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Success Story

Albuquerque Bernalillo County Water Utility Protects Data and Saves Money



Another NetApp solution delivered by:



KEY HIGHLIGHTS

Industry
Energy/utilities

The challenge
Protect data with backup and recovery and disaster recovery solution; provide flexible dev/test environment.

The solution
Implement NetApp® FAS storage systems with NetApp SnapManager® for Oracle®, SnapMirror®, and FlexClone® software.

- Benefits**
- 97% improvement in RPO and 88% improvement in RTO
 - 30-minute database copies for test purposes versus 8 hours previously
 - Five-figure expense averted for separate boxes to handle CIFS and NFS storage
 - Up to 30% disk space saved with NetApp deduplication
 - Ability to avoid hiring one full-time employee

CUSTOMER PROFILE

Water is the lifeblood of any community, and it is especially precious in arid environments in which rainfall is scant. The Albuquerque Bernalillo County Water Utility Authority is responsible for keeping the water flowing to the City of Albuquerque, New Mexico, and its surrounding metropolitan area. When an underground aquifer that the city depended on for water showed warning signs of being depleted, the authority tapped surface water from Rio Grande tributaries and saved the city from going dry.

The water authority has 500 employees, 172,000 customer accounts representing 520,000 water users, and more than \$1 billion in assets. (www.abcwua.org)

THE CHALLENGE

Also life-giving is the data maintained by the water authority to support the facilities that treat and transport water, and help conduct the business transactions that keep the utility afloat.

When the water authority was launched as an independent utility with its own budget and set up on its own in 2007, it had to build its own storage infrastructure for its two critical systems: an IBM Maximo Asset

Management system tracking its billion dollars in assets and an Oracle Utilities Customer Care and Billing system providing account information for its customer base. The systems were back-ended by Oracle10g™ and 11g™ databases and ran on Sun™ servers. Being able to back up and recover this data was a business imperative.

Equally important was the development of a disaster-recovery solution that would protect the data in the event of a catastrophic event that might impact the primary data center.

The previous Sun storage solution depended on the city's systems administrator to allocate storage. "The city had a server cluster with internal storage for the applications we needed to support. It was very difficult to manage the storage array in that cluster because it was tightly configured and only one system administrator could use it," says John Lovato, senior database administrator for the Albuquerque Bernalillo County Water Utility Authority.

For the three-person IT support team assigned to the water authority, this caused delays as the staff members waited to coordinate with employees from other jurisdictions. What the team wanted was

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John Lovato

Senior Database Administrator, Albuquerque Bernalillo County Water Utility Authority

a dedicated storage solution it could manage on its own. “We looked at the option of buying another Sun cluster similar to the one the city had and we looked at an EMC SAN solution, but we would have had to hire an employee just to administer that. We decided on NetApp because it was very easy to manage,” Lovato states.

THE SOLUTION

The water authority purchased two NetApp FAS3020HA storage systems, one running in the organization’s main data center and the other running in the disaster recovery site. NetApp SnapMirror is used to replicate data between the two data centers for backup and disaster recovery. The water authority uses NetApp SnapManager for Oracle to create Snapshot™ copies of Oracle databases for replication. When developers need database copies for developing and testing, the IT team uses NetApp FlexClone to thin provision database clones with minimal storage requirements to be used as dev/test copies. NetApp FlexVol® enables the DBAs to thin provision new volumes to meet changing storage needs with little effort and no disruption.

“One of the driving factors behind going to the NetApp solution was the fact that it is so easy to maintain and allocate storage with the NetApp flexible volume architecture,” says Lovato. “Now we can manage our own volumes and our own storage without waiting for a system administrator.”

With NetApp software managing backup chores automatically, the IT team can focus on new business initiatives such as the automated meter-reading project. This five-year project will introduce into the system self-reading meters that report on usage up to four times a day. “This enables us to do advanced analysis that we couldn’t do before, such as leak detection, which helps to conserve water,” says Lovato. “At the same time this project will create the largest influx of data that we’ve ever experienced, and we’ll be depending on NetApp FlexVol technology to enable the database to grow to meet our needs over time.”

Two companies joined forces with Oracle Professional Services and NetApp Professional Services to enable the project to be a success. Total Resource Management (TRM: www.trmnet.com), a Maximo integrator based in Honolulu, Hawaii, delivers strategic

consulting solutions in an integrated asset management framework. Commercial Data Systems (CDS: www.cdsinc.com), one of the top enterprise-level computer integrators and solution providers in the United States, is also based in Honolulu.

BUSINESS BENEFITS

97% improvement in RPO and 88% decrease in RTO

Before the NetApp solution, if the storage array supporting key business applications failed, the only way to have gotten it up and running again would have been to rebuild it from tapes—a process that would have taken nearly eight hours and resulted in an eight-hour data loss. “We were fortunate that never happened,” says Mark Torres, system administrator 3 for the Albuquerque Bernalillo Water Utility Authority. “But with the NetApp solution, it would take at most one hour to restore the system from Snapshot copies with a 15-minute loss of data.” That yields an improvement of 97% in the recovery point objective and 88% in the recovery time objective.

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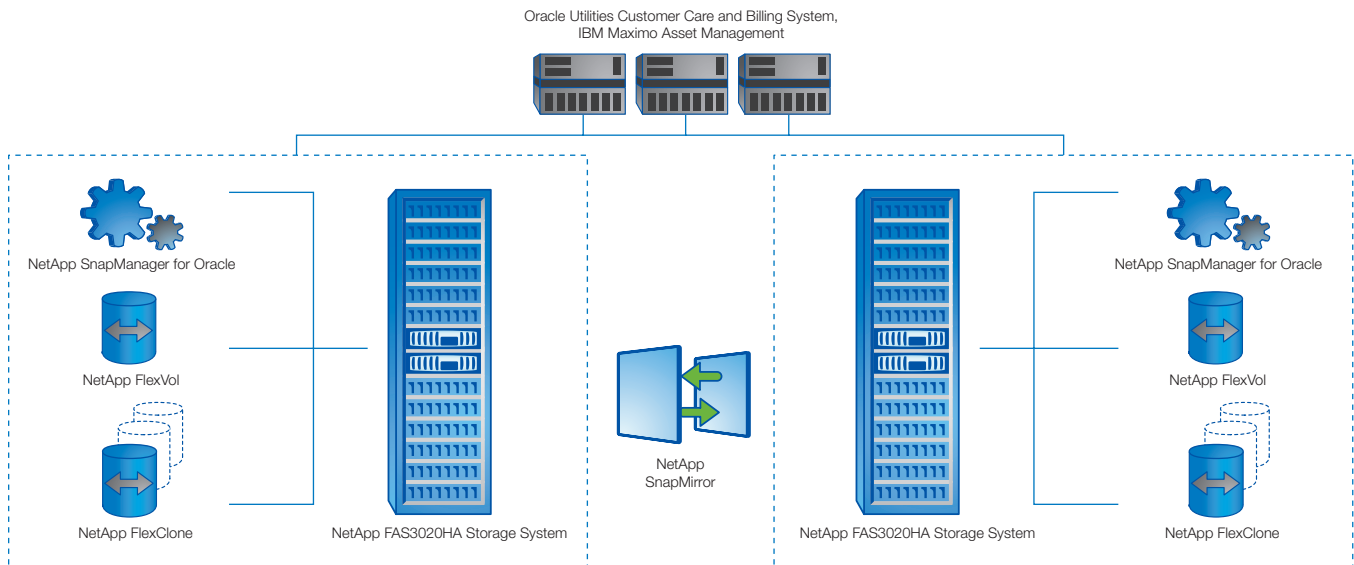


Figure 1) Albuquerque Bernalillo County Water Utility Authority data protection and disaster recovery infrastructure.

SnapManager, FlexVol, and FlexClone are used for disaster recovery and development and testing environments. Albuquerque Bernalillo County Water Utility Authority uses Fibre Channel LUNs for the operating system of each connected server and for application home directories; NFS mounts for database files and database software; and CIFS shares for Windows-based applications on both the primary and secondary sites.

remote site,” says Christopher Smith, database administrator for the Oracle Customer Care and Billing Project. “And we have so much more control over the data. With the NetApp storage system volume analysis I can go in there as the database administrator and change allocation, increase space where needed, and remove space if we’re not using it. It’s a huge benefit, and we avoided having to hire another full-time employee that an EMC SAN would have required.”

Five-figure expense avoided

The IT team’s ability to install a new 14-terabyte shelf online without disrupting any users averted a weekend job that would have been required with the previous equipment. The shelf now supports Solaris™ volumes for Oracle data and some Microsoft® Windows®-based file shares. “We could never have put a Windows application on the Sun storage we used to have,” says Torres. “We would have had to get another machine to host that storage, which would have had a five-figure price tag.”

“The ability to use Fibre Channel, NFS, and CIFS is really appealing from a DBA perspective,” says Lovato. “Using NFS shares, creating and mounting them, is something

we couldn’t have done on our own before. We’re getting ready to support Microsoft SQL® Server down the road, and I can see dropping that right into the NetApp equipment on iSCSI. Just being able to deliver all this data and access it from all these different applications is great.”

Database copies in 30 minutes versus 8 hours

Developers are always busy tweaking the Maximo and Customer Care and Billing applications. They ask for full copies of the production databases for development and testing on a weekly basis. “I can give them a complete, up-to-date virtual copy of the Customer Care and Billing database in about 30 minutes with NetApp FlexClone,” says Smith. “To do this the old way would have taken an eight-hour day for a full export and import of the database. As a result we’ve been able to test more thoroughly. With the production database, developers can go through every case and type of account and make sure that the application is billing correctly, and that the bills are going to look like they should. FlexClone is superb. It takes up no storage space, so each time we clone a 600-gigabyte database, we’re saving more than half a terabyte of disk space.”

Saving up to 30% of disk space with deduplication

Another space-savvy feature is NetApp deduplication, which the IT team is using with its NFS shares that hold the software for both the Oracle software and the Customer Care and Billing software. The team is saving up to 30% on these volumes.

Monitoring NetApp through Oracle

With NetApp SupportEdge, NetApp AutoSupport, and support from NetApp partner Commercial Data Systems, Inc., the water utility is fully prepared for any eventuality. It has total confidence that any problem will be swiftly and efficiently addressed. One of the benefits of NetApp’s close relationship with Oracle is that Oracle tunes its Enterprise Manager to target NetApp equipment. “As DBAs we’re able to see these NetApp targets in a standard environment that we use every day to maintain our databases,” says Lovato. “NetApp fits very neatly into the set of tools we have. We can monitor the health of our NetApp equipment and receive health alerts.”

“With NetApp our data is protected now, and we have a business continuity solution in the event of a disaster by failing over from the remote site.”

Christopher Smith

Database Administrator for the Oracle Customer Care and Billing Project, Albuquerque Bernalillo County Water Utility Authority

Training makes the grade

Three days of NetApp training helped to set the stage at a conceptual level for understanding how the NetApp software tools function. “That was beneficial because we were new to NetApp,” says Torres. “Then, during the hands-on portion of the training, we were able to access our hardware from the training facility and do the exercises with our own hardware, which was very effective. NetApp has been right behind us every step of the way, along with its business partner, and we look forward to building this relationship in the future.”

SOLUTION COMPONENTS

NetApp products

NetApp FAS3020HA storage systems
NetApp Data ONTAP® 7G operating system
NetApp SnapManager for Oracle software
NetApp SnapMirror software
NetApp FlexClone software
NetApp FlexVol software
NetApp deduplication

NetApp Global Services

Oracle Implementation and Integration Service
NetApp SupportEdge Premium with AutoSupport

Environment

Applications: Oracle Utilities Customer Care and Billing, IBM Maximo Asset Management
Databases: Oracle 10g and 11g
Server platform: Sun servers running Solaris operating system
Users: 500 employees

Protocols

FC SAN, NAS-NFS, NAS-CIFS

NetApp partner

Commercial Data Systems, Inc.
www.cdsinc.com



www.netapp.com

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