EMC VPLEX AND VMware OFFER A TOTAL SOLUTION TO REDUCE DOWNTIME

EMC VPLEX and VMware protect application availability, offering several advantages over traditional failover solutions.

**ESSENTIALS**
The EMC VPLEX and VMware solution:
- Requires minimal setup
- Reduces complexity
  - No need for quorum disks
- Reduces hardware cost and setup
- Reduces downtime risks

**The Challenge**
Solutions requiring higher levels of availability have traditionally been very costly, hard to implement, and difficult to manage. Downtime, whether planned or unplanned, is extremely costly, until now. EMC® VPLEX® and VMware now offer a total solution to reduce downtime concerns.

**EMC VPLEX**
The EMC VPLEX family removes physical barriers within, across, and between data centers. The VPLEX federation solution can be stretched across two geographically dispersed data centers separated by synchronous distances. Round-trip-time for a non-uniform host access configuration is now supported up to 10 milliseconds for VPLEX Geosynchrony® 5.3 and ESXi 5.5 with NMP and PowerPath®/VE. For detailed supported configuration, refer to latest VPLEX ESSM on http://elabnavigator.emc.com. This is accomplished through the creation of VPLEX distributed virtual volumes. These are storage devices located at both sites of the Metro environment. VPLEX Metro is a SAN-based federation solution that delivers both local and distributed storage federation, enabling users to have the same exact information, accessible at the same time, in two separate locations.

**VMware vSphere**
VMware vSphere delivers uncompromised control over all IT resources with the highest efficiency in the industry. VMware vSphere is comprised of a number of features that transform industry standard hardware into a shared, mainframe-like resilient environment with built-in service level controls for all applications.

VMware vSphere makes it simpler and less expensive to provide higher levels of availability for important applications. With vSphere, organizations can easily increase the baseline level of availability provided for all applications. vSphere makes it possible to reduce both planned and unplanned downtime.

**VMware HA**
VMware HA provides easy-to-use, cost-effective, high availability for all applications running on virtual machines. In the event of server failure, affected virtual machines are automatically restarted on other host machines in the cluster that have spare capacity. HA minimizes downtime and IT service disruption while eliminating the need for dedicated standby hardware or installation of additional software. VMware HA provides uniform high availability across the entire virtualized IT environment without the cost and complexity of failover solutions tied to either operating systems or specific applications.

Refer to the `vSphere Availability Guide`, located at http://www.vmware.com/support/pubs, for more information on VMware HA basics, including how to create HA clusters, how VMware HA works, and explanations on configuration procedures.

**vMotion**
vMotion enables live migration of running virtual machines from one physical server to another. This enables companies to perform hardware maintenance without scheduling downtime and disrupting business operations. vMotion also allows mapping of virtual machines to hosts to be continuously and automatically optimized within clusters for maximum hardware utilization, flexibility, and availability.
EMC VPLEX Metro and VMware HA

In order for the virtual machines and applications to failover transparently, the data must be shared across cluster nodes or physical servers. VMware ESXi clustering requires shared storage to provide automatic failover and non-disruptive movement of virtual machines. VPLEX Metro allows shared storage to span multiple data centers allowing ESXi servers in geographically separate locations to share access to datastores. With VPLEX, VMware HA provides automatic fail over across data centers for greater levels of availability than can be provided by a single site. VPLEX Metro fits perfectly with VPLEX distributed cache coherence for automatic sharing, balancing, and failover of I/O across the cluster, as shown in the following figure.

![VPLEX and VMware Solution](image)

**Figure 1. EMC VPLEX and VMware Solution**

**Note:** EMC RecoverPoint™ can be used with VMware Site Recovery Manager (SRM) for operational and disaster recovery when added to a VPLEX environment.

**Testing: Validating EMC VPLEX Metro with VMware ESXi HA cluster**

To validate the functionality of the EMC VPLEX and VMware ESXi HA solution, EMC E-Lab™ created and deployed a VMware ESXi HA cluster configuration attached to EMC VPLEX Metro on a VMware ESXi platform. The configuration was comprised of:

- Four (4) Cisco UCS C210 M2 Servers
- VMware HA cluster
- Two (2) node VMware ESXi HA clusters
- EMC VPLEX Metro AccessAnywhere
- VPLEX Witness
- VMware NMP
- Distance extension simulation equipment (10ms delay for network and FC traffic)

Solution verification consisted of integrating VPLEX hardware and software components with VMware ESXi HA to ensure data integrity and consistency in cluster environment. Verification focused on interoperability of the entire solution. Testing included cluster behavior during I/O interruptions, I/O path disruptions (including SAN switches, storage processor reboots, and failover), WAN link disruptions, cluster node failover, and heartbeat failure simulations.

**Proven Results**

In combination with VMware HA and vMotion over distance, VPLEX provides a unique capability that enables organizations to transparently move and relocate virtual machines and its corresponding applications and data over distance. Customers benefit from simpler management of resources within and across data centers, enabling a lower-cost solution along with entirely new ways to solve IT problems.

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