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CUSTOMER PROFILE

EMC Corporation

EMC virtualizes infrastructure of internal eRoom, slashing costs and improving reliability, performance, and growth potential

Benefits

- Eliminated additional $1.5 million from planned budget expenditures and reigned in ongoing hardware and associated costs
- Dramatically improved system availability, reliability, and reserve growth capacity
- Boosted reboot performance 300 percent or more

Business overview

EMC Corporation (NYSE: EMC) is the world's leading developer and provider of information infrastructure technology and solutions that enable organizations of all sizes to transform the way they compete and create value from their information.

Challenges

EMC must cost-effectively support its large internal EMC® Documentum® eRoom® community while ensuring eRoom operations remain highly reliable and fast to support business critical usage—even as the community continues to expand. Currently more than 37,000 EMC employees participate in more than 3,200 eRooms, storing and sharing more than 4 TB of data. Adding server hardware to the existing configuration would certainly incur exorbitant costs and probably still not satisfy the full range of operational goals.

A phased-in approach

In 2004, the company rolled out its internal eRoom site on four servers: two application, one index, one database; a year later, it added another application server. In 2006, following several mergers and acquisitions and an escalating user adoption rate, eRoom use exploded. EMC added more storage capacity as a stopgap to handle the data storage load, which was up to 50 percent over the recommended 2 TB limit.

Just prior to the usage and content storage explosion of the existing site, a project plan to build a single, large new site was initiated and approved. A longer term solution required that EMC create multiple eRoom sites to manage the ongoing growth projections for users and content storage. The company's corporate IT department purchased eight Dell PowerEdge 6850 and four Dell PowerEdge 2950 servers for this project, and considered building out four eRoom sites: one production, one test, one development, and one restore. However, in this scenario, the department expected it would have to reduce its level of support (too many eRoom users), work with the constraints of limited expansion and fail-over capabilities (too little hardware), and absorb the costs of future hardware acquisitions as well as ongoing server maintenance.

EMC solution

To ensure support for the expanding eRoom user base while minimizing hardware requirements, maintenance costs, and work within the approved budget, the department looked to other products in the EMC family for a solution. Fortunately, this challenge coincided with EMC's acquisition of VMware, Inc. as well as the release of the newest version of VMware® ESX® Server, which abstracts server processor, memory, storage, and networking resources into multiple virtual machines. EMC had already planned to use VMware capabilities to virtualize the production application servers as well as the non-production test and development application and adjunct servers, but with ESX Server 3.0 now in play, organizations such as EMC could also run their database servers as virtual machines.

According to Axel Kehlenbeck, project manager, "That meant that for the first time we could run everything as a virtual server farm."

Pieces of the infrastructure virtualization puzzle

The EMC IT enterprise collaboration project team used VMware technology to virtually replicate six physical servers—three application, one database (SQL), one file, and one index—four times; that is, it put four virtual machines on each physical box. The total number of eRoom sites thus created: four production, one test, and two restore, plus more than nine standby virtual servers for fail-over or future expansion.

Increasing the number of eRoom production sites from one to four provides more balance on each site, prevents overload, and enables the them to reliably support future user and content growth. The eRooms are organized by business function: Customer and Technology Services; Production/Operations (engineering and manufacturing); Sales and Marketing; and Corporate. All of the virtual servers in the farm are managed by the ESX VMware server.

In addition, this configuration means the test site can be a mirror image of any of the production sites, resulting in greater accuracy when testing and debugging issues, verifying new releases, and delivering customizations. The dedicated restore sites reduce recovery time and, if needed in an emergency, can be quickly repurposed to double as test sites.

Cost savings

EMC costs savings have been dramatic. They include the savings that come with purchasing only six servers instead of twenty-four. For example, all application servers run on one box instead of four, reducing the costs of operating them. A smaller footprint in the data center means reduced space, power, cooling, and maintenance requirements. Deploying the new infrastructure saved as much as $1.5 million compared to the budgeted amount for the initially proposed setup.

Scalability, reliability, and expansion potential

Each physical server now houses one or more spare virtual machines dedicated to fail-over and future capacity in the form of additional servers, or another complete site. If a physical or virtual server is going down, VMware senses this problem and moves the failing server to another virtual server or physical machine. Several fail-overs have already been handed by VMware—the entire process took only a few minutes and eRoom users never noticed a disruption. In the past, such a fail-over would have significantly impacted users and produced longer down times.

VMware also simplifies site maintenance. Some changes to eRoom or its environment require a server reboot. Physical servers take an extensive amount of time to bring down and reboot, resulting in longer scheduled outages. To respond to these outages, employees must work overtime, which impacts production work. Virtualizing the servers with VMware reduces this time and effort—virtual servers can be rebooted in seconds—decreasing the need for extended scheduled down times, improving the user experience, and increasing employee satisfaction.

The use of virtualization provided additional benefits during the build phase of the project. Once a single VMware virtual server is configured, it can be easily replicated. This enables the infrastructure and application development teams to set up one server, then duplicate it to create an additional virtual or physical server in the VMware farm. This process, which can be completed as often as needed, has reduced the time and cost to set up 24 servers.

The existing hardware configuration gives EMC enough physical capacity to add two more production sites. And, the company retains large stores of spare virtual server capacity for future growth and expansion. "Perhaps best of all," says Kehlenbeck, "we have a total of 18 to 20 virtual servers still available—and that's using conservative server-load calculations."

Bonus: Former CAD viewer and real time servers are now virtual as well and are shared by all four of the production eRoom sites. The dedicated servers purchased for these applications were repurposed; one to another project and one as the VMware control console.

Business profile

EMC Corporation

The world's leading developer and provider of information infrastructure technology and solutions.

Industry

Technology

Geographies

Global

Business solution

Virtual infrastructure management

EMC products

EMC Documentum eRoom, EMC CLARiiON, VMware ESX Server, VMware VirtualCenter, VMware High Availability, RSA Access Manager

Deployment summary

Virtually replicated six physical servers—three application, one database (SQL), one file, and one index—four times to run more than 3,200 collaborative workspaces (eRooms) that support more than 3 TB of data and 37,000 users. Total number of eRoom sites thus created: four production, one test, and two restore, plus nine standby virtual servers for fail-over or future expansion.

Improved performance

System performance has improved, in part due to faster hardware and more servers. Being wary of the possible performance effects of virtualized servers, EMC adopted a very conservative physical server loading plan when deciding to implement a virtual farm. eRoom is a server intensive product—more application servers and hardware translate to better performance. The final performance results achieved were significantly greater than expected. Users were both pleased and astounded with the increased performance; eRoom activities, such site access, opening stored content, and saving files, are now nearly instantaneous. Response delays have been eliminated, yet the virtual site configuration is nearly identical to the original physical hardware configuration.

Proper data distribution was also crucial to system performance. Although eRoom communities were already segmented by business and geographic operations, splitting a single eRoom into four, while evenly distributing 4 TB of data, presented a big challenge. The additional time spent evaluating and analyzing business unit usage patterns paid off—not only are the eRoom sites provisioned to better balance user load, but they also maximize collaboration. Users in each of the four eRoom sites can easily participate in cross-functional projects without negatively impacting system performance.

> "We saved the company $1.5 million right off the top, plus cut ongoing costs for floor space, power, depreciation, and labor—and we got all these extra capabilities like easy expansion, smooth and plentiful fail-over, and faster performance. Basically, there was no downside."
>
> **Axel Kehlenbeck, project manager**

Time savings with single sign-on

EMC also chose to implement single sign-on (SSO) using RSA® Access Manager (a product of RSA, The Security Division of EMC). Users can now go from one eRoom to another seamlessly without a separate login. Now, they are authenticated as they switch, saving valuable time and eliminating frustration for users who frequently move throughout the system.

Summary

The virtualization of the EMC internal eRoom solution has resulted in significant cost savings and system improvements. The project not only came in under the approved budget, but negated the need for an authorization of up to $1.5 million to cover the additional unplanned physical hardware and software costs. It also resulted in a more reliable system with greater availability to meet business-critical needs. With extensive spare virtual server capacity, EMC can easily accommodate future growth and expansion. File storage space increased by 400 percent and performance improved as a result of load balancing and new hardware. The project has been a technological breakthrough for EMC—for the first time, an application's complete infrastructure has been virtualized in a virtual farm – including the database servers.

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Take the next step

To learn about implementing an efficient collaboration management system using EMC Documentum eRoom, visit **www.EMC.com** or call **800.607.9546** (outside the U.S.: +1.925.600.5802).

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