

StoneFly Networks Success Story

Denton Appraisal District Maintains Valuable Tax Data with StoneFly IP SAN

Clustered IP SAN Configuration Ensures High Availability of Critical Property Appraisals for Top-Five Texas County

In Benjamin Franklin's day, nothing in the world was certain but death and taxes. In Brad Green's world at Denton Central Appraisal District, the certainties are that surging volumes of property assessments and vital tax data will continue to create a swell in storage requirements. Green, director of information services for Denton Central Appraisal District (DCAD), supports a 100-person property appraisal operation for one of the fastest growing and top-five ranked counties in North Texas.

The county, which is some 30 minutes north of Dallas, extends several hundred miles and contains approximately 300,000 parcels comprising residential and commercial properties. Each year, the district prepares and disseminates an annual appraisal roll, and then gives property owners three months to protest before final tax assessments are levied. During this time, information processing demands typically quadruple and storage requirements skyrocket. In addition, DCAD's heavy reliance on database technology and increasing use of imaging put additional strain on the storage foundation.

Challenge:

According to Steve Meek, president of The Fulcrum Group, a North Texas systems integrator that assists Green's IT efforts and led the storage network initiative, DCAD's direct-attached storage was busting at the seams and becoming a management nightmare. "DCAD's rate of growth made it much too difficult for the district's three-person IT team to manage a DASD approach," he explained. "One person was almost dedicated full time to shifting data between servers because there was no efficient way to optimize storage utilization across servers." As a result, The Fulcrum Group and DCAD began exploring other options to consolidate and centrally manage mass storage.

"Everything started from storage," said Green. "It was the fundamental component of our system upgrade." At any point, the district can have 4,000-5,000 business owners, insurance agents and other users accessing its appraisal data, which must be readily and easily accessible. "Ramifications are huge if our systems go down," he added.

Denton Appraisal

Industry/Market:

- Government

Challenges:

- Storage grew by 300 percent in one year
- Direct-attached storage was difficult to manage
- Increasing use of images exacerbated storage dilemma.
- Significant storage spikes during annual appraisal
- Required a cost-effective and economical way to leverage FC SAN
- Limited IT resources required the team to deploy an extremely easy to use solution

Solution:

StoneFly Backup Advantage with two StoneFly Networks™ i3000 in a clustered configuration with FailOver and Replicator mirroring

Benefits:

- Accelerated backup windows lets district back up all 35 servers in the time it used to take to back up one
- Readily access highly available data through clustered configuration
- Remote mirroring capabilities supports evolving disaster recovery plans



The district's fiduciary responsibility to other county agencies, including the police and fire departments, means that uptime and high availability are top priorities.

In the last year alone, DCAD's storage grew by 300 percent as new home development and other growth countywide caused significant increases in imaged documents including photos and maps. While Green could anticipate a continuing storage swell, budgeting for exponential growth was not as easy since government budget processes are longer than most and typically include three-to-five year technology refresh cycles. The Fulcrum Group, a Texas qualified information systems vendor (QISV), works with many local government purchasers to help leverage technology investments wisely. "You need to be able to demonstrate how a particular solution is more cost effective while producing the necessary improvements in efficiency," said Meek.

Solution:

In forecasting long-range requirements based on current and anticipated storage growth, it was clear that a storage area network (SAN) provided a critical piece of DCAD's upgraded technology foundation. It was also determined that a Fibre Channel SAN would provide enterprise-class protection for the district's high-performance databases. The high price tag associated with this solution, however, prompted the IT team to research more economical ways to extend the FC SAN so they could attach more servers to the storage network. With that in mind, Green started exploring the viability of iSCSI over two years ago, well before the standard was ratified. He decided to assess the viability of adding an IP SAN into his storage mix.

In early 2003, The Fulcrum Group demonstrated IP SAN solutions from FalconStor and Network Appliance but both fell short of expectations. DCAD wasn't pleased with FalconStor's level of integration and felt the drawbacks to the Network Appliance IP SAN were its proprietary architecture and high cost. During this timeframe, The Fulcrum Group brought in a StoneFly representative to demonstrate the capabilities of the StoneFly Storage Concentrator. In less than 30 minutes, he set up a basic IP SAN with one server and one disk array to show the ease with which the system handles block-level file storage.

"The interface was so intuitive and the system was extremely easy to use," said Green. "We were sold on the spot." In particular, Green was impressed with the simplicity of "carving out" volumes. "LUN management on the StoneFly IP SAN makes it possible to reassign resources from the common storage pool in minutes, unlike our FC

System Configuration:

Clients/Servers: 100
Microsoft Windows clients;
a total of 35 Windows
2003 servers; eight that
are dual-attached to an
EMC FC SAN and ten that
are attached to the IP SAN

Network Set-up: Two
StoneFly Networks™
i3000; Cisco Catalyst 4507
gigabit Ethernet switch;
Dell 5224 gigabit Ethernet
switch; Adaptec 7211C
iSCSI Adapters and four
Microsoft iSCSI initiators

Quotes:

"We reduced back up on that primary system from 10 to two hours. What's more, we can now back up 35 servers in the amount of time it used to take to back up one server."

"The interface was so intuitive and the system was extremely easy to use. LUN management on the StoneFly IP SAN lets us reassign resources from the common storage pool in minutes, unlike our FC SAN which doesn't really support any virtualization."

Brad Green, director of information services for Denton Central Appraisal District.

SAN, which doesn't support a real level of virtualization," he said. Another plus was that anyone on the IT team could allocate or re-allocate storage from the IP SAN unlike the FC SAN, which required special expertise.

By the third quarter of 2003, the DCAD Board of Directors approved a budget to install both the FC and IP SAN platforms. They started with the IP SAN, installing two StoneFly Storage Concentrator i3000 models in a clustered configuration with Active/Passive Failover for high availability. The team began migrating database and imaging files to the IP SAN, eventually attaching 10 servers running Microsoft Windows 2003 to the IP SAN. Since DCAD wanted to support a clustered environment, The Fulcrum Group next piloted Windows 2003 clustered configurations on the IP SAN, using the built-in Microsoft iSCSI initiators.

Following the success of the pilot project, the team rolled out the clustered configuration to the FC SAN, which was based on an EMC CX600 platform. While it only took a couple of days to attach 10 servers to the IP SAN, DCAD spent nearly two weeks connecting eight servers to the FC SAN with substantial cost and drain on IT resources. The team also installed clustered file services running Microsoft Volume Shadow Copy Services (VSS) to take twice-daily copies or snapshots of all DCAD files.

In the long run, DCAD plans to keep the FC SAN relatively small but expects the IP SAN to grow considerably. "Cost per port is prohibitively expensive on the FC SAN," explained Green. "So, we limit the number of servers attached to it and look to the IP SAN for handling rapid growth and expansion."

Benefits:

DCAD's StoneFly IP SAN enables the IT team to meet fluctuating storage requirements easily and economically. Green recalled an emergency SQL deployment to install a new GIS server. Because time was of the essence, the team decided to bypass the FC SAN and hook the box into the IP SAN instead. "In less than an afternoon, we were up and running on the IP SAN," said Green. "We used Microsoft's built-in iSCSI initiators and were creating new storage volumes within hours." Green estimated that the server installation, which would have taken a week or more on the FC SAN, was also completed at about a third of the cost of connecting the server to the FC SAN.

Overall, DCAD rates the usability of the IP SAN as far superior to the FC SAN. "Operating the IP SAN doesn't impact our limited staff nearly as much as maintaining the FC SAN does," noted Green. "We can delegate storage provisioning tasks on the IP SAN without any concern." In addition to the ease with which DCAD can add and reassign storage on the IP SAN, the IT team also benefits from using StoneFly's Replicator mirroring feature to preserve data integrity and accelerate backup windows. "We plan to implement an offsite location for disaster recovery purposes, which is one of the reasons we were very interested in Replicator," explained Green. "This will enable us to extend our iSCSI SAN to the remote site while providing immediate access to vital data."

In addition, DCAD uses the StoneFly IP SAN in conjunction with CommVault's award-winning backup and recovery software to slash back-up operations on the RISC 6000 platform. "We reduced back up on that primary system from 10 to two hours," said Green. "What's more, we can now back up 35 servers in the amount of time it used to take to back up one server." DCAD has also improved restore times considerably. Previously, if a file on any server was lost, it took several hours to recover the data, including securing offsite tapes and completing the entire restore operation. With the IP SAN, restores can now be completed in a matter of minutes.

"Our combined CommVault and StoneFly solution gives us simple and affordable enterprise-class data protection," he added.

DCAD currently has 16 terabytes of storage on its combined IP and FC SAN solution. With most of its servers operating at around 40 percent utilization and ample room to grow, DCAD is well positioned to tackle the annual processing rush when the appraisal rolls are made public. The district's IP SAN plays a pivotal role in the overall storage picture, making it extremely easy to handle storage spikes or allocate more storage to power users as needed. "Our StoneFly IP SAN meets all our requirements for high availability at a low cost," concludes Green. In addition, the IP SAN doesn't impact resources and performs as promised. Green added, "We won't have any problem demonstrating the return on investment in our IP SAN—it's already paying for itself."

