EMC IT Storage Refresh Delivers Performance, Scale, and Cost Savings

Migration to Intel® Xeon® processor-based EMC Symmetrix® VMAX® part of successful system replatform

INTRODUCTION

During 2009 and 2010, EMC, like many enterprise organizations, was focused on reducing spending in the data center. Given the company’s rapid growth, EMC’s IT organization also required the agility to meet increasing demands from the business. The EMC IT team needed a cost-containment solution that would create greater capacity for growing business operations, driving data analytics, and improving service levels to internal customers. Their solution was to create a virtualized, hybrid cloud environment powered by the energy-efficient performance, added data protection, and scalability of Intel® Xeon® processors.

For its storage refresh, EMC IT migrated to Symmetrix® VMAX® based on Intel Xeon processors to optimize current operations and support future growth. Symmetrix VMAX leverages the power of Intel multi-core processors to deliver the performance and efficiency of a scale-up architecture and the cost benefits of a scale-out architecture.

The storage refresh was part of a much larger effort, as EMC IT engaged in a complete system replatform of its servers, applications, and network. The replatform included moving from the legacy infrastructure to an open Intel- and Linux*-based platform, using Cisco Unified Computing System (UCS).

The massive migration of EMC’s legacy IT platform, including the storage upgrade, began in 2009, and remarkably, was completed less than 12 months later, delivering 20 times better system throughput performance and $5 million to $7 million in savings.
The Move to Symmetrix VMAX

EMC IT migrated from its legacy Symmetrix DMX3-4500 to Symmetrix VMAX in a move that lowered costs and also supported increased performance, new capabilities, and scalability. Symmetrix VMAX provides simple, intelligent, and modular storage that dynamically and seamlessly adjusts resources with the growth EMC IT required.

Symmetrix VMAX is the first product based on EMC’s Virtual Matrix Architecture, which uses industry-standard components and EMC’s Symmetrix interconnection features. The combination can be used to scale storage systems up to hundreds of petabytes and millions of input/output operations per second. The Virtual Matrix interface connects and shares resources across all nodes, providing the agility to grow storage capacity from entry-level configurations into the world’s largest storage system.

Each VMAX engine runs on multi-core Intel Xeon processors, with a total of 16 processor cores and up to 128 GB of cache. As customer storage needs increase, the system can be scaled out linearly by adding additional engines. This improves modularity and the predictability of performance and capacity scaling. A fully loaded system can have 128 processor cores, 1 TB of cache, and 2 PB of storage—a previously unheard-of level of scalability.

The specific configuration and connectivity of the Symmetrix VMAX storage array used for EMC IT production included:

- 450 devices (enterprise Flash* drives, fibre channel, SATA)
- RAID 1 and RAID 5 disk format with concatenated metavolumes
- SAN connectivity through an 8 GB infrastructure and 4 GB fibre channel to the SAN

Benefits of Scale-Out Storage with Symmetrix VMAX

Symmetrix VMAX, based on Intel Xeon processors, provides the ultimate scale-out platform with the added data protection and energy-efficient performance needed to lower data center costs and get ahead of IT challenges. Intel® architecture-based storage solutions power intelligent storage optimization capabilities such as data de-duplication, thin provisioning, and automated storage tiering.

Migrating to Symmetrix VMAX enabled EMC IT to make better use of EMC replication technologies TimeFinder* and SRDF*.

The two technologies now support the organization’s development, test, and performance environments, both in creating refreshes of Oracle instances and creating backups of those instances in seconds.

The move to Symmetrix VMAX also enabled heavy usage of snapshots and clones, which has led to lower capital and operating expenditures. Snapshots help to reduce disk requirements, and when combined with clones, snapshots enable the company to offload backups, so databases can be backed up without any impact to online users. EMC IT can also offload many reporting requirements and support development and test clones in parallel—all without impacting production.

In addition to reaping the benefits of sophisticated storage capabilities, EMC IT was able to automate new services and reduce risk by moving off old hardware—all of which reduced maintenance and operational costs.

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– Ramesh Razdan, Senior Director of Technology Services, EMC
Replatform Delivers Results
Performance tests show that EMC IT’s replatform, including the storage refresh, has resulted in up to 20 times better performance on transaction processing.

Internal customers rarely note system changes, but Mike Norris, Senior Director of Enterprise Systems and Application Hosting at EMC, indicated that in this case, the improvements were too significant to overlook. “In the business where no news is good news, we’ve had unsolicited feedback from users asking us what we did to make the system better.”

Ramesh Razdan, Senior Director of Technology Services at EMC, added, “Users have told us that we’ve given them time back in their day. Jobs are finishing sooner, and requests are coming back in seconds instead of tens of minutes. For us, that translates into greater productivity and efficiency that makes a difference to our bottom line.”

Conclusion
EMC Corporation is a global leader in enabling businesses and service providers to transform their operations and deliver IT as a service. When EMC needed to upgrade its IT organization’s storage solution, the company turned to its own Symmetrix VMAX array, powered by Intel Xeon processors. The new storage solution was part of a massive replatform project that has helped EMC IT improve performance up to 20 times and has saved an estimated $5 million to $7 million in capital and operating expenses.

The new, more flexible storage solution enabled EMC IT to achieve the performance and efficiency of scale-up architecture while at the same time lowering costs through a scale-out architecture. Thanks to the processing power provided by multi-core Intel processors, EMC IT has achieved greater performance on a smaller footprint and at a low cost point, while also accelerating the journey to a virtualized, hybrid cloud environment.
Learn More

For further details on EMC IT’s full system replatform:

- EMC IT’s “On-Ramp” to the Journey to the Private Cloud
  http://www.emc.com/collateral/hardware/white-papers/h8170-emc-it-on-ramp-cloud-wp.pdf

- EMC webcast: Moving to Cloud-Enabled Oracle Databases
  http://www.emc.com/events/2011/q2/05-03-11-enabled-oracle-databases.htm

- RISC-to-Intel X86 Migration (see "Featured Content" box):

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To learn more about Intel® Xeon® processors, visit www.intel.com/xeon