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GET TECHNOLOGY RIGHT



HARDWARE

HP's 2U Edges Out Competitors

ProLiant DL380's manageability beats Gateway and MPC BY OLIVER RIST

THEY MAY NOT be sexy, but today's 2U rack servers may be the most flexible machines you can slap in a rack. They can be had at a much lower price than more richly configured 4U and larger machines, yet typically they have more expansion and feature flexibility than 1U pizza machines and blade servers.

Unfortunately, this same out-of-box flexibility often makes one 2U server look a whole lot like any other. Should server administrators simply look for the lowest price tag?

To find out, I took three similarly configured 2U rack servers from three competing vendors — Gateway, HP, and MPC — and tested them at the University of Hawaii's Advanced Network Computing Laboratory. What I found was that despite similar hardware specifications, you can find quite a bit of



DANA EDMUNDS

differentiation not only in bundled management software, but also in supporting custom hardware engineering.

All three of my 2U servers sported dual Intel Xeon CPUs, at least 1GB of RAM, and Ultra320 SCSI hard drives. The priciest machine in the roundup, the Gateway

975, won the performance challenge, due no doubt to its faster CPUs and larger amount of RAM. Performance differences among the boxes weren't significant.

Bare-bones Boxes

As soon as I removed the Gateway 975 and MPC 2610 machines from their cartons, I

realized I was looking at price-conscious products. For one thing, they look like basically the same machine. Both boxes were housed in identical chassis OEMed from Intel, but their internals were configured differently.

The Gateway 975 led our threesome in the muscle department, arriving with

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two 3.06GHz Intel Xeon processors, 2GB of PC2100 RAM, and four 73GB hard drives in a RAID 5 configuration. Dual embedded 10/100/1000 NICs provided network connectivity, and a redundant power supply and an internal 20/40GB SCSI DDS-4 DAT drive ensured a basic level of redundancy and reliability.

The MPC NetFrame 2610 was more slimly configured, with dual 2.0GHz Xeons and 1GB worth of ECC RAM comprising the heart of the system. Dual 36GB hard disks were connected to an embedded Ultra320 RAID controller. Although the system uses the same 10/100/1000 embedded Pro/1000 LAN links, this box had neither an internal tape drive nor a secondary power supply.

The Gateway and MPC servers both shipped without an installed operating system. And whereas HP provided a guided SmartStart-based OS install routine and a server-management package, Gateway and MPC simply bundled a Windows 2000 Advanced Server installation disc and a poster of quick-start instructions.

The Gateway 975 also came with Gateway Server Manager 1.2, which aids in asset management and monitoring after OS setup. As an ongoing management tool, however, Gateway Server Manager is crippled by an inability to set alerts based on thresholds.

Nevertheless, I had no trouble installing Windows 2000 Advanced Server on both machines. I even wiped

the Gateway clean and ran Red Hat Linux 8 instead, again with no trouble. So although the Gateway and MPC units may lack proprietary hardware engineering geared towards management and monitoring, their use of standard, off-the-shelf parts can actually ease configuration hurdles in some situations.

2U Cadillac

Next to the Spartan Gateway and MPC machines, HP's ProLiant DL380 G3 looked like a luxury sedan. The DL380 G3 is typical of the ProLiant line's detail-oriented engineering, combining a feature-rich 2U chassis, well-chosen hardware components, and flexible management software.

Our DL380 came with a no-tool chassis and five

hot-swappable fans (standard); it can be upgraded to eight fans with an optional expansion kit. Additionally, there's space for two hot-swappable power supplies, though these aren't part of the standard configuration.

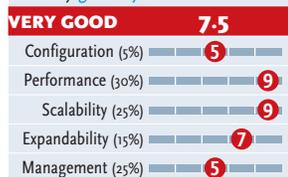
Dual 2.8GHz Xeon CPUs, each containing 512K of L3 cache, provide the muscle on this machine. As with the HP ProLiant DL560 I reviewed recently (see "Performance and Polish," May 5, page 53), the DL380 G3 uses a third-party CPU chip set, ServerWorks' Grand Champion LE. Engineered for single- to four-way Xeon systems, this silicon adds an integrated 400MHz front-side bus, can take up to 16GB of interleaved RAM, and has an I/O bridging interface capable of 3.2GB-per-second transfer rates.

My DL380 came with a full 1GB of ECC-capable RAM, expandable to 6GB, and was backed by dual 36GB RAID 5 striped hard disks. The system can support up to 880.8GB of hard disk space by using six 146.8GB hot-swappable hard disks in RAID 5. Dual LAN links were useful though only the optional link was Gigabit capable; the embedded interface is straight 10/100.

In a change from the previous DL380 model (the G2), my G3 contained only a single Smart Array 5i RAID controller with 64MB of on-board cache. The G2 came with an additional PCI-based Smart Array 5302. A secondary RAID controller is available on the G3 only as a specially installed option. Usage-based testing, however, didn't reveal any

Gateway 975

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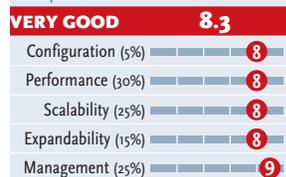
COST: Base price, \$2,199; as tested, \$8,821

OPERATING SYSTEMS: Windows 2000 Server, Windows Server 2003

BOTTOM LINE: While not as polished as the DL380, this server packs an awful lot of punch. Its bundled management software is a step behind HP's, but for sys admins who simply want power without proprietary software hooks, this machine is worth considering.

HP ProLiant DL380 G3

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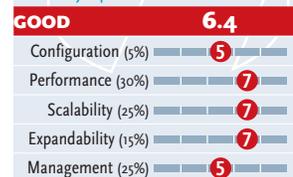
COST: Base price, \$2,588; as tested, \$6,215

OPERATING SYSTEMS: Windows NT, Windows 2000 Server, Windows Server 2003, Novell Netware, Red Hat Linux, SuSE Linux, Caldera OpenUnix

BOTTOM LINE: A carefully engineered machine in a field dominated by cookie-cutter competition, the DL380 is widely expandable via a large number of HP ProLiant option products, and it comes bundled with a free and surprisingly useful management suite.

MPC NetFrame 2610

infoworld.com/reviews/MPC_buympc.com



COST: Base price, \$2,658; as tested, \$5,689

OPERATING SYSTEMS: Windows 2000 Server, Windows 2000 Advanced Server

BOTTOM LINE: This is basically the same machine as the Gateway 975, though the Gateway came much more strongly configured than the MPC model. This shouldn't deter potential buyers, however, as both these machines are completely customizable prior to purchase.

disk-based I/O bottlenecks, so the single Smart Array seems to be doing the job.

Special management hardware is a ProLiant hallmark, and the DL380 G3 retains its internal Remote Insight Lights-Out card, which came preconfigured on our machine. With this device, administrators can access an embedded Web server remotely and perform basic management tasks. I recommend using the Lights-Out card in conjunction with HP's Insight Manager 7 software, which allows the management of multiple servers and their Lights-Out cards from a centralized console.

A full installation of Insight Manager would require significant system resources in the forms of a personal Web server and an MSDE database installation, but it's well worth the effort. Insight Manager is

what makes the DL380 stand out from the rest of the 2U pack. Of course, it provides the most benefit when used in an all-ProLiant environment.

Built around SNMP and DMI (Desktop Management Interface) management layers, the software automatically gathers ProLiant server information through SNMP and DMI agents preloaded in the product line. Other servers can be found this way as well, but you'll need to install your own SNMP and DMI agents.

Insight Manager is a valuable monitoring, alerting, and asset management tool. Best of all, it comes free with every HP ProLiant. Insight Manager is still a step behind third-party server management tools, but it's useful even for medium-sized installations.

Thanks to HP engineering, the DL380 is far easier to

expand than the Gateway and MPC systems. Although the Gateway and MPC should be able to use any Intel-compatible, third-party expansion product, there's no telling if this is true for any single product until you try it. HP's DL380, on the other hand, uses more expensive and proprietary expansion modules built specifically for the ProLiant line. These might be more expensive than general third-party products, but they cover the gamut of expansion possibilities, and you know they're going to work. When upgrading a production server, a smooth upgrade process is worth its weight in gold.

Which Way to Go?

To get a feel for their performance capabilities, I ran increasing numbers of script-based HTTP and FTP

sessions through these machines using a Spirent Avalanche performance analyzer. The results matched up with configuration differences, indicating that, when it comes to performance at least, these systems are essentially created equal. The HP edged out the MPC machine by over 200 sessions before showing signs of stress, but Gateway's dual 3.06GHz CPUs and its 2GB of RAM were enough to keep it 400 sessions ahead of the HP before it began to sweat.

All considered, I would opt for the ProLiant DL380 G3. Despite its extras, the DL380 is price-competitive. And when you factor in the bundled management software and the management- and expansion-oriented custom engineering, the HP's price point is even more impressive.

2U Servers Compared

Gateway and MPC systems support more RAM and hard disk space, but the HP unit offers more hot-swappable components, better management, and easier expandability.

	MAX NUMBER OF CPUS AND TYPE, CHIPSET	RAM (STANDARD/MAX)	MAX. INTERNAL HARD DISK STORAGE	INSTALLED RAID CONTROLLER	PCI-X EXPANSION SLOTS	NETWORK INTERFACES	HOT-SWAPPABLE SUBSYSTEMS	REDUNDANT MODULES	BUNDLED MANAGEMENT SOFTWARE
Gateway 975	2 Intel Xeon, Intel E7501	1GB/12GB	1022GB Wide Ultra320	LSI MegaRAID single channel	6 (3 full, 3 half height)	Integrated dual Intel 82546EB Gigabit NICs	Hard drives	Fans, power supplies (optional)	Gateway Server Manager 1.2
HP ProLiant DL380 G3	2 Intel Xeon, ServerWorks Grand Champion LE	512MB/6GB	880.8GB Wide Ultra320	Smart Array 5i dual channel	3	Integrated dual Compaq NC7781 PCI-X 10/100/1000	Fans, power supplies, hard drives	Power supplies (optional), NICs, cooling zones	HP Insight Manager 7, SmartStart
MPC NetFrame 2610	2 Intel Xeon, Intel E7501	1GB/12GB	1022GB Wide Ultra320	Integrated dual channel	6 (3 full, 3 half height)	Integrated dual Intel 82546EB Gigabit NICs	Hard drives	Fans, power supplies (optional)	none



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