

# VMware® VMmark™ V1.1 Results

**Vendor and Hardware Platform: HP ProLiant DL585G5**  
**Virtualization Platform: VMware ESX 4.0 (build 148783)**

**VMmark V1.1 Score =**  
**22.11 @ 15 Tiles**

**Tested By: Hewlett Packard**

**Test Date: 4/6/2009**

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## Performance

	webservers		javaserver		mailserver		fileserver		database		
<b>TILE_0</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1890.72	1.86	18144.12	1.09	1684.78	1.54	16.90	1.32	2408.50	1.61	1.46
<b>p1</b>	1867.83	1.83	17662.45	1.06	1712.42	1.56	16.42	1.28	2415.43	1.62	1.45
<b>p2</b>	1858.17	1.82	18119.05	1.09	1838.25	1.68	16.45	1.28	2422.10	1.62	1.47
<b>TILE_1</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1891.92	1.86	18112.10	1.09	1762.97	1.61	18.75	1.46	2416.72	1.62	1.50
<b>p1</b>	1882.62	1.85	17651.72	1.06	1818.58	1.66	18.49	1.44	2430.68	1.63	1.50
<b>p2</b>	1859.00	1.82	18121.12	1.09	1779.55	1.62	18.43	1.44	2436.53	1.63	1.50
<b>TILE_2</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1866.20	1.83	18133.10	1.09	1712.55	1.56	18.90	1.47	2387.18	1.60	1.49
<b>p1</b>	1839.97	1.81	18165.75	1.09	1636.65	1.49	18.60	1.45	2397.10	1.61	1.47
<b>p2</b>	1810.97	1.78	18167.12	1.09	1625.05	1.48	18.42	1.44	2402.55	1.61	1.46
<b>TILE_3</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1876.50	1.84	18143.97	1.09	1789.45	1.63	18.25	1.42	2414.88	1.62	1.50
<b>p1</b>	1859.35	1.82	18123.20	1.09	1790.65	1.63	18.16	1.42	2429.10	1.63	1.50
<b>p2</b>	1844.22	1.81	17688.05	1.06	1698.15	1.55	18.12	1.41	2433.25	1.63	1.47
<b>TILE_4</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1908.50	1.87	18117.20	1.09	1688.35	1.54	18.73	1.46	2362.30	1.58	1.49
<b>p1</b>	1890.35	1.86	18119.33	1.09	1720.33	1.57	18.45	1.44	2374.25	1.59	1.49
<b>p2</b>	1885.47	1.85	17683.92	1.06	1780.53	1.62	18.38	1.43	2382.68	1.60	1.49
<b>TILE_5</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1878.47	1.84	18103.55	1.09	1673.35	1.53	18.63	1.45	2383.15	1.60	1.48
<b>p1</b>	1864.78	1.83	18091.55	1.09	1739.03	1.59	18.49	1.44	2393.15	1.60	1.49
<b>p2</b>	1853.00	1.82	18129.00	1.09	1778.40	1.62	18.19	1.42	2400.38	1.61	1.49
<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1840.38	1.81	18156.20	1.09	1708.58	1.56	18.68	1.46	2420.97	1.62	1.49

<b>p1</b>	1820.85	1.79	17695.67	1.07	1794.45	1.64	18.47	1.44	2429.90	1.63	1.49
<b>p2</b>	1812.75	1.78	18152.97	1.09	1766.28	1.61	18.30	1.43	2374.22	1.59	1.48
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1852.47	1.82	18172.28	1.09	1662.20	1.52	18.60	1.45	2388.68	1.60	1.48
<b>p1</b>	1830.90	1.80	18145.17	1.09	1797.30	1.64	18.34	1.43	2390.22	1.60	1.49
<b>p2</b>	1804.20	1.77	18131.85	1.09	1754.22	1.60	18.32	1.43	2400.15	1.61	1.48
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1888.67	1.85	18119.90	1.09	1513.88	1.38	18.90	1.47	2419.32	1.62	1.46
<b>p1</b>	1869.83	1.84	18103.90	1.09	1550.00	1.41	18.68	1.46	2425.65	1.63	1.46
<b>p2</b>	1856.47	1.82	18117.78	1.09	1572.35	1.43	18.42	1.44	2432.57	1.63	1.46
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1902.15	1.87	18127.45	1.09	1510.97	1.38	18.76	1.46	2408.10	1.61	1.46
<b>p1</b>	1884.92	1.85	18118.47	1.09	1624.53	1.48	18.61	1.45	2414.05	1.62	1.48
<b>p2</b>	1881.10	1.85	18148.53	1.09	1618.28	1.48	18.45	1.44	2420.05	1.62	1.47
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1878.75	1.84	18108.10	1.09	1513.62	1.38	18.59	1.45	2421.95	1.62	1.46
<b>p1</b>	1849.75	1.82	18131.15	1.09	1615.80	1.47	18.42	1.44	2437.28	1.63	1.47
<b>p2</b>	1817.85	1.78	18105.92	1.09	1752.28	1.60	18.33	1.43	2441.00	1.64	1.49
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1903.03	1.87	18114.90	1.09	1464.92	1.34	18.67	1.46	2421.82	1.62	1.45
<b>p1</b>	1895.75	1.86	18136.85	1.09	1680.12	1.53	18.50	1.44	2424.03	1.62	1.49
<b>p2</b>	1880.78	1.85	18151.67	1.09	1713.75	1.56	18.38	1.43	2432.62	1.63	1.49
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1898.67	1.86	18086.90	1.09	1346.95	1.23	18.62	1.45	2416.00	1.62	1.42
<b>p1</b>	1887.55	1.85	18065.15	1.09	1554.80	1.42	18.60	1.45	2419.12	1.62	1.46
<b>p2</b>	1870.92	1.84	18079.22	1.09	1650.75	1.51	18.48	1.44	2429.90	1.63	1.48
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1909.08	1.87	18092.65	1.09	1400.55	1.28	18.59	1.45	2425.25	1.63	1.44
<b>p1</b>	1883.45	1.85	18105.75	1.09	1486.35	1.36	18.15	1.41	2427.38	1.63	1.44
<b>p2</b>	1887.10	1.85	18123.05	1.09	1704.40	1.55	18.23	1.42	2432.65	1.63	1.49
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1832.85	1.80	18130.08	1.09	1259.10	1.15	18.31	1.43	2331.55	1.56	1.38
<b>p1</b>	1806.60	1.77	17655.12	1.06	1593.45	1.45	18.13	1.41	2400.55	1.61	1.44
<b>p2</b>	1791.42	1.76	18116.47	1.09	1728.55	1.58	17.93	1.40	2405.95	1.61	1.47
<b>p0_score:</b>	21.95										
<b>p1_score:</b>	22.11										
<b>p2_score:</b>	22.19										
<b>Unreviewed_VMmark_Score:</b>	22.11										

# Configuration

## Server and Network

Server Manufacturer and Model	HP ProLiant DL585G5
Processor Vendor and Model	Quad-Core AMD Opteron 8393 SE
Processor Speed (GHz)	3.1GHz
Number of Sockets/Cores per Socket	4 Sockets / 4 Cores per Socket (16 Cores Total)
Primary Cache	128KB I + 128KB D on chip per core
Secondary Cache	2MB
Other Cache	6MB
Memory	128GB (16x8GB PC2-5300 667MHz Registered ECC DDR2 DIMMs)
Disk Subsystem Type	Direct attach SAS for operating system, FC SAN for VMs
Number of Disk Controllers	1 SMART Array P800 (O/S)
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	2 QLogic QLE2462 dual port fibre channel HBA
Number of Network Controllers	3
Network Controller Vendors and Models	1 x embedded dual-port HP NC371i Gigabit adapter, 3 x dual-port HP NC380T Gigabit adapters
Network Switch Vendors and Models	HP ProCurve 2900
Network Speed	1000BaseT
Other Hardware	None
Other Software	None
Hardware Availability Date	April 27, 2009
Software Availability Date	November 2008

## Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 build 148783
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	June 30, 2009

## Storage

Array Vendor, Model, and Firmware Version	HP StorageWorks MSA 2000, Storage Controller Firmware J200P16, Management Controller Firmware W420R30
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 4/32
Disk Space Used	983 GB for VMs
Array Cache Size	1 GB

Number and Size of LUNs	10 LUNs, 1.6TB per LUN
RAID Type	RAID 0
Number of Members per RAID Set	12 drives per RAID set
Disk Vendor, Model, and Speed	HP Dual Port 146GB SAS 15K RPM
<b>Clients</b>	
Number of Clients	15
System Model(s)	HP ProLiant DL360G5
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	2.83GHz
Number of Sockets/Cores per Socket	1 Sockets / 4 Cores per Socket (4 Cores Total)
Memory	2GB
Network Controller Vendor and Model	HP NC373i Gigabit Adapter
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition, Service Pack 2
Other Hardware	None
Other Software	None

## Notes for Workload

### Server and Network Notes

- Server BIOS settings:
  - Power Regulator: Static High Performance (default Dynamic Power Savings Mode)
  - Ultra Low Power State: disabled (default enabled)
  - Memory Channel Mode: Independent Mode (default Combined Mode)
  - AMD Virtualization Technology: enabled (default disabled)
  
- QLogic HBA BIOS settings:
  - Fibre Channel tape support disabled (default enabled)
  - Data rate option set to 3 (default 2)
  - Execution Throttle set to 128 (default 16)
  
- vSwitch Configuration:
  - vSwitch0 for the Service Console configured on vmnic2
  - vSwitch1 for all standby, fileserver, javaserver and database VMs configured with 120 ports (default 56) on vmnic0
  - vSwitch2 for all mailserver VMs configured on vmnic1
  - vSwitch3 for webservers 0-2 configured on vmnic3
  - vSwitch4 for webservers 3-5 configured on vmnic4
  - vSwitch5 for webservers 6-8 configured on vmnic5
  - vSwitch6 for webservers 9,11 & 12 configured on vmnic6
  - vSwitch7 for webservers 13-15 configured on vmnic7
  
- Storage Configuration:

- storage0 configured to store odd-numbered database VMs
- storage1 configured to store even numbered database VMs
- storage2 configured to store all VMs other than database for tiles 0 & 1
- storage3 configured to store all VMs other than database for tiles 2 & 3
- storage4 configured to store all VMs other than database for tiles 4 & 5
- storage5 configured to store all VMs other than database for tiles 6 & 7
- storage6 configured to store all VMs other than database for tiles 8 & 9
- storage7 configured to store all VMs other than database for tiles 10 & 11
- storage8 configured to store all VMs other than database for tiles 12 & 13
- storage9 configured to store all VMs other than database for tile 14

## Virtualization Software Notes

- virtualized MMU was enabled for all VMs (default Automatic)
- ethernet adapter type set to Enhanced vmxnet3 for all VMs
- logging was disabled for all VMs
- IDE & floppy devices were removed on all VMs (default enabled) for all but the fileserver virtual machines
- syncTime set to TRUE for all VMs
- Misc.RunningVCpuLimit set to 192 (default 512)
- BufferCache.SoftMaxDirty=85 (default 15)
- IRQ.RoutingPolicy = 0 (default 2)
- Disk.SchedNumReqOutstanding = 128 (default 32)
- all virtual machines were upgraded to virtual hardware version 7
- iptables and firewall were disabled for the COS

## Operating System Notes

- Microsoft Windows Server 2003 virtual machines were updated to Service Pack 2, as well as KB933360
- Fileserver and Webserver VMs were updated to SLES 10 SP2

## Software Notes

None.

## Client Notes

- Microsoft Windows Server 2003 client machines were updated to Service Pack 2, as well as KB933360
- TCP TOE chimney was disabled on all clients (default enabled)

## Other Notes

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