

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: HP ProLiant ML370 G6
Virtualization Platform: VMware ESX 4.0 Update 1 (build 208167)

VMmark V1.1.1 Score =
25.29 @ 18 Tiles

Tested By: HP

Test Date: 03-22-2010

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1900.92	1.87	18107.00	1.09	1563.92	1.43	16.96	1.32	2059.32	1.38	1.40
p1	1920.22	1.88	18098.17	1.09	1657.83	1.51	16.84	1.31	2108.30	1.41	1.42
p2	1911.47	1.88	18082.72	1.09	1469.65	1.34	17.08	1.33	2079.40	1.39	1.38
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1906.90	1.87	18097.45	1.09	1611.42	1.47	16.93	1.32	2094.72	1.40	1.41
p1	1913.85	1.88	18097.38	1.09	1554.33	1.42	16.90	1.32	2070.05	1.39	1.40
p2	1918.53	1.88	18090.97	1.09	1557.47	1.42	16.98	1.32	2047.97	1.37	1.40
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1912.45	1.88	18093.12	1.09	1620.00	1.48	16.76	1.31	2119.70	1.42	1.41
p1	1917.53	1.88	18088.92	1.09	1584.62	1.44	16.82	1.31	2080.90	1.39	1.40
p2	1908.25	1.87	18089.22	1.09	1619.88	1.48	17.00	1.32	2095.82	1.40	1.41
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1922.90	1.89	18127.20	1.09	1613.12	1.47	16.97	1.32	2075.18	1.39	1.41
p1	1935.60	1.90	18125.92	1.09	1576.33	1.44	17.10	1.33	2047.08	1.37	1.40
p2	1928.45	1.89	18132.70	1.09	1616.53	1.47	17.00	1.33	2099.97	1.41	1.42
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1915.75	1.88	18120.55	1.09	1674.53	1.53	17.03	1.33	2075.43	1.39	1.42
p1	1919.97	1.88	18107.65	1.09	1631.20	1.49	16.99	1.32	2111.57	1.41	1.42
p2	1912.45	1.88	18084.40	1.09	1672.28	1.52	16.87	1.32	2086.85	1.40	1.42
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1920.65	1.88	18110.17	1.09	1547.65	1.41	16.70	1.30	2080.43	1.39	1.39
p1	1925.42	1.89	18110.12	1.09	1630.78	1.49	16.90	1.32	2072.43	1.39	1.41
p2	1935.88	1.90	18098.83	1.09	1567.05	1.43	16.85	1.31	2047.55	1.37	1.40
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1888.33	1.85	18073.70	1.09	1691.30	1.54	16.59	1.29	2083.62	1.40	1.41
p1	1900.35	1.87	18073.05	1.09	1665.55	1.52	16.98	1.32	2090.40	1.40	1.42
p2	1888.70	1.85	18075.50	1.09	1662.92	1.52	16.83	1.31	2077.72	1.39	1.41
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1913.88	1.88	18081.47	1.09	1521.92	1.39	16.81	1.31	2083.38	1.40	1.39
p1	1930.97	1.90	18092.97	1.09	1525.90	1.39	17.02	1.33	2113.97	1.42	1.40
p2	1920.83	1.89	18100.17	1.09	1625.42	1.48	17.19	1.34	2064.20	1.38	1.41
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1900.70	1.87	18099.00	1.09	1764.90	1.61	16.86	1.31	2126.30	1.42	1.44
p1	1914.05	1.88	18104.03	1.09	1767.92	1.61	16.79	1.31	2103.35	1.41	1.44
p2	1912.15	1.88	18102.12	1.09	1702.22	1.55	17.12	1.33	2107.88	1.41	1.43
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1911.78	1.88	18099.30	1.09	1512.75	1.38	17.02	1.33	2070.50	1.39	1.39
p1	1925.17	1.89	18087.83	1.09	1578.22	1.44	16.96	1.32	2118.43	1.42	1.41
p2	1927.08	1.89	18105.47	1.09	1601.08	1.46	17.24	1.34	2087.43	1.40	1.41
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1900.85	1.87	18096.30	1.09	1628.50	1.48	16.86	1.31	2076.18	1.39	1.41
p1	1915.15	1.88	18099.33	1.09	1604.38	1.46	16.79	1.31	2090.07	1.40	1.41
p2	1908.55	1.87	18104.88	1.09	1576.55	1.44	16.94	1.32	2085.88	1.40	1.40
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1913.67	1.88	18083.40	1.09	1629.95	1.49	16.98	1.32	2099.20	1.41	1.41
p1	1926.40	1.89	18085.62	1.09	1571.22	1.43	17.13	1.33	2098.70	1.41	1.41
p2	1932.03	1.90	18102.53	1.09	1504.20	1.37	17.13	1.34	2058.40	1.38	1.39
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1908.03	1.87	18064.10	1.09	1537.10	1.40	16.46	1.28	2099.57	1.41	1.39
p1	1918.72	1.88	18075.62	1.09	1686.47	1.54	16.39	1.28	2067.00	1.39	1.41
p2	1903.92	1.87	18065.62	1.09	1625.58	1.48	16.60	1.29	2055.43	1.38	1.40
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1861.97	1.83	18072.65	1.09	1506.83	1.37	16.48	1.28	2065.32	1.38	1.37
p1	1866.50	1.83	18045.05	1.09	1681.03	1.53	16.75	1.31	2052.70	1.38	1.41
p2	1877.25	1.84	18053.85	1.09	1650.15	1.50	16.66	1.30	2068.05	1.39	1.40
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1849.15	1.81	18017.17	1.08	1390.85	1.27	16.25	1.27	2034.92	1.36	1.34
p1	1853.67	1.82	18030.85	1.09	1654.58	1.51	16.58	1.29	2042.85	1.37	1.39
p2	1848.33	1.81	18023.67	1.08	1686.72	1.54	16.48	1.28	2035.95	1.36	1.40
TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1868.30	1.83	18030.35	1.09	1450.00	1.32	16.52	1.29	2093.32	1.40	1.37
p1	1867.38	1.83	18040.92	1.09	1577.47	1.44	16.44	1.28	2054.07	1.38	1.38
p2	1882.00	1.85	18046.20	1.09	1733.90	1.58	16.63	1.30	2072.53	1.39	1.42
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1810.88	1.78	17940.85	1.08	1310.55	1.19	16.47	1.28	2130.20	1.43	1.33
p1	1825.80	1.79	17982.17	1.08	1629.45	1.49	16.41	1.28	2108.88	1.41	1.39
p2	1831.70	1.80	18000.67	1.08	1579.65	1.44	16.63	1.30	2091.93	1.40	1.39
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1830.65	1.80	17906.15	1.08	1255.20	1.14	16.33	1.27	2097.55	1.41	1.32
p1	1846.17	1.81	17894.35	1.08	1525.00	1.39	16.69	1.30	2117.57	1.42	1.38
p2	1849.38	1.81	17985.80	1.08	1713.20	1.56	16.55	1.29	2124.60	1.42	1.41
p0_score:	25.00										
p1_score:	25.29										
p2_score:	25.30										
Unreviewed_VMmark_Score:	25.29										

Configuration

Server and Network	
Server Manufacturer and Model	HP ProLiant ML370 G6
Processor Vendor and Model	Intel Xeon W5580
Processor Speed (GHz)	3.2GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB per core
Other Cache	8MB L3
BIOS Version	08/14/2009
Memory Size (in GB, Number of DIMMs)	96GB (12x8GB)
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 QLE2632 dual port fibre channel HBA
Number of Network Controllers	2
Network Controller Vendors and Models	1xQuad-port HP NC375i (integrated) , 1xDual-port Intel 82598EB 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)	04-27-2009
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	1.1TB for VM's
Array Cache Size	1GB
Total Number of Physical Disks Used	133
Total Number of Enclosures/Pods/Shelves Used	11
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	11
Total Number of Storage Groups Used	11
Number LUNs Used	11
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	132 HP 146GB 15K RPM SAS drive for VMs, 1 HP 60GB 1.5G SATA SSD for O/S
Clients	
Number of Clients	18
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:
 - Intel Turbo Boost up to 3.46 GHz
 - HP Power Profile set to Maximum Performance (default: Balanced Performance)
 - Thermal Configuration set to Increased Cooling (default: Optimal Cooling)
 - Memory Speed with 2 DIMMs per Channel set to 1333 Mhz Maximum (default: 1066 Mhz Maximum)
- 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 all VM tiles 1, 3, 5, 7, 9, 11, 13, 15, 17 on vmnic6 at 10Gb/s
 - vSwitch2 for Service Console 2 and all VM tiles 0, 2, 4, 6, 8, 12, 14, 16, 18 on vmnic5 at 10Gb/s
- Storage Configuration:
 - database00_b1490g6 contains database VMs 0, 2, 4, 6, 8, 11, 13, 15, 17
 - database01_b1490g6 contains database VMs 1, 3, 5, 7, 9, 12, 14, 16, 18
 - storage0_b1490g6 contains mailserver0, fileserver0, webserver0, javaserver0, standby0, mailserver9, fileserver1, webserver1, javaserver1, standby1
 - storage1_b1490g6 contains mailserver1, fileserver2, webserver2, javaserver2, standby2, mailserver11, fileserver3, webserver3, javaserver3, standby3

- storage2_bl490g6 contains mailserver2, fileserver4, webserver4, javaserver4, standby4, mailserver12, fileserver5, webserver5, javaserver5, standby5
- storage3_bl490g6 contains mailserver3, fileserver6, webserver6, javaserver6, standby6, mailserver13, fileserver7, webserver7, javaserver7, standby7
- storage4_bl490g6 contains mailserver4, fileserver8, webserver8, javaserver8, standby8, mailserver14, fileserver9, webserver9, javaserver9, standby9
- storage5_bl490g6 contains mailserver5, fileserver11, webserver11, javaserver11, standby11, mailserver15, fileserver12, webserver12, javaserver12, standby12
- storage6_bl490g6 contains mailserver6, fileserver13, webserver13, javaserver13, standby13, mailserver16, fileserver14, webserver14, javaserver14, standby14
- storage7_bl490g6 contains mailserver7, fileserver15, webserver15, javaserver15, standby15, mailserver17, fileserver16, webserver16, javaserver16, standby16
- storage8_bl490g6 contains mailserver8, fileserver17, webserver17, javaserver17, standby17, mailserver18, fileserver18, webserver18, javaserver18, standby18

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 except mailserver17
- 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" set in /etc/vmware/esx.conf
- /vmkernel/module/vmfs2/enabled = "false"
- /vmkernel/netNetqueueEnabled = "false"
- firewall was 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

None.

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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