HP ProLiant DL585 G5 earns #1 virtualization performance record on VMmark Benchmark

HP Leadership

»The HP ProLiant DL585 G5 is a highly manageable, rack optimized, four-socket server designed for maximum performance in an industry standard architecture.
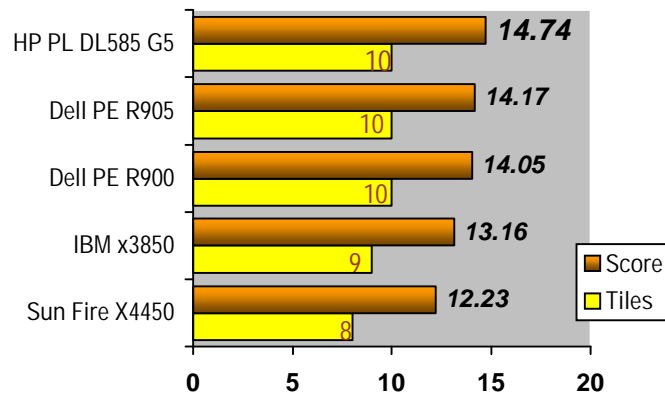
Customer Value

What are the benefits of using HP ProLiant servers and VMmark?

HP ProLiant servers and VMware provide organizations with a robust and reliable platform for virtualization

The VMmark benchmark measures the key performance characteristics for virtual machines. The benchmark represents an end user environment running multiple workloads, is platform neutral, and provides a methodical way to measure scalability so that the same benchmark can be used across different hardware platforms.[1]

The HP ProLiant DL585 G5 offers up to a 20% performance advantage when compared to other four-socket, 16-core competitors utilizing VMware. With the VMmark benchmark result, customers can compare performance and scalability of different virtualization platforms, make appropriate hardware choices and monitor virtual machine performance on an ongoing basis. And they can be reassured the HP ProLiant DL585 G5 IS the appropriate choice.

Key Points

The HP ProLiant DL585 G5 is the highest performing server on the VMmark benchmark with a VMmark score of 14.74@10 tiles. This result defeated competitors Dell, IBM, and Sun.

Figure 1. VMmark results for four-socket, 16-core servers.

The HP ProLiant DL585 G5 defeats other 16-core competitors by up to 20% with a two-tile advantage on the virtualization benchmark!

In addition, HP posted the industry's first 16-core results with the ProLiant DL580 G5 and BL680 G5 servers and so far, the ProLiant BL680 G5 is the only server blade result on the VMmark benchmark.

Technology for better business outcomes.

1 Excerpted from http://www.vmware.com/products/vmmark/faq.html

Table 1. VMmark configuration for system results.

System Description	VMmark Version & Score	Processors	Published Date
HP ProLiant DL585 G5 Quad-Core AMD Opteron 8360 SE 2.5GHz 64GB RAM ; 4 sockets/16 cores/16 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 1	14.74@10 tiles	08/04/08
Dell PowerEdge R905 Quad-Core AMD Opteron 8360 SE 2.5GHz 64GB (16 x 4GB RAM); 4 sockets/16 cores/16 total threads	VMmark v1.0 VMware ESX v3.5.0 Update 1	14.17@10 tiles	05/06/08
Dell PowerEdge R900 Quad-Core Intel Xeon x750 2.93GHz 64GB (16 x 4GB RAM); 4 sockets/16 cores/16 total threads	VMmark v1.0 VMware ESX v3.5.0 Update 1	14.05@10 tiles	07/08/08
IBM System x3850 M2 Quad-Core Intel Xeon x750 2.93GHz 64GB (32 x 2GB RAM); 4 sockets/16 cores/16 total threads	VMmark v1.0 VMware ESX v3.5.0	13.16@9 tiles	03/26/08
Sun Fire X4450 Quad-Core Intel Xeon x750 2.93GHz 64GB (16 x 4GB RAM); 4 sockets/16 cores/16 total threads	VMmark v1.0 VMware ESX v3.5.0	12.23 @ 8 tiles	04/25/08

Test results as of 8-01-08. For more details, please visit: http://www.vmware.com/products/vmmark/results.html

What is the VMmark Benchmark?

VMmark is the first benchmark that was designed specifically to quantify and measure the performance of virtualized environments. It features a novel tile-based scheme for measuring the scalability of consolidated workloads and provides a consistent methodology that captures both the overall scalability and individual application performance.

What VMmark measures

The VMmark benchmark is intended to measure the performance of virtualized servers on a system under test (SUT) so that customers can compare the capabilities of different platforms for virtualization. VMmark represents the performance of virtual machines within a server running VMware ESX and a set combination of operating systems and specially tuned applications reflecting a typical datacenter environment. VMmark uses a collection of 'sub-tests' derived from commonly used load-generation tools as well as from benchmarks developed by the Standard Performance Evaluation Corporation (SPEC®). VMmark is an open standards effort that is agnostic toward hardware platforms and different virtualization software systems. VMmark uses workloads that represent common applications in datacenters. It is important to note that VMmark is designed to benchmark the performance of the virtualization software and the hardware, and is not designed as a benchmark of any other software component.

Tile – the unit of work

VMmark uses sets of 6 virtual machines to run the workloads, and refers to one set of 6 virtual machines with workloads as a 'tile.' The two most important numbers in the results are the performance of each individual workload and the total number of tiles that a system can run. The total number of tiles that a system can run gives an estimate of the system's capacity for consolidation.

VMmark client systems

Client systems work in conjunction with the VMmark test configurations to drive the workloads on the tile. Each tile requires a client system with specific configuration rules and software. When more than one tile is run, one client is set up as the 'primary client.

This table shows the workloads and applications being run with each VMmark tile. Note that the standby server virtual machine does not run an application as it functions to answer a heartbeat during the test run; however, it does run an operating system and is configured as 1 CPU with a specified amount of memory and disk space.

Table 2. VMmark workload summary per tile

Workload	Application	Virtual Machine Platform
Mail server	Exchange 2003	Windows 2003, 2 CPU, 1GB RAM, 24GB disk, 32-bit
Java server	SPECjbb2005-based	Windows 2003, 2 CPU, 1GB RAM, 8GB disk, 64-bit
Web server	SPECweb2005-based	SLES 10, 2 CPU, 512MB RAM, 8GB disk, 64-bit
Database server	MySQL	SLES 10, 2 CPU, 2GB RAM, 10GB disk, 64-bit
File server	dbench	SLES 10, 1 CPU, 256MB RAM, 8GB disk, 32-bit
Standby server	None	Windows 2003, 1 CPU, 256MB RAM, 4GB disk, 32-bit

The ProLiant Advantage

HP ProLiant DL585 G5

The HP ProLiant DL585 G5 is a highly manageable, rack optimized, four-socket server designed for maximum performance in an industry standard architecture. With up to four Quad-Core AMD Opteron processors and a large memory footprint, the DL585 G5 delivers the performance and performance-per-watt needed for compute-hungry database, virtualization, and consolidation applications. Its industry leading remote management functions help reduce costs and improve the ability to respond quickly to business changes.

HP ProLiant servers, BladeSystem, and VMmark

Partnership between HP and VMware

HP is proud that the HP ProLiant DL580 server platform was chosen to be the reference system in the development of the VMmark benchmark. More than a dozen ProLiant servers are certified for VMware. HP can help your business plan, implement, and operate a virtual infrastructure with VMware. HP qualifies a wide range of ProLiant servers, StorageWorks storage, and integrated HP management software. For a quick overview, download our Solutions Guide (pdf), or visit www.hp.com/go/vmware for more information. HP offers a total of 41 VMware ESX Server 3.0 certified servers, more than IBM, Dell, and Sun.[2]

HP market leadership[3]

HP ProLiant servers and server blades are a vital part of the HP success story. For the 47th consecutive quarter, HP ProLiant is the x86 server market share leader in both factory revenue and units, shipping 1 out of every 3 servers in this market.[4]

- HP's x86 revenue share was 11.7 points higher than its nearest competitor, Dell.
- HP remains the leading provider of AMD Opteron processor-based servers and server blades, with a 35.8% of factory revenue share.

For the 24th consecutive quarter, 6 years, HP is the #1 vendor in worldwide server shipments. HP shipped 1 out of every 3 servers worldwide as HP captured 33.6 percent total unit shipment share.

- HP shipped over 165,000 more servers than #2 Dell.
- HP shipped over 400,000 more servers than #3 IBM and 8.1 times as many as #4 Sun.

HP proven performance

Proven performance is part of the reason that HP is #1 in server shipments. HP has posted hundreds of benchmark results on the most commonly used benchmarks on hundreds of ProLiant servers and blades, helping customer to identify reasons to be confident in HP.

Appendix

The reference system used for normalizing all benchmark results was the HP ProLiant DL580 G2 running VMware's ESX Server 3.0.1, build 32039 (with patch ESX-6075798). The system contained two 2.2-GHz single-core Intel Xeon CPUs with hyper-threading support, and was configured with 16GB of memory. Storage was provided by an EMC Clariion CX500 disk array connected via a 1Gb/s fiber channel link and containing five 10,000 RPM disks configured in RAID5. The load-generating client was an HP ProLiant DL385 with two 2.6 GHz single-core AMD Opteron CPUs and 4 GB of memory running 32-bit Microsoft Windows Server 2003 operating system with Service Pack 2. The client and the reference system were connected through a single 1 Gigabit Ethernet link.

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2 Same cross-generational count used for competitor platforms. For the most up to date list visit: www.hp.com/go/vmware and http://www.vmware.com/pdf/vi3_systems_guide.pdf. The VMware systems guide was last updated October 29, 2007.
3 Source: IDC Worldwide Quarterly Server Tracker May 2008
4 Includes Compaq ProLiant from Q196 through Q202 and HP ProLiant from Q302 through Q306.

For more information

For more information on VMware for HP ProLiant servers:
http://h18004.www1.hp.com/products/servers/vmware/index.html

HP VMware information:
http://www.hp.com/go/vmware

Home page for VMware's VMmark:
http://www.vmware.com/products/vmmark/overview.html

VMmark FAQ:
http://www.vmware.com/products/vmmark/faq.html

VMmark Guide:
http://www.vmware.com/vmtn/resources/573

Full Disclosure Reports for the HP ProLiant DL585 G5 and the other core results posted as of date of publication: http://www.vmware.com/products/vmmark/results.html

An Overview of the VMmark benchmark on HP ProLiant servers and server blades:
ftp://ftp.compaq.com/pub/products/servers/benchmarks/VMmark_Overview.pdf