

# VMware® VMmark™ V1.1 Results

**Vendor and Hardware Platform: HP ProLiant DL785 G5**  
**Virtualization Platform: VMware ESX Server 3.5 Update 1 (build 82663)**

**VMmark V1.1 Score =**  
**21.88 @ 16 Tiles**

**Tested By: Hewlett-Packard/Business Critical Systems**

**Test Date: August-2008**

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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>	1917.00	1.88	18011.20	1.08	1526.30	1.39	17.93	1.40	2016.00	1.35	1.40
<b>p1</b>	1871.25	1.84	17551.78	1.06	1583.50	1.44	17.98	1.40	2002.20	1.34	1.39
<b>p2</b>	1823.03	1.79	18002.85	1.08	1632.97	1.49	18.39	1.43	1981.92	1.33	1.41
<b>TILE_1</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1503.85	1.48	18046.72	1.09	1469.28	1.34	17.90	1.40	2056.38	1.38	1.33
<b>p1</b>	1482.20	1.45	17603.38	1.06	1497.45	1.37	18.09	1.41	2070.28	1.39	1.33
<b>p2</b>	1476.97	1.45	18046.17	1.09	1645.58	1.50	18.07	1.41	2053.88	1.38	1.36
<b>TILE_2</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1709.15	1.68	18048.70	1.09	1225.85	1.12	17.42	1.36	1789.15	1.20	1.27
<b>p1</b>	1689.83	1.66	17913.60	1.08	1234.08	1.13	18.82	1.47	1781.60	1.19	1.29
<b>p2</b>	1679.20	1.65	18000.17	1.08	1225.03	1.12	18.70	1.46	1757.50	1.18	1.28
<b>TILE_3</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1603.10	1.57	18030.47	1.09	1508.50	1.38	18.39	1.43	1916.58	1.28	1.34
<b>p1</b>	1599.12	1.57	18040.67	1.09	1558.70	1.42	16.94	1.32	1929.47	1.29	1.33
<b>p2</b>	1564.25	1.54	17998.25	1.08	1559.95	1.42	16.35	1.27	1960.72	1.31	1.32
<b>TILE_4</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1862.10	1.83	17625.85	1.06	1595.83	1.45	18.53	1.44	2151.72	1.44	1.42
<b>p1</b>	1856.40	1.82	18050.60	1.09	1607.05	1.47	18.41	1.43	2173.75	1.46	1.43
<b>p2</b>	1839.33	1.81	18050.83	1.09	1691.92	1.54	18.14	1.41	2192.53	1.47	1.44
<b>TILE_5</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1802.50	1.77	18076.40	1.09	1542.72	1.41	19.08	1.49	2212.15	1.48	1.43
<b>p1</b>	1820.22	1.79	17606.35	1.06	1628.83	1.49	19.14	1.49	2213.93	1.48	1.44
<b>p2</b>	1932.42	1.90	18045.53	1.09	1698.22	1.55	18.97	1.48	2199.70	1.47	1.47
<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

<b>p0</b>	1877.50	1.84	18084.47	1.09	1540.20	1.40	19.25	1.50	1996.45	1.34	1.41
<b>p1</b>	1875.62	1.84	17613.25	1.06	1512.42	1.38	19.04	1.48	1998.08	1.34	1.40
<b>p2</b>	1865.17	1.83	18051.22	1.09	1608.10	1.47	19.07	1.49	2007.17	1.34	1.42
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1918.03	1.88	18065.15	1.09	1552.33	1.42	17.88	1.39	1936.50	1.30	1.39
<b>p1</b>	1910.33	1.87	18053.47	1.09	1447.60	1.32	17.63	1.37	1916.47	1.28	1.37
<b>p2</b>	1920.38	1.88	18059.60	1.09	1476.70	1.35	17.60	1.37	1883.50	1.26	1.37
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1716.80	1.68	17997.40	1.08	1505.88	1.37	18.98	1.48	2167.78	1.45	1.40
<b>p1</b>	1699.72	1.67	17958.60	1.08	1599.80	1.46	18.87	1.47	2156.25	1.44	1.41
<b>p2</b>	1684.53	1.65	17968.17	1.08	1660.17	1.51	18.90	1.47	2145.28	1.44	1.42
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1606.33	1.58	17970.08	1.08	1376.85	1.26	17.86	1.39	2245.47	1.50	1.35
<b>p1</b>	1602.35	1.57	17983.47	1.08	1342.47	1.22	17.73	1.38	2255.57	1.51	1.34
<b>p2</b>	1568.92	1.54	17524.30	1.05	1394.60	1.27	17.40	1.36	2261.20	1.52	1.34
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1520.95	1.49	17585.58	1.06	1391.65	1.27	19.29	1.50	2208.62	1.48	1.35
<b>p1</b>	1497.78	1.47	18050.62	1.09	1336.83	1.22	19.12	1.49	2208.70	1.48	1.34
<b>p2</b>	1480.05	1.45	18045.88	1.09	1187.88	1.08	17.24	1.34	2205.90	1.48	1.28
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1927.38	1.89	17572.78	1.06	1269.10	1.16	19.73	1.54	1943.08	1.30	1.36
<b>p1</b>	1868.03	1.83	18030.47	1.09	1212.92	1.11	19.70	1.54	1909.60	1.28	1.34
<b>p2</b>	1820.75	1.79	18035.62	1.09	1272.90	1.16	19.54	1.52	1864.15	1.25	1.34
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1847.55	1.81	18054.42	1.09	1345.45	1.23	18.45	1.44	2266.88	1.52	1.39
<b>p1</b>	1860.28	1.83	18089.85	1.09	1412.10	1.29	18.44	1.44	2268.82	1.52	1.41
<b>p2</b>	1964.90	1.93	18071.12	1.09	1384.75	1.26	18.68	1.46	2260.18	1.51	1.42
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1922.38	1.89	17486.03	1.05	1262.25	1.15	19.54	1.52	2105.05	1.41	1.37
<b>p1</b>	1913.33	1.88	17967.78	1.08	1419.47	1.29	19.42	1.51	2106.53	1.41	1.41
<b>p2</b>	1925.08	1.89	17959.90	1.08	1582.62	1.44	19.30	1.50	2098.85	1.41	1.44
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1871.42	1.84	17997.88	1.08	1164.50	1.06	16.51	1.29	1810.35	1.21	1.27
<b>p1</b>	1871.95	1.84	17996.80	1.08	1317.25	1.20	16.55	1.29	1800.25	1.21	1.30
<b>p2</b>	1860.28	1.83	17997.00	1.08	1188.88	1.08	16.68	1.30	1768.78	1.19	1.27
<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1859.95	1.83	17972.35	1.08	1107.28	1.01	18.44	1.44	1952.05	1.31	1.30

<b>p1</b>	1848.55	1.81	17838.50	1.07	1357.88	1.24	18.16	1.42	1954.33	1.31	1.35
<b>p2</b>	1834.50	1.80	18013.58	1.08	1680.88	1.53	18.09	1.41	1953.80	1.31	1.41
<b>p0_score:</b>	21.80										
<b>p1_score:</b>	21.88										
<b>p2_score:</b>	21.98										
<b>Unreviewed_VMmark_Score:</b>	21.88										

## Configuration

<b>Server and Network</b>	
Server Manufacturer and Model	HP ProLiant DL785 G5
Processor Vendor and Model	Quad-Core AMD Opteron™ 8360 SE
Processor Speed (GHz)	2.50
Number of Sockets/Cores per Socket	8 Sockets / 4 Cores per Socket (32 Cores Total)
Primary Cache	64 KB I + 64 KB D on chip per core
Secondary Cache	512 KB I+D on chip per core
Other Cache	2 MB +D L3 on I chip per chip
Memory	128 GB (32 x 4 GB) PC2-5300 667MHz Registered ECC DDR2 DIMM
Disk Subsystem Type	SAS (OS), FC SAN (VMs)
Number of Disk Controllers	N/A
Number of Host Bus Adapters	4
Host Bus Adapter Vendors and Models	QLogic Corp QLE2462 Dual Port
Number of Network Controllers	4
Network Controller Vendors and Models	Intel PRO/1000 PT Quad Port Gigabit Server Adapter
Network Switch Vendors and Models	2 x Tiger 10/100/1000 SMC 8624T
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	July-2008
Software Availability Date	Apr-2008
<b>Virtualization Software</b>	
Vendor, Product, Version, and Build	VMware ESX 3.5 Update 1 (build 82663)
Virtualization Type	Hardware Virtualization

Supplemental Software	None
Virtualization Software Availability Date	Apr-2008

**Storage**

Array Vendor, Model, and Firmware Version	<ol style="list-style-type: none"> <li>1. HP StorageWorks 1500cs MSA with dual controller, Firmware Revision 7.00b1500</li> <li>2. HP StorageWorks 1500cs MSA with dual controller, Firmware Revision 7.00b1500</li> <li>3. HP StorageWorks 1500cs MSA with dual controller, Firmware Revision 7.00b1500</li> <li>4. HP StorageWorks 1500cs MSA with dual controller, Firmware Revision 7.00b1500</li> </ol>
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Fibre Channel Switch Vendors and Models	None
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Disk Space Used	1260G
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Array Cache Size	<ol style="list-style-type: none"> <li>1. HP StorageWorks 1500cs MSA, 512MB per controller</li> <li>2. HP StorageWorks 1500cs MSA, 512MB per controller</li> <li>3. HP StorageWorks 1500cs MSA, 512MB per controller</li> <li>4. HP StorageWorks 1500cs MSA, 512MB per controller</li> </ol>
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Number and Size of LUNs	LUN 1: 160GB LUN 2: 240GB LUN 3: 160GB LUN 4: 240GB LUN 5: 160GB LUN 6: 160GB LUN 7: 240GB LUN 8: 240GB LUN 9: 240GB LUN 10: 240GB LUN 11: 240GB LUN 12: 240GB LUN 13: 240GB LUN 14: 240GB LUN 15: 240GB LUN 16: 240GB
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RAID Type	RAID0 (all LUNS)
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Number of Members per RAID Set	LUN 1: 14 members LUN 2: 14 members LUN 3: 14 members LUN 4: 14 members LUN 5: 14 members LUN 6: 14 members LUN 7: 14 members LUN 8: 14 members LUN 9: 14 members LUN 10: 14 members LUN 11: 14 members LUN 12: 14 members LUN 13: 14 members LUN 14: 14 members LUN 15: 14 members LUN 16: 14 members
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Disk Vendor, Model, and Speed	Fujitsu MAX3073 15K
<b>Clients</b>	
Number of Clients	16
System Model(s)	HP ProLiant DL145 G2
Processor Vendor(s) and Model(s)	AMD Opteron™
Processor Speed(s) (GHz)	2.0
Number of Sockets/Cores per Socket	2 Sockets / 1 Core per Socket (2 Cores Total)
Memory	2GB
Network Controller Vendor and Model	Onboard Broadcom NetXtreme Gbit Ethernet
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition SP1
Other Hardware	None
Other Software	None

## Notes for Workload

### SUT Notes

- The onboard controller contained 1 73GB/15K drive for OS.
- BIOS settings:
  - User-Accessible USB Ports = All Ports Off (default All Ports On)

### Virtualization Software Notes

- Eleven vSwitches (0-10) bound to eleven physical NICs.
- Each vSwitch was configured to 128 ports (default 56) except Service Console
- Service Console on vSwitch0 attached to vmnic0.
- Databases 0 – 7 on vSwitch1 attached to vmnic8;
- Databases 8 – 15 on vSwitch2 attached to vmnic13;
- Fileservers 0 – 7 and Standby 0 - 7 on vSwitch3 attached to vmnic4;
- Fileservers 8 - 15 and Standby 8 - 15 on vSwitch5 attached to vmnic15;
- Mailserver 0 – 7 and Javaservers 0 - 7 on vSwitch4 attached to vmnic5;
- Mailserver 8 - 15 and Javaservers 8 - 15 on vSwitch6 attached to vmnic12;
- Webservers 0 – 3 on vSwitch7 attached to vmnic10;
- Webservers 4 – 7 on vSwitch8 attached to vmnic14;
- Webservers 8 – 11 on vSwitch9 attached to vmnic9;
- Webservers 12 – 15 on vSwitch10 attached to vmnic2;
- Each tile was stored on its own LUN.
- Virtualized MMU Enabled on Database, Fileserver and WebServer VMs (default Automatic)
- Ethernet Adapter Type set to Enhanced vmxnet for following VMs:
  - Databases 0-15, Fileservers 0-15, Webservers 0-15, Javaservers 0-15, Mailservers 5-9,12-14, Standby 5,8,9
- /etc/vmware/esx.conf "QLogic Corp QLE2462" options = "ql2xmaxqdepth=64"
- Advanced Settings, Config, Misc.RunningVCpuLimit 192 (default 128)

## Operating System Notes

## Software Notes

## Client Notes

## Other Notes

VMMARK.CONFIG changes:

- JavaServer/DELAYTIME="240"
- Standby/DELAYTIME="90"
- WebServer/DELAYTIME="100"
- Database/DELAYTIME="220"
- FileServer/DELAYTIME="240"
- TILEDELAY=300

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This is a full disclosure report for a VMmark benchmark result. All published VMmark results must be from fully-compliant tests for which a full disclosure report is publicly available.

For information about VMmark and the rules regarding its usage visit [www.vmware.com/products/vmmark](http://www.vmware.com/products/vmmark).

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