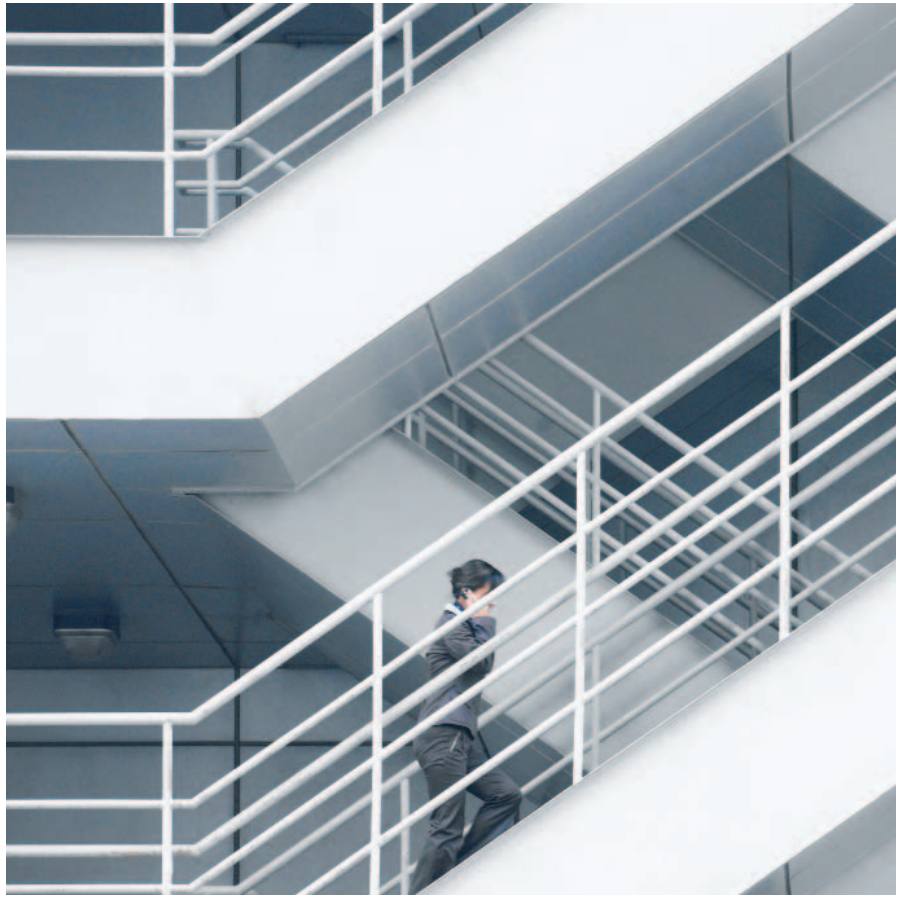




## HP virtualization with VMware

Enabling end-to-end virtualization  
of IT resources



# hp

Whether you have 10 servers,  
100 servers or 1,000 servers,  
the HP virtualization solution with  
VMware can deliver savings,  
simplification and scalability  
across your environment.



**Table 1. VMware software components.**

The HP virtualization solution with VMware leverages multiple software products from VMware, including those summarized here.

<b>VMware ESX Server</b>	<ul style="list-style-type: none"><li>• Provides virtual infrastructure software for partitioning, consolidating and managing servers.</li><li>• Provides hardware-independent virtual machines, encapsulated in easy-to-manage files, to maximize administration flexibility.</li></ul>
<b>VMware Virtual SMP</b>	<ul style="list-style-type: none"><li>• Allows a single virtual machine to span multiple physical processors.</li><li>• Enables multiple processors to work in parallel while using only a single guest operating system image.</li></ul>
<b>VMware VirtualCenter</b>	<ul style="list-style-type: none"><li>• Provides a central point of control for your datacenter's virtual computing resources.</li><li>• Allows you to manage hundreds of servers from a single console.</li></ul>
<b>VMware VMotion</b>	<ul style="list-style-type: none"><li>• Lets you move live, running virtual machines from one host to another while maintaining continuous service availability.</li><li>• Enables intelligent workload management by allowing you to make dynamic changes without impacting users.</li></ul>
<b>VMware DRS</b>	<ul style="list-style-type: none"><li>• Dynamically allocates and balances computing capacity across collections of hardware resources aggregated into unified resource pools.</li></ul>
<b>VMware HA</b>	<ul style="list-style-type: none"><li>• Provides easy to use, cost effective high availability for applications running in virtual machines</li></ul>
<b>VMware Consolidated Backup</b>	<ul style="list-style-type: none"><li>• A centralized facility for LAN-free backup of virtual machines.</li><li>• Simplifies backup administration and reduces the load for ESX Servers.</li></ul>
<b>VMware Capacity Planner</b>	<ul style="list-style-type: none"><li>• Provides a web-enabled tool that delivers accelerated, more accurate and benchmarked capacity planning and server consolidation assessments.</li></ul>

## The virtualization opportunity

### Reducing costs and increasing agility

Around the world, forward-looking IT organizations are turning rigid datacenters into agile, virtualized environments. They recognize the opportunity to use virtualization to break down the silos that keep applications from sharing infrastructure and that contribute to chronic underutilization of IT resources.

More than ever before, it's clear that virtualization makes good business sense. It can help an organization simultaneously reduce costs, increase agility and make IT more responsive to the needs of the business. So for many companies, the question isn't, "Should we virtualize?" Instead, the question is, "How can we transition to a virtualized environment in a predictable, cost-effective manner?"

Today, HP has the answer. HP offers a complete, mainstream virtualization solution that leverages VMware software and HP platforms, management tools and services. This proven solution puts your organization on a predictable path to the broad benefits of a virtualized IT environment.

## The HP virtualization solution with VMware

### Enabling end-to-end virtualization

The HP virtualization solution with VMware includes industry-leading server virtualization software from VMware and HP tools for unified management of the virtual environment. These software components run on HP ProLiant servers, the top selling industry-standard server brand.

To bring it all together, the HP Services organization and HP channel partners help you through the process of evaluating your needs, planning your solution, and deploying and operating your virtualized environment.

With HP, you gain an end-to-end, tightly integrated virtualization solution that incorporates everything you need—hardware, software and services, including planning, deployment and management. HP delivers all the resources to put virtualization to work for your critical IT initiatives, including server consolidation, workload optimization and disaster recovery.

Whether you have 10 servers, 100 servers or 1,000 servers, the HP virtualization solution with VMware can deliver savings, simplification and scalability across your environment.

## Core solution components

### VMware software

VMware provides core building blocks for a virtualization solution that is up to the challenges of enterprise datacenter environments. VMware is the global leader in virtual infrastructure software for industry-standard servers. Many of the world's largest companies use VMware solutions to simplify their IT infrastructures while fully leveraging their existing computing investments and responding faster to changing business demands.

The HP virtualization solution with VMware builds on the capabilities of VMware ESX Server and complementary software products from HP and VMware to provide an enterprise-ready virtual machine environment.

### Virtualization licensing requirements

Virtualization requires that you have the appropriate number of software licenses for the applicable number of virtualized environments. It is your responsibility to verify that you work with your software provider and obtain the appropriate number of licenses to all third-party software to be used in any virtualized environment.

**Table 2. HP software components.**

The HP virtualization solution with VMware makes use of a wide range of HP tools for deploying, managing and optimizing your virtualized environment, including those products summarized here.

<b>HP Systems Insight Manager</b>	<ul style="list-style-type: none"><li>• Discovers and identifies physical and virtual systems.</li><li>• Provides a consolidated management console for physical and virtual resources.</li></ul>
<b>HP ProLiant Essentials Virtual Machine Management Pack</b>	<ul style="list-style-type: none"><li>• Provides central management and control of VMware and other virtual machines.</li><li>• Enables physical host to virtual machine association.</li><li>• Is part of HP ProLiant Essentials Virtualization Management Software.</li></ul>
<b>HP ProLiant Essentials Server Migration Pack</b>	<ul style="list-style-type: none"><li>• Automates the manual task of migrating servers between physical or virtual platforms.</li><li>• Enables conversions between virtualization layers, for easy migration from one virtual machine type to another.</li><li>• Is part of HP ProLiant Essentials Virtualization Management Software.</li></ul>
<b>HP ProLiant Essentials Performance Management Pack</b>	<ul style="list-style-type: none"><li>• Detects and analyzes hardware bottlenecks on HP ProLiant servers, select HP Integrity servers and MSA500/MSA1000/MSA1500 shared storage devices.</li><li>• Uses historic performance and utilization data to identify under-utilized servers that can be virtualized</li></ul>
<b>HP ProLiant Essentials Rapid Deployment Pack</b>	<ul style="list-style-type: none"><li>• Automates the deployment of physical systems, the VMware ESX virtualization layer and virtual machine guests in the ESX environment.</li></ul>
<b>HP ProLiant Essentials Vulnerability and Patch Management Pack</b>	<ul style="list-style-type: none"><li>• Helps protect your virtual machines from the security vulnerabilities experienced by physical systems.</li></ul>

### HP servers certified for VMware

HP is the world's leading brand for x86 servers, storage, management software, services and support. Building on this core strength, HP ProLiant servers and HP BladeSystem provide ideal platforms for virtualization on industry-standard hardware.

With HP, you have the added assurance that comes with hardware and software that have been certified for VMware. HP tests and qualifies many of its products with VMware. This includes drivers, management agents, installation software and more. Certification allows you to run your business-critical applications with confidence, knowing HP has tested key components within the virtualized stack. Today, HP has more certified platforms for VMware than any other vendor—more than 30 HP ProLiant server models have been certified for use with VMware ESX Server.\*

By using HP BladeSystem, you can leverage the performance, density and low power consumption of server blades. A smaller solution footprint helps you make the most of the valuable space in your datacenter, and attachment to a storage area network (SAN) is economical.

### HP StorageWorks

To take advantage of many of the features of VMware, including the ability to quickly move virtual machines to different physical servers, you will want to attach to a SAN. HP StorageWorks Storage Array Systems provide an ideal storage platform for virtualization over a SAN. Like HP ProLiant servers, HP StorageWorks Storage Array Systems are certified to perform well in VMware environments. What's more, these storage systems leverage the HP StorageWorks Grid, a comprehensive storage virtualization environment that provides a wide range of storage-level virtualization capabilities.

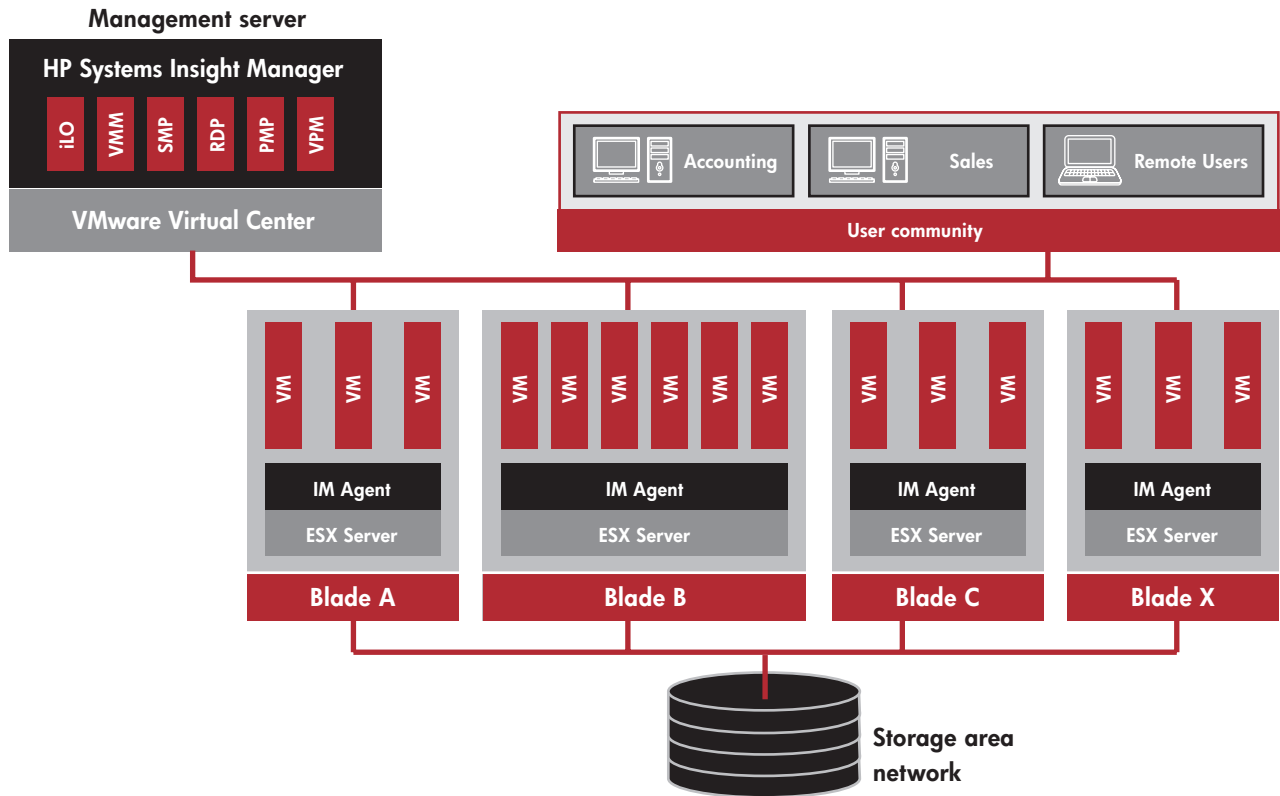
### HP integrated virtualization management

#### **Gain a single view of physical and virtual resources**

While many companies can provide hardware that works with VMware, no other company offers HP's unique set of tightly integrated virtualization management capabilities. HP arms you with the tools you need to unify the management of physical and virtual assets within the same environment.

\*As of March 2006. For details, see [www.hp.com/go/vmware](http://www.hp.com/go/vmware).

Figure 1. Virtual server architecture



Consolidated management is enabled by the combination of HP Systems Insight Manager and HP ProLiant Essentials software, which work in concert with VMware. HP Systems Insight Manager discovers and identifies physical and virtual systems. Add in the capabilities of HP ProLiant Essentials software and you gain the ability to monitor both the health and the performance of physical and virtual resources.

HP ProLiant Essentials Virtualization Management Software, included with select VMware products from HP, provides critical management and migration tools for a VMware virtualization solution. This software complements both HP Systems Insight Manager and VMware VirtualCenter.

Using an optional Smart Plug-in, HP OpenView management solutions extend the reach of HP Systems Insight Manager and its complementary products in an HP-VMware virtualization environment.

Together, HP Systems Insight Manager, HP ProLiant Essentials software and HP OpenView software provide a solid and reliable IT management foundation for your virtualization solution.

## HP expertise—for a one-stop solution

HP delivers one-stop shopping and support for your virtualization solution—including expert consulting and technical services from HP and partners as well as ongoing support from the worldwide HP support organization.

The HP Consulting and Integration team and HP channel partners offer a range of services for VMware deployments, including analysis, consolidation and migration. HP professionals can help you identify your needs and develop a clear virtualization strategy.

You can also look to the HP Services organization for worldwide support for your virtualization solution. In these efforts, HP support personnel work closely with the VMware support organization. Add in the resources of HP's worldwide network of certified value-added resellers, and you can be sure you have easy access to the expertise you need to deploy, operate and support a high performance, virtualized environment.



## Virtualization scenarios

### Server consolidation

The HP virtualization solution with VMware enables your organization to consolidate your server resources to help improve utilization and reduce IT complexity. When you virtualize resources with HP ProLiant servers and VMware, you can easily migrate from an under-utilized, over-provisioned physical environment to a virtual environment with fewer, more reliable systems. With HP ProLiant Essentials Server Migration Pack, you can speed the migrations of these environments to a virtualized environment.

### Workload optimization

With virtualized server resources, you can respond faster to business change and increase the efficiency of your operations. The HP virtualization solution with VMware, using HP ProLiant Essentials Virtual Machine Management Pack and VMware VirtualCenter, gives you dynamic control to help manage resource utilization and balance workloads to deliver on service level agreements and respond to business demands effectively.

### Failed host recovery and disaster recovery

Virtualization can help you maintain the availability of critical applications, reduce the risk of data loss and business interruption, and recover more quickly from disruptive events. HP ProLiant servers and VMware software deliver system reliability matched with virtualization to move, duplicate and restore critical information with little or no disruption to your business. With HP Systems Insight Manager and HP ProLiant Essentials Virtual Machine Management Pack, you can set thresholds and receive alerts on both the physical server and the virtual machines. Additionally, you can predetermine how to recover from a failed host. The HP management tools working together with VMware DRS and VMware HA provide a level of automation that allows for optimized utilization and high availability.

### Other usage models

Virtualization has a wide range of applications. Other usage models include:

- Test and development—The HP virtualization solution with VMware can help you automate test and development processes. A single physical server can host dozens of virtualized development environments, reducing the number of physical servers needed for test and development.
- Legacy application and operating system support—The HP virtualization solution with VMware allows your company to upgrade to a new hardware platform while continuing to run legacy applications without modification inside a virtual machine.
- Client consolidation—The HP virtualization solution with VMware can be used to enable client consolidation. Virtualization simplifies client software updates, hardware refresh cycles and management of security issues.

“VMware and HP have a shared vision for support of an agile datacenter and our partnership supports the HP Adaptive Enterprise strategy. Together, VMware and HP have great capabilities to address customer needs for IT consolidation and other solutions that virtual infrastructure is facilitating.”

Diane Greene  
President, VMware

## Implementing virtualization

### Putting best practices to work

HP and channel partners offer proven processes for implementing virtualization solutions. These processes draw on best practices and established methodologies to guide you through the three key stages of a virtualization initiative: planning, deployment and migration, and operation.

### Phase 1: Planning

HP's step-by-step approach to virtualization begins with careful planning. In this phase, HP consultants and HP channel partners work with your team to identify candidate servers for virtualization. A key step here is to gather inventory and performance data for your current environment.

This process identifies the appropriate hardware for your virtualization solution, including server types, storage and networking gear. Armed with this information, you can determine the applications that are a best fit for running in a virtual machine.

Tools used in this phase include HP online planning resources and the VMware Capacity Planner, which creates capacity profiles for large environments. Other tools include HP Systems Insight Manager and HP ProLiant Essentials Performance Management Pack, which provide capabilities for discovering your environment and identifying servers with bottlenecks or excess capacity.

### Phase 2: Deployment and Migration

Sound planning creates a foundation for deployment and migration work. In this phase, you begin by building and assembling racks for servers, networking and storage and by installing operating systems.

At this point, you're ready to begin putting the virtualization tools into place. HP professionals and HP channel partners work with your team to deploy virtualization technology onto each physical server, install agents to manage physical servers, and migrate existing applications from physical servers to virtual machines.

HP ProLiant Essentials Server Migration Pack, part of the HP ProLiant Essentials Virtualization Management Software, streamlines migration of existing server environments to HP ProLiant servers running VMware. Server Migration Pack enables migration either on physical servers or on virtual machines running on other virtualization platforms.

### Phase 3: Operation

Once your virtualized environment is in place, management tools become the key to a successful project. With HP Systems Insight Manager and ProLiant Essentials Virtual Machine Management Pack, you can monitor both physical servers and virtual machines from a single console. You can also easily move virtual machines to other servers running VMware.

## Let's get started

HP offers a wide variety of free online resources to help you evaluate your virtualization needs and opportunities. To access these resources—including online planning tools and downloadable white papers—visit [www.hp.com/go/vmware](http://www.hp.com/go/vmware).

To learn more about the HP virtualization solution with VMware and how it can help your organization reduce costs and increase business agility, contact your HP sales representative or HP channel partner.



For more information, please visit:  
[www.hp.com/go/vmware](http://www.hp.com/go/vmware)

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