

The decision to buy a high-performance, dedicated server is a critical one for Small to medium-size businesses (SMBs).

While cloud computing is gaining popularity, most SMB organisations still prefer the predictable cost, control and security of on-premise servers and storage.

The first consideration is the primary network operating system you'll run on the server

Then you need an estimate of the number of concurrent users and any storage requirements.

Servers come in three general form factors: tower, rack and blade.

### **Tower servers**

These are upright, free-standing units that contain all traditional server components: hard disks, motherboards and central processing units (CPUs), networking, cabling, power and so on. You commonly add a hard drive to a tower server for direct attached storage (DAS).

Tower servers generally require more floor space than bladed environments or rack-mounted servers, and offer less scalability by design.

### **Rack servers**

These are complete servers specially designed for ultra-compact vertical arrangement within a standardized 19-inch mounting rack or cabinet. Rack-mounted models have expansion slots, known as mezzanine slots, for adding network interface cards (NICs) or Fibre Channel host bus adapter (HBA) cards. This configuration uses floor space efficiently, and offers centralized cable and server management. In addition, a rack server configuration increases infrastructure scalability by letting you add servers as needed, and connect to external storage, such as a network attached storage (NAS) or storage area network (SAN).

It's important to note that relative to server blades and enclosures, rack servers are more limited in the number of new drives and memory you can install.

Rack servers are generally designed to work as a logical and cohesive whole but without the tight integration found with server blades, which makes rack servers more flexible in some situations. In addition, you can run servers from different manufacturers in the same rack unit because the servers don't share proprietary components.

### **Server blades**

These are small form factor servers housed in blade enclosures, which are designed for modularity and high-density footprints (enabling you to fit more servers into a smaller space). A blade enclosure includes server blades and room for storage, in addition to many shared components – power, cooling and ventilation, networking and other interconnects—all controlled by an integrated management system.

Blade infrastructures generally require less rack space than rack-mounted servers. Blade enclosures also use less power per server because of shared power and cooling, which equates to less heat output and lower cooling costs.

Some blade infrastructure enclosures can increase the number of servers up to 60 percent.

### **Assessing your needs**

To narrow down the type of server form factor you need, you should first determine the role(s) you need this server to fill, such as:

- File sharing and storage, and printing services
- Application hosting
- Email and web hosting
- Server consolidation and virtualisation
- Enterprise databases and business intelligence
- Enterprise resource planning (ERP), customer resource management (CRM) and other high-end, process-intensive applications

Each of these server roles require increasingly higher processing power, memory, storage and, ultimately, power and cooling needs. For example, a simple tower server can support file/print services and serve as a dedicated email or host server; however, you'll find the flexibility and scalability of a rack or bladed environment is necessary to efficiently host enterprise databases, ERP, CRM and so forth.

#### **Available space**

Do you have ample floor and/or closet space? If so, a tower server may be the most economical choice. If your current server infrastructure is reaching its capacity, you should consider a rack-mounted server or bladed infrastructure.

#### **Scalability and costs**

Tower servers remain one of the most economical choices, especially for a very small SMB looking to make its first server purchase. However, relative to rack-mounted servers and server blades, tower servers lack expansion options that SMBs might need in the future.

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Rack-mounted servers and bladed environments enable you to start small, buying only the number of servers and storage options you need today, and add servers as needed in the future. By getting only what you need up front, you can help reduce underutilization of equipment and save on initial capital costs.

To determine TCO of various server form factors, visit the HP ActiveAnswers web page and use the HP BladeSystem TCO tool.

An HP BladeSystem c3000 Enclosure, for example, is designed for smaller sites or remote environments needing two to eight servers or storage. The HP c3000 Enclosure is fully compatible with the larger HP BladeSystem c7000 Enclosure, supporting the same server and storage products, so it's highly scalable.

### **Selecting a server form factor**

Select a tower server if you want an economical and all-inclusive server/storage solution to support file/print or dedicated email or web services. This solution is ideal for first-time server buyers, especially in small offices.

Consider a rack server for maximum computing power in a space-saving design, especially in environments with an adequate power and cooling infrastructure and an existing storage system. It's usually best to have in-house IT staff to maintain and support a rack server environment.

Choose a bladed solution to support high-end computing in high-density environments in which power and cooling is already reaching its limits. Companies needing an enterprise-level blade enclosure should plan for in-house IT support, but the smaller yet flexible enclosures are designed to quick deployment without a lot of IT expertise.