

Hospital Owner Centralizes Electronic Medical Records while Delivering LAN-like Application Performance across the WAN

Cisco WAAS Saves the Organization \$1.5 million a year on WAN Bandwidth while Cisco MDS SAN Switch Streamlines Data Storage and Replication

EXECUTIVE SUMMARY
<p>HEALTH MANAGEMENT ASSOCIATES, INC. (HMA)</p> <ul style="list-style-type: none"> • Healthcare • Naples, FL • 34,500 employees <p>BUSINESS CHALLENGE</p> <ul style="list-style-type: none"> • Comply with HIPAA by rolling out Sovera[®] application for Health Information Management • Centralize Electronic Medical Records for ease of data protection and compliance • Help ensure physician productivity by enabling access to centralized Sovera application across the WAN • Provide secure storage and replication for hospital network business-critical patient records
<p>NETWORK SOLUTION</p> <ul style="list-style-type: none"> • Cisco Wide Area Application Services (WAAS) Network Modules • Cisco Wide Area Application Services (WAAS) Appliances • Cisco MDS 9216 Multilayer Fabric Switches
<p>BUSINESS VALUE</p> <ul style="list-style-type: none"> • Cisco WAAS will save US\$1.5 million in WAN bandwidth • LAN-like application performance helps ensure physician productivity • Scalable SAN architecture with replication and disaster recovery for secure data storage

Business Challenge

Health Management Associates, Inc. (NYSE: HMA) is the a premier operator of acute care hospitals, primarily in the southeast and southwest areas of non-urban America. When HMA acquires a hospital, it immediately upgrades the quality of healthcare delivery and simultaneously expands its medical services so community residents no longer need to commute to major urban centers for specialty medical care, except in rare instances. Apart from providing additional medical services, HMA upgrades the physical facility to today's technology. It also introduces a number of proven hospital management practices that greatly improve a patient's hospitalization experience, principally through decentralized management with centralized operating systems.

HMA manages 61 acute care hospitals across the country and has four datacenters, including data recovery sites, located throughout the United States in Atlanta, Georgia; Naples, Florida; Jackson, Mississippi and Colorado. HMA has always been keen on using technologies to enable its outstanding

quality of services. During a 2004 State of the Union address, President George W. Bush proclaimed that all Americans will have Electronic Medical Records (EMR) within 10 years. Sparked by the president's proclamation as well as Health Insurance Portability and Accountability (HIPAA) requirements in Health Information Management (HIM), HMA began a move from paper to electronic medical records.

The current HMA practice requires physicians to capture patient information such as insurance cards, diagnosis, and prescriptions on paper; scan it into data capture servers temporarily; transfer it to the main Naples facility; and then get it mirrored into the Jackson facility. Later when the information is retrieved, it is pulled across the organization's wide-area network (WAN).

“With Electronic Medical Records becoming standardized in all our hospitals, and more demands being placed on IT, and we were faced with deciding whether EMR and the Sovera application that deliver EMR should be centralized or decentralized,” says Mark Drake, network engineer for HMA. “It became clear that decentralization was too expensive and cumbersome because it required us to install and maintain expensive local servers, operating systems, and software licenses at each hospital. However, in our centralization approach, we also did not want to add costs for doubling our current WAN bandwidth because we were already spending roughly \$1.2 million a year on WAN bandwidth across all hospitals. Clearly, we needed a cost-effective WAN optimization solution that could enable centralization, optimize application performance, and improve WAN efficiency with the bandwidth that we already had in place.”

With the dramatic increase in electronic records, HMA also soon discovered that it needed to upgrade its storage environment to provide the scalability necessary to meet future needs and to provide connectivity to a remote disaster recovery site. HMA contacted Jason Broome, a systems engineer with consulting firm Mainline Information Systems to assess HMA’s storage environment.

“It was clear to me from the beginning that HMA really needed a Storage Area Network [SAN] solution with FCIP [Fibre Channel over IP] capability in order to connect over long distance to the data recovery site, from Naples, Florida to the data center in Jackson, Mississippi” says Broome. “The Cisco SAN products provided the scalability that they needed, as well as a familiar Cisco management environment for the HMA IT team.”

“Cisco WAAS not only enables centralized Electronics Medical Records for us, but also saves us \$1.5 million a year on WAN bandwidth across 61 hospitals with a 6-month ROI (return on investment). Unlike tunnel-based alternatives, Cisco WAAS is the most transparent and easiest solution to implement and integrate as it does not require us to overhaul our security infrastructure.”

—Mark Drake, Network Engineer, Health Management Associates, Inc.

Network Solution

After considering all the SAN switches available, Broome recommended that the IBM system Storage DS4700 be connected with Cisco® MDS 9216 Multilayer Fabric Switches, because they provide scalability, familiar management software, and the IP connectivity needed to mirror and replicate data over long distances.

“The Cisco MDS 9216i switches worked like clockwork, and the best part was that it only took about 30 minutes of downtime to transfer the data to the new storage network, and there was no downtime at all for the data mirroring, which was totally transparent to the users,” says Broome.

HMA was already using a WAN optimization appliance from another vendor. But the incumbent solution would require significant overhaul of HMA’s security infrastructure in order to optimize EMR and Sovera application across the WAN.

“One of the deciding factors in selecting Cisco WAAS was its tunnel-less architecture, where client and server IP addresses and TCP port information are preserved,” says Drake. “With some of the other vendors that we evaluated, we realized that we would have to implement major configuration and policy changes in all of our network and application firewalls. Cisco did not require us to make any changes to the way that we handle our security, which made it a clear winner.”

Business Results

According to Drake, before implementing Cisco WAAS, the new Sovera EMR application almost saturated the company’s WAN bandwidth. HMA’s hospitals all have T1s and were consuming roughly 768 Kbps during normal business hours. After implementing the new Cisco WAAS, HMA was not only able to deliver LAN-like Sovera performance, but also significantly cut bandwidth consumption.

“Our Davenport, Florida hospital was using about 768 Kbps prior to this project and now it is using about 400 Kbps with the Cisco WAAS,” says Drake. “Cisco WAAS has cut the consumption down by half.”

LAN-like response time was also a significant improvement for HMA. “Prior to upgrading to Cisco WAAS, doctors and nurses would wait 15-20 seconds to load a medical image, now it takes less than five seconds – a three to four times improvement. Besides performance, Cisco WAAS’ fully transparent architecture really resonates with us. Preserving client and server IP addresses and ports is a big deal for us. Implementing a nontransparent alternative would render our WAN Access Control Lists (ACLs) useless.”

HMA employs the WAN ACLs to control communications among hospitals across the WAN on a per hospital basis. According to Drake, hospitals are permitted to communicate with each other, but only on certain ports, servers, and IP addresses.

“If one of our hospitals gets hit with a virus, that virus does not propagate out to 61 sites, and this way we are able to lock all the sites down from each other,” says Drake. “Cisco WAAS gave us the ease of implementation into our current infrastructure without having to overhaul everything. It was the least disruptive of all the vendor solutions that we evaluated. Cisco dramatically reduced implementation efforts without us having to change our whole security profile. That drove us to Cisco.”

As HMA continues their Sovera EMR application rollout, they expect more investment in Cisco WAAS as more hospitals are integrated into the centralized application delivery model.

“Basically, we were looking at what we have paid out for the Cisco products as opposed to what we would pay for by adding another T1 to each facility,” says Drake. “We were already spending \$1.2 million for total communications. Adding the new T1s would require us to spend another \$1.5 million every year. The Cisco solution allows us to save \$1.5 million dollars a year and pays for itself in six to seven months.”

Next Steps

Since HMA already uses Cisco end-to-end for its IT needs, the Cisco WAAS and Cisco MDS 9216i Multilayer Fabric Switches were a natural fit for the Wide Area Application Engine (WAE) upgrade, and Drake anticipates Cisco will be an instrumental part in future upgrades.

“We figured that if there were other IT products that the Cisco WAAS could communicate within the WAE’s in some fashion down the road, that ought to be an option for the future,” says Drake. “We do not want any other products included in our configuration that might not have the ability for future growth or future deployments. As we acquire hospitals, we work with the existing IT as long as it is working. But if anything needs upgrading, we always turn to Cisco.”

PRODUCT LIST

Cisco Application and Storage Networking Services

- Cisco Wide Area Application Services (WAAS) Network Modules
- Cisco Wide Area Application Services (WAAS) Appliances
- Cisco MDS 9216 Multilayer Fabric Switches

For More Information

Find out more about Cisco WAAS and Cisco MDS Multilayer Switches solutions, please visit

<http://www.cisco.com>.



Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

©2007 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0705R)