HP ProLiant servers earn best overall virtual performance on 2P VMmark benchmark

ProLiant DL385 G5p, BL495c bring in highest results

HP Leadership

»The NEW HP ProLiant BL495c G5 is an innovative class of high-performance blade optimized for virtualization. With technology such as HP Virtual Connect Flex-10 and AMD™ Rapid Virtualization Indexing, the ProLiant BL495c G5 is optimized for hosting virtual machines.

»The NEW HP ProLiant DL385 G5p rack server is designed with virtualization in mind, yet flexible to support any business need. It offers Quad-Core AMD Opteron processors with up to 6MB L3 Cache, doubles the features of the ProLiant DL385 G5, and provides integrated virtualization technology support via USB.

Customer Value

What are the customer benefits of using the HP ProLiant 2P servers as a virtualization platform?

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

Because the ProLiant DL385 G5p is designed with virtualization workloads in mind with features such as four integrated NICs and expanded memory capabilities, it is no wonder its latest VMmark benchmark results showed the ultimate in 2P virtualization performance.

The ProLiant BL495c G5 eliminates the performance bottlenecks of a virtual machine host. Engineered with more memory and I/O than any other two-processor server blade, this world's first virtualization blade maximizes the number and performance of VMs that customers can deploy per blade. This means customers can add more VMs to their network without adding additional IT staff, and can get more bang for their buck out of expensive hypervisor licenses.

In addition, HP provides NEW Dynamic Power Capping that enables customers to limit the power consumption of the blade enclosure by setting an enclosure-wide Dynamic Power Cap, thus saving customers huge costs in power and cooling. And with the NEW Virtual Connect Flex-10 Ethernet technology utilized on the ProLiant BL495c G5, customers can enjoy increased performance, infrastructure cost savings, and power savings.

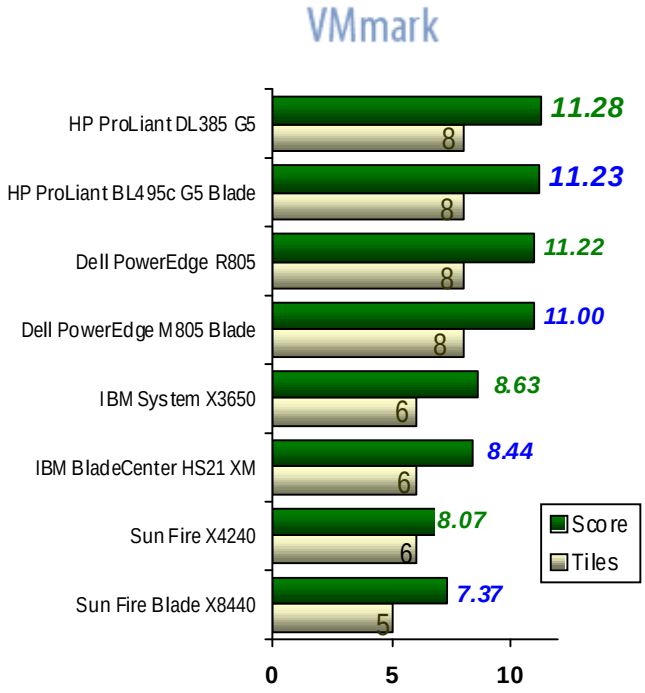
For anyone who needs fast-to-deploy virtualization for server blades, the VMmark benchmark shows that the HP ProLiant 2P servers are the BEST CHOICE.

Key Points

- The HP ProLiant DL385 G5p delivers the best 2P performance overall for virtualization with its latest record of 11.28 @ 8 tiles.
- The HP ProLiant BL495c G5 is, virtually, the best 2P blade with a result of 11.23 @ 8 tiles.
- HP ProLiant servers extend the savings from virtualization to a lower ongoing cost of ownership via HP Thermal Logic Technology.
- This result defeated the Dell, IBM, and Sun competitors.

For this benchmark, the HP ProLiant DL385 G5p offers up to a 39.7% performance advantage when compared to its competitors utilizing VMware. The HP ProLiant BL495c G5 offers up to a 52.3% performance advantage when compared to other blade competitors running the VMmark Benchmark.

Figure 1. VMmark results for 2P servers.



Test results as of 12-30-08.

The ProLiant Advantage

HP ProLiant BL495c G5 server blade

With more DIMMs (16) than any other half-height blade in the industry and Quad-Core AMD Opteron processors with Rapid Virtualization Indexing, the HP ProLiant BL495c took the #1 2P blade performance leadership on the VMmark Benchmark with a score of 11.23 @ 8 tiles. The server ran 48 virtual machines running web server, database, Java server, mail server, and file server workloads, which are the workloads IT organizations are most likely to virtualize. Optimized for virtualization, the HP ProLiant BL495c G5 blade maximizes the number and performance of VMs that you can deploy per blade – up to 52.3% better with a three tile advantage over other blade competitors on the VMmark Benchmark!

The HP ProLiant BL495c G5 server blade delivers unmatched compute performance and expandability, industry-leading management tools, and the latest technologies for dense compute environments. Its benefits include:

Deploy more VMs

- More DIMMs (16) than any other half-height blade in the industry, which means deploying more VMs at a lower cost
- Quad-Core AMD Opteron processors with AMD Virtualization™ (AMD-V™) technology with Rapid Virtualization Indexing

Get more I/O

- Embedded Dual Port Flex-10 10Gb Ethernet Adapter
- Supports up to 24 FlexNICs per blade

Reduce power usage

- Solid State Drive options that use up to 1/10th the power of standard hard drives
- High efficiency components, such as switching voltage regulators

For this benchmark, the system tested was the HP ProLiant BL495c G5 running VMware's ESX Server 3.5.0, Update 3. The system contained two 2.7GHz Quad-Core AMD Opteron processors Model 2384 and was configured with 64GB (8 x 8GB) total memory. Storage was provided by HP StorageWorks MSA 1000. The load-generating clients were 8 HP ProLiant DL360 G5 servers with 2.83GHz Quad-Core Intel Xeon CPUs and 2GB of memory running Microsoft Windows Server 2003 operating system with Service Pack 2.

HP ProLiant DL385 G5p rack server

Known as the "versatile, dependable workhorse," the ProLiant DL385 G5p maintains its dominant share in the AMD Opteron 2U, 2P market with its innovative features and key options that allow for greater system scalability to support more users and bigger applications all on virtualization platforms. For this benchmark, the HP ProLiant DL385 G5p offers up to a 39.7% performance advantage when compared to its competitors utilizing VMware. The server also ran 48 virtual machines running web server, database, Java server, mail server, and file server workloads.

The new HP ProLiant DL385 G5p server offers twice the memory, double the NICs, and up to 8 more SFF drives than its previous generation. Powered by two Quad-Core AMD Opteron 2300 Series Processors with 6MB L3 cache, this server is the right fit for virtual perfection because it allows customers of all sizes, from a small business to a large enterprise, to deploy more virtual machines with confidence.

Key benefits include:

- Quad-Core AMD Opteron performance for demanding scale-out applications and virtualization projects
- Ideal for virtualization with up to 16 DIMMs and 4 NICs
- Industry-leading management that enables powerful administration
- Engineered for reliability and ease of ownership

For this benchmark, the reference system used was the HP ProLiant DL385 G5p running VMware's ESX Server 3.5.0, Update 3. The system contained two 2.7GHz Quad-Core AMD Opteron processors Model 2384 and was configured with 64GB (8 x 8GB) total memory. Storage was provided by HP StorageWorks MSA 1000.

HP Thermal Logic Technology

HP offers HP Thermal Logic Technology, a portfolio of embedded technologies, for an energy-efficient data center to enable customers to:

- REDUCE total energy consumption.
- RECLAIM trapped data center or power and cooling resources without sacrificing performance with HP ProLiant servers using HP Dynamic Power Saving.
  - HP Dynamic Power Saving – Only HP can provide the opportunity with this unique technology solution to triple data center capacity
- EXTEND the life of the data center.

Dynamic Power Capping only from HP

Exclusively on ProLiant servers, customers enjoy HP Dynamic Power Capping that enables customers to limit the power consumption of the enclosure by setting an enclosure Dynamic Power Cap within the Onboard Administrator. This will optimize the performance of the servers while ensuring that the enclosure stays below the Dynamic Power Cap value. Individual server caps are set and managed by the Onboard Administrator, providing power to those servers that need it and lowering power for those that don't, but making sure the aggregate load stays below the enclosure cap.

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.

Table 1. VMmark configuration for system results.

System Description	VMmark Version & Score	Processors	Publish Date
HP ProLiant DL385 G5p Quad-Core AMD Opteron 2384 2.7GHz 64GB (8 x 8GB) RAM; 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 3	11.28 @ 8 tiles	12/30/08
HP ProLiant BL495c G5 Quad-Core AMD Opteron processor Model 2384 2.7GHz 64GB (8 x 8GB) RAM; 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 3	11.23 @ 8 tiles	12/30/08
Dell PowerEdge R805 Quad-Core AMD Opteron processor Model 2384 2.7GHz 64GB (8 x 8GB) RAM; 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 3	11.22 @ 8 tiles	11/12/08
Dell PowerEdge M805 blade Quad-Core AMD Opteron processor Model 2384 2.7GHz 64GB (8 x 8GB) RAM; 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 3	11.00 @ 8 tiles	11/17/08
IBM System x3650 Quad-Core Intel Xeon X5460 3.16GHz 32GB RAM 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 1	8.63 @ 6 tiles	09/02/08
IBM BladeCenter HS21 XM Quad-Core Intel Xeon X5450 3.0GHz 32GB RAM 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 1	8.44 @ 6 tiles	09/05/08
Sun Fire X4240 Quad-Core AMD Opteron 2360 SE 2.56GHz 32GB (8 x 4GB) RAM 2 sockets/8 total cores/8 total threads	VMmark v1.1 VMware ESX v3.5.0 Update 1	8.07@ 6 tiles	10/23/08
Sun Blade x8440 Dual-Core AMD Opteron processor Model 8222 3.0GHz 64GB (16 x 4GB) RAM 4 sockets/8 total cores/8 total threads	VMmark v1.0 VMware ESX v3.5.0	7.37 @ 5 tiles	02/04/08

Test results as of 12-30-08. For more details, please visit: http://www.vmware.com/products/vmmark/results.html

For more information

HP ProLiant BL495c G5 server blade: www.hp.com/servers/proliant/bl495c

HP ProLiant DL385 G5p: http://www.hp.com/servers/proliantdl385

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

HP Virtual Connect Flex-10: http://www.hp.com/go/virtualconnect

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

HP VMmark highlights: http://www.hp.com/go/vmware/vmmark

For information about VMmark and the rules regarding its usage visit 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 as of the dates listed. January 2009