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## Disaster Recovery with VMware and Compellent

**Opportunity:** International parts distributor requires highly available applications to maintain 24x7 operations. The solution needs to be cost-effective, increase application uptime, and allow for servers to be restarted at a remote location during a disaster recovery event.

**Technology:** VMware vSphere 4, Dell R710 servers, Compellent Storage

**Project:** Design and implement virtual infrastructure; configure replication of data between main site and remote site

**Solution:** Performed virtualization assessment of physical server environment to determine virtual performance and storage requirements. Planned and implemented network changes to allow an iSCSI storage area network and to allow for replication traffic to be routed to a remote location. Compellent Storage with dual controllers was implemented to provide failover in the case of a controller outage. Thin provisioning, a feature of Compellent, was utilized to allocate storage on demand to ensure there is no wasted storage capacity. Snapshots for each disk, an ability of the Compellent storage solution, were also enabled. This allows for rapid recovery of data in the event of corruption or user error. VMware ESXi was implemented on three Dell R710 servers and set up as a cluster of shared computing resources, managed by a separate VMware vCenter server. Planned downtime for the physical servers was eliminated by configuring VMware's vMotion technology. To quickly remediate unexpected server failures, VMware's High Availability technology was implemented. VMware's Fault Tolerance capability was also installed on certain servers to prevent virtual machine downtime in the event of an unexpected outage, allowing for extreme uptime.

At the DR location, a single controller Compellent SAN was implemented with SATA disk to reduce costs. Three VMware ESX servers were implemented to provide the computing capacity needed to run virtual machines replicated from the production site. Compellent's remote replay technology was used; allowing snapshots of virtual machines to be replicated over the WAN to the remote location. They can then be presented to the ESX servers and the virtual machines can be restarted. VMware's Site Recovery Manager (SRM) can then be used to automate and test the recovery of virtual machines. SRM drastically increases the capability to recover servers during a DR event. This allows for easy testing of the DR plans and reduces human error by automating the recovery during an event.

**Benefits:** Compared to physical servers, the availability of virtual machines can be significantly higher through the use of VMware's vMotion, High Availability and Fault Tolerance. Utilizing a dual controller Compellent SAN, its thin provisioning capability, and easily expandable storage; high uptime can be achieved and data growth can be handled by simply adding disks and allocating more space where it is needed. In a DR event, applications can be made available in a matter of minutes so that critical business functions can resume.