

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: HP ProLiant DL585 G6
Virtualization Platform: VMware ESX 4.0 (build 164009)

**VMmark V1.1.1 Score =
29.95 @ 20 Tiles**

Tested By: Hewlett Packard

Test Date: 7/8/2009

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1890.15	1.85	18106.03	1.09	1743.97	1.59	18.85	1.47	2407.07	1.61	1.50
p1	1885.88	1.85	18136.00	1.09	1878.10	1.71	18.54	1.44	2411.68	1.62	1.52
p2	1874.20	1.84	18134.17	1.09	1876.05	1.71	18.48	1.44	2414.80	1.62	1.52
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1940.42	1.90	18076.88	1.09	1888.97	1.72	18.65	1.45	2394.40	1.60	1.53
p1	1921.47	1.89	18111.42	1.09	1840.65	1.68	18.52	1.44	2409.07	1.61	1.52
p2	1908.12	1.87	18142.65	1.09	1784.03	1.63	18.27	1.42	2410.62	1.62	1.50
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1987.45	1.95	18128.95	1.09	1534.65	1.40	19.19	1.50	2391.10	1.60	1.48
p1	1978.72	1.94	18122.75	1.09	1617.80	1.48	19.09	1.49	2396.40	1.61	1.49
p2	1972.08	1.94	18131.92	1.09	1563.92	1.43	18.96	1.48	2403.47	1.61	1.48
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1995.60	1.96	18126.65	1.09	1799.78	1.64	18.77	1.46	2401.43	1.61	1.53
p1	1983.88	1.95	18132.03	1.09	1937.72	1.77	18.58	1.45	2416.80	1.62	1.55
p2	1960.38	1.92	18125.70	1.09	1845.35	1.68	18.55	1.45	2414.07	1.62	1.53
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1980.75	1.94	18158.53	1.09	1805.70	1.65	18.50	1.44	2423.05	1.62	1.52
p1	1970.22	1.93	18157.72	1.09	1892.62	1.73	18.53	1.44	2429.38	1.63	1.54
p2	1957.35	1.92	18131.30	1.09	1792.05	1.63	18.48	1.44	2432.50	1.63	1.52
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1896.25	1.86	18142.72	1.09	1718.40	1.57	19.00	1.48	2401.30	1.61	1.50
p1	1896.33	1.86	18156.42	1.09	1781.97	1.62	18.77	1.46	2418.07	1.62	1.51
p2	1883.25	1.85	18135.42	1.09	1798.20	1.64	18.72	1.46	2416.82	1.62	1.51

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1989.40	1.95	17679.58	1.06	1824.45	1.66	19.08	1.49	2418.60	1.62	1.53
p1	1981.30	1.94	18125.80	1.09	1891.72	1.72	18.89	1.47	2431.50	1.63	1.54
p2	1978.62	1.94	18128.33	1.09	1845.78	1.68	18.90	1.47	2437.62	1.63	1.54
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1983.72	1.95	18166.40	1.09	1737.60	1.58	18.51	1.44	2315.15	1.55	1.50
p1	1963.67	1.93	18171.40	1.09	1798.80	1.64	18.64	1.45	2264.43	1.52	1.50
p2	1960.40	1.92	18162.88	1.09	1887.65	1.72	18.55	1.45	2271.45	1.52	1.51
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1936.72	1.90	18133.03	1.09	1764.62	1.61	18.35	1.43	2412.75	1.62	1.50
p1	1919.12	1.88	18135.38	1.09	1688.50	1.54	18.52	1.44	2422.90	1.62	1.49
p2	1907.90	1.87	18162.03	1.09	1771.72	1.62	18.34	1.43	2428.65	1.63	1.50
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1940.12	1.90	18173.88	1.09	1788.97	1.63	18.50	1.44	2417.15	1.62	1.51
p1	1924.72	1.89	18141.47	1.09	1877.12	1.71	18.26	1.42	2427.95	1.63	1.52
p2	1914.47	1.88	18125.22	1.09	1728.50	1.58	18.32	1.43	2436.72	1.63	1.50
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1901.05	1.87	18128.70	1.09	1724.08	1.57	18.83	1.47	2400.32	1.61	1.50
p1	1887.55	1.85	17667.72	1.06	1747.22	1.59	18.64	1.45	2402.70	1.61	1.49
p2	1880.38	1.85	18124.80	1.09	1867.45	1.70	18.58	1.45	2409.50	1.61	1.52
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1896.45	1.86	18121.60	1.09	1726.00	1.57	18.91	1.47	2390.32	1.60	1.50
p1	1892.08	1.86	17675.15	1.06	1841.45	1.68	18.70	1.46	2394.65	1.60	1.51
p2	1885.72	1.85	18130.92	1.09	1900.28	1.73	18.63	1.45	2404.50	1.61	1.52
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1982.47	1.95	17672.45	1.06	1738.28	1.58	18.79	1.46	2417.90	1.62	1.51
p1	1963.75	1.93	18117.75	1.09	1690.05	1.54	18.73	1.46	2431.25	1.63	1.50
p2	1962.53	1.93	18114.97	1.09	1745.12	1.59	18.79	1.46	2430.30	1.63	1.51
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1980.55	1.94	17678.75	1.06	1534.78	1.40	19.16	1.49	2402.80	1.61	1.47
p1	1968.53	1.93	18152.88	1.09	1757.72	1.60	18.85	1.47	2402.45	1.61	1.52
p2	1963.20	1.93	18170.40	1.09	1792.58	1.63	18.81	1.47	2414.00	1.62	1.52
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1919.65	1.88	17687.03	1.06	1532.75	1.40	18.66	1.45	2407.28	1.61	1.46
p1	1892.72	1.86	18118.95	1.09	1696.30	1.55	18.46	1.44	2413.40	1.62	1.49
p2	1875.03	1.84	18108.30	1.09	1689.58	1.54	18.40	1.43	2415.60	1.62	1.48

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1787.00	1.75	18146.88	1.09	1413.15	1.29	17.83	1.39	2352.25	1.58	1.40
p1	1783.22	1.75	18153.12	1.09	1353.97	1.23	17.75	1.38	2366.97	1.59	1.39
p2	1775.55	1.74	18128.17	1.09	1327.62	1.21	17.63	1.37	2370.82	1.59	1.38
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1962.35	1.93	18080.15	1.09	1483.62	1.35	18.43	1.44	2383.45	1.60	1.45
p1	1937.83	1.90	18085.30	1.09	1587.55	1.45	18.15	1.41	2396.82	1.61	1.47
p2	1937.15	1.90	18081.60	1.09	1688.60	1.54	18.02	1.40	2403.72	1.61	1.48
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1888.00	1.85	18144.80	1.09	1381.45	1.26	18.97	1.48	2407.15	1.61	1.43
p1	1884.12	1.85	17697.15	1.07	1560.80	1.42	18.82	1.47	2413.75	1.62	1.46
p2	1878.35	1.84	18158.53	1.09	1692.55	1.54	18.72	1.46	2417.62	1.62	1.49
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1987.45	1.95	18165.47	1.09	1348.78	1.23	18.96	1.48	2416.22	1.62	1.44
p1	1969.25	1.93	18175.47	1.09	1497.38	1.37	18.65	1.45	2424.10	1.62	1.47
p2	1967.28	1.93	18174.65	1.09	1620.95	1.48	18.56	1.45	2423.68	1.62	1.49
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1960.15	1.92	18158.22	1.09	1272.55	1.16	18.78	1.46	2409.38	1.61	1.42
p1	1940.88	1.90	18144.47	1.09	1578.65	1.44	18.53	1.44	2420.38	1.62	1.48
p2	1931.50	1.90	18154.83	1.09	1684.28	1.54	18.33	1.43	2426.22	1.63	1.49
p0_score:	29.69										
p1_score:	29.95										
p2_score:	30.00										
Unreviewed_VMmark_Score:	29.95										

Configuration

Server and Network	
Server Manufacturer and Model	HP ProLiant DL585G6
Processor Vendor and Model	Six Core AMD Opteron 8439 SE
Processor Speed (GHz)	2.8GHz
Total Sockets/Total Cores/Total Threads	4 Sockets / 24 cores/ 24 threads
Primary Cache	64KB I + 64KB D on chip per core
Secondary Cache	512KB I+D on chip per core
Other Cache	6MB I+D L3 on chip
BIOS Version	05/07/2009

Memory Size (in GB, Number of DIMMs)	128GB (16x8GB)
Memory Type and Speed	PC2-5300 667MHz Registered ECC DDR2
Disk Subsystem Type	Direct attach SAS for operating system, FC SAN for VMs
Number of Disk Controllers	1
Disk Controller Vendors and Models	1 SMART Array P800 (O/S)
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	1 QLogic QMH2462 dual port fibre channel HBA
Number of Network Controllers	4
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	07/13/2009
Software Availability Date	05/21/2009

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 (build 164009)
Virtualization Type	Hardware
Supplemental Software	None.
Virtualization Software Availability Date	05/21/2009

Storage

Array Vendors, Models, and Firmware Versions	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	1.34TB for VM's
Array Cache Size	1GB
Total Number of Physical Disks Used	146
Total Number of Enclosures/Pods/Shelves Used	12
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12

Total Number of Storage Groups Used	12
Number LUNs Used	12
LUN Size and Number of Disks Per LUN	1.6TB per LUN, 12 disks per LUN
RAID Type	RAID 0 for VMs, RAID 1 for O/S
Number of Members per RAID Set	12
Disk Vendors, Models, and Speeds	144 x HP 146GB 15K RPM SAS drive for VMs, 2 x HP 36GB 15K RPM SFF for O/S

Clients

Number of Clients	20
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:
 - 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)
 - Drive Write Cache enabled (default disabled)
 - DRAM Prefetch disabled (default enabled)
 - Software Training on Hardware Prefetch disabled (default enabled)
- 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 tiles 0-9 standby, fileserver, javaserver, mailserver, and database VMs configured with 120 ports (default 56) on vmnic6
 - vSwitch6 for tiles 11-19, 21 standby, fileserver, javaserver, mailserver, and database VMs configured with 120 ports (default 56) on vmnic7
 - vSwitch2 for webservers 0-6 configured with 8 ports on vmnic1
 - vSwitch3 for webservers 7-9,11-14 configured with 8 ports on vmnic0
 - vSwitch5 for webservers 15-19,21 configured with 8 ports on vmnic5

- Storage Configuration:
 - database00_storage_dl585g6 configured to store database VMs 0, 2, 4, 6, 8, 11, 13, 15, 16, 17
 - database01_storage_dl585g6 configured to store database VMs 1, 3, 5, 7, 9, 12, 14, 18, 19, 21
 - storage0_dl585g6 configured to store all VMs other than database for tiles 0 & 1
 - storage1_dl585g6 configured to store all VMs other than database for tiles 2 & 3
 - storage2_dl585g6 configured to store all VMs other than database for tiles 4 & 5
 - storage3_dl585g6 configured to store all VMs other than database for tiles 6 & 7
 - storage4_dl585g6 configured to store all VMs other than database for tiles 8 & 9
 - storage5_dl585g6 configured to store all VMs other than database for tiles 10 & 11
 - storage6_dl585g6 configured to store all VMs other than database for tiles 12 & 13
 - storage7_dl585g6 configured to store all VMs other than database for tiles 14 & 15
 - storage8_dl585g6 configured to store all VMs other than database for tiles 16 & 17
 - storage9_dl585g6 configured to store all VMs other than database for tiles 18 & 19

Virtualization Software Notes

- virtual hardware upgraded from V4 to V7
- virtualized MMU was enabled for all VMs (default Automatic)
- ethernet adapter type set to vmxnet3 for all VMs
- logging was disabled for all VMs (default enabled)
- IDE & floppy devices were removed on all VMs (default enabled)
- BufferCache.SoftMaxDirty=85 (default 15)
- Disk.SchedNumReqOutstanding = 128 (default 32)
- Net.EtherswitchHashSize = 4 (default 1)
- IRQ.RoutingPolicy = 0 (default 2)
- Net.MaxNetifRxQueueLen = 300 (default 100)
- Net.MaxNetifTxQueueLen = 1000 (default 500)
- Net.MaxPortRxQueueLen = 160 (default 80)
- Net.Vmxnet2PinRxBuf = 1 (default 0)
- VMFS3.MaxHeapSizeMB = 64 (default 80)
- /vmkernel/module/qla2xxx.o/options = "ql2xmaxqdepth=128" set in /etc/vmware/esx.conf (default 32)
- firewall was 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

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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