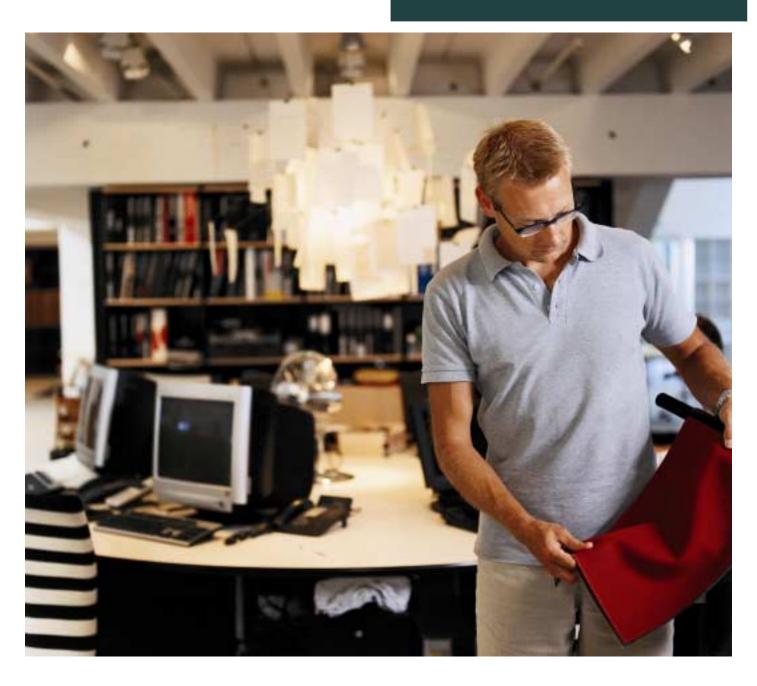# How to choose the right server

Servers are everywhere and you think you need one to manage files and printers, host a mail server, better secure your company network, or in general do more for you than a desktop can. However, knowing you need a server and actually getting the right one are two different things. This how-to guide will help you understand what a server is, how to decide if you need one, and how to go about finding the right server to meet your needs. The different sections of the guide include:

- Understand it: find out how servers are different from desktop systems and how to decide if you need a server.

- Plan it: evaluate a solution you need a server for in practical terms like software, data, and users.

- Do it: see how others found the right servers for their solutions in two case studies.

- Use it: learn more about the tools and resources from HP that can make the selection process easier.

- Buy it: browse HP's ProLiant server line to get an idea of what your options are.

Understand it

You read business technology articles and you talk with savvy IT professionals. The message from both is that key business systems are built on servers, but what exactly does that mean? "Server" is a broad term that may quickly bring a host of questions -- and good ones at that -- immediately to mind:

- How is a server different from a desktop system and can you use a high-end desktop in place of a server?

- How do you know when you need a server?

- Do you need more than one server?

- How much memory and disk space will it need?

- Will you have to replace it in six months?

- And of course, how much will it all cost?

How is a server different from a desktop?

The answer to this most basic yet key question is more straightforward than you might imagine. A server is a system specifically designed to hold, manage, send, and process data. The technology behind servers:

- Makes them more reliable than desktops
- Helps them process data faster and more efficiently
- Can be extended to support data backup and security
- Reduces data bottlenecks so information flows more freely and quickly
- Is designed to scale as your needs scale

In short, a server is much more than a supercharged desktop system, and can't be replaced by one. Desktop systems are optimized to run user-friendly operating systems, desktop applications, and facilitate other "desktop" tasks. Even if a desktop sports the same processor speed, memory, and hard disk space as a server, they aren't the same because the technologies behind them are engineered for different usage.

Do you need a server?

While there is no single litmus test that you can use to determine if you need a server, some general guidelines do apply.

If your office only has three or four staff members who share files across networked computers, surf the Web, or send e-mail, you may not need a server at all. However, once you have five or more employees working together on a network, a server can provide a central location for your important files, shared applications, and other resources you regularly use. In addition, if you want to implement any of the following systems or applications you'll need a server:

- File and print server
- Microsoft Exchange system or other e-mail server
- Firewall or other security system
- Web site or company intranet
- DatabaseERP or CRM solution
- E-commerce solution

In general, if you need to put a computer system in place that processes, shares, or otherwise manages data, you'll need a server.

The right server for you

The questions of how a server differs from a desktop and when a server is the right hardware solution are easy to answer. But the answers to the remaining questions -- how much server you need to buy, what kind of configuration you need, and of course, how much it will all cost you in the end -- are based entirely on what you plan to use the server for. One of the significant benefits of servers is that you can customize their configurations to meet your very specific needs, so you can concentrate your money in those areas where you need it most.

It probably won't surprise you to find out that a server typically costs more than a desktop, but then again, a server is designed to do more than a desktop. It might, however, surprise you to find out a solid entry-level server doesn't cost that much more than a high-end desktop, and may fit more comfortably into your technology budget than you might have imagined. As you'll see in the Do It section, many file/print and Web servers (two of the most common uses for servers in small and medium businesses) come well equipped for a reasonable price.

The most important thing you can do to ensure that your server meets your needs and fits your budget is to devote a bit of time and energy to assessing those needs. Until you have a good understanding of exactly what you want to use your server for, you run the risk of not buying enough server power, or spending too much of your valuable budget on features you simply don't need. A little planning in the beginning can make for significant savings and proper equipment sizing in the end.

Plan it

Planning to meet your server needs is an assessment activity that requires a bit of investigation on your part. Ultimately, you are trying to answer a number of "how much" and "what kind" questions:

- How many employees do you have?

- What problem are you trying to solve?

- What kind of software do you need for the number of people you have?

- How fast does the server need to process data (i.e., processor speed)?

- How many processors do you need? Some solutions require two or more.

- How much memory (RAM) do you want?

- How much hard disk space does data require, now and in the future?

- What kind of hard disk controller (SCSI or IDE) do you need?

- Do you want a rack mount server (which takes up less space) or a tower (which has more room for expansion)?

- Do you need a network interface card (or two)?

- Do you plan to attach additional backup and storage drives (tape or optical, for example) to your system?

- What level of RAID (redundant array of inexpensive disks) do you want to support?

- What kind of server management tools do you need?

- Do you want help getting your server set up?

- What level of maintenance and support do you need?

The good news is that even if you don't know where to begin to start answering these particular questions, the analysis you do of how you want your database, Web server, file server, or other system to function will actually lead to the answers. Once you have a good idea what you are looking for in a solution, a reseller, consultant, and the tools on HP.com can help you convert those good ideas into real server specifications (more on this in the Use It section).

Assessing your needs

If you don't have answers for the list of questions above, how do you go about assessing your solutions needs? You have to evaluate several different aspects of the solution to get a complete picture you can use to find the right server to support it:

- The solution itself
- Software
- Data
- Users

Your solution

While you probably have a good idea of what kind of solution you are planning to create, the more details you can define for it, the easier it will be to choose the right hardware. For example, if you are building a file and print server you might ask:

- How many employees are in your company?
- How many and what kind of printers do you need to support?
- How much data do you have now?

If you are setting up a Microsoft Exchange server or other e-mail system, you might ask:

- What services do you need to support: e-mail, instant messaging, contact management?
- Do you plan to support wireless access to your e-mail?

In addition to defining how your solution will behave when it first goes into action, you need to consider any additions or changes you plan to make in the next few months or even a year. While your print server may only need to manage one or two printers initially, you may intend to grow it to support eight to twenty printers of varying types, including multifunction printers, scanners, and other printing and imaging devices. When you choose to buy a server for your initial implementation that will support future expansion, you save both time and money.

The software?

If you plan on running a particular set of software packages on your server, such as a Web server or database, you should gather all of the pertinent details about those packages before you go server shopping. Most have very specific requirements for the kind of systems they need, including the best processor speed as well as a minimum amount of memory and hard disk space.

While the documentation for each software package includes these basic requirements, consider asking the software manufacturer or reseller for their advice on what kind of system to buy. It is in their best interest for your solution to succeed, and they have a lot of experience putting their software to work on different servers. Most can quickly and easily tell you what kind of server best supports their software when it runs alone and even in conjunction with other software packages. Typically, this help is free, so take advantage of it.

The data?

How much data you have now and how much you'll generate over the life of the server will directly dictate how much storage space your server should offer. While defining exactly how much data you have, or how much you will have, for that matter, is much like shooting a moving target, there are ways to calculate some approximate numbers based on past history.

For example, if you plan to build a file server to hold documents currently scattered among many different desktop systems, add up the amount of space they take up and divide that by how long it took you to create them (in months, preferably). You'll have a good idea of how much storage space you need immediately, and you can calculate the average amount of data you create per month. Multiple that average by 24 or 36 months, and you'll have a good idea of how much storage space you'll need on your server in two or three years.

If you are creating a more complicated solution like a database-driven Web site, rely on your programming staff or consultants to help you define how much data the system will generate. Also, don't forget that your actual data isn't the only information your server will store. Any software you install will take up disk space, as will the server's operating system, so you have to take all of that into account when you consider drive space. The good news is that a reseller or sales associate can help you pull this all together.

Users and performance

Finally, you need to have a good idea of how many people will be working with your solution and how well it needs to operate for them. Both of these factors affect the horsepower (both processor speed and memory) your server needs. If your file and print servers will only have eight or 10 users, you won't need as much power. However, if it will have to support 50 to100 users your power needs will be more significant.

If you are building an intranet or a Web site, you need to have a rough estimate of how many people will visit the site per day. In addition, if you are building a database solution, how many people will be accessing the database at once?

Also, don't just think about how many users your system needs to support when you launch it. As with data, consider how many users you expect to support in six months, a year, or two years. You want to be sure that your server is ready to support an increasing number of users.

A helpful tip

Depending on the complexity of the solution, you may have to evaluate each of these different aspects yourself, or the IT professionals building the solution may do it for you. If you are putting the solution together yourself (for an office file and print server or a small intranet, for example) assess your needs as completely as possible but don't be afraid to rely on a reseller, consultant, or other expert for help reviewing your work. They don't have to build the solution from soup to nuts to give you the benefit of their expertise, and the few hundred dollars you spend up front to buy a few hours of a professional's time could save you thousands of dollars down the road.

Do it

The following case studies describe two real-world scenarios that illustrate how different organizations might evaluate their particular solution needs and find the right server to support those needs.

A file and print server for 20

Trey's writing and training consulting business has been growing by leaps and bounds in the last year. His company of one has grown to a virtual company of 20 and he's decided to lease office space and bring together his employees, who had previously worked from their homes, so they can be more effective and productive. Currently, each employee keeps the files they create on their desktop systems, and most back those files up to a Zip drive once a week. To share files, employees use e-mail or some space on an FTP server that is associated with the company Web site hosted at a local ISP. The FTP server only has 250 MB of space, however, so the server is only good for file transfer, not file storage.

Trey knows that once the employees are together in an office, they'll need to share printing resources and should have access to a common file server he can easily back up each night. The content and training materials the company creates are its bread and butter, so they need to be both accessible and easy to protect.

On average, most employees create about 5 GB of data per year, so Trey will need 100 GB of space to support his current employees, and other 100 GB for the data they will create in the next two and half years, or a total of 200 GB of disk storage space.

Finally, Trey plans to support five shared office printers and an MFP from his file and print servers.

Trey puts all of this information together and consults with his local reseller to choose the right server. He eventually settles on a HP ProLiant ML110 with a 3.4 GHz Intel® Pentium® 4 processor with Hyper-Threading Technology, 1 GB of memory, and three 80 GB ATA hard drives that come with Microsoft Windows Server 2003 already installed. He knows the ML110 is specifically designed with small businesses in mind, and while it may look like a desktop -- and is priced like one -- Trey is confident it will give him the processing power and performance his growing company need. While Trey is confident he can get his file and print server set up with some help from a consultant he often recruits for technical writing, he does choose to purchase a Care Pack hardware support package that gives him access to technical support during business hours for three years.

Because only 20 people will access the server and will use it mainly to work with files and print documents, one processor and the 1 GB of memory are enough for now. However, the ML110 is expandable, so he can increase the server's memory to 4 GB if necessary. Given his data projections, the three 80 GB hard drives will more than meet Trey's needs for the next couple of years, but he can expand his server to accommodate 320 GB if business soars and he has more data than he ever expected.

Trey chose the ProLiant ML110 because it meets his needs now and fits his budget, but can also grow with his needs. The server is easy to install and maintain, and Trey has it up and running when his employees walk into work for their first day in the new office.

A mail and messaging server for 50

Until now, Kursten's company has relied on their ISP to provide and manage its e-mail services. However, as the company grows, outsourcing e-mail has become cost prohibitive, so the company has decided to begin managing its own e-mail and messaging services to cut costs and improve services. A consultant is working with the company to put the e-mail server and its various applications together, but Kursten is the project's owner and is responsible for all budgetary decisions.

The consultant has advised the company to use Linux for the server's operating system because as open source software, it is free yet reliable and perfectly suited to the company's e-mail needs. Further, the consultant recommends the company run SuSE OpenExchange, an open source e-mail system that will integrate with the e-mail clients employees have been using so staff won't have to learn to use a new e-mail software after the new server is in place.

Working with her consultant, Kursten chooses the HP ProLiant ML310, with a 3.4 GHz Intel® Xeon processor, 1 GB of memory, three 36.4 GB hard drives, and a Smart Array 641 controller.

The ProLiant ML310 comes standard with 512 MB of memory, and the additional memory will increase performance and allow for growth, while the additional storage allows users to store more data (e-mail attachments, message archives, etc.) on the server instead of on their desktops. Given the company's current headcount, the 1.2 TB of total storage allows for up to 2 GB of e-mail storage per user. Typically however, users only need about 1 GB of e-mail storage, so the company can add another 50 employees before they have to think about increasing the server's storage capacity. Finally, the Single Channel Ultra320 SCSI Adapter provides the server with an entry-level hardware RAID protection for OS and log files to help make the server more stable and its data safer.

Just like the ML110, the ML310 is expandable to grow with the company's e-mail needs. It can accommodate up to 4 GB of memory and 1.2 TB of SCSI disk space (four 300 GB ultra 320 hard drives) of disk space.

Use it

As you've seen in the other sections of this guide, finding the right server for any given solution takes some work, but it isn't impossible and it doesn't require that you hire a full-time IT professional. HP has the tools and resources you need to match your requirements to a server, even if you don't know the difference between SCSI and IDE, or Ultra3 or ATA. If you can define your needs in terms of features, software, data, and users, we can do the rest.

Care Pack services

Your server will probably host applications that are essential to the operation of your business. So to keep your business running smoothly and maximize the return on your technology investment you'll want to make sure that the server is always available and performing at its best. An important element of keeping your server running is the warranty and support services you choose, like the Care Pack services HP offers.

The complete portfolio of HP Care Pack services for HP ProLiant servers provides the level of coverage and response time that reflects the importance of the server to your operations.

- On-site hardware support is available with up to 24x7 coverage and a 6-hour on-site time-to-repair commitment.

- Because software problems account for more downtime than hardware issues (26% vs. 21%), HP also offers support for all operating systems

- For your convenience, HP also offers combination services that provide both hardware and software support.

- To help maximize productivity, advisory and remedial support is also available for over 160 of the most popular business applications, including the Microsoft Office suite.

HP can also help you meet specialized support requirements ranging from disaster recovery, back-up technical and advisory support with level 2 and 3 professional help desk, remote server monitoring and management, usage-based messaging (MS Exchange) services, and more.

ActiveAnswers

ActiveAnswers is a complete tool set that you can use to turn your basic solution requirements into server specifics. You'll find a variety of sizers and configurators to help you customize servers for specific kinds of solutions. Among the tools you will find:

- **Solution Sizers:** help you determine the solution that best fits your solution. You will find sizers for e-commerce solutions, SQL server and Oracle database solutions, Microsoft Exchange and Lotus Domino solutions, and more.

- **System Configurator:** helps you weigh your available options for a particular server, adding and removing components to see how they affect prices and capabilities. If you want a good estimate for how much a particular server will cost, look to the configurator.

- **Mobile Solutions Wizard:** helps you identify the components you need to implement a complete wireless solution. This wizard takes you beyond servers to access points and other tools you need to establish and secure a robust wireless network.

Some of these tools require a bit of IT knowledge to use effectively, but that doesn't mean they can't be useful to non-IT business professionals. If nothing else, the questions the sizers and configurators ask you will give you a good idea of what you'll need to ask an IT professional. They can be as educational as they are useful, and provide insight into the different criteria that drive server choice.

Resellers and sales associates

If you aren't comfortable sizing your own server, or you would feel more comfortable working with an experienced professional, certified HP resellers and sales associates are available to help you make choices that meet your needs and don't break your budget. To get in touch with either a reseller or the HP sales associated in your area call 1-800-282-6672, or visit one of HP's online reseller partners or your local reseller. Follow the links to the right for quick access to both.

Buy it

HP offers a complete line of servers to meet your growing company's every need.

HP ProLiant ML 110

The HP ProLiant ML110 makes small networks hassle-free. This powerful yet simple platform provides all the relevant server features in an easy-to-use package. Practical performance, such as Intel® Celeron and Pentium processing, ECC memory, and 64-bit PCI support deliver the IT functionality small businesses require.

HP ProLiant ML 310

For growing businesses running sophisticated small applications and branch offices of larger organizations that need a platform for single-function solutions, the ML310 is a P4 or Celeron-based ProLiant that delivers ProLiant reliability together with best-in-class data protection and management to help simplify ownership. Choosing a ProLiant server is making an investment in your company's future.

HP ProLiant ML 350

The third generation ProLiant ML350 delivers on a long tradition of engineering excellence with state of the art technologies that maximize reliability and performance at an affordable price. The ML350 is now available with 3.4 GHz Intel® Xeon processors running on faster, 800 MHz front side bus. New 3.4 GHz array models also include the Smart Array 641 for Ultra320 RAID.

HP ProLiant ML 370

The ProLiant ML370 is a versatile, high performance 2-way platform that enables IT infrastructures to adapt to today's demanding business requirements. A wide variety of configuration possibilities and powerful integrated Lights-Out management makes it the ideal server for the corporate data center to the remote site.

For more information

Choose a server how-to guide online
http://www.hp.com/sbso/productivity/howto/data_main/servers/buy_it.html

For detailed information about HP's ProLiant server line
http://h18004.www1.hp.com/products/servers/platforms/index.html

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