VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R720 Virtualization Platform: VMware ESXi 5.1.0 Build 799733 VMware vCenter Server: VMware vCenter Server 5.1.0 Build 799731	VMmark 2.1.1 Score = 11.39 @ 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: 11-28-2012

Performance Section	Configuration Section	Notes Section
Performance	Configuration	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	325.23	0.98	60.27	4707.62	1.01	139.75	3206.50	1.46	68.63	2704.25	1.78	62.48	1915.60	1.81	49.01	1.36
p1	329.75	1.00	54.00	4657.07	1.00	160.50	3185.57	1.45	69.78	2760.85	1.82	66.16	1975.03	1.87	52.37	1.38
p2	329.77	1.00	58.75	4562.98	0.98	326.11	3074.45	1.40	76.19	2558.97	1.69	69.82	1882.42	1.78	57.35	1.33
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.75	0.99	63.00	4682.55	1.01	125.40	3690.72	1.68	62.10	2963.35	1.95	50.24	2102.72	1.99	39.71	1.45
p1	333.73	1.01	63.00	4706.62	1.01	141.86	3516.18	1.60	70.09	2891.70	1.90	59.46	2169.85	2.05	49.05	1.45
p2	327.55	0.99	63.00	4692.73	1.01	166.29	3478.20	1.58	71.82	2735.03	1.80	60.28	1932.90	1.83	47.60	1.39
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.43	0.99	55.50	4710.15	1.01	116.50	3788.55	1.72	77.06	2745.53	1.81	67.13	1988.25	1.88	52.08	1.42
p1	328.27	0.99	53.77	4699.02	1.01	122.90	3679.47	1.67	82.30	2560.97	1.69	69.54	1910.30	1.81	55.82	1.39
p2	323.48	0.98	53.20	4703.18	1.01	146.46	3536.60	1.61	90.27	2401.20	1.58	78.95	1692.35	1.60	61.76	1.32
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.82	0.98	63.60	4744.32	1.02	112.20	3747.40	1.70	76.33	2761.70	1.82	65.17	2089.90	1.98	52.70	1.44
p1	325.38	0.99	64.00	4722.15	1.02	123.41	3638.62	1.65	81.98	2545.80	1.68	69.60	1809.55	1.71	54.23	1.37
p2	330.12	1.00	64.00	4708.30	1.01	128.02	3553.75	1.62	86.66	2563.12	1.69	75.92	1843.08	1.74	59.70	1.37
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.90	0.98	63.75	4726.07	1.02	117.48	3487.90	1.59	73.50	2675.35	1.76	63.94	1966.42	1.86	53.07	1.39
p1	329.10	1.00	64.00	4724.15	1.02	126.45	3393.93	1.54	77.97	2595.20	1.71	67.84	1822.33	1.72	53.79	1.36
p2	324.20	0.98	64.00	4704.90	1.01	147.61	3239.93	1.47	86.56	2646.00	1.74	79.21	1879.83	1.78	64.98	1.35
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.93	0.99	73.47	4729.77	1.02	114.28	3452.05	1.57	54.37	2963.18	1.95	50.00	2153.60	2.04	37.45	1.44
p1	328.40	0.99	67.17	4725.30	1.02	125.64	3293.43	1.50	61.60	2935.05	1.93	56.98	2140.85	2.02	43.74	1.43
p2	322.12	0.98	69.50	4693.68	1.01	130.96	3223.55	1.47	64.92	2873.12	1.89	59.78	2172.28	2.05	48.48	1.41
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.60	0.99	73.00	4725.18	1.02	122.60	3673.62	1.67	82.28	2554.07	1.68	70.40	1756.12	1.66	57.57	1.36
p1	329.38	1.00	73.58	4701.98	1.01	131.78	3604.85	1.64	85.52	2612.03	1.72	74.14	1920.50	1.82	62.35	1.39
p2	324.90	0.98	73.92	4695.77	1.01	163.68	3509.95	1.60	90.53	2531.40	1.67	78.86	1752.40	1.66	64.97	1.34

TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.27	0.99	64.00	4705.02	1.01	131.75	3722.00	1.69	79.48	2687.75	1.77	69.35	1918.03	1.81	55.34	1.40
p1	329.05	1.00	54.38	4678.73	1.01	152.00	3590.03	1.63	86.91	2550.07	1.68	77.33	1811.35	1.71	61.66	1.36
p2	328.10	0.99	53.27	4663.00	1.00	184.97	3570.43	1.62	87.90	2432.47	1.60	76.77	1797.42	1.70	62.85	1.35
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.35	1.00	69.75	4724.80	1.02	122.19	3880.80	1.76	71.94	2856.20	1.88	61.38	2138.07	2.02	50.81	1.47
p1	323.43	0.98	63.20	4701.95	1.01	134.42	3897.18	1.77	71.65	2757.18	1.82	59.77	1934.35	1.83	47.78	1.42
p2	327.18	0.99	63.50	4677.18	1.01	168.75	3764.50	1.71	77.21	2737.25	1.80	67.04	1926.30	1.82	55.03	1.41
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.30	0.98	76.25	4740.80	1.02	110.05	4058.88	1.85	64.58	2811.10	1.85	56.59	2116.88	2.00	45.09	1.47
p1	324.23	0.98	70.50	4727.32	1.02	117.75	3892.35	1.77	72.95	2732.18	1.80	66.88	1877.55	1.77	50.57	1.41
p2	326.05	0.99	64.00	4718.20	1.02	124.35	3790.88	1.72	77.20	2692.47	1.77	69.08	1979.42	1.87	58.77	1.42

p0_score:	14.22
p1_score:	13.95
p2_score:	13.70

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	16.50	10.00	5.00
Avg_Seconds_To_Complete	24.66	34.89	324.93
Failures	0.00	0.00	0.00
Ratio	1.03	1.11	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	13.95		
Unreviewed_VMmark2_Infrastructure_Score	1.13		
Unreviewed_VMmark2_Score	11.39		

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 5.1.0 Build 799733 / 09-10-2012
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.1.0 Build 799731 / 09-10-2012
Supplemental Software	None
Servers	
Quantity	2
Server Manufacturer and Model	Dell PowerEdge R720
Processor Vendor and Model	Intel Xeon E5-2690
Processor Speed (GHz)	2.90
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	1.3.6
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	FC SAN
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	QLogic 2562 Dual-Port 8Gb Fibre Channel HBA
Number of Network Controllers	3
Network Controller Vendors and Models	Integrated Broadcom NetXtreme 1GbE Adapter, 2 x Intel 82599EB 10GbE 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)	10-08-2012
Network	
Network Switch Vendors and Models	1 x Dell PowerConnect 6248, 1 x PowerConnect 8024F
Network Speed	10Gbps, except SUT management (1Gbps)
Storage	
Array Vendors, Models, and Firmware Versions	2 x Violin V6000 16TB with formatted capacity of 8TB (50%) Firmware G5.2.0
Fibre Channel Switch Vendors and Models	Brocade 300
Disk Space Used	2730 GB
Array Cache Size	N/A
Total Number of Physical Disks Used	128
Total Number of Enclosures/Pods/Shelves Used	2
Number of Physical Disks Used per Enclosure/Pod/Shelf	Violin VMA: 64 Flash VIMMs
Total Number of Storage Groups Used	2
Number of LUNs Used	14
LUN Size and Number of Disks Per LUN	• All LUNs spread across 64 Flash VIMMs ◦ 1 LUN at 20GB (Deploy Source) ◦ 1 LUN at 40GB (Deploy Target) ◦ 2 LUNs at 1031GB (DS2DB) ◦ 2 LUNs at 783GB (DS2Web) ◦ 2 LUNs at 1652GB (Mailserver) ◦ 2 LUNs at 374GB (OlioDB) ◦ 2 LUNs at 1771GB (OlioWeb) ◦ 1 LUN at 200GB (Standby Source) ◦ 1 LUN at 100GB (Standby Target)
RAID Type	Violin Memory vRAID
Number of Members per RAID Set	7 on Violin Memory Array A, 7 on Violin Memory Array B
Disk Vendors, Models, and Speeds	128 x Violin 256 GB Flash VIMMs

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 Controlleri(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 V9, except DS2WebB,C and OlioDB at 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)
- Cluster DRS Automation Level set to "Fully Automated", Level 2
- Logical CPU layout changed for all VMs (except Standby) to one socket with multiple cores (default: multiple sockets with one core per socket)
- SCSI adapter type PVSCSI used for all Standby VMs (default LSI Logic parallel)
- SCSI adapter type PVSCSI used for all Mailserver and Linux VMs (default LSI Logic SAS)
- /adv/Power/CpuPolicy = "static" (default balanced)
- /adv/VMFS3/HardwareAcceleratedLocking = "0" (default 1)
- /adv/Mem/SamplePeriod = "0" (default 60)
- /adv/Mem/BalancePeriod = "0" (default 15)
- /adv/Mem/ShareScanGHz = "0" (default 4)
- /adv/Cpu/CoschedCrossCall = "0" (default 1)
- /adv/Cpu/HTWholeCoreThreshold = "0" (default 200)
- /adv/Net/MaxNetifTxQueueLen = "1000" (default 500)
- /adv/Net/MaxNetifRxQueueLen = "500" (default 100)
- /adv/Net/NetTxWorldlet = "1" (default 2)
- /adv/Net/NetTxCompletionWorldlet = "0" (default 1)

- /adv/DataMover/HardwareAcceleratedInit = "0" (default 1)
- /adv/DataMover/HardwareAcceleratedMove = "0" (default 1)
- /adv/Numa/SwapLocalityEnable = "0" (default 1)
- /adv/Numa/LTermFairnessInterval = "0" (default 5)
- /adv/Numa/SwapLoadEnable = "0" (default 1)
- /adv/Numa/MonMigEnable = "0" (default 1)
- /adv/Numa/PageMigEnable = "0" (default 1)
- /adv/Misc/TimerMaxHardPeriod = "4000" (default 100000)
- /adv/Misc/TimerMinHardPeriod = "2000" (default 30)

Server Notes

- Intel Turbo Boost Technology up to 3.80 GHz
- System Profile set to Performance in BIOS
- Hardware Prefetcher set to Disabled (default Enabled)
- Adjacent Cache Line Prefetcher set to Disabled (default Enabled)

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 and Standby VMs on vmnic7 at 10Gb/s

Storage Notes

- All LUNs spread across two Violin Memory Arrays, each containing 64 256GB VIMM Flash modules in vRAID.
- Violin Memory Array A:
  - 1 LUN at 40GB, as Deploy Target LUN
  - 1 LUN at 100GB, as SvMotion Target LUN
  - 1 LUN at 1031GB, containing even DS2DB VMs
  - 1 LUN at 783GB, containing even DS2Web VMs
  - 1 LUN at 1652GB, containing even Mailserver VMs
  - 1 LUN at 374GB, containing even OlioDB VMs
  - 1 LUN at 1771GB, containing even OlioWeb VMs
- Violin Memory Array B:
  - 1 LUN at 100GB, as Deploy Source LUN
  - 1 LUN at 200GB, SvMotion Source LUN
  - 1 LUN at 1031GB, containing odd DS2DB VMs
  - 1 LUN at 783GB, containing odd DS2Web VMs
  - 1 LUN at 1652GB, containing odd Mailserver VMs
  - 1 LUN at 374GB, containing odd OlioDB VMs
  - 1 LUN at 1771GB, containing odd OlioWeb VMs
- All LUNs used Round Robin Path Selection Policy and I/O Operation Limit of 8

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)
- All SLES11 VMs were updated with SP2

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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