

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R710
Virtualization Platform: ESX 4.0 build 150817

VMmark V1.1 Score =
23.55 @ 16 Tiles

Tested By: Dell Inc.

Test Date: 03/20/2009

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Performance

	webservers		javaserver		mailserver		fileservers		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1965.42	1.93	18114.00	1.09	1714.58	1.56	17.46	1.36	2429.15	1.63	1.49
p1	1961.05	1.92	18123.28	1.09	1739.88	1.59	17.29	1.35	2433.88	1.63	1.49
p2	1961.47	1.92	18123.20	1.09	1816.72	1.66	17.41	1.36	2434.50	1.63	1.50
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1971.85	1.94	18126.20	1.09	1717.12	1.57	18.09	1.41	2435.05	1.63	1.50
p1	1967.05	1.93	18118.12	1.09	1704.20	1.55	18.01	1.40	2437.75	1.63	1.50
p2	1967.58	1.93	18124.72	1.09	1654.40	1.51	17.96	1.40	2438.12	1.63	1.49
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1880.35	1.85	18117.67	1.09	1781.10	1.62	18.68	1.46	2441.43	1.64	1.51
p1	1889.38	1.85	18129.05	1.09	1824.45	1.66	18.47	1.44	2449.68	1.64	1.51
p2	1887.72	1.85	18141.55	1.09	1689.17	1.54	18.42	1.44	2450.57	1.64	1.49
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1958.88	1.92	18125.10	1.09	1719.22	1.57	17.95	1.40	2444.12	1.64	1.50
p1	1956.72	1.92	18143.88	1.09	1795.17	1.64	18.10	1.41	2447.85	1.64	1.51
p2	1903.88	1.87	18134.08	1.09	1786.95	1.63	17.98	1.40	2450.00	1.64	1.50
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1921.78	1.89	18117.25	1.09	1613.80	1.47	18.24	1.42	2438.75	1.63	1.48
p1	1934.42	1.90	18112.60	1.09	1670.10	1.52	18.15	1.41	2439.45	1.63	1.49
p2	1933.50	1.90	18127.22	1.09	1638.35	1.49	18.19	1.42	2445.07	1.64	1.48
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1968.85	1.93	18125.65	1.09	1628.62	1.48	17.60	1.37	2299.12	1.54	1.46
p1	1959.42	1.92	18149.53	1.09	1753.15	1.60	17.44	1.36	2290.82	1.54	1.48
p2	1964.78	1.93	18154.20	1.09	1718.70	1.57	17.42	1.36	2291.43	1.54	1.47
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1977.15	1.94	18121.65	1.09	1706.70	1.56	16.05	1.25	2247.07	1.51	1.44

p1	1975.95	1.94	18111.85	1.09	1720.97	1.57	16.08	1.25	2249.72	1.51	1.44
p2	1926.62	1.89	18113.90	1.09	1738.15	1.58	16.05	1.25	2247.93	1.51	1.44
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1888.42	1.85	18146.47	1.09	1719.62	1.57	17.53	1.37	2251.85	1.51	1.46
p1	1898.17	1.86	18131.78	1.09	1836.92	1.67	17.40	1.36	2255.65	1.51	1.47
p2	1901.70	1.87	18119.95	1.09	1731.65	1.58	17.27	1.35	2255.03	1.51	1.46
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1629.47	1.60	18114.88	1.09	1590.15	1.45	17.26	1.35	2231.75	1.50	1.38
p1	1779.28	1.75	18137.50	1.09	1721.90	1.57	17.25	1.34	2216.55	1.49	1.43
p2	1863.10	1.83	17657.45	1.06	1844.42	1.68	17.10	1.33	2198.62	1.47	1.45
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1906.62	1.87	18116.08	1.09	1597.67	1.46	17.01	1.33	2224.70	1.49	1.42
p1	1916.25	1.88	18114.17	1.09	1677.10	1.53	17.02	1.33	2223.90	1.49	1.44
p2	1916.80	1.88	18119.65	1.09	1721.55	1.57	16.87	1.31	2220.70	1.49	1.45
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2001.47	1.96	18134.15	1.09	1396.45	1.27	18.20	1.42	2371.93	1.59	1.44
p1	1948.50	1.91	18130.03	1.09	1473.12	1.34	18.14	1.41	2374.88	1.59	1.45
p2	2002.15	1.96	17690.10	1.06	1247.90	1.14	17.99	1.40	2376.03	1.59	1.40
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1922.72	1.89	18149.70	1.09	1587.20	1.45	17.80	1.39	2399.60	1.61	1.46
p1	1885.67	1.85	17680.58	1.06	1662.17	1.52	17.76	1.38	2402.53	1.61	1.46
p2	1930.62	1.89	18122.62	1.09	1736.25	1.58	17.75	1.38	2400.43	1.61	1.49
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1996.62	1.96	18128.65	1.09	1347.65	1.23	18.07	1.41	2433.10	1.63	1.43
p1	1945.10	1.91	18124.35	1.09	1640.20	1.50	18.08	1.41	2443.43	1.64	1.48
p2	1995.72	1.96	18117.83	1.09	1764.05	1.61	18.15	1.41	2444.85	1.64	1.51
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1925.35	1.89	18174.97	1.09	1404.45	1.28	18.30	1.43	2453.32	1.64	1.44
p1	1933.03	1.90	17679.90	1.06	1559.97	1.42	18.17	1.42	2454.22	1.64	1.46
p2	1884.17	1.85	18128.10	1.09	1732.03	1.58	18.14	1.41	2455.05	1.65	1.49
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	2002.47	1.97	18165.20	1.09	1253.10	1.14	18.35	1.43	2436.10	1.63	1.42
p1	1992.58	1.96	17704.97	1.07	1564.40	1.43	18.28	1.42	2440.03	1.63	1.47
p2	1993.28	1.96	18150.75	1.09	1629.65	1.49	18.16	1.42	2441.25	1.64	1.49
TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1929.95	1.89	18109.62	1.09	1250.60	1.14	18.48	1.44	2423.57	1.62	1.41
p1	1935.72	1.90	18121.90	1.09	1485.33	1.35	18.38	1.43	2439.95	1.63	1.46
p2	1931.42	1.90	18107.42	1.09	1667.75	1.52	18.16	1.42	2441.38	1.64	1.49

p0_score:	23.23
p1_score:	23.55
p2_score:	23.60
Unreviewed_VMmark_Score:	23.55

Configuration

Server and Network	
Server Manufacturer and Model	Dell PowerEdge R710
Processor Vendor and Model	Intel Xeon X5570
Processor Speed (GHz)	2.93
Number of Sockets/Cores per Socket	2 Sockets / 4 Cores per Socket / 2 Threads per Core (8 Cores, 16 Threads Total with Intel Hyper-Threading Capability)
Primary Cache	32KB(I)+32KB(D) per core
Secondary Cache	256KB per core
Other Cache	8MB L3
Memory	96GB (12x8GB) DDR3-1066MHz DR RDIMMs
Disk Subsystem Type	SAS (OS), FC SAN (VMs)
Number of Disk Controllers	N/A
Number of Host Bus Adapters	4
Host Bus Adapter Vendors and Models	1 x Dell PowerEdge Expandable RAID Controller (PERC) 6/i 3 x Qlogic Corp QLE2462 Dual Port
Number of Network Controllers	3
Network Controller Vendors and Models	2 x dual-port embedded Broadcom NetXtreme II BCM5709 1 x Intel Gigabit VT Quad Port Server Adapter
Network Switch Vendors and Models	Dell PowerConnect 6248
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	03/30/2009
Software Availability Date	06/30/2009

Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 4.0 build 150817
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	06/30/2009

Storage	
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Array Vendor, Model, and Firmware Version	3 x Dell/EMC CX3-40f, version 03.26.040.5.025
Fibre Channel Switch Vendors and Models	None
Disk Space Used	992 GB for VMs
Array Cache Size	8GB per array
Number and Size of LUNs	16 LUNs, each ~300 GB
RAID Type	RAID0
Number of Members per RAID Set	10
Disk Vendor, Model, and Speed	Hitachi HUS151P7/Seagate STT73455 15K

Clients

Number of Clients	16
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 client14: PowerEdge 1850 client15: 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 client14: 3.60 client15: 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) client14: 2 Sockets / 1 Core per Socket (2 Cores Total) client15: 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/15K drive for OS
- BIOS settings:
 - Intel Turbo Boost Technology up to 3.20 GHz (default)
 - Virtualization Technology = Enabled
 - Embedded SATA = Off (default On)
 - Internal USB port = Off (default On)
 - User Accessible USB Ports = All Ports Off (default On)
- Qlogic HBA BIOS settings:
 - Data rate option set to 3 (default 2)
- Array settings:
 - Storage Processor cache High/Low watermark - 40/20 (default 80/60)
- Network Settings:
 - Broadcom NICs (vmnic0,1,2,3) bound to vSwitch0,1,2,3 respectively
 - Two Intel ports (vmnic4,5) bound to vSwitch4,5 respectively (2 unused)
 - Service console and WebServer0-3 attached to vSwitch0
 - JavaServer, MailServer, and Standby VMs attached to vSwitch1
 - Database VMs attached to vSwitch2
 - WebServer4-7 VMs attached to vSwitch3
 - WebServer8-15 VMs attached to vSwitch4
 - FileServer VMs attached to vSwitch5
- Storage Notes:
 - For all VMs, each tile was stored on its own LUN

Virtualization Software Notes

- Hardware support for both CPU and MMU virtualization enabled on all VMs (default Automatic)
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- All VMs' hardware upgraded to version 7
- Ethernet Adapter type was set to VMXNET3 for all VMs
- Logging was disabled for all VMs (default enabled)
- IDE and Floppy devices were removed on all VMs (default enabled)
- vmfs2 module unloaded at boot
- iptables and firewall services disabled at boot

Operating System Notes

- Microsoft Windows Server 2003 virtual machines were updated to Service Pack 2, and KB951072-v2 was applied
- SUSE Linux Enterprise Server 10 virtual machines were updated to Service Pack 2

Software Notes

Client Notes

- KB951072-v2 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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