



NetApp®

## Success Story

# MDI: Equipped for Success with Healthcare Technology Solutions on Cisco, VMware, and NetApp



### KEY HIGHLIGHTS

**Industry**  
Healthcare

**The Challenge**  
Architect a high-performance, flexible infrastructure for fast change, high data volume.

**The Solution**  
Build on Cisco UCS®, VMware®, and NetApp® for maximum availability/extensibility.

#### Benefits

- Bring on new clients/services in days, not months
- Scale in all dimensions: servers, storage, connectivity—up and out
- Gain flexibility to deal with changing requirements
- Grow more quickly with less hardware
- Manage exponential growth without adding complexity

### Customer Profile

Through healthcare management and technology solutions, MDI helps clients see healthcare differently. Leveraging extensive experience in provider network administration, contracting, and health data management, MDI collaborates with clients to enhance the quality of healthcare delivery and plan benefits while controlling costs. Founded in 1992 and headquartered in Ponte Vedra, Florida, MDI serves public and private sector clients across 31 states and Puerto Rico.

### The Challenge Architect a High-Performance, Flexible Infrastructure for Fast Change, High Data Volume

MDI builds centralized health data warehouses for clients wanting to measure cost, quality, and other performance standards associated with medical health plan management. “Our data processing and storage capabilities are among the most advanced in the industry,” says Billy Steeghs, MDI’s SVP of Information Technology. “Our servers run highly sophisticated analytics across billions of medical events within minutes, a process that used to take days or even weeks to complete.”

MDI’s data visualization technology was recently showcased at Microsoft’s MIX10, a conference that highlights applications developed using Microsoft® Silverlight technology. MDI’s Viewpoint Analytics platform uses Silverlight’s unique data processing capabilities to present a patient’s medical history in a graphical representation of the human body. The interactive graphic displays affected organs, bones, and body systems by location and severity, making it easy to identify high-risk situations and warning signs.

To deliver such cutting-edge healthcare analytics and data management solutions, MDI relies on a highly capable, flexible shared IT infrastructure. How did the structure come together? One challenge at a time, suggests Steeghs: “We first started using NetApp Snapshot™ technology to streamline backup processes and reduce costs by freeing up space on our tier 1 storage. We had such success in terms of reliability and leveraging NetApp Data ONTAP® integrated efficiency features that we started moving more of our data to NetApp. First file shares, then databases, and, before long, NetApp had become MDI’s tier 1 storage solution.”

“Unpredictability is the nature of our business. We must have the ability to scale out any or all of our infrastructure components rapidly and in every dimension. The Cisco, VMware, and NetApp solution gives us that capability for servers, for storage, and for connectivity.”

**Billy Steeghs**

Senior Vice President, Information Technology, MDI

Steeghs says that in developing infrastructure specifications, the challenges came in what the IT team didn't know: “We simply could not predict our six-month growth—in numbers of customers, the size of customers' employee or member groups, the number or size of files they'd need to manage, or even the volume of reference data that MDI would purchase. For example, our comparative dataset alone includes nearly three-quarters of a billion individual claim lines and roughly 30 million unique patients for each year. As we built out our software and supporting infrastructure, flexibility was critical.”

MDI outlined requirements for the IT infrastructure:

- Multidimensional scalability to accommodate changing requirements
- Fast provisioning of server and storage resources
- Performance to support demanding workloads
- Native multiprotocol support, including Fibre Channel over Ethernet (FCoE) connectivity
- High availability and replication technology for disaster recovery (DR)
- Rapid deployment and management simplicity with efficient, complementary server/storage/networking virtualization solutions

**The Solution**

**Build on Cisco, VMware, and NetApp for Maximum Availability and Extensibility**

MDI determined the best-fit infrastructure to be a VMware vSphere® 4.1 virtualiza-

tion platform running on a Cisco Unified Computing System™ (UCS) data center platform with NetApp unified storage.

“The Cisco UCS solution meets our requirements for fast scale-out,” comments Steeghs. “With this platform, we can quickly add a new blade and distribute the load. Cisco UCS templates and preconfigured service profiles make it faster and more secure, since all parameters are predefined, and servers can be deployed, upgraded, or changed in seconds. It allows us to grow beyond a chassis without reinventing the wheel every time a full chassis of servers is needed.”

NetApp brings equivalent scalability and simplicity to storage. Steeghs cites native FCoE connectivity; boot-from-SAN, deduplication, backup, and replication efficiencies; and low total cost of ownership (TCO) as additional NetApp differentiators. “FCoE was the key for us to grow the server farm without additional investments needed in our traditional Fibre Channel environment. We utilized FCoE-to-FC modules to tie the two environments together. That's all we need to expand our server farms.”

Today, the Cisco, VMware, and NetApp infrastructure supports MDI's software as a service (SaaS) business, delivering web-based access to the Viewpoint Analytics solution. This infrastructure helps MDI serve a growing client list, including HealthScreen, a wellness management company; First Coast Advantage, a Medicaid provider service network owned by Shands Jacksonville.

Steeghs remarks that the up/down scalability and efficient footprint of the solution make it possible to deliver MDI solutions multiple ways, including as a hosted private cloud at client sites.

System highlights:

- MDI's Cisco solution leverages Cisco UCS B-Series Blade Servers and Cisco® 6100 Series Fabric Interconnects.
- A high-availability NetApp FAS3140 system provides storage capacity via FCoE.
- The NetApp primary system also provides storage resources to the company's contract management and claims repriker and a VMware View® 4.0 environment used by MDI developers.
- Tight integration with VMware allows NetApp storage to be added and managed from the VMware vCenter™ Server. Currently more than 80% of MDI applications run in the VMware on NetApp environment.
- For disaster recovery, MDI leverages NetApp SnapMirror® technology to replicate contractual obligation systems to a NetApp FAS2020 at the MDI disaster recovery site in Ohio.

“NetApp technology and the Cisco UCS infrastructure help us to cost-effectively meet our data protection, within minutes recoverability, and information security commitments,” notes Steeghs. “After rigorous testing and assessment on data services for a federal contract, MDI was deemed compliant in accordance with stringent NIST security requirements.”

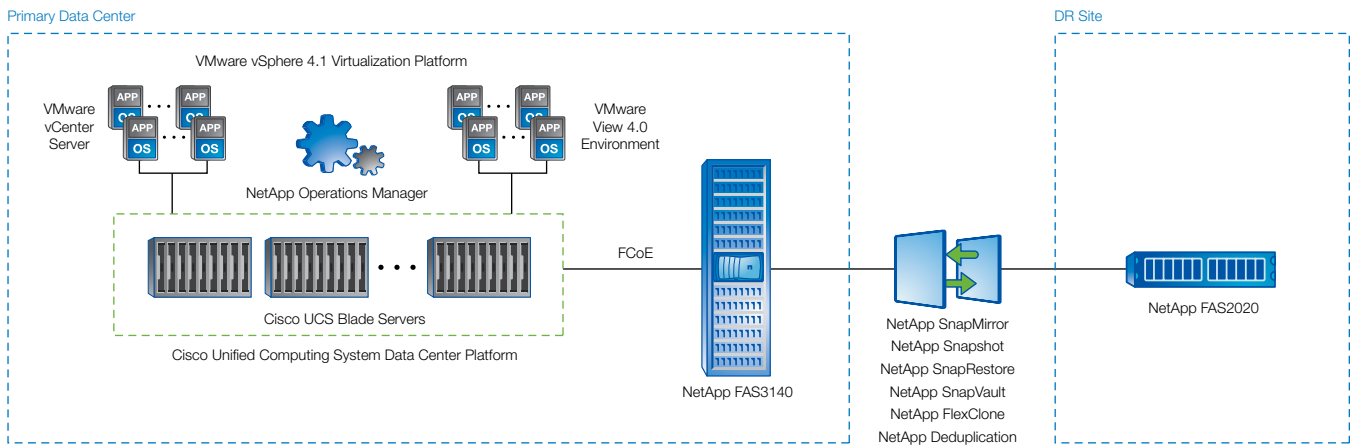


Figure 1) MDI storage infrastructure.

**Business Benefits**  
**Infrastructure Insurance:**  
**Multidimensional Scalability**

Steeghs confirms that the Cisco, VMware, and NetApp infrastructure meets MDI’s need for extensibility: “This solution delivers the functionality we require today with multidimensional scalability to accommodate rapidly changing business requirements. Today a client may ask us to run analytics for an organization with 400 employees; tomorrow it may be a 400,000-member group. Or they may ask us to add a dimension to the data cubes that we use to deliver extremely high-speed analysis and reporting. That simple request can increase our storage requirements tenfold.”

The Cisco UCS solution simplifies scaling by uniting all elements into a single, cohesive system. The wire-once model, in conjunction with management tools such as service profiles that provide a level of abstraction from the physical infrastructure, helps make scaling much faster and easier than in traditional configurations.

Steeghs continues, “Change is constant in healthcare. And the rapid advancement in technology enables the industry to solve problems today that it couldn’t solve yesterday. We must have the ability to nondisruptively scale out any or all of our infrastructure components rapidly and in every dimension. The Cisco VMware, and NetApp solution gives us that capability for servers, for storage, and for connectivity.”

**First Responder: New Services in a Heartbeat**

The new shared IT infrastructure combines the power of Cisco UCS service profiles with NetApp rapid cloning and FlexVol® storage-virtualization technology to help MDI quickly respond to both internal developer and external client requests.

Steeghs says that provisioning new server and storage resources, a process that took days with the traditional infrastructure, now takes just hours: “We get new-build requests almost daily, and the virtual infrastructure allows us to more quickly deploy resources. The results are accelerated development cycles and a real competitive advantage. In many cases, we can respond to client requests in a matter of days versus the 6 to 12 months that a competitor might need.

“Running MDI’s cutting-edge healthcare information technology on this infrastructure, we’re able to use an agile process for software design, which means we get to sprint while other companies are still walking. Without equivalent infrastructure capability, their ability to catch up becomes increasingly difficult.”

**Flexibility of Implementation**

NetApp also provides high-speed I/O to the MDI claims processing environment, which currently runs across a 100-node cluster. MDI utilizes NetApp Snapshot copy technology to create copies of data extracted (via CIFS) from

claims databases. Steeghs explains, “Using Snapshot technology, we can nearly instantaneously create millions of small files that we distribute for processing across the cluster. When the processing is done, we simply roll back to an earlier Snapshot copy.

“This is another good example of how our business has been able to grow with NetApp,” Steeghs goes on. “When we were presented with a recent technical challenge, we were able to build a solution within a matter of weeks, leveraging Snapshot technology in a very unique way and tapping into NetApp’s API to automate a process that otherwise would have required overly time-consuming database queries and deletion of millions of files once the processing completed. With the NetApp technology, we can easily handle billion-record workloads. To date, no workload has pushed the NetApp system beyond 50% of its processing capability.”

**A Shrinking Medical Bill**

Additional savings come from NetApp deduplication and thin provisioning technologies, which together reduce capacity requirements by nearly 3TB. Using NetApp Snapshot technology, MDI stores up to 85 days’ worth of online backups in roughly 20% of the space it would take to store traditional backups—a savings that equates to as much as 212TB.

**Preferred Providers**

Manageability is a key benefit of the highly integrated infrastructure. Cisco UCS Manager, for example, lets MDI manage all Cisco UCS elements as

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a single, redundant, uniform pool of resources that can be configured on demand. Cisco UCS can boot directly from NetApp storage and use the same storage virtual environments and application data.

Steeghs summarizes: “Manageability, simplicity, and the ability to grow within a smaller hardware footprint are key in helping MDI—and our clients—control costs. We’ve designed this infrastructure and leveraged solution elements to let us deliver cutting-edge functionality with high value. From the earlier days of our company, when we first used NetApp technology for backups, to this most recent Cisco UCS deployment, we’ve found NetApp to be a key enabler of MDI innovation. While we have certainly looked at other storage vendors, including EMC and 3PAR, NetApp has consistently and repeatedly proven to deliver the best value and technical capability for our business.”

Another NetApp solution delivered by:



SOLUTION COMPONENTS	
<p><b>NetApp Products</b>            NetApp HA FAS3140 and FAS2020 systems            NetApp Snapshot, SnapRestore®, SnapMirror technologies            NetApp SnapVault®, FlexClone®, Operations Manager software</p>	<p>Cisco UCS 6120XP            VMware vSphere 4.1 and View 4.0            Microsoft Windows® Server 2008 R2            Microsoft Silverlight            Microsoft SQL Server® 2008            Microsoft SQL Server 2008 Analysis Services            Microsoft Office SharePoint® Server 2007</p>
<p><b>Protocols</b>            NetApp NAS (CIFS) and SAN (FCoE, FC, iSCSI)</p>	
<p><b>Environment</b>            Cisco UCS B-Series Blade Servers            Cisco UCS B200 M2            Cisco 6100 Series Fabric Interconnects</p>	<p><b>Partner</b>            Sirius  <a href="http://www.siriuscom.com">www.siriuscom.com</a></p>



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