CHOOSING YOUR FIRST SERVER:
THE DELL POWEREDGE T110

The Dell™ PowerEdge™ T110 server delivers real business advantages

Better data protection

Easier printer sharing

Easier to manage

Faster file sharing

Easier path for future growth

for only $177 more than a desktop acting as a server.*

*Based upon the configurations tested

As your business grows, your computing needs grow as well. While your business has used desktop systems to perform certain server functions, investing in a real server, the Dell PowerEdge T110, will yield benefits now and support your business as it keeps growing. For only $177 more than a current-generation desktop, you can immediately reap the benefits of real server hardware and a real server operating system: better data protection, faster file sharing, easier management, and an easier path for growth. The Dell PowerEdge T110 eliminates the extra time and hassles surrounding your computer environment, letting you focus on your business.

To quantify the advantages of using a Dell PowerEdge T110 server rather than a desktop system functioning as a server, we conducted a number of tests in our labs. We configured the Dell PowerEdge T110 server with an Intel® Xeon® processor X3430 and Microsoft® Windows Server® 2008 R2 Foundation Edition, and compared it to an HP Compaq 6005 Pro Microtower PC desktop with an AMD Phenom™ II X3 B75 processor running Microsoft Windows® 7 Ultimate Edition. We based all test results on our comparison of these two systems as configured for a fictitious test company. The test company had a mix of client operating systems—Windows 7, Windows XP, and Windows Vista®—as a typical small business is likely to have.

In the sections below, we discuss the wide range of benefits you can expect to enjoy by investing in this entry-level server. To view our full report with our detailed methodology and results, see http://www.principledtechnologies.com/clients/reports/Dell/T110_first_server.pdf.

Protection of data

The Dell PowerEdge T110 server features a real server operating system—Microsoft Windows Server 2008 R2 Foundation Edition—with management features that allow you to better protect your data. Windows Server 2008 R2 Foundation Edition is only available by purchasing a real server that comes with it preconfigured. You cannot buy the operating system (OS) separately and simply install it on a desktop. Windows Server 2008 R2 Foundation Edition's Active Directory security lets you manage all your users and user passwords in a single location, so you can easily control who has access to your data. When an employee leaves your company, you no longer need to worry about potential unwanted data access due to multiple copies of the same account residing on different systems in your office. With Active Directory, there is only one copy of any account.

Because a real server uses a Redundant Array of Independent Disks (RAID) to make copies of your data automatically, you experience no immediate downtime in the event of a hard drive failure. To test this, we removed a hard drive from both the Dell

● **The Dell PowerEdge T110 protects your data better with Active Directory Security, RAID technology, and a BMC alert system.**

● **Prevent unplanned downtime – With RAID technology you can recover the hard drive in around 6 minutes without losing productivity vs. at least an 1 hour of lost work without RAID.**

PowerEdge T110 server with two drives in RAID 1 and the HP Compaq 6005 Pro Microtower PC desktop with a single non-RAID drive, and measured the interruption such a failure would cause. The Dell server's RAID prevented any unplanned downtime and it took only around 6 minutes to recover the hard drive at a later

time, while the HP desktop's single non-RAID drive created instant downtime when the hard drive failed. Without an extra drive available, you could be down for several hours or even days. At a minimum, there is at least 1 hour of lost work time while you replace the drive and copy the data from a backup source. There would also be permanent data loss for any new data since the most recent backup. Although RAID technology is no substitute for having an adequate backup solution, the Dell PowerEdge T110's RAID technology eliminates downtime and lost productivity when a hard drive fails compared to a desktop without RAID.

Another data protection feature of the Dell PowerEdge T110 server is the Baseboard Management Controller (BMC), which is a specialized service processor that monitors the physical state of the server. It alerts you if someone has tampered with your server. If someone tries to steal your data by opening your server system's case and taking your hard drive, the server has an intrusion sensor that connects to the BMC. The BMC alerts you and you can take appropriate action should such a physical intrusion occur. A typical desktop system such as the HP Compaq 6005 Pro Microtower lacks this notification mechanism, leaving your data and hardware unmonitored and vulnerable to intruders.

Design meant for continuous operation

As the central repository for all your business data, your server needs to run morning, noon, and night. Using a real server is optimal for this kind of deployment. The Dell PowerEdge T110 features Error Correction Code (ECC) memory, which detects and autocorrects errors introduced during the storage or transmission of data. Because servers operate 24 hours a day, the likelihood of errors happening is high, and memory errors can lead to loss of data or to computer crashes. Memory in desktops, such as the HP system we tested, offer no such feature, and lack of ECC memory is likely to create problems for your data and your business.

Intel® Xeon® server processors tuned for maximum server performance

The Dell PowerEdge T110 features a real server processor—the Intel Xeon processor X3400 series— tuned for maximum performance for server related tasks. This quad-core Intel Xeon processor comes with Intel's Turbo Boost Technology, which allows the processor to deliver bursts of extra performance when you need it most.

Typical desktop system processors such as the triple-core AMD Phenom II X3 B75 that comes in the HP desktop do not offer this capability. To get an idea of the performance capabilities of the processors, we researched online and found published CPU Mark PassMark® scores for each. An Intel Xeon processor X3430, like the one in our server, scored 3,638 while the AMD Phenom™ II X3 B75 scored 2,410; higher scores are better. This indicates a performance edge of approximately 51 percent for the Intel Xeon processor X3430.[1]

The Intel Xeon Processor X3430 has a performance edge of more than 50% over the AMD Phenom II X3 B75.

Faster file sharing

The Dell PowerEdge T110 helps decrease potential frustration and boost productivity by letting your workers share files quickly. To compare its file sharing capability with that of the HP desktop system, we created an 80GB folder filled with sample office files and stored it on each system, and then shared the folder with all of the users in our test setup. The Dell PowerEdge T110 shared the files in roughly three-quarters of the time it took the HP desktop. The transfer took 1 minute 45 seconds, compared to 2 minutes 18 seconds on the HP system, a savings of 33 seconds. This means less office time wasted waiting for relatively simple operations to complete.
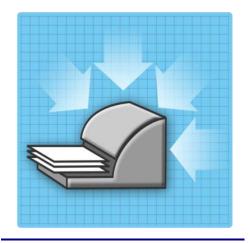

Share files 24% faster with the Dell PowerEdge T110.

Easier printer sharing setup

Setting up printers for each individual computer or user can be a hassle that creates unnecessary time costs. The server operating system that comes with the Dell PowerEdge T110 makes setting up and sharing printers with specific employees or departments a simple procedure. To compare the printer sharing setup experience on the two systems under test, we set up a simulation where we shared a printer with the users in one department, and recorded the number of steps each one took.

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[1] Data referenced on December 20, 2010 from http://www.cpubenchmark.net/cpu_lookup.php?cpu=AMD+Phenom+II+X3+B75.

Share printers in 57% fewer steps with the Dell PowerEdge T110.

Sharing a printer with our test users in a sample department on the Dell PowerEdge T110 took only 11 steps, versus 26 steps on the HP desktop, for a 57 percent reduction in steps. Because our client machines used a mix of operating systems (Windows 7, Windows XP, and Windows Vista), as a real office is likely to do, using Windows 7 Home Groups on the HP desktop was not possible since all of the machines accessing a Home Group must also be running Windows 7. The real server operating system's Active Directory groups make printer sharing a snap, since the same user structure is available from all client machines despite the mixed operating system environment, reducing the number of steps it takes to share a printer by almost two-thirds.
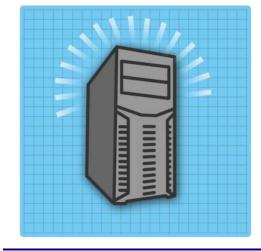
Easier to manage

Microsoft Windows Server 2008 R2 Foundation Edition, the real server operating system that comes standard with the Dell PowerEdge T110, helps you manage your employees' accounts in one centralized location, saving you time and energy. The OS provides simplified, secure, file sharing via Active Directory user groups, and like printer sharing, makes it just as easy to share folders and files. Setting up the HP desktop to share files among user groups takes over three times the number of steps.

As your business grows, you hire new employees who need to access your server to complete their day-to-day tasks. We added and removed users from both our desktop-only environment and our Dell PowerEdge T110 server-managed environment, and found that the Dell PowerEdge T110 made both tasks easier. The desktop-only environment took 32 steps to add a user and 28 steps to
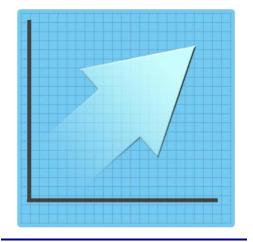

Add and remove users in 83% fewer steps with the Dell PowerEdge T110.

remove a user, for a total of 60 steps, while the Dell PowerEdge T110 server-managed environment took 6 steps to add a user and 4 steps to remove a user, for a total of only 10 steps. That means that with the Dell PowerEdge T110 server, you need 83 percent fewer steps to add and remove user than with the desktop-only environment. With the management capabilities available with the Dell PowerEdge T110, you will spend less time managing your server and more time managing your business.

Furthermore, with the Dell PowerEdge T110 as your server, employees have the flexibility of logging into their accounts from any system in the office while retaining the same access to their data. The desktop operating systems available for the HP system force you to create a new user account for each employee at each system they need access to in your office, and their work is available on only the machines to which they have they saved it.

Easier path for future growth

The Dell PowerEdge T110 has twice the expansion capacity and sets you up for easier growth transitions in the future.

The Dell PowerEdge T110 sets you up for easier transitions in the future as your business grows. To test the expansion capabilities of the Dell PowerEdge T110 server and the HP desktop, we configured each with the largest available drive upgrade on each website's configurator. Then, we used our sample office files to fill the added storage and compared the actual file capacity of each. The Dell PowerEdge T110 with the largest available RAID 1 drive upgrade offers 1TB of additional storage. The HP desktop's largest available upgrade offers only up to 500GB of additional storage in a single non-RAID drive. In terms of files, that is over 750,000 more office files that the Dell PowerEdge T110 server can store.

Furthermore, by purchasing a real server with Windows Server 2008 R2 Foundation, you are investing in an easier future transition as your business continues to grow. Upgrading to Windows Server 2008 R2 Standard Edition, an operating system edition that offers added capacity for a higher number of employees, can be as simple as a few clicks of a mouse. On the other hand, upgrading from Windows 7 to Windows Server 2008 R2 Standard Edition requires a complicated migration process. In our testing, we successfully upgraded the Dell PowerEdge T110 with Windows Server 2008 R2 Foundation Edition to Windows Server 2008 R2 Standard Edition in eight steps. This easy upgrade feature in the Windows Server 2008 R2 family is unavailable in Windows 7, and thus requires installing the operating system, reinstalling all of your programs, and then manually transferring all your data.

Remote Access

With the Windows Server 2008 R2 Foundation Edition OS that comes with the Dell PowerEdge T110, you and your employees will have the option of accessing your data even when you are not at the office. The Dell PowerEdge T110 offers added functionality in that you can configure the system as a router for your network using the Routing and Remote Access Service (RRAS). The Dell PowerEdge T110 configured with Windows Server 2008 R2 Foundation Edition allows 50 remote desktop sessions, far exceeding the single session allowed in Windows 7.

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This means that all your employees can separately log into a remote desktop session and have access to data installed on the Dell PowerEdge T110 server from wherever they are, whether they are in the office, working from home, or on a business trip using a VPN connection.

Pricing

Considering the many ways the Dell PowerEdge T110 server will benefit your business, you'd likely expect it to cost much more than a desktop such as the HP system we tested. After all, your likely motivation for using a desktop to perform the function of a server, instead of buying a real server, would be to save money. In fact, the Dell PowerEdge T110 costs only $177 dollars more, according to the Dell and HP Web sites. On December 9, 2010, the Dell Web site listed the price of the Dell PowerEdge T110 at $1,236,[2] and the HP Web site listed the price of the HP Compaq 6005 Pro Microtower at $1,059.[3] For less than $200 more, your business can reap the many benefits of having a real server today and can be prepared for future expansion as your business grows. The time savings alone would quickly cover the additional dollars.

[2]Source: http://configure.us.dell.com/dellstore/config.aspx?oc=beswlfs1&c=us&l=en&s=bsd&cs=04&model_id=poweredge-t110
[3]Source:http://h71016.www7.hp.com/dstore/MiddleFrame.asp?page=config&ProductLineId=429&FamilyId=3095&BaseId=31409&oi=E9CED&BEID=19701&SBLID=&jumpid=re_R2515_store/smProdCat/PSG/Desktops/HP_6005_Pro_MT_CFG9