San Diego Data Processing Corporation Goes Virtual for Excellence and Efficiency

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SAN DIEGO DPC
SAN DIEGO DATA PROCESSING CORPORATION

KEY HIGHLIGHTS

Industry
Government

The challenge
Enable more timely delivery of server/storage resources while simultaneously cutting IT costs.

The solution
Implement VMware® on NetApp® for fast resource deployment, better capacity utilization, and lower costs.

Benefits
- Achieved up to 60% capacity savings
- Attained within-minutes storage provisioning
- Streamlined database backup/recovery
- Enabled seamless DR for SAP®

CUSTOMER PROFILE

San Diego Data Processing Corporation (SDDPC) is a not-for-profit provider of government information technology solutions. Established in 1979 as the outsourced information technology arm of the City of San Diego, SDDPC provides a wide range of phone, data, and IT services for city, county, and other entity clients, including the 71 law enforcement agencies of ARJIS (Automated Regional Justice Information System). SDDPC employs more than 250 people and actively handles 150+ projects. A Gartner Group evaluation survey on customer satisfaction ranked SDDPC among the top 10% of IT providers in the United States. (Source: www.sddpc.org)

THE CHALLENGE

Accelerate new-application server deployment while shrinking costs
A San Diego city council member recently applauded SDDPC for its "best-in-class" rating from the well-known and highly respected Gartner Group. "It's like winning a gold medal in the Olympics," he said. But for the San Diego Data Processing Corporation, the real trick is continuing that track record of service excellence in the face of high data growth (700% in four years), fast-expanding application requirements, and shrinking budgets.

Rick Knode, director of Computing and Communications Infrastructure at SDDPC, says that increased demands for server resources threatened the organization's reputation for efficiency and excellence. "Like most shops, we ran one major application per server. So we were constantly barraged with requests for servers, particularly from our Windows® groups, where the workload has shifted from application development to application integration in conjunction with the availability of more off-the-shelf and customizable solutions. Purchasing commercial products and reducing application lead time are good for business but challenging for IT, because it puts server deployment on the critical path. In our case, all too often developers had to endure a four- to six-week wait before they could install valuable application packages. The other issue we had to address was cost—at $8,000 per server, we were rapidly outpacing our capital funding. We needed a faster, more cost-effective model for delivering server and storage resources."

THE SOLUTION

Implement a server consolidation solution with VMware on NetApp
The solution for SDDPC was to deploy a virtual infrastructure based on VMware and NetApp storage. Microsoft® Windows test

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Director of Computing and Communications Infrastructure, San Diego Data Processing Corporation

and development environments were the first systems moved to the VMware-on-NetApp infrastructure. Over the next 12 months, SDDPC avoided having to procure approximately 50 servers. Now, three years later, the virtual environment consists of more than 300 virtual servers running on 22 ESX hosts accessing (via NFS) high-performance NetApp FAS6030 storage systems. The virtual infrastructure supports Citrix application delivery systems, Symantec™ Altiris management solutions, Microsoft Internet Information Services (IIS) servers, and other production, development, and test applications.

SDDPC has also standardized on NetApp storage for the City of San Diego's SAP deployment (running on Microsoft Windows and SQL Server™), including a VMware-based architecture that serves the development, quality assurance, and disaster recovery environments for the mission-critical SAP system.

SDDPC acquired its first NetApp system in 1999 and today leverages more than 275TB of NetApp storage across two data centers and a wide array of Windows and UNIX® applications, including GIS applications, Microsoft Exchange, and an in-house SAP deployment running on a Sun™ Solaris™/Oracle® Database platform over the NFS protocol.

BUSINESS BENEFITS

Responsive service—new resources in hours, not weeks

SDDPC leverages the VMware-on-NetApp virtual infrastructure for production systems, as well as in development/test environments. Knode confirms that the NetApp storage provides important technology complementary to VMware. He says, "We knew from experience that NetApp solutions deliver the performance, scalability, reliability, and manageability essential in an enterprise setting. What we didn't realize until we implemented our virtual infrastructure was just how beneficial NetApp tools are within a VMware environment. We use NetApp FlexClone® software, for example, to clone virtual machines for faster provisioning of production systems, as well as to create copies for use in development/testing processes."

Rick Scherer, SDDPC's VMware infrastructure architect, adds, "NetApp FlexClone and Snapshot™ technologies help us meet aggressive deployment deadlines, such as those imposed on us by the city's SAP project, where we're supporting 24x7 development processes. In that environment, we take Snapshot copies of virtual machines every four hours. If a developer needs to roll back to a previous environment, we use FlexClone to create a writable version of the Snapshot copy, and then use Storage

VMotion to move the virtual machine back into the production data store. The whole process can be completed in minutes. In the past, developers in that situation had to go back to tape copies—which could mean losing a full day's work because backups were done nightly—and wait while we found and restored the data, then wait again to copy it back out to a development system. It's not unusual to have to restore an environment several times a week, so the rapid backup, cloning, and recovery that NetApp enables has been critical in helping us meet deployment deadlines. Worth mentioning is that these processes can be done with space efficiency and negligible performance impact."

Outside the SAP development environment, rapid deployment of server and storage resources has been equally beneficial. Scherer reports that standing up a new system—including allocating storage capacity—now takes just hours or even minutes, as opposed to weeks in the traditional infrastructure. Accelerated standup contributes directly to more responsive customer service.

Knode suggests that however many SDDPC applications now run in the VMware-on-NetApp environment, the number should be higher: "We've seen the benefits—in improved resource utilization, faster provisioning, and lower costs. So as more vendors

certify and support applications to run within VMware, we will continue to move applications to the virtual environment."

Success of the VMware-on-NetApp environment was borne out in the Gartner survey that gave SDDPC its top-10% ranking in a customer satisfaction evaluation of IT support responsiveness, system performance, functionality and quality, cost, and the impact of IT services and support on employee work. "Although we are owned by the City of San Diego, it is not a captive audience," notes Scherer. "So we have to provide consistently responsive and cost-effective service. This study bears out our ability to use our IT resources to achieve these objectives."

Reliability to keep a city running
Application and data availability is vital to SDDPC customers. If Oracle, SAP, or GIS applications stop, essential city functions stop, from crime analysis to road repair and bill payments. Scherer says that in addition to supporting around-the-clock SAP development efforts, SDDPC must guarantee 24x7 availability of the majority of its client applications. In fact, SDDPC annually negotiates rates and service-level commitments with the City of San Diego. Currently, on the application hosting side that consists of both virtual and physical servers, SDDPC must deliver 99.5% availability.

"We consistently exceed our target of 99.5% availability," asserts Knode. "I don't know of a single case in the last 12 months where our VMware infrastructure did not meet or exceed service-level agreements. NetApp storage is a huge, critical component of that infrastructure. If a NetApp system goes down, the application goes down."

Knode also expects NetApp SnapMirror® to facilitate the City of San Diego's SAP disaster recovery strategy. When integrated with VMware technology, SnapMirror enables instantaneous recovery and access of data through failed-over virtual machines at a secondary site.

Growing business, shrinking costs
The VMware-on-NetApp solution helps SDDPC continue to deliver cost-effective, best-in-class service even as the organization contends with rapid application and data growth. Messaging data, much of it subject to records-retention regulation, adds significantly to storage requirements. In this setting, NetApp's space-saving technologies are essential. Using NetApp deduplication, SDDPC has achieved more than 45–50% savings in e-mail, home directories, and other user data, and as much as 60% capacity savings in VMware environments. The SDDPC VMware team also routinely utilizes thin provisioning to guarantee capacity to VM images without having to overprovision and purchase excess capacity.

These savings directly benefit the bottom line. By dramatically improving utilization of server and storage resources, SDDPC has avoided additional costs related to new purchases. Add to that the rack savings, power savings, and maintenance and administration savings and it's a budget windfall that helps SDDPC shrink costs even as application and data requirements expand.

To date, SDDPC has eliminated approximately 150 physical servers from the IT infrastructure. In addition to capital savings, the transition to the VMware-on-NetApp solution has improved manageability. A staff of four administers the entire virtual server environment that supports some 80 developers and a city user community of more than 11,000. On the storage side, Scherer estimates that just 1.5FTEs manage the entire NetApp storage footprint of 275TB, and relates that implementing VMware over NFS has enabled reductions in both administration and infrastructure costs.

Long-term value—storage architecture with staying power
Knode insists that NetApp solutions have played a key role in SDDPC's ability to consistently deliver high-quality customer service using state-of-the-art, highly efficient products and services. He states, "When we first evaluated the technology back in 1999, we felt that the benefits NetApp brought to the table

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Rick Scherer
VMware Infrastructure Architect, San Diego Data Processing Corporation

were above and beyond those of any other solution available at the time. Through the years we have continued to benefit from NetApp's forward leaps in technology, as well as the business relationships NetApp has fostered with key infrastructure suppliers.

"We routinely evaluate alternative products and technologies from the industry's top-rated vendors, but have always reached the same conclusion: that the NetApp storage architecture and professional teams deliver the best functionality and best value for our environment. As a nonprofit organization, we have no excess resources to spend on unproven technology. We must minimize risk and make smart decisions upfront. Our long-term investment in NetApp has proven to be one of those smart decisions. And it clearly simplified our transition to a virtual environment."

SOLUTION COMPONENTS	
NetApp Products NetApp FAS6030 and FAS6040 systems NetApp deduplication and FlexClone software NetApp FlexVol®, SnapMirror, and SnapRestore® technologies **Protocols** NAS – NFS	**Environment** VMware Microsoft Windows Microsoft Exchange and SQL Server software Sun Solaris Oracle Database SAP

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