

IMPROVING EFFICIENCY THROUGH VIRTUALIZATION

Dell servers help City of Austin Water Utility prune 90% from power and cooling while boosting testing and development tenfold



SOLUTIONS

- GREEN COMPUTING
- BACKUP/RECOVERY/ARCHIVING
- CONSOLIDATION
- DATABASE MANAGEMENT/UTILITIES
- VIRTUALIZATION



CUSTOMER PROFILE

COUNTRY: United States

INDUSTRY: Utilities

FOUNDED: 1871

NUMBER OF CUSTOMERS: 850,505

NUMBER OF EMPLOYEES: 1,000

WEB ADDRESS:

www.ci.austin.tx.us/water

CHALLENGE

Introduce a high-availability, energy-efficient server and storage infrastructure and disaster recovery plan for a water utility serving 1.5 million residents

SOLUTION

The department virtualized its applications and storage onto Dell™ PowerEdge™ rack servers and a Dell EqualLogic™ iSCSI SAN, allowing the utility to expand its capacity, control server sprawl and save on power and cooling

BENEFITS

- 40 physical servers virtualized onto 4 Dell PowerEdge R805 rack servers four months ahead of schedule
- 99% reduction in recovery time objective (hours vs. weeks)
- 75% reduction in monthly planned downtime (30 minutes vs. two hours)
- Zero unplanned downtime to date
- Projected \$350,000 5-year TCO savings
- 90% reduction in power consumption
- \$80,000 in added UPS costs avoided
- Enhanced management capabilities with streamlined environment
 - Hundredfold faster time to value on new servers (minutes vs. days)
 - Tenfold greater productivity in testing and development

DELL

Delivering a life-giving resource to 1.5 million residents every day would be enough responsibility for most entities to bear. Add to that burden the environmental expectations of one of the top 10 most progressive, ecologically-minded communities in the world.¹ Such is the challenge for the City of Austin Water Utility.

“DELL HAS TAKEN WHAT COULD HAVE BEEN A HIGHLY COMPLICATED PROJECT AND TURNED IT INTO A TREMENDOUS SUCCESS.”

Brownlee Bowmer, Chief Information Officer, City of Austin Water Utility

For the past decade, the department has provided its constituents with an average of 50 billion gallons of water yearly. Keeping the water flowing from the Colorado River to the city's two treatment plants and into the homes and businesses of Austin takes a tremendous amount of maintenance, planning and communication. To make it all work, more than 1,000 employees rely on the utility's network for communications, research and maintenance.

THE GREEN CHALLENGE: MORE POWER IN ONE TENTH THE SPACE

The utility's IT infrastructure consisted of about 40 servers running in a one-application-per-server model, and the need to scale up was fast approaching as its current hardware was nearing end-of-life. The team was also rethinking its disaster recovery strategy and needed a solution to provide a significant improvement in its recovery time objective. To meet the challenge, the team was looking at adding 20 to 30 servers in the near future.

With the city's focus on green initiatives, adding two-dozen pieces of heat-generating, power-consuming hardware to an aging infrastructure was not an option. “The green aspect of it is a big deal for us here in Austin. We have a conservation focus for the whole utility, so we were looking to achieve

some energy consumption savings while expanding our capacity,” recalls Brownlee Bowmer, chief information officer for the utility.

So the team worked with Dell ProConsult to plan and implement the virtualization of 40 existing servers, consolidating them onto 4 Dell PowerEdge R805 rack servers. To provide a scalable and cost-efficient storage solution, the team chose Dell EqualLogic PS6000XV iSCSI SAN units to replace its Fibre Channel storage environment.

To enhance disaster recovery, the team deployed two additional Dell PowerEdge R805 rack servers and two EqualLogic PS6000XV iSCSI SAN systems in a secondary data center five miles from its primary data center.

A virtualization readiness assessment (VRA) from Dell ProConsult helped the IT team design the solution, and Dell provided assistance in physical-to-virtual server migration and deployment.

PROJECTED 5-YEAR SAVINGS OF \$350,000

Virtualizing on Dell PowerEdge servers has the team on track to meet the demands of both its growing data needs and the community's green expectations.

HOW IT WORKS

SERVICES

- Dell™ ProConsult Virtualization Services
- Dell ProSupport for IT

HARDWARE

- Dell EqualLogic™ PS6000XV iSCSI SAN
- Dell PowerEdge™ R805 rack servers with AMD Opteron™ processors

SOFTWARE

- Microsoft® Exchange Server® 2003
- Microsoft Windows Server® 2008
- VMware® ESX Server
- VMware Infrastructure 3.5
- VMware Site Recovery Manager

“IN THE TWO MONTHS SINCE VIRTUALIZING ON DELL POWEREDGE SERVERS, THE APPLICATION GROUP HAS BEEN ABLE TO RUN MORE ENVIRONMENTS.”

Jay Lopez, Senior Programmer, City of Austin Water Utility

The solution is looking good from a monetary standpoint as well. “We’re expecting savings of more than \$350,000 in hardware replacement costs and power and cooling over five years,” relates Brian Bowling, network systems administrator for the utility.

Before virtualization, the team was also budgeting for upgrades of its uninterruptible power supplies to accommodate growth. “Now that our data center footprint is shrinking through virtualization on Dell servers, we were able to avoid \$80,000 in power upgrades,” explains Bowling.

And for each physical server virtualized in the upgrade, the department is eligible for a rebate from its sister utility, Austin Energy. The team will realize additional savings with its EqualLogic iSCSI storage environment as it scales up to meet demand.

RECOVERY IN HOURS, NOT WEEKS

Austin Water’s team also knew it needed a better disaster recovery plan. The department had considered upgrading its EMC CLARiiON CX500 storage environment, but that would have meant purchasing dedicated mirroring software.

Now, using built-in Dell EqualLogic Auto-Replication in conjunction with VMware Site Recovery Manager (SRM), the team’s data is replicated to two offsite Dell EqualLogic PS6000XVs. The team’s estimated recovery time objective (RTO) has improved

dramatically. “Before, recovering our storage would have meant procuring new hardware and restoring from tape backups—probably taking a week or two,” Bowling says. “Now, our recovery time objective is less than an hour.”

TEST PRODUCTIVITY BOOSTED TENFOLD

The project has helped the team’s application group to reclaim weeks of productivity. “Before we would all share one test machine for several different applications,” explains Jay Lopez, senior programmer for the utility.

The environment did little to encourage testing, so when a new server was requested, it could be weeks—from hardware procurement to the process of adding software components—before the server was deployed. “We ran very few test environments before. It was a problem,” Bowling recalls. “Now instead of weeks, a new server can be deployed in just 10 minutes.”

As a result, the team can easily run tests in a virtual environment, and has the flexibility to explore and develop new ideas. “In the two months since virtualizing on Dell PowerEdge servers, the application group has been able to run more test environments,” says Lopez.

FLEXIBILITY IN SIMPLICITY

The team was even able to meet a challenge it was initially skeptical about: virtualizing its Microsoft SQL Server cluster. Using VMware High

Availability on Dell PowerEdge servers mitigates the risk of host failure while optimizing resource allocation.

As a result, the SQL virtualization is already paying benefits. “Before we would have a few minutes of downtime if something went down, recalls Patricia Genty-Andrade, database administrator for the utility. Now we’re able to move virtual machines all over the place and minimize downtime and it’s worked beautifully. We really appreciate the flexibility.”

Beyond flexibility, there are also speed benefits. “We have seen an increase in performance running SQL in a virtualized environment over what we had in our cluster,” Genty-Andrade explains.

PLANNED DOWNTIME REDUCED BY 75%

With the ability to move virtual machines while conducting maintenance on physical servers, the new solution has reduced planned downtime from two hours a month to 30 minutes or less: a 75 percent reduction. “Since deployment, we have experienced no unplanned downtime,” Bowling says.

“A TREMENDOUS SUCCESS”

From the initial assessment through planning and implementation, Dell ProConsult played an integral role in helping the utility achieve its goals—green and otherwise. “Dell has been great helping us do everything right

from the beginning so we'll have a lot fewer problems down the road," says Bowling.

Educating the Austin Water team about its new PowerEdge, EqualLogic and iSCSI environment was key to the total project success. The department wants to keep that transfer of knowledge flowing as it continues its virtualization journey. The team is planning to upgrade from VMware Infrastructure 3.5 to vSphere, which will provide even better reliability with near instant failover.

And with Dell ProSupport for IT, the utility has been able to customize its support for the future. "Dell has

taken what could have been a highly complicated project and turned it into a tremendous success," Bowmer sums up. "We've now got disaster recovery, high availability and we're saving money and have reduced our carbon footprint.

¹ Mother Nature Network's Top 10 Green U.S. Cities, 2009; Natural Resources Defense Council's Smarter Cities project



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