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Trimming The Fat From Exchange

Strategies To Consolidate Resources Dedicated To Running Microsoft Exchange Server Infrastructure

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EXECUTIVE SUMMARY

Consolidation is top of mind for many IT managers, and a portly email infrastructure is a ripe target to put on a diet. Business factors such as mergers and acquisitions and technical factors such as scalability limitations have driven up the cost of running Exchange. There's naturally some trepidation when targeting such a business-critical service for consolidation, but the benefits can be significant. In addition to saving money, a leaner Exchange infrastructure can ease the deployment of technologies that can increase productivity and flexibility like unified communications. Exchange Server 2007 brings enhancements that will aid in consolidation efforts, but firms can also consider server virtualization and other options to create a more streamlined email system. With careful and thorough planning IT managers can reduce the risk of Exchange consolidation while successfully paring down the costs sunk into their email system.

FIRMS STRUGGLE WITH THE COST TO MAINTAIN A SPRAWLING EXCHANGE ENVIRONMENT

There isn't a lot that hasn't been already said about the criticality of email for firms. Organizations rely on email not only for internal and external communication but for managing calendars, contacts, and tasks — and when it's down, so is productivity. Microsoft Exchange Server is a popular choice for corporate email. It's not uncommon to find an ever-increasing number of Exchange servers in IT environments because of mergers and acquisitions and technical limitations of older editions of the platform. This sprawl is driving up the costs of maintenance. In fact, email servers were the second most popular target for consolidation in a recent Forrester survey.¹ In tough economic times, organizations will look to streamline their operations, and Exchange can be an effective target. Hosted Exchange services have piqued the interest of IT leaders who look to manage costs, but for a variety of reasons, many will continue to utilize their on-premise Exchange infrastructure.

Maintaining Exchange Can Drain IT Budgets And Limit Options

IT operations professionals dedicate a huge percentage of the IT budget to just keeping the lights on. In fact, only an average of 20% of the total IT budget is directed toward new initiatives or projects.² Maintaining the status quo takes away from IT initiatives that can increase employee productivity, increase business flexibility, and potentially reduce costs, such as deploying unified communications.³ A mixture of business and technical factors makes Exchange an IT money pit. What are some of biggest factors?

- **Expensive legacy technical burdens.** Exchange Server 2003 and previous iterations were limited to 32-bit servers. This dragged down the performance and scalability of a single Exchange server and limited the number of users a server could support. As a result, IT operations professionals had

to deploy more servers to support a single site. The biggest price tag associated with Exchange deployments, though, is the storage hardware. Pre-Exchange Server 2007, the only option to provide a highly available Exchange environment was to leverage a Fibre Channel storage area network — and storage costs in this scenario could quadruple the price of the servers powering the environment.⁴

- **Pricey supporting services.** High costs aren't just tied to sending, receiving, and storing email — business requirements and external pressures demand firms surround Exchange with expensive services. In regulated industries, archiving email is a must, but email archiving solutions are expensive to build and maintain. It requires the purchase and deployment of email archiving software and storage infrastructure to support it. In addition, because email is such a critical service, firms are forced to spend big money on high availability and disaster recovery options to increase the resiliency of Exchange environments. IT is also under pressure to provide employees with more flexible ways to access Exchange with mobile devices such as BlackBerrys. This is another service and IT infrastructure to manage and maintain.
- **Exchange Server sprawl.** Business activities like mergers and acquisitions have destabilized and created expansive email infrastructure for firms as they look to hastily integrate new pieces into their organizations. What's the result? Organizations are left with inefficient, overprovisioned Exchange environments for their users. It's not just the hardware either; license costs and the complexity of managing larger, dispersed Exchange environments multiply the costs. Some firms are still paying the price of carrying additional Exchange servers from poorly executed Windows NT to Active Directory migrations, and NT's flat domain structure created many small pockets of infrastructure that further the sprawl.

EXCHANGE IS A CONSOLIDATION PROBLEM CHILD — BUT THE BENEFITS ARE HUGE

If it were as simple as shuffling around user mailboxes onto fewer, larger servers, firms wouldn't struggle with consolidation. Exchange consolidation is complicated by its business-critical nature; prolonged disruption is unacceptable. Heavy-handed consolidation that goes too far could limit the ability to support future initiatives such as unified communications. Firms are also unsure of whether the performance demands of Exchange Server 2003 limit common consolidation approaches involving server virtualization. However, with the right planning, the benefits of consolidating Exchange infrastructure are too huge to ignore. Some of these include:

- **Lower infrastructure costs.** The low-hanging fruit is of course a reduction in the number of servers, but there is a ripple effect that trims even more costs — like the number of Exchange Server licenses. Plus, each server brings with it power and cooling requirements, warranty costs, and even a number of spare parts and inventory that must be kept on hand. In today's space- and power-conscious data center, every unit of rack space and every watt counts. The savings are further multiplied when you can reduce the associated external storage.

- **Management simplicity.** Consolidated Exchange infrastructure reduces many of the costs associated with having a complex, unwieldy environment. There are fewer servers that require updates and service packs, monitoring, and troubleshooting. The number of administrators required can be reduced or can be freed up to take on newer responsibilities, like supporting a broader suite of collaboration tools, including SharePoint.
- **Higher availability.** If an insurance rep can't respond with a quote because Exchange is down, then the business stands to lose real dollars. It's less likely that Exchange will go down, and even if it does, recovery can be quicker in a less complicated environment. A reduction in the number of storage groups and databases per server results in faster backup and server recovery.

YOU CAN SQUEEZE WATER FROM THIS STONE

There are several different approaches to reducing the costs associated with Exchange. If you are about to embark on an Exchange consolidation project, keep some of the following best practices in mind:

- **Tie consolidation efforts to Exchange Server 2007 upgrades.** Consolidation can be one of the primary drivers in justifying an upgrade to Exchange Server 2007. One of the major design points of the new version of Exchange was reducing the associated storage costs. The increased accessible memory resulting from the move from 32-bit to 64-bit systems running Exchange helps drive down I/O operations per second (IOPS) by 70%. This newfound I/O efficiency enables customers to reduce investments in ultra-high performance storage.
- **Use less expensive storage.** One of the key benefits of leveraging a storage area network (SAN) is consolidated storage — but this advantage is often lost in Exchange deployments. Many firms avoid mixing Exchange with other workloads on the SAN because Exchange is so I/O intensive and most storage systems can't enforce quality of service for multiple workloads. As a result, most firms deploy a dedicated SAN to Exchange. A dedicated SAN also provides additional resiliency capabilities such as snapshots and replication, features that were lacking within Exchange itself. Shared storage is also required to support Exchange clustering. However, new replication techniques in Exchange Server 2007, such as cluster continuous replication (CCR) and standby continuous replication (SCR), may provide good-enough recovery time objectives (RTO) and recovery point objectives (RPO) to meet business needs. Firms can forgo a highly expensive storage system and the license costs required to support storage-based snapshots and replication. Firms should also evaluate an Ethernet-based storage system over a Fibre Channel-based storage system. Networking Ethernet-based storage systems can be significantly less expensive to acquire and manage.⁵ CCR and SCR are also far less complex to manage than existing cluster technology. Oftentimes, a failure in the clustering facilities themselves cause email failures.

- **Reexamine recovery requirements.** The difference in the investment required to recover from an Exchange failure in 30 seconds versus three seconds can be extremely significant. Overstating the required recovery objectives of email can lead to a sizeable investment in high availability solutions for Exchange. Organizations often default on a SAN-based Exchange cluster when a far less expensive replication solution exceeds their actual recovery requirements.
- **Leverage software-as-a-service alternatives to replace on-premise infrastructure.** There are several operations that can just be run more efficiently and effectively by someone else. Your Exchange administrators should not have to track daily (and even hourly) developments in email antivirus trends. Many firms are carving off operations like message filtering, archiving, encryption, backup, and disaster recovery and handing them to service providers.⁶ These supporting operations can be complex and expensive to deploy yourself — so why not free up your internal resources to take on some business-focused initiatives?
- **Employ server virtualization.** Exchange has been left out of many companies' server virtualization efforts because of perceived performance and support reasons. Exchange Server 2007's significant IOPS performance improvement has the added benefit of making the platform more virtualization-friendly. VMware has done a significant amount of work validating Exchange Server 2007 solutions with hardware vendors. Some of the benefits include reducing the number of servers dedicated to individual Exchange roles by running them on virtual machines and even squeezing more performance out of a single server. IBM has recently demonstrated a single physical server hosting 16,000 mailboxes.⁷ Support varies from manufacturer to manufacturer when it comes to running Microsoft software in a virtual environment, but organizations report that their needs are met.⁸
- **Bring in focused support tools.** Of course, Microsoft provides adequate tools with Exchange Server 2007, and the integration of Windows PowerShell will enable greater automation of Exchange administration — but there are other tools and solutions that can enhance the effectiveness of your Exchange administrators. In addition to Microsoft's System Center Operations Manager, third-party ISVs like NetIQ, NetPro, and Quest Software provide tools that either build upon or replace the facilities provided by Microsoft for functions like migration assistance and auditing.

RECOMMENDATIONS

ASSESSMENT AND PLANNING ARE KEY TO SUCCESSFUL EXCHANGE CONSOLIDATION

The key to successfully consolidating your Exchange infrastructure hinges on understanding your current environment and your present and future technical and business requirements related to Exchange. When you finally execute on your Exchange consolidation strategy, make sure feedback loops are in place as well. Consolidation is an ongoing process, and savvy organizations will be able to avoid pitfalls and make the process less painful in the future. In order to effectively consolidate Exchange costs — and mitigate the risks — you should:

- **Comprehensively assess the technical environment and requirements . . .** Assessment of Exchange is a daunting task as it encompasses so many different areas within IT in addition to the Exchange architecture itself. Network topology and services, security, storage, client systems, and directories all play a role, and you must account for the technical impact of and on each of these. This phase includes an assessment of infrastructure-focused elements like site bandwidth, storage capacity, systems management tools, and licensing requirements, as well as a user needs check that accounts for usage patterns, bandwidth, and storage requirements. For instance, bandwidth requirements and availability in different locations can drive architectural decisions. In addition, aspects of what's sitting on the individual user machines, like individual PSTs, can impact migration strategies. Each element must be considered for its present and future state — consolidation decisions that don't meet tomorrow's technical requirements will limit future collaboration initiatives that leverage Exchange.
- **. . . but also account for business requirements.** Exchange consolidation is by no means a purely technical problem. Business factors have a significant influence on this technical decision being made in the consolidation effort. Mobility and remote access initiatives like increasing the availability of Exchange services to new types of clients outside of the corporate network and factors like service-level agreements and disaster-recovery capability help shape the consolidation strategy. What initiatives will have an impact on user email storage needs? Regulatory and legal discovery requirements can impact consolidation strategy as well, influencing decisions concerning PST, retention, and archiving policies.

ENDNOTES

- ¹ Fifty-five percent of server infrastructure managers and executives cited email servers as candidates for consolidation, ranking only behind database servers. See the December 28, 2007, "[How Large Enterprises Approach IT Infrastructure Consolidation](#)" report.
- ² When asked, "For 2006, approximately what percent of your budget will go to new investments versus ongoing operations and maintenance?" the average response from 404 North American IT executives was 20%. See the October 11, 2006, "[Enterprise IT Infrastructure 2006 Adoption](#)" report.
- ³ Most CIOs properly focus on controlling and reducing the costs of maintaining and operating existing IT systems and operations — what Forrester calls the IT MOOSE. See the November 20, 2006, "[US IT Spending Benchmarks For 2006](#)" report.
- ⁴ In order to cluster Exchange Server 2003 and previous iterations, companies must deploy a storage area network (SAN) so that the clustered Exchange nodes have access to shared storage. See the October 9, 2007, "[Messaging Continuity: Ensuring High Availability For Microsoft Exchange](#)" report.
- ⁵ Although SANs have been built using the FC protocol for years, the benefits of a converged network using Ethernet as a transport mechanism are compelling. The cost advantage of iSCSI storage is so significant that buyers would be foolish not to give it serious consideration as they develop their storage strategies for the next several years. See the November 7, 2007, "[Cost Comparison Of iSCSI Versus Fibre Channel SAN Components](#)" report.
- ⁶ Online backup is an alternative to an on-premise software application that uses a multitenancy architecture and allows you to buy a subscription-based service. An online backup is just the first step toward the delivery of multiple infrastructure-related services — such as disaster recovery, archiving, and security — as software-as-a-service (SaaS). See the February 19, 2008, "[Market Overview: Backup Software-As-A-Service](#)" report.
- ⁷ IBM demonstrated eight virtual machines running Exchange on an x3850 M2 server with 128GB of RAM. Each instance hosted 2,000 mailboxes. Source: *16,000 Exchange mailboxes on one server with VMware*, VMTN Blog, March 6, 2008 (<http://blogs.vmware.com/vmtn/2008/03/16000-exchange.html>).
- ⁸ VMware details the support policies related to Microsoft infrastructure at the following Web site: (http://www.vmware.com/support/policies/ms_support_statement.html).