NASHVILLE ELECTRIC SERVICE

360,000-customer electric utility achieves unprecedented simplicity, efficiency, and scalability

Nashville Electric Service (NES) is one of the nation’s 12 largest public electric utilities and an energy distributor to 360,000 customers in Tennessee. Business growth and adoption of “Big Data” applications such as GIS (geographic information system) mapping and smart grid technologies have been driving exponential storage growth, but NES’s prior storage environment was running out of steam.

“With 20-percent annual storage growth over several years, we were constantly running out of capacity using our previous storage solution, and our users were complaining about slow system response,” says Vic Hatridge, VP and CIO at NES.

Ricky Davis, infrastructure manager with CIBER, Inc., a global IT consulting, services, and outsourcing firm that provides IT services to NES says, “We add about 10 terabytes of data every 12 months. Before, we were worried about having to put a lot of new projects on hold due to overwhelming storage demand.”

CLEAR WINNER IN PERFORMANCE, SCALABILITY, EASE-OF-USE, COST, AND SUPPORT

To alleviate its growth pains, NES began investigating alternative storage systems and concluded that EMC® VNX® unified storage provided the best solution.

“We evaluated EMC unified storage, NetApp, and Hitachi based on their technical capabilities, system performance, ease of expandability and manageability, cost, and service agreements,” recalls Hatridge. “EMC was the clear winner across the board.”

Replacing 100 terabytes of legacy storage, NES has implemented a 370-terabyte EMC unified storage infrastructure comprising two EMC VNX5700™ systems, each configured with 600-gigabyte SAS drives and two-terabyte near-line SAS (NL-SAS) drives.

NES runs its production applications on the SAS drives, including its outage management system, GIS, Oracle-based enterprise resource planning, PeopleSoft human resources, Microsoft® SQL Server®-based call management, Microsoft Exchange email, and a Microsoft SharePoint® collaboration solution. The NL-SAS drives store archived data including email, Microsoft Word documents, and other infrequently accessed information, as well as backup data and journals generated by the utility’s EMC RecoverPoint replication solution.

Approximately 95 percent of the production environment is virtualized using VMware® vSphere™, with 280 virtual servers running on 16 physical servers. NES uses EMC Unisphere™—one of the EMC FAST Suite solutions—which provides a simple and intuitive interface to provision, monitor, and manage storage for the utility’s virtualized and physical servers.

For disaster recovery, the EMC RecoverPoint solution provides continuous remote replication (CRR) between the two VNX systems in separate data centers located 20 miles apart.

ESSENTIALS

Challenges
• Storage not scaling fast enough to match growth
• Sluggish system performance and end-user response times

Solutions
• EMC VNX unified storage
• VMware vSphere virtualization solution
• EMC Unisphere management software
• EMC RecoverPoint continuous remote replication

Key benefits
• Reduced timeframe for migrating production applications to VNX from three months to six weeks
• End-user response times improved by approximately 70 percent
• Oracle database backups completed in one hour instead of four hours
• Virtually unlimited storage capacity to support “Big Data” applications
CIBER, Inc. played a key role in delivering and implementing the VNX infrastructure at NES.

“When it comes to ease of implementation, VNX really exceeded our expectations,” says Davis. “It took two eight-hour days to get the VNX up and running, which was pretty remarkable. We moved our VMware VDMK files from the legacy storage environment over to the VNX while applications were live, and there were no outages. Normally, we would need to carve out four to six weeks to get a system installed; especially when it was not familiar to us and came from a vendor different than the one that supplied the original solution.”

“We had our production environment scheduled to be moved over a three-month period,” adds Davis. “However, because the initial migration of our test and development environment was so successful, we were able to complete moving our production applications to the EMC VNX in only six weeks.”

To increase storage utilization and reduce day-to-day storage administration loads, NES is considering the use of EMC Fully Automated Storage Tiering for Virtual Pools (FAST VP) in its VNX infrastructure. With FAST VP, data will automatically be migrated from one storage tier to another based on its usage, performance, and availability requirements.

PERFORMANCE GAINS OF 70 PERCENT

Since migrating from its legacy storage environment to VNX, NES has observed significant gains in the performance of key application environments. For example, Oracle database backups that used to take four hours now complete in one hour.

Hatridge says, “Once we moved our test and development environments to the VNX, we were so pleased with the improved performance that we escalated our production moves. We’re now seeing production system backups running approximately 70 to 75 percent faster, and equal improvements in our end-user response times.”

“Our users have seen some pretty remarkable improvements,” Davis notes. “We used to receive daily calls from power users reporting performance issues and system failures across many of our primary applications. Since migrating their data and servers to the VNX, they are now able to get their jobs done, and without incident. It’s a real pleasure seeing them happy.”

“All of the systems that we’ve migrated to this VNX solution have experienced incredible performance gains and a level of stability that we have not seen for some time now due to issues with our previous storage solution,” adds Davis.

READY FOR THE SMART GRID-DRIVEN DATA ONSLAUGHT

VNX has also resolved the growing pains that NES was suffering as it was trying to scale the infrastructure to support GIS mapping and other “Big Data” applications.

“We are continuing to expand our use of GIS mapping even though it consumes enormous quantities of storage,” says Hatridge. “And the data that will be generated by smart grid applications will quite frankly reach a magnitude that we’ve never come close to seeing.”

“Now with the VNX, our worries about not keeping up with growth are gone,” concludes Hatridge. “We can scale our storage capacity very easily as new applications and requirements come online and go full-throttle with delivering next-generation services to our customers.”

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