VMware® VMmark™ V1.1 Results

Vendor and Hardware Platform: Dell PowerEdge M905 Virtualization Platform: VMware ESX 3.5 Update 2 (build 103908)	VMmark V1.1 Score = 14.28 @ 11 Tiles
Tested By: Dell Inc.	Test Date: 31/07/2008

Performance Section	Configuration Section	Notes Section
Performance	Configuration	Notes for Workload

Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1765.45	1.73	17599.17	1.06	1510.85	1.38	15.85	1.24	1704.35	1.14	1.29
p1	1795.03	1.76	18037.03	1.09	1429.85	1.30	15.41	1.20	1691.97	1.13	1.28
p2	1796.60	1.76	18059.70	1.09	1308.85	1.19	15.86	1.24	1659.20	1.11	1.26
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1566.92	1.54	17544.38	1.06	1408.38	1.28	18.32	1.43	2052.85	1.38	1.33
p1	1582.70	1.55	17963.05	1.08	1316.92	1.20	18.22	1.42	1998.25	1.34	1.31
p2	1558.62	1.53	17962.05	1.08	1201.78	1.10	18.16	1.42	2015.80	1.35	1.28
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1390.97	1.37	18043.72	1.09	1262.53	1.15	15.81	1.23	1811.47	1.21	1.21
p1	1398.83	1.37	17995.60	1.08	1131.42	1.03	15.52	1.21	1814.53	1.22	1.18
p2	1383.00	1.36	18005.65	1.08	1030.92	0.94	15.43	1.20	1794.15	1.20	1.15
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1683.62	1.65	17604.28	1.06	1528.90	1.39	19.04	1.48	2197.30	1.47	1.40
p1	1702.80	1.67	18046.05	1.09	1516.70	1.38	19.13	1.49	2183.22	1.46	1.41
p2	1681.58	1.65	18041.12	1.09	1596.03	1.46	19.14	1.49	2181.85	1.46	1.42
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1614.45	1.58	18029.38	1.09	1194.95	1.09	17.08	1.33	2055.93	1.38	1.28
p1	1626.50	1.60	17991.20	1.08	1180.00	1.08	16.80	1.31	2039.53	1.37	1.27
p2	1603.72	1.57	18001.83	1.08	1302.85	1.19	16.94	1.32	2041.28	1.37	1.30
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1510.62	1.48	18076.75	1.09	1332.92	1.22	15.47	1.21	2108.68	1.41	1.27
p1	1424.08	1.40	18044.95	1.09	1305.88	1.19	14.92	1.16	2091.55	1.40	1.24
p2	1480.25	1.45	17601.15	1.06	1198.42	1.09	14.76	1.15	2088.72	1.40	1.22
TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1343.60	1.32	18067.08	1.09	1593.58	1.45	16.45	1.28	2008.30	1.35	1.29
p1	1266.55	1.24	18042.40	1.09	1578.67	1.44	15.96	1.24	1947.15	1.30	1.26
p2	1315.12	1.29	17618.20	1.06	1442.90	1.32	15.99	1.25	1968.88	1.32	1.24
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM

p0	1524.17	1.50	18063.20	1.09	1519.00	1.38	17.72	1.38	2106.62	1.41	1.34
p1	1536.78	1.51	18052.15	1.09	1458.67	1.33	17.83	1.39	2091.55	1.40	1.34
p2	1518.05	1.49	18043.60	1.09	1393.15	1.27	17.62	1.37	2094.97	1.40	1.32
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1790.67	1.76	18032.92	1.09	1601.50	1.46	16.95	1.32	2064.00	1.38	1.38
p1	1812.28	1.78	18006.60	1.08	1551.90	1.41	16.66	1.30	2054.72	1.38	1.37
p2	1810.97	1.78	18013.55	1.08	1395.03	1.27	16.76	1.31	2054.90	1.38	1.35
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1466.70	1.44	18064.95	1.09	1351.53	1.23	17.21	1.34	2088.78	1.40	1.29
p1	1416.05	1.39	18028.85	1.09	1219.28	1.11	16.62	1.30	2075.88	1.39	1.25
p2	1400.67	1.37	18051.28	1.09	1164.60	1.06	16.97	1.32	2072.20	1.39	1.24
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1743.75	1.71	17636.60	1.06	1237.80	1.13	19.30	1.50	2147.57	1.44	1.35
p1	1762.83	1.73	18068.38	1.09	1450.75	1.32	18.26	1.42	2141.75	1.44	1.38
p2	1735.70	1.70	18072.80	1.09	1410.85	1.29	17.40	1.36	2145.88	1.44	1.36
p0_score:	14.43										
p1_score:	14.28										
p2_score:	14.12										
Unreviewed_VMmark_Score:	14.28										

Configuration

Server and Network	
Server Manufacturer and Model	Dell PowerEdge M905
Processor Vendor and Model	Quad-Core AMD Opteron 8356
Processor Speed (GHz)	2.30
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	2 MB I+D L3 on chip per chip
Memory	64 GB (16 x 4 GB) PC2-5300 667MHz Registered ECC DDR2 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 Onboard Dell CERC6 RAID Controller 2 x QLogic Corp QME2472
Number of Network Controllers	2
Network Controller Vendors and Models	Onboard Broadcom 5708 Dual Port GbE NIC
Network Switch Vendors and Models	Dell PowerConnect 6248
Network Speed	1000Base-T
Other Hardware	None

Other Software	None
Hardware Availability Date	27/08/2008
Software Availability Date	N/A

Virtualization Software	
Vendor, Product, Version, and Build	VMware ESX 3.5 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	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	818GB
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	LUN 1: 120GB LUN 2: 120GB LUN 3: 120GB LUN 4: 120GB LUN 5: 120GB LUN 6: 120GB LUN 7: 120GB LUN 8: 120GB LUN 9: 120GB LUN 10: 120GB LUN 11: 120GB LUN 12: 260GB LUN 13: 260GB
RAID Type	RAID10 (all LUNs)
Number of Members per RAID Set	LUN 1: 10 members LUN 2: 10 members LUN 3: 10 members LUN 4: 10 members LUN 5: 10 members LUN 6: 10 members LUN 7: 10 members LUN 8: 10 members LUN 9: 10 members LUN 10: 10 members LUN 11: 10 members LUN 12: 16 members LUN 13: 16 members
Disk Vendor, Model, and Speed	Fujitsu Enterprise/15K

Clients	
Number of Clients	11
System Model(s)	5 x PowerEdge 1650, 4 x PowerEdge 1750, 2 x PowerEdge 1850
Processor Vendor(s) and Model(s)	Intel Xeon
Processor Speed(s) (GHz)	5 x 1.40 (1650), 2 x 3.20 (1750), 2 x 3.06 (1750), 2.80 (1850), 3.40 (1850)
Number of Sockets/Cores per Socket	10 x 2 Sockets / 1 Core per Socket (2 Cores Total), 1 x 2 Sockets / 2 Cores per Socket (4 Cores Total)
Memory	2 GB
Network Controller Vendor and Model	5 x Intel PRO/1000 XT Network Connection (1650), 4 x Broadcom NetXtreme Gigabit Ethernet (1750), 2 x 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 onboard CERC6 controller contained 1 73GB/15K drive for OS.

Virtualization Software Notes

- Four vSwitches (0-3) bound to four physical NICs, vmnic0-3, respectively.
- Each vSwitch was configured to 120 ports (default 56).
- Service Console was shared with vSwitch0.
- Database, Standby, MailServer 0-5 VMs attached to vSwitch0;
  FileServer, JavaServer, MailServer 6-10 VMs attached to vSwitch1;
  WebServer 0-5 VMs attached to vSwitch2;
  WebServer 6-10 VMs attached to vSwitch3.
- Database 0-5 VMs were stored on LUN 12. Database 6-10 VMs were stored on LUN 13. For all other VMs, each tile was stored on its own LUN.
- Virtualized MMU Enabled on Database, FileServer, and WebServer VMs (default Automatic)
- Ethernet Adapter Type set to Enhanced vmxnet for all VMs.
- vmfs2 module was unloaded prior to the benchmark run.

Operating System Notes

- Microsoft Windows Server 2003 virtual machines were updated to Service Pack 2, and KB 933360 was applied.

Software Notes

Client Notes

- KB 933360 was applied.

Other Notes

VMMARK.CONFIG changes:

- JavaServer/DELAYTIME="1140" (default 540)
- Standby/DELAYTIME="770" (default 170)
- WebServer/DELAYTIME="780" (default 180)
- Database/DELAYTIME="960" (default 360)

- FileServer/DELAYTIME="1050" (default 450)
