

## VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: HP ProLiant DL385 G7  
 Virtualization Platform: VMware ESX 4.0 Update 1 (build 208167)

**VMmark V1.1.1 Score =  
30.60 @ 21 Tiles**

Tested By: HP

Test Date: 03-29-2010

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### Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1926.12	1.89	18098.70	1.09	1316.22	1.20	16.88	1.32	2379.95	1.59	1.39
p1	1919.00	1.88	18130.25	1.09	1319.33	1.20	16.96	1.32	2380.82	1.60	1.39
p2	1910.45	1.87	18146.35	1.09	1262.12	1.15	16.39	1.28	2390.80	1.60	1.37
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1999.47	1.96	17710.28	1.07	1677.70	1.53	17.68	1.38	2384.65	1.60	1.48
p1	2002.95	1.97	18175.30	1.09	1713.25	1.56	18.02	1.40	2387.78	1.60	1.50
p2	1988.62	1.95	18131.70	1.09	1664.88	1.52	17.93	1.40	2387.30	1.60	1.49
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1959.47	1.92	17685.70	1.06	1625.45	1.48	18.92	1.48	2363.75	1.58	1.48
p1	1862.67	1.83	18149.72	1.09	1615.65	1.47	18.54	1.45	2365.38	1.58	1.46
p2	1775.62	1.74	18142.12	1.09	1473.15	1.34	18.29	1.43	2371.12	1.59	1.42
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1979.70	1.94	17672.50	1.06	1503.08	1.37	18.39	1.43	2382.38	1.60	1.45
p1	1973.92	1.94	18118.95	1.09	1469.62	1.34	18.22	1.42	2384.75	1.60	1.45
p2	1961.15	1.92	18129.30	1.09	1422.38	1.30	18.43	1.44	2386.20	1.60	1.44
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1936.95	1.90	18123.35	1.09	1413.42	1.29	18.41	1.44	2380.60	1.60	1.44
p1	1925.47	1.89	17668.70	1.06	1390.47	1.27	18.11	1.41	2382.20	1.60	1.42
p2	1916.97	1.88	18115.50	1.09	1387.28	1.26	18.24	1.42	2393.95	1.60	1.43
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1997.12	1.96	18132.95	1.09	1780.28	1.62	17.98	1.40	2394.97	1.60	1.51
p1	2000.90	1.96	17684.10	1.06	1798.92	1.64	17.90	1.39	2396.75	1.61	1.50
p2	1983.17	1.95	18166.28	1.09	1637.25	1.49	18.03	1.40	2396.93	1.61	1.48

<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1990.42	1.95	18122.58	1.09	1692.90	1.54	18.21	1.42	2369.22	1.59	1.49
<b>p1</b>	1981.50	1.94	18118.40	1.09	1591.00	1.45	16.50	1.29	2373.95	1.59	1.44
<b>p2</b>	1979.80	1.94	18157.58	1.09	1557.08	1.42	17.52	1.37	2377.47	1.59	1.46
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1979.42	1.94	18100.95	1.09	1718.33	1.57	18.41	1.43	2377.38	1.59	1.50
<b>p1</b>	1980.60	1.94	17651.65	1.06	1684.05	1.54	18.33	1.43	2380.35	1.60	1.49
<b>p2</b>	1974.70	1.94	18131.53	1.09	1745.08	1.59	18.34	1.43	2379.12	1.59	1.50
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1934.65	1.90	18107.90	1.09	1466.55	1.34	18.72	1.46	2376.25	1.59	1.45
<b>p1</b>	1928.35	1.89	18122.03	1.09	1419.42	1.29	18.66	1.45	2373.55	1.59	1.44
<b>p2</b>	1914.47	1.88	18096.20	1.09	1410.90	1.29	18.49	1.44	2385.28	1.60	1.43
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1996.78	1.96	18163.17	1.09	1691.42	1.54	16.83	1.31	2393.80	1.60	1.47
<b>p1</b>	1993.00	1.96	17709.33	1.07	1785.50	1.63	17.29	1.35	2392.68	1.60	1.49
<b>p2</b>	1979.30	1.94	18148.70	1.09	1695.78	1.55	17.41	1.36	2394.57	1.60	1.48
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1971.12	1.93	18092.90	1.09	1428.42	1.30	18.20	1.42	2345.40	1.57	1.44
<b>p1</b>	1962.67	1.93	18088.50	1.09	1414.90	1.29	18.40	1.43	2347.85	1.57	1.44
<b>p2</b>	1964.50	1.93	18112.35	1.09	1346.35	1.23	17.97	1.40	2354.75	1.58	1.42
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1966.45	1.93	18062.50	1.09	1667.83	1.52	18.18	1.42	2361.60	1.58	1.48
<b>p1</b>	1956.95	1.92	18047.15	1.09	1892.38	1.73	18.17	1.42	2358.10	1.58	1.52
<b>p2</b>	1955.90	1.92	18024.45	1.08	1686.10	1.54	18.03	1.41	2358.45	1.58	1.48
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1899.78	1.86	18117.40	1.09	1482.92	1.35	17.61	1.37	2355.47	1.58	1.43
<b>p1</b>	1900.08	1.86	18096.12	1.09	1453.15	1.32	17.32	1.35	2354.45	1.58	1.42
<b>p2</b>	1882.83	1.85	18101.53	1.09	1420.67	1.30	17.30	1.35	2364.38	1.58	1.41
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1988.67	1.95	18064.17	1.09	1641.55	1.50	17.83	1.39	2370.88	1.59	1.48
<b>p1</b>	1987.30	1.95	18082.72	1.09	1730.05	1.58	17.76	1.38	2376.15	1.59	1.49
<b>p2</b>	1971.88	1.94	18116.83	1.09	1665.95	1.52	17.69	1.38	2377.68	1.59	1.48
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1971.50	1.93	18065.35	1.09	1474.47	1.34	17.25	1.34	2345.07	1.57	1.43
<b>p1</b>	1962.15	1.93	18038.10	1.09	1617.67	1.47	17.70	1.38	2347.53	1.57	1.46
<b>p2</b>	1966.53	1.93	18026.65	1.09	1623.88	1.48	17.67	1.38	2349.88	1.57	1.46

<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1971.33	1.93	18078.25	1.09	1591.25	1.45	18.02	1.40	2364.45	1.58	1.47
<b>p1</b>	1955.53	1.92	18111.17	1.09	1730.70	1.58	17.81	1.39	2364.93	1.58	1.49
<b>p2</b>	1946.55	1.91	18072.78	1.09	1763.38	1.61	17.98	1.40	2363.57	1.58	1.49
<b>TILE_16</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1898.72	1.86	18103.50	1.09	1490.50	1.36	18.11	1.41	2381.10	1.60	1.44
<b>p1</b>	1891.28	1.86	18076.08	1.09	1679.65	1.53	18.09	1.41	2379.38	1.59	1.47
<b>p2</b>	1884.83	1.85	18081.38	1.09	1569.65	1.43	17.81	1.39	2388.70	1.60	1.45
<b>TILE_17</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1977.35	1.94	18077.00	1.09	1412.08	1.29	16.18	1.26	2390.45	1.60	1.41
<b>p1</b>	1967.10	1.93	18081.10	1.09	1741.30	1.59	17.17	1.34	2389.22	1.60	1.48
<b>p2</b>	1957.78	1.92	18081.17	1.09	1734.62	1.58	16.65	1.30	2391.05	1.60	1.47
<b>TILE_18</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1967.90	1.93	18079.78	1.09	1344.20	1.23	18.39	1.43	2349.70	1.57	1.42
<b>p1</b>	1956.72	1.92	18073.15	1.09	1499.83	1.37	18.37	1.43	2346.82	1.57	1.45
<b>p2</b>	1959.20	1.92	18061.42	1.09	1589.85	1.45	18.11	1.41	2350.38	1.57	1.46
<b>TILE_19</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1965.97	1.93	18071.60	1.09	1295.08	1.18	18.10	1.41	2374.10	1.59	1.41
<b>p1</b>	1964.00	1.93	18054.00	1.09	1582.70	1.44	18.20	1.42	2365.35	1.58	1.47
<b>p2</b>	1957.67	1.92	18052.62	1.09	1657.22	1.51	18.11	1.41	2369.18	1.59	1.48
<b>TILE_20</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1903.45	1.87	18089.40	1.09	1328.58	1.21	18.14	1.41	2358.43	1.58	1.41
<b>p1</b>	1898.72	1.86	18081.15	1.09	1614.95	1.47	17.82	1.39	2354.90	1.58	1.46
<b>p2</b>	1939.35	1.90	18080.25	1.09	1731.83	1.58	17.98	1.40	2363.15	1.58	1.49
<b>p0_score:</b>	30.47										
<b>p1_score:</b>	30.73										
<b>p2_score:</b>	30.60										
<b>Unreviewed_VMmark_Score:</b>	30.60										

## Configuration

Server and Network	
Server Manufacturer and Model	HP ProLiant DL385 G7
Processor Vendor and Model	Twelve Core Amd Opteron 6176 SE
Processor Speed (GHz)	2.3GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 24 Cores / 24 Threads

Primary Cache	64KB I + 64KB D on chip per core
Secondary Cache	512K I+D on chip per core
Other Cache	12MB I+D L3 on chip
BIOS Version	03/18/2010
Memory Size (in GB, Number of DIMMs)	128GB (16x8GB)
Memory Type and Speed	1333MHz Registered ECC DDR3
Disk Subsystem Type	Direct attach SAS for operating system, FC SAN for VMs
Number of Disk Controllers	1
Disk Controller Vendors and Models	HP Smart Array P410i/256 MB Controller
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	1 QLogic QLE2462 dual port fibre channel HBA
Number of Network Controllers	3
Network Controller Vendors and Models	1xQuad-port Broadcom NetXtreme II BCM5709 Gigabit Ethernet (integrated), 2xSingle-port Chelsio T3 10Gb Ethernet
Network Switch Vendors and Models	HP ProCurve 3400cl-48G
Network Speed	10Gb/s for VM's & COS, 1Gb/s for alternate COS
Other Hardware	None.
Other Software	None.
Hardware Availability Date (MM-DD-YYYY)	03-29-2010
Software Availability Date (MM-DD-YYYY)	11-19-2009

**Virtualization Software**

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 1 (build 208167)
Virtualization Type	Hardware
Supplemental Software	None
Virtualization Software Availability Date	11-19-2009

**Storage**

Array Vendors, Models, and Firmware Versions	HP StorageWorks MSA 2000, firmware version J200P16
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 4/32
Disk Space Used	1.407TB for VM's
Array Cache Size	1GB

Total Number of Physical Disks Used	157
Total Number of Enclosures/Pods/Shelves Used	13
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12
Total Number of Storage Groups Used	13
Number LUNs Used	13
LUN Size and Number of Disks Per LUN	1.6TB per LUN, 12 disks per LUN
RAID Type	RAID 0 for VMs, none for O/S
Number of Members per RAID Set	12
Disk Vendors, Models, and Speeds	156 HP 146GB 15K RPM SAS drive for VMs, 1 HP 60GB 1.5G SATA SSD for O/S

#### Clients

Number of Clients	21
System Model(s)	HP ProLiant DL360G5
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	2.83GHz
Total Sockets/Total Cores/Total Threads	1 Sockets / 4 Cores / 4 Threads
Memory per Client	2GB
Network Controller Vendors and Models	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:
  - HP Power Profile set to Maximum Performance (default: Balanced Performance)
  - Thermal Configuration set to Increased Cooling (default: Optimal Cooling)
  
- QLogic HBA BIOS settings:
  - Fibre Channel tape support disabled (default enabled)

- Data rate option set to 3 (default 2)
- Execution Throttle set to 255 (default 16)
- vSwitch Configuration:
  - vSwitch0 for the Service Console on vmnic0 at 1Gb/s
  - vSwitch1 for Service Console 2 and all VM tiles 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 configured with 120 ports (default 56) on vmnic4 at 10Gb/s
  - vSwitch2 for all VM tiles 0, 2, 4, 6, 8, 12, 14, 16, 18, 21, 22 configured with 120 ports (default 56) on vmnic5 at 10Gb/s
- Storage Configuration:
  - database00\_bl685g6 configured to store database VMs 0, 2, 4, 6, 8, 11, 13, 15, 17, 19, 22
  - database01\_bl685g6 configured to store database VMs 1, 3, 5, 7, 9, 12, 14, 16, 18, 21
  - storage0\_bl685g6 configured to store all VMs other than database for tiles 0 & 1
  - storage1\_bl685g6 configured to store all VMs other than database for tiles 2 & 3
  - storage2\_bl685g6 configured to store all VMs other than database for tiles 4 & 5
  - storage3\_bl685g6 configured to store all VMs other than database for tiles 6 & 7
  - storage4\_bl685g6 configured to store all VMs other than database for tiles 8 & 9
  - storage5\_bl685g6 configured to store all VMs other than database for tiles 11 & 12
  - storage6\_bl685g6 configured to store all VMs other than database for tiles 13 & 14
  - storage7\_bl685g6 configured to store all VMs other than database for tiles 15 & 16
  - storage8\_bl685g6 configured to store all VMs other than database for tiles 17 & 18
  - storage9\_bl685g6 configured to store all VMs other than database for tiles 19 & 21
  - storage10\_bl685 configured to store all VMs other than database for tile 22

## Virtualization Software Notes

- virtual hardware upgraded from V4 to V7
- virtualized MMU was enabled for all VMs (default Automatic)
- all VMs installed with VM Tools 148783 except mailservers installed with build 208167
- ethernet adapter type set to vmxnet3 for all VMs
- logging was disabled for all VMs
- IDE & floppy devices were removed on all VMs (default enabled)
- BufferCache.SoftMaxDirty=85 (default 15)
- Disk.SchedNumReqOutstanding = 128 (default 32)
- IRQ.RoutingPolicy = 0 (default 2)
- Net.MaxNetifRxQueueLen = 300 (default 100)
- Net.MaxNetifTxQueueLen = 1000 (default 500)
- Net.TcpipHeapMax = 120 (default 64)
- Net.vmxnetThroughputWeight = 255 (default 0)
- /vmkernel/module/qla2xxx.o/options = "ql2xmaxqdepth=152" (default 32)
- /vmkernel/module/vmfs2/enabled = "false" (default true)
- /vmkernel/netNetqueueEnabled = "false" (default true)

## Operating System Notes

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

## Other Notes

None.

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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.

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