



VMware Infrastructure 3

Data center management and optimization suite

VMware® Infrastructure is the most widely deployed software suite for optimizing and managing IT environments through virtualization. VMware technology is proven to deliver results at over 100,000 customers of all sizes, used in a wide variety of environments and applications and trusted in production environments by over 80%¹ of VMware customers. The suite is fully optimized, rigorously tested and certified for the widest range of hardware, operating systems and software applications. VMware Infrastructure provides built-in resource optimization, application availability and operational automation capabilities that deliver transformative cost savings as well as increased operational efficiency, flexibility and IT service levels.

Key Features and Benefits Summary

VMware Infrastructure 3 is a virtual datacenter operating system that unifies discrete hardware resources to create a shared dynamic platform while delivering built-in availability, security and scalability to applications. Key components of a VMware Infrastructure environment include:

- Infrastructure vServices: Services that virtualize industry standard servers, storage and networks to create a unified shared resource that can be precisely allocated to applications
- Application vServices: Services built into the platform such as availability, security, scalability that can be enabled for all applications.
- Management vServices: The dynamic shared infrastructure created by VMware Infrastructure is comprehensively managed by management vServices provided by the vCenter family of solutions, that provides end to end automation of day to day management tasks in the virtual datacenter

Key Features and Benefits	VMware ESXi ² standalone	VMware Infrastructure Foundation	VMware Infrastructure Standard	VMware Infrastructure Enterprise
Infrastructure vServices: Services that virtualize industry standard servers(vCompute), storage (vStorage) and networks(vNetwork) to create a unified resource that can be precisely allocated to application				
vCompute				
VMware ESX³				
• Bare-metal architecture inserts a robust virtualization layer directly on the server hardware for near-native virtual machine performance, reliability and scalability.	X	X	X	X
• Small footprint. VMware ESXi is a compact, 32MB form factor of the production proven VMware ESX hypervisor. It is a fraction of the size of a general purpose operating system for unparalleled security and reliability.	X	X	X	X
• Server integration. VMware ESXi is available integrated into servers from leading OEM vendors for a simplified boot and deployment experience.	X	X	X	X
• CPU virtualization. Increase server utilization without the risk of critical services being starved for CPU resources. VMware ESX uses intelligent process scheduling and load balancing across available processors to manage the execution of virtual machine processing	X	X	X	X
– Advanced memory management	X	X	X	X
• RAM over-commitment. Increase memory utilization by configuring virtual machine memory that safely exceeds the physical server memory. For example, the sum of the memory of all virtual machines running on a server with 8GB physical memory can be 16GB.	X	X	X	X
• Transparent page sharing. Utilize available memory more efficiently by storing memory pages identical across multiple virtual machines only once. For example, if several	X	X	X	X

¹ Source: VMware Customer Adoption Survey 2008

² This standalone product edition is the embedded or hard disk installable VMware ESXi, available for free.

³ VMware ESX and ESXi are functionally equivalent with some minor exceptions. KB article 1003345 describes the differences in supported networking features between ESX Server and ESX Server 3i. VMware ESX is not available as a free download.

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virtual machines are running Windows Server 2003, they will have many identical memory pages. Transparent page sharing consolidates those identical pages into a single memory location.				
<ul style="list-style-type: none"> • Memory ballooning. Shift memory dynamically from idle virtual machines to active ones. Memory ballooning artificially induces memory pressure within idle virtual machines, forcing them to use their own paging areas and release memory for active virtual machines. 	X	X	X	X
<ul style="list-style-type: none"> • Performance optimizations for the lowest overhead and highest efficiency <ul style="list-style-type: none"> - Networking performance optimizations such as TCP Segmentation Offload and Jumbo Frames that reduce the CPU overhead associated with processing network i/o³ - Support for hardware nested page tables that optimize memory translation time between guest operating systems and physical memory - Support for large memory pages which makes memory access for the guest operating systems and the hypervisor more efficient - Support for paravirtualized Linux guest operating systems (Linux kernel 2.6.21 onwards) that run at higher levels of performance because they are virtualization-aware 	X	X	X	X
<ul style="list-style-type: none"> • Wake-on LAN. Enable higher consolidation ratios by allowing virtual machines to go on stand-by mode when not used. 	X	X	X	X
<ul style="list-style-type: none"> • Single Server Resource management for virtual machines. Define advanced resource allocation policies for virtual machines to improve service levels to software applications. Establish minimum, maximum, and proportional resource shares for CPU, memory, disk and network bandwidth. Modify allocations while virtual machines are running. Enable applications to dynamically acquire more resources to accommodate peak performance. 		X	X	X
<ul style="list-style-type: none"> - CPU capacity prioritization. CPU capacity is assigned to virtual machines on a "fair share" basis and CPU resource controls also allow an absolute minimum level of CPU capacity to be provided to critical virtual machines. 		X	X	X
<ul style="list-style-type: none"> - Storage I/O traffic prioritization. Ensure that critical virtual machines receive priority access to storage devices. I/O traffic from virtual machines to disk can be prioritized on a "fair share" basis. 	X	X	X	X
<ul style="list-style-type: none"> - Network Traffic Shaper. Ensure that critical virtual machines receive priority access to network bandwidth. Network traffic from virtual machines can be prioritized on a "fair share" basis. Network Traffic Shaper manages virtual machine network traffic to meet peak bandwidth, average bandwidth and burst size constraints. 	X	X	X	X
<ul style="list-style-type: none"> - Support for powerful physical server systems. Take advantage of very large server systems with up to 32 logical CPUs and 256GB RAM for large scale server consolidation and DR projects. 	X	X	X	X
<ul style="list-style-type: none"> - Support for up to 128 powered-on virtual machines. Take advantage of very large server systems for server enterprise-class server consolidation and containment. The maximum number of powered-on virtual machines per VMware ESX has been extended from 80 to 128. 	X	X	X	X
<ul style="list-style-type: none"> - Improved power management VMware ESX enters a low power "halt" state when a CPU is not scheduled. 				
Distributed Resource Management: Align resource allocation with business priorities				
<ul style="list-style-type: none"> • VMware Distributed Resource Scheduler Dynamically optimize resource allocation to virtual machines across resource pools with VMware DRS. Align computing resources with business goals while ensuring flexibility and efficient utilization of hardware resources. VMware DRS continuously monitors utilization across resource pools and intelligently allocates available resources among virtual machines based on pre-defined rules and policies. 				X
<ul style="list-style-type: none"> - Abstraction of resources from hardware. Manage resources independently of the physical servers that contribute the resources. 				X
<ul style="list-style-type: none"> - Flexible hierarchical organization. Organize resource pools hierarchically to match available IT resources to the business organization. DRS ensures that resource utilization is maximized while business units retain control and autonomy of their infrastructure. Resource pools can be flexibly added, removed, or reorganized as business needs or organization change. 				X

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- Isolation between resource pools. Make allocation changes within a resource pool without impacting other unrelated resource pools. For example, any allocation changes in the resource pool dedicated to a given business unit do not impact other resource pools.				X
- Management of sets of virtual machines running a distributed application. Optimize the service level of distributed applications by controlling the aggregate allocation of resources for the entire set of virtual machines running the distributed application.				X
- Manual and Automatic Migration Mode. Execute recommendations for virtual machine resource optimization either manually or automatically with VMware VMotion.				X
- Affinity Rules. Create rules that govern the allocation of virtual machines to physical servers. For example, certain virtual machines can always be kept on the same server for performance reasons. Alternatively, certain virtual machines can always be kept on different servers for high availability.				X
- Maintenance mode for servers with VMware DRS. Perform maintenance on physical servers without disruption to virtual machines and end users. When a physical server is placed in maintenance mode, DRS automatically moves virtual machines to alternative servers in the resource pool.				X
• Distributed Power Management (experimental). Reduce energy consumption in the datacenter by optimizing workload placement for low power consumption with VMware Distributed Power Management (DPM). DPM consolidated workloads when DRS clusters need fewer resources and powers off host servers to conserve energy. When resource requirements increase, DPM brings hosts back online to ensure service levels are met.				X
vNetwork				
- Network virtualization. Network virtual machines like physical machines. Build complex networks within a single VMware ESX or across multiple installations of VMware ESX for production deployments or development and testing purposes.	X	X	X	X
o Virtual NICs. Configure each virtual machine with one or more virtual NICs. Each of those network interfaces can have its own IP address and even its own MAC address. As a result, virtual machines are indistinguishable from physical machines from a networking standpoint.	X	X	X	X
o Virtual switches. Create a simulated network within an VMware ESX with virtual switches that connect virtual machines.	X	X	X	X
o Expanded port configuration policies. Simplify port configuration by utilizing a single configuration object across large groups of ports. The configuration object specifies all information needed to enable a port: NIC teaming policy (now per port instead of per virtual switch), VLAN tagging, Layer 2 security, and traffic shaping.	X	X	X	X
o VLAN Overlay a logical LAN on top of physical LANs to isolate network traffic for security and load segregation purposes. VMware ESX VLANs are compatible with standard VLAN implementations from other vendors. Modify network configurations without having to change actual cabling and switch setups. VLANs keep broadcast traffic limited to the VLAN, reducing the network load of broadcast packets on other switches and network segments.	X	X	X	X
o VLAN tagging. Enhance network security by tagging and filtering network traffic on VLANs. Limit the scope of broadcast domains.	X	X	X	X
o Layer 2 network security policies. Enforce security for virtual machines at the Ethernet layer. Disallow promiscuous mode sniffing of network traffic, MAC address changes, and forged source MAC transmits.	X	X	X	X
o Enhanced NIC teaming. Give each networked virtual machine built-in NIC failover and load balancing enabling greater hardware availability and fault tolerance. NIC teaming policies allow users to configure multiple active and standby adapters. Teaming configuration may be different for different port groups on the same virtual switch and different groups can even select different teaming	X	X	X	X

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algorithms for the same team.				
<ul style="list-style-type: none"> o Rate limiting. Restrict traffic generated by a virtual machine to ensure resource balancing among many virtual machines 	X	X	X	X
<ul style="list-style-type: none"> - Flexible virtual switches. Scale up to handle more virtual machines. Virtual switches can be created with any number of ports from 8 to 1016, and the maximum number of virtual switches is 127. 	X	X	X	X
vStorage				
<ul style="list-style-type: none"> • Storage virtualization. Leverage shared storage to centralize virtual machine file storage for greater manageability, flexibility and availability. 	X	X	X	X
<ul style="list-style-type: none"> o Fibre Channel HBA consolidation. Share expensive storage network components across many virtual machines while maintaining hardware fault tolerance. 	X	X	X	X
<ul style="list-style-type: none"> o Virtual disk files Simplify virtual machine storage management. Virtual machines see their own private virtual disk files. However, outside the virtual machine, the virtual disks are simply large files that can be copied, moved, archived and backed up as easily as any other file. 	X	X	X	X
<ul style="list-style-type: none"> o Compatibility with SAN security practices. Enforce security policies with LUN zoning and LUN masking. 		X	X	X
VMFS cluster file system				
<ul style="list-style-type: none"> • Shared data file system. Enable multiple installations of VMware ESX to read and write from the same storage location concurrently. Since virtual machines are hardware independent and portable across servers, VMFS ensures that individual servers are not single points of failure and enables resource balancing across multiple servers. 	X	X	X	X
<ul style="list-style-type: none"> - Store virtual disk files on high performance shared storage such as Fibre Channel or iSCSI SAN. 	X	X	X	X
<ul style="list-style-type: none"> o Online insertion or deletion of nodes. Add or delete an VMware ESX from a VMFS volume without pausing or halting the processing of other VMware ESX installations. 	X	X	X	X
<ul style="list-style-type: none"> o On-disk disk file locking. Ensure that the same virtual machine is not powered on by multiple servers at the same time 	X	X	X	X
<ul style="list-style-type: none"> • Logical volume manager. Manage the interaction between the physical storage arrays and VMFS with flexibility and reliability. 	X	X	X	X
<ul style="list-style-type: none"> - Dynamic volume resizing. Aggregate multiple storage disks into a single VMFS volume. Resize LUNs and add new heterogeneous LUNs to a VMFS volume on the fly. 	X	X	X	X
<ul style="list-style-type: none"> - Automatic volume re-signaturing. Simplify the use of array-based snapshot technology. Re-signaturing automatically recognizes snapshot VMFS volumes. 	X	X	X	X
<ul style="list-style-type: none"> - Partial online operation. Volume continues to function even if some LUNs are lost. 	X	X	X	X
<ul style="list-style-type: none"> - Raw device mapping. Optionally, map SAN LUNs directly to a virtual machine in order to enable application clustering⁴ and array-based snapshot technology while profiting from the manageability benefits of VMFS. 	X	X	X	X
<ul style="list-style-type: none"> • Write-through I/O. Ensure precise recovery of virtual machines in the event of server failure. Write-through I/O enables virtual machines to have the same recovery characteristics as a physical system running the same operating system. 	X	X	X	X
<ul style="list-style-type: none"> • Boot from SAN. Run multiple installations of VMware ESX on diskless configurations of blade and rack mount servers by booting from SAN. Simplify backups and disaster recovery by eliminating the need to separately backup local attached server disks. 	X	X	X	X
<ul style="list-style-type: none"> • High Performance. Optimized for virtual machine I/O. Store and access the entire virtual machine state efficiently from a centralized location with virtual disk performance close to native SCSI. 	X	X	X	X
<ul style="list-style-type: none"> • Adaptive block sizing. Uses large block sizes favored by virtual disk I/O. Use sub-block allocator for small files and directories. 	X	X	X	X
<ul style="list-style-type: none"> • Dynamic increase of VMFS volume size. Create new virtual machines without relying on a storage administrator. Adaptive block sizing and addressing for growing files allows to increase a VMFS volume on the fly. 	X	X	X	X
<ul style="list-style-type: none"> • Increased number of VMware ESX per VMFS volume. Connect up to 32 VMware ESX installations to a single VMFS volume. 	X	X	X	X

⁴ Microsoft Clustering Services requires direct access to a SAN LUN.

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<ul style="list-style-type: none"> • Extended block size and file limits. Run even the most data intensive production applications such as databases, ERP and CRM in virtual machines <ul style="list-style-type: none"> • Maximum volume size: 64 TB • Maximum virtual disk size: 2 TB • Maximum file size: 2 TB max • Block size: 1 MB to 8 MB 	X	X	X	X
<ul style="list-style-type: none"> • Caching. VMFS uses volume, device, object and buffer caching to improve performance 	X	X	X	X
<ul style="list-style-type: none"> • Built-in storage access multipathing. Ensure shared storage availability with SAN multipathing for Fibre Channel or iSCSI SAN, and NIC teaming for NAS. 	X	X	X	X
<ul style="list-style-type: none"> • Hot add virtual disk. Add virtual disk to a running virtual machine or hot extend virtual disks live to increase available resources or for backup. 	X	X	X	X
<ul style="list-style-type: none"> • Distributed journaling. Recover virtual machines faster and more reliably in the event of server failure. 	X	X	X	X
<ul style="list-style-type: none"> • Storage Management 		X	X	X
<ul style="list-style-type: none"> - LUN discovery and management. Discover LUNs in the shared storage and map those LUNs to a VMFS volume. 	X	X	X	X
<ul style="list-style-type: none"> - File directories. Enable easy virtual machine administration with file directories. All files for a virtual machine are stored in a separate directory. 	X	X	X	X
<ul style="list-style-type: none"> - Direct pass through of virtual machine data. Ensure correct application behavior and data integrity for applications running in virtual machines. VMFS preserves the internal file system semantics of the operating system running inside the virtual machine. 	X	X	X	X
<ul style="list-style-type: none"> - Unified hierarchical namespace. Manage all available physical disks, logical volumes and VMFS volumes with a consistent namespace that eliminates potential conflicts. 	X	X	X	X
<ul style="list-style-type: none"> - SMI-S-compliant management interfaces. Monitor virtual storage using any standard SMI-S-aware storage management tool. 	X	X	X	X
<ul style="list-style-type: none"> - New- N-port ID virtualization. Assign individual worldwide port names to each virtual machine to enable QoS analysis on a per virtual machine basis using third party SAN tools. 	X	X	X	X
Interoperability VMware Infrastructure 3 is optimized, rigorously tested and certified across the widest range of operating systems and supported across a broad range of software applications allowing for enterprise-wide hardware and operating system independent standardization.				
<ul style="list-style-type: none"> • Servers. VMware Infrastructure 3 is rigorously tested and certified with industry-leading rack, tower and blade servers from Dell, Fujitsu Siemens, HP, IBM, NEC, Sun Microsystems and Unisys. 	X ⁵	X	X	X
<ul style="list-style-type: none"> • Storage. VMware Infrastructure 3 is rigorously tested and certified with a wide range of storage systems from Dell, EMC, Fujitsu, Fujitsu Siemens, HP, Hitachi Data Systems, IBM, NEC, Network Appliance, StorageTek, Sun Microsystems and 3PAR. 	X	X	X	X
<ul style="list-style-type: none"> o NAS and iSCSI SAN support. By supporting lower-cost, more easily managed shared storage, VMware ESX 3 further reduces total cost of ownership of IT environments. Advanced VMware Infrastructure capabilities like VMotion™, DRS and VMware HA are fully supported with NAS and iSCSI environments. 	X	X	X	X
<ul style="list-style-type: none"> o New - Local SATA storage support. 	X	X	X	X
<ul style="list-style-type: none"> o New- Use high speed networking such as 10 GigE and Infiniband for the most network intensive workloads 	X	X	X	X
Application vServices: Services built into the platform that can be turned on/off for all applications				
<ul style="list-style-type: none"> • Interoperability VMware Infrastructure 3 is optimized, rigorously tested and certified across the widest range of operating systems and supported across a broad range of software applications allowing for enterprise-wide hardware and operating system independent standardization. 				
<ul style="list-style-type: none"> - Operating systems. VMware Infrastructure 3 supports a wide range of unmodified operating systems including Windows, Linux, Solaris and Novel NetWare. 	X	X	X	X
<ul style="list-style-type: none"> o New – Ubuntu support 	X	X	X	X
<ul style="list-style-type: none"> o New – Windows Vista support 	X	X	X	X
<ul style="list-style-type: none"> - Software applications. Run software applications from hundreds of software vendors in VMware virtual machines. 	X	X	X	X

⁵ VMware ESXi has a separate hardware compatibility list from VMware ESX 3.5

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<ul style="list-style-type: none"> - Support for other virtual machine formats. VMware ESX 3 can run virtual machines created in non-VMware formats. VMware Converter (available for free download or integrated into VCenter Server) converts virtual machines from other virtual machine formats to virtual machines that run on VMware ESX 	X	X	X	X
Availability :Lower Planned and unplanned downtime				
Reduce planned downtime by moving applications “live” from one server to another				
<ul style="list-style-type: none"> • VMotion: Live migrate running virtual machines from one server to another with no disruption or downtime. Enhanced VMotion compatibility provides cross generational VMotion capability between processors from the same CPU vendor. 				X
<ul style="list-style-type: none"> • Storage VMotion: Live migrate running virtual machine disks from one storage array to another with no disruption or downtime. 				X
Reduce unplanned downtime by protecting against hardware and OS failures				
<ul style="list-style-type: none"> • VMware HA: Low cost high availability for all applications 			X	X
<ul style="list-style-type: none"> - Protect against physical machine failures through low cost, easy to setup VMware HA. VMware HA automatically detects physical machine failure and restarts virtual machines on other physical machines in a shared storage environment. 			X	X
<ul style="list-style-type: none"> - Resource checks. Ensure that capacity is always available in order to restart all virtual machines affected by server failure. HA continuously monitors capacity utilization and “reserves” spare capacity to be able to restart virtual machines. 				X
<ul style="list-style-type: none"> - New- Protect against operating system failures with virtual machine failure monitoring in VMware HA 			X	X
<ul style="list-style-type: none"> - Intelligent choice of servers (when used with VMware DRS). Automate the optimal placement of virtual machines restarted after server failure. 				X
<ul style="list-style-type: none"> • Support for Microsoft® Clustering Services⁶. Cluster virtual machines running Microsoft® Windows operating system across physical hosts. 		X	X	X
<ul style="list-style-type: none"> • Virtual machine snapshots. Increase application availability while reducing backup windows using virtual machine snapshots. Create a point-in-time copy of virtual machine data that can be used for testing, backup, and recovery operations, 		X	X	X
<ul style="list-style-type: none"> • VMware Consolidated Backup Centralize your backups by using your backup solution with VMware Consolidated Backup 		X	X	X
<ul style="list-style-type: none"> - NEW: One-step restore of virtual machine consolidated backup images with vCenter Converter (integrated into vCenter Server) 	X	X	X	X
<ul style="list-style-type: none"> - New - Fibre Channel ,iSCSI, NAS and local storage support. Use VMware Consolidated Backup with a variety of storage options. 		X	X	X
<ul style="list-style-type: none"> - New – VSS quiescing Ensure application data consistency of VSS-aware applications using VSS quiescing before backup 		X	X	X
<ul style="list-style-type: none"> - Backup proxy server. Remove load from VMware ESX installations by consolidating backup load and management onto a backup proxy server. 		X	X	X
<ul style="list-style-type: none"> - File level full and incremental backup (for virtual machines running Microsoft® Windows operating system). Recover individual files and directories 		X	X	X
<ul style="list-style-type: none"> - Image level backup (for virtual machines running any operating system). Recover entire virtual machine image. 		X	X	
<ul style="list-style-type: none"> - Built in integrations with most major backup providers. Leverage existing investment in backup agents to move virtual machine data from the Consolidated Backup proxy server to tape devices 		X	X	X
Security: Secure virtual infrastructure from vulnerabilities				
<ul style="list-style-type: none"> • New- Patch Management. vCenter Update Manager enforces compliance to patch standards through automated scanning and patching of online VMware ESX hosts and select Microsoft and Linux virtual machines. Reduce security exposure in the environment through secure patching of offline virtual machines and reduce downtime through automatic snapshots prior to patching and rollback. Integration with VMware DRS enables zero downtime VMware ESX host patching. 		X	X	X
Scalability				
<ul style="list-style-type: none"> - New - 64GB RAM for virtual machines. Run the most memory-intensive workloads in virtual machines with a memory limit extended to 64GB. 	X	X	X	X

⁶ Although previous versions of ESX Server support MSCS, ESX Server 3.5 currently does not support any version of MSCS.

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<ul style="list-style-type: none"> • 4-way Virtual SMP™. Enable a single virtual machine to use up to four physical processors simultaneously. VMware ESX 3 extends this unique feature from two to four processors. With 4-way Virtual SMP even the most processor intensive software applications like databases and messaging servers can be virtualized. 	X	X	X	X
<ul style="list-style-type: none"> • VMware Distributed Resource Scheduler Dynamically optimize resource allocation to virtual machines across resource pools with VMware DRS. VMware DRS allows for dynamic growing and shrinking of applications based on their resource requirements and priorities 				X
<p>Management vServices: The dynamic shared infrastructure created by VMware Infrastructure is comprehensively managed by management vServices provided by the vCenter family of solutions. vCenter Server⁷ provides the central point of control for VMware environments and enables administration of and access to VMware Infrastructure components. In the instances where vCenter Server is not present (such as standalone ESXi environments), the VMware Infrastructure Client provides visibility and access to virtual machines running on individual host ESX servers.</p>				
<ul style="list-style-type: none"> • Provisioning Management 				
<ul style="list-style-type: none"> - Deployment wizard. Create new virtual machines with a user friendly wizard. Customize network identities and operating system parameters to make new instances unique. 	X	X	X	X
<ul style="list-style-type: none"> - Virtual machine templates. Save virtual machines as templates that can be instantiated in minutes. Minimize errors and downtime by establishing configuration standards for virtual machines. Re-designed templates support easy virtual machine patching and updating. Templates are stored on shared storage for greater reliability. 		X	X	X
<ul style="list-style-type: none"> - Virtual machine hot or cold cloning. Copy existing running or suspended virtual machines when a new instance of a server is needed. 		X	X	X
<ul style="list-style-type: none"> - PXE (Pre-boot Execution Environment) support. Use your server provisioning tools to deploy existing system images to empty virtual machines. 	X	X	X	X
<ul style="list-style-type: none"> - Remote devices. Install software in a virtual machine running on a server from the CD-ROM of a desktop without leaving your desk. 		X	X	X
<ul style="list-style-type: none"> • Configuration Management 				
<ul style="list-style-type: none"> - Establish and ensure compliance with corporate configuration standards through virtual machine templates. 		X	X	X
<ul style="list-style-type: none"> - Centralized storage of virtual machine configuration files. Increase deployment flexibility with centralized storage of virtual machine configuration files 		X	X	X
<ul style="list-style-type: none"> - VMware ESX configuration. Centralize management and configuration of all VMware ESX installations in vCenter Server. 		X	X	X
<ul style="list-style-type: none"> - Centralized licensing. Manage all VMware software licenses with an embedded FlexNet licensing server and a single license file. 		X	X	X
<ul style="list-style-type: none"> - Configure and control all the virtual infrastructure services 				X
<ul style="list-style-type: none"> - Programmatic interfaces through the VMware Infrastructure SDK. Provide Web Services APIs to access the functionality and data provided through the graphical user interfaces in order to integrate with third party systems management products and to extend of the core functionality 	X	X	X	X
<ul style="list-style-type: none"> • Infrastructure Management 				
<ul style="list-style-type: none"> - New -Large-scale management with vCenter Server 2. Manage upto 200 hosts and 2000 virtual machines with vCenter Server2.5. 	-	X	X	X
<ul style="list-style-type: none"> - Enhanced inventory model. Manage the complete inventory of virtual machines, resource pools and physical servers with greater visibility into object relationships. The new inventory model provides the flexibility to organize objects into folders and create two separate hierarchical views. 		X	X	X
<ul style="list-style-type: none"> - Enhanced object model. Manage virtualized IT environment with a consistent object model covering all entities such as virtual machines, physical servers, and resource pools. 		X	X	X
<ul style="list-style-type: none"> - Interactive topology maps. Visualize the relationships between physical servers, virtual machines, networks and storage. Topology maps allow to easily verify correct configuration for distributed services such as VMotion, DRS and HA. 		X	X	X

⁷ Note the vCenter Server is a separately licensed and purchased product –not included in any VMware Infrastructure Editions. Many of the capabilities that are part of VMware Infrastructure, such as VMware DRS, HA, VMotion, Update Manager etc require the presence of at least one instance of vCenter Server in the environment

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- New- Cisco Discovery Protocol support Discover physical and virtual network configurations for better debugging and monitoring of Cisco-based environments from within vCenter Server.		X	X	X
- Server and virtual machine management		X	X	X
o Virtual Infrastructure Client. Manage multiple installations of VMware ESX, virtual machines, and vCenter Server with a common user interface.	X	X	X	X
o Virtual Infrastructure Web Access. Manage virtual machines and access virtual machine graphical consoles without installing a client.	X	X	X	X
o Virtual machine shortcuts. Enable self-help for end users with direct access to virtual machines through a Web browser.		X	X	X
- Fine-grained access control. Secure the environment with configurable, tiered group definitions and fine-grained permissions.		X	X	X
- Integration with Microsoft® Active Directory. Base access controls on existing Microsoft® Active Directory authentication mechanisms.		X	X	X
- Custom roles and permissions. Enhance security and flexibility with user-defined roles. vCenter Server users with appropriate privileges can create custom roles such as night shift operator or backup administrator. Restrict access to the entire inventory of virtual machines, resource pools and servers by assigning users to these custom roles.		X	X	X
- Resource pool access control and delegation. Secure resource allocation at different levels in the company. For example, when a top-level administrator makes a resource pool available to a department-level use, all virtual machine creation and management can be performed by the department administrator within the boundaries assigned to the resource pool.	-	-	-	X
- Audit trails. Maintain a record of significant configuration changes and the administrator who initiated them. Export reports for event tracking.		X	X	X
- Session management. Discover and, if necessary, terminate vCenter Server user sessions.		X	X	X
• Capacity Management				
- System monitoring. Continuously monitor physical servers and virtual machine availability and utilization from a single interface.		X	X	X
o Alerts and notifications. Set green, yellow and red level alarms for CPU, memory and heartbeat states to manage and pre-empt problems. Alarm triggers generate automated notifications and alerts. Schedule automatic execution of system management tasks such as sending SNMP traps, sending emails, running management scripts, suspending, powering off, and resetting virtual machines.	X	X	X	X
o Performance graphs. Monitor and analyze virtual machines, resource pools and server utilization and availability with detailed performance graphs. Performance metrics can be defined with several levels of granularity and can be viewed in real time, or across a specified time interval.	X	X	X	X
o Reports. Export vCenter Server data to HTML and Excel formats for integration with other reporting tools and offline analysis.	X	X	X	X
• Consolidation Management				
- New- Integrated Physical to Virtual machine conversion. Manage multiple simultaneous conversions to virtual machines. Convert physical machines, virtual machine formats such as Microsoft VirtualServer or VirtualPC, backup images of physical machines such as Symantec Backup Exec LiveStateRecovery , Ghost 9 , VMware Consolidated backup images to running virtual machines.		X	X	X
- New- Guided consolidation. Guide first time virtualization users, in simpler Windows environments through the consolidation process workflow. Through a wizard based, tutorial like interface, Guided consolidation automatically discovers physical servers, helps analyze their performance and triggers the conversion of physical to virtual machines placed intelligently on the right host.		X	X	X

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