

VMware® VMmark™ V1.0.0 Results

Vendor and Hardware Platform: Dell PowerEdge R900
Virtualization Platform: VMware ESX 3.5 Update 1 (build 82663)

VMmark V1.0.0 Score =
14.05 @ 10 Tiles

Tested By: Dell Inc.

Test Date: Jun-18-2008

Performance Section
[Performance](#)

Configuration Section
[Configuration](#)

Notes Section
[Notes for Workload](#)

Performance

	webservers		javaservers		mailservers		fileservers		databases		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1858.58	1.82	18039.05	1.09	1579.92	1.44	19.10	1.49	2026.00	1.36	1.42
p1	1817.67	1.78	18048.22	1.09	1662.03	1.52	19.08	1.49	2038.08	1.37	1.43
p2	1823.25	1.79	18048.65	1.09	1616.33	1.47	18.95	1.48	2041.22	1.37	1.42
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1732.47	1.70	18063.22	1.09	1789.90	1.63	19.39	1.51	2021.30	1.35	1.44
p1	1757.33	1.72	18031.08	1.09	1866.62	1.70	19.29	1.50	2031.12	1.36	1.45
p2	1743.20	1.71	17597.85	1.06	1865.58	1.70	19.18	1.49	2033.10	1.36	1.44
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1641.85	1.61	18004.03	1.08	1781.67	1.62	19.48	1.52	2018.85	1.35	1.42
p1	1658.40	1.63	18024.15	1.08	1746.88	1.59	19.06	1.49	2029.20	1.36	1.42
p2	1631.00	1.60	17994.83	1.08	1881.20	1.72	19.23	1.50	2040.25	1.37	1.44
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1603.12	1.57	18016.88	1.08	1775.30	1.62	19.38	1.51	1997.42	1.34	1.41
p1	1600.28	1.57	18055.08	1.09	1902.90	1.73	19.17	1.49	2007.90	1.35	1.43
p2	1614.45	1.58	17990.42	1.08	1950.97	1.78	19.03	1.48	2020.10	1.35	1.44
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1676.28	1.65	18091.58	1.09	1680.20	1.53	19.16	1.49	1981.38	1.33	1.40
p1	1689.78	1.66	18057.90	1.09	1743.95	1.59	18.92	1.47	2005.42	1.34	1.42
p2	1706.28	1.67	18034.33	1.09	1642.38	1.50	18.84	1.47	2022.65	1.36	1.40
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1605.58	1.58	18021.40	1.08	1583.38	1.44	19.38	1.51	1999.58	1.34	1.38
p1	1615.05	1.59	17991.92	1.08	1603.20	1.46	19.30	1.50	2031.40	1.36	1.39
p2	1610.97	1.58	17578.60	1.06	1540.78	1.40	19.33	1.51	2043.05	1.37	1.37
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1640.20	1.61	18021.47	1.08	1510.45	1.38	18.61	1.45	1943.35	1.30	1.35
p1	1640.42	1.61	18020.80	1.08	1734.45	1.58	18.49	1.44	1964.88	1.32	1.39
p2	1628.38	1.60	18042.22	1.09	1738.65	1.59	18.70	1.46	1983.25	1.33	1.40
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1688.35	1.66	18011.62	1.08	1469.28	1.34	18.78	1.46	1968.55	1.32	1.36
p1	1698.65	1.67	18059.65	1.09	1590.67	1.45	18.70	1.46	1972.53	1.32	1.38
p2	1713.80	1.68	18060.55	1.09	1710.20	1.56	18.74	1.46	1998.08	1.34	1.41
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1822.00	1.79	18073.50	1.09	1354.70	1.24	18.88	1.47	1941.45	1.30	1.36
p1	1767.67	1.73	17573.00	1.06	1510.53	1.38	18.87	1.47	1956.38	1.31	1.37
p2	1766.25	1.73	18048.55	1.09	1691.15	1.54	18.72	1.46	1989.22	1.33	1.41
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1730.42	1.70	18055.28	1.09	1210.62	1.10	19.22	1.50	1904.78	1.28	1.31
p1	1765.92	1.73	17613.62	1.06	1483.38	1.35	18.97	1.48	1958.65	1.31	1.37
p2	1775.30	1.74	18020.95	1.08	1717.00	1.57	19.15	1.49	1969.15	1.32	1.42
p0_score:	13.86										
p1_score:	14.05										
p2_score:	14.15										
Unreviewed_VMmark_Score:	14.05										

Configuration

System Under Test (SUT)	
Processor Vendor and Model	Quad-Core Intel Xeon X7350
Processor Speed (GHz)	2.93
# of Sockets/Cores per Socket	4 Sockets / 4 Cores per Socket (16 Cores Total)
Primary Cache	32 KB I + 32 KB D on chip per core
Secondary Cache	8 MB I+D on chip per chip, 4 MB shared/2 cores
Other Cache	None
Memory	64 GB (16x4GB) 667 MHz ECC CL5 DDR2 FB-DIMM
Disk Subsystem	SAS (OS), FC SAN (VMs)
# of Disk Controllers	N/A
Host Bus Adapters Vendor and Model	1 x Dell PowerEdge Expandable RAID Controller (PERC 6/i) 2 x QLogic Corp QLE2462
# of Host Bus Adapters	3
# of Network Controllers	6
Network Controllers Vendor and Model	3 x Intel PRO 1000PT Dual Port 1GbE

Network Switches Vendor and Model	Dell PowerConnect 6248
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	Nov-2007
Software Availability Date	Apr-2008

Virtualization Platform

Vendor, Product, and Version	VMware ESX 3.5 Update 1
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Platform Availability Date	Apr-2008

Storage

Array Vendor and Model/ Firmware Version	EMC CX3-40f, version 03.24.40.5.006
Fibre Channel Switches Vendor and Model	None
Used GB	707
Array Cache GB	8 (4 per SP)
Number and Size of LUNs	LUN 0: 100GB LUN 1: 200GB LUN 2: 200GB LUN 3: 200GB LUN 4: 200GB LUN 5: 200GB LUN 6: 200GB LUN7: 100GB LUN8: 200GB LUN9: 200GB LUN10: 200GB LUN11: 200GB LUN12: 200GB LUN13: 200GB LUN14: 200GB
RAID Type	RAID0 (all LUNs)
Number of Members per RAID Set	3 members (all LUNs)
Disk Vendor and Model/Speed	Seagate Cheetah 15K

Clients

# of Clients	10
System Model	PowerEdge 860

Processor Vendor and Model	Intel Xeon
Processor Speed (GHz)	2.66
# of Sockets/# of Cores	1 / 4
Memory	2 GB
Network Controller Vendor and Model	Intel PRO/1000 PT
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 Enterprise Edition SP2
Other Hardware	None
Other Software	None

Notes for Workload

SUT Notes

- Onboard PERC 6/i controller contained 1 x 73GB/10K drive for OS
- BIOS settings:
Hardware Prefetcher Disabled (default Enabled)
Adjacent Sector Prefetch Disabled (default Enabled)

Virtualization Platform Notes

- vSwitch0, vSwitch1, vSwitch2, vSwitch3, vSwitch4, and vSwitch5 bound to vmnic8, vmnic9, vmnic10, vmnic11, vmnic12, and vmnic13 respectively.
- vSwitch0-3 configured to 128 ports, 4-5 configured to 64 (default 56).
- Service Console was shared with vSwitch0.
- Database VMs were attached to vSwitch0
Javaserver, Standby and Webserver VMs 0-2 were attached to vSwitch1
Fileserver VMs were attached to vSwitch2
Mailserver VMs were attached to vSwitch3
Javaserver, Standby and Webserver VMs 3-5 were attached to vSwitch4
Javaserver, Standby and Webserver VMs 6-9 were attached to vSwitch5.
- Tile to LUN mapping:
LUN0 All Tile0 VMs minus database0, mailserver0
LUN1 database2, fileserver3
LUN2 All Tile1 VMs minus fileserver1
LUN3 All Tile2 VMs minus database2
LUN4 All Tile4 VMs minus database4
LUN5 All Tile5 VMs minus fileserver5
LUN6 All Tile6 VMs minus database6
LUN7 database8, fileserver9
LUN8 All Tile8 VMs minus database8
LUN9 All Tile9 VMs minus fileserver9
LUN10 database0, fileserver1
LUN11 database4, fileserver5
LUN12 database6, fileserver7, mailserver0
LUN13 All Tile7 VMs minus fileserver7
LUN14 All Tile3 VMs minus fileserver3
- vmfs2 module was unloaded prior to the benchmark run.

- Disk: SchedNumReqOutstanding set to 128 (default 32)
- VMFS3: MaxHeapSizeMB set to 64 (default 16)
- Network adapter type was set to "Enhanced vmxnet" for all VMs.

Operating System Notes

- Microsoft Windows Server 2003 R2 Enterprise Edition, Service Pack 2 on all Windows virtual machines.

Software Notes

Client Notes

Other Notes

QLogic HBA settings:

- Loop reset delay 8 (default 5)
- Link down timeout 45 (default 30)
- LUNs per target 256 (default 128)
- Maximum queue depth 64 (default 32)

EMC CX3-40f

- Storage Processor cache High/Low watermark - 40/20 (default 80/60)

VMMARK.CONFIG settings:

- TILEDELAY = 1200 (default 600)
- MailServer/DELAYTIME = 360 (default 5)
- Standby/DELAYTIME = 150 (default 170)
- WebServer/DELAYTIME = 450 (default 180)
- Database/DELAYTIME = 180 (default 360)
- FileServer/DELAYTIME = 5 (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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