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IT Architect, VMware

#### KEY HIGHLIGHTS

##### Challenge

Create and implement a comprehensive disaster recovery plan in conjunction with a datacenter consolidation project.

##### Solution

- VMware consultants worked closely with VMware IT to develop an architecture design to fit the business requirements, leveraging expertise and experience gained from previous SRM engagements
- Conducted knowledge transfer sessions to accelerate staff learning for optimized implementation
- Provided operational run books, configuration guides, and other documents to enable VMware IT to successfully maintain their SRM deployment moving forward
- Consultants worked with the EMC team to proactively address potential compatibility issues

## VMware

VMware is the global leader in virtualization solutions from the desktop to the datacenter—bringing cloud computing to businesses of all sizes. Customers rely on VMware to reduce capital and operating expenses, ensure business continuity, strengthen security and go green. With more than 150,000 customers and 22,000 partners, VMware earned revenues of \$1.9 billion in 2008.

As part of its continuing efforts to save costs and boost efficiency by streamlining IT operations, VMware recently completed a project to consolidate two data centers in the San Francisco Bay Area. Working with VMware Professional Services, VMware identified an opportunity to replicate data to a second data center in Wenatchee, Washington and create a comprehensive disaster recovery plan centered on VMware vCenter Site Recovery Manager. As a result, VMware can now restore email access to 10,500 mail accounts within one hour. The new system allows the IT team to provide employees with precise timeframes for resolutions and conduct test failovers at any time without disrupting its production environment.

### Best Practices in Disaster Recovery

Companies everywhere are using VMware technology to save money and resources by consolidating their data centers. In early 2009, VMware applied this strategy to itself, asking its IT organization to consolidate two data centers in the San Francisco Bay Area. The IT team initially intended to move all of its Bay Area servers and applications into its Palo Alto data center, but soon realized that the Palo Alto location lacked the space to support this move.

The IT team then looked to Wenatchee, Washington—where VMware operates another data center—and made an important discovery. Because the Wenatchee data center had been designated by VMware as a recovery site, it would be the ideal facility to support a disaster recovery program for the Palo Alto data center while also absorbing resources from the closed data center.

“Being based in California, we have to think ahead about things like earthquakes, power outages and terrorist attacks,” says Alex Fontana, IT Architect, VMware. “We wanted to make sure we could do a recovery in an alternate location without disrupting our global 24x7 operations. Above all, we needed to know that our 10,500 Exchange mailboxes would still be accessible internally and externally to keep operations going under even the worst circumstances.”

VMware’s IT team decided to use Wenatchee as the disaster recovery site for many of its critical production workloads such as Microsoft Exchange. The company chose to replace the built-in Microsoft Exchange replication technology with a robust solution that would allow the use of vCenter Site Recovery Manager. Using EMC RecoverPoint as the replication technology would allow the company to roll back to any earlier point-in-time images if the need arose.

## DEPLOYMENT ENVIRONMENT

- Software: VMware ESX 3.5, VMware vCenter Server, VMware vCenter Site Recovery Manager, Microsoft Exchange Server 2007
- Server: HP ProLiant BL680 G5 Server Blades. Each blade consists of 16 processors cores and 64 GB of RAM
- Storage: EMC CLARiiON CX3-80 Storage Array. Fully populated array with three cabinets of discs.
- Storage Replication: EMC RecoverPoint

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One question remained: how to handle the actual disaster recovery process? VMware opted to use its own vCenter Site Recovery Manager solution leveraging the assistance of VMware Professional Services. The project would not only protect the company from downtime and data loss, but also serve as a case study for VMware customers considering similar disaster recovery projects.

## Streamlining Disaster Recovery Recovery From One Day To Under One Hour

vCenter Site Recovery Manager accelerates and ensures successful recovery through workflow automation, non-disruptive testing, and centralized management of recovery plans. The solution enables VMware to place a site recovery runbook into a programmable format and use that as a step-by-step guide for restoring access to email and other data.

“Using vCenter Site Recovery Manager, the VMware IT team will dramatically simplify testing during a disaster recovery process,” says John Arrasjid, Principal Architect, VMware Professional Services. “They’ll be able to figure out what’s working right away, validate that the recovery steps are in the right sequence and then get a precise timeframe for every stage. By using vCenter Site Recovery Manager to automate as many steps as possible in the disaster recovery process, we’ve enabled ourselves to tell our senior manager exactly how quickly we can recover the network—and then stake our jobs on it.”

VMware Professional Services deployed vCenter Site Recovery Manager and a dedicated vCenter server environment within two months. The company can now more easily meet its recovery time objectives, having gained the flexibility to failover all Exchange clusters at once or individual clusters on a case-by-case basis. Even if an entire data center were to go down, VMware could realistically aim to have its email operational again in less than one hour.

“In the past, doing a complete recovery of a critical business application would have taken a whole day or longer, and the process would have been full of manual steps,” says Ben Lin, a Consultant and Business Continuity/Disaster Recovery Specialist in VMware Professional Services. “With the new design using vCenter Site Recovery Manager, we can have all seven Exchange clusters up and running within an hour.”

EMC RecoverPoint replication technology has also helped VMware achieve its recovery point objectives. Previously, network issues may have required full reseeds of databases that became out of sync. Today, the process is much simpler.

Throughout the disaster recovery process, key VMware employees can easily remain notified. A dedicated email server in Wenatchee—separate from the company’s Microsoft Exchange servers—sends text messages via Short Message Service (SMS) to administrators’ cell phones to notify them of issues. The messages contain complete information about the urgency and estimated resolution timeframe of each issue.

## Focusing On Concepts Before Technology

Working closely with VMware’s IT team, VMware Professional Services carefully assessed the project’s conceptual requirements before proceeding. This approach is the exact opposite of the way many companies approach disaster recovery.

“Most companies focus their disaster recovery programs on the technology involved,” says Fontana. “As a result, they make decisions that don’t necessarily support the true needs of the organization. Working with VMware Professional Services, we were better able to determine what we were really trying to accomplish in our disaster recovery program, and to form a conceptual architecture around those needs. Plugging in the right technology became a relatively simple final step.”

*“We have taken a design approach with vCenter Site Recovery Manager that allows the IT group to stake their reputation on successful recovery, sequencing, and timeframes. Through isolated testing, the IT group can now create Service Level Agreements (SLAs) that have a 100% guarantee for automated recovery.”*

— John Y. Arrasjid, Principal Architect  
VMware Professional Services

Companies that choose to build a physical disaster recovery environment must set up exactly the same hardware and software in their recovery center as in their main data center. With vCenter Site Recovery Manager, VMware simply virtualized and abstracted all of its Palo Alto hardware, and then used more powerful servers with a smaller footprint in Wenatchee. Writes to the production LUNs are split and routed through RecoverPoint appliances to target LUNs at the Wenatchee datacenter. Meanwhile, five blade servers in Wenatchee remain on warm standby in case of failover. Most of the time, these servers remain free to run other production workloads, such as backups and consistency checks.

VMware Professional Services further ensured the success of the project by identifying any hardware dependencies and confirming that key technical components were configured at the disaster recovery site. With DNS, Active Directory and Exchange CAS and Hub Transport servers fully operational in Wenatchee, only the mailbox servers needed to be failed over to get the company back online in the event of an outage or disaster.

Using vCenter Site Recovery Manager, VMware can test its failover process at any time. The solution leverages an isolated network, which allows VMware to bring up the recovered VMs without impacting the production environment. Site Recovery Manager generates detailed reports for each test and actual failover, which provides insight into the time required for each step of the process.

“Many companies take great pains to define their disaster recovery plan, but then they don’t test it,” says Fontana. “We had the perfect combination: we worked with VMware Professional Services to create our plan, and we can now test every aspect of our recovery, at any time, with vCenter Site Recovery Manager. From there, we can continue to tweak the workflow, inserting pauses and adjusting the scope of the recovery.”

## Connecting IT Staff with the Right Resources

As a VMware employee, Fontana has access to more information and resources than most VMware customers who are planning implementations. Still, he believes it was helpful to work with VMware Professional Services in implementing vCenter Site Recovery Manager.

“This is the first time I’ve worked directly with the VMware Professional Services group and had a team fully engaged,” says Fontana. “Even as a VMware employee, there were certain bits of nitty-gritty information that I couldn’t get. The PSO resources always connected me with the right resources. Whenever I sent them an email, they were super responsive in helping me get my issues involved.”

VMware Professional Services worked directly with the EMC team to proactively address any potential compatibility issues. They also submitted documentation for the project to Fontana and his colleagues weeks ahead of time, giving everyone a chance to prepare for the project. Fontana believes the results speak for themselves.

“Without vCenter Site Recovery Manager, I would have to walk through numerous steps to handle a recovery,” says Fontana. “First, I would have to access the recovery site over the network, if possible, or walk a local resource through the steps. Then I would engage the storage team to stop replication and perform a personality swap to make the local storage primary. Finally, I would connect to the ESX hosts and rescan, register virtual machines, power on, change IP settings and update DNS. In all, hours of stressful work. With vCenter Site Recovery Manager, I simply push a button and everything we have pre-programmed happens at the recovery site.”

*“The combination of vCenter Site Recovery Manager, EMC CLARiiON, and EMC RecoverPoint considerably reduced the complexity of the implementation. When SRM initiates the failover, RecoverPoint will automatically reverse replication from the recovery site to the protected site. This enabled us to rapidly conduct multiple failover and failback scenarios without any storage reconfiguration required.”*

— Ben Lin, Consultant  
VMware Professional Services

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## Future Promises Greater Speed, Fewer Physical Hosts

With the help of VMware Professional Services, VMware’s IT organization has built its first comprehensive disaster recovery plan. VMware Professional Services can architect a disaster recovery solution to protect critical workloads for virtually any company.

“We work with customers to determine current requirements, assumptions and risks,” says Lin. “We get customer signoff at every element of the design process. Customers can leverage our experience with previous implementations to put together a reliable schedule and set of deliverables to guide us towards a successful delivery.”

VMware’s IT organization will continue to work with VMware Professional Services as it implements vSphere and SRM 4. The company also seeks to add more applications to its disaster recovery plan, and is planning to use vCenter Site Recovery Manager for any datacenter moves in the future.

“Upgrading our Microsoft Exchange environment to run in vSphere will allow us to take advantage of new features and performance improvements. We see that as an opportunity to reevaluate the number of ESX hosts we run for Exchange,” says Fontana. “When customers ask us how they can achieve these benefits too, we’ll be able to showcase our environment and share our experiences with their virtual infrastructure team.”

## Results

- Ensured that 10,500 company email accounts can be restored within 60 minutes of a disaster
- Reduced recover time objective for the Exchange environment from one day to less than one hour
- Automated the key steps of the disaster recovery process, enabling speedy testing and improved timeframes for resolution
- Gained the ability to test failover, without disrupting the production environment
- Consolidated two data centers into one, reducing hardware and power requirements

