



NetApp®

## Success Story

# DuPage Medical Group Enhances Patient Care with 24/7 Availability Using NetApp Clustered Data ONTAP

DuPage Medical Group

WE CARE FOR YOU



### KEY HIGHLIGHTS

**Industry**  
Healthcare

#### The Challenge

Offer 24/7 availability for clinical and office applications and data while improving scalability and performance.

#### The Solution

With assistance from Meridian IT Inc., virtualize servers with VMware® vSphere® on a FlexPod® platform running NetApp® clustered Data ONTAP®.

#### Benefits

- Enhance patient care by avoiding systems downtime
- Improve performance for Citrix XenApp and other critical workloads
- Conserve data center space with intelligent caching
- Expand capacity quickly to onboard new physician practices faster
- Reclaim storage capacity with deduplication

### Customer Profile

DuPage Medical Group (DMG) is one of the largest and most successful independent multispecialty physician groups in Illinois. With more than 425 physicians practicing in 50 medical and surgical specialties, DMG continually strives to innovate through a model of QEA: quality, efficiency, and access. This commitment includes implementing the latest technology. Through secure access to DMG's patient portal, MyChart, physicians and patients are able to stay closely connected.

### The Challenge

#### Overcoming capacity constraints

Technology is never static, and that is especially true in healthcare. To provide the best care, DMG wanted to deploy the latest applications and upgrades, but ran into space, compute, and storage limitations in its data center.

"It was primarily a physical server environment that DMG had built up over the years," says Tony Beard, manager of server, storage, and IT security infrastructures at DuPage Medical Group. "We decided to virtualize most of our environment with VMware vSphere—including our Citrix XenApp servers—but

we needed high-performance storage and servers that could handle the load."

### Providing true 24/7 operations

As part of the technology upgrade, Beard wanted to put a storage infrastructure in place that would allow DMG to operate with near-zero downtime. For example, if a DMG patient goes to a nearby hospital in the middle of the night, the DMG IT team can't tell the hospital doctor to wait for an image because a firmware upgrade is under way. "Now, with NetApp clustered Data ONTAP, we can operate with near-zero downtime and minimize data access issues," he says.

### The Solution

#### NetApp clustered Data ONTAP and FlexPod

DMG engaged Meridian IT Inc., a technology solutions provider, to help it evaluate storage solutions from three vendors, including NetApp. "We decided to go with NetApp for three reasons," says Beard. "First of all, NetApp gives us the capacity we need in a compact solution that takes up the least amount of rack space. Second, the clustered Data ONTAP operating system allows us to have multiple high-availability targets instead of a typical

“If there’s a hardware failure or we need to patch, we can roll our environment between nodes without downtime using clustered Data ONTAP and avoid service interruption. That’s vital to enabling uninterrupted delivery of care.”

**Tony Beaird**

Manager of Server, Storage, and IT Security Infrastructures, DuPage Medical Group

two-node cluster. The third reason is performance: it far exceeds what we had previously, which has a positive impact on healthcare operations.”

Meridian IT, channel partner of NetApp, Cisco, and VMware, worked alongside the NetApp Professional Services team to deploy a FlexPod solution in two data centers. FlexPod combines NetApp FAS3250 storage systems, Cisco Unified Computing System™ (Cisco UCS®) servers, and Cisco Nexus® series switches into a single architecture with excellent support for virtualized environments. Virtual machines boot from Fibre Channel and then access data stores using NFS over a 10GbE network.

Working with Meridian, DMG IT staff migrated all of DMG’s data to the new platform. “The FlexPod technology components are extremely well integrated, and Meridian IT has been responsive across the board,” says Beaird. “They get the right people involved as quickly as possible. I was impressed with how their technical staff interacted with NetApp Professional Services to get the job done quickly.”

NetApp DataMotion™ for Volumes—a standard, built-in feature of clustered Data ONTAP—provides the ability to nondisruptively move individual data volumes, allowing data to be redistributed across the cluster at any time,

and for any reason, while the storage infrastructure continues to serve data. Data migration might be performed to rebalance capacity usage, to optimize for changing performance requirements, or to isolate one or more controllers or storage components to execute maintenance or lifecycle operations.

“We now have four storage controller nodes at each data center,” says Beaird. “If there’s a hardware failure or we need a patch, we can roll our environment between nodes without downtime using clustered Data ONTAP and avoid service interruption. That’s vital to enabling uninterrupted delivery of care.”

Data is replicated between data centers with NetApp SnapMirror®, which transfers only new or modified data blocks to reduce bandwidth utilization and accelerate data transfers. In addition, NetApp also improves storage efficiency in a virtual environment with deduplication.

#### **Making the most of limited space with intelligent caching**

To provide cost-effective performance for I/O-intensive workloads such as Citrix XenApp, DMG uses NetApp Flash Cache™. With controller-attached PCIe caching, Flash Cache speeds data access through intelligent caching of recently read user data or NetApp metadata. No setup or ongoing administration is needed.

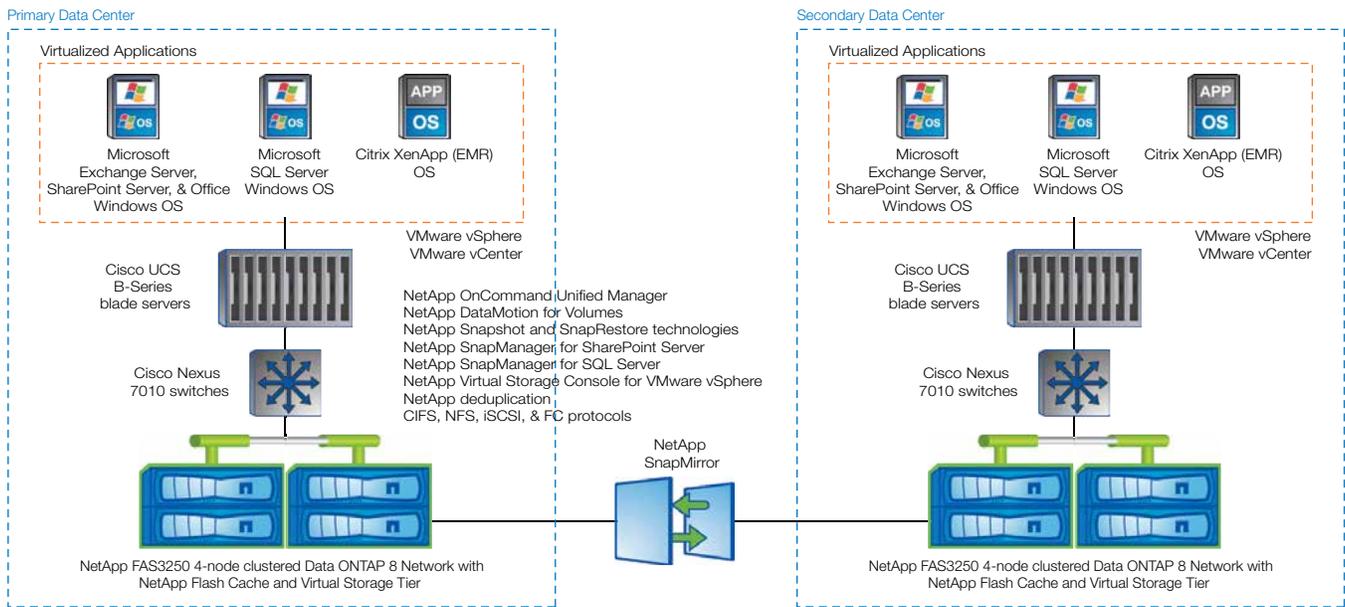
“We just let the NetApp system manage the cache without any intervention from us,” says Beaird. “The performance boost we get from NetApp Flash Cache is more than what we expected. Our Citrix experts were impressed.”

The increase in performance also comes with a reduced storage footprint and storage costs because DMG can use Flash Cache along with higher capacity hard disk drives and avoid adding more high-performance disks.

#### **The right tools for the job**

DMG also uses NetApp data protection tools such as SnapManager® for Microsoft® SQL Server® and SnapManager for Microsoft SharePoint® Server to automate backup processes and other administrative functions. With NetApp Snapshot™ and SnapRestore® technologies, IT can restore lost or corrupted files for users in a matter of minutes, enhancing productivity.

NetApp Virtual Storage Console for VMware vSphere provides integrated, end-to-end virtual storage management for DMG’s VMware infrastructure, including discovery, health monitoring, capacity management, provisioning, cloning, backup, restore, and disaster recovery. Administrators can access and execute all these capabilities from within VMware vCenter™.



**Figure 1) DuPage Medical Group FlexPod infrastructure.** NetApp clustered Data ONTAP enables a highly available, unified clustered storage architecture with four active storage controller nodes at each data center.

## Business Benefits

### No downtime equals better patient care

With FlexPod in place, DMG has been able to virtualize 85% of its server environment, allowing for faster provisioning of services and considerable space and power savings. The combination of NetApp and VMware allows DMG to achieve nondisruptive operations for critical workloads such as Citrix XenApp, which delivers electronic medical record (EMR) and other essential applications, including a Merge picture archiving and communication system (PACS). Medical images are hosted on the NetApp cluster, and physicians access them from any approved web-enabled device using the Merge iConnect Access viewer.

The ability to deliver services and medical images 24/7 with zero downtime enhances the delivery of patient care. “With our FlexPod environment, doctors and clinicians have the data and images they need any time of the day or night to enable delivery of the best care possible,” says Beard.

### An efficient, manageable infrastructure

Because of the efficiency and small footprint of the FlexPod environment, DMG has been able to stay within its data centers and avoid major infrastructure upgrades. The FlexPod

environment is also easy to administer and scale, allowing 1.5 full-time equivalent (FTE) IT staff to manage 400TB of data. Because upgrades and patches can be performed with zero downtime, IT staff no longer needs to come in late at night or on weekends for scheduled maintenance windows.

DMG is piloting NetApp OnCommand® Balance, a predictive modeling tool, to further optimize performance and capacity. “It lets me know at a glance what’s going on with the SAN,” says Beard. “We can identify hot spots in our environment, and if there’s an issue, I can confirm that storage isn’t the bottleneck. If it is, we can rebalance without downtime.”

### Deploying new technology faster

When DMG acquires a new physician practice, it can onboard its data and systems quickly and deploy virtual servers and storage resources in days rather than taking weeks to procure and configure a dedicated physical infrastructure. “We acquire several practices every year, and with FlexPod, we’re ready for more,” says Beard. “If 50 more users need to access our EMR system, no problem. We have the capacity. We spin up a couple of Citrix XenApp servers, and there’s no issue. That’s something we couldn’t do a year ago.”

In the future, DMG is considering deploying Citrix XenDesktop on its FlexPod for virtual desktop infrastructure (VDI), an enabling technology for clinical mobility. “The healthcare industry cannot tolerate systems downtime or inflexible IT systems,” says Beard. “We can now provide access to our systems 24 hours a day. That’s important to us and for our patients needing immediate care.”

“With our FlexPod environment, doctors and clinicians have the data and images they need any time of the day or night to enable delivery of the best care possible.”

**Tony Beard**

Manager of Server, Storage, and IT Security Infrastructures, DuPage Medical Group

#### SOLUTION COMPONENTS

##### FlexPod Components

NetApp FAS3250 storage systems with clustered Data ONTAP 8

Cisco Unified Computing System (Cisco UCS) blade chassis and B-Series blade servers with Cisco UCS Manager

Cisco Nexus switches

##### Virtualization Components

VMware vSphere 5.1

VMware vCenter 5.1

Citrix XenApp 6.5

##### NetApp Software

NetApp OnCommand Unified Manager

NetApp DataMotion for Volumes

NetApp Virtual Storage Console for VMware vSphere

NetApp Virtual Storage Tier

NetApp Flash Cache

NetApp Snapshot technology

NetApp SnapRestore

NetApp SnapManager for SQL Server

NetApp SnapManager for SharePoint Server

NetApp SnapMirror

NetApp deduplication

##### Third-Party Products

Epic EMR

Merge PACS 6.5

Merge iConnect Access

Microsoft Exchange Server 2007

Microsoft SQL Server 2005/2008/2012

##### Protocols

CIFS, NFS, iSCSI, Fibre Channel

##### NetApp Global Services

NetApp SupportEdge Premium

##### Partner

Meridian IT Inc.

[www.onlinemeridian.com](http://www.onlinemeridian.com)



[www.netapp.com](http://www.netapp.com)

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Discover our passion for helping companies around the world go further, faster at [www.netapp.com](http://www.netapp.com).

Go further, faster®

© 2014 NetApp, Inc. All rights reserved. No portions of this document may be reproduced without prior written consent of NetApp, Inc. Specifications are subject to change without notice. NetApp, the NetApp logo, Go further, faster, DataMotion, Data ONTAP, Flash Cache, FlexPod, OnCommand, SnapManager, SnapMirror, SnapRestore, and Snapshot are trademarks or registered trademarks of NetApp, Inc. in the United States and/or other countries. Microsoft, SharePoint, and SQL Server are registered trademarks of Microsoft Corporation. VMware and VMware vSphere are registered trademarks and vCenter is a trademark of VMware, Inc. Cisco Nexus and Cisco UCS are registered trademarks and Cisco Unified Computing System is a trademark of Cisco Systems, Inc. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. CSS-6686-0214

Follow us on:     