

# HP Recommended configuration for HP ProLiant DL585 G7 server and VMware® vSphere™

Featuring the AMD Opteron™ 6100 Series processor

## Recommended configuration

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## HP Recommended configuration

HP, AMD and VMware collaborate at an engineering level to ensure that our customers benefit from software and hardware solutions that are jointly tested, validated and tuned for optimal performance. We have developed a variety of recommended configurations for applications that are appropriate for particular business and technical situations.

The configuration in this guide is recommended, meant as a guideline to assist you in building an architecture for your specific needs. However, this configuration is provided as a reference only since specific configurations vary based on your needs. Memory, AMD processor count and frequency, I/O and storage recommendations should be seen as minimum recommendations. We strongly recommend that you work with your local HP Reseller or HP Sales Representative to help determine the best solution for you.

### Configuration paradigms

This solution contains a recommended configuration. In addition to being optimized for form factor, the configuration brings out the unique capabilities provided by the selection of HP ProLiant servers featuring AMD Opteron™ 6100 Series processors and the features they contain. We strive to provide flexible configurations that may meet a wide range of customer needs. The individual optimization points and trade-offs are explained below.

#### Rack optimized

The rack form factor-optimized configuration consists of a production environment to provide full support of the lifecycle of the VMware virtualization solution block. This configuration can fit into existing data center rack environments, providing an ideal solution for customers who value future expansion capabilities and modularity over physical rack space.

This configuration allows the deployment of high-performance AMD Opteron 6100 Series processors, and it offers the possibility of driving a significant amount of the storage through external Fibre Channel options and achieving larger memory footprints through the higher DIMM socket count in the scale-up family of rack servers. Conversely, you can also use this large DIMM capacity to reach the recommended memory footprint with lower-density and lower-cost DIMMs, if desired. Get maximum usage from your server memory by using “memory over-commit” in your virtualized environment—this applies to both rack and blade VMware environments.

## HP ProLiant DL585 G7 servers

HP continues to raise the bar on technology innovation and engineering excellence. The new HP ProLiant DL585 G7 server delivers industry-leading efficiencies to reduce costs in capital as well as operating budgets.

The new HP ProLiant DL585 G7 server features the latest scale-up AMD Opteron 6100 Series processors with up to 12 cores per CPU (for up to 48 cores), supports up to a 512 MB memory footprint and has up to 11 PCIe 2.0 I/O slots. This perfect balance of a new system architecture, extensive memory capacity and I/O throughput significantly accelerates virtualization and removes performance bottlenecks. The best part is that the HP ProLiant DL585 G7 server with the AMD Opteron 6100 Series processor is the first server that can pay for itself in as little as 30 days and deliver 4P performance with 2P economics.

The HP ProLiant DL585 G7 server featuring the AMD Opteron 6100 Series processor in the configuration listed below is an example derived from work that HP completed in performance tests of previous generations of this platform using VMware ESX running on HP ProLiant x86\_64 platforms.

### AMD Opteron™ 6100 Series processor

Get the performance you need for demanding workloads with a consistent, scalable platform that provides business value without compromise. Tackle tough virtualization and database workloads cost-effectively with the right-fit server platform. Realize superior performance with configurations offering 4P performance at 2P economics. Take control with Direct Connect 2.0 Architecture consistency, including power, virtualization and memory innovations. Gain advantages normally reserved for high-end systems with exceptional performance, price/performance, value, low total cost of ownership (TCO) and generational consistency.

# Recommended configuration

**Figure 1:** HP ProLiant DL585 G7 servers



## Production environment

Function	Quantity	Model	Memory	Processor	GHz <sup>1</sup>	Disk Drives (SAS) <sup>2</sup> OS/App
Application	2	HP ProLiant DL585 G7	512 GB	4x 8-core AMD Opteron 6100 Series processors	2.4	6x SAS drives
Network adapter	2	NC524SFP Dual-Port 10GbE Server Adapter	n/a	n/a	n/a	n/a
Storage adapter <sup>3</sup>	4	FC1242 Dual-Port HBA	n/a	n/a	n/a	n/a
Storage	1	EVA4400fc	n/a	n/a	n/a	8x 146 GB 15K FC

<sup>1</sup> Typically the latest available processor should be used for production servers.

<sup>2</sup> Increasing the number of drive spindles improves performance, 15K Serial Attached SCSI (SAS) reference minimum.

<sup>3</sup> The 4x Dual-Port HBAs provide redundancy for the configuration.

## General notes

- All OS/App disks are local RAID 1; disks are used only for swap/temp file space if the iHypervisor model of the server is ordered
- Best performance will be obtained with highest-speed, highest-wattage processors
- Depending on specific workloads, lower-power processors may provide an acceptable tradeoff in performance versus power and cooling
- Refer to VMware best practices guides for recommendations on configuring networks for VMware
- Minimum VMware vSphere version supported on platform: vSphere v4.0 U1

VMware configurations must conform to the specific devices listed in the VMware Hardware Certification List (HCL), which is updated frequently to reflect devices currently certified for support by VMware and HP, and published on the VMware website.

Find the latest VMware hardware certifications at [www.vmware.com/go/hcl](http://www.vmware.com/go/hcl).

Find the latest HP hardware certifications for VMware vSphere at <http://h71028.www7.hp.com/enterprise/cache/505363-0-0-0-121.html>.

In addition to the High Availability feature, VMware vSphere supports Fault Tolerance. VMware Fault Tolerance (FT) is a feature that allows a new level of guest VM redundancy and is enabled on a per-virtual-machine basis. When FT is enabled on a VMware high availability cluster, a second virtual machine is created on the second cluster node to work in virtual lockstep with the primary virtual machine with the least possible interruption of service upon a failure with the primary VM. For additional FT configuration guidelines, refer to the VMware paper entitled, "Protecting Mission-Critical Workloads with VMware Fault Tolerance."

To provide the most flexible environment for FT configurations, HP recommends upgrading the HP ProLiant DL585 G7 memory configuration. This server supports memory configurations up to the VMware vSphere 4.x maximum of 512 GB.

## Bill of materials

### Production servers

For HP ProLiant DL585 G7 servers with the AMD Opteron 6100 Series processor

Quantity	Part Number	Description
2	590480-B21	HP DL585R07 CTO Chassis Svr
2	601351-L21	AMD Opteron Processor Model 6176SE 2P Option Kit, FIO
2	601351-B21	AMD Opteron Processor Model 6176SE 2P Option Kit
32	593911-B21	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit
2	534562-B21	1 G Flash Backed Write Cache Module
2	481041-B21	HP Slim SATA DVD-ROM Optical Drive
8	500172-B21	HP 1200W 12V Hot Plug AC Power Supply
2	U4608E	HP Care Pack DL585 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic
2	452148-B22	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License
4	507125-B21	HP 146 GB 6G SAS 15K SFF DP Hard Disk Drive
2	489892-B21	HP NC524SFP Dual Port 10GbE Server Adapter
4	AE312A	HP FC1242 4 Gb PCI-e Dual Channel FibreChannel HBA
		VMware vSphere Enterprise Plus License (supports a processor up to 12 cores with no memory limitation)
1	AJ695A	EVA4400 146 GB w/Emb Switch Simple SAN Factory integrated StarterKit

## Options and recommendations

The preceding recommended configuration outlines the optimal solution for a general VMware vSphere environment. HP provides a myriad of additional options to strengthen the foundation of your data center and give you the custom solution you need. HP options are easy to implement and tailored for ProLiant and StorageWorks giving you confidence in your entire infrastructure. HP options allow you to optimize energy, facility and computing resources with the most integrated data-center solutions. Please contact HP for more information.

**Transact business faster.** Use faster AMD Opteron processors, high-performance drives and high-capacity memory for the maximum performance required by your business-critical applications.

### Recommended performance options

Memory	
HP 2 GB (1x 2 GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
HP 8 GB (1x 8 GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 16 GB (1x16 GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21

Drives	
HP 300 GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 146 GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 72 GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21

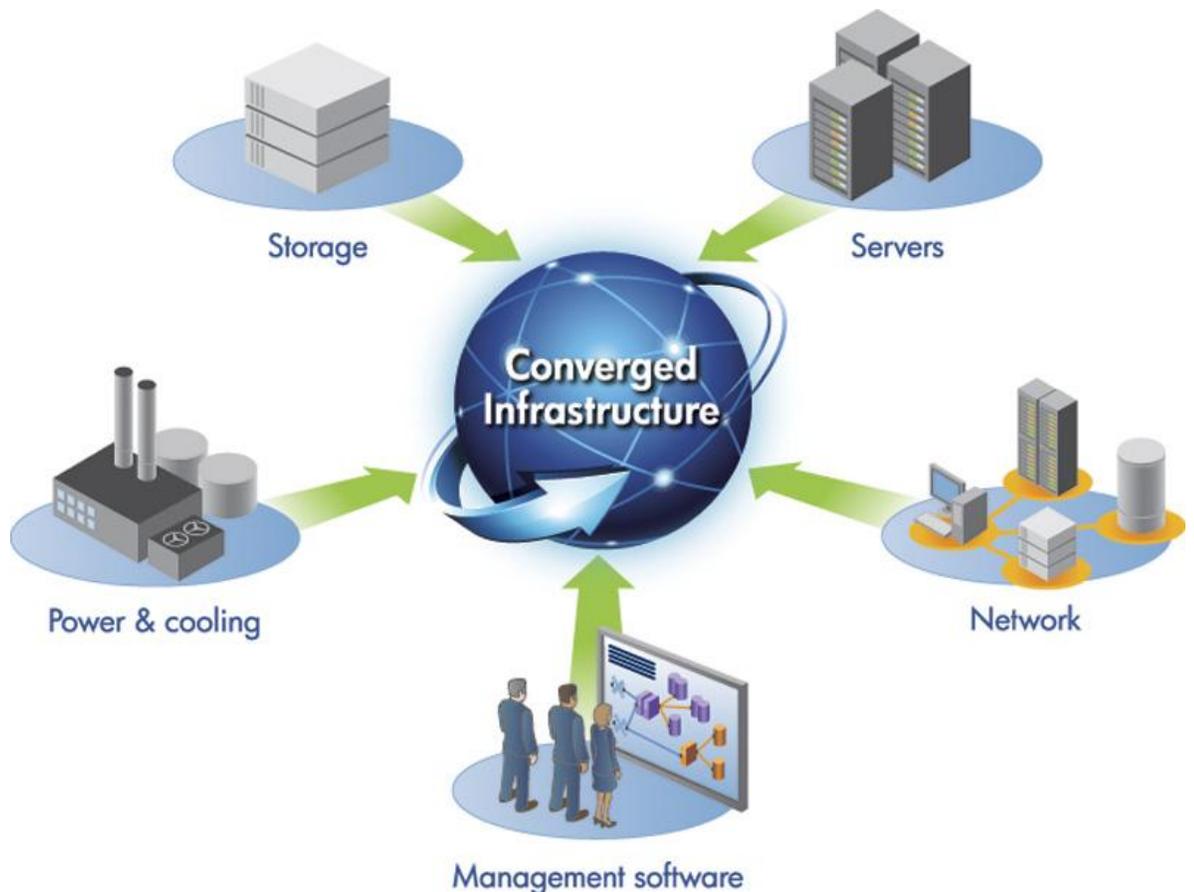
**A more cost-effective solution.** HP servers featuring low-power AMD Opteron processors and efficient memory help reduce power-consumption costs for your business, making your solution more energy efficient with a lower TCO. Additionally, cost-efficient hard drives help reduce your overall initial investment and lower your TCO even more.

## Recommended cost cost-effective/low-power options

<b>Memory</b>	
HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
<b>Drives</b>	
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21

# HP Converged Infrastructure

Figure 2: HP Converged Infrastructure



## IT resources are sprawling

For years, IT organizations have been adding servers, storage and networking devices to keep pace with applications and the number of terabytes of data they generate. Over time, these IT resources have become locked up in countless technology silos, each of which is devoted to an application or line of business. To ensure service level agreements (SLAs), these silos have created over-provisioning and underutilization and have become collectively difficult to manage. The result: more budget spent on operations and IT's inability to deploy new services quickly. Inevitably, the sprawl of underutilized IT resources leads to diminished productivity, lack of space, complex networking and unnecessary facility costs.

## HP Converged Infrastructure—The solution to sprawl

The solution to sprawl is to break down the technology silos and bring all IT resources together into adaptive pools of assets that can be shared by many applications and managed as a service. This solution brings together management tools, policies and processes so resources can be managed in a holistic, integrated manner. It also brings together power and cooling practices so systems and facilities work synergistically to extend the life of the data center.

A Converged Infrastructure has five overarching requirements. It is virtualized, resilient, orchestrated, optimized and modular:

- **Virtualized**—Requires the virtualization of all heterogeneous resources: compute, storage, networking and I/O. Virtualization separates the applications, data, and network connections from the underlying hardware—thereby, making it easier and faster to reallocate resources to match the changing performance, throughput and capacity needs of individual applications. This end-to-end virtualization improves IT flexibility and response to business requests, ultimately improving business speed and agility. A single operating environment must be able to manage many types of virtual machines.
- **Resilient**—Integrates nonstop technologies and high availability policies. Because diverse applications share virtualized resource pools, a Converged Infrastructure must have an operating environment that automates high-availability policies to meet SLAs. A resilient Converged Infrastructure provides the right level of availability for each business application.
- **Orchestrated**—Orchestrates the business request with the applications, data and infrastructure. It defines the policies and service levels through automated workflows, provisioning and change-management design by IT and the business. Orchestration provides an application-aligned infrastructure that can be scaled up or down, based on the needs of each application. Orchestration also provides centralized management of the resource pool, including billing, metering, and chargeback for consumption.
- **Optimized**—Optimize itself for any workload—nonstop, desktop or cloud applications and any OS—whether it runs on a physical or virtual machine. Based on policies, the infrastructure is able to adapt to a wide variety of demands in the most efficient way possible to meet different requirements for performance, resiliency and overall efficiency. This means that it does not over-provision (waste resources) or under-provision (hurt business outcomes), but continuously optimizes resource supply with application demand.
- **Modular**—Built on modular design principles that are based on open and interoperable standards. A modular approach allows IT to integrate new technologies with existing investments without having to start over. This approach also gives IT the ability to extend new capabilities and scale capacity over time.

## HP Networking

Networking is the key to a Converged Infrastructure by connecting applications, infrastructure and users across the extended enterprise. And HP is changing the rules of networking—with a secure and converged network, server and storage infrastructure fabric, based on industry standards that enable rapid business service innovation while reducing total costs and delivering greater ease-of-ownership from core to edge. Combining 3Com, H3C, TippingPoint and HP Networking and security solutions, HP is creating a global networking powerhouse that enables a simplified, more flexible fabric.

For enterprise customers, HP Networking offers:

- **Better application service:** To quickly adapt to business conditions and respond to competitive challenges and opportunities, you need innovative, application-centric networking solutions that evolve as you grow to deliver advanced mobile capabilities. HP delivers modular, high performance infrastructures with a time-to-service advantage.
  - You can continue to operate limited but critical branch functions with backup and recovery capabilities. Our WAN routers are modular with flexibility to adopt different WAN connectivity options. With the Microsoft Unified Communications & Collaboration (UC&C) solution you have continued voice capability even when the WAN links go down.
- **Infrastructure-wide simplicity:** Networking has become increasingly complex due to the rapidly growing demand for mobile and fixed access to multiple applications and services. The evolution of wired and wireless technology and the proliferation of WLAN devices and applications have made it difficult to scale networks and efficiently manage and secure them. With HP, enable unified core-to-edge solutions with an ease-of-ownership advantage.
  - Get simplified networking with our comprehensive, standards-based solution that you can manage from a “single pane of glass.” We offer wired, wireless, security, management, application hosting, UC&C, firewall, local Internet, WAN acceleration—all in a unified end-to-end solution.
- **Improved economics:** Faced with the challenge of doing more with less, you need robust networking solutions that optimize the total cost of ownership. This includes the cost of acquisition, operation, maintenance and the ongoing cost of service and support contracts. Ensure server-like economics with HP Networking that delivers a dramatically lower TCO.
  - Get remote manageability that reduces the need for local IT, WAN acceleration for optimal use of existing WAN links, integrated security with policy-based solutions and scheduled power management to help reduce networking costs.

## Storage External



**EVA4400 (Enterprise-class storage for up to 250 servers).** HP StorageWorks 4400 Enterprise Virtual Arrays offers easily deployable and affordable enterprise-class storage array functionality for the midsize customer. Its virtualization capabilities optimize capacity and eliminate management complexities, allowing you to aggregate and automate array management tasks so you can manage more storage capacity with fewer resources. With the affordable, easily deployable EVA4400 Simple SAN Solution, your focus is now on your business priorities.

Features: 1) Powerful performance from an easily deployable and affordable enterprise-class storage array. 2) Designed for easy integration with your IT infrastructure and business applications. 3) Superior storage for data protection that's reliable and available. 4) Embedded 8Gb/s switches for economical FC SAN connection. 5) Support for Solid State Disks for improved performance.



**XP20000 and XP24000 external storage arrays.** Business risk comes in many shapes and sizes—from site disaster, to human error to unpredictable cost and data growth. Your business depends on information technology more than ever before. In this IT-driven environment, information availability is critical to your business success while the consequences of any outage are far-reaching. How can you deliver uninterrupted availability while at the same time controlling costs? Now in its 5th generation, the HP StorageWorks XP24000 and XP20000 Disk Arrays have been engineered to minimize or eliminate your exposure to these risks, and solve your need for 24x7 operations and storage consolidation cost savings. The XP disk arrays combine a completely redundant hardware platform with unique data replication capabilities that are integrated with clustering solutions for complete business continuity. Additionally, the XP disk arrays best-in-class software decreases the costs and complexities of data management. And through HP StorageWorks XP Thin Provisioning Software and the seamless scalability of the hardware, you can quickly adapt to change and accelerate the growth of the business. With the XP disk array platform, you can confidently manage business-critical IT. The HP XP20000 supports up to 96 PB of capacity and the XP24000 supports up to 243 PB of capacity.

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## Storage External

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**P2000/MSA (Scalable shared storage for up to 64 servers).** The HP StorageWorks P2000 Modular Smart Array features a high-performance 4 Gb Fibre Channel connected array for efficient consolidation and functionality at highly affordable prices. It allows departmental and small to medium businesses customers to grow capacity as demands increase up to 27 TB SAS or 60 TB SATA, and supporting up to 64 hosts. With up to 512 LUNs and each LUN sized up to 16 TB, the P2000 gives maximum configuration flexibility. The P2000 allows mixing of enterprise-class, dual-ported SAS drives and archival-class SATA drives, and the P2000 model now supports both Large Form Factor and Small Form Factor drives. The optional HP StorageWorks 2000 Modular Smart Array Snapshot Software offers increased data protection. The P2000 can be configured with a single controller for a low initial price with future expansion, or a dual controller model for situations that require higher availability and performance for the most demanding entry-level situations.

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## Backup and data protection

### External

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**MSL4048 LTO Ultrium tape library.** The HP StorageWorks MSL4048 Tape Library will meet a broad range of demanding data-storage needs including unattended backup, archive and disaster recovery for small to medium businesses, workgroups, or remote offices. The MSL4048 Tape Library offers up to 76.8 TB of compressed (2:1) storage capacity in only a 4U form factor and your choice of LTO-4 or LTO-3 Ultrium tape drives. The library is also available with a wide choice of interfaces including Fibre Channel, SCSI and SAS to allow installation of the library into any IT environment. The MSL4048 Tape Library enables you to manage your media easily both in and out of the library with a standard barcode reader, a configurable three-slot mail slot and four 12-slot removable magazines. With unique HP web-based remote management, the MSL4048 Tape Library is easily managed from across the room—or across the globe. The enhanced HP operator control panel is a full quarter VGA screen with an easy-to-navigate interface for easy onsite operator interaction.



**MSL8096 LTO Ultrium tape library.** The HP StorageWorks MSL8096 Tape Library will meet a broad range of demanding data-storage needs including unattended backup, archive and disaster recovery for medium to large businesses, workgroups, or remote offices. The MSL8096 offers up to 153.6TB of compressed (2:1) storage capacity in an 8U form factor with your choice of LTO-4 or LTO-3 Ultrium Tape Drives. The library is also available with a wide choice of interfaces including Fibre Channel, SCSI and SAS. A second power supply can be added for enhanced system uptime. The MSL8096 enables you to manage your media easily both in and out of the library with a standard bar code reader and eight 12-slot removable magazines. A quarter VGA operator control panel, up to 15 configurable mail slots and a viewing window with interior illumination enable easy operator interaction with the library. With HP unique web-based remote management, the MSL8096 is easily operated, configured and managed from across the room—or across the globe.



**D2D4000 backup system with deduplication.** HP StorageWorks D2D4000 Backup System provides consolidated, disk-based data protection for small and medium size data centers in an intelligent self-managing 2U rack-mountable solution. Dynamic deduplication removes redundant backup data to retain up to 50x more data on the same raw 4.5 TB or 9 TB disk and allows low bandwidth replication for cost-effective offsite backup and recovery. The D2D4000 Backup System integrates seamlessly into your existing environment and works with your backup software applications to automate the simultaneous daily backup of up to 16 servers onto a single network-connected device. With speeds of more than 325 GB/hour over iSCSI or 4 Gb Fibre Channel interfaces you can significantly reduce your backup window. The D2D4000 Backup System removes the need to manage multiple devices and reduces errors caused by media handling; proven hardware-based RAID 6 further reduces the risk of data loss.

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## HP Management tools

Let us help manage your servers with confidence.

### HP Insight software

HP Insight software offers deep insight, precise control and ongoing optimization—exactly what you need to deliver better service to your business.

### HP Insight Control, powered by iLO Advanced

HP Insight Control can help save you time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simplified management console. Insight Control is essential server management that unlocks the management functionality built into your HP ProLiant servers. According to an IDC white paper sponsored by HP, "Gaining Business Value and ROI with HP Insight Control," (May 2009), Insight Control can save as much as \$48,380 for every 100 users over three years in administration expenses with 6.1 months payback time and a 500+ percent return on investment.

HP Insight Control delivers four key capabilities for HP ProLiant servers and BladeSystem infrastructures:

- **Deploy or migrate servers quickly:** Bring reliability and consistency to the HP ProLiant server-deployment process with a simple, easy-to-use solution that turns manual, resource-intensive discovery, imaging and provisioning into unattended, repeatable and highly automated activities. Additionally, automate the migration of workloads from existing physical and virtual servers to the latest HP ProLiant servers or to the virtual machines on VMware ESX or VMware vSphere.
- **Take complete control of your HP ProLiant and BladeSystem infrastructure:** Control your infrastructure from anywhere, regardless of OS state. This helps maximize IT infrastructure stability and minimize risk. HP Insight Control, with iLO Advanced, offers global team collaboration for up to six remote users to reduce administration expense. You can reduce travel costs and increase IT staff efficiency with access to servers anytime, anywhere. Use automatically captured server-event video footage for training or diagnostic purposes. With the latest release of HP Integrated Lights-Out (iLO 3) you can now work even faster. Experience turbo-charged performance, a streamlined user interface and enhanced standards support with iLO 3—with 800 percent faster remote console and 360 percent faster Virtual Media.
- **Optimize power confidently:** Deploy your data center on HP ProLiant servers and make the most of power by accurately measuring consumption, reducing usage and reclaiming unused power and cooling resources so you can up to triple the capacity of your data center. Dynamic Power Capping allows you to safely reclaim unused power and cooling capacity by limiting power usage without risk or performance degradation or circuit over-subscription. With Data Center Power Control, you can reduce power consumption during critical times and quickly

respond to catastrophic failure events by lowering the power state of noncritical servers or gracefully taking them offline, based on predefined scripting. Automatically discover and map servers to specific outlets using Intelligent Power Discovery to ensure accurate correlation between equipment and power data collected, verify redundancy and eliminate human errors with simplified routine tasks and processes to save time and money.

- **Perform proactive system health and performance management:** Monitor your entire infrastructure with one simple, integrated interface and receive proactive notification of impending or actual failures. Health monitoring can be accomplished through the HP Systems Insight Manager interface, or via your existing VMware vCenter™ Server or HP Operations Manager console.

### HP Insight Control for VMware vCenter™ Server

HP Insight Control for VMware vCenter™ Server delivers powerful HP hardware-management capabilities to virtualization administrators, enabling comprehensive monitoring, remote control and power optimization directly from the VMware vCenter console. In addition, HP Insight Control delivers robust deployment capabilities and is an integration point for the broader portfolio of infrastructure-management, service-automation and IT-operation solutions available from HP. Key capabilities integrated into the VMware vCenter console include:

- **Combined physical and virtual view:** From a single pane of glass, monitor status and performance of virtual machines and the underlying host systems that support them
- **Integrated troubleshooting:** Receive prefailure and failure alerts on HP server components and invoke HP management tools, such as HP Systems Insight Manager and Onboard Administrator, in-context, directly from the VMware vCenter console
- **Powerful Remote Control:** Manage and troubleshoot HP ProLiant and BladeSystem servers remotely by using HP Integrated Lights Out Advanced capabilities directly from the VMware vCenter console
- **Proactive power management:** Get the most out of your existing power envelope by comprehending and proactively managing power for hosts and pools of virtual machines across hosts

A core component of HP Insight Control, the VMware vCenter Server extension is included with HP Insight Control, which can be purchased as a single license, in bulk quantities or bundled with HP ProLiant and BladeSystem hardware. Existing HP Insight Control customers who are under a current Software Updates contract can even download this extension free of charge.

### HP Insight Dynamics for ProLiant

Building on HP Insight Control, HP Insight Dynamics for ProLiant is advanced infrastructure lifecycle management software that allows you to adjust instantly to

dynamic business demands and provision and modify a complex infrastructure in minutes. HP Insight Dynamics for ProLiant is the infrastructure management at the core of the HP BladeSystem Matrix, a Converged Infrastructure solution that spans servers, storage and network resources that make an ideal platform for delivering shared services.

HP Insight Dynamics delivers three key capabilities for HP ProLiant servers and HP BladeSystem server blades:

- **Provision the infrastructure in minutes:** Automatically activate physical and virtual servers, storage and networking from pools of shared resources. Whether you need a single virtual machine or infrastructure for a complex three-tier application, HP Insight Dynamics for ProLiant finds available resources, streamlines the approval process and automatically provisions and configures what's needed across infrastructure silos. Delivering infrastructure to the business becomes faster, more efficient and more reliable.
- **Optimize the infrastructure confidently:** Quickly adjust and optimize your environment over its lifecycle so you can predictably make changes without time-consuming analysis and increase operational efficiency. Key data points, such as power draw, CPU and network utilization, are captured every five minutes and are used to generate best-fit consolidation scenarios. When combined with built-in re-balancing tools, you can eliminate weeks or months of tedious planning and implementation.
- **Protect the continuity of services:** HP Insight Dynamics for ProLiant protects quality of service and offers continuity of services with a wide spectrum of high availability and recovery solutions. For both HP ProLiant and HP Integrity servers, the continuum of solutions range from server-aware and application-aware availability to disaster-recovery solutions for distances from campus to continental for both physical and virtual server environments.

## HP Services

HP leverages in-depth VMware, HP BladeSystem Matrix, BladeSystem and ProLiant server, software, storage and networking know-how to help you craft your application strategy, design and implement a state-of-the-art solution and operate and continually improve a high-performing IT virtual infrastructure. HP provides a full spectrum of customer-focused services from technology support to complex migrations, all wrapped up with a series of totally managed services.

### Deployment services

Collaboration with HP Technology Services and HP Authorized Service Partners can take time, risk and worry out of the deployment process, and free your IT people to focus on what they do best. From preliminary planning and delivery to installation, configuration, integration, testing, migration and staff orientation, our highly trained professionals can help ensure a rapid, trouble-free deployment.

## **Complete portfolio of proven data center deployment solutions**

- HP Factory Express—A wide array of factory-customized, factory-configured and factory-integrated solutions that are deployed ready-to-roll at your data center
- Onsite installation and startup—Minimize the time, effort and resources you'll need to implement your new IT solutions successfully; an HP Services professional deploys and configures your hardware and software and conducts an orientation session
- Onsite implementation—HP provides comprehensive management of customized multifaceted deployment initiatives, including project management of the entire service engagement and extensive knowledge transfer

## Support

### **Hardware technical support**

Increase equipment availability and productivity with round-the-clock remote support—and where problems cannot be resolved remotely—onsite support for your HP hardware, as well as selected multivendor equipment. These flexible HP Care Pack Services cover desktops, workstations, servers, storage systems and network equipment.

Choose 4-hour 13x5 or 24x7 same-day hardware support when you need to:

- Extend your hardware warranty coverage with prompt, anytime service for key systems and devices
- Obtain easy-to-buy, easy-to-use onsite services
- Improve hardware performance and uptime
- Increase the return on your HP and multivendor hardware investments
- Enjoy consistent service coverage across geographically dispersed sites

Alternatively, consider 6-hour or 24-hour Call-to-Repair support, which provides you with remote problem diagnostics, onsite hardware support, round-the-clock coverage and upfront server audits all within your designated time period.

### **Software technical support and updates**

HP Software Support services give your IT team direct access to HP Response Center engineers for reliable advice on issues such as software features, use and problem diagnosis and resolution.

HP products licenses come with bundled one-year 24x7 software technical support and update services. HP Care Pack options are available to extend the period of coverage from one year to three, four or five years for some product lines.

## Proactive Select

HP Proactive Select service is specifically designed to meet the needs of HP ProLiant and BladeSystem customers who are looking for affordable consultancy expertise. Proactive Select is a flexible, very cost-effective way to purchase consultancy services and couple them with appropriate hardware and software support services, if required. This service solution is purchased as Service Credits, providing flexibility with minimum complexity.

## Insight Remote Support

HP Insight Remote Support delivers secure remote support for your HP servers and storage 24x7, so you can spend less time solving problems and more time focused on your business.

- Remote monitoring all the time so you gain better control
- Automated notification every time so you can do more with less
- Accurate resolution in less time so your business stays up and running

## Put your money where your business is

Free up your resources to focus on your core business by leveraging HP's Factory Express service to receive customization, integration and deployment services for your turnkey solution. Have your system arrive fully configured in racks and ready to run. HP does the hard work for you: We rack, integrate, test and deliver it, and all you have to do is turn it on. HP Factory Express can save you time, money and resources.

HP Financial Services (HPFS) offers you financing and leasing options that allow you to pay as you grow and stretch your capital investment dollars to accomplish more. HPFS will even help you retire your legacy systems so your IT grows with your business.

HP Education offers flexible, comprehensive training on server networking and server software to help your IT staff get the most out of your investments.

## For more information

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