

BRINGING RELIABILITY TO DISTRIBUTED DATA

e²M improves data recovery success rate from 60% to 100%, thanks to Dell and Symantec



- SOLUTIONS**
- BACKUP/RECOVERY/ARCHIVING
 - CONSOLIDATION
 - SERVICES
 - VIRTUALIZATION



CUSTOMER PROFILE

COUNTRY: United States

INDUSTRY: Engineering, Research and Development

FOUNDED: 1989

NUMBER OF EMPLOYEES: 400

WEB ADDRESS:
www.e2m-inc.com

CHALLENGE

Engineering and environmental firm e²M manages large volumes of project data in 12 geographically separated offices. Each office was backing up all of its data locally and storing backups on site, a time-intensive process that resulted in a mere 60 percent recovery success rate.

SOLUTION

With assistance from Dell, the firm designed a centralized backup architecture built on Dell™ PowerEdge™ rack-mounted and blade servers, two Dell EqualLogic™ iSCSI SAN arrays, and a Dell PowerVault™ robotic disk and tape storage unit. Dell then provided a data protection solution from Symantec for deduplication and centralized backup.

BENEFITS

RUN IT BETTER

- 100% successful data recovery (vs. 60% previously)
- 83% reduction in backup time (8 hours vs. 48+ hours)
- 40% data reduction through deduplication
- 30% savings in backup software licensing
- 572 hours a year of staff time reclaimed for more valuable tasks
- Five-figure hardware cost avoidance through a software-only deduplication solution and use of existing hardware

GROW IT SMARTER

- Enhanced ability to scale remote offices due to centralized backup
- 2-hour deployment of Dell EqualLogic arrays increases scalability



For engineering companies and large government agencies such as the U.S. Department of Defense, the goal of complying with environmental regulations poses distinct challenges. Some of these challenges are apparent. What might be less obvious is that these organizations' environmental and engineering projects often generate large documents that put pressure on data management and protection systems.

“THIS HAS BEEN THE MOST BENEFICIAL, COST-EFFECTIVE BACKUP SOLUTION WE COULD HAVE ASKED FOR. AND WITHOUT THE SOLID INFRASTRUCTURE DELL HELPED US DESIGN, WE COULD NOT HAVE MADE THIS IMPROVEMENT AS COST-EFFECTIVELY AS WE DID.”

Gustin Hare, Corporate IT Director, e²M

The engineers, scientists, researchers and analysts who work for Denver, Colorado-based e²M provide government and corporate clients with services ranging from biological surveys and archaeological studies to construction design-builds and remediation of pollution. Their projects frequently entail data-intensive work such as geographic information system (GIS) mapping and aerial photography. And employees nationwide need remote access to this data.

“If a project requires specific expertise, we look across the company’s 12 offices for someone with those skills,” says Gustin Hare, corporate IT director. “If our Fairfax, Virginia, office needs an acoustical engineer and the right person resides in San Antonio, Texas, we’ll deploy that person remotely.” This makes the company agile, but it complicates data management.

DISPARATE BACKUPS DIFFICULT TO MANAGE

For years, e²M stored and backed up all of its 10 terabytes of project data locally. The firm used Symantec Backup Exec™ in its Denver, Colorado; Fairfax, Virginia; and Sacramento, California offices. Its other nine offices used the backup utilities built into Microsoft Windows Server. Because all backups were performed and stored locally, IT managers worried that their data was ill-protected from disaster. In addition, all backups outside the Denver office were managed by non-IT employees.

“Some of the people running backups were local administrative assistants; others were people who had technical expertise in an area such as GIS,” Hare says. “Their project load dictated how much time they had to assist IT, so they didn’t always make sure that incremental backups ran nightly.” Therefore, backups were not reliable. Hare adds, “Backup is one of our biggest concerns, but it wasn’t part of the job description for the people performing it.”

Because IT staff did not receive alerts when backups failed, they were often unaware of problems. System administrator Lloyd Cramer estimates that when an employee needed a file restored, it was available for recovery only about 60 percent of the time. Although 11 employees each spent about an hour a week on backups, data was lost regularly. And Cramer spent at least three hours a week rooting out problems with backups.

When data was not recoverable, the company faced delays in submitting deliverables to clients, and employees had to re-create the lost data. Ineffective backups placed a drag on productivity and had a negative impact on the company’s bottom line.

DELL INFRASTRUCTURE UNDERLIES BETTER BACKUP

As a first step in getting control over its data, e²M turned to Dell for help building a network infrastructure.

HOW IT WORKS

HARDWARE

- Dell™ PowerEdge™ M600 blade servers with Intel® Xeon® 5400 series processors
- Dell PowerEdge M1000e modular blade enclosure
- Dell PowerEdge 2950 servers with Intel Xeon processors
- Dell EqualLogic™ PS5000E iSCSI SAN arrays
- Dell PowerVault™ 220S SCSI enclosure
- Dell PowerVault ML6000 tape library

SOFTWARE

- Veritas NetBackup™ PureDisk™ with Agents for Microsoft® Exchange and Microsoft SQL Server®, plus Veritas NetBackup Bare Metal Restore™ Option
- Microsoft Windows Server® 2008 Datacenter with Hyper-V™
- SUSE® Enterprise Linux 10

SERVICES

- Dell ProConsult Services
 - Design and implementation support

“WE’RE SEEING ABOUT A 40 PERCENT REDUCTION IN THE VOLUME OF BACKUP DATA CROSSING THE NETWORK BECAUSE OF DEDUPLICATION WITHIN VERITAS NETBACKUP PUREDISK.”

Lloyd Cramer, System Administrator, e²M

“Our Dell relationship started many years ago with PC purchases,” Hare explains. “Then about three years ago, we engaged the Dell Infrastructure Consulting team to help us plan our enterprise infrastructure.”

The e²M IT staff numbered only three at the time. “Because we were such a small IT shop, we relied on Dell for technical expertise,” says Hare. “We asked Dell to help us design an enterprise system based on our current needs and forecasted growth. They completed an on-site evaluation, which resulted in an enterprise design. We tweaked the design and then implemented it, and it is still in use today.” The firm moved from 12 isolated, local peer-to-peer networks to companywide connectivity via a DMVPN.

The corporate network now includes a data center in Denver that houses five Dell PowerEdge M600 blade servers with Intel® Xeon® 5400 processors in a Dell PowerEdge M1000e enclosure and nine Dell PowerEdge 2950 servers with Intel Xeon processors, all running Microsoft Windows Server 2008 Datacenter or 2003.

Two of the PowerEdge M600 machines host nine virtual servers via Windows Server’s Hyper-V component. One of the rack-mounted servers is supported by a three-terabyte Dell PowerVault 220S SCSI enclosure. The PowerVault 220S stores most of the firm’s file server data, but the data center’s primary storage is a pair of Dell EqualLogic PS5000E iSCSI storage arrays, with a total capacity of 24 terabytes of data.

EQUALLOGIC AN EASY CHOICE

e²M considered the NetApp™ FAS2020 storage system StoreVault™ S550

appliance, along with EMC Avamar® software, but the decision wasn’t difficult. “Once we had a demo of Dell EqualLogic, it was a simple choice,” says Mark West, an IT specialist with e²M. “The EqualLogic array came with all the features we needed; for most other offerings, we would have had to purchase additional licensing to do things like snapshots and replication. It also offered a user-friendly interface combined with intelligent data management.”

Installation was quick. “We had the first Dell EqualLogic array installed, firmware upgraded and configured to its first target within two hours—it was very easy,” West says. “When we added a second EqualLogic array, it plugged right into our existing array group. There was no need to juggle data around, as the device does all of that automatically. In other iSCSI environments, this can be painful, but with the Dell storage systems it was very easy to do.”

BACKUPS IN 83% LESS TIME

Once e²M had established a corporate network and data center with Dell’s help, the two teams designed a process by which data from across the company could be backed up in this central location. First they consolidated the data on a Dell EqualLogic array and then backed up the data onto a Dell PowerVault ML6000 tape library. For data protection software, at Dell’s recommendation, the company evaluated, then purchased, Veritas NetBackup and Veritas NetBackup PureDisk, a deduplication solution for remote site backups.

The Symantec solution, sourced through Dell, offered several benefits over competitors. First, deduplication

functionality in PureDisk reduces the volume of data transfers that the centralized backups require. PureDisk deduplicates data for e²M at both the source and the target. “We’re seeing about a 40 percent reduction in the volume of backup data crossing the network because of deduplication within Veritas NetBackup PureDisk,” Cramer notes.

In part because of this deduplication, backup time has been reduced by 83 percent for e²M. Formerly, individual offices performed full backups every weekend, and the process often took longer than 48 hours—sometimes as long as five days. Now NetBackup completes full backups in eight hours, so data from all 12 offices receives a full backup every night.

STAFF SAVING 572 HOURS A YEAR

Another selling point of NetBackup was that it provides a single, centralized interface for data protection and recovery for distributed servers. Now, in an hour a day, one e²M IT specialist manages backups remotely and confirms that all backups complete successfully. The administrative and non-IT technical personnel who previously managed backups for their local offices now focus on their primary responsibilities of supporting the company and its clients. Each of these 11 employees has reclaimed an extra hour a week—making approximately 572 staff hours a year available for more valuable tasks.

The solution also saved the firm money up front. Because NetBackup PureDisk works with any storage, hardware including the Dell EqualLogic arrays that e²M acquired, the firm didn’t need to purchase an additional vendor-specific deduplication appliance. e²M

avoided an extra five-figure cost, and the EqualLogic arrays meet other storage needs as well.

Licensing for the Symantec software was 30 percent less expensive than the other solutions e²M evaluated. Furthermore, e²M has the option of setting up a secondary backup location for essentially the same licensing fee, so that files could reside in three places: in their original location, as backups in the Denver data center and as backups at a third site.

As e²M implemented NetBackup, the company was acquired by HDR, Inc., headquartered in Omaha, Nebraska. HDR is now reviewing whether the cost-effective scalability of this product makes it a good investment for implementation on a much larger scale.

100% RECOVERY SUCCESS

e²M designed its backup process to run outside of the production environment so that it wouldn't slow down operations. NetBackup Agents for Microsoft Exchange and SQL Server were deployed to avoid bringing those applications offline when backups run. It also implemented the Veritas NetBackup Bare Metal Restore Option to enable server recovery in a fraction of the time compared with a traditional recovery from tape.

The firm uses the throttling capability in NetBackup PureDisk to prevent backup-related data transfers from interfering with employees' need for network bandwidth. "We can schedule

a job to start at a certain time and run for a certain length of time at a certain bandwidth," explains Cramer. "After most people leave for the day, we can throttle it up. We customize the data flow for backups so that we don't impinge on people's ability to do their jobs."

Most important, backups and data recovery are now reliable. Storing data in multiple locations provides disaster protection, and IT can find desired files quickly. "We've been able to recover every file users have asked us for since we implemented the Dell and Symantec solution," says Cramer.

"This has been the most beneficial, cost-effective backup solution we could have asked for," sums up Hare. "It's a full solution that meets all of our backup and disaster recovery needs. Data recovery used to be one of our greatest concerns, but now we focus our energy on supporting our business users, while the backups take care of themselves. If users put their data in the proper place, we will be able to recover it with this solution. And without the solid infrastructure Dell helped us design, we could not have made this improvement as cost-effectively as we did."

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