HP Recommended configurations for HP ProLiant DL585 G7 and HP ProLiant BL685c G7 servers and HP Virtualization for SAP®—guidelines for the enterprise

With the AMD Opteron™ 6100 Series processor

Recommended configurations

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HP Recommended configurations

HP, AMD and SAP 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.

We recommend the configurations in this guide, and it is meant as a guideline to assist you in building an architecture for your specific needs. However, these configurations are provided as a reference only, since specific configurations vary based on actual need. Memory, I/O, storage and AMD Opteron™ processor count and frequency recommendations should be considered minimums. We strongly recommend that you work with your local HP Reseller or HP Sales Representative to determine the best solution for you.

Configuration paradigms

The following solution has a rack-optimized 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 processors and the features they contain. We strive to provide a flexible configuration that meets a wide range of customer needs. The individual optimization points and trade-offs are explained below.

Rack server–optimized

The rack server–optimized configuration consists of test, development and production environments to provide full support for the solution lifecycle. This configuration is built to fit into existing data center rack environments, providing an ideal solution for customers who value future expansion capabilities and modularity over physical rack space. In addition, this configuration allows the deployment of high-performance Intel processors, as well as a significant amount of the storage through a storage area network (SAN).

Blade server–optimized

The blade server–optimized configuration consists of a production environment to provide full support of the lifecycle of the solution. This configuration is designed to maximize server and storage density in data center environments where space, power or cooling capacities are more constrained. The configuration is optimized for server consolidation and energy efficiency by maximizing the density of the BladeSystem enclosure with server blades such as the HP ProLiant BL685c G7 with the AMD Opteron 6100 Series processor. In addition, this configuration allows deployment of a significant amount of the storage through either Directly Attached (DAS) or Storage Area Network (SAN) connected storage options.

This configuration is built around the space and power saving advantages of the HP BladeSystem platform and the virtual I/O capabilities offered through the Virtual Connect suite of products. This configuration allows considerable flexibility in its deployment methodology and its aggregated management features, and can easily be integrated into an existing HP ProLiant infrastructure.

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 both capital as well as operating budgets.

The new HP ProLiant DL585 G7 server features the latest scale-up AMD Opteron 6100 Series processor 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 below is an example derived from work HP completed in performance tests of previous generations of this platform using VMware ESX running on HP ProLiant x86_64 platforms.

HP ProLiant BL685c G7 servers

Get cost-effective yet uncompromising and dense 4P computing with the HP ProLiant BL685c G7 servers powered by the AMD Opteron 6100 Series processor with up to 48 cores. Our servers offer a large memory footprint of 512 GB of DDR3 memory that supports compute-intensive applications and server consolidation. In addition, integrated HP Virtual Connect FlexFabric support helps lower your infrastructure costs and reduce your power consumption by converging the LAN and SAN connections at the server.

AMD Opteron™ 6100 Series processor

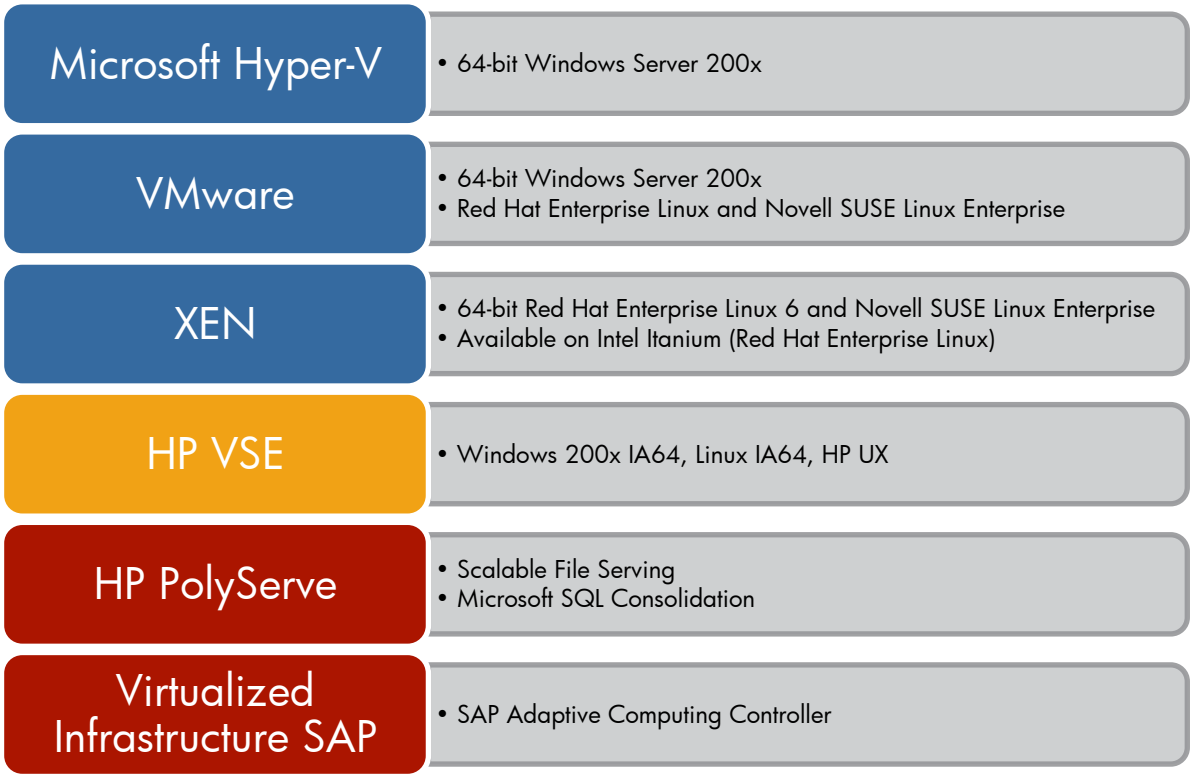
Get the performance you need for demanding workloads with a consistent, scalable platform that provides business value without compromise. Tackle tough virtualization and database workloads cost-effectively with the right-fit server platform, and realize superior performance with configurations offering 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 and generational consistency.

Workload considerations

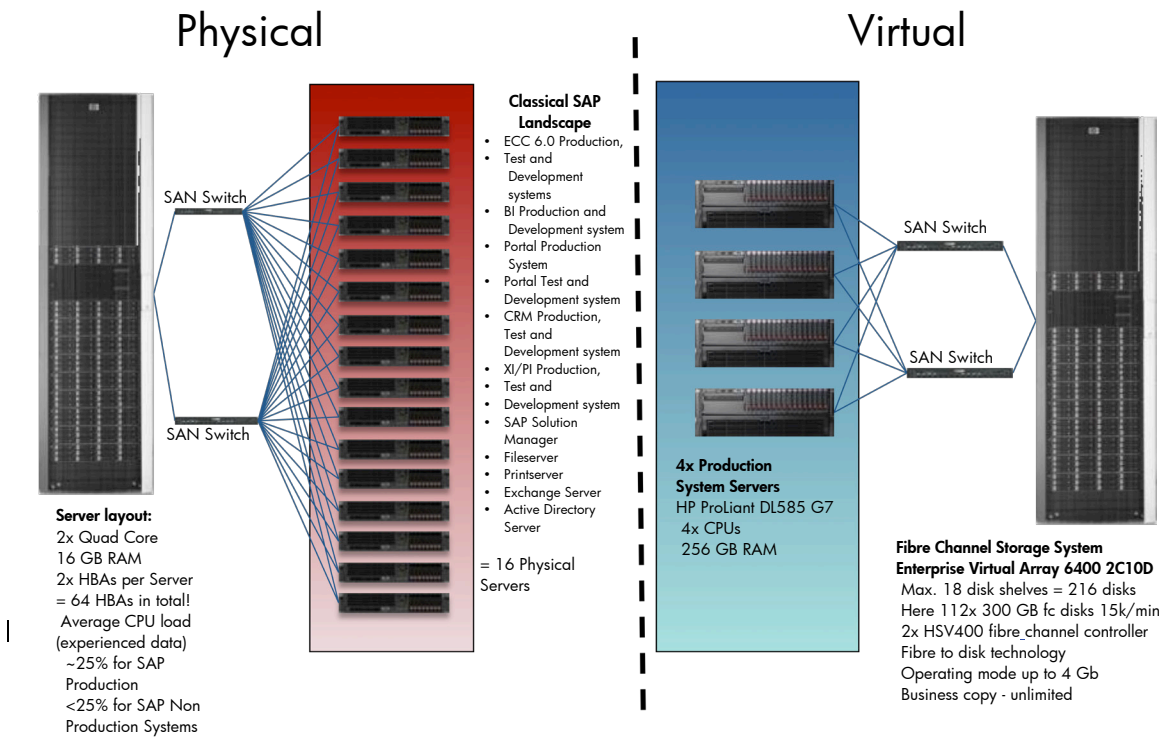
The virtualized SAP landscape solution is dependent on individual customer requirements and the total size of the SAP landscape. Customer requirements for high availability, failover performance and disaster tolerance must be analyzed with respect to user behavior and the workloads of individual SAP applications. We highly recommend that you contact the appropriate HP SAP Competency Center for sizing and landscape design support.

SAP Virtualization Solutions

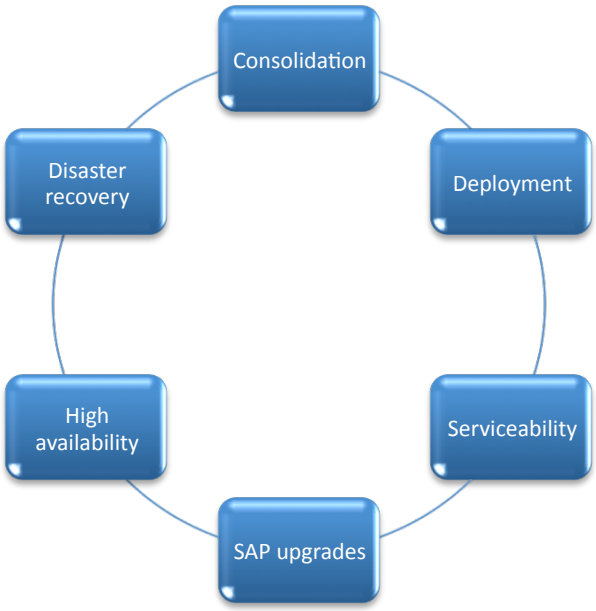
SAP works on a variety of virtualization layers, shown in the diagram below, that allow the full virtualization of business-critical SAP installations.



The goal of virtualization is to eliminate server sprawl and create a consolidated environment where SAP installations will run with the same efficiency and reliability as if they were on a standalone server. When using virtualization to consolidate your data center, you can dramatically reduce server counts.



As with all technologies, there are a variety of use cases where virtualized SAP installations are the best choice.



Consolidation

- Lower cost of ownership
- Less operation and management
- Separation of the 1:1 relation between application and server

OS Deployment

- Deploying OS TEMPLATES with HP Rapid Deployment

HP SAP Dialog Instance Deployment

- HP Rapid Deployment Template
- SAP Supported

HP SAP SCS Deployment

- Planned

Serviceability

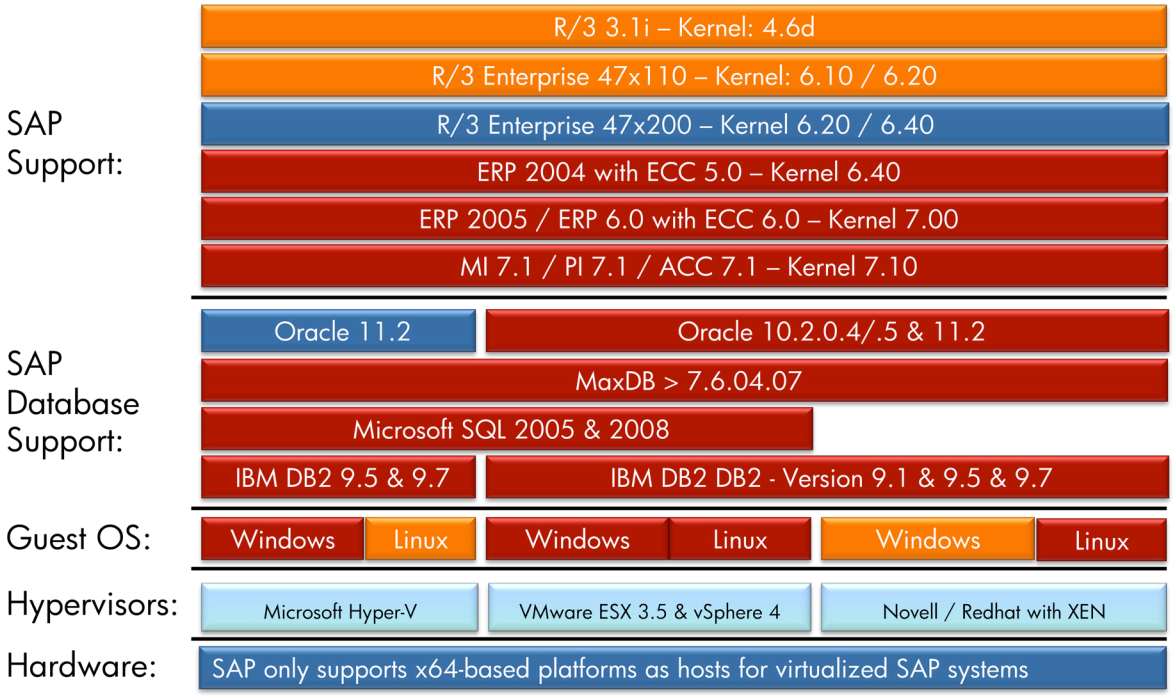
- Change the amount of memory and CPUs online
- Add memory online
- Supported with Windows 2003 & 2008
- SAP uses the Memory only under Windows
- Add CPUs remotely
- Supported with Windows 2008 Datacenter Edition only
- Server movement
- Transparent, not visible to end user

SAP Upgrades

- Faster "SAP Upgrades"–more time and more possibilities for test runs
- Several "snapshots" at various times during the project
- Very fast return to the latest working version

High Availability

- Clustering for all operating systems
- High availability without complex cluster software
- No breakdown because of a server outage



SAP does not support the following applications in production environments:

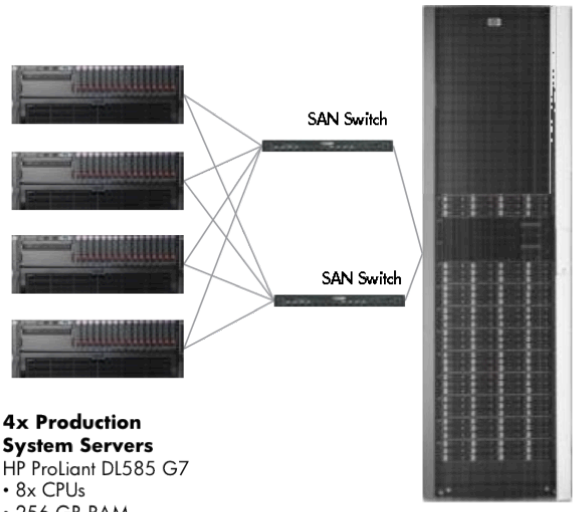
- BPC – Business Planning and Consolidation, originally Outlooksoft, which was acquired by SAP (see SAP Note 1098847)
- Master Data Management (see SAP Note 1070760)
- SAPConsole (used to translate SAPGUI screens to character-based screens compatible with handheld radio frequency devices)
- CRM Mobile Laptop (see SAP Note 1336014)
- Supply Chain Management Optimizer (see SAP Note 1223407)
- TREX 7.1 (see SAP Note 1303814)

To get full SAP support, SAPOSCOL counters can be viewed in SAP transaction OS07N. Full SAP support requires application of SAP Note 1409604, "Virtualization on Windows: Enhanced monitoring." The information in this note also applies to Linux and must be applied to obtain SAP support.

Recommended configurations

HP ProLiant DL585 G7 server

Figure 1: Rack server–optimized: HP ProLiant DL585 G7 server



Production environment

Function	Quantity	Model	Memory	Processor	GHz[1]	Disk Drives (SAS)[2] OS/Application
Production	4	DL585 G7	256 GB	4x 12-core AMD Opteron 6100 Series processors	2.3	3x SAS drives
Storage	1	EVA6400	n/a	n/a	n/a	112x 300 GB fc disks 15k/min
Enclosure	HP Rack 10000 G2 Series					

[1] Typically, the fastest available processor should be used for production servers.
[2] Increasing the number of drive spindles improves performance, 15k Serial Attached SCSI (SAS) reference minimum.

HP ProLiant BL685c G7 server

Figure 2: Blade server–optimized: HP ProLiant BL685c G7 server

Production environment

Function	Quantity	Model	Memory	Processor	GHz[1]	Disk Drives (SAS)[2] OS/Application
Production	4	BL685c G7	256 GB	4x 12-core AMD Opteron 6100 Series processors	2.2	2x SAS drives
Storage	HP 2312fc DC Modular Smart Array HP 2324fc DC Modular Smart Array					
Enclosure	HP BladeSystem c7000 Enclosure HP Rack 10000 G2 Series					

[1] Typically, the fastest available processor should be used for production servers.
[2] Increasing the number of drive spindles improves performance, 15k Serial Attached SCSI (SAS) reference minimum.

General notes

Rack form factor

- The virtualization layer consumes additional system resources including CPU power, memory and data throughput
- Refer to SAP and HP Best Practices guides for recommendations on configuring networks in a virtualized environment
- HP recommends the use of virtualized storage solutions, such as the HP Enterprise Virtual Arrays (EVAs), for best storage performance

HP-SAP software components

- SAP configurations must conform to the specific devices listed in the SAP Hardware Certification list published on the www.saponwin.com add-on page. This document is updated frequently to reflect devices currently certified for support by SAP and HP

Bill of materials

Rack server–optimized

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

Quantity	Part Number	Description
4	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
128	593913-B21	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit
1	582765-B21	HP Insight Control, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates
1	481041-B21	HP Slim SATA DVD-ROM Optical Drive
12	512547-B21	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive
4	500172-B21	HP 1200W CS HE Power Supply Kit
1	534562-B21	1G Flash Backed Write Cache
1	U4608E	HP Care Pack DL585 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic

4	AJ764A	HP StorageWorks Dual Channel 8 Gb/s 82Q PCI-E-to-Fibre Channel Host Bus Adapter
8	221692-B22	HP StorageWorks 5 Meter LC/LC Multi-Mode OM2 Fibre Channel Cable (2/4Gbit auf 2/4Gbit)
4	A7448B	HP StorageWorks 8 Gb/s Fibre Channel Short-Wave Transceiver Kit (SFP)
2	UL127E	HP Care Pack for B-Series 8/40 SAN Switch
2	AM870A	HP StorageWorks 8/40 SAN Switch - Power Pack+ (24) Full Fabric Ports Enabled
1	AF001A	HP Rack 10000 G2 Series

Blade server–optimized

For HP ProLiant BL685c G7 servers with the AMD Opteron 6100 Series processor

Quantity	Part Number	Description
4	518878-B21	HP ProLiant BL685c G7 CTO Blade
4	518871-L21	AMD Opteron Processor Model 6174 2P Option Kit, FIO
4	518871-B21	AMD Opteron Processor Model 6174 2P Option Kit
128	593913-B21	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit
1	451871-B21	QLogic QMH2562 8Gb FC HBA for HP BladeSystem c-Class
4	UK109E	HP Care Pack BL685c 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic
16	512547-B21	HP 146 GB 6G SAS 15K 2.5 inch DP ENT HDD
1	AJ795A	HP 2312fc DC Modular Smart Array
12	AJ737A	HP MSA2 450 GB 5k RPM 3.5 inch SAS HDD
1	AJ797A	HP 2324fc DC Modular Smart Array
1	507014-B21	HP BladeSystem c7000 Enclosure, Single-Phase with 2 Power Supplies, 4 Fans[1]
2	499243-B21	HP 2400W High Efficiency Hot-Plug Power Supply
6	412140-B21	HP Active Cool 200 Fan Option Kit
2	455880-B21	HP Virtual Connect Flex-10 10Gb Ethernet Module for the c-Class BladeSystem
2	572018-B21	HP Virtual Connect 8Gb 20-Port Fibre Channel Module for c-Class BladeSystem
1	UE479E	HP Care Pack c7000 Enclosure 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic
1	AF001A	HP Rack 10000 G2 Series

[1]Power Distribution Unit (PDU) required. For more information, visit http://www.hp.com/go/pdu

Options and recommendations

The preceding recommended configuration outlines the optimal solution for a general SAP 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 (1x2 GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
HP 4 GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
HP 8 GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 16 GB (1x16GB) 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 146 GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21

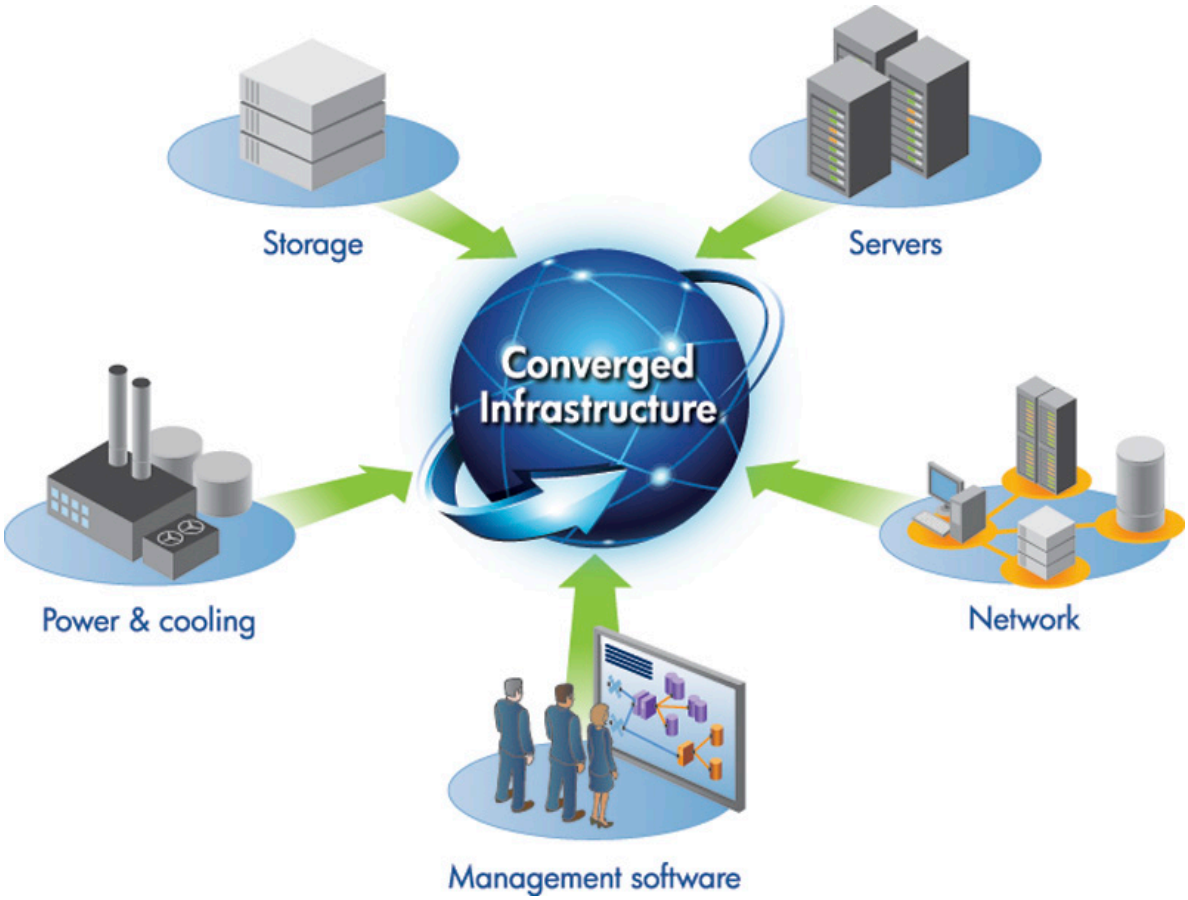
A more cost-effective solution. HP servers using low-power AMD Opteron processors and efficient memory help reduce power consumption costs for your business, making your solution more energy efficient with a lower TCO. Additionally, cost-efficient hard drives help reduce your overall initial investment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

Recommended cost-effective/low-power options

Memory	
HP 4 GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604500-B21
HP 8 GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604502-B21

Drives	
HP 500 GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21

Figure 3: 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 different 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**—Optimizes 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**—Is 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. By 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 (TCO). 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.

HP StorageWorks

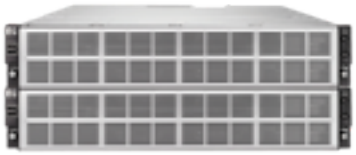
Storage
External

EVA4400 (Enterprise-class storage for up to 250 servers). HP StorageWorks 4400 Enterprise Virtual Arrays offer 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.

Storage
External



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 business 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 with a dual controller model for situations that require higher availability and performance for the most demanding entry-level situations.

P4000 SAN Solutions. Your storage needs are growing. You need a SAN for virtualized servers, and you want your next investment to have a long term payoff. The HP LeftHand P4000 SAN Solutions are optimized for database and email applications, as well as virtualized servers. With a pay-as-you-grow, all-inclusive pricing model and intuitive storage management software, the SAN is perfect for the budget-minded. Do high availability and disaster recovery seem out of your reach? The P4000 eliminates single points of failure across the SAN with an innovative approach to data availability, reducing risk without driving up costs. Unsure that current storage can meet your future needs? Built on a storage clustering architecture, the HP P4000 SAN allows you to scale capacity and performance linearly without incurring downtime or performance bottlenecks, or forcing expensive upgrades. Need creative ways to stretch your IT budget? Reservationless thin provisioning substantially increases your storage efficiency.

Storage
External

SB40c (Direct attach storage blade). Do you need a direct attached or shared storage solution within your BladeSystem enclosure? The StorageWorks SB40c Storage Blade delivers direct attached and shared storage for c-Class enclosures, with support for up to six hot-plug small form factor (SFF) SAS or SATA hard disk drives. The enclosure backplane provides a PCI Express connection to the adjacent c-Class server blade and enables high performance storage access without any additional cables. The SB40c Storage Blade features an onboard Smart Array P400 controller with 256 MB battery-backed write cache, for increased performance and data protection.

X3800sb (Network storage gateway blade). Do you have islands of storage that you need to consolidate, or tier two applications that would benefit from centralized storage? You need a flexible SAN gateway that increases the efficiency of your existing infrastructure. The HP StorageWorks X3800sb Network Storage Gateway Blade is a flexible ready to deploy SAN gateway solution for both enterprise and workgroup SAN environments. The X3800sb Network Storage Gateway Blade is used to access SAN storage, translating file data from the server into blocks for storage. Centralize file serving onto a SAN to control proliferation of storage devices. Connect to Fibre Channel, SAS, or iSCSI storage to increase efficiency of your existing infrastructure.

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 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 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 153.6 TB 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 barcode 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 unique HP 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. The 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.

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.
- **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 Microsoft® System Center or HP Operations Manager console.

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 SAP, 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.

HP Services has services tailored for SAP applications:

- HP SAPS Meter Service for consolidated and virtualized SAP infrastructures
- SAP Application and Infrastructure Modernization Services
- HP Migration in a Box for SAP
- HP Mission Critical Services for SAP

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.

Available recommended services options

There are a variety of services available for HP BladeSystem Matrix:

- HP Matrix Implementation Service
- Matrix Deployment Services
  - Windows Cluster SIM CMS w/Insight Software Implementation Service
  - BladeSystem Matrix Upgrade Implementation Service
  - BladeSystem Matrix Expansion Kit Integration Implementation Service
- One-year, 24x7 Software Technical support for management software suite included
- Three-, four- and five-year 24x7 Software Technical support upgrades for management software suite

The HP BladeSystem service options include the following:

- HP BladeSystem infrastructure deployment
- HP BladeSystem enhanced network deployment
- Three-year 24x7 enclosure and related options support
- Three-year 6-hour call-to-repair enclosure and related options support
- Three-year 24-hour call-to-repair enclosure and related options support
- Three-year Proactive Select

The HP Matrix and BladeSystem Mission Critical Services option is three-year Proactive 24 or Critical Service.

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.

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

Mission Critical Services for SAP

When downtime isn't an option, HP Mission Critical Services for SAP provide a complete support solution for businesses that depend on IT application availability. HP Mission Critical Services for SAP is composed of the right combination of proactive and reactive services, delivered by highly trained professionals who have world-class skills and a commitment to understanding both your enterprise technology requirements and your business objectives. These services will minimize your downtime risks, improve operational efficiency and enhance your ability to drive innovation and respond rapidly to changing business requirements.

Mission Critical Services for SAP options deliver:

- Improved availability and performance across your IT infrastructure for both physical and virtual solutions.
- Enhanced operational effectiveness, with proactive problem identification and recommendations from HP technical specialists.
- Coordinated support by technical experts who provide hands-on assistance and share knowledge with your staff
- Rapid access to support and expertise that spans your environment.

Efficiently managed infrastructure resources that meet your IT-performance and business objectives.

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.

Considerations

HP strongly recommends that customers contact our StorageWorks specialists in our jointly managed SAP Competence and Solution Centers regarding the following topics:

- Selection of appropriate storage array—SWD All-in-One, storage blades, MSA, EVA or even XP, based on the customer's requirements
- Backup and restore and availability concepts—considering recovery point, recovery time and general availability
- Consolidation of backup and associated topics—tape backup, virtual tape libraries, disk-assisted backup and local and remote mirroring including cluster integration with CLX or MetroCluster

For more information

To read more about our HP ProLiant DL585 G7 and HP ProLiant BL685c G7 servers with the AMD Opteron 6100 Series processor and HP Virtualization for SAP, go to:

HP Partners

- **www.hp.com/go/sap**
- **www.amd.com/opteron**

Customer Fact Sheet–h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9971EEW.pdf

HP Servers

- **www.hp.com/go/proliant**
- **www.hp.com/servers/dl585**
- **www.hp.com/servers/bl685c**

HP StorageWorks

- **XP Thin Provisioning–h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-0277ENW.pdf**
- **System Copy software–h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-6274ENW.pdf**
- **P4000 iSCSI SAN–h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-4478ENW.pdf**
- **EVA for SAP Using Solid State Drives–h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-2142ENW.pdf**

HP Infrastructure

- **Solutions for SAP Business All-in-One–h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-6651ENW.pdf**
- **Solutions for SAP Business Objects Explorer–h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-5613ENW.pdf**
- **Disaster Tolerant Solutions for SAP Netweaver–h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-0559ENW.pdf**
- **Transitioning SAP Environments from HP 9000 to HP ProLiant–h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-4510ENW.pdf**

HP Services

- **HP Performance Analysis–h20195.www2.hp.com/v2/GetPDF.aspx/5981-8969EN.pdf**
- **Reducing Risks in SAP Environments–h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-9998ENW.pdf**

HP Software

- **HP Diagnostics Software–h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-4321EEW.pdf**

Call to action

For more information, please contact your HP Representative or Reseller.

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