success of migration can play a huge rule in managing these risks.

Proper selection of storage systems and software can have a dramatic impact on the migration process by facilitating migration testing, accelerating data movement, simplifying infrastructure through storage and server consolidation, and improving data management processes.

A significant portion of the time, effort, and costs associated with a migration project is attributed to the physical amount of e-mail that has to be migrated. Reducing the volume of data to be migrated is one of the simplest ways to reduce the overall risk and minimize coexistence time, which in itself is a major load on administration and support resources.

The typical migration process is managed through the use of standard Exchange or third-party migration tools, and nearly all of these tools have unwanted impacts on storage. Many migration projects at some point run parallel mailboxes in the legacy system and in Exchange 2003. The immediate consequence is that the storage space consumed by e-mail can be doubled for the duration of the migration. Even after the completion of the migration, the amount of storage consumed is likely to be significantly higher as a result of the loss of message single instance.[1]

Migration tools themselves operate largely on a messaging application programming interface (MAPI) basis, where there is no provision for single-instance messaging (which is usually provided through the Microsoft Exchange Message Transfer Agent or MTA). In effect, every migrated message ends up being unique—and as a result the new e-mail environment consumes a much greater amount of e-mail storage, in some cases two to three times greater than the originating e-mail system.

The migration method is a key factor in maintaining single-instance storage when you move mailbox data from Exchange 5.5 to Exchange 2000[+] servers because the store uses the MESSAGE-ID of each message to manage and track single-instance storage. If your migration tool doesn't maintain Exchange's protected storage environment (leaving MESSAGE-IDs intact and in context), the migration process won't maintain single-instance storage.

There is no way of negating this problem using Microsoft tools when migrating from a non-Exchange system to Exchange, and in fact there is only one way of preventing this explosion in storage when migrating between Exchange versions: performing an in-place upgrade of the existing Exchange system. This requires system downtime and has extremely high risk, since all mailboxes must be converted at once. Consequently, it is not possible to adopt a phased approach. Should anything go wrong, the whole process has to be abandoned and the entire system reinstated.

Throughout the process it is important to consider the needs of the end user for uninterrupted access to the e-mail system, complete access to the user's personal e-mail knowledge base, and a single point of access with no need to run parallel systems.

The bottom line for any migration or upgrade is to deliver the benefits of the new technology without introducing undue risk and ongoing costs. Addressing the three core principles of controlling storage and other infrastructure costs, reducing administrative resource requirements, and maintaining user transparency provides a solid foundation for successful deployment.

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[1]Message single instance is often referred to as single-instance storage, or SIS.

Benefits of IBM N series and Symantec Technology in Managing Exchange Migrations

Combining technologies from IBM System Storage N series and Symantec can deliver substantial benefits for companies migrating to Exchange.

Symantec Enterprise Vault™ is a total archiving system for Microsoft Exchange. Enterprise Vault streamlines and reduces the ongoing cost of information storage for the enterprise without compromising information availability.

IBM System Storage N series with NearStore® option provides reliable, low-cost, disk-based nearline storage that works in conjunction with Enterprise Vault. The addition of IBM System Storage N series with SnapLock® Compliance or SnapLock Enterprise software can ensure regulatory compliance or adherence to corporate best practices.

IBM System Storage N series—fabric-attached storage (FAS) with or without NearStore—integrates easily into complex environments and provides shared access to UNIX®, Windows®, Linux®, and Web data while simultaneously supporting Fibre Channel (FC) storage area networks (SANs), IP SANs (iSCSI), and network-attached storage (NAS).

Advanced data management features common to both IBM N series with NearStore option and IBM N series (primary) simplify data management in today's dynamic IT environments.

Utilizing Enterprise Vault in conjunction with IBM N series with NearStore option to archive existing e-mail data before migration:

- Significantly reduces the amount of data that must be migrated, so migration occurs more quickly with less administrative burden
- Ensures that message single instance is preserved so that storage requirements after migration do not increase
- Provides built-in mechanisms to ensure regulatory compliance; IBM N series with SnapLock software running on IBM N series with NearStore option is designed to guarantee that e-mail data cannot be altered or deleted during the compliance period.

Utilizing IBM N series primary storage as the storage repository for the new Exchange environment:

- Facilitates migration testing to minimize or eliminate the need for parallel operation of the old and new e-mail systems
- Enables consolidation of Exchange servers to simplify the overall e-mail infrastructure and reduce ongoing expenses
- Provides outstanding data management tools to reduce backup time, provide disaster recovery, and ensure the successful operation of the new e-mail system.

Using Enterprise Vault and IBM N series with NearStore Option During Migration

The following five main components must be accommodated during migration from a legacy e-mail system:

- Mailbox profile
- Mailbox content
- Personal folder content
- Public folder content
- Address books, both personal and corporate.

Of these, mailbox content is the area where Symantec and IBM N series provide the greatest benefit. (For organizations with a large number of public folders, the benefit can be just as important.) Implementing Enterprise Vault in conjunction with IBM N series with NearStore option minimizes the amount of e-mail to be moved. This in turn reduces the time required to perform migration and minimizes the total storage requirement during and after the migration. In the process it is possible (and desirable) to rationalize personal folder file content, thereby removing yet another risk area. This is accomplished through Enterprise Vault's PST (personal information store) Migration utility by importing personal folder file content from the desktop to the IBM N series with NearStore option.

If a company is considering migrating from a non-Exchange system such as GroupWise, Enterprise Vault can be used to minimize the impact of the migration on the new Exchange environment.

When migrating Exchange versions, Enterprise Vault and IBM N series with NearStore option can be used before, during, and after migration to minimize storage costs and migration time and reduce project risk. By using Enterprise Vault, the size of the Exchange message store can be reduced ahead of the physical migration. Experience shows that the content to be moved can be reduced up to 50% or more by moving older items out into a separate Enterprise Vault repository on IBM N series with NearStore option. Enterprise Vault is Exchange version independent and has its own method of single instance and compression. Once in Enterprise Vault, data does not need to be converted when the organization moves to Exchange 2003. It remains accessible to the user in exactly the same seamless way as before and can still, if required, be restored to Exchange in the correct native format.

There are four basic approaches to Enterprise Vault-assisted migration. The choice of approach is dependent on how the organization views e-mail archiving in relation to the migration project—whether it is part of the project or a separate project of its own. The merits and considerations of each possible choice are described in the following subsections.

Archive All Existing E-mail Content Prior to Migration

In Figure 1, Enterprise Vault is deployed in the source environment with Exchange 5.5 or Exchange 2000 and used to archive *all* e-mail from both public and private (mailbox) stores to an IBM N series with NearStore option. Enterprise Vault and IBM N series are then deployed in the target environment. This reduces the project effort to primarily the migration of personal address books and mailbox profiles, since there are no mail items or e-mail shortcuts to migrate.

Required tasks include:

1. Archive all content from the source environment. Migrate mailbox profile and address books to the target environment. Archive all PST files from the source environment.
2. Provide access to archived mailbox and PST content via Enterprise Vault Archive Explorer.
3. Utilize ongoing archiving in the target environment with access to archived content via both Archive Explorer and shortcuts in mailboxes.

This process yields significant reductions in time, effort, risk, and cost, since data migration accounts for significant costs during a migration project. The cost savings are achieved because the user maintains ongoing access to historical e-mail without the need to move that mail into Exchange 2003.

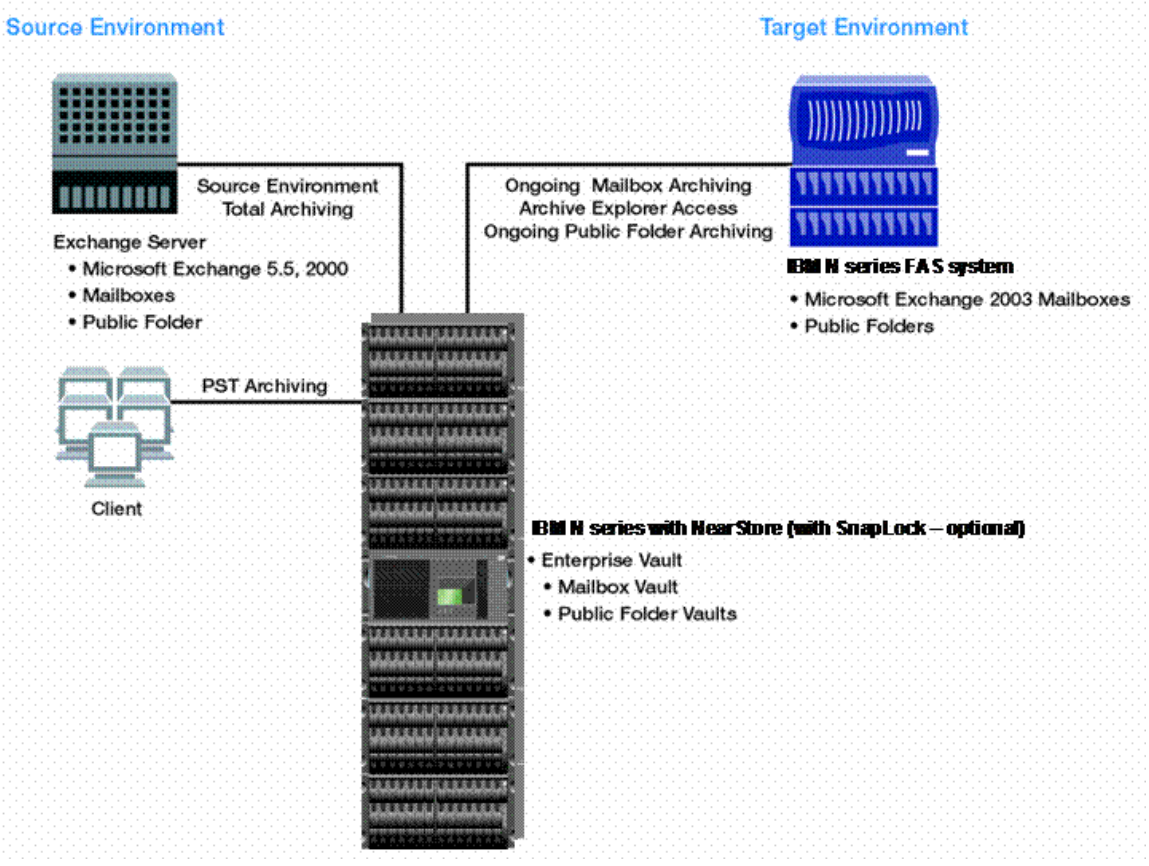

Figure 1) Archiving all e-mail content prior to migration.

Minimizing Mailbox Content to Be Moved

Enterprise Vault and IBM N series storage are most commonly used during migration to minimize the amount of mailbox content migrated between the source and target environments without archiving the entire contents.

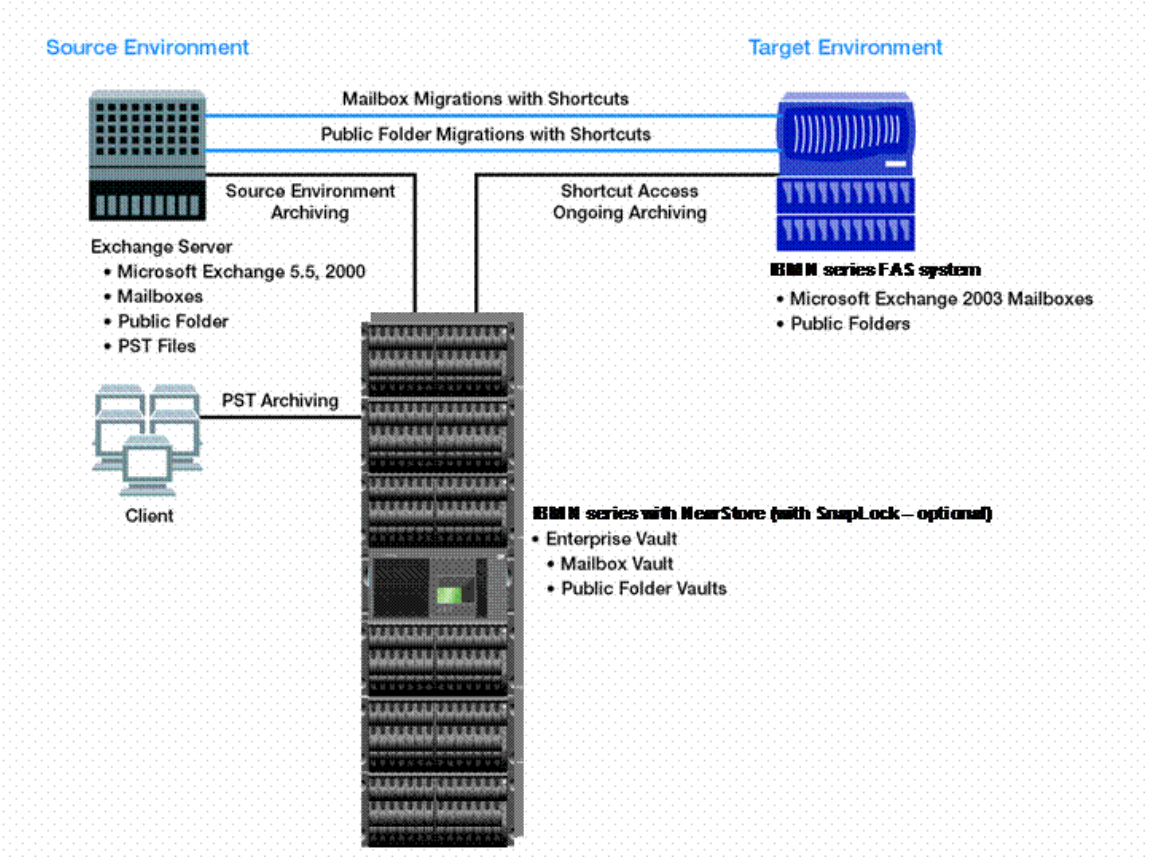

Figure 2) Using Enterprise Vault and IBM N series storage to replace e-mails with shortcuts prior to migration.

Figure 2 depicts Enterprise Vault deployed in both the source environment and target environment. In this scenario Enterprise Vault is used ahead of migration to aggressively archive content from the mailbox into the Enterprise Vault repository stored on an IBM N series with NearStore option. With this approach, unlike the first method, either all or a percentage of the content is archived from the source environment and is replaced with seamless shortcut links in the mailboxes and public folders. The data migration effort is then focused on moving the residual shortcuts and any percentage of content left behind.

The tasks are as follows:

1. Archive a percentage of the content from the source environment based on age or mailbox quota. Archive all PST files from the source environment. All archived content is stored on IBM N series with NearStore option.
2. Migrate mailbox profiles, residual content, archive shortcuts, and address books to the target Exchange environment utilizing IBM N series storage.
3. Provide access to archived mailbox, public folder, and PST content via Enterprise Vault shortcuts created in mailboxes and also via Enterprise Vault Archive Explorer.
4. Utilize ongoing archiving in the target environment with access to archived content via both Archive Explorer and shortcuts in mailboxes.

The common settings applied in this approach are to archive anything older than 30 days. Residual shortcuts are left behind for all the archived content, or this can be adjusted—for example, anything up to a year old. These policies typically reduce the source mailbox and public folder content by around 80% and significantly reduce the data migration effort, with the added benefit of providing seamless access to content archived from the source environment in the target mailboxes.

As with the previous method, this approach represents a significant reduction in time, effort, risk, and cost of the migration process.

If shortcuts are created only for items of a certain age—for example, those less than a year old—then Archive Explorer can still be used to access content, together with the other search interfaces within Enterprise Vault.

Protecting Investment in Exchange 2003

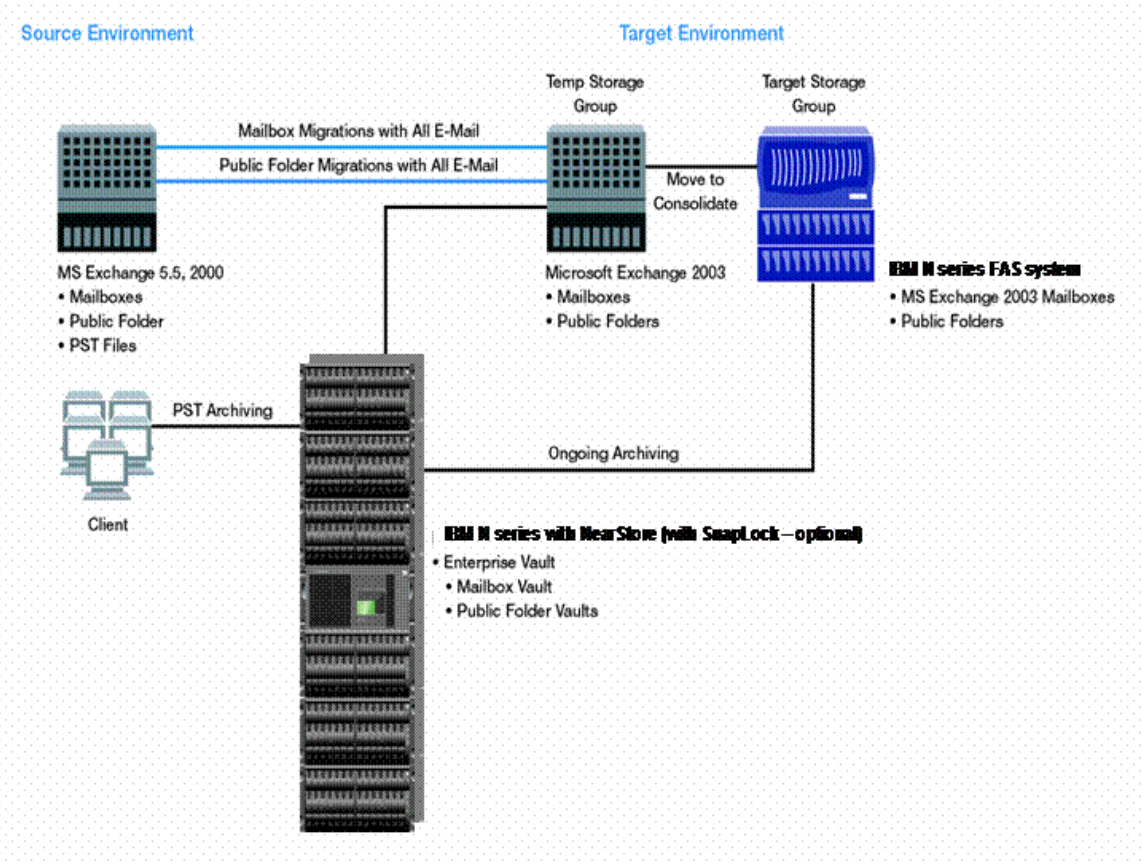

Figure 3) Introducing Enterprise Vault and IBM N series into the target environment during the migration.

In instances where companies have already begun an Exchange migration project or are migrating content from legacy mail systems, it may not be possible or appropriate to introduce a new technology into the legacy environment. In this case, Enterprise Vault and IBM N series storage can be introduced solely into the Exchange 2003 environment to streamline mailbox management along best practices.

As mentioned earlier, a side effect of migration to Exchange 2003 is likely to be the loss of single instancing. This means that migrated data in the target environment takes up more physical storage than necessary. Enterprise Vault can be used to minimize the operational impact of this duplicated data by reducing the physical storage requirements through archiving and recreation of lost single-instance data. The process is seamless to users, who have their original items replaced with shortcuts.

Figure 3 depicts a scenario where the data migration exercise is under way prior to the introduction of Enterprise Vault and IBM N series storage. Enterprise Vault is deployed only in the target environment, along with IBM N series storage, according to the following steps:

1. Migrate mailbox profiles, mailbox and public folder content, and address books from the originating Exchange system or legacy e-mail system to the transition storage group in the target Exchange environment using the Microsoft migration wizards or similar tools.
2. Archive all PST files from the source environment to the archive deployed in the current environment. Security ID (SID) history is required to map permissions. Aggressively archive content from mailboxes and public folders in the transition storage group until archiving thresholds are reached.
3. Move the archived mailboxes and public folders into the target storage group on the IBM N series for fragmentation elimination and storage consolidation.
4. Provide access to archived mailbox and PST content via Enterprise Vault shortcuts created in mailboxes and also via Enterprise Vault Archive Explorer.
5. Implement archiving in the target environment with access to archived content on the IBM N series with NearStore option via both Archive Explorer and shortcuts in mailboxes.

Exchange 2003 adopts a storage group model that allows mailboxes and content to be organized more efficiently within an Exchange site. To optimize the migration process and ensure that migrated mailboxes suffer the least fragmentation, we recommend having a transition storage group into which mailboxes are migrated. Enterprise Vault should then be configured to archive from these mailboxes constantly and aggressively to the IBM N series with NearStore option, perhaps under a 30-day policy as discussed earlier. The archiving services would run every 15 minutes during the migration to archive content quickly into the target environment as it arrives from the Exchange migration wizards, again with shortcuts replacing the original items. After a mailbox has been migrated, the resulting archived mailbox would then be transferred to the target storage group, where it would be consolidated and any fragmentation eliminated.

The migration of PST files can be undertaken independently from the mailbox migration, further reducing risk. In addition, use of the Enterprise Vault Web-based Archive Explorer can eliminate the need to populate the new target mailboxes with residual shortcuts for the migrated PST content, as discussed previously.

In short, this approach, while not reducing the amount of time taken to perform the migration, does minimize the risk and the storage and associated costs of managing the migrated content.

Deployment of Enterprise Vault and IBM N series Storage after Migration

Finally, Enterprise Vault can help in instances where companies have already completed their Exchange migration projects and, as a result, are struggling with large private and public databases together with the associated impact on backup and recovery times.

Figure 4 highlights this scenario. The primary concern is to reduce the size of the Exchange databases quickly and, if necessary, cap them to control growth. The goal is to provide a defined service level agreement (SLA) on Exchange, a predictable backup and recovery strategy, and ongoing reductions in associated storage costs. Mailbox quotas may be used to cap mailbox sizes, but this approach is highly intrusive for the end user and may result in corporate records being lost. The introduction of an archiving policy working with a mailbox quota provides the ability to control Exchange growth and is completely nonintrusive to the end user, preserving long-term access to important Exchange content. An example archiving policy using this model might constrain mailbox sizes by archiving at 75% of a mailbox quota of 100MB, thus effectively capping Exchange to 75MB multiplied by the number of mailboxes, with an effective mailbox size governed by the amount of storage allocated to a mailbox archive.

The following steps highlight the process:

1. Mailbox content has already been migrated to the target environment.
2. Archive all PST files from the source environment to the archive deployed in the current environment. SID history is required to map permissions. Initially, archive content aggressively from mailboxes and public folders in the target environment until the quota archiving thresholds are reached. Subsequently modify the ongoing archiving in the target environment to a nightly schedule with access to archived content via both Archive Explorer and shortcuts in mailboxes.
3. Provide access to archived mailbox and PST content on the IBM N series with NearStore option via Enterprise Vault shortcuts created in mailboxes and also via Enterprise Vault Archive Explorer.

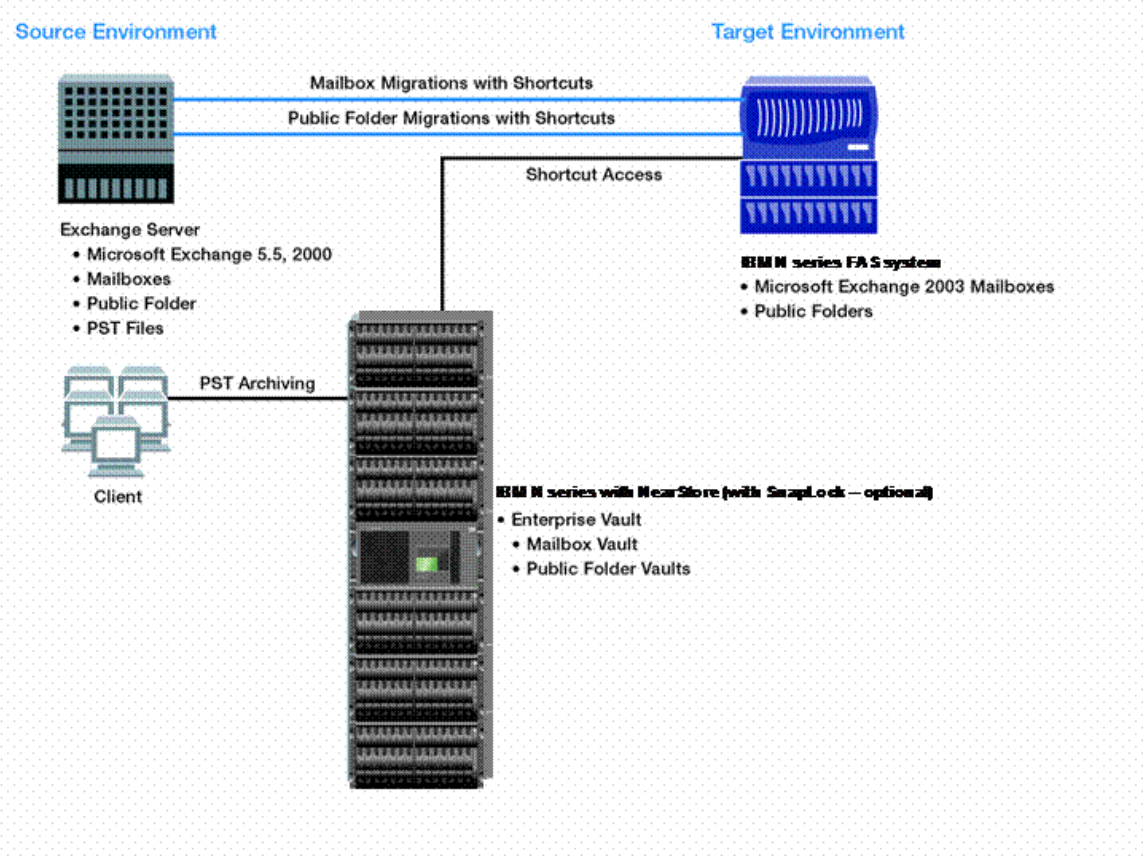

Figure 4) Leveraging Enterprise Vault and NearStore option after the migration has completed.

As before, the migration of PST files can be treated as a separate project and undertaken independently from the archiving of mailboxes to reduce risk and the cost of storage.

Using IBM N series as Primary Storage in the New Exchange Environment

Although the use of Enterprise Vault and IBM N series with NearStore option can reduce the duration and complexity of the migration process and some of the infrastructure costs, there are still substantial business risks during migration. Ongoing infrastructure costs can also be significant. Utilization of IBM N series storage systems as primary storage for the new Exchange environment further alleviates business risks and reduces infrastructure and ongoing management costs.

Customers moving from direct-attached storage will probably want to implement an IP SAN with iSCSI for their new Exchange storage, while those with a FC infrastructure can leverage that existing investment.

Implementing a centralized IBM N series storage system for Exchange makes it possible to:

- Completely test the migration before going live
- Consolidate on fewer Exchange servers to simplify infrastructure and reduce costs
- Improve Exchange data management.

Migration Testing

Full migration testing is made possible through a unique feature of the IBM N series architecture. An IBM System Storage N series with FlexClone™ volume is a writable, point-in-time image of an existing volume. A FlexClone volume writes only incremental updates to disk, minimizing the physical storage required by the clone without altering the original volume. This makes it possible to test a new Exchange environment using production data without duplication of data or risk of corruption before going live. A FlexClone volume of each Exchange volume can be created, and these FlexClone volumes can then be used to test the migration without altering the original data. This makes it possible to validate the migration, identify gaps, understand the impacts, and fine-tune the process so that no surprises occur when the new environment goes live. Parallel operation can be reduced or eliminated, since the new system can be fully tested and validated.

Consolidating Servers

One of the biggest causes of complexity in many Exchange environments is the proliferation of Exchange servers. Many companies have added additional servers when what they really needed was additional or centralized storage. The result is Exchange environments with hundreds of small servers that make management a nightmare and the prospect of upgrading almost unthinkable.

Implementing Enterprise Vault and IBM N series with NearStore option makes it possible to significantly reduce the number of needed Exchange servers, even if no change is made to primary storage. For instance, if 50% of the data is archived, then 50% less storage is needed, and servers deployed solely for the purpose of added storage capacity can also be eliminated.

Implementing centralized storage with IBM N series storage systems allows the number of servers to be reduced even further. Centralized IBM N series storage ensures that all Exchange servers have adequate storage capacity and I/O bandwidth to support the maximum number of users so that server counts can be reduced to the absolute minimum, eliminating complexity and reducing both infrastructure and administrative costs. Regular archiving can be used to limit future growth.

Improved Exchange Data Management

The combination of archiving with Enterprise Vault to reduce active Exchange data and the advanced features of IBM N series storage systems running IBM System Storage N series with SnapManager® for Exchange can greatly simplify ongoing data management tasks in an Exchange environment. Exchange volumes can be dynamically expanded with no disruption to the software. SnapManager for Exchange is a Volume Shadow Copy Service (VSS)-based application that can be used to direct the Exchange migration process; it provides a comprehensive data management solution that simplifies configuration, backup, and restore operations for Exchange databases. SnapManager software provides near-instantaneous hot backups and rapid restores to increase the availability, scalability, performance, and reliability of Exchange environments.

Recommendations for Migration

Successful and painless migration to Exchange 2003 depends on many factors and is never completely risk free. Using Enterprise Vault and IBM N series storage to assist in the management of Exchange content can be a critical success factor, dramatically reducing the risks associated with storage, admin overhead, and user transparency.

The decision as to the appropriate method of Exchange and legacy mail system migration depends on a number of factors, including:

- The perception of project risk in relation to migration
- The availability of storage to contain migrated e-mail content
- Availability of backup technology to protect migrated e-mail content
- The time needed to perform the migration
- The status of the migration project: not started, in progress, concluded
- The budget available to perform the migration.

In a normal migration scenario the benefits of Enterprise Vault, IBM N series with NearStore option, and IBM N series storage systems are easily justified in terms of project time, storage cost, and resource cost savings, together with a general reduction in overall project risk. Later in a migration project, the benefits are more focused on storage cost savings, although significant risk can be avoided through thorough testing facilitated by IBM N series with FlexClone volumes.

One category of e-mail content that always gains significantly from the use of Enterprise Vault and IBM N series with NearStore option is PST file migration. The use of these technologies can be justified purely by the risk, cost, and time savings associated with the migration, repatriation, and consolidation of PST file content into an archive that is seamlessly accessible by Windows users.

Every Exchange deployment is unique, but by selecting appropriate technologies from the various elements described in this paper, it is possible to create a migration plan that minimizes risk, reduces infrastructure and management costs, and rationalizes the ongoing management of Exchange data.

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