

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: HP Proliant BL490 G6
 Virtualization Platform: VMware ESX 4.0 (build 158725)

**VMmark V1.1 Score =
24.24 @ 17 Tiles**

Tested By: HP

Test Date: 05/01/2009

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1821.53	1.79	18134.85	1.09	1352.95	1.23	16.66	1.30	2411.25	1.62	1.38
p1	1846.90	1.81	18138.08	1.09	1466.40	1.34	16.61	1.29	2409.60	1.61	1.41
p2	1830.20	1.80	18129.88	1.09	1272.10	1.16	16.88	1.32	2417.75	1.62	1.37
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1833.28	1.80	18133.12	1.09	1574.97	1.44	16.21	1.26	2430.30	1.63	1.42
p1	1847.25	1.81	18131.00	1.09	1551.38	1.41	16.49	1.29	2433.12	1.63	1.42
p2	1849.38	1.81	18128.30	1.09	1533.78	1.40	16.77	1.31	2429.53	1.63	1.43
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1825.05	1.79	18130.47	1.09	1563.85	1.43	16.29	1.27	2407.00	1.61	1.42
p1	1824.85	1.79	18124.45	1.09	1570.35	1.43	16.40	1.28	2417.35	1.62	1.42
p2	1825.62	1.79	18148.42	1.09	1560.72	1.42	16.76	1.31	2415.65	1.62	1.43
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1812.22	1.78	17670.97	1.06	1695.17	1.55	16.10	1.26	2417.72	1.62	1.43
p1	1851.03	1.82	18155.10	1.09	1651.35	1.51	16.54	1.29	2420.07	1.62	1.44
p2	1860.17	1.83	18160.60	1.09	1683.42	1.53	16.37	1.28	2418.53	1.62	1.45
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1839.67	1.81	17682.85	1.06	1625.35	1.48	16.34	1.27	2421.35	1.62	1.43
p1	1852.10	1.82	18129.88	1.09	1620.67	1.48	15.86	1.24	2421.95	1.62	1.43
p2	1850.30	1.82	18142.28	1.09	1617.78	1.47	16.24	1.27	2423.40	1.62	1.43
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1833.70	1.80	18122.38	1.09	1555.42	1.42	16.06	1.25	2408.60	1.61	1.41
p1	1850.45	1.82	18136.78	1.09	1552.60	1.42	16.62	1.30	2412.53	1.62	1.43
p2	1848.60	1.81	18135.17	1.09	1559.65	1.42	16.44	1.28	2413.68	1.62	1.42

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1832.25	1.80	18142.08	1.09	1657.95	1.51	16.17	1.26	2428.25	1.63	1.44
p1	1820.03	1.79	17713.85	1.07	1540.50	1.40	16.59	1.29	2432.60	1.63	1.41
p2	1850.72	1.82	18170.78	1.09	1576.90	1.44	16.61	1.29	2425.90	1.63	1.43
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1828.88	1.79	17706.50	1.07	1574.95	1.44	16.43	1.28	2409.35	1.61	1.42
p1	1855.35	1.82	18151.60	1.09	1559.72	1.42	16.67	1.30	2413.25	1.62	1.43
p2	1862.78	1.83	18147.40	1.09	1628.80	1.49	16.77	1.31	2413.75	1.62	1.44
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1835.12	1.80	18128.85	1.09	1669.90	1.52	16.07	1.25	2409.18	1.61	1.43
p1	1851.85	1.82	18128.72	1.09	1728.70	1.58	16.20	1.26	2411.60	1.62	1.45
p2	1856.12	1.82	17685.38	1.06	1813.33	1.65	16.43	1.28	2417.55	1.62	1.46
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1836.75	1.80	18152.92	1.09	1555.38	1.42	16.11	1.26	2428.00	1.63	1.42
p1	1854.80	1.82	17670.80	1.06	1676.88	1.53	16.18	1.26	2434.88	1.63	1.44
p2	1857.83	1.82	18129.47	1.09	1670.30	1.52	16.48	1.28	2430.35	1.63	1.45
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1840.80	1.81	17670.65	1.06	1639.85	1.50	16.31	1.27	2396.70	1.61	1.42
p1	1850.92	1.82	18132.62	1.09	1680.80	1.53	16.47	1.28	2401.62	1.61	1.44
p2	1853.97	1.82	18130.15	1.09	1605.17	1.46	16.69	1.30	2400.38	1.61	1.43
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1846.67	1.81	18002.38	1.08	1523.97	1.39	16.28	1.27	2430.20	1.63	1.41
p1	1860.35	1.83	18110.88	1.09	1629.08	1.49	16.39	1.28	2431.62	1.63	1.44
p2	1861.53	1.83	18152.50	1.09	1705.85	1.56	16.55	1.29	2431.97	1.63	1.46
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1820.95	1.79	18128.67	1.09	1474.15	1.34	16.15	1.26	2404.50	1.61	1.40
p1	1830.53	1.80	17703.78	1.07	1680.55	1.53	16.50	1.29	2409.55	1.61	1.44
p2	1833.90	1.80	18137.05	1.09	1711.53	1.56	16.45	1.28	2409.75	1.61	1.45
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1838.00	1.80	18033.17	1.09	1451.00	1.32	16.09	1.25	2429.43	1.63	1.40
p1	1844.97	1.81	18042.70	1.09	1572.33	1.43	16.42	1.28	2431.30	1.63	1.43
p2	1828.53	1.79	18002.20	1.08	1597.20	1.46	16.34	1.27	2426.10	1.63	1.42
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1774.95	1.74	18093.72	1.09	1467.30	1.34	15.68	1.22	2406.88	1.61	1.38
p1	1786.03	1.75	18138.38	1.09	1669.22	1.52	16.41	1.28	2407.97	1.61	1.43
p2	1780.55	1.75	18106.72	1.09	1584.83	1.44	16.33	1.27	2399.47	1.61	1.41

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1756.53	1.72	18051.90	1.09	1339.35	1.22	15.23	1.19	2358.22	1.58	1.34
p1	1774.35	1.74	18075.03	1.09	1623.55	1.48	15.62	1.22	2357.80	1.58	1.40
p2	1785.40	1.75	18094.28	1.09	1701.42	1.55	15.79	1.23	2362.80	1.58	1.42
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1772.22	1.74	17962.83	1.08	1223.55	1.12	15.85	1.24	2364.00	1.58	1.33
p1	1777.28	1.74	18005.42	1.08	1525.15	1.39	15.87	1.24	2370.20	1.59	1.39
p2	1775.83	1.74	17992.85	1.08	1634.75	1.49	16.14	1.26	2363.00	1.58	1.41
p0_score:	23.86										
p1_score:	24.24										
p2_score:	24.31										
Unreviewed_VMmark_Score:	24.24										

Configuration

Server and Network	
Server Manufacturer and Model	HP Proliant BL490 G6
Processor Vendor and Model	Quad-core Intel Xeon X5570
Processor Speed (GHz)	2.93GHz
Number of Sockets/Cores per Socket	2 Sockets / 4 Cores per Socket (8 Cores Total) / 2 Threads per Core (16 Threads Total with Intel Hyper-Threading Capability)
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256K per core
Other Cache	8MB L3
Memory	96GB (12x8GB 1066MHz Registered ECC DDR3)
Disk Subsystem Type	Direct attach SATA for operating system, FC SAN for VMs
Number of Disk Controllers	1 HP Embedded SATA Controller
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	1 dual-channel QLogic QMH2462 fibre channel HBA
Number of Network Controllers	3
Network Controller Vendors and Models	Integrated HP NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter, 1xdual-port HP NC360m Gigabit Ethernet
Network Switch Vendors and Models	HP ProCurve 3400cl-48G
Network Speed	10Gb/s for VM's, 1Gb for COS
Other Hardware	HP ProCurve Switch cl 10-GbE Media Flex Module
Other Software	None.
Hardware Availability Date	03/30/2009

Software Availability Date	06/30/2009
Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 4.0 (build 158725)
Virtualization Type	Hardware
Supplemental Software	None.
Virtualization Software Availability Date	06/30/2009
Storage	
Array Vendor, Model, and Firmware Version	HP StorageWorks MSA 2000, firmware version J200P16
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 4/32
Disk Space Used	1.12TB for VM's
Array Cache Size	1GB
Number and Size of LUNs	11 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 146GB 15K SAS drives for data, HP 32GB 1.5G SATA SSD for O/S
Clients	
Number of Clients	17
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:
 - Processor Speed: Intel Turbo Boost up to 3.2GHz
 - HP Power Profile: Maximum Performance (default Balanced Power and Performance)
 - HP Power Regulator: HP Static High Performance Mode (default HP Dynamic Power Savings Mode)
 - Thermal Configuration: Increased Cooling (default Optimal Cooling)
 - Drive Write Cache: 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 64 (default 16)
- vSwitch Configuration:
 - vSwitch0 for the Service Console configured on vmnic2
 - vSwitch1 for VMs for tiles 0-8 plus standby9, javaserver9 & webserver9 on vmnic0 running at 10Gb/s
 - vSwitch2 for VMs for tiles 11-17 plus mailserver9, fileserver9 & database9 on vmnic1 running at 10Gb/s
- Storage Configuration:
 - database_00_bl685g6 configured to store even-numbered database VMs
 - database_01_bl685g6 configured to store odd-numbered database VMs
 - 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 10 & 11
 - storage6_bl685g6 configured to store all VMs other than database for tiles 12 & 13
 - storage7_bl685g6 configured to store all VMs other than database for tiles 14 & 15
 - storage8_bl685g6 configured to store all VMs other than database for tile 16

Virtualization Software Notes

- all virtual machines were upgraded to virtual hardware version 7
- virtualized MMU was enabled for all VMs (default Automatic)
- ethernet adapter type set to vmxnet3 for all VMs
- logging was disabled for all VMs except Mailserver17
- floppy devices were removed on all VMs (default enabled)
- IDE devices removed on all VMs except mailservers0-7, 11-14 and file servers
- VMFS3.MaxHeapSizeMB was set to 64 (default 80)
- BufferCache.SoftMaxDirty was set to 85 (default 15)
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- Net.EtherswitchHashSize was set to 4 (default 1)
- iptables and firewall were disabled for the COS

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

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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