



Microsoft Windows Powered Customer Solution

California Regional Health Care Provider Enhances Paperless Medical Record Keeping While Reducing Storage Costs with Windows Powered Iomega NAS



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Solution Overview

Customer Profile

The Kaweah Delta Health Care District operates a 454-bed hospital in Visalia, California, and sees more than 60,000 visitors per year in its Emergency department. Its facilities also include the 60-bed inpatient Cypress Rehabilitation Center, a 32-bed inpatient Transitional Care Unit, and 14 outpatient clinics.

Business Situation

Having moved to a completely paperless environment for patient medical records in 1997 with optical jukebox storage, Kaweah Delta needed a more flexible, cost-effective, and efficient storage solution.

Solution

KDHCD chose Windows® Powered Iomega NAS P410m servers both for new storage and to replace the jukebox systems.

Benefits

- High reliability and availability
- Seamless integration with existing systems
- Integrated security
- Lower total cost of ownership

Software and Services

Microsoft® Windows® Powered NAS

Hardware

Iomega NAS P410m servers with 480 GB of storage

Partners



The Kaweah Delta Health Care District achieved a paperless medical record environment by moving all of its patient medical records to a digital imaging system stored on optical jukeboxes. To add storage, the district tried out a few Linux-based Snap Servers before deciding to migrate its entire jukebox storage system to Windows Powered Iomega NAS servers. The Iomega NAS servers provide hot-swappable disks for increased reliability and integrate seamlessly with the district's existing infrastructure for easier management. The lower purchase and maintenance costs for the Windows Powered Iomega NAS lowered storage costs by 30 percent. And the small footprint delivers comparable storage in a fraction of the physical space required by the jukeboxes.

Situation

It's common knowledge that health care paperwork accounts for a significant percentage of the high cost of health care. As a result, new paperless, computer-based solutions that enable providers to collect, store, and securely transmit patient information are becoming increasingly popular as a means to cut costs and improve patient care. In fact, new government regulations, including the Health Insurance Portability and Accountability Act of 1996 (HIPAA), now mandate that all health care providers move to such systems by 2004.

The Kaweah Delta Health Care District (KDHCD), an innovative regional health care provider headquartered in Visalia, California, was an early adopter of paperless medical record keeping and, in the process, has significantly reduced costs and labor. KDHCD operates a multifaceted group of health care facilities in California's San Joaquin Valley, including a 454-bed hospital, with a 24-hour Emergency department; a rehabilitation center; a transitional care unit; 14 outpatient clinics; and more than 81 community benefit programs. To maintain its high standards, meet the needs of its community, and ensure that the members of the community have access to a continuum of health care services, Kaweah Delta continues to develop strategies to allocate resources efficiently.

In 1997, KDHCD implemented an Imnet document imaging system to store the official record of all clinical and administrative information. All patient charts and billing and insurance records are

scanned into the system. In addition, physicians' dictated notes are entered into the system electronically but must be signed and authenticated by the physician within 24 hours.

When KDHCDC first implemented Imnet, the district installed three optical jukebox storage systems, which nearly filled KDHCDC's computer center. Although the system was effective, the three jukeboxes were filled to capacity by 2001. Because the records need to be kept indefinitely and new records are created daily, KDHCDC needed to quickly find a file storage solution that could store more data in less space and scale efficiently.

KDHCDC first installed four Linux-based Snap network attached storage (NAS) servers. These servers required a separate administration utility, which added to administrative and training costs because Kaweah Delta runs mostly Windows®-based applications. Also, if a disk failed, administrators had to power down the entire NAS system and remove the chassis in order to replace the drive.

Those drawbacks led the district to seek a better solution when it needed added storage. Nick Volosin, KDHCDC's Information Systems (IS) Director, approached CDW, a leading provider of technology solutions, to explore new options. CDW quickly assessed KDHCDC's needs and identified the Windows Powered Iomega NAS as an ideal solution. "The Windows Powered Iomega NAS met all of our requirements for reliability, availability, ease of management, and integrated security," Volosin says.

Solution

After first testing an evaluation unit, KDHCDC purchased five Windows Powered Iomega NAS P410m servers from CDW. Each server features an optimized version of the Microsoft® Windows 2000 operating system, 480 gigabytes (GB) of RAID-redundant storage across four hot-swappable hard disks, native support for the Active Directory® directory service, dual network interface cards (NICs), and several value-added software features, including a Web-based user interface, Persistent Storage Manager, and Iomega management utilities and back-up software.

Four of the units were added directly to KDHCDC's Imnet document imaging system to rapidly increase storage capacity by almost 2 terabytes. The fifth unit was deployed to back up the first four production units.

Volosin estimates that the Imnet system stores about 1 million images (letter-size pages) every three months and grows by about 40 GB per month. All new data will be stored on the Windows Powered Iomega NAS servers. The 2 terabytes of data on the jukeboxes will be transferred to the Windows Powered Iomega NAS starting in March 2003. The Snap Servers will continue to provide static storage for the data already loaded on them but will eventually be replaced with the Windows Powered Iomega NAS, as well.

A total of 3,000 users—physicians and their office staff, nurses, and other hospital staff responsible for patient care or administration—have access to the Imnet system. Volosin estimates that typically 400 concurrent users access the system at any given time during the day from 1,200 workstations located throughout the hospital.

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Nick Volosin
Information Systems Director
Kaweah Delta Health Care District



The Windows Powered Iomega NAS P400m Series

In addition, physicians and their office staffs can securely access the system remotely, dialing in to the network using a Citrix client and Windows Terminal Services—part of Windows 2000 Server—to review patients' charts. Physicians often dial in from home in the evenings or on weekends to review and electronically sign transcriptions of dictation reports.

Benefits

High Reliability and Availability

Because the Imnet document imaging system is the official record for all of KDHCDC's patient records, reliability and availability are critical. Three key features of the Windows Powered Iomega NAS convinced KDHCDC that this solution would meet its requirements for reliability and availability:

- **Hot-swappable disk drives** enable technicians to replace a disk drive while the system continues to run. "The hot-swappable disk drives are an especially valuable feature of the Windows Powered Iomega NAS," Volosin says. "We use a RAID 5 configuration, so one disk drive out of the four can go out, and the NAS keeps running. Hot-swappable disk drives mean we can switch out a bad one without having to take down the whole system. We just pull the disk drive out and slide in a new one. Even though the Snap Servers support RAID 5, you have to power them down and open up the chassis to replace a disk drive. This means data is not available, which is not acceptable."
- **Terminal Services** makes the stored data available to remote users. Authorized users with the proper security credentials can dial in to the network using a Citrix client, then use Terminal Services to navigate records on the Iomega NAS units.
- **Persistent Storage Manager**, which KDHCDC plans to implement before the end of 2003, to take point-in-time snapshots of the data stored on each Iomega NAS, providing an ideal backup and recovery solution. Snapshots of the four production units will be taken and backed up directly to the fifth Windows Powered Iomega NAS.

KDHCDC is already using the Windows Powered Iomega NAS for database and file backups.

"Instead of backing up to tape, we're backing up to the Windows Powered NAS," Volosin says.

"That enables us to put the NAS offsite on our network and back up out of our data center, in real time, without having to haul a tape to another building. We're finding that with the lower price of magnetic storage, it's preferable to do backups to NAS boxes rather than to tape. It's faster, more automated, and you don't have the errors that happen when a tape goes bad in the middle of a backup."

Seamless Integration with Existing Systems

The optimized version of the Windows 2000 Server operating system on the Iomega NAS integrates seamlessly with KDHCDC's Windows NT®-based infrastructure. In addition, Active Directory support paves the way for the district's move to Windows 2000. "Support for Active Directory is a major defining advantage of the Windows Powered NAS versus a Linux-based NAS," Volosin says. "We're moving to Windows 2000 in the next year, so the Active Directory support already in the Windows Powered Iomega NAS means that we'll be able to easily integrate new Iomega units into the directory infrastructure automatically."

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KDHCD administrators can use the Windows-based tools that they're already familiar with to manage the new Windows Powered Iomega NAS P410m's, without additional training. "The Windows Powered NAS servers are much easier to manage than the Linux-based NAS boxes," Volosin says. "If you need to do something to the Linux-based NAS, you have to either remember how to run a separate utility or get out the book to refresh your memory."

In addition, the Windows Powered Iomega NAS supports most popular Windows-based antivirus software. "There is no antivirus software for our Linux-based NAS, whereas with the Windows Powered NAS we can load the standard Symantec Norton Antivirus software that we use for all of our other Windows-based servers."

KDHCD was also able to integrate its Windows Powered Iomega NAS with its legacy NetWare systems. "We still use NetWare so the dual NICs in the Iomega NAS P410m servers can talk to Novell security as well as Windows-based security," Volosin says. "That means that we don't have to convert everything all at once."

Integrated Security

Tight security is imperative when working with confidential patient information. The Windows Powered Iomega NAS P410m provides KDHCD with improved security by offering a thoroughly tested, comprehensive, and unified operating system. Users access network resources through a single sign-on, and administrators can use powerful and consistent tools to manage security services for users.

Currently, the seamless integration of the Windows Powered Iomega NAS with Windows NT domains provides administrators with more security options than the Linux-based NAS does. Where the Linux-based NAS allows only "None," "Read Only," and "Full Control" permission settings, the Windows Powered NAS provides administrators with several additional options, including "Create," "Read," "Write," "Erase," "Modify," and "File Scan." This capability is important because it enables the system administrator to provide authorized users with the access they need, while protecting the files from inadvertent changes or deletions.

Low Total Cost of Ownership

The total cost of ownership of the Windows Powered Iomega NAS is less than Linux-based NAS from Snap because of the high cost of managing the Snap Servers. Acquisition costs for the Iomega NAS solution are also much lower than for storage area network-based storage solutions. The cost advantage is even greater when the Windows Powered Iomega NAS is compared to KDHCD's original jukebox system.

"We were able to buy four Windows Powered Iomega NAS boxes for about the cost of the annual maintenance on the jukebox system," Volosin says. "That was also about the same amount that we were paying for just the optical disks that go into the jukebox. And we save about 10 person-hours each month by not having to load new disks into the jukeboxes. Plus, with the Windows Powered Iomega NAS, we can store the same amount of data that we used to store in 6-foot-tall jukeboxes, in a 1U rack unit that's less than 2 inches tall."

KDHCD has also saved costs through productivity improvements. With the Windows Powered Iomega NAS, users can access a file in about a second compared to about 15 seconds with the old jukebox system. This means faster access to patient records to expedite patient care and billing processes, and also means less user frustration and lower labor costs.

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The Windows Powered NAS is an optimized file server based on Windows technology that is designed for high reliability, availability, and ease of management. Windows Powered NAS integrates with the existing infrastructure and supports heterogeneous file serving as well as backup and replication of mission-critical data. It also provides advanced data protection features, such as Persistent Storage Manager and Storage Manager. Windows Powered NAS is also an ideal solution for consolidating multiple file servers into a single solution that enables cost reduction and policy-based management of storage resources.

For more information on Windows Powered NAS, go to: <http://www.microsoft.com/storage/>

For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to:
<http://www.microsoft.com/>

For more information about the Kaweah Delta Health Care District, visit the Web site at:
<http://www.kaweahdelta.org/>

For more information about Iomega, visit <http://www.iomega.com/>

For more information about CDW, visit <http://www.cdw.com/>

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