HP ProLiant servers

Simple, affordable computing

Servers can help you protect information and boost efficiency in ways that PCs alone cannot, providing a more reliable foundation for growth. HP ProLiant servers are the foundation for simple, affordable computing solutions that improve productivity, protect your information, and give your growing business plenty of flexibility for expansion. This guide tells you how.

What this guide contains

The reliable answer to business change

If there is one constant in business, it is change.

For companies that rely on paper-based processes, change might consist of something as simple as a client who is switching to e-mail. But even a simple change has ramifications if, for example, you can no longer invoice that client by fax.

Even if you have some basic information technology in place, can you be sure it is properly shared, protected, and able to flex on demand? PCs alone are not enough. Adding a single server immediately increases your organization's capabilities.

For companies with limited or no IT staff, the process of identifying, deploying, and then managing a server may seem a daunting and expensive challenge. But in fact, you can purchase a server for as little as the cost of a desktop—and the cost of deploying and maintaining that server will inevitably be lower than the cost of data loss or chronically low productivity levels.

How can this guide help?

HP ProLiant server solutions combine smart advice, technology, and services to help ensure simplicity, affordability, and reliability from the start. This enables you to compete with confidence and benefit from HP's focus, investment, and commitment to helping you succeed.

This guide can help, by focusing on the process and benefits of:

- Moving from a peer-to-peer network to a server-based network
- Deploying your first server
- Upgrading and expanding an existing server network
- Selecting the appropriate model, server lifecycle management solution, and services

Why deploy your first server?

Until now, you may have relied on interconnected PCs—known as a peer-to-peer (P2P) network—to share files and resources. Such a setup may be adequate for one to five users; but as you grow, it can restrict growth, reduce access speeds, and make it difficult to protect information. With a shared and centralized server solution, you can easily get more out of your computing resources.

A basic server network provides the same essential capabilities as a P2P network (access to data, printers, e-mail, and applications)—but it also provides a lot more users with access to shared central resources.

In addition, server-based computing offers a host of other important characteristics. These are outlined below, along with some of the reasons why—with more than 10 million units sold so far—HP ProLiant servers are considered a simple, affordable, reliable choice.

Simple, cost-effective setup and administration
Using a server platform allows you to run your business applications, e-mail system, databases, and other applications far more efficiently—and more profitably—than companies that don't use servers. With a server, it is also easier to monitor and maintain your IT systems because everything is managed centrally.

And when you choose HP ProLiant servers, you also reap the benefits of HP products, tools, and partnerships:

- Step-by-step guidance from HP SmartStart[1] makes it quick and easy to set up servers, even if you've never done it before.
- Comprehensive HP server management software tools provide total remote control without compromise, enabling your support partner to easily deploy, monitor, and update servers.
- HP Systems Insight Manager prevents problems before they occur by notifying you of pre-failure conditions.

Superior reliability
One of the key benefits of a server-based network is increased reliability. Unlike peer-to-peer networks, where data is often scattered across the network and vulnerable to corruption or loss if one of the PCs fails, server-based networks store data in a centralized location and back it up automatically. This centralized approach protects the data, so your business will keep running smoothly even in the event of a technological glitch.

ProLiant servers and storage products are ideal for any company creating its first server-based network. They protect your data with features such as pre-failure warranties,[1] which alert your support partner to possible component errors so they can take preventive action.

Enhanced productivity
Servers support shared access to the applications your business depends on, while also enabling your staff to work more efficiently. With a permanent Internet connection and centrally managed e-mail, for instance, you are always online. Plus, with a central source where information can be accessed, you'll reduce the dependence on specific individuals and their PCs.

ProLiant servers with pre-installed Microsoft® Windows® Small Business Server 2003 software empower you to do more and connect to customers as never before. For example, your employees will be able to collaborate effectively using Windows SharePoint Services and—when they're away from the office—enhanced Outlook Web Access and the new Remote Web Workplace.

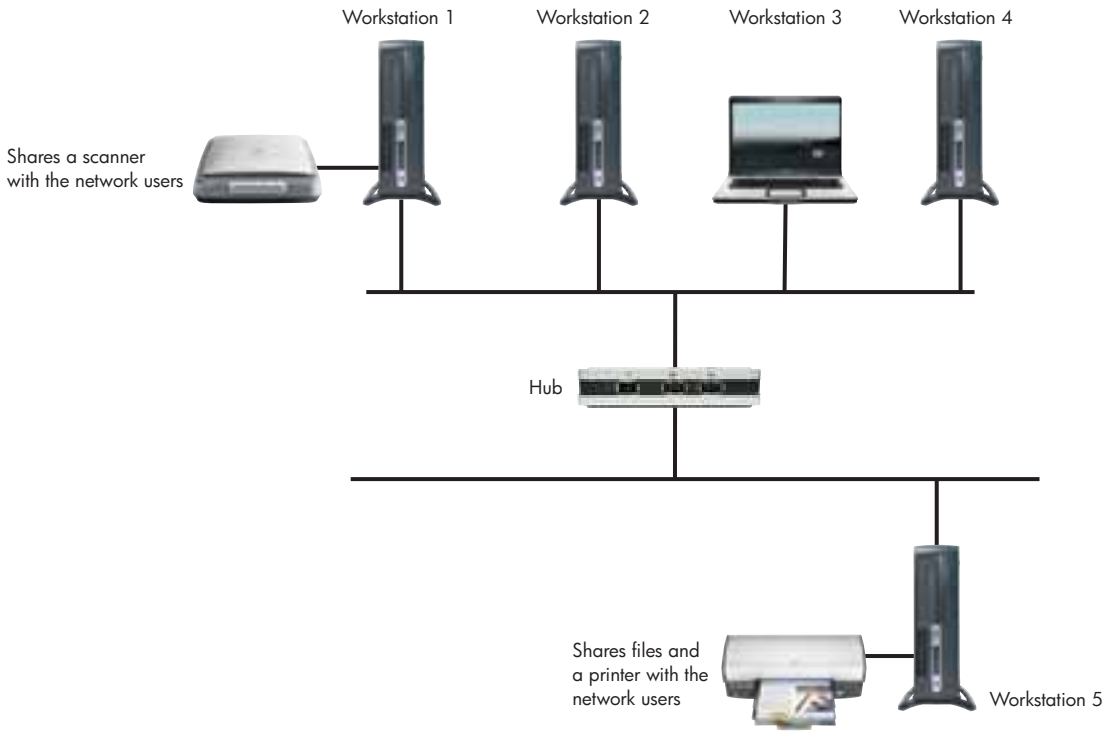
Robust data protection
Safeguard the information your business and its operations depend on with integrated data protection solutions—from backup and disaster recovery to long-term archiving—that can help ensure the continuity of your business. A server provides a single point of control, which makes implementing protection measures radically simple and quick. You can easily install a firewall and anti-virus software to protect against intrusion and eliminate threats, and you can connect devices that quickly back up and restore data in case it gets lost or damaged.

- Many ProLiant servers provide data protection and enhanced reliability via multiple hard disk drives, optional remote management, error-correcting code (ECC) memory, and robust embedded RAID support.
- HP StorageWorks tape drives integrate seamlessly with ProLiant servers, and a range or products is available to suit your particular quantity of data or required backup and restore speeds.

[1] Available on HP ProLiant 300 series and above models.

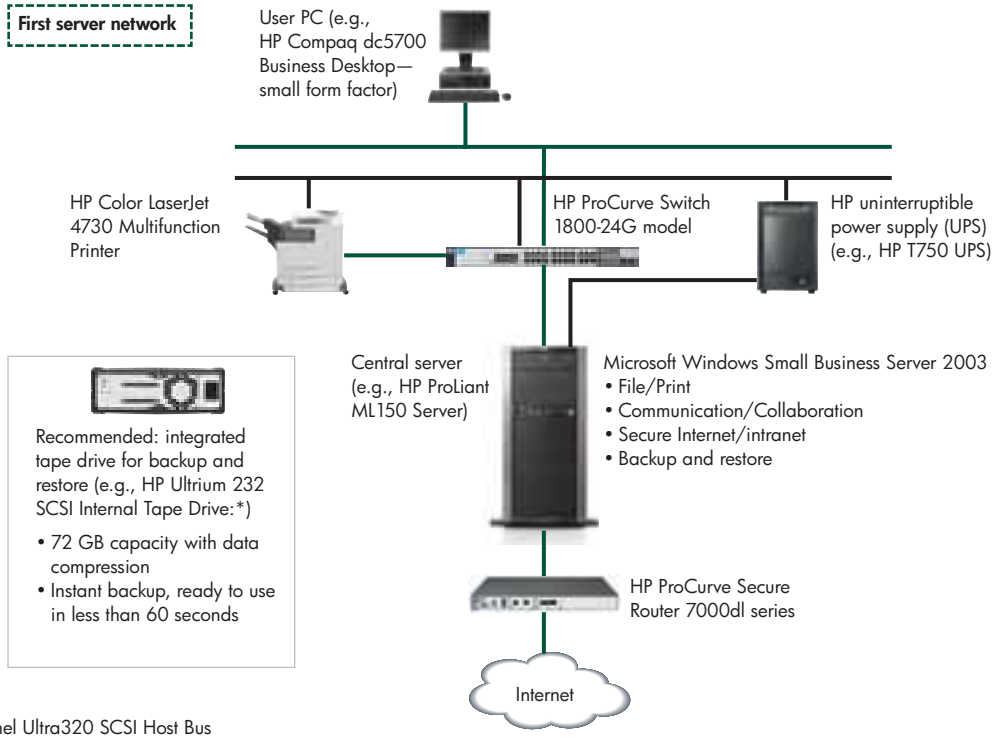
Scenario 1: typical small business server solutions
The following are typical "before and after" scenarios showing how companies can deploy HP ProLiant servers to suit specific business needs, situations, and environments.

Before



After

This scenario shows a simple client/server network setup in which several user PCs have access to a central resource for shared data, applications, Internet connection, e-mail, printing, and more.



Recommended: integrated tape drive for backup and restore (e.g., HP Ultrium 232 SCSI Internal Tape Drive:*)

- 72 GB capacity with data compression
- Instant backup, ready to use in less than 60 seconds

* ProLiant ML servers require HP Single Channel Ultra320 SCSI Host Bus Adapter G2; ProLiant DL servers require HP SC11Xe Host Bus Adapter

Before you create a server-based IT environment

- Your interconnected PCs may be unreliable and prone to failure, especially if the central PC is used as a workstation too.
- Productivity may be reduced by inefficient Internet and e-mail systems and by long printer queues.
- It may be difficult to learn and use multiple tools to manage the many different hardware devices you use.
- You may not have sufficient system support for today's advanced but necessary data-protection provisions.
- If you regularly have to visit each PC manually to update operating-system patches or check security configurations, you may be exposed to security vulnerabilities for prolonged periods.

After you create a ProLiant server–based IT environment

- Data exchange is fast and secure.
- Reliability is improved.
- You can manage all servers, clients, printers, network switches, and other hardware devices from a single centralized console.
- Servers can be managed remotely.
- Security can be significantly enhanced.
- You can add resilience against power failures.

Why upgrade an existing server network?

If you already operate a server network, there are a number of reasons you may wish to consider refreshing or expanding it with the capabilities of new or additional servers. Some of the key reasons are outlined below.

Increasing performance and availability

As user numbers grow and customer demands multiply, so does the need to increase system performance and keep IT services up and running. The technologies that can help you do that are constantly advancing—and they are becoming more affordable all the time.

- Industry-standard ProLiant servers integrate seamlessly with existing and future IT investments. This means you can scale out confidently—adding new servers to increase system performance—and know that your existing investment is still protected.
- ProLiant servers offer unique fault-tolerant technologies—for example, RAID Advanced Data Guarding (ADG), which keeps data available even if you lose two hard drives. Other technologies only support the loss of one.[2]
- When it comes to processing power, HP delivers high-performance results—even as workloads increase significantly—with ProLiant servers equipped with the latest multi-core technology.
- A robust storage solution, Serial Attached SCSI (SAS) drive technology meets your needs for scalability, performance, reliability, and manageability while protecting your investment in compatible SCSI software and middleware—and supporting a choice of SAS or Serial ATA (SATA) direct-attach storage devices.
- The Transmission Control Protocol/Internet Protocol (TCP/IP) offload engine (TOE) reduces network latency by freeing the CPU from the task of processing network traffic, helping to improve network communications and increase server efficiency.[3]
- HP software can monitor server performance and send you alerts, explanations, and recommendations on how to resolve hardware issues and when to consider upgrading.[4] See **www.hp.com/products/pmp**.

Migrating from older systems

Older systems may not support today's capabilities, and earlier operating systems may no longer be supported by their developers—leaving you open to new threats. Migrating to up-to-date servers running the latest operating systems helps to reduce risks to ongoing productivity and security.

- The new HP Server Migration Pack—Universal Edition software automates the migration of an older server's setup and data to a newer model, harnessing the latest technologies for superior performance and efficiency. For more information, see **www.hp.com/go/migrate**.
- With the Windows Small Business Server pre-installed,[5] you get the security and reliability you need to be sure of meeting your server availability commitments. By providing a more secure infrastructure with built-in firewall protection and security-enhanced remote access, you can better protect your business from unauthorized users and data loss. You can also take advantage of the "green check" of software health—with automated patch and update management tools that keep your server up to date and running at its best.

[2] RAID ADG is standard on select models of HP Smart Array controllers only.

[3] TOE is available only on some network interface cards (embedded and slot). See the HP website for more information.

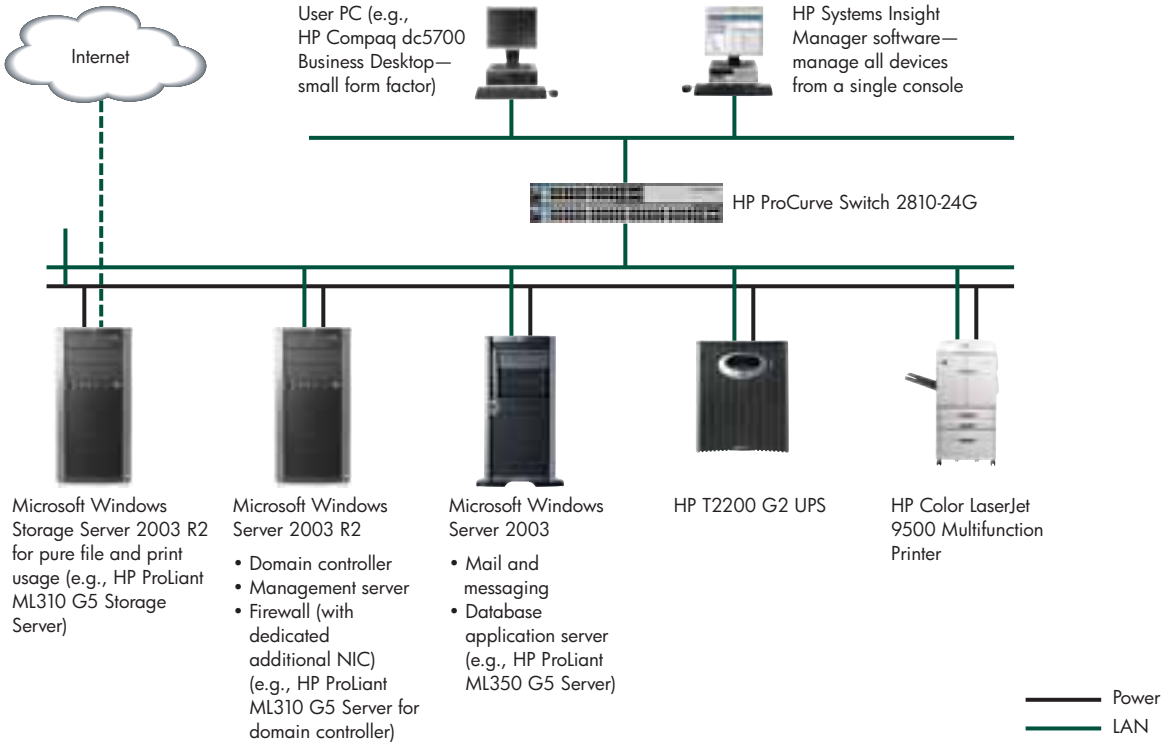
[4] HP ProLiant Essentials Performance Management Pack software. Not available on ProLiant 100 series models.

[5] On selected HP ProLiant servers only.

Scenario 2: enhancing your server network
The following is a typical scenario showing how companies can deploy HP ProLiant servers to suit specific business needs, situations, and environments.

This example shows how a basic server network can be easily expanded to support growing demands with the addition of dedicated servers to support specific functions, such as a storage server used exclusively for file and print.

If your back-end infrastructure keeps growing, consider rack servers as an alternative to tower servers such as those used in this example. Discover the HP Rack Advantage at **www.hp.com/go/serverexpertisesmb**.



Coping with increased workloads
Stacking multiple applications on a server can lead to slow and unreliable performance. Consider moving applications such as e-mail and database to dedicated servers—or consolidating them on more advanced servers better suited to the task.

- Under the HP Total Care program, HP or an authorized channel partner can help you find the servers and options best suited to your particular applications.

The HP ProLiant server portfolio—with easy serviceability and the option to add peripherals, storage, memory, and more as you need them—lets you easily and cost-effectively upgrade and expand your system as business demands change. A comprehensive choice of configurations, operating systems, processors, storage, software, options, and more—all tested for seamless integration and compatibility—is available to help you address key challenges as you grow.

Before upgrading your servers

- You may have stacked up multiple tasks and applications on a single server, which can hamper its performance and compromise its reliability.
- You may be running older operating systems, which limit capabilities and application support.
- Your older systems may not support the tools necessary to simplify management—this increases the costs and risks of downtime.
- Failures in your current server may no longer be covered by its original warranty.

After upgrading to ProLiant servers

- You'll enjoy superior server capabilities, such as advanced disk security, higher performance, better resource utilization, increased flexibility, improved monitoring capabilities, and power consumption savings.
- You will be able to save up to 30 percent in time and effort by leveraging the capabilities of Microsoft Small Business Server software, which comes pre-installed and provides a central point of infrastructure management.
- You'll enjoy generous warranty coverage that can be extended even further with easy-to-buy HP Care Pack services.
- You'll be able to choose dedicated devices for key applications (e.g., storage servers) optimized for the task. For others, you can make the most cost-efficient use of resources by consolidating applications onto fewer, more-powerful servers sized both to support them and grow on demand.
- With the ProLiant 300 models you'll have the option to migrate using the HP Server Migration Pack—Universal Edition,[1] which provides an automated, accurate, and affordable way to migrate existing servers to the latest server technology. See **www.hp.com/go/p2p**.
- You or your support partner will be able to manage all servers, storage, networking, printing, client, and UPS hardware devices from a single console—using HP Systems Insight Manager or ProLiant Lights Out 100. See **www.hp.com.go/hpsim**.

ProLiant servers in the real world: AUTO IN

When Czechoslovakian Ford dealer AUTO IN sought to establish reliable lines of communication with its dealerships and with Ford Corporation Headquarters, it chose a solution built on HP ProLiant ML350 servers and the guidance of the HP Services Consulting & Integration team. They couldn't be happier with the outcome…

"The servers are 100 per cent reliable. We have been using them for 11 months and there has not been a single issue with them. As far as the service from HP C&I is concerned, when I watched them implement then launch this network, it was exactly what I expected. I was looking for a strong and reputable company with good control mechanisms, which could handle demanding implementation projects and would give me confidence that the system would function reliably. I knew that by choosing HP I had the right company to do that."

—Milos Pavlicek, Managing Director of AUTO IN

Choosing a suitable ProLiant server

The following tables provide a simplified guide to choosing the most appropriate server for your environment, based on the applications you will be running on the server and the number of users it is intended to support. Detailed information, including recommended servers for database applications, is available from local HP channel partners.

For recommendations on the server that best supports your key applications and database, visit the ProLiant server buying guide at **www.hp.com/go/serverselector**.

For more about hardware options, visit **www.hp.com/go/%20server/options%20**.

Application	Things to consider
Pure file and print (storage server)	• Amount of memory will drive the speed of print management. 1 to 2 GB of base memory will be sufficient to support up to 200 users. • Allocate 2 to 5 GB of disk space per user for standard office application files. (Consider additional capacity for digital images, multimedia files, and CAD drawings.) • Windows Storage Server 2003 Release 2 (WSS2003 R2) operating system is pre-installed on HP ProLiant Storage Servers and HP StorageWorks All-in-One (AiO). • If you intend to run additional services or applications on this server, you should consider a general-purpose ProLiant server. • File and print is not CPU intensive, so adding a second processor for this alone will have no significant impact.
File and print plus all-purpose on Microsoft Windows Server 2003	• We recommend a second processor and an additional 1 to 2 GB of base memory if running additional applications on the server, such as a domain controller.
Dedicated Messaging Microsoft Exchange Server 2003 and earlier, Lotus Domino, SendMail, SUSE OpenExchange Server (concurrent users)	• A single CPU and 1 to 2 GB of base memory will support up to 200 concurrent users. Add a second CPU (for servers that support 2 CPUs) and an additional 1 GB of base memory if running third-party anti-virus or anti-spam software on this server. • Plan for 2 to 5 GB of mailbox, calendar, and address book storage on the server for each user. • We suggest running RAID 5 or 10. • For Microsoft Exchange, use the Microsoft Exchange Storage Planning Calculator to determine the number of drives required (visit **www.hp.com/solutions/activeanswers/exchange**).
Messaging Microsoft Exchange Server 2007	• Microsoft Exchange Server 2007 requires a 64-bit OS version; requirements vary based on the level of high-availability features the user plans to install. Please refer to the HP Sizing and Configuration Tool for Microsoft Exchange Server 2007 (visit **www.hp.com/solutions/activeanswers/exchange**).
Web	• Actual performance within Web serving is driven by the type of content. Static content changes very little, affecting primarily the amount of storage required. Dynamic content will impact all facets of the server, so faster processors, more memory, and faster disk drive speeds will be required. • A single CPU and 1 GB of base memory will support up to 400 concurrent users. • Two CPUs and 2 GB of base memory will support up to 2,500 concurrent users. • We recommend adding another server for every 2,500 additional concurrent users and load-balancing the servers.
Database	• A single CPU and 1 GB of base memory will support a light-use database—one that has infrequent, simple queries or batch queries that are run overnight. Add a second CPU for better performance if you have frequent or complex queries. • Two dual-core CPUs and 2 GB of base memory will support a heavy-use database—one with frequent and complex queries that run in real time. • Add more memory for performance: the more data that can be cached in memory, the better the performance.
Domain controller	• Having separate domain controllers in an SMB environment is highly unlikely; an existing system is often used as the domain controller. In the past, HP has recommended using a file and print server as the domain controller. The easiest approach is to add 1 to 2 GB of memory to any system that is going to be a domain controller.
Microsoft Windows Small Business Server 2003 (incl. 5 CALs)	• The Microsoft Windows Small Business Server 2003 operating system consists of two products: Standard and Premium. Each supports up to 75 clients or devices. • Microsoft Windows Small Business Server 2003 Standard Edition consists of Windows Server 2003 and Exchange Server 2003. • Microsoft Windows Small Business Server 2003 Premium Edition starts with Windows Server 2003 and Exchange Server 2003, and adds SQL Server 2000 together with Internet Security and Acceleration (ISA) Server.

Multiple applications on one ProLiant general-purpose server

Use this table when combining applications on one server. Using the "Order of importance" column, choose the appropriate server configuration from the Server Selector (**www.hp.com/go/serverselector**) based on the most important application first, then refer to the table below to determine any adjustments that need to be made in order to support other application(s).

You cannot combine applications on HP ProLiant Storage Servers or HP StorageWorks AiO.

Order of importance	Application type	What you should know	Be sure and add to the base configuration
1	Database server	If combining with other applications, start with the database configuration, then add according to the instructions for the other application.	Not applicable
2	Messaging server For Microsoft Exchange Server 2003 and earlier, Lotus Domino, SendMail, SUSE OpenExchange Server (Do not combine Microsoft Exchange Server 2007 with other applications on a single server.)	Disk I/O (number of spindles) is more important than capacity requirements. If running third-party anti-virus software, consider adding another CPU and increasing the memory.	Make sure that there is enough storage for the number of mailboxes you will need. If combining with file and print serving, use more, smaller drives for enhanced performance. Add 1 to 2 GB of base memory.
3	File and print server	This functionality is disk space intensive. You cannot put multiple applications on an HP ProLiant Storage Server or HP StorageWorks AiO.	Add an additional processor, if one is not already included. Add extra storage; please see the "File and print" section above for instructions on how much storage to add per user—in addition to the storage you will need for the operating system and other application(s). You may need to use external storage for the data.
4	Web server	Static content changes very little, affecting primarily the amount of storage and memory required. Additional memory increases response times due to caching of the content in memory. Dynamic content can change often. This will impact all facets of the server, therefore requiring faster processors, more memory, and faster disk drive speeds.	Ensure that there is enough disk space available to hold your website(s). Memory is affected by dynamic (constantly changing) pages. Add 512 MB of memory to support a Web server as well as other applications. Increase memory to 1 GB or more if the website is highly dynamic (more than 30%) or has complex pages.
5	Domain controller server	Requires 1 GB of memory	Add an additional processor if not already included. Add an additional 1 GB of memory.
	Security server	Cannot be combined with any other applications	
	Small Business Suite server	Cannot be combined with any other applications	

For information on HP ProLiant servers, visit **www.hp.com/go/proliant**.

For HP certified and supported operating systems matrixes for HP server products, visit **http://h10018.www1.hp.com/wwsolutions/index.html**.

For specific hardware specifications and requirements, visit the Microsoft website at **www.microsoft.com**.

Services and tools to make the most of your business technology

HP Total Care
HP Total Care is a combination of technologies, services, and tools that help midsize businesses get the most from their IT investments by providing support throughout the lifecycle of the IT infrastructure—from choosing, configuring, and protecting technology, to tuning and recycling it. The following four sections describe what HP offers midsize businesses during each of those key phases.

Choose
Resources to help you select the right solution set to meet the needs of your dynamic business, including:

- HP online buying guides
- Product selector and comparison tools
- Solution configurators, guides, demos, and videos
- Instant online chat, e-mail, and telephone support
- Free online learning center
- Business Technology Center
- On-demand webinars
- TCO tool
- HP Financial Services

Use
Technology and services to improve efficiency and reduce costs, including:

- HP Care Pack services
- HP Insight Control environment
- Support Update Notification
- HP service centers
- Instant Support Professional Edition
- Management software
- Free online classes
- HP Factory Express
- "How to" guides for IT professionals
- HP Financial Services

Protect
Technology and services to mitigate your business risk, including:

- Data Protector software
- Management software
- Defective media retention
- ProLiant Essentials: Vulnerability and Patch Management
- Data Mirroring software
- Security Assessment Service
- Security Enhancement Service

Transition
Migration technology and resources to ease your transition, including:

- Server Migration Tool
- Trade-in/Trade-up
- Data scrub and recycling
- HP Financial Services

For more information about HP Total Care, visit the HP Total Care website at **www.hp.com/go/MidsizeTotalCare**, or speak with the experts at HP or your Channel Business Partner to discover the unique combination of technology, services, and tools you can leverage for your business.

Getting you up to speed fast, within budget

With HP Financial Services, you can acquire your complete IT solution, including hardware, software, and services, on payment terms that suit you best. HP Care Pack education services offer cost-effective, targeted training to ease implementation, streamline technology migration and consolidation, optimize resources, and maximize the return on your investment. You can also learn how best to deploy and manage your server environment with HP ProLiant Essentials training courses. See **http://education.hp.com/hp-proliant-essentials.htm**.

Additional resources

To find out more about how HP ProLiant servers can help extend your computing capabilities simply, affordably, and reliably, consult these additional resources:

- The HP Server Buying Guide provides the assistance you need when it comes to selecting the correct ProLiant server and storage configuration based on your environment. Visit **www.hp.com/go/serverguide**.
- The HP online Learning Center offers free, instructor-led classes that are available 24x7 to help expand your knowledge on a variety of computing topics, including methods for getting the most out of your server infrastructure. Start taking classes today when you visit **http://h30187.www3.hp.com/index.jsp**.

To learn more, visit www.hp.com

4AA0-7966ENW Rev. 2, February 2008

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