

# SOLUTIONS

## THAT SOLVE YOUR REAL-WORLD PROBLEMS

*The VMware-Intel Solution Set Delivers Performance, Flexibility and Reliability—All with Improved Total Cost of Ownership.*

**V**irtualization is no longer an emerging trend. The technology has proven itself in terms of effective server consolidation, the elimination of planned downtime and cost savings. In fact, a recent survey of *CIO* magazine readers finds that 85 percent are satisfied or very satisfied with the overall level of ROI for their server virtualization efforts.

VMware Inc. and Intel Corp. are at the forefront of virtualization solutions. The two companies have been collaborating for many years to accelerate adoption and help organizations find ways to overcome business challenges.

Many of the world's largest companies rely on VMware virtualization solutions

to simplify their IT infrastructure, better leverage their existing investments and become more agile in the face of changing business requirements. And for its part, Intel has developed much of the technology that has fueled successive waves of IT advances. Intel supplies products that create innumerable advanced computing and communications systems, and it is bringing similar leadership to virtualization.

### Delivering Value

Building on their respective domain expertise, VMware and Intel together provide tight coupling of virtualization needs with silicon implementation—in other words, hardware-assisted virtualization. This means that infrastructure optimization can be addressed holistically from the desktop to the server and network level.

For example, Intel® Virtualization Technology (Intel® VT) includes a unique platform of hardware assistance for virtualization. Intel enhancements in the processor, chipset and network interface improve traditional software-based virtualization solutions. These integrated features give virtualization software the ability to take advantage of offloading workload to the system hardware, enabling more streamlined virtualization



VMWARE VIRTUAL-  
IZATION SOLUTIONS  
BUILD ON THE  
STRENGTHS OF INTEL  
HARDWARE.

software stacks and “near native” performance characteristics. Virtualization solutions enhanced by Intel VT allow a platform to run multiple operating systems and applications as independent virtual machines. Using these built-in virtualization capabilities, it is even easier for one computer system to function as multiple virtual systems.

Furthermore, continued advances such as the new Quad Core Intel® Xeon® 5300 and Quad Core Intel® Xeon 7300 processor families create a performance environment that makes virtualization practical and cost-effective.

VMware virtualization solutions build on the strengths of Intel hardware. A global leader in enabling virtual infrastructures for industry-standard systems, VMware serves all of the Fortune 100 and 92 percent of the Fortune 1,000, including companies such as UBS, National Australia Bank, Bank of America, HSBC, HP, Merrill Lynch, General Electric and Verizon. VMware also serves small and midsize businesses. In fact, the customer base for its server solutions includes 100,000 organizations of all sizes across all industries.

Together, Intel and VMware products and solutions deliver significant tangible business benefits.

### Business Continuity

Every IT organization wants to be able to provide business continuity, but costs and complexity have made this challenging. In most cases, continuity and disaster recovery plans are predicated on having nearly identical hardware in a separate location. However, maintaining identical physi-

cal platforms at a failover site is not only initially expensive, but also means lockstep hardware and software upgrades in the primary and failover locations. Even trivial issues, like a firmware variation, can affect the business continuity process.

One of the main benefits of virtualization for business continuity is the independence of the recovery process from the recovery hardware. Because virtual machines encapsulate the complete environment, including data, application, operating system, BIOS and virtualized hardware, applications can be restored to hardware with a VMware virtualization platform without concern for the differences in underlying hardware characteristics. The physical-world limitation of having to restore to an identical platform does not apply.

Using virtualization for business continuity can save money, reduce recovery time and make the process more reliable. For instance, VMware Infrastructure creates environments where outages are limited to brief restarts at most, delivering a continuous availability solution that protects against application or hardware failure.

*Disaster Recovery.* In today's business environment, having robust disaster recovery is no longer a luxury; it is a necessity. IT organizations must be ready to face the results of natural disasters such as hurricanes, earthquakes, snowstorms and floods, as well as human-caused events such as power outages, terrorism and cyber attacks. So disaster recovery must be a central element of every IT strategy. While the need for protecting IT resources from disasters is a business imperative, IT managers are faced with many obstacles, including cost and complexity, when devel-

oping a traditional disaster recovery plan.

As part of its business continuity solution, VMware Infrastructure makes disaster recovery affordable through consolidation savings. It also provides rapid recovery that enables quick provisioning and is hardware-independent. It makes testing plans simpler, thereby enhancing disaster recovery reliability.

*High Availability.* High availability becomes a reality with virtualization, at a lower cost and without the complexity of traditional solutions such as clustering. For instance, the Intel Xeon MP 7300 offers enterprise-proven reliability and maximizes system availability in a virtualized environment, providing confidence when consolidating enterprise applications.

Another component of its business continuity solution, VMware® High Availability (HA) provides easy-to-use, cost-effective high availability for applications running on virtual machines, regardless of the operating systems or underlying hardware configurations. If a physical server fails, affected virtual machines are automatically restarted on other production servers with spare capacity. If there is a failure within a virtual machine related to the operating system, VMware HA detects it and the affected virtual machine is restarted on the same physical server.

Because VMware HA eliminates the need for dedicated stand-by hardware and additional software, IT organizations can minimize downtime and IT service disruptions while still delivering high availability across the entire IT environment.

### Infrastructure Optimization

Today's typical data center houses equip-

ment from multiple server and storage system vendors. Servers sometimes run a variety of operating systems. Many of these servers are dedicated to running just a single application. This proliferation of silos has generated physical complexity and has made the management of devices difficult for IT managers.

*Server Consolidation.* The solution to this complexity is to introduce virtualization technology. "Virtualization is a technology that is believed to reduce complexity and cost, improve utilization levels, and help control the server and storage sprawling within enterprises," says Graham Penn, associate vice president of IDC's Asia/Pacific Storage.

By consolidating server hardware with VMware Infrastructure, particularly when leveraging the higher performance of Intel technology, an IT organization can increase the utilization of existing hardware from a typical 10 to 15 percent up to 80 percent. That can translate into a reduction in hardware requirements by a 10:1 ratio or better. VMware also offers VMware® Server, a free virtualization product for Windows and Linux servers with enterprise-class support. It enables companies to partition a physical server into multiple virtual machines and to immediately experience the benefits of virtualization. Furthermore, the latest Intel platform increases the memory bandwidth and application performance within each VMware virtual machine by more than two

ONE OF THE MAIN BENEFITS OF VIRTUALIZATION FOR BUSINESS CONTINUITY IS THE INDEPENDENCE OF THE RECOVERY PROCESS FROM THE RECOVERY HARDWARE.

times over previous-generation multiprocessor platforms.

In short, virtualization with Intel and VMware means more than simply cutting costs through consolidation. It means enhanced performance that delivers new business value.

*The Dynamic Data Center.* Where else can virtualization lead? Thought leaders envision the dynamic data center as a reachable goal. It is a concept that leverages hardware and software capabilities, particularly virtualization, to create a post-modern data center that is easy to manage, affordable, flexible and ready to meet complex service-level requirements.

In line with its infrastructure optimization efforts, VMware® ESX Server and VMotion™ can make the dynamic data center a reality, coupled with more manageable and powerful hardware.

The dynamic data center means hardware failure does not equal server failure, sudden shifts in business requirements are not a crisis, and within-budget performance is easy to achieve. It is a transition that companies can begin today, using current technology across their base of installed servers while leveraging the growing power of servers in dual and quad core, dual socket, quad socket and more.

### The Bottom Line

The combination of the business continuity and infrastructure optimization solutions—with their associated components including disaster recovery, high availability, server consolidation and the dynamic data center—will result in greater flexibility in IT operations and solid investment returns.

“We estimate that VMware® Infra-

## Demonstrable TCO

The VMware TCO Calculator helps IT professionals determine the fiscal impact virtualization can have on their organizations. It is a user-friendly tool that requires just a few data inputs to quickly generate a detailed report assessing areas for potential savings. At the same time, it is highly customizable. The TCO Calculator uses a robust methodology based on VMware customer surveys and experience in the field. The free online TCO calculator is available at [www.vmware.com/calculator](http://www.vmware.com/calculator)

structure enables us to avoid \$7,500 in hardware and maintenance costs for each server virtualized,” says Barry Naber, technology manager at International Truck and Engine Corp., a manufacturer of diesel engines, trucks and school buses. With 230 virtual machines running business-critical applications on only 18 physical servers in its Chicago data center, the company’s savings add up to approximately \$1.7 million.

The bottom line is that no other route to server consolidation or infrastructure rationalization can produce the kind of results that virtualization provides, particularly when it is enabled by the combination of VMware and Intel, which delivers an integrated approach to virtualization based on a deep and solid business relationship.

---

*For more information about VMware, Intel and their virtualization solutions, go to [www.vmware.com](http://www.vmware.com) and [www.intel.com](http://www.intel.com).*