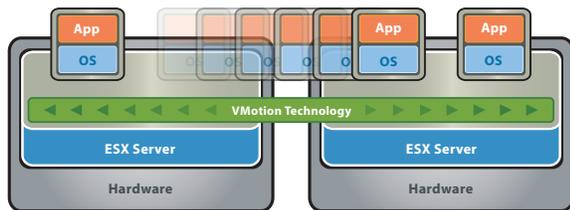# VMware VMotion
Live migration of virtual machines without service interruption

AT A GLANCE

VMware® VMotion™ enables the live migration of running virtual machines from one physical server to another with zero downtime, continuous service availability, and complete transaction integrity. VMotion is a key enabling technology for creating the dynamic, automated, and self-optimizing data center.

BENEFITS

- Continuously and automatically allocate virtual machines within resource pools.
- Improve availability by conducting maintenance without disrupting business operations

VMware VMotion moves live, running virtual machines from one host to another while maintaining continuous service availability.

How Is VMware VMotion Used?

VMotion allows users to:

- Automatically optimize and allocate entire pools of resources for maximum hardware utilization, flexibility and availability.
- Perform hardware maintenance without scheduled downtime.
- Proactively migrate virtual machines away from failing or under-performing servers.

How Does VMotion work?

Live migration of a virtual machine from one physical server to another with VMotion is enabled by three underlying technologies.

First, the entire state of a virtual machine is encapsulated by a set of files stored on shared storage such as Fibre Channel or iSCSI Storage Area Network (SAN) or Network Attached Storage (NAS). VMware's clustered Virtual Machine File System (VMFS) allows multiple installations of ESX Server to access the same virtual machine files concurrently.

Second, the active memory and precise execution state of the virtual machine is rapidly transferred over a high speed network, allowing the virtual machine to instantaneously switch from running on the source ESX Server to the destination ESX Server. VMotion keeps the transfer period imperceptible to users by keeping track of on-going memory transactions in a bitmap. Once the entire memory and system state has been copied over to the target ESX Server, VMotion suspends the source virtual machine, copies the bitmap to the target ESX Server, and resumes the virtual machine on the target ESX Server. This entire process takes less than two seconds on a Gigabit Ethernet network.

Third, the networks being used by the virtual machine are also virtualized by the underlying ESX Server, ensuring that even after the migration, the virtual machine network identity and network connections are preserved. VMotion manages the virtual MAC address as part of the process. Once the destination machine is activated, VMotion pings the network router to ensure that it is aware of the new physical location of the virtual MAC address. Since the migration of a virtual machine with VMotion preserves the precise execution state, the network identity, and the active network connections, the result is zero downtime and no disruption to users.

KEY FEATURES

- **Reliability.** Proven by thousands of customers in production environments since 2004, VMotion continues to set the standard for the most dependable live migration capabilities.

- **Performance.** Perform live migrations with downtime unnoticeable to the end-users. Optimal use of CPU and network resources ensures that the live migrations occur quickly and efficiently.

- Interoperability. Migrate virtual machines running any operating system across any type of hardware and storage supported by VMware ESX Server.

  » **Support for Fibre Channel SAN.** Implement live migration of virtual machines utilizing a wide range of up to 4GB Fibre Channel SAN storage systems.

  » *New -* **NAS and iSCSI SAN support.** Implement live migration of virtual machines with lower-cost, more easily managed shared storage.

  » *New -* **Customizable CPU compatibility settings.** Ensure that virtual machines can be migrated across different versions of hardware. Enable virtual machines to benefit from the latest CPU innovations.

- Manageability.

  » **Migration wizard.** Quickly identify the best destination for a virtual machine using real-time information provided by migration wizard.

  » **Multiple concurrent migrations.** Perform multiple concurrent migrations to continuously optimize virtual machine placement across the entire IT environment.

  » **Priority levels.** Assign a priority to each live migration operation to ensure that the most important virtual machines always have access to the resources they need.

  » **Scheduled migration tasks.** Automate migrations to happen at pre-defined times, and without an administrator's presence.

  » **Migration audit trail.** Maintain a detailed record of migration operations, including date/time and the administrators responsible for initiating them.

How can I purchase VMware VMotion?

- VMware VMotion is included in VMware Infrastructure 3 Enterprise.

- VMotion can also be purchased as separately licensed product with VMware Infrastructure 3 Standard and VMware Infrastructure 3 Starter.

Product Specifications and System Requirements

VMotion requires the installation of VirtualCenter Management Server and VirtualCenter Agent on both the source and target physical systems.

For detailed product specifications and system requirements refer to the VMware Infrastructure Basic System Administration Guide located at http://www.vmware.com/support/pubs/vi_pubs.html.

vmware®