

Small business server procurement and deployment competitive analysis

Executive summary

Dell Inc. (Dell) commissioned Principled Technologies (PT) to evaluate the procurement and deployment of the following three small business servers, each running Microsoft Windows Small Business Server 2003 R2 Standard Edition:

- Dell PowerEdge T105
- HP ProLiant ML 115
- IBM System x3200 M2

Dell specified the test systems and defined the major areas of testing. PT developed detailed test methodologies, purchased and set up the systems, and executed all tests.

As the Key findings detail and Figures 1 through 4 illustrate, the Dell PowerEdge T105 provided a faster experience than both the HP ProLiant ML 115 and IBM System x3200 M2 servers in all of the following areas:

- online ordering
- wait from ordering to arrival
- unboxing and setting up server

Dell's technical support also resolved a technical problem with the server more quickly than HP's and IBM's did.*

The Test results section provides more detail on our key findings, while the Test methodology section explains how we conducted the tests. Appendix A details the system configurations.

KEY FINDINGS

- Ordering the Dell PowerEdge T105 online took 12 minutes 40 seconds, 62.4 percent faster than ordering the HP ProLiant ML 115 and 50.5 percent faster than ordering the IBM System x3200 M2 (see Figure 1).
- The Dell PowerEdge T105 arrived 5 days after we placed our order, 61.5 percent faster than the 13 days for the HP ProLiant ML 115, and 76.2 percent faster than the 21 days for the IBM System x3200 M2 (see Figure 2).
- It took us a total of 24 minutes 6 seconds to go from a boxed server to one with a working desktop for the Dell PowerEdge T105, 31.4 percent faster than for the HP ProLiant ML 115 and 11.1 percent faster than for the IBM System x3200 M2 (see Figure 3).
- Dell technical support took 13 minutes 58 seconds to resolve a single problem,* 82.4 percent faster than HP and 70.9 percent faster than IBM (see Figure 4).

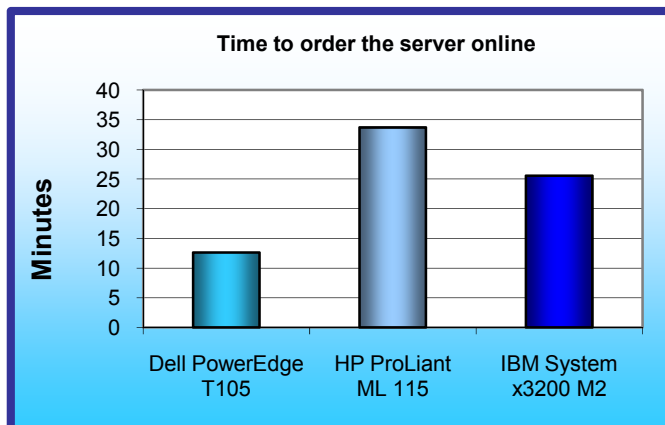


Figure 1: Time in minutes it took us to order the three servers online. Lower numbers are better.

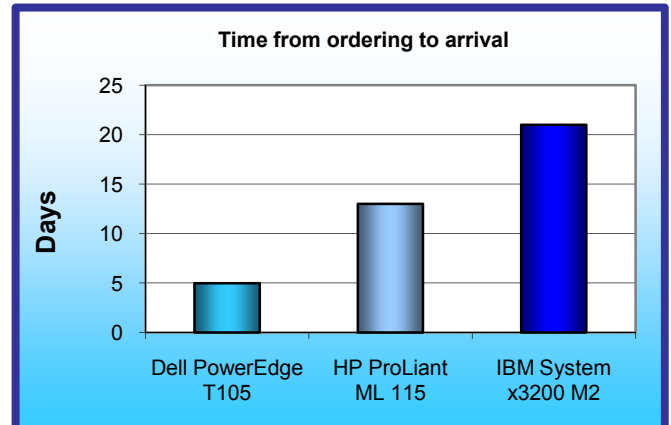


Figure 2: Time in days it took for the servers to arrive after we ordered them. Lower numbers are better.

* The times we cite in this report represent a PT staff person presenting a single technical assistance problem to each vendor. We spoke with either one individual or, if the initial contact did not sufficiently resolve our problem, a series of technicians. Our results are unavoidably anecdotal due to the small sample size but do accurately reflect our experience.

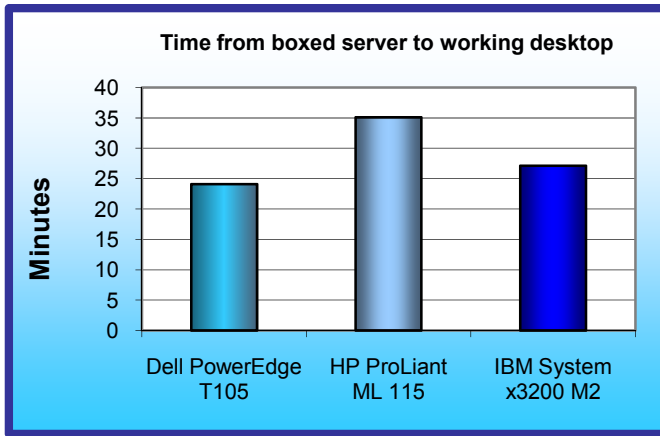


Figure 3: Time in minutes it took us to go from boxed servers to working desktop. Lower numbers are better.

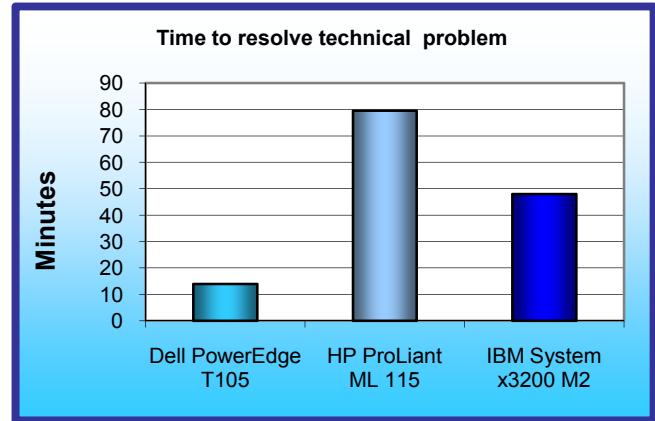


Figure 4: Time in minutes it took for the vendors' technical support to resolve a single problem. Lower numbers are better.

Test results

In this test, we timed the process of ordering the SBS system online, the wait between ordering and receiving the system, and the process of getting the system set up physically. We also measured the amount of time it took for the vendor's technical support team to resolve a sample issue.

Figure 5 provides specific metrics related to our ordering and waiting to receive the three test servers. Ordering the Dell PowerEdge T105 online took 12 minutes 40 seconds, 62.4 percent faster than the 33 minutes 42 seconds it took to order the HP ProLiant ML 115 and 50.5 percent faster than the 25 minutes 34 seconds it took to order the IBM System x3200 M2. Ordering the Dell PowerEdge T105 took only 30 steps, compared to 87 for the HP ProLiant ML 115 and 59 for the IBM System x3200 M2.

The order-to-arrival time for the three systems varied widely: the Dell PowerEdge T105 arrived 5 days after we placed our order, 61.5 percent faster than the 13 days for the HP ProLiant ML 115 and 76.2 percent faster than the 21 days for the IBM System x3200 M2.

	Dell PowerEdge T105	HP ProLiant ML 115	IBM System x3200 M2
Time it took us to order the server online (mm:ss)	12:40	33:42	25:34
Number of steps we took to order the server online	30	87	59
Number of days from our placing order to the server's arrival	5	13	21

Figure 5: Specific metrics related to our ordering and waiting to receive the three test servers. Lower numbers, representing shorter times and fewer steps, are better.

Figure 6 provides specific metrics related to our unboxing the three test servers and getting them to the point where they had working desktops. It took us a total of 24 minutes 6 seconds to go from a boxed server to one with a working desktop for the Dell PowerEdge T105, 31.4 percent faster than the 35 minutes 8 seconds it took for the HP ProLiant ML 115 and 11.1 percent faster than the 27 minutes 7 seconds it took for the IBM System x3200 M2. Physically setting up the Dell PowerEdge T105 took 7 steps, compared to 8 for both the HP ProLiant ML 115 and the IBM System x3200 M2.

	Dell PowerEdge T105	HP ProLiant ML 115	IBM System x3200 M2
Number of steps we took to physically set up the server	7	8	8
Time it took us to unbox and set up the server (mm:ss)	07:10	12:35	09:41
Time from powering the server on to having a working desktop	16:56	22:33	17:26
Total time it took us to go from a boxed server to one with a working desktop	24:06	35:08	27:07

Figure 6: Specific metrics related to our unboxing and getting the three test servers up and running. Lower numbers, representing shorter times and fewer steps, are better.

As we detail in the Test methodology section, we unplugged each system’s hard drive, to represent a cable coming loose, something that can easily happen during shipping. We then telephoned the vendor’s technical support for assistance in resolving the issue.

As Figure 7 shows, Dell technical support took 13 minutes 58 seconds to solve the problem, 82.4 percent faster than the 1 hour 19 minutes 33 seconds HP took and 70.9 percent faster than the 48 minutes 3 seconds IBM took.

We summarize our experience with the three vendors’ technical assistance providers as follows:

- Dell: One call resolved the issue. The support technician had us immediately check the BIOS to make sure the system “saw” the drive. He had us check the boot order, and then had us open the case to check if any connections had become loose during shipping.
- HP: We needed three calls to resolve the issue. The first two support technicians attributed the problem to the lack of an operating system and suggested reinstalling. The second technician suggested that setup failed to see the hard drive because setup needed to load additional hard disk controller drivers. The second technician sent us detailed instructions on how to slipstream those drivers onto a custom installation disk. The third support technician suggested we open the case and check the connections.
- IBM: We needed two calls to resolve the issue. The first support technician attributed the problem to the lack of an operating system and suggested we use the recovery CD to reinstall. The second support technician suggested we open the case and check the connections.

As we noted on the first page of this report, the times we report in this section represent our experience in presenting a single problem to each vendor. Our results are unavoidably anecdotal due to the small sample size but do accurately reflect our experience.

	Dell	HP	IBM
Time it took the vendor’s technical support to resolve the problem (hh:mm:ss)	00:13:58	01:19:33	00:48:03
Number of telephone calls it took the vendor’s technical support to resolve the problem	1	3	2

Figure 7: Time and number of telephone calls it took vendors’ technical support to resolve a single problem. Lower numbers, representing shorter times and fewer calls, are better.

Test methodology

This section details the methodologies we followed in testing the systems.

Ordering online

Measure the amount of time and number of steps it takes to place an order. Note: This test requires a stopwatch and a video camera.

1. Start the stopwatch and video camera.
2. Go to the vendor's Web site and configure the specific SBS system as agreed upon. Note the number of steps it takes to order the system.
3. Stop the stopwatch and video camera and note the time.

Waiting to receive

Measure the amount of time it takes for the SBS system to arrive.

1. Note the numbers of days from the time you place the order to the time the SBS system arrives.
2. Note all correspondence you receive from each vendor regarding the specific order you placed.

Setting up the system physically

Measure the amount of time it takes you to unbox the SBS system and physically connect it. Note: This test requires a stopwatch and a camera capable of taking video and still photographs.

1. Take a still picture of every box as it arrives from the vendor. Note the number of boxes.
2. Start the stopwatch and video camera, and start unboxing the SBS system.
3. Note the number of steps you take to physically connect each system, including connecting the following components:
 - AC power cable
 - Ethernet connection to network
 - keyboard
 - monitor
 - mouse
4. Stop the stopwatch and video camera when you have physically connected the system.

Getting assistance from technical support




Measure the amount of time it takes the technical support team to solve the issue.

Note: This test requires a stopwatch, a video camera, and a client PC.

1. Unplug the hard drive, and reboot the system.
2. Once the system reboots, start the stopwatch and video camera, and call tech support.
3. Describe the problem. Note any unusual issues that arise during the call.
4. Stop the stopwatch and video camera when the tech support call ends.
5. Repeat steps 2, 3, and 4 for subsequent tech support calls if necessary.

Appendix A. Test system configuration information

As per Dell's request, PT purchased three servers for this test. Figure 8 presents detailed configuration information for the systems.

Servers	Dell PowerEdge T105	HP ProLiant ML115 G5	IBM System x3200 M2
			
General			
Number of processor packages	1	1	1
Number of cores per processor package	2	2	2
Number of hardware threads per core	1	1	1
System power management policy	Always on	Always on	Always on
CPU			
Vendor	AMD	AMD	Intel
Name	Opteron 1222	Opteron 1222	Intel Xeon E3110
Stepping	3	3	6
Socket type	Socket AM2 (940)	Socket AM2 (940)	Socket 775 LGA
Core frequency (GHz)	3.0	3.0	3.0
Front-side bus frequency (MHz)	1,000	1,000	1,333
L1 cache	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)
L2 cache	2 MB (2 x 1 MB)	2 MB (2 x 1 MB)	6 MB (2 x 3 MB)
Platform			
Vendor	Dell	HP	IBM
Motherboard model number	0RR825	NVIDIA nForce	4367
Motherboard chipset	nForce Pro 2200	nForce 570 SLI	Intel 3200
Motherboard revision number	A4	A2	01
Motherboard serial number	CN7082185L50C8	USE834NDVN	K179088919W
BIOS name and version	Dell 1.2.1 (06/13/2008)	HP O18 (05/26/08)	IBM BIOS Version 1.34
BIOS settings	Default	Default	Default
Memory module(s)			
Vendor and model number	Hyundai Electronics HYMP564U72CP8-Y5	Samsung M3 91T6553EZ3-CF7	Hyundai Electronics HYMP564U72CP8-Y5
Type	PC2-5300	PC2-6400	PC2-5300
Speed (MHz)	667 MHz	800 MHz	667 MHz

Servers	Dell PowerEdge T105	HP ProLiant ML115 G5	IBM System x3200 M2
Speed in the system currently running @ (MHz)	667	800	667
Timing/latency (tCL-tRCD-iRP-tRASmin)	5-5-5-15	5-6-6-18	5-5-5-15
Size	1,024 MB	1,024 MB	1,024 MB
Number of RAM modules	2 x 512 MB	2 x 512 MB	2 x 512 MB
Chip organization	Double-sided	Double-sided	Double-sided
Channel	Dual	Dual	Dual
Hard disk			
Vendor and model number	Western Digital WD1601ABYS-18C0A0	HP GB0160EA	Western Digital WD1601ABYS-23C0A0
Number of disks in system	2	2	2
Size	160 GB	160 GB	160 GB
Buffer size	16 MB	16 GB	16 MB
RPM	7,200	7,200	7,200
Type	SATA	SATA	SATA
Controller	NVIDIA Corp nForce4 Serial ATA Controller	NVIDIA Corp MCP55 SATA Controller	Intel Corporation 82801IB/IR/IH
Controller driver	Dell 2.20.0.64 (02/14/2008)	NVIDIA Corporation 5.10.2600.998	Microsoft 5.2.3790.3959 (10/1/2002)
Operating system			
Name	Microsoft Windows Small Business Server 2003 R2 Standard Edition	Microsoft Windows Small Business Server 2003 R2 Standard Edition	Microsoft Windows Small Business Server 2003 R2 Standard Edition
Build number	2600	2600	2600
Service Pack	2	2	2
Microsoft Windows update date	NA	NA	NA
File system	NTFS	NTFS	NTFS
Kernel	ACPI Multiprocessor PC	ACPI Multiprocessor PC	ACPI Multiprocessor PC
Language	English	English	English
Microsoft DirectX version	10	10	10
Graphics			
Vendor and model number	ATI ES1000	Matrox G200e	ATI ES1000
Chipset	ATI ES1000	Matrox G200	ATI ES1000
BIOS version	BK-ATI VER008.005.031.000	3.8.033 SL	BK-ATI VER008.005.031.000
Type	Integrated	Integrated	Integrated
Memory size	32 MB	32 MB	32 MB
Resolution	1,280 x 1,024	1,280 x 1,024	1,280 x 1,024
Driver	ATI 8.240.50.1000 (05/02/2007)	Matrox 5.96.6.6	ATI 8.24.3.0 (04/05/2006)

Servers	Dell PowerEdge T105	HP ProLiant ML115 G5	IBM System x3200 M2
Network card/subsystem			
Vendor and model number	Broadcom NetXtreme BCM5722 Gigabit Ethernet	HP NC105i PCIe Gigabit Server Adapter	Broadcom NetXtreme BCM5722 Gigabit Ethernet
Type	Integrated	Integrated	Integrated
Driver	Broadcom 10.62.1.2 (11/30/2007)	Hewlett-Packard Company 10.78.0.0 (03/19/2008)	Broadcom 10.62.0.0 (09/17/2007)
Additional network adapter	Broadcom NetXtreme BCM5722 Gigabit Ethernet	HP NC110T PCIe Gigabit Server Adapter	NetXtreme BCM5704 Dual Port Ethernet Adapter- PCI-X
Driver	Broadcom 10.62.1.2 (11/30/2007)	Hewlett-Packard Company 9.12.13.0 (12/12/2007)	Broadcom 10.62.0.0 (09/17/2007)
Optical drive			
Vendor and model number	HL-DT-AT DH10N	HL-DT-AT GDRH20N	TSST TS-H353B
Type	DVD-ROM	DVD-ROM	DVD-ROM
Interface	IDE	SATA	SATA
Dual/single layer	Single layer	Single layer	Single layer
USB ports			
Number of ports	4	6	6
Type of ports (USB 1.1, USB 2.0)	USB 2.0	USB 2.0	USB 2.0

Figure 8: Detailed system configuration information for the test servers.



Principled Technologies, Inc.
1007 Slater Road, Suite 250
Durham, NC 27703
www.principledtechnologies.com
info@principledtechnologies.com

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