



*“We use VMware vCenter Site Recovery Manager for workflow, testing, auditing and execution of our disaster recovery plans. It is a crucial component of our disaster recovery strategy as a whole.”*

— Donald Wilkins, Director of IT, Navicare, Inc.

#### KEY HIGHLIGHTS

##### Challenge

Implement automated non-intrusive disaster recovery system adaptable to changing business needs

##### Solution

- Reduce recovery time for a virtual machine by 90 percent, from ten minutes to one minute
- Recover 25 virtual machines in less than 30 minutes
- Restore basic customer application functions within 12 hours
- Conduct full DR tests on a monthly basis rather than annual basis
- Double recovery success rate

## Navicare, Inc.

### Protecting the IT Infrastructure that Streamlines Healthcare

Navicare, Inc. (Navicare) is a leading Internet-based medical claims clearinghouse that helps physician practices increase profitability through improved claims reimbursement and staff productivity.

Serving over 15,000 physicians in practices nationwide, Navicare’s solutions automate account receivables processes, including primary and secondary claims reimbursement; patient eligibility verification; rejected and denied claims management; electronic remittance and posting; claims and remittance reporting and analysis; and patient statement processing.

#### The Challenge

“Basically, our solutions enable our clients to speed their claims reimbursement from insurance companies, and make the entire process more productive for practice staff,” explained Donald Wilkins, director of IT at Navicare. “And as a web-based software as a service, virtually all that we do is real-time. In the event of a disaster, real-time transactions could mean lost business.”

As if that is not enough incentive to maintain uptime and data security, Navicare is also mandated by the Health Insurance Portability and Accountability Act (HIPAA) to take certain measures to provide disaster recovery solutions. “Failure to adequately recover from a disaster could lead to noncompliance and jail time or fines,” said Wilkins. “Of far greater concern is the fact that we may be putting the health of individuals at risk. Needless to say, we want to follow best practices to minimize disruption or loss of business in the event of a disaster.”

Navicare’s production environment consists of 7 TB of Oracle databases, a VMware ESX cluster running 25 virtual machines, and Dell EqualLogic iSCSI SANs connected by Cisco-based network architecture. As part of its “best practices” approach to disaster recovery, Navicare sought a solution that could meet multiple recovery objectives for its IT services.

“Our recovery point objective (RPO) varies based on the criticality of each system,” says Wilkins. “In most cases, critical systems have a one hour RPO. Once a declaration of a disaster has been made, our goal is to cut over to our disaster recovery facility within 6 hours. Oracle and VMware infrastructure are to be recovered within 4 hours of declaration, with the remaining 2 hours used to test and validate application processes. Basic customer application functions are to be operational within 12 hours, and full functionality—analytics and reporting—are to be restored between 24 and 48 hours.”

## VMWARE AT WORK

VMware vCenter Site Recovery Manager

VMware Infrastructure 3 Enterprise, featuring:

- VMware ESX 3.5
- VMware vCenter Server
- VMware vMotion
- VMware Distributed Resource Scheduler (DRS)
- VMware High Availability (HA)

## The Solution

Between the 'need to haves' and 'want to haves', Navicure had a plethora of requirements for its disaster recovery solution, but VMware vCenter Site Recovery Manager provided to be an ideal match for the company's needs.

Site Recovery Manager eliminates complex manual recovery steps and removes the risk and worry from disaster recovery. In doing so, Site Recovery Manager accelerates recovery and ensures successful recovery by automating the recovery process and eliminating the complexity of managing and testing recovery plans.

"It just made sense to go with Site Recovery Manager," says Wilkins. "We were already using VMware Infrastructure 3 to virtualize our data center, and had been using features like VMware High Availability and VMware Distributed Resource Scheduler at our production facility to achieve better utilization of servers in the cluster. Based on the good results we'd experienced, we felt comfortable selecting VMware Site Recovery Manager to go a step further and help protect our data center."

The first time that Navicure used Site Recovery Manager for beta testing, it achieved stunning results. Ten virtual machines failed over within ten minutes—a process that previously would have taken close to two hours. "The test runs were totally non-intrusive and did not affect primary site virtual machines," says Wilkins. "Additionally, there was seamless integration with the Dell EqualLogic arrays, so both the iSCSI software and hardware initiators were successfully tested, which can be a time-consuming process otherwise."

Having successfully completed this beta testing, Navicure unleashed a full deployment of Site Recovery Manager. With its prior disaster recovery process, Navicure was saddled with a lot of manual processes that had to be continually updated as new virtual machines were brought online, and which were subject to human error. These tasks were made much more efficient with the Site Recovery Manager, which Navicure used to automatically configure seven basic recovery steps:

- Shutdown of protected virtual machines at protection site (recovery only)
- Prepare storage
- Suspend Non-critical virtual machines
- Recover virtual machines in High, Normal and Low priority order
- Cleanup virtual machine test (test only)
- Resume Non-critical virtual machines (test only)
- Reset Storage (test only)

## DEPLOYMENT ENVIRONMENT

- Hardware: VMware ESX running on Dell PowerEdge servers attached to Dell EqualLogic PS Series arrays (models PS100 through PS5000xv). Replication software included with hardware / array firmware
- Guest Operating Systems: Windows 2003, Solaris 10x86, Red Hat Enterprise 5
- Virtualized Production Applications: Microsoft Exchange, SQL, EDI translation services, Blackberry Enterprise server

## Results

This automation has transformed Navicure's disaster recovery processes for the better. "Site Recovery Manager has reduced the recovery time from 10 minutes per virtual machine to one minute on average for basic recovery, and it has greatly reduced the probability of error," says Wilkins. "We can successfully recover 25 virtual machines in less than 30 minutes. That means that we can cut over to a disaster recovery facility within 6 hours of a disaster, and basic customer application functions are operational within 12 hours."

The "before and after" on recovery time objective (RTO) has been particularly impressive. "Our original RTO was four hours from the time of the declaration," says Wilkins. "We still maintain the four hour RTO, but now can actually recover all virtual machines in one hour, whereas it took the whole four hours before. This extra time is used to assist other infrastructure recovery efforts. We can recover the entire virtual machine infrastructure before the database administrators have completed the cut over to the standby database."

Just as important as recovery time, the recovery success rate has been drastically improved by Site Recovery Manager. "The recovery success rate before Site Recovery Manager was roughly 50 percent," says Wilkins. "Most of the failure was not so much the inability to recover, but to recover in the time set forth by the RTO. With Site Recovery Manager, the ability to achieve the RTO is now at 100 percent."

Perhaps most important of all, Site Recovery Manager enables Navicure to run its disaster recovery test with greater frequency. "A complete disaster recovery test of all our virtual machines used to be an annual affair," says Wilkins. "With Site Recovery Manager, it's now a monthly affair. This was achieved in large part because Site Recovery Manager reduced the testing time of each virtual machine to 1/10th of the original time."

While these metrics are impressive, Navicure feels that the main benefits of Site Recovery Manager can't necessarily be measured: "Being assured that your disaster recovery processes work and reducing the labor hours required to verify them is pretty much a reward in and of itself," says Wilkins.

## The Future

Navicure continues to improve its disaster recovery processes by taking advantage of Site Recovery Manager's flexibility to easily customize each recovery plan with custom script steps. "The sky is the limit on what you can do with the custom scripting functionality," says Wilkins. "For example, we are executing scripts after each virtual machine recovery to do the updating of a Bind DNS server at the recovery site. Also, we are inserting some code to update hosts file entries in the physical infrastructure of the Oracle RAC cluster. That's just some of the ways that Site Recovery Manager can be tailored to our needs to help us meet our evolving objectives."

"Moving forward, we will continue to implement enterprise class virtualization technologies like Site Recovery Manager to drive more operational efficiencies and high availability into the infrastructure," says Wilkins. "We want to continue to be an innovator in our industry, and continue to provide value to our customers by providing quality services—and our use of Site Recovery Manager helps ensure that we can follow through on those goals."

