



# HP ProLiant BL680c G5 takes #1 server blade virtualization performance record on VMmark Benchmark



## HP Leadership



»The HP ProLiant BL680c G5 server blade, delivers no-compromise performance and expansion in the first Quad-Core 4P BladeSystem server.

## Customer Value

What are the customer benefits of using HP ProLiant server blades and VMmark?

HP ProLiant server blades 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.<sup>1</sup>

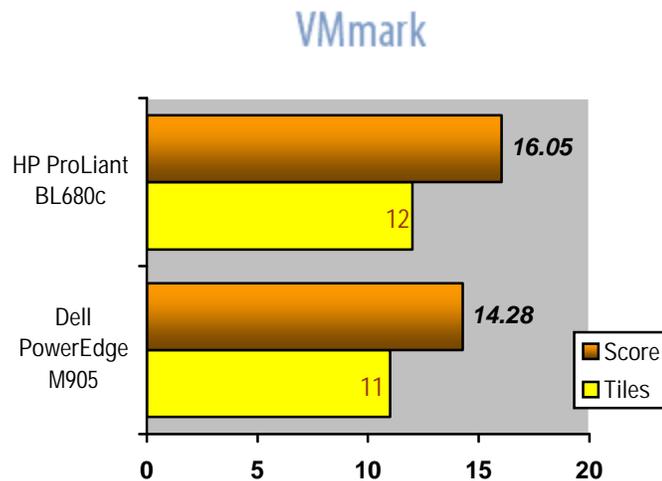
The HP ProLiant BladeSystems platform is designed to share components between enclosures, so customers can run their same business applications, trust the same HP servers and storage components, and connect to their same networks.

For this benchmark, the HP ProLiant BL680c G5 offers up to an 12% performance advantage when compared to its blade competitor 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. With its variety of BladeSystems servers and components, HP offers customers the BEST CHOICE.

## Key Points

- The HP ProLiant BL680c is the highest performing 16-core server AND blade server on the VMmark benchmark with a VMmark score of 16.05@12 tiles.
- This result defeated the Dell PowerEdge M905 server blade.
- Dell does not offer an Intel four-socket blade server. HP provides a variety of blade server platforms

Figure 1. VMmark results for server blades.



The HP ProLiant BL680c G5 outperformed the Dell blade competitor by up to 12% with a one-tile advantage on the virtualization benchmark!



## Technology for better business outcomes.

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

Table 1. VMmark configuration for system results.

System Description	VMmark Version & Score	Processors	Publish Date
HP ProLiant BL680c G5 blade server Six-Core Intel Xeon E7450 2.4GHz 128GB (16 x 8GB) RAM; 4 sockets/6 cores per socket/24 cores/24 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 2	16.05@12 tiles	09/15/08
Dell PowerEdge R905 Quad-Core AMD Opteron 8356 2.3GHz 64GB (16 x 4GB RAM); 4 sockets/4 cores per socket/16 cores/16 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 2	14.28@11 tiles	08/12/08

Test results as of 9-11-08. 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.'

# The ProLiant Advantage

## HP ProLiant BL680c G5

Designed to keep pace with strenuous computing demands, the HP ProLiant BL680c G5 server blade is equipped with outstanding 4P processing power and expansion capabilities, enterprise-class availability features, and industry-leading management tools that make it easy to deploy and maintain.

With up to four Intel Xeon 7300 or 7400 Series processors, 24 processor cores, 128GB of fully buffered memory, two bays supporting hot-plug serial attached SCSI (SAS) and serial ATA (SATA) hard drives, integrated HP Smart Array RAID controller, four embedded Gigabit Ethernet adapters, and three I/O expansion slots, the HP ProLiant BL680c G5 delivers the density customers want with the performance they need to handle the most demanding enterprise class applications.

## HP ProLiant servers, BladeSystem, and VMmark

### *Partnership between HP and VMware*

HP is proud that the HP ProLiant DL580 G2 server platform was chosen to be the reference system in the development of the VMmark benchmark. Now, 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](http://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.<sup>2</sup>

---

<sup>2</sup> Same cross-generational count used for competitor platforms. For the most up to date list visit: [www.hp.com/go/vmware](http://www.hp.com/go/vmware) and [http://www.vmware.com/pdf/vi3\\_systems\\_guide.pdf](http://www.vmware.com/pdf/vi3_systems_guide.pdf). The VMware systems guide was last updated October 29, 2007.

## *HP market leadership*<sup>3</sup>

HP ProLiant servers and server blades are a vital part of the HP success story.

For the 48th 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.<sup>4</sup>

- HP's x86 revenue share was 9.2 points higher than its nearest competitor, Dell.

For the 25th consecutive quarter, more than 6 years, HP is the #1 vendor in worldwide server shipments. HP shipped 1 out of every 3 servers worldwide as HP captured 33.1 percent total unit shipment share.

- HP shipped over 133,000 more servers than #2 Dell.
- HP shipped over 410,000 more servers than #3 IBM and 7.4 times as many as #4 Sun.

HP extended the lead in the blade server market, with a 53.3% revenue share, and a 50.3% units, growing faster than the market in both revenue and units.

- HP grew blade revenue 59.2%, year over year, gaining 6.2 points of revenue market share while IBM lost 7.6 points of revenue share to fall to 24.8%, more than 28 points behind HP.
- HP grew blade units 65.1%, year over year, gaining 4.2 points of unit market share while IBM lost 5.3 points of share to fall to 27.7%, more than 22 points behind HP.
- Dell, a distant third in blade units, 9.1%, and revenue, 8.4%, lost more than 40 points behind HP in both.

## *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.

---

<sup>3</sup> Source: IDC Worldwide Quarterly Server Tracker August 2008

<sup>4</sup> Includes Compaq ProLiant from Q196 through Q202 and HP ProLiant from Q302 through Q306.

## For more information

HP ProLiant BL680c G5 server blade: [www.hp.com/servers/proliant/bl680c](http://www.hp.com/servers/proliant/bl680c)

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 BL680c 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](ftp://ftp.compaq.com/pub/products/servers/benchmarks/VMmark_Overview.pdf)

© 2008 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. AMD-8111, AMD-8131, AMD-8132, and AMD-8151 are trademarks of Advanced Micro Devices, Inc. HyperTransport is a licensed trademark of the HyperTransport Technology Consortium. Windows is a registered trademark of Microsoft Corporation in the U.S. and other jurisdictions. Intel is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and other countries. Xeon is a trademark or registered trademark of Intel Corporation in the U.S. and other countries and is used under license. Linux is a U.S. registered trademark of Linus Torvalds. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation.

For information about VMmark and the rules regarding its usage visit [www.vmware.com/go/vmmark](http://www.vmware.com/go/vmmark). VMware® VMmark™ is a product of VMware, Inc. VMmark utilizes SPECjbb2005® and SPECweb2005®, which are available from the Standard Performance Evaluation Corporation (SPEC). The competitive benchmark results stated herein reflect results published on [www.vmware.com](http://www.vmware.com) as of the dates listed.

September 2008

# Appendix

The reference system used for normalizing all benchmark results was the HP ProLiant BL680c G5 running VMware's ESX Server 3.5.0, build 110268. The system contained four 2.4GHz Six-Core Intel Xeon E7450 CPUs and was configured with 128GB (16 x8GB) total memory. Storage was provided by HP StorageWorks MSA 2000, each with 12 x 146 x 15K drives. The load-generating clients were 12 HP ProLiant DL360 G5 servers with 2.6GHz Quad-Core Intel Xeon CPUs and 2GB of memory running Microsoft Windows Server 2003 operating system with Service Pack 2.