

OPTIMIZE BUSINESS GROWTH WITH IT

Tune Your Servers for Competitive Advantage

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Abstract

IT departments don't have to be seen as cost centers, especially at a small or mid-size business. Having the proper technology can help a company achieve its business needs and goals, but this requires a plan that can be executed and monitored so the IT operations continue to increase business value. In this white paper, learn how to use technology, including virtualization, to expand your operations. It also includes a worksheet with questions to answer to help you make the proper decision.

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Introduction

The IT department once may have played a minor role in a company's internal systems infrastructure, but it has since taken center stage, with the potential to transform businesses and drive growth. Having the right infrastructure is key to achieving the needs of the business, while having the right technology is key to achieving the goals of the business. However, achieving those goals doesn't come by accident. Companies must actively plan, execute and monitor the IT operations to continue to increase business value.

In the IT department, your server is the technological heart of your company. Your most crucial business data — inventory information, customer data, company email and more — flows through your servers every second, requiring that they be healthy and functioning smoothly on a 24/7 basis. Eventually, as with human hearts, servers begin to show their age and reliability becomes an issue. The question is, in order for you to get the best return on your investment and to continue to propel business growth, does your server need minor surgery or a major transplant?

In this white paper, we will outline the thought process that small and midsize businesses (SMBs) can follow to determine the best ways to use technology to expand their operations instead of to simply support it. We'll look at how you should conduct a needs assessment; how the increasingly important technology of virtualization might affect your decision; and steps to take when making the change. We also have provided a worksheet with questions to consider as you make your decision.

New servers, new growth

When a company has too much data to process, it drains performance and efficiency from other business functions. Faster, more efficient processors allow businesses to increase capacity and take advantage of new applications.

Upgraded architectural aspects can:

- Add faster network interface capabilities
- Increase flexibility and improve performance
- Free IT time to help other departments

How to Use Technology to Drive Growth

What does a new system mean to your business as a whole? A newly refreshed server — whether through upgrades or replacement — provides greater opportunity for companies to improve their business efficiencies. It's not simply a question of applications being able to take advantage of faster processors, although application performance and responsiveness is key. New servers translate to new capacity, which means that the business side can take advantage of new enterprise-focused applications more easily.

Midsize businesses enjoying growth and expansion frequently must deal with the challenge of upgrading to applications that more appropriately complement their size. Some database applications built for SMBs have an upper limit of data capacity — and when a company's inventory components or customer list stretches that limit, it drains performance and efficiency. The same applies to the IT department, which must struggle to develop workarounds in applications that are underpowered for the company's current needs.

One of the biggest advantages of deploying new servers is to phase out systems that aren't part of a standard infrastructure. Previously among SMBs, it might have been easier to buy a departmental system for a specific application rather than conform to (or even initially establish) a standard architecture. But as a company grows, or merges with another, a standard architecture is tantamount to becoming more agile when it comes to deploying new applications that accommodate data from throughout the company. What executive would want to put an end to a successfully deployed application that produces the tactical and strategic information the organization needs?

You can also upgrade architectural aspects of the system, whether through storage area networks (SANs) or adding faster network interface capabilities. This increases flexibility and maximizes resources, as well as improves performance and makes the IT department's job easier.

If you are replacing obsolete hardware with new servers, you also have the opportunity to upgrade your server operating system. This allows you to take advantage of new capabilities that have been added in recent years. In addition to the increasing availability of low-cost Linux or Unix-based systems, server operating systems have also improved security. The ability to add virtualization technology increases flexibility when it comes to ensuring business continuity.

Assessing Your Current Situation

Some businesses see their IT departments as innovators that can identify new value chains instead of only assisting with existing ones. Those willing to take those risks often see much higher returns. To accomplish this, however, the business first needs the proper equipment.

For years, companies frequently used one server for each application. This way, the IT department could easily maintain the application on a single server without maintenance or downtime affecting other applications. However, IT staff found that dedicated servers were frequently underused (as little as 10 percent of their capacity, according to some studies). At the same time, adding servers for each application added management complexity, required more physical space and increased energy costs.

With the development of blade servers, as well as the improving reliability of virtualization software, businesses discovered that they could consolidate multiple server-based applications within a single enclosure. This combination delivered multiple advantages: companies can reduce the amount of physical space devoted to servers and spend less money on electricity to power the system and cool that space. Managing a single enclosure rather than multiple servers also reduces the time that the IT team needs to manage and monitor the hardware and associated network cabling.

While these changes offer clear cost benefits, companies must also consider the trade-offs involved in upgrading to new servers, including the time IT must spend in configuration, deployment and testing. The answer may depend on how recently you installed a new system. According to the 2008 Server Workloads study from research firm IDC, only 27 percent of all servers are less than three years old. Another 19 percent are four years old, while 54 percent are five years or older.

After five years, servers fall prey to a number of maladies, including:

- Increasing susceptibility to hardware failure
- Increasing maintenance costs
- Termination of support for older operating systems
- Inability to add applications requiring newer technology

Add to that ongoing increases in processing power and disk capacity, as well as internal and network I/O, and companies with older servers can garner significant business benefits by replacing them. In assessing your needs, remember that the question is not solely one of time. Companies should also consider the viability of upgrading certain components of older servers and then redeploying them for less stressful activities, such as nearline storage for archives or internal Web servers.

Why consider virtualization?

With virtualization, companies can run the equivalent of four different servers running four separate applications on a single system. It also allows businesses to establish backup and disaster recovery networks.

Consolidation allows companies to:

- Lower overall energy costs
- Reduce the need for additional physical space
- Save on IT administration time

Taking Advantage of Virtualization

Virtualization has gained traction quickly and resolutely because it solves multiple problems within a single architectural framework. Simply put, virtualization allows you to partition a drive to represent a physical system running what's known as a virtual machine. As a result, on a single hardware server you can run the equivalent of four different servers running four separate applications.

Companies derive several advantages from this. For instance, virtualization eliminates the paradigm of one application = one server. As servers age and need to be replaced, companies can consolidate what were originally multiple servers into a single piece of new hardware that can host multiple virtual machines and their applications. Frequently, companies can purchase a more powerful server with the latest quad-core processors for far less than they would spend if they replaced the original number of servers.

At the same time, because your ratio of servers has been reduced by a factor of anywhere from 10 to 4, consolidation reduces your energy costs, the need for additional physical space and the amount of hardware the IT staff has to manage. Overall, companies derive cost savings through better asset utilization and reduced IT administration time.

Another advantage to virtualization is that you can set up a cost-effective business-continuity system, including multiple drives within an enclosure to mirror each other. This way, if one fails, the application and its data automatically switches over and users will never experience downtime. You can also do this across a wide-area network to create a disaster recovery system with little incremental investment.

The ability to run legacy operating systems virtually is an additional benefit. If you have a business-critical application that runs on an outdated or proprietary piece of software, you can run it as a virtual machine. This enables you to maintain application data or functionality until such time as you can phase out the application.

Collaborate among departments

When deploying or upgrading a server, the IT and business departments must work together to manage expectations, training and scheduling so key business functions don't suffer.

Data transfer benefits:

- All at once? no need to support multiple platforms simultaneously
- In stages? not as costly, treat it as a soft launch

Planning for a New Server or Upgrade

The planning process for deploying a new server or an upgrade requires the collaboration of both the business and IT staffs. Certainly, there should be a clear business need for the initial implementation of new technology — such as a slow server that's hampering employee productivity; the system is freezing up; it's out of warranty; or parts are no longer available. But the two teams also need to manage expectations regarding the schedule for the project, potential downtime during the changeover and training for new applications or processes.

When a business is growing, responding to a more intense competitive landscape or deploying new enterprise-wide applications, its planning process differs only slightly. Because it may deploy more servers or install a data center to accommodate new business, other issues should be considered in terms of space, power and cooling.

Cost

Be sure to balance outlay versus savings. Certainly a new server or an upgrade will cost you money, but it's also likely to reduce your maintenance costs, especially if you upgrade from a much older system. If your business is expanding, you should run some numbers regarding volume discounts you would get from purchasing more equipment compared to the costs of doing a second installation to accommodate that growth in another year.

Factor in intangibles, such as employee productivity, because your staff will be using a system that's more responsive and able to allow faster access to shared files and applications. Other benefits include:

- Allowing employees to access to data from outside the office
- Helping protect the company from computer viruses and malicious spyware/adware
- Keeping key business functions running with built-in failure prevention

Energy

There are two sides to this issue: the electricity you need to run new servers and the cooling you need to maintain their environment. If you decide to upgrade components, this will be less of an issue. However, investing in new energy-efficient servers or enclosures may save you money on both electricity and cooling. If you deploy a new data center, however, also consider what changes you must make to your power configuration. Some utilities restrict extensive expansion of companies' power usage.

Space

If you decide to consolidate existing servers into an enclosure or a system using virtualization technology, you can recapture square footage for other needs. If you are expanding, however, you should consider where you will install new cabling and networking apparatus.

Data transfer

Build time into your schedule to ensure the accurate transfer of data from old systems to new systems, as well as testing. You can either roll out the new platform all at once or in waves. If you choose to do the transfer all at once, you might want to arrange for the work to be done over a long holiday weekend. It's no fun for IT staff to work during a holiday, but it means that your operations can proceed without interruption.

Advantages to doing it all at once is that the new system will be implemented faster and all team members will be able to use it right away. Plus, you won't have to support two (or more) platforms simultaneously. One disadvantage is that the IT team might not be able to deal with other system issues because they are so focused on the new deployment.

It will likely be less expensive if you roll out the new platform in stages. This way, you won't need as much support staff to work on the implementation, and they can work out the kinks as they go along. It will be more like a soft launch, and you'll also be able to get a group of employees up to speed faster before moving on to the next group. A disadvantage is that it will be more confusing because team members will be working on different platforms and won't be able to communicate as efficiently.

Use this worksheet to determine the benefits of upgrading or replacing your server(s).

Worksheet

What business issues do you currently face?

- Growth or expansion
- Increased need for customer responsiveness
- Improved access to or integration of data
- Increased need to deploy applications more quickly

What issues do you currently face with your servers?

- Performance
- Reliability
- Capacity
- Maintenance costs
- Operating system end-of-life

How old are your servers?

- 1-3 years
- 4-5 years
- 5 years or more

What upgrade options are available to you?

- Faster processors
- More hard drive capacity
- Speedier network interface
- Better I/O

How much will those upgrades cost?

How much will new servers cost, whether through leasing or buying?

Will the ongoing operation and maintenance costs change on a per server basis?

What are the costs to any changes necessary to your current physical space, such as improved electrical configurations?

If you deployed virtualization technologies, how many servers could you eliminate?

What is your current cost of maintenance per server?

What is the current cost of energy per server?

What is the current cost of square footage in your office or data center?

How much square footage could you regain by eliminating servers?

Using the numbers from the previous four questions, how much could you save by eliminating the number of servers previously determined?

If you deployed virtualization technologies, how much training would your IT staff require?

How much would the training cost?

If you have subsidiaries or branch offices, how much are you currently paying to ensure business continuity for them?

Could this amount be eliminated through virtualization?

Are you currently running a business-critical legacy application that requires proprietary hardware?

What are its annual maintenance costs?

What percentage could be eliminated through the use of a virtual machine running on standard hardware?

If you decide to upgrade or replace the servers, how much time would be required to remove your current server configuration and install a new server configuration?

If you decide to replace the servers, how much time would be required to migrate or integrate existing data?

