

VMware® VMmark® V2.5.1 Results

Vendor and Hardware Platform: Dell PowerEdge R720
 Virtualization Platform: VMware ESXi 5.1.0 U1 Build 1065491
 VMware vCenter Server : VMware vCenter Server 5.1.0 Build 799731

**VMmark V2.5.1 Score =
16.18 @ 14 Tiles**

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/cores/threads in test: 4/48/96

Tested By: Dell Inc.

Test Date: 09-10-2013

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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	326.45	0.99	64.00	4716.80	1.02	139.91	3782.43	1.72	74.13	2713.05	1.79	80.39	2053.62	1.94	82.78	1.43
p1	330.60	1.00	64.00	4692.70	1.01	150.36	3785.75	1.72	74.05	2814.57	1.85	79.68	2049.62	1.94	83.04	1.44
p2	325.45	0.99	64.00	4645.55	1.00	212.15	3596.00	1.64	84.96	2557.10	1.68	93.11	1901.03	1.80	100.59	1.37
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.48	1.00	64.00	4702.52	1.01	139.47	3503.85	1.59	69.23	2889.43	1.90	75.56	2106.80	1.99	78.40	1.44
p1	325.25	0.98	64.00	4691.75	1.01	143.91	3422.53	1.56	72.75	2803.68	1.85	80.48	2128.45	2.01	83.57	1.42
p2	326.05	0.99	68.75	4636.05	1.00	220.17	3174.68	1.44	89.33	2460.05	1.62	105.17	1761.95	1.67	109.20	1.31
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.02	0.99	54.73	4708.25	1.01	136.56	3497.45	1.59	69.92	2987.05	1.97	75.75	2199.90	2.08	78.65	1.46
p1	327.20	0.99	64.00	4696.48	1.01	140.94	3394.93	1.54	74.75	2689.85	1.77	82.46	2025.58	1.91	85.43	1.39
p2	327.27	0.99	69.00	4638.80	1.00	197.03	3056.80	1.39	100.90	2409.53	1.59	111.41	1712.12	1.62	117.23	1.29
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	331.50	1.00	63.08	4704.00	1.01	136.67	3789.80	1.72	73.70	2840.60	1.87	78.80	2170.72	2.05	80.74	1.46
p1	332.57	1.01	63.88	4688.77	1.01	140.53	3736.00	1.70	76.67	2690.03	1.77	82.49	1937.15	1.83	85.51	1.41
p2	323.95	0.98	68.78	4636.82	1.00	202.67	3435.20	1.56	98.65	2583.65	1.70	103.24	1883.08	1.78	101.91	1.36
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.65	0.99	59.25	4707.15	1.01	139.70	3794.38	1.73	73.30	2754.93	1.81	78.16	2100.07	1.98	79.08	1.44
p1	325.10	0.98	64.00	4692.75	1.01	140.37	3698.03	1.68	77.47	2696.93	1.78	81.87	1953.75	1.85	83.84	1.41
p2	321.77	0.97	73.75	4657.70	1.00	182.40	3375.25	1.53	97.19	2621.50	1.73	101.32	1936.83	1.83	106.01	1.37
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.30	1.00	64.00	4692.73	1.01	137.78	3821.85	1.74	71.78	2831.93	1.86	73.71	2056.05	1.94	75.15	1.45
p1	328.60	1.00	63.50	4708.68	1.01	135.26	3730.28	1.70	75.77	2847.22	1.87	78.00	2091.38	1.98	79.59	1.45

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	17.00	11.00	5.00
Avg_Seconds_To_Complete	28.91	22.01	327.92
Failures	0.00	0.00	0.00
Ratio	1.06	1.22	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	19.93	
Unreviewed_VMmark2_Infrastructure_Score	1.18	
Unreviewed_VMmark2_Score	16.18	

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 5.1.0 U1 Build 1065491/ 04-25-2013
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 E5-2697 v2
Processor Speed (GHz)	2.70
Total Sockets/Total Cores/Total Threads	2 Sockets / 24 Cores / 48 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	30 MB I+D on chip per chip L3
BIOS Version	2.0.19
Memory Size (in GB, Number of DIMMs)	256 GB, 16 x 16 GB
Memory Type and Speed	2Rx4 PC3-14900R-11 ECC, 1866 MHz
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	Dell PERC H710
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	QLogic 2562 Dual-Port 8Gb Fibre Channel HBA
Number of Network Controllers	2
Network Controller Vendors and Models	Integrated Intel I350 Quad-Port 1-GbE Adapter, Intel 82599EB 10-GbE SFI/SFP+ Network Adapter
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	09-11-2013
Software Availability Date (MM-DD-YYYY)	08-29-2013
Network	
Network Switch Vendors and Models	1 x Dell PowerConnect 6248
Network Speed	10Gbps for Olio and DS2, 1Gbps for rest
Storage	
Array Vendors, Models, and Firmware Versions	1 x Fusion-io ION Data Accelerator, FW 2.0.1
Fibre Channel Switch Vendors and Models	None (hosts directly attached to storage)
Disk Space Used	5800 GB
Array Cache Size	N/A
Total Number of Physical Disks Used	4 x HDDs, 3 x PCI-e Flash
Total Number of Enclosures/Pods/Shelves Used	1

Number of Physical Disks Used per Enclosure/Pod/Shelf	1 HDD per host, 2 HDDs for Fusion-io ION OS 3 PCI-e Flash
Total Number of Storage Groups Used	0
Number of LUNs Used	16
LUN Size and Number of Disks Per LUN	All LUNs striped across 3 PCI-e Flash cards <ul style="list-style-type: none"> • 14 LUNs at 400GB • 2 LUNs at 100GB
RAID Type	SUT OS: RAID0 ION OS: RAID1 ION Flash: RAID0
Number of Members per RAID Set	SUT OS: 1 ION OS: 2 ION Flash: 3
Disk Vendors, Models, and Speeds	4 x Dell 146GB 15K RPM SAS 3 x Fusion-io 2.4 TB ioDrive2 Duo

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, Bitness, and Service Pack	Microsoft Windows Server 2008 R2 Enterprise (64-bit)
Other Hardware	None
Other Software	None

Clients

Total Number of Clients / Total Physical Clients / Total Virtual Client Hosts	15/1/5
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 / 24 Cores / 24 Threads
Memory per Physical Client	Prime Client: 4 GB Clients 0-4: 24 GB
Network Controller(s) Vendors and Models	Prime Client: Intel PRO/1000 PT Dual Port Server Adapter Clients 0-4: 1 x Integrated Broadcom BCM5716 NetXtreme II GbE
Operating System, Version, Bitness, and Service Pack	Prime Client: Microsoft Windows Server 2003 Enterprise 32-bit, Service Pack 2 Virtual Client hosts: VMware ESX 4.1.0 (Build 260247) Virtual Clients: Microsoft Windows Server 2008 R2 Enterprise 64-bit
Number of Virtual Clients	14
Number of vCPUs Per Virtual Client	4
Number of vMem (GB) Per Virtual Client	4
Virtual Client Networking Notes	1 vSwitch for Service Console, 1 vSwitch for virtual clients
Virtual Client Storage Notes	Virtual client VMs used local storage. 1 x 160GB 7.2 RPM SATA
Other Hardware	None
Other Software	None

Notes for Workload

Virtualization Software Notes

- All VMs used virtual hardware V7
- All VMs used VMware tools version 8305
- 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)
- All VMs: Paravirtual Controller (default: LSI Logic Parallel for Standby, LSI Logic SAS for others)
- Cluster DRS Automation Level set to "Fully Automated", Level 1

Advanced Settings:

- Cpu.CoschedCrossCall=0 (default 1)
- Cpu.CreditAgePeriod = 533 (default 3000)
- Cpu.HTWholeCoreThreshold = 0 (default 200)
- DataMover.HardwareAcceleratedInit=0 (default 1)
- DataMover.HardwareAcceleratedMove=0 (default 1)
- Disk.SchedNumReqOutstanding=256 (default 32)
- Irq.BestVcpuRouting=1 (default 0)
- Irq.IRQRebalancePeriod = 20000 (default 2)
- Mem.BalancePeriod=0 (default 15)

- Mem.SamplePeriod=0 (default 60)
- Mem.ShareScanGHz=0 (default 4)
- Mem.VMOverheadGrowthLimit = 0 (default 4294967295)
- Misc.TimerMaxHardPeriod=4000 (default 100000)
- Misc.TimerMinHardPeriod=2000 (default 100)
- Net.MaxNetifRxQueueLen=500 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- Net.NetTxCompletionWorldlet=0 (default 1)
- Net.NetTxWorldlet=1 (default 2)
- Numa.LargeInterleave = 0 (default 1)
- Numa.LTermFairnessInterval=0 (default 5)
- Numa.MigImbalanceThreshold = 57 (default 10)
- Numa.MonMigEnable=0 (default 1)
- Numa.PreferHT=1 (default 0)
- Numa.RebalancePeriod=60000 (default 2000)
- Numa.SwapInterval=1 (default 2)
- Numa.SwapLoadEnable=0 (default 1)
- Numa.SwapLocalityEnable=0 (default 1)
- VMFS3.HardwareAcceleratedLocking=0 (default 1)

Driver Options:

- /vmkernel/module/qla2xxx/options = "ql2xmaxqdepth=256 ql2xintrdelaytimer=2 qlxenablemsix=1" (default 32, 0, and 0)
- /vmkernel/module/ixgbe/options = "MQ=0,0 InterruptThrottleRate=2000,2000 InterruptType=2,2 " (default 1, 16000, and 2)

Server Notes

Server BIOS Settings:

- Intel Turbo Boost Technology up to 3.50 GHz (default)
- System Profile set to Performance in BIOS (default)
- 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 1 Gb/s
- vSwitch1 for vMotion on vmnic1 at 1 Gb/s
- vSwitch2 for DS2 VMs on vmnic4 at 10 Gb/s
- vSwitch3 for Olio VMs on vmnic5 at 10 Gb/s
- vSwitch4 for Mailsever VMs on vmnic2 at 1 Gb/s
- vSwitch5 for Deploy and Standby VMs on vmnic3 at 1 Gb/s

Storage Notes

- Dell PowerEdge R720 configured with 3 x 2.4TB Fusion-io ioDrive2 Duo PCI-e Flash cards and Fusion-io ION Data Accelerator software

- Configuration for Fusion-io ION Data Accelerator:
 - Dell PowerEdge R720
 - 2 x Intel Xeon E5-2690 2.90 GHz
 - 256 GB (16 x 16 GB, 2Rx4 PC3-12800R-11 ECC / 1600 MHz)
 - 2 x QLogic 2562 Dual-Port 8Gb Fibre Channel HBA
 - 2 x 146 GB 15K RPM HDD
 - 3 x 2.4TB Fusion-io ioDrive2 Duo PCI-e Flash Cards
- VM Layout
 - ION Data Accelerator
 - 14 LUNs, each for all VMs from 1 tile (except Standby)
 - 1 LUN for all Standby VMs and DeployTemplate
 - 1 LUN for Deploy target and SvMotion target
 - All LUNs were configured as block devices and no system memory was used for write caching

Datacenter Management Server Notes

None

Operating System Notes

- All MailServer VMs running Microsoft Windows Server 2008 R2 Enterprise (64-bit)
- All Standby VMs running Microsoft Windows Server 2003 R2 Enterprise SP2 (32-bit)
- All SLES11 VMs were updated with SP2
- VMXNET3 driver configured to use one receive and one request queue (Default: number of queues matches the number of vCPUs)

Software Notes

- Each Mailserver VM running Microsoft Exchange Server 2007 Enterprise SP3 (64-bit)

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)
- 4 virtual client hosts ran 3 virtual clients each, and 1 ran 2 virtual clients
- All virtual client hosts were installed with VMware ESX 4.1.0 (Build 260247)

Other Notes

None

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