

VMware® VMmark® V2.1 Results

Vendor and Hardware Platform: Dell PowerEdge R710
 Virtualization Platform: VMware ESX 4.1.0 Build 260247
 VMware vCenter Server: VMware vCenter Server 4.1.0 build 258902

**VMmark V2.1 Score =
7.30 @ 7 Tiles**

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/core/threads in test: 4/24/48

Tested By: Dell Inc.

Test Date: 07-20-2011

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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	328.30	0.99	66.50	4657.15	1.00	178.39	3137.12	1.43	107.36	2339.82	1.54	88.32	1790.20	1.69	69.56	1.30
p1	327.75	0.99	63.02	4667.57	1.01	190.74	3081.80	1.40	110.98	2221.55	1.46	88.52	1611.67	1.52	66.19	1.26
p2	325.52	0.99	56.75	4662.30	1.00	189.21	2976.32	1.35	118.32	2215.12	1.46	97.38	1618.30	1.53	73.91	1.24
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.48	0.99	71.00	4666.35	1.01	178.70	3157.80	1.44	107.91	2235.25	1.47	88.60	1659.38	1.57	70.76	1.27
p1	327.20	0.99	65.00	4654.18	1.00	193.98	3108.12	1.41	110.07	2173.68	1.43	92.58	1575.72	1.49	68.70	1.25
p2	326.82	0.99	64.00	4628.82	1.00	205.32	3038.97	1.38	115.46	2297.45	1.51	100.86	1675.47	1.58	78.31	1.27
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.90	0.99	73.35	4672.55	1.01	177.78	3421.78	1.56	91.35	2494.45	1.64	72.00	1736.65	1.64	57.92	1.33
p1	325.77	0.99	63.00	4658.27	1.00	196.45	3312.80	1.51	97.36	2501.93	1.65	78.43	1774.17	1.68	63.10	1.33
p2	326.25	0.99	63.05	4636.98	1.00	212.61	3249.75	1.48	101.45	2420.43	1.59	83.58	1782.58	1.68	70.40	1.31
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.30	0.99	78.22	4662.93	1.00	187.06	3134.35	1.43	108.62	2223.07	1.46	89.04	1605.58	1.52	67.16	1.26
p1	326.20	0.99	73.00	4641.25	1.00	204.98	3065.32	1.39	112.63	2321.07	1.53	98.03	1721.10	1.63	74.66	1.28
p2	329.15	1.00	73.17	4621.73	1.00	221.35	3046.75	1.39	114.44	2181.40	1.44	91.97	1632.40	1.54	73.30	1.25
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.05	0.98	69.90	4667.65	1.01	168.17	2895.88	1.32	125.88	2087.88	1.37	107.73	1515.25	1.43	82.52	1.21
p1	330.35	1.00	64.00	4653.88	1.00	194.70	2741.25	1.25	138.11	1963.62	1.29	118.57	1487.30	1.41	94.53	1.18
p2	325.05	0.98	54.75	4643.00	1.00	202.23	2661.60	1.21	145.74	1820.33	1.20	122.58	1294.38	1.22	93.71	1.12
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.02	0.99	87.25	4666.73	1.01	167.20	3242.85	1.47	102.07	2417.15	1.59	83.58	1797.38	1.70	69.28	1.32
p1	326.27	0.99	75.25	4646.45	1.00	186.87	3176.50	1.44	106.51	2348.72	1.55	88.00	1667.28	1.58	70.31	1.28

p2	325.15	0.98	74.00	4641.00	1.00	193.05	3138.65	1.43	108.99	2247.03	1.48	87.55	1554.42	1.47	70.53	1.25
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.85	0.99	84.15	4685.25	1.01	181.91	3246.38	1.48	101.70	2374.97	1.56	78.90	1727.85	1.63	66.28	1.30
p1	324.57	0.98	66.75	4669.25	1.01	188.80	3161.53	1.44	106.85	2413.82	1.59	84.04	1695.22	1.60	68.28	1.29
p2	324.77	0.98	64.00	4629.77	1.00	208.86	3090.35	1.41	111.53	2371.53	1.56	86.80	1648.72	1.56	71.74	1.27
p0_score:	8.99															
p1_score:	8.86															
p2_score:	8.72															
Infrastructure_Operations_Scores:										vmotion	svmotion	deploy				
Completed_Ops_PerHour										15.50	9.00	4.50				
Avg_Seconds_To_Complete										35.36	28.94	424.54				
Failures										0.00	0.00	0.00				
Ratio										0.97	1.00	1.12				
Number_Of_Threads										1	1	1				
Summary					Run_Is_Compliant	Number_Of_Compliance_Issues(0)*					Median_Phase(p1)					
Unreviewed_VMmark2_Applications_Score					8.86											
Unreviewed_VMmark2_Infrastructure_Score					1.03											
Unreviewed_VMmark2_Score					7.30											

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1.0 Build 260247 / 07-13-2010
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 4.1.0 build 258902 / 07-13-2010
Supplemental Software	None
Servers	
Quantity	2
Server Manufacturer and Model	Dell PowerEdge R710
Processor Vendor and Model	Intel Xeon X5690
Processor Speed (GHz)	3.46 GHz

Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 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	12 MB I + D on chip per chip L3
BIOS Version	3.0.0
Memory Size (in GB, Number of DIMMs)	96 GB, 12 x 8 GB
Memory Type and Speed	Dual rank PC3-10600 Registered ECC
Disk Subsystem Type	Direct-Attach SAS
Number of Disk Controllers	1
Disk Controller Vendors and Models	Dell PERC H700
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 Broadcom 1GbE BASE-T MC Server Adapter, Intel 82599EB 10-Gigabit SFI/SFP+ Network Adapter
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	02-14-2011
Software Availability Date (MM-DD-YYYY)	03-23-2011
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 OlioWeb and OlioDB; 10Gbps for OlioWeb, OlioDB and VMotion
Storage	
Array Vendors, Models, and Firmware Versions	1 x Dell Powervault MD1220, 2 x Dell PowerVault MD3220,(Firmware 07.75.14.61)
Fibre Channel Switch Vendors and Models	None
Disk Space Used	8742 GB
Array Cache Size	2 GB
Total Number of Physical Disks Used	64 (53 HDDs, 11 SSDs)
Total Number of Enclosures/Pods/Shelves Used	3

Number of Physical Disks Used per Enclosure/Pod/Shelf	<ul style="list-style-type: none"> • One enclosure with 24 (5x150GB SSDs + 19x146GB 15K HDDs) • One enclosure with 22 (22x146GB 15K HDDs) • One enclosure with 18 (6x150GB SSDs + 12x146GB 15K HDDs)
Total Number of Storage Groups Used	9
Number of LUNs Used	17
LUN Size and Number of Disks Per LUN	<ul style="list-style-type: none"> • 1 disk group across 5x150GB SSDs, containing 2 LUNs, 200GB and 300GB • 1 disk group across 10x146GB HDDs, containing 1 LUN, 1362GB • 1 disk group across 9x146GB HDDs, containing 1 LUN, 1226GB • 1 disk group across 6x146GB HDDs, containing 2 LUNs, 80GB and 737GB (unused) • 1 disk group across 6x146GB HDDs, containing 1 LUN, 200GB • 1 disk group across 16x146Gb HDDs, containing 14 LUNs, 130GB, 131GB, 132GB, 133GB, 134GB, 135GB, 136GB, rest unused • 1 disk group across 6x146GB HDDs, containing 1 LUN, 400GB • 1 disk group across 1x150GB SSD, containing 1 LUN, 80GB • 1 disk group across 5x150GB SSDs, containing 2 LUNs, 156GB and 160GB
RAID Type	RAID 0
Number of Members per RAID Set	<ul style="list-style-type: none"> • 3 RAID 0 sets, each across 6x146GB HDDs • 2 RAID 0 sets, each across 5x150GB SSDs • 1 RAID 0 set across 1x150GB SSD • 1 RAID 0 set across 10x146GB HDDs • 1 RAID 0 set across 9x146GB HDDs • 1 RAID 0 set across 16x146GB HDDs
Disk Vendors, Models, and Speeds	SEAGATE ST9146852SS, 15K RPM HITACHI HUC151414CSS600, 15K RPM Pliant LB150S

Datacenter Management Server

System Model	Dell PowerEdge 1950
Processor Vendor and Model	Intel Xeon E5450
Processor Speed (GHz)	3.00 GHz
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 GHz
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, 1 x Intel 82571EB Gigabit Ethernet Controller
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 VMXNET 3 for all VMs (default VMXNET2)
- Logging was disabled for all VMs (default enabled)
- Floppy was removed for all VMs (default enabled)
- CDROM was removed for all VMs except Mailservers, DS2WebA6, DS2WebB4 and DS2WebB5 (default enabled)
- 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/TimerMinHardPeriod = 2000 (default 100)
- /adv/Misc/TimerMaxHardPeriod = 4000 (default 100000)
- /adv/Misc/NMILint1IntAction = 2 (default 3)
- /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
- /adv/Net/MaxNetifTxQueueLen = 1000 (default 500)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Net/NetTxWorldlet = 1 (default 2)
- /vmkernel/pageSharing = FALSE (default TRUE)
- Firewall disabled for Console OS (default enabled)
- Cluster DRS Automation Level set to "Fully Automated", Level 1 ("Aggressive")

Server Notes

- Intel Turbo Boost Technology up to 3.73 GHz
- Virtualization Technology: Enabled (default: Disabled)
- Adjacent Cache Line Prefetch: Disabled (default: Enabled)
- Hardware Prefetcher: Disabled (default: Enabled)

- DCU Streamer Prefetcher: Disabled (default: Enabled)
- Data Reuse: Disabled (default: Enabled)
- Power Management: Maximum Performance (default: Active Power Controller)

Networking Notes

vSwitch Configuration:

- vSwitch0 for Service Console on vmnic0 at 1Gb/s
- vSwitch1 for VMotion on vmnic2 at 10Gb/s
- vSwitch2 for all Olio VMs on vmnic3 at 10Gb/s
- vSwitch3 for all VMs except Olio on vmnic1 at 1Gb/s

Storage Notes

- 1 disk group across 5x150GB SSDs, containing 2 LUNs: Even DS2DB VMs (200GB), Odd DS2DB VMs (300GB)
- 1 disk group across 10x146GB HDDs, containing 1 LUN: Even DS2Web and OlioWeb VMs (1362GB)
- 1 disk group across 9x146GB HDDs, containing 1 LUN: Odd DS2Web and OlioWeb VMs (1226GB)
- 1 disk group across 6x146GB HDDs, containing 1 LUN: All Standby VMs (200GB)
- 1 disk group across 16x146Gb HDDs, containing 14 LUNs: All MailServer VMs (130GB, 131GB, 132GB, 133GB, 134GB, 135GB and 136GB), rest unused
- 1 disk group across 5x150GB SSDs, containing 2 LUNs: Even OlioDB VMs (156GB), Odd OlioDB VMs (160GB)
- 1 disk group across 6x146GB HDDs, containing 2 LUNs: DeployLUN (80GB) and 737GB (unused)
- 1 disk group across 1x150GB SSD, containing 1 LUN: Deploy Template (80GB)
- 1 disk group across 6x146GB HDDs, containing 1 LUN: SVmotion (400GB)

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 VMXNET 3 network and 32GB disk space.
- Each client virtual machine was running Microsoft Windows Server 2008 R2 Enterprise (64-bit)
- 3 physical clients ran 2 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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