

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: SGI XE500
 Virtualization Platform: VMware ESX 4.0 Update 1 (build 208167)

**VMmark V1.1.1 Score =
24.56 @ 17 Tiles**

Tested By: SGI

Test Date: 02/16/10

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1929.05	1.89	18151.58	1.09	1524.22	1.39	16.94	1.32	2335.35	1.56	1.43
p1	1941.83	1.91	18158.35	1.09	1571.62	1.43	17.13	1.33	2435.30	1.63	1.45
p2	1943.10	1.91	18145.58	1.09	1435.80	1.31	16.95	1.32	2441.40	1.64	1.43
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1907.95	1.87	18134.60	1.09	1673.15	1.53	16.31	1.27	2407.95	1.61	1.45
p1	1911.53	1.88	18133.35	1.09	1486.12	1.35	16.21	1.26	2434.93	1.63	1.42
p2	1932.30	1.90	18156.95	1.09	1616.78	1.47	16.49	1.29	2409.22	1.61	1.45
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1963.12	1.93	18127.70	1.09	1729.05	1.58	16.27	1.27	2462.97	1.65	1.47
p1	1960.80	1.92	18124.58	1.09	1676.92	1.53	16.20	1.26	2426.93	1.63	1.46
p2	1848.75	1.81	18129.72	1.09	1707.15	1.56	16.31	1.27	2451.47	1.64	1.45
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1925.42	1.89	18159.25	1.09	1652.10	1.51	16.96	1.32	2438.05	1.63	1.46
p1	1939.00	1.90	18153.20	1.09	1626.35	1.48	17.15	1.34	2408.72	1.61	1.46
p2	1951.12	1.91	18149.58	1.09	1508.78	1.38	16.95	1.32	2441.03	1.64	1.44
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1895.70	1.86	18158.15	1.09	1526.72	1.39	16.04	1.25	2449.62	1.64	1.42
p1	1908.72	1.87	18177.60	1.09	1629.58	1.49	15.98	1.25	2405.80	1.61	1.44
p2	1918.53	1.88	18157.15	1.09	1531.12	1.40	16.30	1.27	2467.78	1.65	1.43
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1905.72	1.87	18144.30	1.09	1733.97	1.58	16.04	1.25	2393.82	1.60	1.45
p1	1919.62	1.88	18157.42	1.09	1637.00	1.49	16.19	1.26	2461.30	1.65	1.45
p2	1934.40	1.90	18174.97	1.09	1633.78	1.49	16.27	1.27	2402.65	1.61	1.45

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1968.30	1.93	18121.28	1.09	1693.90	1.54	16.12	1.26	2373.72	1.59	1.45
p1	1975.35	1.94	18128.78	1.09	1659.15	1.51	16.44	1.28	2408.62	1.61	1.46
p2	1967.75	1.93	18131.25	1.09	1719.67	1.57	16.29	1.27	2383.30	1.60	1.46
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1917.33	1.88	18129.80	1.09	1611.70	1.47	15.97	1.24	2387.30	1.60	1.43
p1	1931.72	1.90	18123.75	1.09	1619.55	1.48	16.38	1.28	2412.40	1.62	1.45
p2	1939.75	1.90	18135.80	1.09	1657.78	1.51	16.28	1.27	2422.05	1.62	1.45
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1967.08	1.93	18162.15	1.09	1642.95	1.50	16.09	1.25	2396.88	1.61	1.45
p1	1970.05	1.93	18166.08	1.09	1618.60	1.48	16.33	1.27	2319.40	1.55	1.44
p2	1974.15	1.94	18148.03	1.09	1662.90	1.52	16.36	1.27	2383.10	1.60	1.46
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1928.47	1.89	17689.88	1.06	1658.22	1.51	16.07	1.25	2400.15	1.61	1.44
p1	1900.12	1.86	18141.03	1.09	1645.78	1.50	16.44	1.28	2394.07	1.60	1.44
p2	1925.42	1.89	18154.78	1.09	1658.80	1.51	16.45	1.28	2403.65	1.61	1.45
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1927.25	1.89	18139.38	1.09	1557.53	1.42	16.16	1.26	2399.78	1.61	1.43
p1	1935.60	1.90	18127.92	1.09	1564.92	1.43	16.22	1.26	2453.88	1.64	1.44
p2	1947.47	1.91	18114.40	1.09	1635.92	1.49	16.51	1.29	2421.45	1.62	1.45
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1973.42	1.94	18128.47	1.09	1510.10	1.38	16.33	1.27	2391.03	1.60	1.43
p1	1975.28	1.94	17672.15	1.06	1643.03	1.50	16.35	1.27	2403.57	1.61	1.45
p2	1969.95	1.93	18126.67	1.09	1664.95	1.52	16.57	1.29	2369.30	1.59	1.46
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1927.35	1.89	18123.72	1.09	1462.10	1.33	16.86	1.31	2409.50	1.61	1.42
p1	1940.95	1.90	18119.15	1.09	1583.28	1.44	17.06	1.33	2389.38	1.60	1.45
p2	1944.08	1.91	18110.05	1.09	1707.38	1.56	16.98	1.32	2353.80	1.58	1.47
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1958.12	1.92	18129.75	1.09	1489.88	1.36	16.86	1.31	2345.70	1.57	1.43
p1	1958.12	1.92	18126.35	1.09	1507.90	1.37	17.00	1.33	2395.57	1.61	1.44
p2	1958.72	1.92	18120.17	1.09	1466.20	1.34	16.97	1.32	2326.93	1.56	1.42
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1972.30	1.94	18164.83	1.09	1438.40	1.31	16.22	1.26	2375.93	1.59	1.41
p1	1965.50	1.93	18107.55	1.09	1572.85	1.43	16.48	1.28	2380.50	1.60	1.44
p2	1972.60	1.94	18131.15	1.09	1577.50	1.44	16.59	1.29	2329.15	1.56	1.44

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1936.80	1.90	18101.53	1.09	1353.17	1.23	17.20	1.34	2424.15	1.62	1.41
p1	1936.88	1.90	18115.45	1.09	1512.10	1.38	17.15	1.34	2379.97	1.59	1.44
p2	1940.25	1.90	18116.15	1.09	1513.25	1.38	16.91	1.32	2376.80	1.59	1.43
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1973.62	1.94	18149.95	1.09	1258.38	1.15	16.87	1.31	2421.38	1.62	1.39
p1	1978.47	1.94	17685.92	1.06	1599.15	1.46	17.11	1.33	2399.18	1.61	1.45
p2	1965.20	1.93	18125.15	1.09	1582.25	1.44	17.02	1.33	2429.03	1.63	1.46
p0_score:	24.37										
p1_score:	24.56										
p2_score:	24.59										
Unreviewed_VMmark_Score:	24.56										

Configuration

Server and Network	
Server Manufacturer and Model	SGI XE500
Processor Vendor and Model	Intel Xeon X5570
Processor Speed (GHz)	2.93 GHz
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 I + D on chip per core
Other Cache	8MB I + D on chip per chip L3
BIOS Version	1.0b (12/10/09)
Memory Size (in GB, Number of DIMMs)	96GB (12x8GB)
Memory Type and Speed	Dual rank 1333MHz Registered DDR3
Disk Subsystem Type	Internal RAID for OS, FC SAN for VMs
Number of Disk Controllers	1
Disk Controller Vendors and Models	LSI Logic 1078 Based SAS RAID card
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	QLogic Dual-Port 8Gbit fibre channel HBA (qlc2562)
Number of Network Controllers	2
Network Controller Vendors and Models	1x Onboard Intel 82576 Dual-Port Gigabit Ethernet Controller, 1x Dual-Port Chelsio N320E-G2-CR 10Gbit Ethernet

Network Switch Vendors and Models	SMC 8848M with 10GigE card
Network Speed	10Gbps for all VMs except webserver VMs. 1Gbps for webserver VMs
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	12/10/09
Software Availability Date (MM-DD-YYYY)	11/19/09
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 (MM-DD-YYYY)	11/19/09
Storage	
Array Vendors, Models, and Firmware Versions	2xSGI InfiniteStorage IS4600, firmware 07.50.12.00
Fibre Channel Switch Vendors and Models	Brocade 4800 Director Switch w/ 16port 8Gbit blade and two 16 port 4Gbit blades
Disk Space Used	1.064TB per LUN for VMs
Array Cache Size	4096MB
Total Number of Physical Disks Used	208
Total Number of Enclosures/Pods/Shelves Used	12
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	16
Total Number of Storage Groups Used	22
Number LUNs Used	22
LUN Size and Number of Disks Per LUN	1.064TB per LUN, 8 disks per LUN
RAID Type	RAID 0
Number of Members per RAID Set	22 LUNs over 8x146GB 15K drives
Disk Vendors, Models, and Speeds	146 GB Seagate Barracuda 15K6 FC drives (ST3146356FC)

Clients	
Number of Clients	17
System Model(s)	SGI XE340
Processor Vendor(s) and Model(s)	Intel Xeon E5540
Processor Speed(s) (GHz)	2.53GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Memory per Client	24GB
Network Controller Vendors and Models	1x Intel 82576 Dual-Port Gigabit Ethernet Controller
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition 32bit R2, Service Pack 2
Other Hardware	None
Other Software	None

Notes for Workload

Server BIOS Settings

- Intel Turbo Boost Technology Enabled up to 3.33GHz (default enabled)
- Adjacent Cache Line Prefetch Enabled (default disabled)

QLogic HBA BIOS settings

- Execution throttle set to 128 (default 32)
- Fibre Channel tape support disabled (default enabled)

vSwitch Configuration

- vSwitch0 for Service console on vmnic0 at 1Gbps
- vSwitch1 for VMs except webserver VMs, configured with 120 ports (default 56) on vmnic4 at 10Gbps
- vSwitch2 for all webserver VMs, configured with 24 ports on vmnic1 at 1Gbps

Storage Configuration

- 22 RAID 0 LUNs were created over 8x146GB 15K FC drives.
- 17 LUNs holding each tile's Fileserver/Javasever/Mailserver/Standby/Webserver VM
- 5 LUNs each holding 5 Database VMs
- 1 LUN holding VM SWAP
- IS4600-1 configured with 16 LUNs.
- IS4600-5 configured with 6 LUNs
- IS4600-1_LUN0 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 0
- IS4600-1_LUN1 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 1
- IS4600-1_LUN2 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 2
- IS4600-1_LUN3 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 3
- IS4600-1_LUN4 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 4
- IS4600-1_LUN5 configured with Fileserver/Javasever/Mailserver/Standby/Webserver VM for tile 5

- IS4600-1_LUN6 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 6
- IS4600-1_LUN7 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 7
- IS4600-1_LUN8 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 8
- IS4600-1_LUN9 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 9
- IS4600-1_LUN10 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 10
- IS4600-1_LUN11 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 11
- IS4600-1_LUN12 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 12
- IS4600-1_LUN13 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 13
- IS4600-1_LUN14 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 14
- IS4600-1_LUN15 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 15
- IS4600-5_LUN0 configured with Fileserver/Javaserver/Mailserver/Standby/Webserver VM for tile 16
- IS4600-5_LUN3 configured with VM Swap
- IS4600-5_LUN4 configured with Database VM for tile 0,1,2,3,4
- IS4600-5_LUN5 configured with Database VM for tile 5,6,7,8,9
- IS4600-5_LUN6 configured with Database VM for tile 10,11,12,13,14
- IS4600-5_LUN7 configured with Database VM for tile 15,16

Virtualization Software Notes

- Virtual hardware running V7
- Virtual MMU was enabled for all VMs
- Ethernet adapter type set to vmxnet3 for all VMs
- Logging was disabled for all VMs
- Storage multipathing was set to "Fixed" (default MRU)
- IDE & Floppy removed for all Linux VMs (default enabled)
- IDE removed for all Windows VMs except mailserver5 VM (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)
- VMFS3.MaxHeapSizeMB=64 (default 80)
- /vmkernel/module/qla2xxx.o/options = "ql2xmaxqdepth=128" set in /etc/vmware/esx.conf (default 32)
- HostLocalSwapDirEnabled = 1 (default 0)
- vmfs2 module unloaded before run
- 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 additionally updated with following SP3 updates as of Nov 2009: KB923561,KB924667-v2,KB925902-v2,KB926122,KB927891,KB929123,KB930178,KB932168,KB933854,KB936357,KB938127,KB941569,KB943055,KB943460,KB944338-v2,KB944653,KB945553,KB946026,KB948496,KB950762,KB950974,KB951066,KB951748,KB952004,KB952069,KB952954,KB953298,KB954155,KB955069,KB956572,KB956802,KB956803,KB956844,KB957097,KB958469,KB958644,KB958687,KB958869,KB959426,KB960225,KB960803,KB960859,KB961371-v2,KB961501,KB967715,KB967723,KB968389,KB968537,KB968816,KB969059,KB970238,KB970653-v3,KB971032,KB971486,KB971557,KB971633,KB971657,KB971961,KB972260,KB973354,KB973507,KB973525,KB973540,KB973815,KB973869,KB974112,KB974571,KB975025,KB975467
- Database, Fileserver and Webserver VMs were updated to SLES 10 SP2
- Fileserver VMs were setup with smp kernel. (default is -default uniprocessor kernel)

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)

Other Notes

- Memory speed with 2 DIMMs per channel is 1066 MT/s

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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