

# VMware® VMmark™ V1.1.1 Results

**Vendor and Hardware Platform: Sun Microsystems Sun Fire [tm] X4270**  
**Virtualization Platform: VMware ESX 4.0 (build 164009)**

**VMmark V1.1.1 Score =**  
**24.18 @ 17 Tiles**

Tested By: Sun Microsystems

Test Date: 09/17/2009

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## Performance

	webserver		javaserver		mailserver		fileserver		database		
<b>TILE_0</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1699.12	1.67	18141.55	1.09	1630.25	1.49	16.81	1.31	2428.50	1.63	1.42
<b>p1</b>	1705.80	1.67	18133.20	1.09	1653.10	1.51	16.62	1.30	2442.20	1.64	1.42
<b>p2</b>	1657.72	1.63	18144.38	1.09	1531.58	1.40	16.89	1.32	2442.80	1.64	1.40
<b>TILE_1</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1714.58	1.68	17701.25	1.07	1538.97	1.40	16.77	1.31	2437.12	1.63	1.40
<b>p1</b>	1731.62	1.70	18148.62	1.09	1415.53	1.29	17.10	1.33	2447.72	1.64	1.39
<b>p2</b>	1734.97	1.70	18133.85	1.09	1370.42	1.25	17.19	1.34	2446.78	1.64	1.39
<b>TILE_2</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1801.25	1.77	18141.17	1.09	1709.15	1.56	17.43	1.36	2444.22	1.64	1.46
<b>p1</b>	1746.92	1.71	18132.33	1.09	1704.60	1.55	17.35	1.35	2455.28	1.65	1.45
<b>p2</b>	1720.03	1.69	18138.65	1.09	1522.97	1.39	17.53	1.37	2445.38	1.64	1.42
<b>TILE_3</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1602.20	1.57	18153.62	1.09	1596.67	1.46	16.67	1.30	2433.35	1.63	1.40
<b>p1</b>	1677.28	1.65	17684.88	1.06	1620.78	1.48	16.74	1.30	2442.82	1.64	1.41
<b>p2</b>	1686.78	1.66	18135.20	1.09	1569.42	1.43	16.61	1.29	2434.00	1.63	1.40
<b>TILE_4</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1764.62	1.73	18159.80	1.09	1577.72	1.44	16.36	1.28	2443.50	1.64	1.42
<b>p1</b>	1778.47	1.75	18158.28	1.09	1492.12	1.36	16.33	1.27	2445.97	1.64	1.40
<b>p2</b>	1783.67	1.75	17704.92	1.07	1560.33	1.42	16.42	1.28	2445.68	1.64	1.41
<b>TILE_5</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1765.83	1.73	18121.10	1.09	1447.35	1.32	16.25	1.27	2402.25	1.61	1.38
<b>p1</b>	1786.60	1.75	18105.75	1.09	1542.00	1.41	16.42	1.28	2418.65	1.62	1.41
<b>p2</b>	1784.40	1.75	18069.42	1.09	1495.35	1.36	16.34	1.27	2421.03	1.62	1.40

<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1806.47	1.77	17717.15	1.07	1541.35	1.41	17.00	1.32	2436.65	1.63	1.42
<b>p1</b>	1817.17	1.78	18185.42	1.09	1566.03	1.43	16.97	1.32	2441.75	1.64	1.43
<b>p2</b>	1763.08	1.73	18167.67	1.09	1531.62	1.40	17.18	1.34	2440.45	1.64	1.42
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1773.10	1.74	18122.28	1.09	1577.88	1.44	15.61	1.22	2443.40	1.64	1.40
<b>p1</b>	1790.38	1.76	18121.58	1.09	1558.88	1.42	15.68	1.22	2438.93	1.63	1.40
<b>p2</b>	1789.97	1.76	18124.60	1.09	1552.00	1.42	15.84	1.23	2441.90	1.64	1.41
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1772.25	1.74	18127.00	1.09	1609.78	1.47	15.84	1.23	2428.62	1.63	1.41
<b>p1</b>	1789.75	1.76	18126.95	1.09	1617.15	1.47	16.13	1.26	2431.18	1.63	1.42
<b>p2</b>	1788.95	1.76	18116.92	1.09	1553.53	1.42	16.29	1.27	2439.47	1.63	1.41
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1771.47	1.74	18123.10	1.09	1604.53	1.46	16.98	1.32	2433.47	1.63	1.43
<b>p1</b>	1790.72	1.76	18116.47	1.09	1725.20	1.57	17.07	1.33	2445.93	1.64	1.46
<b>p2</b>	1797.05	1.76	18090.05	1.09	1667.60	1.52	17.09	1.33	2441.00	1.64	1.45
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1817.90	1.78	18113.42	1.09	1592.85	1.45	17.01	1.33	2428.38	1.63	1.44
<b>p1</b>	1828.35	1.79	18133.28	1.09	1707.50	1.56	17.32	1.35	2441.07	1.64	1.46
<b>p2</b>	1826.08	1.79	18118.20	1.09	1610.80	1.47	17.24	1.34	2442.72	1.64	1.45
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1826.08	1.79	18144.83	1.09	1566.95	1.43	16.65	1.30	2438.32	1.63	1.43
<b>p1</b>	1831.15	1.80	18121.35	1.09	1667.95	1.52	16.62	1.30	2443.88	1.64	1.45
<b>p2</b>	1832.90	1.80	18126.28	1.09	1675.83	1.53	16.54	1.29	2441.60	1.64	1.45
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1767.15	1.73	18158.08	1.09	1528.38	1.39	16.54	1.29	2436.32	1.63	1.41
<b>p1</b>	1779.58	1.75	18148.92	1.09	1596.10	1.46	16.80	1.31	2437.62	1.63	1.43
<b>p2</b>	1778.55	1.75	17714.17	1.07	1653.40	1.51	16.86	1.31	2438.20	1.63	1.43
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1822.53	1.79	17669.67	1.06	1476.58	1.35	17.22	1.34	2413.10	1.62	1.41
<b>p1</b>	1827.00	1.79	18114.53	1.09	1582.17	1.44	17.09	1.33	2420.15	1.62	1.44
<b>p2</b>	1831.38	1.80	18113.45	1.09	1659.15	1.51	17.32	1.35	2364.30	1.58	1.45
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1823.40	1.79	17677.33	1.06	1382.10	1.26	16.62	1.30	2420.12	1.62	1.38
<b>p1</b>	1826.80	1.79	18143.15	1.09	1559.55	1.42	16.56	1.29	2428.43	1.63	1.42
<b>p2</b>	1826.05	1.79	18157.47	1.09	1521.92	1.39	16.82	1.31	2426.60	1.63	1.42

<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1825.50	1.79	18087.58	1.09	1279.58	1.17	17.17	1.34	2408.65	1.61	1.38
<b>p1</b>	1826.83	1.79	18109.47	1.09	1539.35	1.40	17.19	1.34	2412.93	1.62	1.43
<b>p2</b>	1831.05	1.80	18115.10	1.09	1687.12	1.54	17.07	1.33	2414.03	1.62	1.45
<b>TILE_16</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1822.58	1.79	17571.67	1.06	1192.00	1.09	16.45	1.28	2413.28	1.62	1.34
<b>p1</b>	1832.80	1.80	18051.60	1.09	1389.10	1.27	16.75	1.31	2424.45	1.62	1.39
<b>p2</b>	1829.88	1.80	18076.85	1.09	1627.62	1.48	16.57	1.29	2424.43	1.62	1.44
<b>p0_score:</b>	23.92										
<b>p1_score:</b>	24.22										
<b>p2_score:</b>	24.18										
<b>Unreviewed_VMmark_Score:</b>	24.18										

## Configuration

<b>Server and Network</b>	
Server Manufacturer and Model	Sun Microsystems Sun Fire [tm] X4270
Processor Vendor and Model	Intel Xeon X5570 Quad-Core
Processor Speed (GHz)	2.93 GHz
Number of Sockets/Cores per Socket	2 Sockets / 4 Cores per Socket (8 Cores Total) / 2 Threads per Core(16 Threads Total)
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB on chip per core
Other Cache	8MB on chip per chip
BIOS Version	07023901
Memory Size (in GB, Number of DIMMs)	96GB (12x8GB)
Memory Type and Speed	1066MHz Registered ECC DDR3
Disk Subsystem Type	SATA SSD for OS and database VMs, FC SAN for VMs
Number of Disk Controllers	1
Disk Controller Vendors and Models	LSI1068E
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Qlogic QLA2462 Dual Port 4Gb FC
Number of Network Controllers	1
Network Controller Vendors and Models	1x Intel PRO/10Gbe-SR (single port) 2x On board Intel PRO/1000 MT1Gbe Dual port

Network Switch Vendors and Models	Fundry Network Fast Iron Edge X424
Network Speed	10Gbps
Other Hardware	None
Other Software	None
Hardware Availability Date	07/21/2009
Software Availability Date	07/21/2009
<b>Virtualization Software</b>	
Vendor, Product, Version, and Build	Vmware ESX 4.0 (build 164009)
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	05/21/2009
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	9x Sun StorageTek 2450 with 2501 SAS Expansion Tray IOM, Version 06.70.54.11 1x Sun StorageTek 2450, Version 06.70.54.11
Fibre Channel Switch Vendors and Models	Brocade 5000
Disk Space Used	1139GB for VMs
Array Cache Size	6.5GB
Total Number of Physical Disks Used	235
Total Number of Enclosures/Pods/Shelves Used	19
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12
Total Number of Storage Groups Used	1
Number LUNs Used	28
LUN Size and Number of Disks Per LUN	192GB per LUN 0,1,6,15,16,17 442GB for LUN2 444GB for LUN3 425GB for LUN4 240GB for LUN5 380GB for LUN7 385GB for LUN8 390GB for LUN9 395GB for LUN10 435GB for LUN11 440GB for LUN12

	445GB for LUN13 450GB for LUN14 60GB for LUN 18,19,20 29.75GB for LUN21-27 12 disks for LUNs0-20 1 disk per LUN21-27
RAID Type	0
Number of Members per RAID Set	12 members for LUNs 0-20
Disk Vendors, Models, and Speeds	Seagate Cheetah 146GB, 15K rpm Intel X25 Extreme, 32GB SSD

AMD QUad-Core Opteron 2356

<b>Clients</b>	
Number of Clients	17
System Model(s)	1. Sun Blade 6000 Chassis with 10x Sun Blade X6240 2. Sun Blade 6000 Chassis with 7x Sun Blade X6240
Processor Vendor(s) and Model(s)	
Processor Speed(s) (GHz)	2.3GHz
Number of Sockets/Cores per Socket	2 Sockets / 4 Cores per Socket (8 Cores Total)
Memory per Client	32GB
Network Controller Vendors and Models	Intel PRO 1000/PT Dual Port 1Gbe
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition 2003 SP2
Other Hardware	None
Other Software	None

## Notes for Workload

### Server and Network Notes

- Server:
  - Used one internal 32GB SATA SSD for OS and 7x 32GB SATA SDDs for database workloads 0-13
  - Intel HyperThreading Enabled
  - Processor speed: Intel Turbo Boost up to 3.2GHz
- Network:
  - vSwitch0 bound to vmnic0 - Service Console
  - vSwitch3 bound to vmnic2 - Service Console 2, private net for reporting tool.
  - vSwitch2 configured for 248 ports (default 56)
  - vSwitch2 bound to vmnic5 - All VMs
- Storage:
  - Each tile(except for Database and Mailserver0 VMs)

- stored on its own LUN
- Database0 to Database13 VMs stored by pair on their own LUN except database14 to database16 stored on its own LUN
- Mailserver0 VM stored on its own LUN.

### **Virtualization Software Notes**

- All VMs were upgraded to hardware version 7
- All VMs ethernet adapter type set to VMXNET3
- Removed IDE and Floppy devices from all VMs (default enabled)
- Disabled logging for all VMs.
- Disk.SchedNumRequestOutstanding set to 128 (default 32)
- Firewall and iptables services were stopped
- Unloaded VMFS2 module prior the run

### **Operating System Notes**

- Microsoft Windows Server 2003 Virtual Machines were updated to SP2 and KB933360 was applied.

### **Software Notes**

None

### **Client Notes**

- KB933360 was applied

### **Other Notes**

None

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