

StoneFly IP SAN Keeps Data Flowing for Palm Springs' Desert Water Agency by Supporting New Virtualization Initiative

Palm Springs is best known for its year-round sunshine and beautiful golf courses, which attract tourists from around the world. Located in the heart of Southern California's desert region, the city depends upon a reliable supply of clean water to support the thousands of people who live, visit and work in the area. These people count on Desert Water Agency (DWA) – a special district formed by the California State Legislature and governed by an elected board of directors -- for all of their water needs.

Challenge

- Increase infrastructure reliability
- Implement robust storage to eliminate application downtime
- Install Microsoft R2 Virtual Server Technology
- Avoid costly and complicated Fibre Channel SAN technology

Solution

- StoneFly Integrated Storage Concentrator ISC-1620
- StoneFly Reflection Synchronous Mirroring
- StoneFly Reflection Asynchronous Replication

Benefits

- StoneFly IP SAN was simple to install and administer
- StoneFly GUI was easy to use
- IP SAN technology didn't require changes in IT Infrastructure
- IP SAN Platform improved storage uptime and availability with minimal cost and effort

About 95 percent of the water that DWA provides is pumped from deep wells located throughout its service area, which spans Palm Springs, the neighboring town of Cathedral City and several unincorporated areas of Riverside County. DWA works hard to ensure the purity of this water by carefully monitoring and controlling the quality of water that feeds into, and is drawn from, these precious wells.

The Challenge

DWA's information systems (IS) department also works hard to support the Agency's goals. Recently, the organization recognized the need to enhance its data protection and business continuity efforts by improving infrastructure redundancy and implementing more robust storage. The catalyst for this decision was a nearly catastrophic event for IS: a server failure caused several hours of downtime and for days created significant disruption

before operations resumed normally. Although no data was lost, employees went for days without the full breadth of IS services that they had grown accustomed to, such as use of Microsoft Exchange, email, AutoCAD, and simple file and print capabilities.

"Unfortunately, a situation like this makes you aware of how valuable your data is, and how you are able to retrieve or recover it. Our goal was to build a system with as much replication and duplication as possible, without jeopardizing speed or integrity of data on our servers. Sometimes you have to make that extra step to make it happen," said Kory Knox, Network Administrator.

According to Knox, the ability to access information and to communicate is critical. If another serious failure occurred, the entire operations could suffer, particularly in the event of a natural

disaster. Although a component failure caused the most recent problem, the DWA Information Systems department realized that other occurrences, such as user error or even an earthquake, could potentially inflict even greater damage in the future.

John Tessman, a Programmer Analyst who has been with DWA for 13 years, said that the server difficulties they had just experienced were a wake up call. "It became clear that it was critically important for us to create an IS environment that could remain live and responsive to our customer base in the event our primary data center failed in any way," said Tessman.

Tessman and Knox decided it made sense to find a way to separate the applications from the hardware using storage and server virtualization. This would make it possible for DWA to manage its applications and physical hardware separately, which would allow continued use of business-critical systems should server failure occur. The idea was presented to Mario Ballesteros, DWA's Systems and Service Administrator, and a strategy team was subsequently formed, with Tessman heading up the group, and Knox and another IS team member, Sheldon Bivins, joining him.

It was an easy decision for Tessman to select Microsoft's Virtual Server 2005 R2 as the platform for DWA's virtualization strategy. DWA has embraced Microsoft technology for years, and the Information Systems executives wanted to maintain their connections with the software giant as they made their important foray into virtual computing. Selecting the storage virtualization component presented a greater challenge, however. Even though it's common knowledge that storage area networks (SANs) make ideal counterparts to virtual servers because they enable shared storage while also facilitating backups and other storage management applications, choosing the right SAN proved to be a complex undertaking.

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John Tessman, Programmer Analyst

"The platform had to operate successfully without raising eyebrows due to high cost. Therefore cost efficiency was a major concern," said Bivins.

DWA, which also considers itself a "true blue IBM shop," evaluated IBM's TotalStorage offerings, which include SANs, but felt they were far too comprehensive and costly, calling for replacement of much of the Agency's existing infrastructure. At the same time, TotalStorage didn't provide an adequate resolution to DWA's server and storage virtualization requirements.

"What I really wanted was an add-on storage solution, not a total IS makeover," said Tessman, who had been relying upon the internal drives in DWA's servers for storage. "We also wanted to find a way to be up and running in minutes in the event of a server crash, rather than days."

He spoke with Fibre Channel SAN vendors, and felt that their solutions were also cost prohibitive for an organization the size of DWA. A Microsoft partner then suggested that Tessman consider an IP SAN. One advantage IP SANs have over Fibre Channel SANs in a virtual environment is that direct backups to tape or disk can be performed at the virtual server layer (as opposed to via the VM hypervisor layer). This simplifies and streamlines the process, and allows the VMs to behave like physical servers. Additionally, because VM hypervisors rely extensively on IP networks for LAN and WAN connectivity, using IP based storage saves infrastructure costs and eliminates the

need for complicated worldwide names (WWN) and LUN masking. The ease of assigning IP addresses and VLANs to the hypervisor and to individual virtual machines makes IP a great fit for storage networks.

Tessman was already somewhat familiar with the iSCSI storage standard, and knew about Microsoft's iSCSI drivers. He researched several IP SAN vendors including StoneFly, Inc., an iSCSI market pioneer that has used virtualization to create simple-to-operate, high-performance IP SANs supporting advanced storage services since its founding in 2000. After comprehensive environmental analysis and consultation with Ken Friend, a senior StoneFly executive, Tessman realized that DWA needed more than just a SAN or a simple iSCSI storage solution, since one of his essential goals was eliminating his dependence on hardware systems alone to provide high availability. StoneFly's layered approach to building IP SANs -- keeping the intelligence layer separate from the physical hardware -- appealed to him because it makes it easy to transition hardware when implementing technological improvements, upgrading system infrastructure or even recovering from a critical component failure.

StoneFly has given us a solid storage platform upon which to support our virtualization projects and meet our business continuity goals. The StoneFly IP SAN has more than met our needs, StoneFly's support team has been fantastic.

John Tessman, Programmer Analyst

Although many vendors promise and promote virtualization initiatives, few vendors have a deep understanding of the interrelationship between server and storage virtualization technologies for improving infrastructure availability and redundancy. Tessman felt comfortable with Friend's knowledge in this area, as well as the time that Friend had already invested in educating himself about DWA's distinct environment and goals. He decided to give StoneFly's proven, IP SAN-based disaster recovery offerings a try.

The Solution

DWA chose a redundant StoneFly Integrated Storage Concentrator™ (ISC) 1620 configuration based on a single-chassis design that streamlines deployment. The ISC-1620 is highly scalable, delivering 2 to 8TB of capacity in a single node, with all SAN functions consolidated for virtualization, management and storage.

Although Tessman had never installed or even used IP SANs before, he was able to quickly set up the two ISC 1620 units – one in his primary data center, and one in the secondary data center in another building on the DWA site a quarter of a mile away. Using Windows 2003 Small Business Server as the operating system, he first established a test environment, powering up both the primary and remote servers, and then configuring a virtual server. He proceeded to create a series of files and emails, and then initiated a failover by disconnecting the primary machine.

According to Tessman, the StoneFly SAN proved its value instantly, enabling the transfer of the OS, applications and data to the other physical server automatically and without disruption. "In a matter of minutes, the secondary server took over. We were immediately sold," he said. "An added plus was that the ISC-1620 units were easy to set up, and I liked the StoneFly user interface, too."

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Added Knox, "We are able to have an ideal backup system that we envisioned at an affordable cost. It's like having a big business solution for a small business company."

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Kory Knox, Network Administrator

The price of the StoneFly IP SANs was right for DWA, at a fraction of the cost of the other alternatives that Tessman considered. And, because StoneFly ISC-1620 units are pre-configured based on the individual requirements of each customer's business continuity requirements, DWA was able to immediately put them to work without the need to purchase add-on

software for mirroring, storage virtualization or other capabilities.

In just a few short months, Tessman has already leveraged many of the built-in ISC-1620 features. The SAN is anchored by the StoneFusion Operating System™, an IP-based block-level provisioning appliance that centralizes storage management, control and monitoring of logical storage volumes. The ISC systems also include StoneFly Reflection™ for local and campus mirroring, and StoneFly Snapshot™ for fast, efficient data recovery. Tessman took advantage of Reflection right away to mirror the data between his primary and secondary sites for added protection.

Although DWA has not yet experienced a failover situation, the new IP SAN has given the agency confidence in its ability to recover from an IT disaster. "StoneFly has given us a solid storage platform upon which to support our virtualization projects and meet our business continuity goals," said Tessman. He added, "From easy compatibility with Virtual Server 2005 R2, to superior scalability and an excellent price point, the StoneFly IP SAN has more than met our needs. In addition, as we've further explored the ISC-1620's capabilities, StoneFly's support team has been fantastic."



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