Performance brief

HP achieves world records for 2P blade and 2P rack-mount server virtualization performance on VMmark 2.5.1 benchmark

Once again, ProLiant servers <u>clinch virtualization leadership spots</u> for 2P blade and 2P servers to complete a 2P/4P/8P sweep of the competition
September 2013

Executive summary

The newest 2-host, 2-socket results on the HP ProLiant DL380p Gen8 Server with 16.54 @ 14 tiles and the HP ProLiant BL460c Gen8 Server Blade with 16.47 @ 14 tiles running the latest Intel Xeon processor technology on the VMmark 2.5.1 benchmark, **outperformed all other 2-host, 2-socket rack-mount and blade servers**, respectively. Again, sweeping aside the competition, HP maintains the role of virtualization performance champion with its **record-breaking results for four configurations** — 2P blade, 2P, 4P, and 8P — on the VMmark 2.x benchmark.

Using the VMmark 2.x benchmark, HP ProLiant servers showcased world-class proficiency in performing common platform-level workloads such as live migration of virtual machines, cloning and deploying virtual machines, and automatic virtual machine load balancing across the data center for customers' virtualization needs.

Key take aways

- **New! #1 2P blade with the ProLiant BL460c Gen8 Server Blade: 16.47 @ 14 tiles with the latest Intel processor technology**
- **New! #1 2P with the ProLiant DL380p Gen8 Server: 16.54 @ 14 tiles with 37% greater performance and 4 more tiles than its previous Intel processer technology result**
- **#1 4P with the ProLiant DL560 Gen8 Server: 20.35 @ 18 tiles with up to 19.7% greater performance and 2 more tiles than its nearest VMmark 2.x benchmark competitors**
- **#1 8P with the ProLiant DL980 G7: 31.80 @ 30 tiles with up to 9.5% greater performance than Fujitsu's VMmark 2.1 benchmark result**
- **ProLiant results defeated results of VMmark 2.x competitors from Fujitsu, Cisco, Dell, IBM, Lenovo, and Huawei**
 *(See Appendix A for more details)*

Only with HP
How we did it

- **ION Shared Storage Devices.** Each ION device is comprised of a single HP ProLiant DL380p Gen8 server configured with HP PCIe IO Accelerators and ION Data Accelerator software available through HP and powered by Fusion-io.
  - **HP ProLiant DL380p Gen8 server used as a single storage device.** This server platform is notable for its highly scalable and robust PCIe backplane ideal to support the extreme levels of IO as an ION storage device. With unmatched performance and configuration flexibility, it is the ideal platform to support Dynamic Workload Acceleration.
  - **HP PCIe IO Accelerators, powered by Fusion-io.** These accelerators are enterprise-reliable flash products that dramatically accelerate workloads by connecting directly to the HP ProLiant DL380p Gen8 Server PCIe bus. With microsecond access latencies and high IOPS, they provide a high performance in-server memory tier, each with capacities up to 3TB.
  - **ION Data Accelerator software from Fusion-io.** ION software transforms a single HP ProLiant DL380p Gen8 Server configured with HP PCIe IO Accelerators into a cost-effective, highly available, high performance shared storage acceleration device for multiple applications and clusters.
- **The QLogic-designed 16Gb Gen 5 Fibre channel adapters** complement the HP Converged Infrastructure by delivering high-performance, flexible, efficient storage networking connectivity that simplifies the data center environment. QLogic FlexSuite adapters leap beyond previous I/O performance boundaries with 16Gb Gen 5 Fibre Channel and PCIe 3.0 support which doubles the maximum data rate over predecessors, 8Gb Fibre Channel and PCIe 2.0.

Figure 1. HP ProLiant 2P servers' latest results on the VMmark 2.5.1 benchmark and the ProLiant 4P and 8P servers' results on the VMmark 2.5 benchmark

2P blade/2P/4P/8P server virtualization world records!
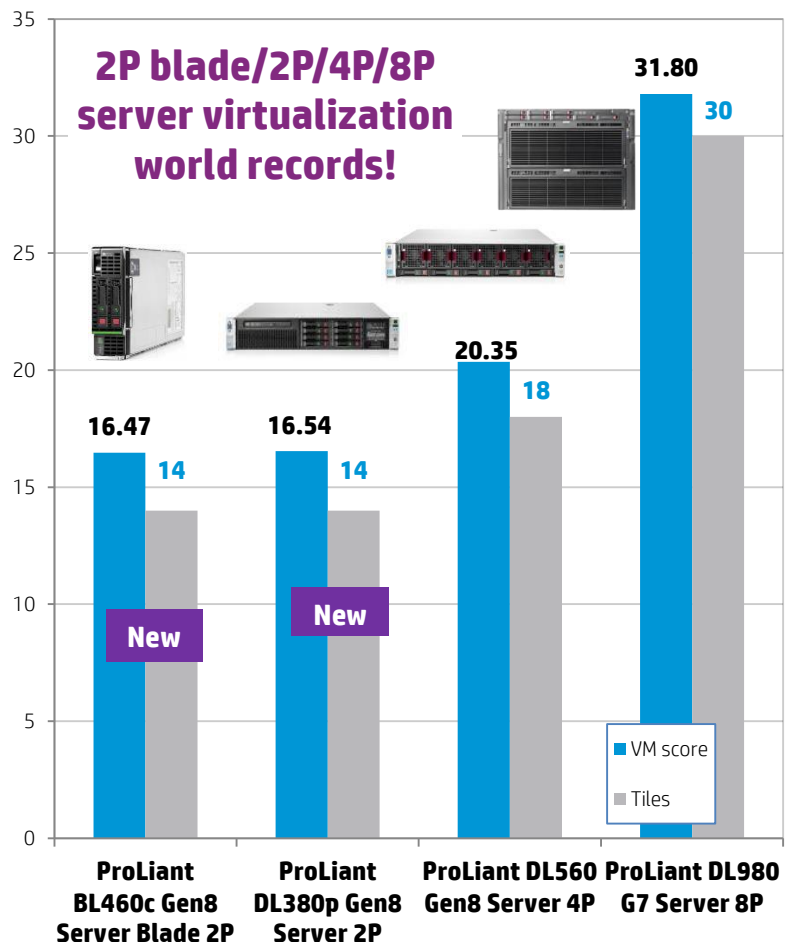
HP Smart Array P220i and P420i Controllers: The Smart Array controllers allow overhead in high bandwidth environments, resulting in a higher performance advantage. The HP Smart Array P220i Controller for blades and Smart Array P420i Controller are 6Gb/s, PCIe Serial Attached SCSI (SAS) RAID controllers that provide enterprise class, second generation storage performance, and data protection. They deliver increased server uptime by providing advanced storage functionality including online RAID level migration with flash-backed write cache (FBWC), global online spare, and pre-failure warning. With FBWC, customers can have indefinite data retention vs. just two days with battery-backed write cache. To learn more, see www.hp.com/products/smartarray.

HP ProLiant BL460c Gen8 Server Blade: The HP ProLiant BL460c Gen8 Server Blade is the latest addition to the world's leading family of server blades. With an ideal balance of performance, scalability, and expandability, this server blade offers a simpler way to manage a data center. The dual-socket server blade features next-generation, 2-socket Intel Xeon E5-2600 v2 processor family and is engineered with enhanced memory and storage capacities, the next-generation HP Integrated Lights-Out (iLO) Management Engine, and cloud-enabled insight management. With new features that give it improved flexibility and simplified management, the HP ProLiant BL460c Gen8 Server Blade is an ideal choice for data center computing. To learn more, see www.hp.com/servers/bl460c-gen8.

HP ProLiant DL380p Gen8 Server: With its customer-motivated improvements, the DL380p Gen8 Server offers the perfect solution for the dynamic compute requirements of growing small businesses as well as demanding data centers. This server is future-ready with HP-exclusive FlexibleLOM, giving a choice of NICs and allowing easy upgradability for future NIC capacities as they become available. For dynamic compute requirements of growing small businesses as well as demanding data centers, the ProLiant DL380p Gen8 Server is the perfect solution. To learn more, see www.hp.com/servers/dl380p-gen8

HP ProLiant DL560 Gen8 Server: The HP ProLiant DL560 Gen8 Server is the latest server in the ProLiant Scale-up x86 portfolio that redefines density-optimized 4P rack server technology without compromising on performance, scalability, or expandability. Built on the latest Gen8 innovative and intuitive hardware and software features and supporting the new high-density and cost-effective Intel Xeon E5-4600 processors, the DL560 Gen8 Server is ideal for virtualization, server consolidation, database, business processing, and general 4P data-intensive applications where optimization of data center space and price/performance is paramount. To learn more, see www.hp.com/servers/dl560-gen8.

HP ProLiant DL980 G7 Server: For customers' largest and most demanding enterprise-class workloads, HP offers the ProLiant DL980 G7 Server with the HP PREMA Architecture. This award-winning, scale-up x86 system blends business-critical and industry-standard design principles into an 8P x86 workhorse designed for balanced scaling, self-healing resiliency, and breakthrough efficiencies. To learn more, see www.hp.com/servers/dl980.

HP ProLiant DL380p Gen8 server used as an ION Storage Device: Configured with multiple HP PCIe IO Accelerators and using ION Data Accelerator software, the ION Storage Device is used to accelerate even the most I0 intensive workloads. With flexible deployment options, ION Devices can be scaled up or used to enhance existing HP storage infrastructure.

For more information on ProLiant leading benchmarks, see www.hp.com/servers/benchmarks.

Appendix A
Sweeping aside the competition . . .again

VMmark 2.x benchmark configurations
Table 1. 2-host, 2-socket blade server VMmark results of the HP ProLiant BL460c Gen8 Server Blade and its nearest competitors

System description	Score	Total Sockets/ Cores/ Threads	Processor	Memory	Software
HP ProLiant BL460c Gen8 Server Blade 2 hosts, 2 sockets, 12 cores	**16.47 @ 14 tiles**	4/48/96	Intel Xeon E5-2697 v2 2.70GHz	256GB	VMmark 2.5.1 VMware ESX 5.1.0 U1 vCenter Server 5.1.0
Fujitsu PRIMERGY BX924 S3 2 hosts, 2 sockets, 8 cores	12.05 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.5 VMware ESX 4.1.0 U3 vCenter Server 5.1.0b
Cisco UCS B200 M3 2 hosts, 2 sockets, 8 cores	11.32 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	128GB	VMmark 2.1.1 VMware ESX 5.1.0 vCenter Server 5.1.0
IBM Flex System x240 Compute Node, 2 hosts, 2 sockets, 8 cores	10.29 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.1.1 VMware ESX 4.10 U2 vCenter Server 5.0
Dell PowerEdge M620 2 hosts, 2 sockets, 8 cores	10.20 @ 10 tiles	4/32/64	Intel Xeon E5-2680 2.70GHz	256GB	VMmark 2.1.1 VMware ESX 4.1. U2 vCenter 4.1.0

Table 2. 2-host, 2-socket VMmark results of the HP ProLiant DL380p Gen8 Server compared to its previous Intel processor technology result and its nearest competitors

System description	Score	Total Sockets/ Cores/ Threads	Processor	Memory	Software
HP ProLiant DL380p Gen8 Server 2 hosts, 2 sockets, 12 cores	**16.54 @ 14 tiles**	4/48/96	Intel Xeon E5-2697 v2 2.70GHz	256GB	VMmark 2.5.1 VMware ESX 5.1.0 U1 vCenter Server 5.1.0.
HP ProLiant DL380p Gen8 Server 2 hosts, 2 sockets, 16 cores	12.11 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.5. VMware ESX 4.1.0 U3 vCenter Server 5.0.0
Fujitsu PRIMERGY RX300 S7 2 hosts, 2 sockets, 8 cores	12.51 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.5.1 VMware ESX 4.1.0 U3 vCenter Server 5.1.0 U1
Cisco UCS C240 M3 2 hosts, 2 sockets, 8 cores	12.00 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.5 VMware ESXi 5.1.0 vCenter Server 5.1.0
Dell PowerEdge R720 2 hosts, 2 sockets, 8 cores	11.39 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.1.1 VMware ESXi 5.1.0 vCenter Server 5.1.0
Lenovo ThinkServer RD 630 2 hosts, 2 sockets, 8 cores	11.17 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.5 VMware ESXi 5.1.0 vCenter 5.1.0
Huawei Tecal RH2288-8S V2 2 hosts, 2 sockets, 8 cores	10.47 @ 10 tiles	4/32/64	Intel Xeon E5-2690 2.90GHz	256GB	VMmark 2.1.1 ESXi 4.1.0 U2 vCenter Server 5.0.0

Table 3. 2-host, 4-socket VMmark results of the HP ProLiant DL560 Gen8 Server and its nearest competitors

System description	Score	Total Sockets/ Cores/ Threads	Processor	Memory	Software
HP ProLiant DL560 Gen8 Server 2 hosts, 4 sockets, 8 cores	**20.35 @ 18 tiles**	8/64/128	Intel Xeon E5-4650 2.70GHz	256GB	VMmark 2.5 VMware ESX 4.1.0 U3 vCenter Server 5.1.0
Fujitsu PRIMERGY RX500 S7 2 hosts, 4 sockets, 8 cores	20.12 @ 18 tiles	8/64/128	Intel Xeon E5-4650 2.70GHz	512GB	VMmark 2.1.1 VMware ESX 4.1.0 U3 vCenter Server 5.1.0
Cisco UCS C460 M2 2 hosts, 4 sockets, 10 cores	18.00 @ 18 tiles	8/80/160	Intel Xeon E7-4870 2.40GHz	512GB	VMmark 2.1.1 VMware ESX 4.1 U1 vCenter Server 4.1.0
Dell PowerEdge R910 2 hosts, 4 sockets, 10 cores	17.63 @ 18 tiles	8/80/160	Intel Xeon E7-4870 2.40GHz	512GB	VMmark 2.1.1 VMware ESX 4.1.0 U1 vCenter Server 4.1.0 U1
Huawei Tecal RH2485 V2 2 hosts, 4 sockets, 8 cores	16.99 @ 16 tiles	8/64/128	Intel Xeon E5-4650 2.70GHz	256GB	VMmark 2.1.1 VMware ESX 4.1.0 U2 vCenter Server 5.0

The ProLiant DL560 Gen8 Server provided 19.7% greater performance and 2 more tiles than the Huawei Tecal RH2485 V2 result of 16.99 @ 16 tiles

Table 4. 2-host, 8-socket VMmark results of the HP ProLiant DL980 G7 Server and its nearest competitor, Fujitsu

System description	Score	Total Sockets/ Cores/ Threads	Processor	Memory	Software
HP ProLiant DL980 G7 Server 2 hosts, 8 sockets, 10 cores	**31.80 @ 30 tiles**	16/160/320	Intel Xeon E7-4870 2.40GHz	1.0TB	VMmark 2.5 VMware ESX 4.1.0 U3 vCenter Server 5.0.0
Fujitsu PRIMERGY RX900 S2 2 hosts, 8 sockets, 10 cores	29.03 @ 30 tiles	16/160/320	Intel Xeon E7-8870 2.40GHz	1.0TB	VMmark 2.1 VMware ESX 4.1. U1 vCenter Server 4.1