



## Union Hospital Addresses Storage, Performance, and Cost Concerns with VMware Virtual SAN Solution

### INDUSTRY

Healthcare

### LOCATION

Terre Haute, Indiana

### KEY CHALLENGES

- Expensive to replace aging storage solution.
- Performance could not keep up with increasing workloads.
- Latency issues impacted delivery of patient services.
- Ongoing system maintenance was costly.

### SOLUTION

Virtual SAN is hyperconverged storage from VMware for virtual machines. It delivers storage for virtualized applications with a scale-out architecture leveraging x86 servers and server-side flash. This drastically lowers TCO while providing a high performance and scalable storage solution.

### BUSINESS BENEFITS

- Fast database performance sped up application response times
- Budget-friendly scale-out expansion eliminated need for costly storage upgrades
- Easy-to-manage solution reduced maintenance cost

Faced with aging hardware and maxed-out resources, Union Hospital had to decide whether to replace its existing storage system or migrate to a completely different platform. After evaluating solutions from several vendors, it chose to purchase the VMware Virtual SAN™ product. The decision saved money, solved key application performance challenges, delivered scalability, and freed up operational resources, positioning Union Hospital for future expansion.

Founded in 1892, Union Hospital is a not-for-profit healthcare system based in Terre Haute, Indiana, that provides care to residents of the Wabash Valley, regardless of income. It operates 2 hospitals and 18 clinics in Indiana and Illinois, with more than 330 healthcare providers. For five years, Union Hospital and Union Hospital Clinic have been recognized by Hospitals & Health Networks magazine's "Most Wired Hospitals" survey for excellence in information technology.

### The Challenge

In 2012, Union Hospital began taking a close look at its data storage requirements. At the time, it was relying heavily on a NetApp storage system, which was aging, decreasing in capacity, and causing performance-related concerns.

"We had reached the end of life on our NetApp and on our HP storage," explains Chad Elliott, network systems consultant at Union Hospital. "We were running out of storage resources. There really wasn't any more horsepower to get out of the system. We were hitting a wall."

The IT organization had a complex environment made up of products from a range of vendors. Although NetApp was the primary storage platform, the hospital's IT team also relied on HP, Citrix, and Cisco products.

The system struggled to keep up with the loads required by Union Hospital's mission-critical applications, such as GE Healthcare's Centricity solutions for electronic medical records (EMR), practice management, and imaging and Siemens Soarian Clinicals for lab work, patient orders, and charting. The organization's more than 3,000 users experienced long application launch times, sluggish page refreshes, slow reporting, significant latency, and occasional system crashes, all of which negatively impacted the quality of patient services. It also was becoming more costly to manage the NetApp system as it aged, as much as \$500,000 per year.

It became clear that an upgrade was required, and one was scheduled for summer 2014.

***“We actually had clinics calling us up to say how much faster the apps were running once they were in a pure Virtual SAN environment. ... It seems like the more things we migrate to Virtual SAN, the more people are begging to be on it.”***

- Chad Elliott,  
Network Systems Consultant,  
Union Hospital

## VMWARE FOOTPRINT

- VMware Virtual SAN
- VMware vSphere

## APPLICATIONS VIRTUALIZED

- GE Healthcare Centricity EMR
- GE Healthcare Centricity practice management solution
- GE Healthcare Centricity PACS
- Siemens Soarian Clinicals
- Oracle Database
- Microsoft SQL Server

In 2013, GE Healthcare announced that it would start supporting virtual platforms for its Centricity applications. So, together with Joink, a Terre Haute-based Internet service provider and virtualization partner, Union Hospital set out to evaluate whether a Virtual SAN solution made sense.

“We looked at other vendors off and on, but most of those other vendors seemed to be relatively new to market,” Elliott explains. “And with hardware storage array purchases, we were looking at over a million-dollar investment. The intention was not to budget a forklift replacement but to ease over from traditional storage to a virtual solution.”

## The Solution

“Based on our preliminary testing,” Elliott says, “we decided to pursue Virtual SAN.”

The VMware Virtual SAN product offers several benefits compared to other solutions. Union Hospital already had an existing VMware vSphere® environment, which had just been migrated to new Cisco UCS C-Series servers. “We were able to take that UCS investment and build on it with additional hardware instead of buying something new,” Elliott says. “We had also upgraded to 10 Gigabit Ethernet, so it was already there and ready for Virtual SAN.”

The VMware Virtual SAN solution is scalable, which is a big advantage. “With other monolithic SANs, you have to buy all you need right now, but you can buy Virtual SAN in chunks and scale linearly,” notes Chad Killion, technical manager of client services at Joink. “Together, we decided that it would be most advantageous, both for cost and for performance, to go with Virtual SAN because they could grow it as needed, one node at a time. It kind of blew our minds to experience something this innovative with storage.”

Moving to the Virtual SAN environment would also allow Union Hospital to consolidate its system, rather than having to use products from multiple vendors for a single solution. Bringing storage under the VMware umbrella would greatly simplify maintenance and hardware requirements.

Joink and Union Hospital were confident in the ability of VMware to support the solution. “VMware has an excellent reputation, and its support services have always been excellent,” says Elliott. “It’s the support by which I measure all other companies’ support because it’s always gone above and beyond. Even though we were extremely early adopters of Virtual SAN, we were confident VMware would deliver.”

The solution went live in March 2014 at half the cost of a NetApp replacement. The results have been everything Union Hospital expected and more.

## Business Benefits

Bobby Andreae, network systems consultant and Citrix administrator at Union Hospital, started the migration onto the VMware Virtual SAN environment. “The new Virtual SAN has performed tremendously faster. Application launch times went from approximately 30 seconds to less than 10 seconds in most cases, sometimes even closer to 5 seconds. We also were able to achieve more than 53,000 IOPS on Virtual SAN, when we were previously seeing around 900.”

When Elliott and his team tested the Centricity EMR system for one of the hospital’s clinics, reports that had taken 30 minutes to run were taking just 5 minutes. “We actually had clinics calling us up to say how much faster the apps were running once they were in a pure Virtual SAN environment,” says Elliott.

Accessing patient records and retrieving appointment data was critical for the doctors, nurses, and medical staff. Earlier latency issues slowed down the Oracle database and the Centricity SQL Server database. It was common to see latency as high as 200 milliseconds throughout the day, but now it’s often under 1 millisecond, resulting in very fast response times for patient database operations.

The new system can also support more concurrent sessions. “We can host a significantly higher number of Citrix users on a virtual Citrix XenServer of comparable specs versus our old environment,” Andreae says. “Generally we would reach a ceiling of 40 users and then we would start seeing issues. We’ve had more than 85 users in this new environment with no reports of performance degradation.”

Union Hospital found an unexpected advantage to migrating over to the Virtual SAN solution: reclaimed resources in the data center. The addition of Cisco UCS servers in 2013 combined with the launch of the VMware Virtual SAN solution in 2014 freed up more than 100 copper ports and 1 blade in two core Cisco routers in Union Hospital’s data center. “We probably gained back years on our capacity in our data center. We were running out of space, but now we have room to grow without having to invest in more equipment,” Elliot says.

All of this performance, scalability, and storage improvement comes without an increase in system maintenance, which is a plus for Elliott and his team. “Managing Virtual SAN has proven to be about as simple as it can get. You add some disks, you claim those disks, and you’re done,” notes Killion. “It’s less than a tenth of what I have to do on NetApp. I would go so far as to say that managing Virtual SAN is kind of an oxymoron.”

Since launching the Virtual SAN solution, Union Hospital has added two nodes and doubled the number of disks on each node for a total of 74TB of raw storage space. The response has been so positive that everyone wants their projects on the Virtual SAN environment. “It seems like the more things we migrate to Virtual SAN, the more people are asking to be on it,” Killion says.

### Looking Ahead

The move to a pure VMware Virtual SAN environment will continue. Union Hospital has plans to add at least one node per quarter and eventually to migrate everything off of its existing external storage arrays. “Being able to scale in smaller chunks makes it easier to get budget approval,” says Elliott. “The migration has bought us time. We were able to see a performance increase with the new system and some relief on the old system. But our goal is to completely phase in Virtual SAN for all our applications.”

Elliott is excited about the future Virtual SAN roadmap. “It seems that VMware has bet heavily on this and sees the opportunity for people like us to be able to bite off storage in small chunks. It’s a game changer.”

