

# Dell's Guide to Server Basics

If you're a small-business owner with multiple computers, it is probably time to consider investing in a server. Servers help keep your data secure and organized and will help you run your business more efficiently. Servers provide your business with a single solution for

- Centralized Email management
- Consolidated Internet connectivity
- Internal Web site development
- Remote access monitoring
- Mobile device support
- File and printer sharing
- Backup and restore

... to name just a few

Choosing the right server solution starts with understanding how the server will be used. What type of applications will it be running? How critical are these functions to your company?

**Click on the questions below to learn more about servers:**

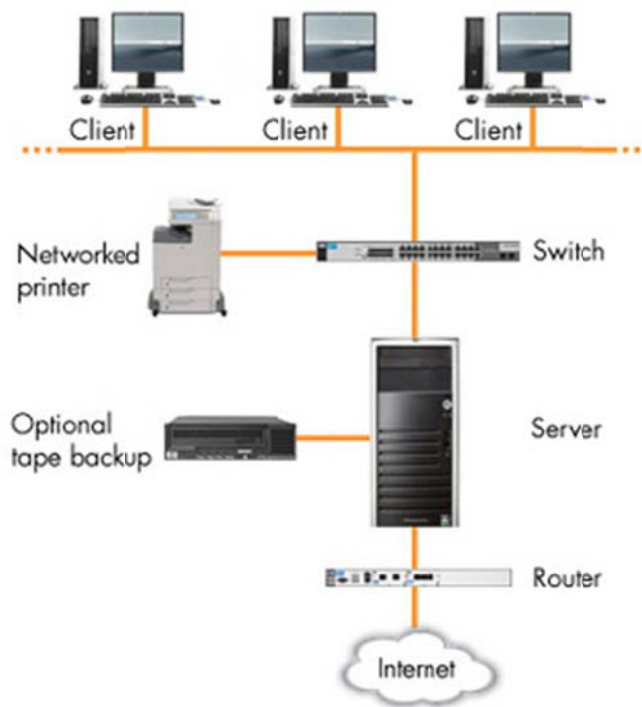
1. [What is a Server?](#)
2. [When do I need a Server?](#)
3. [Why do I need a server?](#)
4. [What type of Server do I need?](#)
  - 4.1. [Why Tower Servers?](#)
  - 4.2. [Why Rack Servers?](#)
  - 4.3. [Why Blade Servers?](#)
5. [Server hardware configuration explained](#)
6. [Server Software](#)

## What is a Server?

Simply put, a server is typically a more powerful computer than your average desktop. It is specifically engineered to deliver information and software to other computers that are linked to it by a network. Servers have the hardware to manage Ethernet-cabled or wireless networking, usually through a router.

Servers are built to handle heavier workloads and more applications taking advantage of the specific hardware to increase productivity and reduce downtime.

Servers also offer remote-management tools, which means an IT person can check usage, and diagnose problems from another location. That also means you can perform routine maintenance such as adding new users or changing passwords.



[Back to Top](#)

## **When do I need a server?**

Start by asking yourself these questions to understand when it's time to invest in a server:



- **Are you using two or more computers in your business?**

By storing and organizing data in a core location, you can access and share files easily and manage business information more efficiently.

- **Do you have a mobile workforce?**

Businesses with a mobile workforce (employees who work from home or frequently travel) definitely need a server. Your employees can remotely connect to the company network and access information and resources, no matter where they are.

- **Do your employees share documents between multiple**

computers? If so, you risk losing important files, not to mention having multiple versions of vital documents. Servers provide a centralized location to store and organize important documents,

- **Can you afford to lose valuable files and data?  
Can it be replaced or restored?**

A server can help you get organize data and help protect your business from lost and corrupted files. You can back up information from your sever to a dedicated backup and recovery system. Then, if some of your important business data is accidentally deleted, lost or stolen, you can be confident your files are safely backed up and that you can restore these files again. With the multiple hard drives on a server and your backup systems, you can be confident that a crashed hard drive won't wipe out your system again.



- **Do you need to host your own Web site?**

A Server lets you manage and develop your own web site so you can conduct business more easily.

- **Do you need to share access to peripherals, such as printers and fax machines?**

Servers let your entire office have access to these peripherals. Plus, servers take the load off your local computer and put the jobs into queues to print or fax next in line.

[Back to Top](#)

## Why do I need a server?

Investing in a server enables

- Your employees to share software tools and access company databases on- and off-site. You can better manage additional computers and software applications, as well as control access that employees and devices have to certain information.
- You to control access to sensitive information, such as financial records and personnel information, by storing it away from prying eyes. It allows you to better manage firewalls and virus protection, helping you prevent unwanted intrusions. Protection is especially important when you have a mobile workforce.
- You can easily add platforms, such as customer relationship management (CRM) software and accounting programs, which enable you to schedule group meetings, share information, and manage clients and vendors. They also allow your employees to send group emails and faxes and organize customer contacts and customer data in one location.



[Back to Top](#)

## What type of a server do I need?

The server you choose should reflect the number and type of applications you want to run on it. You need to know how many users (clients) it will have. Many common applications – such as print serving, sharing office documents like Word and Excel files – impose such light processing demands that a single low-cost server may be able to handle your entire company with ease. Other tasks, like hosting large databases or image libraries, require more processing horsepower along with big, fast hard disks and capacious network pipes to match.

When buying a server there are three considerations:

1. Server type: Tower, Rack or Blade?
2. Hardware configuration
3. Server software



## Towers, Racks or Blades?

You can choose from the following three types of servers:

### Tower Servers

This is the most basic of servers on the market. It costs and takes up as much space as the average desktop. Tower servers are great for small businesses that



- Have limited space concerns and need centralized processing without a data room
- Need easier monitoring and maintenance of networked resources
- Want to reduce susceptibility to intrusion and attack through a central location

A tower is most typically recommended for your first server. You will also be able to choose the number of hard drives and processors on your server. For an office with less than 25 employees, a server with one processor and 2-4 hard drives should be sufficient. If you have more than 25 employees or if you're planning to run data intensive applications, a server with two processors and 4-6 hard drives is recommended.

### Rack Servers

This system stacks the servers in racks in much the same way that a CD rack stacks CDs. This is a space-saving option but is more suited for companies that

- Want to maximize space in a centralized data center
- Need flexibility to mix and match servers to match applications and workloads
- Require large dedicated storage internal to the server.



Rack servers are better for small businesses that are well-versed in the world of servers or a medium-sized business that requires more servers.

### **Blade Servers**

This system is the most compact server of the bunch. This server was named for its ultrathin shape. Multiple blade servers can fit vertically into a single enclosure, sharing certain hardware components like power supplies. Because of their ultra-compact size, you can fit more servers into less space. Consolidating a traditional server infrastructure into space- and power-saving blade enclosures means:



- More processing
- Less space
- Less power
- Less time and money spent on management

Blade servers are great for businesses that require much larger computing capacity, or for businesses that plan to develop a data center.

**[Back to Top](#)**

## Server Hardware Configuration

Servers use the same basic architecture or configuration as your desktop computer. However, a server has enhanced hardware features such as

- Multiple multi-core processors
- Faster memory options for increased application performance
- Multiple hard drives for increased data capacity and redundancy
- Specialized networking cards

. . . and more.



### **System board**

The system board, also referred to as a 'motherboard', is the computer's main circuit board to which all the other components of your server are connected.

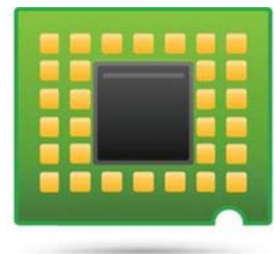
The major components on the system board include the processor (or CPU), supporting circuitry called the chipset, memory, expansion slots, a hard drive controller, and input/output (I/O) ports for devices such as keyboards, mice, and printers. Some system boards also include additional built-in features such as a graphics adapter, SCSI disk controller, or a network interface.

### **Processor**

The processor is the central brain of the server. The speed and number of processor in your server has an enormous impact on your server's ability to support applications. Processors are continually changing and it can be difficult to determine which one is right for your application. You should consider three main features when selecting a processor.

#### **Clock speeds**

This is how fast the processor operates, usually measured in gigahertz (GHz). Generally, the faster the better, that is, servers with higher speeds deliver better performance. This may translate into the ability to support more simultaneous Outlook accounts, handle more web requests during peak demand periods or perform faster queries on your customer database. Buying a higher frequency processor improves current system performance but also helps ensure your server is able to handle future



demand.

### **Core count**

The number of physical processors within the processor itself. Today, most server CPUs have two or four cores. Multiple cores enable better multitasking on servers that will run multiple applications. For example, virus scans may run on one core while data backup is handled by another independent core.

### **Cache size**

Each processor has built-in high speed memory located directly on and close to the central processing unit (CPU). Larger cache size reduces the frequency that the CPU needs to retrieve data from the system memory that sits outside of the CPU. For most applications, this improves the responsiveness of the system and provides a better user experience. Typically, CPUs with higher core counts and frequency have larger cache sizes to provide optimal performance.

## **Memory**

When you open a file or document, your server needs a place to temporarily keep track of that file. It uses high-speed specialized chips called random-access-memory, or RAM. The actual file is saved to your hard drive once you 'save' the file. RAM is designed for fast access and quickly remembers where the file is stored in your permanent hard drive system.

A general rule of thumb is to add as much RAM as you can – the more RAM available, the more operations your server can handle at the same time, without having to access the hard drives (which are slower than the RAM on the system board).

## **Storage, or Hard Drive System**

Hard drives provide your server with a large library of all the files it can access. Think of it like an ever-expandable file cabinet. The size and type of hard drive systems depends on just how much data you need to store.

### **Internal Storage**

Most servers are configured with a very large hard drive much like the hard drive in your desktop. However, server hard drives are specially designed for fast access times and the ability to add multiple hard drives internally.

Eventually, you may need to add more hard drives and attach external [hard drive systems](#).

### **RAID**

**Redundant Array of Independent Disks** – combines hard drives into one large, logical storage system that writes data across more than one disk for greater reliability. To use a RAID hard drive system, you will need to include a Dell PowerEdge Raid Controller (PERC) card which manages the data writing across these disks.



## **Network Controller**

The network connection is one of the most important parts of any server. The network controller manages the inputs and traffic from the clients (other computers) in your office.

## **Power supply**

Because a server usually has more devices than a typical desktop computer, it requires a larger power supply (300 watts is typical). If the server houses a large number of hard drives, it may require an even larger power supply.

Then you need to consider which form factor options will fit your needs: Tower and Rack or Blade.

[Back to Top](#)

## **Server Software**

Requirements of a server's operating system and application software differ from those of a desktop computer. A server is better able to share data from multiple people securely and reduces bottlenecks.

For most small to medium business, Dell recommends pre-installed Windows Server 2008 family of operating systems for your server. Windows Server operating systems can be pre-installed at the factory before the server is shipped to your office which is not only less expensive than purchasing at retail, but also alleviates the hassle of installing the software yourself. In addition, pre-installed OS software has been fully tested by Dell engineers before it leaves the factory and is included in Dell's support agreements.

### **Centralized Authentication**

One of the biggest benefits of a server is that it can house a central user directory. It contains the user names and passwords of all the employees in the company. All the desktop systems on the network are connected to the server which allows users to log into any desktop on the network with their user name and password. Their files and settings will appear as if they were sitting at their own computer. This functionality is crucial for security and provides the foundation for many other facets of network computing.



### **File Sharing**

The central user directory can also be used to allow or deny access to certain files. A normal small-business server will have file shares available that contain users' personal files as well as shared files that other users can access when necessary. By dedicating a share to each user, they can store sensitive and private information in a place that only they can access.

### **Bringing Email In-House And Implementing Mobile E-Mail**

Adding a server and configuring it to handle e-mail tasks brings all of your e-mail in-house making users' e-mail access faster and keeping sensitive information within the company's doors. In addition, by moving your company's e-mail to a local server, you can enable e-mail access to your mobile devices, such as a Windows Mobile phone, BlackBerry or [Dell Streak](#).

### **Centralized Applications**

Additional business applications such as an inventory or customer resource management applications can be run from your server and used by your employees while keeping the data safe on the server's redundant storage. In most businesses, these applications are the key to the company, and keeping them safe and sound is an absolute requirement, especially as the business grows.

## Data Backup

One of the most important services a server provides is backing up your business critical data. In the event of a catastrophic failure, fire, or flood, that data can mean the difference between keeping the doors open or closing them for good. Backup software running on the server makes copies of the server's operating system and files to the tape or other external storage device. Once completed, these backups can be stored off site in a secure location.



## Build An Intranet And Extranet

A simple intranet site for your business could house quick links to forms, commonly used files, and information for your employees, as well as serve as a central point for distributing information throughout the company.

## Virtualization

As your server network and infrastructure grow, you may find that some of your servers are running a single application. It may be using only 60-70% of its processing capacity. You can take control of this under-utilized server capacity by creating virtual machines on a single server through a specialized software system known as 'virtualization'. So once you start investing, you can continue to get more out of your investment without adding more infrastructure.

If you have...	If you need...	Choose...
Fewer than 15 users	Shared files, printers and remote access	Windows Server 2008 R2 Foundation
Fewer than 75 users	A turn-key solution that includes shared calendars, email, collaboration, remote access and virtualization	Windows Small Business Server® 2008 Standard
Fewer than 75 users	A turn-key solution that includes shared calendars, email, collaboration, remote access, virtualization and lines of business applications such as customer relationship management (CRM)	Windows Small Business Server 2008 Premium
Unlimited number of users	Shared files, printers, virtualization and remote access	Windows Server 2008 R2 Standard

If your business needs to exchange large files with other companies or clients, you can also use your server to house these files and allow access to outside entities through an extranet. Many email providers restrict the size of emails. Direct file transfers may be the only way to distribute some information

If you're spending a lot of time moving information around your organization, if you're having trouble wringing real efficiencies out of your current computers, or if you have concerns about data safety, it's time to get your first server.

Let us show you how adding a server to your small business network is simple with Dell.

[View Dell Server Solutions](#)