Bernalillo County cuts technology expenses by migrating from a mainframe to the HP BladeSystem

Standardizing on HP server blades and storage saves county funds

"We are extremely satisfied with the HP BladeSystem. The performance of ProLiant server blades is 100% better than the mainframe."

—Paul Roybal, chief information officer, Bernalillo County, New Mexico

HP customer case study:
HP BladeSystem, HP-UX 11i, HP Integrity Virtual Machines, HP StorageWorks Enterprise Virtual Arrays, HP Services, HP StorageWorks Business Copy EVA, and HP StorageWorks Data Protector

Industry:
Public Sector/ Government

Objective

Upgrade the server and storage infrastructure to save money and operate more efficiently

Approach

Evaluate the feasibility of migrating from a legacy mainframe system to industry-standard servers to host SAP® NetWeaver® 7.0, Microsoft® SQL Server 2005, and Oracle® databases

Business technology improvements

- Consolidates systems and servers, reducing the number of physical servers from 150 to 60 and simplifying management
- Quickens server deployment from one month to two hours, enabling faster response to technology needs
- Provides scalability and 200% faster application response
- Eliminates the need to develop custom interfaces and to hire difficult-to-find personnel with mainframe expertise
- Speeds requisitioning, procurement, approvals, and vendor payment through efficient, paperless workflows

Business outcomes

- Reduces the time of year-end financial closeout by 90% (from 2 weeks to 2 days)
- Decreases power and cooling costs by 40%
- Lowers server maintenance costs by 15%
- Saves approximately $10,000 to $15,000 in annual software license costs
- Produces a projected, cumulative five-year net storage benefit of $2.2 million
- Generated 196% ROI with 16-month payback period for the storage infrastructure

Strategic decisions advance responsiveness

Bernalillo County, New Mexico uses sophisticated technology to serve 700,000 residents in a 1,200-square-mile area. A county website offers a variety of services, such as road construction updates and tax assessor records, while geographic information systems (GIS) help guide public safety and public works operations.

In addition to these services, the county sought to deliver new technology capabilities in an effort to improve responsiveness and better serve its growing population. Accomplishing these objectives at lower cost presented

a challenge. However, the IT staff, spearheaded by Paul Roybal, chief information officer, made three strategic decisions that advanced their goals:

- Moved the county's financial applications from an IBM MP3000 7060-H30 (60 MIPS) mainframe to an SAP enterprise resources planning (ERP) application running on HP ProLiant server blades,
- Standardized dozens of other applications on HP BladeSystem server blades, and
- Replaced server-attached storage with HP StorageWorks Enterprise Virtual Arrays (EVAs).

Mainframe constrictions

Prior to adopting an HP/SAP environment, Bernalillo County shared an IBM MP3000 7060-H30 (60 MIPS) mainframe with the City of Albuquerque. When Albuquerque chose to move off of the mainframe, Bernalillo County decided it was an opportune time to move its financial applications to industry-standard servers.

The inflexibility and performance of the mainframe and legacy applications impacted county operations, slowed year-end accounting, and halted procurement until financial closing. Due to the legacy environment's issues, the county shut down financial transactions up to two weeks in advance of year-end accounting, so procurements stopped until after the books closed.

Along with the performance degradation, developing custom interfaces to the mainframe was expensive, and finding personnel with mainframe expertise was difficult. "The mainframe's COBOL application had been around since the early '80s, and there was no follow-on product or enhancements in this environment for the financial applications. It was very much a batch, edit-and-post application system without robust validity checking. Year-end to closeout of our financial books was difficult and lengthy," Roybal explains.

Choosing HP and outstanding partners

In selecting an industry-standard alternative to the mainframe, the county considered solutions from IBM and Dell, but chose HP hardware and software. The county saw the solutions, backed by HP services and support, as superior to others on the market. Bernalillo County replaced the mainframe with HP ProLiant server blades running Microsoft Windows® Server 2003 on the front-end. By opting for ProLiant server blades, the staff takes advantage of Intel® Xeon® processors as well as the servers' flexibility to run a varied set of applications and to operate with the county's existing technologies.

The hardware implementation went smoothly, aided by the high level of technical support and personal attention provided by HP enterprise channel partner, Abba Technologies. Abba is certified in its core practices of storage, networking, and server consolidation professional services. As Bernalillo County has rolled out innovative solutions to its users, Abba has been a close partner, sharing design advice, implementation assistance, and after-hours response.

Systems integrator for government implementations, Aristone Corporation, now a part of Black & Veech, migrated mainframe data to the HP servers. "From kickoff to go live, blueprinting, and realization, the migration went very well, and we were able to easily manage the deployment using HP Insight Control software tools," Roybal says.

Company profile

Name:
Bernalillo County

Number of employees:

2,500

Number of residents:
700,000

URL:
www.bernco.gov

The benefits of a mainframe alternative

Now, county departments are enjoying substantial performance improvements, including 200% faster application response, and enhanced functionality by hosting SAP and a Microsoft SQL Server 2005 database on ProLiant servers.

"We are extremely satisfied with the performance of HP ProLiant servers compared to our previous mainframe solution. The SAP system on ProLiant server blades has cut down our year-end closeout significantly to about one-tenth of what it took before. And there's more information at our fingertips than we've ever had," Roybal notes.

"When Bernalillo County needed to provide additional services to residents, we turned to HP to provide an infrastructure that could help us cut costs and deploy applications faster. With Integrity server blades and HP-UX 11i, we decreased the number of physical servers, improved overall performance as well as reduced power and cooling requirements by 40%."
Paul Roybal, chief information officer, Bernalillo County, New Mexico

County personnel no longer need to write custom interfaces as they did for the mainframe, and the county no longer needs staff members with specialized mainframe expertise. And using industry-standard solutions, it takes less time to integrate sophisticated reporting features and internal controls.

Additionally, the SAP environment saves time in the procurement of goods and services. "We have online catalogs of our most frequently purchased items that our end users can select from. It's a paperless workflow environment, whereas before we were pushing paper around and waiting for people to sign documents. From requisition to the final cutting of a vendor's check, we've significantly shortened that time cycle. The vendors that do business with us get paid electronically, which is quicker," Roybal says.

Standardizing on HP server blades cuts costs

Apart from the financial applications running on the mainframe, the county had numerous other applications running on dozens of under utilized Windows and Linux servers. To streamline the server infrastructure and cut costs, the IT staff consolidated these applications using VMware virtualization software on ProLiant server blades. The shift to HP BladeSystem technology improves application reliability, reduces the number of physical servers, simplifies server maintenance, quickens deployment, and trims costs.

For example, the county's Web portal and SAP NetWeaver Business Intelligence data warehouse run in virtualized environments, reducing the number of physical servers that run these applications from 150 to 60.

Roybal notes, "Rolling out applications quicker and shortening the time to deploy new servers are several advantages of virtualizing on HP servers." The staff can build and deploy a virtualized server in two hours rather than in one month that they previously needed, increasing responsiveness and freeing IT staff for more productive tasks.

Overall, the county's server consolidation project reduces power and cooling costs by 40% and saves approximately $10,000 to $15,000 per year in licensing costs as a result of the way in which the county licenses its Windows-based servers on the HP BladeSystem. Server consolidation also reduces maintenance time and costs by 15%.

Virtualizing Oracle databases on HP Integrity server blades

The county brought virtualization to its Oracle databases as well, retiring its older HP 9000 servers for HP Integrity server blades with Intel Itanium® processors and deploying the mission-critical HP-UX 11i operating system. Configured with HP Integrity Virtual Machines software, Integrity server blades host 17 databases. The IT team also creates virtual servers to perform source code control and to optimize server resources as warranted for workloads and database querying.

"We are absolutely pleased with the reliability, availability, and performance of Integrity server blades hosting our Oracle databases. With HP Integrity Virtual Machines, we achieve maximum utilization of our hardware resources and create new servers without having to procure new hardware," Roybal confirms.

One Integrity BL860c server blade currently runs HP-UX 11i v3. "We're planning a gradual upgrade to version 3 for the remaining Integrity servers. We're looking to benefit from the latest performance and security features in HP-UX 11i v3," Roybal says.

Saving time with a common management platform

HP Insight Control as a common, integrated management platform for both HP Integrity and ProLiant server blades also saves time for the Bernalillo County staff. “We’re taking advantage of the capabilities of HP Integrated Lights Out (iLO) Advanced remote management software and HP Systems Insight Manager to reduce the time it takes to evaluate problems. We’ve become more proactive since integrating the remote management product with Systems Insight Manager. It gives us better reporting from a centralized location,” Roybal says.

Unplanned system outages are unacceptable, so the county contracts for HP Proactive 24 services to keep its systems resilient. “We have access to qualified HP Services personnel around the clock who help resolve any issues we have in a timely manner. Proactive 24 support improves availability and efficiency for our systems,” Roybal says.

HP StorageWorks arrays yield 196% ROI

Aside from the server upgrades, the county captured additional efficiencies when it upgraded the previous server-attached storage, which was unscalable and expensive to maintain, to HP StorageWorks Enterprise Virtual Arrays (EVAs). The return on investment (ROI) for the storage upgrade is 196% with a payback period of 16 months. Additionally, the implementation of HP StorageWorks EVAs provides a projected, cumulative five-year net benefit of $2.2 million. Factors enabling the net benefit include improved productivity, the avoidance of storage purchases, and lower maintenance and troubleshooting costs.

The staff credits HP StorageWorks Business Copy EVA for assisting the creation, management, and configuration of local replication and HP Data Protector software for automating data backup and recovery. “We run our SAP environment on an HP StorageWorks EVA platform that’s exceptionally flexible and reliable. When we’ve needed to reconfigure storage, it’s been easy. We use Business Copy EVA to replicate data and have fast image recovery, and Data Protector provides reliable backup for our data and file shares,” Roybal says.

Roybal and his staff believe Bernalillo County has gained traction in many areas of the technology infrastructure as a result of implementing their strategic decisions. “By integrating HP products into our data center, we can optimize resources for any workload, provide services, integrate new systems, and update applications easily and quickly to serve our end users and taxpayers,” he concludes.

Customer solution at a glance

Primary applications
Financial, business intelligence, Web portal, database, and customer relationship management

Primary hardware
- 16 HP ProLiant BL685c and ProLiant BL460c server blades;
- 7 HP Integrity server blades, including model BL860c
- 5 HP StorageWorks Enterprise Virtual Arrays: (2) EVA6000, (2) EVA6100, and (1) EVA3000 comprising 105 TB of total storage capacity
- 4 HP BladeSystem p-Class and c-Class Enclosures

Primary software
- HP-UX 11i v2 and v3
- HP Integrity Virtual Machines
- HP StorageWorks Business Copy EVA Software
- HP Data Protector Software
- HP Insight Control: Integrated Lights-Out (iLO) Advanced and HP Systems Insight Manager (SIM)
- SAP NetWeaver 7.0
- Microsoft Windows Server 2003
- Microsoft SQL Server 2005
- VMware Virtual Infrastructure 3
- Oracle 10g Database Server

HP Services
- HP Proactive 24 (P24)
- HP Insight Remote Support

About Bernalillo County

With its Puebloan, Mexican, and Spanish heritages on full display, today’s Bernalillo County in central New Mexico is an urban area rich in museums, galleries, and attractions, including the largest rattlesnake collection and one of the largest balloon festivals in the United States. The county stretches from the East Mountain area (just north of the Sandia Mountains) to the Volcano Cliffs on the west mesa. More than 700,000 residents live in the county’s 1,200-square-mile area. The city of Albuquerque is the county seat.

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