

VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R900
Virtualization Platform: VMware ESX 3.5 Update 2 (build 103908)

VMmark V1.1 Score =
18.49 @ 14 Tiles

Tested By: Dell Inc.

Test Date: 07/08/2008

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Performance

	webservers		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1624.28	1.59	17707.45	1.07	1765.35	1.61	16.24	1.27	2035.20	1.36	1.36
p1	1539.38	1.51	17754.85	1.07	1524.25	1.39	16.49	1.29	2051.05	1.37	1.32
p2	1526.62	1.50	17293.50	1.04	1436.40	1.31	16.11	1.26	2060.72	1.38	1.29
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1550.30	1.52	17729.67	1.07	1585.50	1.45	17.14	1.34	2052.22	1.38	1.34
p1	1505.28	1.48	17745.58	1.07	1524.33	1.39	17.02	1.33	2061.72	1.38	1.32
p2	1545.33	1.52	17702.75	1.07	1536.47	1.40	16.66	1.30	2053.75	1.38	1.32
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1564.35	1.54	17757.58	1.07	1697.10	1.55	17.07	1.33	2062.72	1.38	1.36
p1	1548.05	1.52	17747.58	1.07	1661.40	1.51	16.78	1.31	2052.57	1.38	1.35
p2	1437.05	1.41	17718.53	1.07	1553.67	1.42	16.53	1.29	2073.72	1.39	1.31
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1575.62	1.55	17767.70	1.07	1673.22	1.53	16.67	1.30	1987.12	1.33	1.34
p1	1522.15	1.49	17754.53	1.07	1454.65	1.33	16.69	1.30	1984.47	1.33	1.30
p2	1502.90	1.47	17361.00	1.04	1269.22	1.16	16.44	1.28	1999.03	1.34	1.25
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1536.83	1.51	17674.95	1.06	1628.45	1.48	17.10	1.33	2011.20	1.35	1.34
p1	1576.92	1.55	17735.90	1.07	1599.42	1.46	16.57	1.29	1976.40	1.32	1.33
p2	1578.22	1.55	17704.60	1.07	1485.53	1.35	16.18	1.26	1994.03	1.34	1.30
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1618.12	1.59	17694.05	1.07	1630.50	1.49	16.38	1.28	2081.85	1.39	1.35
p1	1515.50	1.49	17738.17	1.07	1650.62	1.50	16.57	1.29	2080.97	1.39	1.34

p2_score:	18.24
Unreviewed_VMmark_Score:	18.49

Configuration

Server and Network	
Server Manufacturer and Model	Dell PowerEdge R900
Processor Vendor and Model	Intel Xeon X7460
Processor Speed (GHz)	2.66
Number of Sockets/Cores per Socket	4 Sockets / 6 Cores per Socket (24 Cores Total)
Primary Cache	32KB(I) + 32KB(D) on chip, per core
Secondary Cache	9 MB I+D on chip (3 MB shared per 2 cores)
Other Cache	16 MB I+D L3 on chip
Memory	96 GB (24 x 4GB) 667 MHz ECC CL5 DDR2 FB-DIMM
Disk Subsystem Type	SAS (OS), FC SAN (VMs)
Number of Disk Controllers	N/A
Number of Host Bus Adapters	3
Host Bus Adapter Vendors and Models	1 x Dell PowerEdge Expandable RAID Controller (PERC 6/i) 2 x QLogic Corp QLE2462 dual port Fibre Channel HBAs
Number of Network Controllers	6
Network Controller Vendors and Models	3 x Intel PRO/1000 PT Dual Port 1GbE
Network Switch Vendors and Models	Dell PowerConnect 6248
Network Speed	1000Base-T
Other Hardware	None
Other Software	None
Hardware Availability Date	15/09/2008
Software Availability Date	N/A

Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX Server v3.5.0 Update 2 build 103908
Virtualization Type	Hardware Virtualization
Supplemental Software	None
Virtualization Software Availability Date	25/07/2008

Storage

Array Vendor, Model, and Firmware Version	EMC CX3-40f, version 03.24.40.5.006 EMC CX700, version 02.24.700.5.006
Fibre Channel Switch Vendors and Models	None
Disk Space Used	1517 GB
Array Cache Size	8192 MB (4096 MB per SP)
Number and Size of LUNs	CX3-40f: 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 CX700: LUN0: 400GB LUN1: 382GB LUN2: 400GB LUN3: 400GB
RAID Type	RAID0 (all LUNs)
Number of Members per RAID Set	3 members (all LUNs)
Disk Vendor, Model, and Speed	45 x Seagate Cheetah 73GB 15K 15 x Seagate Cheetah 146GB 10K

Clients

Number of Clients	14
System Model(s)	Dell PowerEdge 860
Processor Vendor(s) and Model(s)	Intel Xeon X3230
Processor Speed(s) (GHz)	2.66
Number of Sockets/Cores per Socket	1 Socket / 4 Cores per Socket (4 Cores Total)
Memory	2 GB
Network Controller Vendor and Model	Intel PRO/1000 MT Gigabit Adapter
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 R2 Enterprise SP2

Other Hardware	None
Other Software	None

Notes for Workload

Server and Network Notes

- Onboard PERC 6/i controller contained 1 x 73GB/10K drive for OS.
- BIOS settings:
 - Hardware Prefetcher - Disabled (default Enabled)
 - Adjacent Cache Line Prefetch - Disabled (default Enabled)
- Six vSwitch0, vSwitch1, vSwitch2, vSwitch3, vSwitch4, and vSwitch5 bound to vmnic0, vmnic1, vmnic2, vmnic3, vmnic4, and vmnic5 respectively.
- Service Console was shared with vSwitch0.
- Database VMs were attached to vSwitch0
 - Javaserver, Standby and Webserver VMs 0-3 were attached to vSwitch1
 - Fileserver VMs were attached to vSwitch2
 - Mailserv VMs were attached to vSwitch3
 - Javaserver, Standby and Webserver VMs 4-7 were attached to vSwitch4
 - Javaserver, Standby and Webserver VMs 8-13 were attached to vSwitch5
- LUN to VM mapping:
 - CX3-40f:**
 - LUN0 Tile0
 - LUN1 Tile1
 - LUN2 Tile2
 - LUN3 Tile3
 - LUN4 Tile4
 - LUN5 Tile5
 - LUN6 Tile6
 - LUN7 Tile7
 - LUN8 Tile8
 - LUN9 Tile9
 - LUN10 database0, fileserv1
 - LUN11 database2, fileserv3
 - LUN12 database4, fileserv5
 - LUN13 database6, fileserv7
 - LUN14 database8, fileserv9
 - CX700:**
 - LUN0 Tile10
 - LUN1 Tile11
 - LUN2 Tile12
 - LUN3 Tile13

Virtualization Software Notes

- Misc: RunningVCpuLimit set to 192 (default 128)
- 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.
- Logging was disabled for all VMs (default Enabled)
- VMFS2 was unloaded prior to run.
- Pegasus CIMOM was stopped prior to run.

Operating System Notes

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

Software Notes

Other Notes

VMMARK.CONFIG changes:

- 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)

Client Notes

- Clients ran Microsoft Windows Server 2003, Service Pack 2.

Other Notes

QLogic 2462 BIOS 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)

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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