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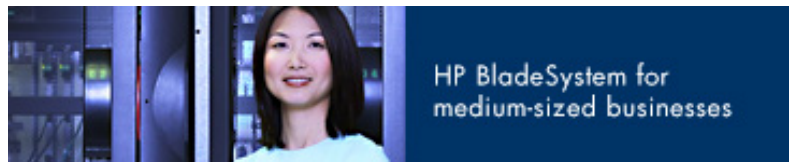
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### Overview

Your company's got the problem every business wants: It's growing. The customer base has grown, the staff has grown, the revenues have grown, and increasingly this growth is putting a strain on the existing IT infrastructure. It's now time to expand that infrastructure to meet the needs of customers and employees alike, and you need a solution that solves your immediate needs and prepares your company for long-term expansion. You require an affordable solution that's easy to manage and easy to grow, yet will allow your company to control IT costs for years to come.

### How can this guide help

Most mid-sized businesses are aware of blade server technology and know that blade servers have been widely adopted by enterprises looking to save space in the data center. What they don't realize is that the same blade technology that's helping large companies increase density and save space may be just the solution they've been looking for to address their own IT expansion needs.

In this solution guide, we'll explain what exactly blade servers are, we'll discuss the unique benefits they can deliver to medium-sized companies, and we'll do our best to help you determine whether or not they're the right solution for your specific business. The sections of the guide include:

- » [What are blade servers and what can they do for you](#)
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- » [Are blade servers right for your business?](#)
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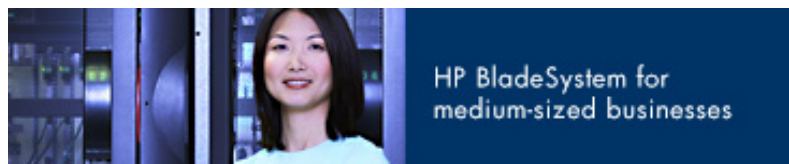


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### What are blade servers and what can they do for you

The term "blade server" is often misused and frequently misunderstood. A blade server is a compact, high-density server that has its own CPU and memory, but that shares networking cables, switches, power, and storage with other blade servers in an enclosure designed specifically to house and manage them. The servers, the enclosure, and all the components of the integrated rack work together as a seamless, efficient unit-increasing efficiency and reducing costs by eliminating many of the overlapping resources often required to run stacks of individual rack servers.

So although the term "blade server" is often used when talking about blade technology, the reality is that the servers themselves are just one part of a larger system, sold as a unit and designed to provide businesses with greater density, simplified management, and easy, affordable expansion.

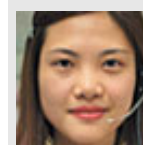
### What can blade servers do for you?

Blade server systems can help businesses operate efficiently, grow flexibly, and control costs effectively by delivering a unique combination of benefits that traditional rack-based systems simply can't match. These benefits include:

- **Better manageability:** So you don't need a squadron of administrators to run your infrastructure
- **Easy expansion:** So you can bring additional servers on line rapidly-without highly trained IT experts
- **Built-in redundancy:** So your data is better protected and availability is increased
- **High density:** So you can store more processing power in a smaller space
- **Affordability:** So you can preserve more capital for strategic business initiatives

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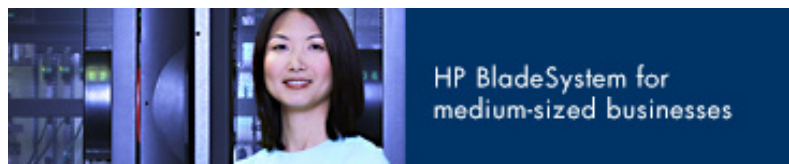
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### Blade system components

#### Server blades

Blades are thin, dense, modular servers with memory and anywhere from one to four processors. They're generally intended for a single, dedicated application (such as web, database, email, or line of business applications) and can be easily inserted into a space-saving rack that houses similar servers.

#### Enclosures

Enclosures house server blades and network switches and connect them to virtual LANs (VLANs), storage, and power through a common backplane — eliminating the need for multiple cables for each component. Each enclosure includes a built-in management module that reports thermal, power, and protection fuse events and provides asset and inventory information.

#### Power and cooling

Centralized power distribution and cooling systems eliminate the need for power supplies in each system component. This unique design enables blade systems to reduce cost, heat, and power usage. To provide power redundancy, power is distributed from the modular power enclosure to the blade server enclosures using scalable bus bars attached to the back of the rack.

#### Storage

Blade server systems generally incorporate some type of storage within the same rack that houses the shared power, server blade enclosure, and switches. Customers choose the type of configuration they prefer, whether it's direct attached storage (DAS), network attached storage (NAS) or a storage area network (SAN).

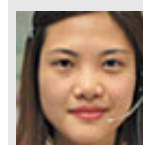
#### Interconnect kits

Some blade enclosures require interconnect kits. These kits include interconnects that slide into the server blade enclosure and collect network and storage signals from the server blades. Several types of interconnects are available, including interconnect switches and patch panels.

#### Management software

Management software is an essential component of any blade server deployment. It keeps track of where physical resources are located within the rack, monitors performance, and allows administrators to deploy, configure, and manage server blades easily.

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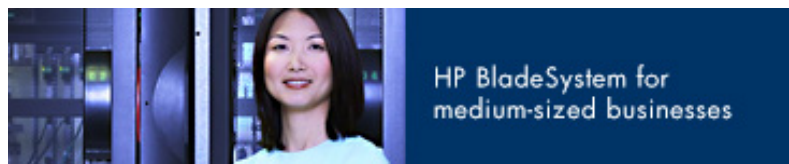


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### Are blade servers right for your business?

Because blade servers were initially adopted by large enterprises and engineering companies with High Performance Computing (HPC) requirements, a perception has grown among medium-sized businesses that blade technology is either too complex or too expensive for their needs.

But the truth is exactly the opposite. Blades have served enterprises well because their high density allows for more efficient use of data center space, and engineering firms like them for how easily they can be clustered, but the fact is that the primary values blade servers bring to the table are simplicity, flexibility, and affordability—making them ideal components of any business's IT infrastructure.

Although many businesses have relied on rack-mount servers for years to meet their IT infrastructure needs, today there are many circumstances where blade servers might just be a better solution. Specifically, businesses that face physical space restrictions, IT resource limitations, or budgetary constraints may find that blade servers meet their needs in a way that rack-mounted servers simply can't.

Why? Because blade servers perform the same function as rack servers while adding several compelling advantages for growing businesses: They require less floor space, they use less power, they can cost less to operate, and they're easier to manage than rack-mount servers.

Furthermore, unlike individual rack-mount solutions, blade servers use a consistent, modular, integrated approach that is easy to deploy and easy to change. Affordable and scalable, a blade infrastructure is ideally suited for companies looking to grow their IT assets incrementally, consolidate to a standardized platform, or build a new business with limited resources.

### Benefits for your growing business

#### Physical advantages

Many of the benefits blade servers deliver are enabled by their unique physical design. By sharing resources such as power cooling, and cabling through an integrated enclosure, blade systems eliminate a great deal of the complexity and overlap that can often plague the typical server stack.

- **Shared power:** Moving power supplies out of individual servers and into a shared enclosure reduces power consumption and provides higher availability for the entire blade infrastructure. It can also reduce the number of individual power cables required for the server and networking system.
- **Reduced cable complexity:** Because blade-based server systems provide network connectivity within the shared enclosure, cabling needs are significantly reduced. Blade servers typically use 87

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percent less cabling than rack-based servers and can save customers US\$100 to US\$350 per 10/100 network port.<sup>1</sup> For customers connecting their blade servers to a SAN, the savings can be even greater, due to the reduced cabling and switching costs of the integrated blade storage infrastructure. This also simplifies any future changes, as the enclosure needs to be wired only once during setup and does not require additional wiring for each server added to the enclosure.

- No keyboard, video, and mouse (KVM) requirement: Because blade servers are managed through a browser-based graphical user interface (GUI), they eliminate the need for individual keyboard, video, and mouse (KVM) cables and switches. This functionality alone can save up to US\$25,000 for each server rack.<sup>2</sup>
- Size and density: Integrated blade solutions are smaller and take up less square footage than a comparable rack solution-helping you conserve valuable IT floor space. Plus, the integrated design also provides greater density-so blade servers are smaller and lighter than rack-mount servers-making them easier to deploy and service.

### **Operational cost savings**

Blade servers are generally easier to manage than traditional server arrangements. In fact, in some cases blade server systems have allowed businesses to double the number of resources (servers, switches, and storage) managed by each of their administrators.<sup>3</sup>

This increase in operational efficiency means companies using blade servers can save money long after the servers are purchased and installed. By combining the networking components, servers, and shared storage, blade servers can reduce the need to physically interact with more individual devices in your environment-providing the potential for your existing staff to do more in less time. A few of the specific ways blade servers streamline system management include:

- Server setup: Adding servers to a blade environment is easier and takes less time than expanding a typical rack environment. In fact, adding a blade server can take as little as 30 minutes, while adding a comparable rack server can take as much as 12 hours.
- Ongoing operations: Blade servers use advanced management tools to automate and simplify numerous administrative tasks. Through a single screen, administrators can quickly create and deploy resources and application environments (assigning server, network, and storage resources) based on the needs of the business.
- Remote operations: Blade servers are the ideal server solution for branch offices in remote locations. Once installed, most aspects of blade system deployment and management can be handled from a central office-without dispatching IT personnel to the remote site. Even the process of adding blade servers can often be handled without highly trained IT resources on site because it's such an intuitive task.

### **Improved availability**

In traditional rack-mounted server architectures, increasing availability means buying additional hardware for redundancy, as well as all the connections and external networking components to support the systems-all of which are extra costs.

With blade server systems, however, a good deal of redundancy is built in. These systems incorporate features such as dual VLAN switches, redundant power subsystems, redundant backplane data paths, redundant storage and storage interconnects, redundant fans for cooling, and hot-swap server blade replacement to automatically deliver higher levels of availability and simplify maintenance.

And, in the event of planned or unplanned downtime — such as the need to upgrade memory, replace a processor, or replace a server — individual blade servers can easily be removed from the enclosure, then upgraded, repaired, or replaced-without recabling and without disturbing the rest of the system, thus reducing downtime even further.

### Lower acquisition cost

The key to comparing acquisition costs for blade servers versus rack servers is to remember that servers don't install themselves. They require cables, network switches, management software, operating system software, SAN infrastructure components, a keyboard, a mouse, a monitor, and any redundancy features you need to provide adequate service levels for your business.

Blade-based servers generally provide all those components as part of an integrated system. Rack servers don't. So to determine whether blades are truly a better value for you, list the individual components you'd need to build your ideal rack system, add up the costs, and then compare that to the price of an integrated blade system with the same features and functionality. When you compare server solutions on this basis, blades often provide a very compelling value proposition.

For more detailed analysis of the cost benefits of blade servers, see HP BladeSystem: Building the Business Case for Adopting the HP BladeSystem in the Data Center available at [www.hp.com/go/blades](http://www.hp.com/go/blades).

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<sup>1</sup> For redundant connections to Ethernet networks, standard HP ProLiant servers require 2 to 4 cables per server. From the shared connectivity of the HP BladeSystem, 8 to 16 servers can be connected redundantly to the network, with 2 to 4 per enclosure. An 8 server comparison yields 16 to 32 cables required for rack-mounted ProLiant servers and 2 to 4 cables required for an HP BladeSystem; a 87.5 percent reduction in the number of cables. The standard cost per port of an integrated Gigabit Ethernet switch is estimated at US\$54 per port on a fiber network. The cost per port of an equivalent standalone switch ranges from US\$65 to US\$385 per port.

<sup>2</sup> The built-in iLO processor on each ProLiant server blade delivers equivalent KVM functionality without requiring additional hardware. The HP Internet list price for a KVM infrastructure solution, including switches, cabling, mounting equipment and keyboard, and monitor and mouse for a rack containing 42 1U servers is approximately US\$25,000. (If more specificity is required, a detailed bill of materials could be built with specific costs and SKUs.)

<sup>3</sup> Based on industry average metrics, the time to deploy a single rack-mounted ProLiant server averages approximately 4 hours, compared to 30 minutes for a ProLiant server blade. Once the blade infrastructure is in place, adding a new server significantly reduces the time to rack, cable, and provision the operating system, and configure VLAN and storage connections. Similarly, changes also take less time.

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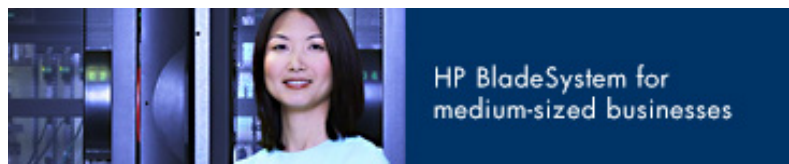
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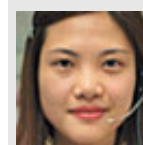
As you've read in the previous pages, blade server technology provides a powerful array of features that can deliver concrete long-term benefits to mid-sized businesses in virtually every industry.

At HP, we've taken the blade server value proposition one step further by leveraging our unmatched technical expertise to integrate computing, storage, power, and network resources into a virtualized, self-aware, automated environment that we call the HP BladeSystem.

HP BladeSystem solutions can greatly simplify the integration of multi-server environments, helping businesses of any size operate more efficiently, grow more flexibly, and control costs more effectively. In short, HP BladeSystem solutions provide an affordable foundation for growth—one that is nimble and flexible, yet built on some of the best enterprise-class technology so that mid-sized businesses can match the IT capabilities of even their largest competitors.

Key benefits of HP BladeSystem solutions include:

- **A strong commitment to blade server technology:** Some IT vendors have been extremely inconsistent in their commitment to providing, supporting, and improving blade server technology. One year they're selling blades, the next year they're not. Then when the market looks promising, they're back again. At HP, we've been committed to blade server technology for years, and we're excited about the expanding market for blade servers. You can rely on HP to provide the hardware and support you need for your systems.
- **Investment protection:** The current HP BladeSystem is the third generation of blade server technology from HP, and all three generations have used the same enclosure. That's just one example of our commitment to providing a consistent product that integrates easily with your existing infrastructures and avoids unnecessary hardware upgrades.
- **Commonality with your existing HP rack environments:** No need to retrain staff or replace your existing hardware. You can easily operate a mixed rack and blade servers environment as you integrate HP BladeSystem solutions—without concerns about multiple system requirements and management tools.
- **Management software:** HP BladeSystem solutions come with one of the most comprehensive management software portfolios in the IT industry. This innovative, industry-standard suite—including tools for monitoring, analysis, power regulation, patch management, automation, and rapid deployment — is delivered via plug-ins to HP Systems Insight Manager Software for an integrated, virtualized, and automated solution.

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- A broad product portfolio: HP offers you the flexibility to choose how many processors each of your blade servers will have, what type of processors they will be, and which networking options you'll use.
  - Choose one-, two-, or four-processor server blades based on AMD Opteron™ or Intel® Xeon™ processors to support your unique business needs and application requirements.
  - Choose the network switching approach that meets your needs — passthrough patch or switches (Cisco, Nortel, or Brocade).

Providing a simplified experience that enables you to focus on what really matters, HP BladeSystem solutions are altogether better for business.

### **Solutions to meet your IT needs**

If you're considering expanding your IT environment, one of your biggest concerns is probably making sure that the new platform you choose can perform the tasks critical to your business success and can run the applications you rely on.

Rest assured that although their design is unique and their form factor is compact, HP BladeSystem solutions are powerful technology — capable of doing anything that comparable rack servers can do — with a level of versatility and scalability that rack-based systems just can't match. HP BladeSystem solutions can be used for:

- Business applications: Run complex business productivity applications such as Microsoft® CRM, Microsoft Great Plains, Microsoft Axapta, or mySAP
- Databases: Run powerful database applications such as Microsoft SQL Server and Oracle® 9iRAC
- Business protection solutions: Integrate a full range of data protection and security solutions
- Server-based computing solutions: Adopt a server-based computing model where centralized servers host applications for multiple users
- Virtual server solutions: Consolidate multiple logical servers on a single physical server
- Clustered solutions: Combine multiple resources to meet your needs for reliability or data-crunching power
- Communication and collaboration solutions: Run popular e-mail and messaging applications such as Microsoft Exchange, Lotus Notes, or Microsoft SharePoint
- Network and Internet support: Manage network services, directory services, security services, and file services
- Multiple operating environments: Run Microsoft Windows®, Linux® Server, or both

### **Building your perfect HP BladeSystem**

Now that you know what blades can do for your business, follow the "Download a PDF version" link at right to download a PDF version of this guide that includes tables and charts to guide you through the BladeSystem selection process.

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