

A Project Summary:
VMware – ESX Server to Facilitate:
Infrastructure Management Services
Server Consolidation
Storage & Testing
with Production Servers

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

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Introduction:

Many companies are spending their IT budget more on maintaining existing system rather than on innovation, virtualization will enable customer to spend more time in improving business. This will happen when customer has his applications running on Virtual Machine; it could be for infrastructure management, testing, or for storage

VMware ESX Server and VAssure Virtualization Labs will significantly reduce the problems and cost in Infrastructure Management Services, Storage, Server Consolidation and Testing

VMware and VAssure Virtualization Labs

Value Proposition

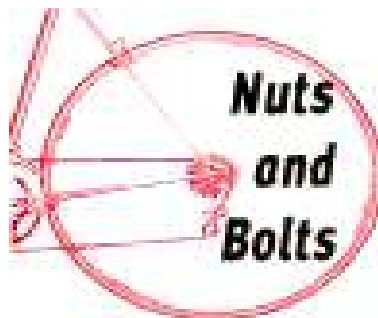
- * Simple Server/Storage Virtualization
- * Reduced Operating Costs
- * Increased Business Flexibility
- * Advanced Data Protection and Disaster Recovery

ESX Server is virtual infrastructure software for partitioning, consolidating, managing server in mission-critical environments. ESX Server minimizes the total cost of ownership of computing infrastructure by increasing resource utilization and its hardware-independent virtual machines are encapsulated in easy to manage files maximize administration flexibility

The benefits of VMware are enhanced by VAssure Virtualization Labs Solutions. VAssure infrastructure enables management of distributed applications and distributed server farms, storage can be consolidated onto traditional storage systems like SANs and add support for IP-based storage, including NAS and iSCSI.

The real power of virtualization comes when large collection of servers are virtualized, Distributed Availability Services of ESX Server will enable automatic migration and restart of VMs when a physical server fails.

This paper describes the real-time application of power of virtualization by VAssure Virtualization Labs Team



Background:

In January 2006, VAssure started as a service of VenSoft India, the core strength on which the services offered have been based is Virtualization. VAssure Virtualization Labs Team has been put through baptism by fire of Virtualization. Team now works with Virtualization tools in areas like Infrastructure Management Services, Server Consolidation, Storage and QA Services like Testing etc.

Customer Challenges:

- Many organizations are working on reducing the number of servers significantly to match the average for number of users supported
- Many organizations Testing environment for globally spread out development teams could not reproduce the problem and bugs eventually showed up later
- Manually setting up configurations to test built up software resulted in lot of slips
- Server Proliferation adding to organizations rising complexity and costs
- Low asset utilization

We launched an initiative to provide services in these areas to lower operating costs by reducing servers and providing complex configurations for testing using virtualization. Three main technologies were discussed in this analysis they are: Hardware Virtualization, Para-virtualization and OS Virtualization. We opted for Hardware Virtualization, the technology that is designed to support multiple types of OSs on a single server and is characterized by technology that virtualizes hardware resources in order to manage and dedicate them to Virtual Machines on the server

The Company selected [VMware](#) as an enabling technology to replace physical servers with virtual hardware instances running on powerful multiprocessor systems and Test & Development Optimization Tool. The Company chose SAN to allow storage to be consolidated. ESX Server was the initial VMware product to run with Guest OS on Linux / MS-Windows



Our Focused Approach

Infrastructure:

Team has dynamically mapped resources to the business and created Virtual Infrastructure to provide services

One two-processor Xeon server has been configured with ESX Server. The Company's SAN infrastructure is configured to support ESX Server with NIC & Fibre Channel (FC) technology; ESX server is configured to access LUNs (Logical Unit Numbers)*

ESX Server is managed by a direct login via telnet to a service console. The physical hardware of the server is pooled and shared by the ESX Server OS i.e. one or more virtual machines (VMs). Each VM operates as an independent entity running a single instance of a guest OS. Hardware is managed and shared by ESX Server. Hardware such as Network Adapters (NICs) may be dedicated to specific VM or /and shared among various VMs via logical Ethernet switch mechanism. Memory is shared depending on the virtual infrastructure environment.

Another two-processor system with VMware ESX Server is connected to SAN in the secondary data center and configured for recovery mode. VMware SAN volumes and Production Server volumes are mirrored to the secondary data center. In the event of disaster striking the primary data center, applications running on VMware can be recovered / restarted from the second location. VMware Virtual Center can be used to migrate a virtual machine from one VMWare ESX host to another while the server is live. This facilitates maintenance or other administrative needs while minimizing application disruptions



* LUNs - Storage devices assign the logical unit numbers (LUN) to a storage unit, such as a logical volume. The LUN provides a unique address or identifier for the logical volume. Device Manager provides interconnections between managed objects and LUNs

Configuring and Working:

Once the necessary software's was installed VMWare ESX Server was configured.

Production Server(s) (Guest OSs) running on ESX Server is/are provided a dedicated hardware. ESX Server partitions at the hardware level and dedicates it to specific production server; no VMs will have access to the dedicated physical hardware. This enables network interface that allows managing of ESX Server over the network and connecting to VM consoles.

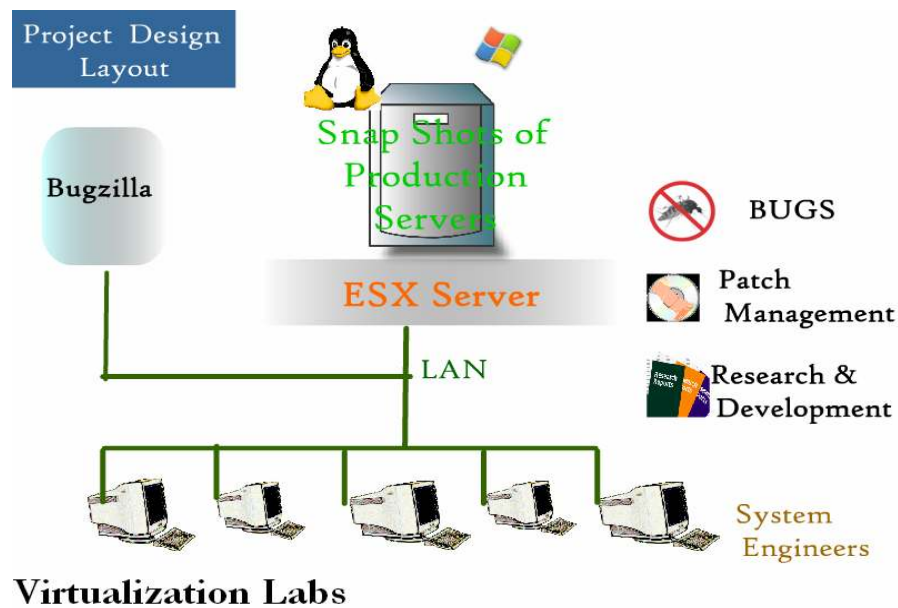
VMware facilitates usage hardware sharing between ESX Server and VMs through a two-layered model. The lower layer executes with in the ESX Server kernel and establishes connection directly with the physical hardware. The ESX Server then provides a virtual device interface for physical hardware. To the next layer, VM makes the virtual hardware visible to the guest OS running inside the VM, the guest OS treats the virtualized hardware as a single physical existence

At the guest OS level, all SAN storage that is managed by the ESX server is connected to a virtual LSI-logic adapter. From the perspective of the guest OS, the storage is treated as local disk

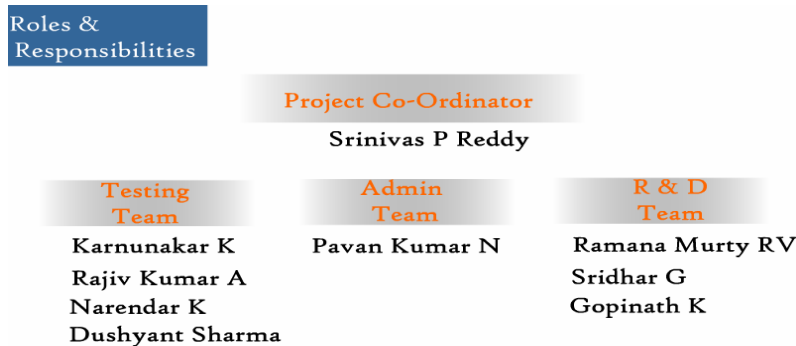
The underlying technology of Snapshot will make it possible to replicate the data from LUNs / Production Server. In the event of ESX crashing Snapshot enables disaster recovery architectures to be realized for ESX Server scenarios. Once the LUNs is brought online at the Virtualization Lab Consoles, a new VM can be built on ESX using existing virtual disks

Specific Production Server will be interacting with the respective development center; Writable Snapshot technology will enable replication of testing scenario at production server to the local systems (Virtualization Lab Consoles used by System Engineers) via LAN. Scenario will be put through QA process of combination: VMware Environment for Configurations-specific Testing Tools as applicable – Web enabled Defect Tracking System Bugzilla. The bug is fixed and snapshot is restored back

Snapshot technology operations: Various techniques that could be used in VMware environment and process of producing a Snapshot copy are factors not addressed in this document



and VAssure:



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This paper is not intended to be a definitive implementation guide. Many factors are not addressed in this document. Expertise may be required to solve logistical problems when the system is designed and built. VAssure team has not tested this procedure with all the combinations of hardware and software options available on all ESX or guest OS variants. There may be significant differences in your configuration that will alter the procedures necessary to accomplish the objectives outlined in this paper.