

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R905
Virtualization Platform: VMware ESX 3.5 Update 3 BETA (build 120079)

VMmark V1.1 Score =
20.35 @ 14 Tiles

Tested By: Dell Inc.

Test Date: 10/24/2008

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Performance

	webservers		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1887.08	1.85	18129.45	1.09	1790.05	1.63	19.15	1.49	2108.10	1.41	1.47
p1	1880.17	1.85	18121.90	1.09	1832.85	1.67	18.80	1.46	2151.28	1.44	1.48
p2	1844.88	1.81	17673.97	1.06	1975.70	1.80	18.71	1.46	2151.57	1.44	1.49
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1889.92	1.85	18143.10	1.09	1769.62	1.61	18.34	1.43	2253.38	1.51	1.48
p1	1869.15	1.83	17689.83	1.06	1797.15	1.64	18.28	1.42	2249.35	1.51	1.47
p2	1864.08	1.83	18167.22	1.09	1789.58	1.63	18.27	1.42	2252.18	1.51	1.48
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1957.47	1.92	18165.70	1.09	1714.05	1.56	19.27	1.50	1922.17	1.29	1.45
p1	1944.80	1.91	18161.22	1.09	1877.92	1.71	19.05	1.48	1921.85	1.29	1.47
p2	1927.92	1.89	18141.85	1.09	1865.00	1.70	18.81	1.47	1919.97	1.29	1.46
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1873.25	1.84	18138.33	1.09	1797.12	1.64	18.79	1.46	2232.78	1.50	1.48
p1	1859.40	1.82	18137.60	1.09	1878.62	1.71	18.77	1.46	2225.15	1.49	1.49
p2	1828.35	1.79	18133.67	1.09	1801.67	1.64	18.39	1.43	2224.93	1.49	1.47
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1923.00	1.89	18139.00	1.09	1694.45	1.54	17.68	1.38	2269.88	1.52	1.46
p1	1908.67	1.87	18134.72	1.09	1781.03	1.62	17.52	1.37	2277.47	1.53	1.47
p2	1912.90	1.88	18133.20	1.09	1946.53	1.77	17.31	1.35	2272.05	1.52	1.50
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2048.57	2.01	18131.42	1.09	1695.92	1.55	17.90	1.40	2027.58	1.36	1.45
p1	2037.90	2.00	18151.50	1.09	1756.62	1.60	17.92	1.40	2020.15	1.35	1.46
p2	1979.25	1.94	17680.65	1.06	1831.05	1.67	17.54	1.37	2020.33	1.35	1.45
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1849.65	1.82	18170.90	1.09	1601.67	1.46	18.36	1.43	1964.35	1.32	1.40
p1	1828.33	1.79	17718.70	1.07	1718.22	1.57	18.11	1.41	2003.17	1.34	1.42
p2	1822.22	1.79	18162.35	1.09	1710.92	1.56	18.02	1.40	2003.03	1.34	1.42
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	2035.42	2.00	18164.00	1.09	1617.88	1.48	18.28	1.42	2095.40	1.40	1.45
p1	2025.70	1.99	18160.67	1.09	1825.53	1.66	18.14	1.41	2082.32	1.40	1.48
p2	2016.47	1.98	18130.00	1.09	1725.17	1.57	18.08	1.41	2082.45	1.40	1.46
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1805.88	1.77	18149.60	1.09	1448.70	1.32	18.25	1.42	2040.75	1.37	1.38
p1	1786.20	1.75	18153.17	1.09	1694.70	1.55	17.97	1.40	2029.60	1.36	1.41
p2	1791.22	1.76	18155.62	1.09	1747.17	1.59	17.90	1.39	2025.35	1.36	1.42
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1883.35	1.85	18165.75	1.09	1505.00	1.37	17.65	1.38	2081.90	1.40	1.40
p1	1871.60	1.84	18171.83	1.09	1692.92	1.54	17.38	1.35	2079.28	1.39	1.42
p2	1845.75	1.81	18151.42	1.09	1823.72	1.66	17.57	1.37	2080.38	1.39	1.44
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1873.00	1.84	17676.03	1.06	1490.88	1.36	19.32	1.51	2215.07	1.48	1.43
p1	1852.40	1.82	18121.88	1.09	1689.42	1.54	18.96	1.48	2201.32	1.48	1.46
p2	1855.30	1.82	18130.12	1.09	1559.33	1.42	18.94	1.48	2200.18	1.47	1.44
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2001.20	1.96	18149.00	1.09	1382.45	1.26	18.58	1.45	2242.12	1.50	1.43
p1	1990.40	1.95	18121.95	1.09	1554.78	1.42	18.54	1.45	2238.43	1.50	1.46
p2	1976.85	1.94	18154.85	1.09	1715.60	1.56	18.40	1.43	2235.10	1.50	1.48
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2066.15	2.03	18162.72	1.09	1242.12	1.13	17.37	1.35	2112.38	1.42	1.37
p1	2054.00	2.02	18138.97	1.09	1496.67	1.36	17.09	1.33	2112.25	1.42	1.41
p2	2051.25	2.01	18142.20	1.09	1696.12	1.55	16.89	1.32	2130.95	1.43	1.45
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2005.42	1.97	17714.22	1.07	1282.22	1.17	19.04	1.48	2220.15	1.49	1.40
p1	1991.25	1.95	18162.42	1.09	1473.20	1.34	18.83	1.47	2208.72	1.48	1.44
p2	1977.15	1.94	18137.70	1.09	1732.15	1.58	18.73	1.46	2206.95	1.48	1.49
p0_score:	20.05										
p1_score:	20.35										
p2_score:	20.44										
Unreviewed_VMmark_Score:	20.35										

Configuration

Server and Network	
Server Manufacturer and Model	Dell PowerEdge R905
Processor Vendor and Model	Quad-Core AMD Opteron 8384
Processor Speed (GHz)	2.7
Number of Sockets/Cores per Socket	4 Sockets / 4 Cores per Socket (16 Cores Total)
Primary Cache	64 KB I + 64 KB D on chip per core
Secondary Cache	512 KB I+D on chip per core

Other Cache	6 MB I+D L3 on chip per chip
Memory	128 GB (16 x 8 GB) PC2-5300 667 MHz Registered ECC DDR2 DIMM
Disk Subsystem Type	SAS (OS), FC SAN (VMs)
Number of Disk Controllers	N/A
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	1 x Dell PowerEdge Expandable RAID Controller (PERC) 6/i 1 x QLogic Corp QLE2462 Dual Port
Number of Network Controllers	8
Network Controller Vendors and Models	8 x Broadcom NetXtreme II BCM5708 (4 onboard)
Network Switch Vendors and Models	Dell PowerConnect 6248
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	11/13/2008
Software Availability Date	N/A

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 3.5 Update 3 (build 120079)
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	Nov-2008

Storage

Array Vendor, Model, and Firmware Version	1. EMC CX300, version 02.26.300.5.005 2. EMC CX300, version 02.26.300.5.005 3. EMC CX300, version 02.26.300.5.005 4. EMC CX300, version 02.26.300.5.005 5. EMC CX300, version 02.26.300.5.005
Fibre Channel Switch Vendors and Models	Brocade Silkworm 3800
Disk Space Used	868 GB for VMs
Array Cache Size	1. EMC CX300, 2048MB 2. EMC CX300, 2048MB 3. EMC CX300, 2048MB 4. EMC CX300, 2048MB 5. EMC CX300, 2048MB
Number and Size of LUNs	14 LUNs, each ~260 GB
RAID Type	RAID0
Number of Members per RAID Set	10
Disk Vendor, Model, and Speed	Fujitsu Enterprise/15K

Clients

Number of Clients	14
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System Model(s)	client0: PowerEdge 1750 client1: PowerEdge 1750 client2: PowerEdge 1750 client3: PowerEdge 1750 client4: PowerEdge 1850 client5: PowerEdge 1650 client6: PowerEdge 1650 client7: PowerEdge 1650 client8: PowerEdge 1650 client9: PowerEdge 1650 client10: PowerEdge 1850 client11: PowerEdge 1850 client12: PowerEdge 1850 client13: PowerEdge 1850
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	client0: 3.06 client1: 3.06 client2: 3.20 client3: 3.20 client4: 2.80 client5: 1.40 client6: 1.40 client7: 1.40 client8: 1.40 client9: 1.40 client10: 3.40 client11: 3.60 client12: 3.60 client13: 3.60
Number of Sockets/Cores per Socket	client0: 2 Sockets / 1 Core per Socket (2 Cores Total) client1: 2 Sockets / 1 Core per Socket (2 Cores Total) client2: 2 Sockets / 1 Core per Socket (2 Cores Total) client3: 2 Sockets / 1 Core per Socket (2 Cores Total) client4: 1 Socket / 2 Cores per Socket (2 Cores Total) client5: 2 Sockets / 1 Core per Socket (2 Cores Total) client6: 2 Sockets / 1 Core per Socket (2 Cores Total) client7: 2 Sockets / 1 Core per Socket (2 Cores Total) client8: 2 Sockets / 1 Core per Socket (2 Cores Total) client9: 2 Sockets / 1 Core per Socket (2 Cores Total) client10: 2 Sockets / 1 Core per Socket (2 Cores Total) client11: 2 Sockets / 1 Core per Socket (2 Cores Total) client12: 2 Sockets / 1 Core per Socket (2 Cores Total) client13: 2 Sockets / 1 Core per Socket (2 Cores Total)
Memory	2 GB except client10, which had 8 GB
Network Controller Vendor and Model	Intel PRO/1000 XT Network Connection (1650), Broadcom NetXtreme Gigabit Ethernet (1750), Intel PRO/1000 MT Network Connection (1850)
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition SP2
Other Hardware	None
Other Software	None

Notes for Workload

Server and Network Notes

- The PERC 6/i onboard controller contained 1 73GB/10K drive for OS
- BIOS settings:
 - Optical Drive Controller = Off (default On)
- Qlogic HBA BIOS settings:
 - Fibre Channel tape support disabled (default enabled)
 - Data rate option set to 1 (default 2)
 - Interrupt Delay timer set to 15 (default 0)
 - Maximum queue depth 64 (default 32)
- EMC CX300 Settings:
 - Storage Processor cache High/Low watermark - 40/20 (default 80/60)
- Network Settings:
 - 3 physical NICs (vmnic0,1,12) bound to vSwitch0
 - 5 physical NICs (vmnic2,3,5,9,13) bound to vSwitch1
 - Each vSwitch was configured to 120 ports (default 56)
 - Service console was shared with vSwitch0
 - Database, FileServer, JavaServer, MailServer, and Standby VMs attached to vSwitch0
 - WebServer VMs attached to vSwitch1
- Storage Notes:
 - For all VMs, each tile was stored on its own LUN

Virtualization Software Notes

- pegasus, iptables, and firewall services stopped in service console
- vmfs2 module was unloaded prior to run
- Virtualized MMU was enabled on all VMs (default Automatic)
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- VMFS3.MaxHeapSizeMB was set to 64 (default 16)
- IRQ.RoutingPolicy was set to 0 (default 2)
- BufferCache.SoftMaxDirty was set to 85 (default 15)
- Misc.RunningVCpuLimit was set to 192 (default 128)
- COW.MaxHeapSizeMB was set to 64 (default 32)
- Ethernet Adapter type was set to Enhanced vmxnet for all VMs
- Logging was disabled for all VMs (default enabled) except mailserver11,12,13
- IDE and Floppy devices were removed on all VMs (default enabled)

Operating System Notes

- Microsoft Windows Server 2003 virtual machines were updated to Service Pack 2, and [KB 933360](#) was applied
- SUSE Linux Enterprise Server 10 virtual machines were updated to Service Pack 2

Software Notes

Client Notes

- [KB 933360](#) was applied

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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