

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R720
 Virtualization Platform: VMware ESX 4.1.0 U2 Build 502767
 VMware vCenter Server: VMware vCenter Server 5.0.0 Build 455964

**VMmark 2.1.1 Score =
10.49 @ 10 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/core/threads in test: 4/32/64
Tested By: Dell Inc.		Test Date: 03-12-2012
Performance Section Performance	Configuration Section Configuration	Notes Section Notes for Workload

Performance

	mailserver			olio			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.45	0.99	54.00	4585.30	0.99	236.36	3182.90	1.45	108.07	2136.60	1.41	127.39	1510.22	1.43	134.10	1.23
p1	326.30	0.99	54.00	4584.80	0.99	234.72	3151.07	1.43	109.91	2197.07	1.45	128.25	1570.92	1.48	134.81	1.25
p2	327.20	0.99	54.00	4525.12	0.97	313.25	2958.90	1.35	123.80	2038.38	1.34	145.04	1521.35	1.44	151.83	1.20
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.93	0.98	53.02	4623.85	1.00	191.24	2884.35	1.31	106.76	2151.38	1.42	125.76	1531.42	1.45	131.07	1.21
p1	331.27	1.00	53.00	4610.38	0.99	227.37	2724.53	1.24	119.10	2097.25	1.38	138.76	1558.22	1.47	146.10	1.20
p2	325.45	0.99	53.00	4587.52	0.99	243.75	2696.90	1.23	123.10	2052.28	1.35	145.03	1441.67	1.36	155.61	1.17
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.55	0.98	53.00	4651.12	1.00	199.09	3332.20	1.52	98.52	2407.28	1.59	109.34	1689.97	1.60	119.49	1.30
p1	326.52	0.99	53.00	4638.40	1.00	226.07	3294.97	1.50	100.77	2351.50	1.55	113.64	1662.25	1.57	122.59	1.29
p2	325.15	0.98	53.00	4553.52	0.98	304.22	3181.60	1.45	107.98	2175.85	1.43	123.54	1569.62	1.48	134.84	1.24
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.07	0.99	65.53	4623.18	1.00	208.52	3412.82	1.55	93.43	2495.57	1.64	102.22	1808.97	1.71	114.26	1.34
p1	325.75	0.99	63.20	4621.18	1.00	220.28	3240.00	1.47	104.22	2326.07	1.53	116.74	1598.22	1.51	130.83	1.27
p2	325.90	0.99	63.33	4535.32	0.98	351.80	3240.35	1.47	103.69	2260.95	1.49	115.20	1553.95	1.47	127.32	1.25
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.00	0.98	63.45	4627.15	1.00	220.19	3359.62	1.53	96.92	2296.03	1.51	112.34	1672.92	1.58	121.21	1.29
p1	321.90	0.97	53.10	4604.45	0.99	248.86	3412.95	1.55	93.23	2462.93	1.62	105.05	1699.50	1.61	117.96	1.31
p2	326.88	0.99	53.00	4533.25	0.98	328.60	3228.35	1.47	104.59	2311.93	1.52	118.02	1607.30	1.52	129.75	1.27
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.45	0.99	60.23	4663.90	1.00	186.70	3048.45	1.39	94.10	2348.80	1.55	107.16	1662.58	1.57	113.42	1.27
p1	327.10	0.99	53.50	4616.35	0.99	228.07	2957.57	1.34	99.95	2339.93	1.54	115.02	1674.67	1.58	120.75	1.26

p2	326.25	0.99	53.08	4594.20	0.99	270.57	2941.75	1.34	100.52	2347.20	1.55	114.39	1757.50	1.66	120.09	1.27
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.60	1.00	63.52	4672.35	1.01	157.19	3451.82	1.57	91.60	2388.88	1.57	104.19	1677.20	1.59	111.89	1.31
p1	322.38	0.98	63.00	4686.75	1.01	164.63	3432.82	1.56	92.13	2567.30	1.69	102.61	1842.08	1.74	110.35	1.35
p2	327.25	0.99	63.12	4607.75	0.99	240.23	3298.43	1.50	100.31	2275.88	1.50	113.64	1667.08	1.58	122.00	1.28
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.52	0.98	60.00	4665.98	1.01	162.72	3417.38	1.55	93.31	2481.78	1.63	103.24	1756.35	1.66	111.28	1.33
p1	326.12	0.99	54.00	4655.57	1.00	199.59	3283.85	1.49	101.02	2366.68	1.56	112.33	1751.35	1.66	120.49	1.31
p2	327.88	0.99	53.02	4570.90	0.98	298.22	3333.70	1.52	98.68	2335.28	1.54	108.96	1602.42	1.51	121.20	1.28
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.52	0.99	74.00	4673.57	1.01	166.02	3361.35	1.53	96.56	2494.70	1.64	108.52	1801.97	1.70	115.18	1.34
p1	326.20	0.99	64.00	4664.48	1.00	182.45	3418.57	1.55	93.42	2343.60	1.54	107.86	1744.75	1.65	112.63	1.31
p2	325.35	0.99	64.00	4584.62	0.99	272.32	3270.57	1.49	101.83	2246.85	1.48	116.61	1582.85	1.50	122.99	1.26
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.18	0.99	64.70	4690.65	1.01	156.99	3214.82	1.46	103.97	2385.22	1.57	111.10	1767.35	1.67	118.82	1.31
p1	326.07	0.99	63.27	4638.43	1.00	192.73	3183.35	1.45	105.93	2273.45	1.50	114.19	1576.92	1.49	124.26	1.26
p2	327.07	0.99	63.92	4639.45	1.00	207.62	3128.88	1.42	108.85	2327.72	1.53	115.77	1664.88	1.57	122.59	1.28
p0_score:	12.94															
p1_score:	12.83															
p2_score:	12.52															

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	15.50	11.00	5.00
Avg_Seconds_To_Complete	29.68	28.46	336.86
Failures	0.00	0.00	0.00
Ratio	0.97	1.22	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	12.83		
Unreviewed_VMmark2_Infrastructure_Score	1.14		
Unreviewed_VMmark2_Score	10.49		

Configuration

Virtualization Software

Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1.0 U2 Build 502767 / 10-27-2011
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.0.0 Build 455964 / 08-24-2011
Supplemental Software	None
Servers	
Quantity	2
Server Manufacturer and Model	Dell PowerEdge R720
Processor Vendor and Model	Intel Xeon E5-2690
Processor Speed (GHz)	2.9
Total Sockets/Total Cores/Total Threads	2 Sockets / 16 Cores / 32 Threads
Primary Cache	32 KB I + 32 KB D on chip per core
Secondary Cache	256 KB I + D on chip per core
Other Cache	20 MB I + D on chip per chip L3
BIOS Version	1.0.4
Memory Size (in GB, Number of DIMMs)	256 GB, 16 x 16 GB
Memory Type and Speed	2Rx4 PC3-12800R-11 ECC / 1600 MHz
Disk Subsystem Type	Direct-Attach SAS
Number of Disk Controllers	1
Disk Controller Vendors and Models	Dell PERC H710p Mini
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	Dell 6 Gbps SAS HBA Adapter
Number of Network Controllers	2
Network Controller Vendors and Models	Integrated Intel I350 Quad-Port 1-GbE Adapter, 2 x Intel 82599EB 10-GbE SFI/SFP+ Network Adapter
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	03-06-2012
Software Availability Date (MM-DD-YYYY)	02-27-2012

Network	
Network Switch Vendors and Models	2 x Dell PowerConnect 6248, 1 x PowerConnect 8024F
Network Speed	1Gbps for SUT management and all VMs except Olio and DS2DB; 10Gbps for OlioDB, DS2DB and VMotion
Storage	
Array Vendors, Models, and Firmware Versions	2 x Dell PowerVault MD3220 (Firmware 07.80.41.60), 4 x Dell PowerVault MD1220
Fibre Channel Switch Vendors and Models	None
Disk Space Used	20,864 GB
Array Cache Size	2 GB
Total Number of Physical Disks Used	142 (109 HDDs, 33 SSDs)
Total Number of Enclosures/Pods/Shelves Used	6
Number of Physical Disks Used per Enclosure/Pod/Shelf	<ul style="list-style-type: none"> • One enclosure with 22 (146GB 15K HDDs) • One enclosure with 24 (8x150GB SSDs + 16x146GB 15K HDDs) • One enclosure with 24 (9x150GB SSDs + 15x146GB 15K HDDs) • One enclosure with 24 (4x150GB SSDs + 20x146GB 15K HDDs) • One enclosure with 24 (146GB 15K HDDs) • One enclosure with 24 (12x150GB SSDs + 12x146GB 15K HDDs)
Total Number of Storage Groups Used	21
Number of LUNs Used	25
LUN Size and Number of Disks Per LUN	Details in section Storage Notes
RAID Type	RAID 0
Number of Members per RAID Set	Details in section Storage Notes
Disk Vendors, Models, and Speeds	SEAGATE ST9146852SS, 15K RPM HITACHI HUC151414CSS600, 15K RPM FUJITSU MBE2147RC, 15K RPM Pliant LB150S
Datacenter Management Server	
System Model	Dell PowerEdge 1950
Processor Vendor and Model	Intel Xeon E5450
Processor Speed (GHz)	3.00
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory	16 GB

Network Controller(s) Vendors and Models	Integrated Broadcom BCM5708C NetXtreme II GigE
Operating System, Version, and Service Pack	Microsoft Windows Server 2008 R2 Enterprise (64-bit)
Other Hardware	None
Other Software	None
Clients	
Number of Clients	5 (1 Dedicated Prime client, 4 Physical ESX servers)
System Model(s)	Dell PowerEdge R410
Processor Vendor(s) and Model(s)	Intel Xeon E5620
Processor Speed(s) (GHz)	2.40
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Memory per Client	Prime Client: 4 GB Clients 0-3: 24 GB
Network Controller(s) Vendors and Models	Prime Client: Intel PRO/1000 PT Dual Port Server Adapter Clients 0-3: 1 x Integrated Broadcom BCM5716 NetXtreme II GbE
Operating System, Version, and Service Pack	Prime Client: Microsoft Windows Server 2003 Enterprise 32-bit, Service Pack 2 Physical Clients: VMware ESX 4.1.0 (Build 260247) Virtual Clients: Microsoft Windows Server 2008 R2 Enterprise 64-bit
Other Hardware	None
Other Software	None

Notes for Workload

Virtualization Software Notes

- All VMs used virtual hardware V7
- Ethernet adapter type set to VMXNET3 for all VMs (default VMXNET2)
- Logging was disabled for all VMs (default enabled)
- Floppy and CDROM removed for all VMs (default enabled)
- Firewall disabled for Console OS (default enabled)
- All Mailserver VMs: Hard Disk 1 on LSI Logic SAS controller, Hard Disk 2 on Paravirtual controller
- Cluster DRS Automation Level set to "Fully Automated", Level 2
- /adv/Cpu/HaltingIdleMsecPenalty = 0 (default 100)
- /adv/Irq/RoutingPolicy = 0 (default 2)
- /adv/Mem/BalancePeriod = 0 (default 15)
- /adv/Mem/SamplePeriod = 0 (default 60)
- /adv/Mem/ShareScanGHz = 0 (default 4)
- /adv/Misc/TimerMaxHardPeriod = 4000 (default 100000)
- /adv/Misc/TimerMinHardPeriod = 2000 (default 100)
- /vmkernel/pageSharing = "FALSE" (default = TRUE)
- /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
- /adv/Net/MaxNetifTxQueueLen = 1000 (default 500)

- /adv/Net/NetTxWorldlet = 1 (default 2)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/PageMigEnable = 0 (default 1)

Server Notes

- Intel Turbo Boost Technology up to 3.80 GHz
- System Profile set to Performance in BIOS

Networking Notes

vSwitch Configuration:

- vSwitch0 for Service Console on vmnic0 at 1Gb/s
- vSwitch1 for VMotion on vmnic6 at 10Gb/s
- vSwitch2 for all Olio VMs on vmnic4 at 10Gb/s
- vSwitch3 for all DS2 VMs on vmnic5 at 10Gb/s
- vSwitch4 for all Mailserver VMs on vmnic1 at 1Gb/s
- vSwitch5 for all Standby VMs on vmnic2 at 1Gb/s

Storage Notes

- 1 RAID0 disk group, across 6x146GB HDDs, containing 1 LUN: SVMotion (400GB)
- 1 RAID0 disk group, across 6x146GB HDDs, containing 1 LUN: DeployLUN (80GB)
- 1 RAID0 disk group, across 1x150GB SSD, containing 1 LUN: DeployTemplate (80GB)
- 2 RAID0 disk groups, each across 4x150GB SSDs, containing 2 LUNs: Even DS2DB (380GB), Even OlioDB (173GB)
- 2 RAID0 disk groups, each across 4x150GB SSDs, containing 2 LUNs: Odd DS2DB (380GB), Odd OlioDB (173GB)
- 2 RAID0 disk groups, each across 10x146GB HDDs, containing 1 LUN: Even DS2Web (150GB)
- 2 RAID0 disk groups, each across 10x146GB HDDs, containing 1 LUN: Odd DS2Web (150GB)
- 2 RAID0 disk groups, each across 12x146GB HDDs, containing 1 LUN: Even MailServer (300GB)
- 2 RAID0 disk groups, each across 12x146GB HDDs, containing 1 LUN: Odd MailServer (300GB)
- 2 RAID0 disk groups, each across 4x150GB SSDs, containing 1 LUN: Even OlioWeb (400GB)
- 2 RAID0 disk groups, each across 4x150GB SSDs, containing 1 LUN: Odd OlioWeb (400GB)
- 2 RAID0 disk groups, each across 6x146GB HDDs, containing 1 LUN: Standby (200GB)

Datacenter Management Server Notes

None

Operating System Notes

- All MailServer VMs running Microsoft Windows Server 2008 R2 Enterprise (64-bit) and updated through Windows Update
- All Standby VMs running Microsoft Windows Server 2003 R2 Enterprise SP2 (32-bit)
- Storage Controller for all Exchange Database Virtual Disks set to Paravirtual.

Software Notes

None

Client Notes

- Prime Client split from Client0 and run on a non-virtualized copy of Microsoft Windows Server 2003 Enterprise SP2 (32-bit)
- Prime Client was running VMware vSphere PowerCLI-4.1.1-332441
- All clients were run on virtual machines that were each defined with 4 vCPUs, 4GB memory, 1 VMXNET3 network and 32GB disk space.
- Each client virtual machine was running Microsoft Windows Server 2008 R2 Enterprise (64-bit)
- 3 physical clients ran 3 virtual clients each and 1 physical client ran 1 virtual client
- All physical clients were installed with VMware ESX 4.1.0 (Build 260247)

Other Notes

None

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