

Technical Case Study:
Infrastructure Management Service
Availability and Storage Management

This is subsequent to Summary of Project –

VMware - ESX Server to Facilitate:
IMS, Server Consolidation, Storage & Testing with Production Server

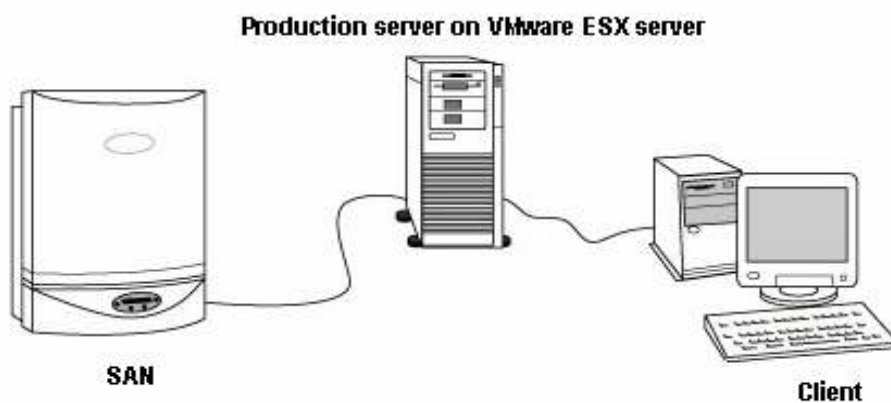


VAssure | Virtualization Labs | trRIMS | Offshore-QA | BI | Portals

<http://www.vassure.com>

Infrastructure Management Services

This project mainly concentrates on maintaining the production servers and the storage of the client using virtualization technologies and latest storage technologies and also testing the server environments and managing the patch and deploying it to the server using for better and reliable performance of the server used by the client.



Features:

The focus of project is on:

- 1> Availability management.
- 2> Security management.
- 3> Service Delivery.
- 4> Storage Management.
- 5> Testing.

At VAssure – Virtualization Lab, maintenance of the server is done according to the client requirement using the VMware ESX server and SAN (Storage Area Network) connected to the production server or other server according to the requirement of the client. Client machine connects the server directly on the VPN or other network means.

Why use VMware - ESX Server?

- 1> Implement server consolidation.
- 2> Respond faster with virtual infrastructure.
- 3> Dramatically improve and lower the cost of disaster recovery.

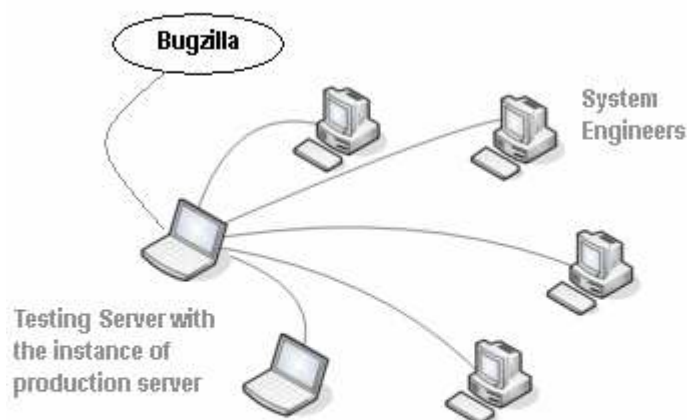
ESX server consolidates different applications and infrastructure services running on different operating systems onto fewer highly scalable, reliable enterprise class servers.

VMware ESX server provides different environments; these are then changed according to the requirement. This helps us to take the instance of the current environment as a snapshot and used for testing as well as for bringing up the virtual server incases of any downtime or break down of the virtual server.

Part of Testing:

The instances which are taken as the snapshot are used for testing the application. The applications are tested and the bugs are reported in the Bugzilla, defect tracking system used. Then the patch is being developed for the bug reported.

The patch is being attached to the testing server maintained in the VM lab which has the snapshot of the instance taken from the production server. Hence after regressively testing the patch which is attached to the testing server, it is attached to the main production server.



VMware ESX server and SAN:

VM Labs uses SAN storage technology for storage management along with VMware ESX server.

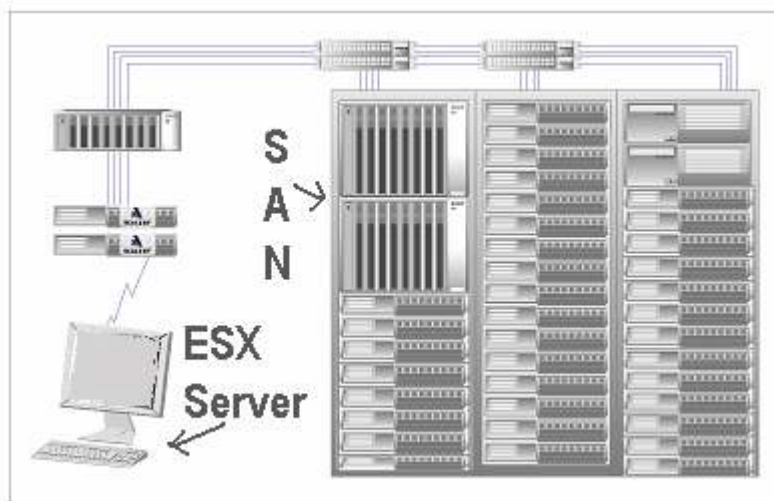
Benefits of SAN Storage Technologies:

- 1> Availability.
- 2> Disk Utilization.
- 3> Management.
- 4> Backup.

San storage technology is more reliable than any other storage technologies; this helps us in avoiding application outages in the company. In SANs, the storage space can be "assigned" to any server that needs more storage, thus deferring new storage purchases. SAN helps us to assign the storage remotely to the server. No downtime and perhaps not even a reboot is required if the OS can handle it. All the storage can be managed globally from a single console.

Using the snapshot of VMware ESX server and the data replication the availability of the server is managed during any disasters or downtime of the storage. Using SAN for centralizing, data backup can improve recovery time dramatically while reducing overall costs by sharing tape resources and eliminating backup windows.

Architecture of SAN with VMware ESX server:



Services offered using this Infrastructure:

- 1> Availability Management:
- 2> Security and storage Management

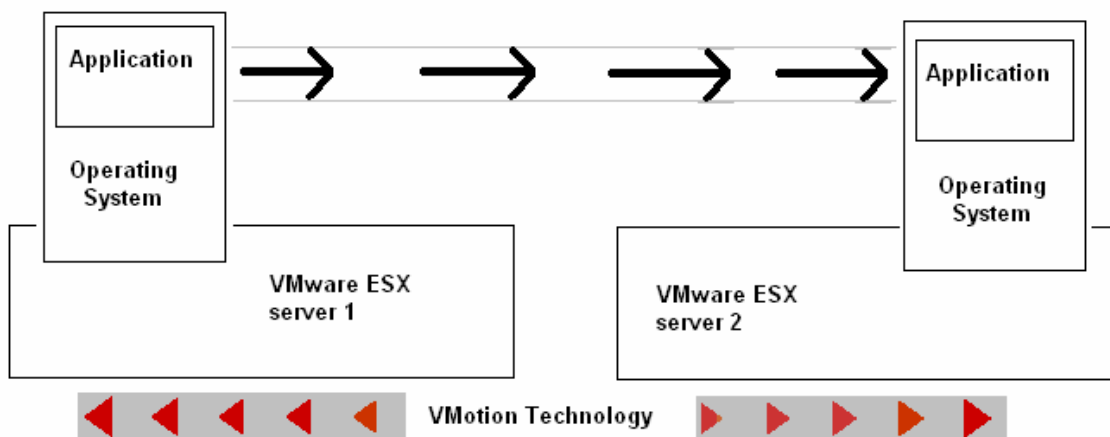
Availability Management:

Server Virtualization is the better way to utilize the computer resources involving in improving scalability, manageability, and availability while lowering the cost of ownership.

The Virtualization software divides the single physical server in to multiple Virtual servers, each of which has an individual operating system and applications with out any interference with the other virtual machines running simultaneously.

This feature helps us to consolidate the workloads from separate physical servers onto one server, this helps in reducing the number of server running . Virtual machines can be created with less time and can be moved from one server to other without reconfiguring the operating system running on the server and also the applications.

These results in provisioning faster and resourceful service allocated to the unit. More than all increase the availability of the server. Together with VMware Virtual Center software and [VMotion](#) technology, ESX server also enables to move Virtual machines from Server to Server with out disturbing the availability of the server.



Maintaining the availability of mission critical applications in the face of maintenance. Hardware failure and adverse events. With the help of VMotion technology, the virtualization software can dramatically improve the application availability and make the updates to business critical servers with out disruption in the service.

Using ESX server, Virtual machines can be clustered to further increase the availability by providing automatic failover.

The availability of the server can also be increased by using multiple NIC cards for network interface. VMware ESX server uses minimum of three NIC cards for network interface and manages the network load using these NIC cards.

Hence this also helps in increasing the network availability of the virtual server.

Security and Storage Management:

VMware ESX server provides strong security and performance Isolation for the Virtual machines storage. Each virtual machine can see only the disks that have been presented to its virtual SCSI adapters. Virtual machines can not see the physical fiber channel HBAs on the ESX server on which they run. These virtual machines cannot also see the LUNs on which they reside.

In a physical Fiber Channel SAN environment, LUN security is typically accomplished through a combination of LUN masking and zoning. This LUN can be accessed using only a single host, as identified by names (WWN) of its HBAs.

But this scenario changes slightly in virtual environment, as it is now possible to have virtual machine on a single host, and with the help of VMotion technology, ESX server hosts may have their LUN masking and Zoning setup to allow for broad access, with control being maintained by VMFS, VMFS is a distributed file system that is included as a part of ESX server.

A host running ESX Server is attached to a Fiber Channel SAN in the same way that any other host is. It uses Fiber Channel HBAs, with the drivers for those HBAs installed in the software layer that interacts directly with the hardware.

VMware ESX server has the inbuilt drivers for this in VMkernel; this is a microkernel that controls the underlying hardware in the server. The VMFS volume manager creates and manages virtual volumes on top of the LUNs that are presented to the ESX server host. Those virtual volumes are referred to as virtual disks are allocated to specific virtual machines making the virtual machines not to interact and know about the physical fiber channel connection from the storage to the server.

This storage isolation is complete. With regard to both security and performance. The virtual machine is isolated to such a degree that software executing in the virtual machine cannot even detect that it is running on a SAN fabric. Even multipathing is handled in a way that is transparent to a virtual machine further more, virtual machines can be configured to limit the bandwidth they use to communicate with storage devices in order to assure desired quality of service levels.

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