

Real Protection for Virtual Environments

DATA PROTECTION

APPLICATION AVAILABILITY

DISASTER RECOVERY

LifeKeeper® for VMware ESX Server

Key Features:

- Supports VMware ESX Server 2.5
- Automated monitoring and recovery for physical systems, virtual machines and applications running within virtual machines
- Virtual-to-virtual, virtual-to-physical and physical-to-virtual failover configuration support
- Easily configurable via JAVA-based GUI

Two methods of protection give users choice as to their optimal configuration:

LifeKeeper running within a virtual machine:

- Nearly identical to LifeKeeper in a physical machine
- LifeKeeper management of individual applications and resources within the virtual machine
- Virtual to Virtual and Virtual to Physical failover configurations
- Supports SCSI and FC shared storage, NAS, and data replication

LifeKeeper running within the console OS:

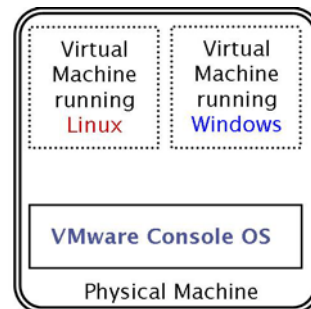
- Failover for entire virtual machine, regardless of operating system
- Recovery can include restart of virtual machine on same physical server
- Treat virtual machines as LifeKeeper protected resources
- Management of Virtual Machine status through LifeKeeper GUI

High Availability Clustering, Data Replication and Disaster Recovery for VMware ESX Server

The use of virtual servers to host business critical applications is expanding rapidly as IT organizations experience significant cost savings and optimize resource utilization through virtualization supported server consolidation. It is not well understood, however, that the use of virtualization technologies can decrease the availability of applications and services. The need for integrating an automated high availability clustering solution to monitor and protect the virtual servers becomes evident when the increased risk of failure is understood.

The potential for application failure is increased due to two factors. First, virtualization increases the scope of failures as more applications and services are at risk given the failure of a single physical machine. If this consolidated server should suffer an outage, multiple applications and business services will be unavailable. Second, the primary causes of application outage are software related; the more complex the software stack being used by an application, the higher the risk of failure. The deployment of a virtualization layer increases software stack complexity and increases the risk of application outages.

The VMware ESX Server Console OS is an example of such a virtualization layer and provides a complete operating system running directly on the host machine physical hardware. From the resources of the host machine, the virtualization layer creates a pool of logical computing resources and allocates those resources to one or more virtual machines in which a standard operating system can run. As the diagram at right shows, these VMs run as isolated entities with dedicated compute resources.



The SteelEye LifeKeeper family of data replication, high availability clustering and disaster recovery solutions bring a complete high availability solution to virtual environments. LifeKeeper offers enterprise-grade reliability while simplifying implementation with certified and easy-to-deploy solutions for a wide range of applications and databases running on Windows or Linux in physical or virtual environments. LifeKeeper brings a complete high availability solution to virtual environments with fast and automatic failure event detection and recovery, comprehensive monitoring and recovery for individual applications and services and tremendous flexibility in building failover configurations from a mixture of physical and virtual machines, and either shared storage or data replication.

SteelEye LifeKeeper offers two approaches to High Availability when used with VMware ESX Server. LifeKeeper can run within a virtual machine just as it does on physical systems, along with specific application recovery kits providing the same level of protection and monitoring. As an alternative, the LifeKeeper for Linux VMware ESX Server Virtual Machine Recovery Kit allows LifeKeeper to run within the VMware Console Operating System. With this solution, LifeKeeper treats the virtual machines running on top of the Console OS as protected resources, regardless of the guest operating system.



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LifeKeeper Running in the Virtual Machines

The easiest and most flexible means of combining high availability clustering and virtualization is to run LifeKeeper within each virtual machine. This is possible if the OS running in the VM is Linux or Windows.

LifeKeeper operates in VMware ESX Server virtual machines using the same cluster and storage configurations as it would on standalone physical systems. In this configuration, LifeKeeper provides management of individual applications and compute resources residing within the virtual machine. LifeKeeper supports virtual-to-virtual, physical-to-virtual, and virtual-to-physical types of failover configurations with a nearly limitless range of more complex configurations built upon these simple building blocks, including failover configurations possible only with the combination of LifeKeeper and virtualization.

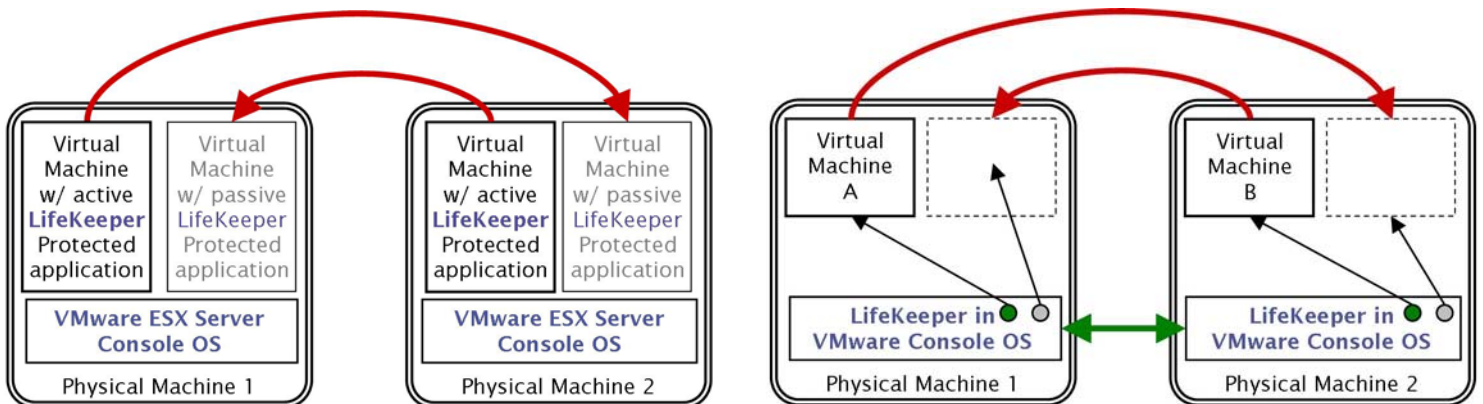
The diagram below shows an example of a 2-node cluster configuration. In this example, LifeKeeper is running in each virtual machine to manage individual applications and resources just as it would in a physical system. In the event of a failure or a manual switchover request from an administrator, LifeKeeper can move applications between virtual machines, even to virtual machines hosted by a different physical system.

LifeKeeper Running in the Console OS

The LifeKeeper VMware ESX Server Virtual Machine Recovery Kit is designed to allow LifeKeeper, when running within the VMware ESX Server Console OS, to manage individual virtual machines as protected resources, regardless of what guest operating system is running inside the virtual machine.

The recovery kit allows LifeKeeper to represent individual virtual machines as LifeKeeper resources, with the normal LifeKeeper capabilities, including monitoring, local recovery, failover, and switchover. The kit does not provide any capability for managing individual applications and resources running inside the virtual machine. To achieve that level of high availability management in a VMware environment, the solution of running LifeKeeper inside the individual virtual machines should be used instead.

The diagram below shows an example of a 2-node cluster configuration. In this example, LifeKeeper is running in the Console OS on both of the physical machines. The VMware ESX Server Virtual Machine Recovery Kit is being used to allow LifeKeeper to manage and protect each of the active virtual machines. In the event of a failure or a manual switchover request from an administrator, LifeKeeper can move either of the virtual machines to the other physical system.



About SteelEye Technology®

SteelEye is a leading provider of application and data availability management solutions for business continuity and disaster recovery on Linux and Windows. The SteelEye LifeKeeper family of software products enable enterprises of all sizes to ensure continuous availability of business-critical applications and data on industry standard servers and storage systems. SteelEye software products are available worldwide and may be purchased directly from SteelEye or through the SteelEye international network of business partners.

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