

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: HP ProLiant DL380 G7
Virtualization Platform: VMware ESX 4.0 Update 2 (build 261974)

VMmark V1.1.1 Score =
38.97 @ 28 Tiles

Tested By: HP

Test Date: 09-30-2010

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1777.60	1.74	17720.72	1.07	1578.85	1.44	17.13	1.34	1967.53	1.32	1.36
p1	1795.95	1.76	18142.83	1.09	1625.53	1.48	16.97	1.32	1972.15	1.32	1.38
p2	1787.80	1.75	18158.33	1.09	1597.25	1.46	16.76	1.31	1968.60	1.32	1.37
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1747.35	1.71	17681.25	1.06	1292.97	1.18	16.15	1.26	2281.45	1.53	1.33
p1	1759.55	1.73	18121.28	1.09	1448.00	1.32	16.24	1.27	2282.38	1.53	1.37
p2	1770.00	1.74	18138.97	1.09	1548.88	1.41	16.29	1.27	2274.43	1.52	1.39
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1786.15	1.75	18159.95	1.09	1377.15	1.26	15.60	1.22	2308.03	1.55	1.35
p1	1806.30	1.77	17720.22	1.07	1607.62	1.47	15.70	1.22	2303.12	1.54	1.39
p2	1796.30	1.76	18164.90	1.09	1619.28	1.48	15.62	1.22	2295.28	1.54	1.40
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1736.60	1.70	17743.97	1.07	1512.83	1.38	15.95	1.24	2292.85	1.54	1.37
p1	1742.65	1.71	18189.45	1.09	1491.00	1.36	16.11	1.26	2287.88	1.53	1.37
p2	1745.55	1.71	18185.67	1.09	1498.75	1.37	15.96	1.24	2282.30	1.53	1.37
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1754.17	1.72	17723.03	1.07	1402.08	1.28	16.78	1.31	2286.95	1.53	1.36
p1	1761.40	1.73	18153.65	1.09	1615.88	1.47	16.96	1.32	2286.45	1.53	1.41
p2	1752.58	1.72	18147.97	1.09	1579.50	1.44	16.80	1.31	2283.28	1.53	1.40
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1744.47	1.71	17701.28	1.07	1552.92	1.42	16.29	1.27	2312.68	1.55	1.38
p1	1770.92	1.74	18156.35	1.09	1597.47	1.46	16.10	1.25	2310.22	1.55	1.40
p2	1773.33	1.74	18152.03	1.09	1619.53	1.48	16.27	1.27	2301.40	1.54	1.41
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1754.67	1.72	18161.97	1.09	1454.50	1.33	16.94	1.32	2175.72	1.46	1.37
p1	1774.03	1.74	18150.03	1.09	1596.70	1.46	16.76	1.31	2177.28	1.46	1.39
p2	1762.72	1.73	17689.33	1.06	1667.15	1.52	16.87	1.31	2180.57	1.46	1.40
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1706.42	1.67	17737.33	1.07	1427.33	1.30	16.12	1.26	2297.40	1.54	1.35
p1	1738.92	1.71	18186.70	1.09	1634.35	1.49	16.29	1.27	2293.47	1.54	1.40
p2	1743.45	1.71	18186.33	1.09	1555.28	1.42	16.17	1.26	2289.53	1.53	1.39
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1761.38	1.73	17708.70	1.07	1438.30	1.31	16.77	1.31	2303.40	1.54	1.37
p1	1753.28	1.72	18185.75	1.09	1681.75	1.53	16.86	1.31	2307.40	1.55	1.42
p2	1772.03	1.74	18215.75	1.10	1667.30	1.52	16.89	1.32	2297.05	1.54	1.42
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1740.78	1.71	17696.20	1.07	1446.45	1.32	16.68	1.30	2274.35	1.52	1.37
p1	1738.35	1.71	18173.03	1.09	1680.10	1.53	16.62	1.30	2268.47	1.52	1.41
p2	1722.90	1.69	18188.12	1.09	1670.42	1.52	16.65	1.30	2261.62	1.52	1.41
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1746.20	1.71	17701.53	1.07	1327.92	1.21	16.26	1.27	2293.90	1.54	1.34
p1	1765.55	1.73	18108.45	1.09	1649.33	1.50	16.16	1.26	2288.15	1.53	1.41
p2	1772.67	1.74	18183.58	1.09	1656.20	1.51	16.30	1.27	2284.43	1.53	1.41
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1782.05	1.75	17743.38	1.07	1400.10	1.28	17.07	1.33	2321.88	1.56	1.38
p1	1786.33	1.75	18169.50	1.09	1664.60	1.52	16.85	1.31	2316.70	1.55	1.43
p2	1798.38	1.76	18182.22	1.09	1741.25	1.59	16.72	1.30	2306.30	1.55	1.44
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1747.40	1.71	18157.03	1.09	1393.83	1.27	16.91	1.32	2293.22	1.54	1.37
p1	1761.28	1.73	18156.70	1.09	1525.72	1.39	16.85	1.31	2284.50	1.53	1.40
p2	1773.85	1.74	18119.00	1.09	1561.47	1.42	16.57	1.29	2279.20	1.53	1.40
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1782.72	1.75	18167.85	1.09	1347.38	1.23	16.80	1.31	2314.05	1.55	1.37
p1	1791.38	1.76	17683.08	1.06	1633.45	1.49	16.54	1.29	2309.78	1.55	1.41
p2	1799.78	1.77	18112.28	1.09	1677.33	1.53	16.71	1.30	2300.18	1.54	1.43
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1742.40	1.71	17713.38	1.07	1383.58	1.26	16.83	1.31	2293.35	1.54	1.36
p1	1753.05	1.72	18141.78	1.09	1577.90	1.44	16.93	1.32	2284.75	1.53	1.40
p2	1767.70	1.73	18129.88	1.09	1672.65	1.53	16.85	1.31	2277.78	1.53	1.42
TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1769.70	1.74	18145.67	1.09	1390.05	1.27	16.32	1.27	2323.85	1.56	1.37
p1	1796.20	1.76	18143.20	1.09	1470.17	1.34	16.24	1.27	2316.70	1.55	1.38
p2	1793.92	1.76	18154.33	1.09	1637.50	1.49	16.09	1.25	2305.93	1.55	1.41
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1743.80	1.71	17742.35	1.07	1396.67	1.27	16.73	1.30	2295.07	1.54	1.36
p1	1760.88	1.73	18186.67	1.09	1608.10	1.47	16.62	1.30	2285.40	1.53	1.41
p2	1749.72	1.72	18155.17	1.09	1610.28	1.47	16.54	1.29	2279.32	1.53	1.40
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1773.72	1.74	17755.72	1.07	1324.42	1.21	17.06	1.33	2318.15	1.55	1.36
p1	1788.78	1.76	18211.78	1.10	1554.05	1.42	16.98	1.32	2307.12	1.55	1.41
p2	1755.88	1.72	18205.42	1.10	1626.97	1.48	16.94	1.32	2296.95	1.54	1.42
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1750.12	1.72	18124.35	1.09	1317.00	1.20	16.14	1.26	2286.07	1.53	1.34
p1	1759.55	1.73	18133.20	1.09	1493.35	1.36	16.34	1.27	2274.32	1.52	1.38
p2	1771.10	1.74	18134.33	1.09	1563.92	1.43	16.29	1.27	2270.80	1.52	1.39
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1761.85	1.73	18185.62	1.09	1243.00	1.13	16.85	1.31	2288.82	1.53	1.34
p1	1786.33	1.75	18155.10	1.09	1526.65	1.39	16.80	1.31	2281.53	1.53	1.40
p2	1779.22	1.75	18146.42	1.09	1706.95	1.56	16.82	1.31	2269.95	1.52	1.43
TILE_20	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1675.10	1.64	18110.15	1.09	1393.42	1.27	16.05	1.25	2290.60	1.53	1.34
p1	1724.20	1.69	18132.80	1.09	1534.75	1.40	16.24	1.27	2278.38	1.53	1.38
p2	1723.80	1.69	18128.47	1.09	1534.78	1.40	16.17	1.26	2272.72	1.52	1.38
TILE_21	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1759.50	1.73	18123.17	1.09	1243.80	1.13	16.87	1.32	1999.45	1.34	1.30
p1	1757.53	1.72	18121.85	1.09	1476.22	1.35	16.86	1.31	1983.83	1.33	1.35
p2	1771.00	1.74	18142.50	1.09	1531.58	1.40	16.77	1.31	1960.30	1.31	1.35
TILE_22	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1749.25	1.72	18186.53	1.09	1223.42	1.12	16.17	1.26	2161.97	1.45	1.31
p1	1801.55	1.77	17727.88	1.07	1589.40	1.45	16.08	1.25	2156.85	1.45	1.38
p2	1788.42	1.76	18180.70	1.09	1622.35	1.48	16.23	1.26	2156.88	1.45	1.39
TILE_23	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1728.55	1.70	18120.10	1.09	1251.47	1.14	16.21	1.26	2304.15	1.54	1.33
p1	1759.28	1.73	18170.95	1.09	1426.88	1.30	16.04	1.25	2295.43	1.54	1.36
p2	1767.20	1.73	18178.65	1.09	1587.33	1.45	16.14	1.26	2288.97	1.53	1.40
TILE_24	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1770.30	1.74	18150.00	1.09	1242.78	1.13	16.20	1.26	2325.72	1.56	1.33
p1	1799.30	1.77	18153.95	1.09	1563.80	1.43	16.28	1.27	2320.40	1.55	1.40
p2	1777.62	1.74	18148.47	1.09	1681.72	1.53	16.33	1.27	2310.10	1.55	1.42
TILE_25	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1756.08	1.72	18165.45	1.09	1175.75	1.07	16.12	1.26	2297.68	1.54	1.31
p1	1767.42	1.73	18144.72	1.09	1417.92	1.29	16.32	1.27	2289.28	1.53	1.37
p2	1774.65	1.74	18136.95	1.09	1544.45	1.41	16.13	1.26	2284.25	1.53	1.39
TILE_26	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1752.15	1.72	18115.67	1.09	1180.85	1.08	16.57	1.29	2292.80	1.54	1.32
p1	1753.17	1.72	18130.67	1.09	1507.70	1.37	16.70	1.30	2287.93	1.53	1.39
p2	1773.28	1.74	18131.70	1.09	1675.70	1.53	16.55	1.29	2277.25	1.53	1.42
TILE_27	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1781.92	1.75	18159.00	1.09	1156.30	1.05	16.13	1.26	2293.50	1.54	1.31
p1	1746.03	1.71	18163.55	1.09	1457.55	1.33	16.13	1.26	2288.40	1.53	1.37
p2	1777.35	1.74	18165.58	1.09	1657.97	1.51	16.06	1.25	2277.15	1.53	1.41
p0_score:	37.76										
p1_score:	38.97										
p2_score:	39.25										
Unreviewed_VMmark_Score:	38.97										

Configuration

Server and Network	
Server Manufacturer and Model	HP ProLiant DL380 G7
Processor Vendor and Model	Intel Xeon X5680
Processor Speed (GHz)	3.33 GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB per core
Other Cache	12MB L3
BIOS Version	08/16/2010
Memory Size (in GB, Number of DIMMs)	192GB (12x16GB)
Memory Type and Speed	1333MHz dual rank 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	1xEmulex LPe12002 dual port fibre channel HBA
Number of Network Controllers	3
Network Controller Vendors and Models	2xHP NC382i dual-port (integrated) , 1xIntel 82598EB dual-port 10Gb Ethernet
Network Switch Vendors and Models	HP ProCurve 3400cl-48G
Network Speed	10Gb/s and 1Gb/s for VMs, 1Gb/s for COS
Other Hardware	None.
Other Software	None.
Hardware Availability Date (MM-DD-YYYY)	11-30-2010
Software Availability Date (MM-DD-YYYY)	06-10-2010

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 2 (build 261974)
Virtualization Type	Hardware
Supplemental Software	None
Virtualization Software Availability Date	06-10-2010

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	1.71TB for VM's
Array Cache Size	1GB
Total Number of Physical Disks Used	180
Total Number of Enclosures/Pods/Shelves Used	15
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12
Total Number of Storage Groups Used	15

Number LUNs Used	15
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	180 HP 146GB 15K RPM SAS drive for VMs, 1 HP 60GB 1.5G SATA SSD for O/S
Clients	
Number of Clients	28
System Model(s)	HP ProLiant DL360G5
Processor Vendor(s) and Model(s)	Intel Xeon E5440
Processor Speed(s) (GHz)	2.83GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 8 Threads
Memory per Client	3.25 GB
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 3.60 GHz (default enabled)
 - HP Power Profile set to Maximum Performance (default Balanced Performance)
 - Collaborative Power Control disabled (default enabled)
 - Thermal Configuration set to Increased Cooling (default Optimal Cooling)
 - HW Prefetcher disabled (default enabled)
 - Adjacent Sector Prefetch disabled (default enabled)
 - DCU Prefetcher disabled (default enabled)
 - Data Reuse disabled (default enabled)

- vSwitch Configuration:
 - vSwitch0 for the Service Console on vmnic0 at 1Gb/s
 - vSwitch1 for webserver VMs 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 27 on vmnic4 at 10Gb/s
 - vSwitch2 for webserver VMs 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25 on vmnic5 at 10Gb/s

- vSwitch3 for all javaserver, standby, and mailserver VMs on vmnic2 at 1Gb/s
- vSwitch3 configured for 120 ports (default 56)
- vSwitch4 for all fileserver VMs on vmnic1 at 1Gb/s
- vSwitch5 for all database VMs on vmnic3 at 1Gb/s
- Storage Configuration:
 - database00_bl685g6 contains database VMs 0, 2, 4, 6, 8, 11, 13, 15, 17, 19, 20, 22, 24, 26
 - database01_bl685g6 contains database VMs 1, 3, 5, 7, 9, 10, 12, 14, 16, 18, 21, 23, 25, 27
 - storage0_bl685g6 contains mailserver0, fileserver0, webserver0, javaserver0, standby0, mailserver1, fileserver1, webserver1, javaserver1, standby1
 - storage1_bl685g6 contains mailserver2, fileserver2, webserver2, javaserver2, standby2, mailserver3, fileserver3, webserver3, javaserver3, standby3, fileserver26
 - storage2_bl685g6 contains mailserver4, fileserver4, webserver4, javaserver4, standby4, mailserver5, fileserver5, webserver5, javaserver5, standby5
 - storage3_bl685g6 contains mailserver6, fileserver6, webserver6, javaserver6, standby6, mailserver7, fileserver7, webserver7, javaserver7, standby7, javaserver26
 - storage4_bl685g6 contains mailserver8, fileserver8, webserver8, javaserver8, standby8, mailserver9, fileserver9, webserver9, javaserver9, standby9, mailserver26, standby26
 - storage5_bl685g6 contains mailserver11, fileserver11, webserver11, javaserver11, standby11, mailserver12, fileserver12, webserver12, javaserver12, standby12, webserver26
 - storage6_bl685g6 contains mailserver13, fileserver13, webserver13, javaserver13, standby13, mailserver14, fileserver14, webserver14, javaserver14, standby14
 - storage7_bl685g6 contains mailserver15, fileserver15, webserver15, javaserver15, standby15, mailserver16, fileserver16, webserver16, javaserver16, standby16
 - storage8_bl685g6 contains mailserver17, fileserver17, webserver17, javaserver17, standby17, mailserver18, fileserver18, webserver18, javaserver18, standby18, webserver27, standby27
 - storage9_bl685g6 contains mailserver19, fileserver19, webserver19, javaserver19, standby19, mailserver21, fileserver21, webserver21, javaserver21, standby21, javaserver27, fileserver27
 - storage10_bl685g6 contains mailserver22, fileserver22, webserver22, javaserver22, standby22, mailserver23, fileserver23, webserver23, javaserver23, standby23
 - storage11_bl685g6 contains mailserver24, fileserver24, webserver24, javaserver24, standby24, mailserver10, fileserver10, webserver10, javaserver10, standby10
 - storage12_bl685g6 contains mailserver20, fileserver20, webserver20, javaserver20, standby20, mailserver25, fileserver25, webserver25, javaserver25, standby25, mailserver27

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
- IDE & floppy devices were removed on all VMs (default enabled)
- firewall was disabled in the console os (default enabled)
- BufferCache.SoftMaxDirty=85 (default 15)
- Disk.SchedNumReqOutstanding = 128 (default 32)
- Irq.RoutingPolicy = 0 (default 2)
- Mem.BalancePeriod = 0 (default 15)
- Mem.SamplePeriod = 0 (default 60)
- Mem.ShareScanGHz = 0 (default 4)
- Net.MaxNetifRxQueueLen = 300 (default 100)
- Net.MaxNetifTxQueueLen = 1000 (default 500)
- Net.TcpipHeapMax = 128 (default 64)
- Net.vmxnetThroughputWeight = 255 (default 0)
- Cpu.HaltingIdleMsecPenalty = 1933 (default 100)
- Cpu.HaltingIdleMsecPenaltyMax = 1957 (default 800)
- Cpu.Quantum = 60 (default 50)
- Numa.PageMigEnable = 0 (default 1)
- /vmkernel/module/ixgbe.o/options = "VMDQ=1,1 InterruptRateThrottle=3000,3000" (default 8,8 and 16000,16000)
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=5 lpfc_cf_delay=1" (default 31,1, and 0)
- The data partitions for mailserver26 and mailserver27 were expanded using the AutoPart utility

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

- The following delay parameters were used in VMMARK.CONFIG
- TILEDELAY=120 (default 600)
- MailServer/DELAYTIME=15 (default 5)
- JavaServer/DELAYTIME=10 (default 450)
- Standby/DELAYTIME=0 (default 540)
- WebServer/DELAYTIME=25 (default 180)
- Database/DELAYTIME=20 (default 360)
- Fileserver/DELAYTIME=0 (default 450)

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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