

Better Business Continuity

With VMware Virtual Infrastructure

Business Continuity Challenges

Implementing plans to ensure business continuity for key IT services is an essential requirement for organizations today. Downtime of important applications is a costly proposition and extended downtime can even be fatal—industry research finds that a significant number of companies that experience extended interruption to IT services soon go out of business.

While most organizations recognize the importance of business continuity, their ability to provide high availability and disaster recovery for key applications is often constrained by the following challenges:

- **High costs.** Business continuity solutions become exponentially more expensive as availability requirements increase. Many solutions require significant investment in additional hardware, software and services. Disaster recovery plans in particular often require duplicating data center infrastructure. These requirements drive up the cost of business continuity and result in a proliferation of under-utilized servers.
- **High complexity.** Most traditional business continuity solutions add significant complexity to data center environments. Acquiring and managing additional servers, implementing and maintaining specialized business continuity software and developing specialized processes for business continuity all contribute to this complexity.
- **Failure to meet recovery time and availability goals.** Due to the cost and complexity of business continuity solutions, organizations are often forced to compromise on solutions that are unlikely to meet goals for availability and recovery time objectives.
- **Insufficient reliability.** Testing complex business continuity solutions is challenging and requires significant equipment and personnel resources. The complexity of these specialized solutions also makes them difficult to maintain and makes it harder to ensure that sufficient staff are trained and available when needed.

Key Benefits

- Reduce downtime due to both planned and unplanned outages.
- Lower cost of business continuity plans.
- Provide high availability for all applications with standard server hardware.
- Share fault-tolerant server, storage and networking hardware between multiple applications
- Simplify infrastructure and processes for business continuity.

Key Building Blocks

- The VMware Infrastructure software suite includes the VMware® ESX Server platform to provide virtualization for x86 servers and VMware HA and Consolidated Backup for business continuity.
- Virtual infrastructure management with VMware VirtualCenter provides centralized management of large virtual infrastructure deployments.
- Software tools include VMware P2V Assistant and third-party clustering, backup, recovery, and replication software.
- Professional services such as VMware Disaster Recovery and Backup engagement to learn backup and recovery techniques for virtualized environments.

These challenges have limited the ability of organizations to implement effective business continuity plans. As a result, key IT services lack the protection they need, putting organizations at significant risk. VMware provides cost-effective, simpler, more reliable solutions for increasing availability and improving disaster recovery so that organizations can implement dramatically better and broader business continuity plans.

“As well as having a significant cost benefit, basing our disaster recovery infrastructure on VMware software has enabled us to get servers up and running in just eight minutes, compared to eight hours with our previous configuration.”

Steve Fountain, IT Director, Markel International

Higher Availability with VMware Virtual Infrastructure

VMware virtual infrastructure software helps organizations increase availability by reducing both planned and unplanned downtime.

Most data center downtime is typically planned. Organizations using VMware software can slash planned downtime by eliminating most scheduled hardware maintenance outages. VMware's groundbreaking VMotion™ technology allows IT administrators to move running virtual machines (software containers that hold a complete operating system and applications) from one physical server to another without downtime. This capability makes it possible to conduct zero-downtime hardware maintenance by simply using VMotion to move running applications to other physical servers as needed. VMware DRS even automates pre-maintenance VMotion migrations when a server is placed in "maintenance mode."

VMware software also helps organizations to reduce unplanned downtime by providing new capabilities and by making existing solutions simpler and more cost-effective. For example, standby servers can be easily created by provisioning virtual machines to underutilized servers without requiring the purchase of additional hardware. Support for servers with multiple network and storage interfaces is built into VMware ESX Server, significantly cutting the cost of fault-tolerance by sharing redundant hardware between multiple virtual machines. VMware Distributed Resource Scheduler (DRS) can reduce unplanned downtime by automating the process of using VMotion to migrate running applications away from servers that cross utilization thresholds.

VMware High Availability (HA) provides easy to use, cost effective high availability for applications running in virtual machines. In the event of server failure, affected virtual machines are automatically restarted on other physical servers that have spare capacity. VMware HA minimizes downtime and IT service disruption while eliminating the need for dedicated standby hardware and 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.

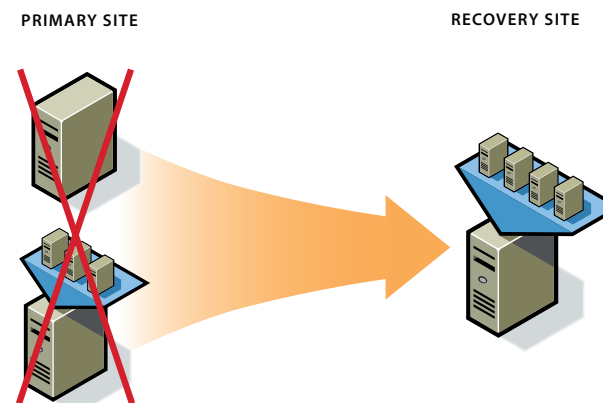
Where 100% uptime in the face of server failures is necessary, VMware software also makes it possible to implement third-party failover clustering solutions less expensively. Cluster nodes from different applications can be consolidated in virtual machines onto fewer servers, providing significant savings in hardware costs. It also provides the flexibility to cluster physical servers with virtual machines or virtual machines with virtual machines.

Better Disaster Recovery with Virtual Infrastructure

Traditional disaster recovery solutions are costly, complex and frequently do not meet recovery objectives. They are costly because they require significant investments in hardware and in specialized software. Recovery frequently requires complex, time-consuming multi-step processes. Meeting recovery time objectives is difficult because of the complexity and cost of advanced solutions.

VMware virtual infrastructure provides a solution that makes it possible to implement disaster recovery plans at a significantly lower cost. Traditional disaster recovery plans require that recovery target hardware must exactly duplicate production hardware, effectively doubling hardware requirements for protected applications. In contrast, VMware virtual machines are hardware-independent so any physical server can serve as a recovery target for any virtual machine. Organizations can significantly reduce the cost of hardware for disaster recovery by repurposing underutilized existing servers for recovery targets and disaster recovery testing.

Server backups are much easier to manage with VMware Consolidated Backup. Consolidated Backup provides an easy to use, centralized facility for LAN-free backup of virtual machines. Entire virtual machine disk contents or selected files are backed up from a centralized Windows 2003 proxy server rather than directly from each ESX Server instance. Consolidated Backup lets virtual machines operate continuously with no backup window downtime and backup operations place no processor or network load on the ESX Server installations.



Virtual infrastructure enables recovery of physical and virtual machines to virtual machines on any hardware

VMware virtual infrastructure also simplifies and accelerates recovery, helping IT organizations meet their time-to-recovery targets. Complex multi-step procedures using specialized software for bare-metal recovery and operating system recovery can be simplified to single-step file recovery because virtual machines are completely encapsulated in a small number of files and can be restored to any hardware. This encapsulation property also makes it possible to use third-party replication software to replicate entire virtual machines to a recovery site, reducing recovery time to just a few hours.

Finally, virtual infrastructure enables a more reliable disaster recovery plan. Because it simplifies disaster recovery processes, the ability to meet time-to-recovery targets is improved, testing of disaster recovery plans is simpler, and training personnel in disaster recovery procedures is easier. The hardware-independence of virtual machines also eliminates complications that can arise due to hardware differences between primary and recovery site hardware.

VMware virtual infrastructure enables a better disaster recovery plan whether or not organizations have virtualized their production servers. Physical servers can be recovered to virtual machine recovery targets in a “physical-to-virtual” recovery scenario, providing the benefits of simpler and hardware-independent recovery. Even greater simplicity, reliability, and cost savings can be realized in a “virtual-to-virtual” recovery scenario where virtual machines in production are recovered to virtualized recovery target servers.

Benefits of Business Continuity Solutions with Virtual Infrastructure

Customers who have used VMware virtual infrastructure to improve their business continuity plans have realized benefits including

- **Reduced downtime.** Customers can eliminate much of their planned downtime with a virtual infrastructure solution. They can also prevent and reduce unplanned downtime through economical sharing of fault-tolerant hardware features and automated restart of application servers. Encapsulated virtual machines enable dramatic reductions in time to recovery for disaster scenarios.
- **Lower costs.** Virtual infrastructure makes it possible for companies to implement better business continuity at a lower cost by slashing the need for additional hardware and specialized software.
- **Simplified processes.** Virtual infrastructure removes the complexity of maintaining duplicate physical systems for disaster recovery. It also eliminates and streamlines much of the recovery process.
- **Broader protection.** Because virtual infrastructure reduces the cost of business continuity solutions, companies can cost-effectively increase availability and ensure more rapid disaster recovery for more of their important applications.

Summary

VMware virtual infrastructure is a proven solution used by 99 of the Fortune 100 companies. Customers of all sizes and industries use VMware software to improve their business continuity plans.

To learn more about how VMware can help you build better business continuity solutions visit the VMware Web site at <http://www.vmware.com> or call 1-877-4VMWARE.