

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Dell PowerEdge M620
 Virtualization Platform: VMware ESX 4.1.0 U2 Build 502767
 VMware vCenter Server: VMware vCenter Server 4.1 U1 Build 345043

**VMmark 2.1.1 Score =
10.20 @ 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: 06-26-2012
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	329.55	1.00	74.00	4625.55	1.00	208.35	3325.55	1.51	100.37	2371.00	1.56	106.25	1785.80	1.69	108.38	1.32
p1	328.65	1.00	74.00	4621.93	1.00	210.69	3371.50	1.53	95.77	2360.45	1.55	106.38	1664.20	1.57	113.59	1.30
p2	327.00	0.99	74.00	4582.20	0.99	279.22	3297.05	1.50	99.97	2477.22	1.63	110.07	1772.88	1.68	118.35	1.32
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.40	1.00	101.50	4649.57	1.00	174.45	3351.05	1.52	98.57	2367.05	1.56	107.49	1683.12	1.59	111.65	1.31
p1	323.20	0.98	104.00	4652.65	1.00	201.10	3249.15	1.48	104.01	2329.50	1.53	116.30	1639.00	1.55	126.20	1.28
p2	328.52	0.99	104.00	4649.70	1.00	197.03	3326.70	1.51	98.62	2485.78	1.64	103.61	1796.62	1.70	115.61	1.33
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.43	0.99	84.00	4670.80	1.01	172.01	2976.65	1.35	126.37	2021.22	1.33	144.10	1401.92	1.33	155.27	1.19
p1	322.75	0.98	84.00	4653.60	1.00	194.54	2859.55	1.30	130.63	2094.60	1.38	146.63	1524.03	1.44	152.47	1.20
p2	331.73	1.00	82.75	4631.35	1.00	199.32	2935.15	1.33	125.01	1989.12	1.31	143.21	1463.85	1.38	151.43	1.19
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.35	0.99	111.53	4665.12	1.01	187.52	2447.05	1.11	91.93	2428.10	1.60	110.04	1740.00	1.64	115.53	1.24
p1	328.77	1.00	114.00	4630.27	1.00	205.90	2203.85	1.00	111.58	2161.85	1.42	132.31	1596.70	1.51	140.82	1.16
p2	321.82	0.97	114.00	4498.43	0.97	358.51	2311.75	1.05	102.47	2206.30	1.45	122.32	1546.20	1.46	131.40	1.16
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	321.60	0.97	89.75	4627.40	1.00	203.13	3356.75	1.53	97.42	2540.55	1.67	106.31	1838.92	1.74	112.91	1.34
p1	325.68	0.99	86.75	4651.45	1.00	202.29	3372.40	1.53	96.73	2342.60	1.54	109.38	1677.33	1.59	121.70	1.30
p2	326.00	0.99	84.00	4592.73	0.99	249.66	3289.75	1.50	100.69	2297.85	1.51	112.23	1607.75	1.52	120.89	1.27
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.60	1.00	104.00	4665.95	1.01	183.15	3328.20	1.51	99.41	2551.25	1.68	98.89	1844.28	1.74	102.33	1.35
p1	325.43	0.99	94.75	4646.27	1.00	211.48	3266.35	1.49	101.49	2355.07	1.55	107.51	1716.88	1.62	116.35	1.30

p2	326.95	0.99	103.25	4597.73	0.99	228.67	3275.00	1.49	100.27	2495.53	1.64	103.19	1745.97	1.65	113.07	1.32
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.15	0.99	74.00	4667.80	1.01	177.47	3120.95	1.42	114.66	2157.43	1.42	126.14	1592.30	1.50	132.51	1.25
p1	326.18	0.99	74.00	4647.75	1.00	190.93	2805.32	1.28	136.13	1957.33	1.29	154.23	1325.50	1.25	164.77	1.15
p2	323.93	0.98	73.95	4610.60	0.99	234.77	2569.50	1.17	158.00	1778.35	1.17	179.46	1303.30	1.23	192.16	1.10
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.52	0.99	110.78	4669.62	1.01	188.33	3118.70	1.42	92.55	2506.75	1.65	102.85	1727.35	1.63	107.92	1.31
p1	328.88	1.00	110.00	4626.15	1.00	222.21	3029.70	1.38	96.86	2440.25	1.61	107.20	1788.28	1.69	116.73	1.30
p2	325.48	0.99	114.00	4635.43	1.00	226.40	2944.10	1.34	105.25	2208.82	1.45	122.76	1610.12	1.52	132.25	1.24
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.30	0.99	87.75	4634.75	1.00	205.80	3213.00	1.46	109.18	2302.15	1.52	121.48	1643.40	1.55	126.55	1.28
p1	330.32	1.00	84.00	4606.52	0.99	227.92	3328.10	1.51	98.44	2401.62	1.58	109.53	1783.22	1.69	117.45	1.32
p2	324.45	0.98	84.00	4555.95	0.98	307.18	3249.15	1.48	103.67	2238.22	1.47	117.33	1539.35	1.45	129.29	1.25
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	331.10	1.00	114.50	4662.90	1.00	181.78	2752.40	1.25	142.02	1998.95	1.32	160.34	1420.70	1.34	172.24	1.17
p1	326.12	0.99	114.00	4643.43	1.00	198.62	2767.82	1.26	139.79	1855.53	1.22	161.33	1349.30	1.28	172.86	1.14
p2	327.73	0.99	114.00	4508.20	0.97	377.43	2584.90	1.18	156.65	1742.00	1.15	177.74	1195.20	1.13	193.45	1.08
p0_score:	12.74															
p1_score:	12.46															
p2_score:	12.27															

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	15.50	11.00	5.00
Avg_Seconds_To_Complete	38.75	38.30	326.21
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	12.46		
Unreviewed_VMmark2_Infrastructure_Score	1.14		
Unreviewed_VMmark2_Score	10.20		

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 4.1 U1 Build 345043 / 02-10-2011
Supplemental Software	None
Servers	
Quantity	2
Server Manufacturer and Model	Dell PowerEdge M620
Processor Vendor and Model	Intel Xeon E5-2680
Processor Speed (GHz)	2.70
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	1.2.6
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 H310
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Emulex LPE1205-M 8Gbps Fibre Channel I/O Mezz Card
Number of Network Controllers	2
Network Controller Vendors and Models	Intel x520-k Dual Port 10Gb KR Blade NDC, Intel® X520-x/k 10Gb Dual Port I/O Mezz Card
Other Hardware	None
Other Software	ixgbe driver 3.9.13, lpfc820 driver 8.2.1.105.34
Hardware Availability Date (MM-DD-YYYY)	03-06-2012
Software Availability Date (MM-DD-YYYY)	06-26-2012

Network	
Network Switch Vendors and Models	4 x Dell PowerConnect M8024-k, 1 x PowerConnect 6248
Network Speed	10Gbps
Storage	
Array Vendors, Models, and Firmware Versions	4 x Dell PowerVault MD3220 (Firmware 07.80.41.60), 1 x Dell PowerVault MD1220
Fibre Channel Switch Vendors and Models	Brocade 300
Disk Space Used	16.5 TB
Array Cache Size	2 GB
Total Number of Physical Disks Used	101 (49 SSDs, 52 HDDs)
Total Number of Enclosures/Pods/Shelves Used	5
Number of Physical Disks Used per Enclosure/Pod/Shelf	<ul style="list-style-type: none"> • One enclosure with 13 (1x150GB SSD + 12x146GB 15K HDDs) • One enclosure with 24 (200 GB SSDs) • One enclosure with 24 (200 GB SSDs) • One enclosure with 20 (146GB 15K HDDs) • One enclosure with 20 (146GB 15K HDDs)
Total Number of Storage Groups Used	22
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 TOSHIBA MK2001GRZB 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	6 (1 Dedicated Prime client, 5 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 0-4: 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, 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)
- Logical CPU layout changed for all VMs (except Standby) to one socket with multiple cores (default: multiple sockets with one core per socket)
- 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/CoschedCrossCall = 0 (Default 1)
- /adv/Cpu/HaltingIdleMsecPenalty = 0 (default 100)
- /adv/Disk/SchedNumReqOutstanding = 256 (default 32)
- /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)
- /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
- /adv/Net/MaxNetifTxQueueLen = 1000 (default 500)

- /adv/Net/NetTxCompletionWorldlet = 0 (default 1)
- /adv/Net/NetTxWorldlet = 0 (default 2)
- /adv/Numa/AutoSplitVM = 0 (default 1)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/MonMigEnable = 0 (default 1)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /adv/Numa/SwapLoadEnable = 0 (default 1)
- /adv/Numa/SwapLocalityEnable = 0 (default 1)

Server Notes

- Intel Turbo Boost Technology up to 3.50 GHz (default: Enabled)
- Adjacent Cache Line Prefetch: Disabled (default: Enabled)
- HW Prefetcher: Disabled (default: Enabled)
- System Profile set to Performance in BIOS (default: Performance Per Watt)

Networking Notes

vSwitch Configuration:

- vSwitch0 for Service Console, VMotion and Deploy on vmnic0 (10Gb/s)
- vSwitch1 for DS2 VMs on vmnic1 (10Gb/s)
- vSwitch2 for Olio VMs on vmnic2 (10Gb/s)
- vSwitch3 for Mailserver and Standby VMs on vmnic3 (10Gb/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)
- 10 RAID0 disk groups, each across 4x146GB HDDs, containing 1 LUN (200GB): 1 Mailserver per LUN
- 1 RAID0 disk group, across 8x200GB SSDs, containing 2 LUNs: DS2-0,5 (740GB), DS2-1,6 (740GB)
- 1 RAID0 disk group, across 8x200GB SSDs, containing 2 LUNs: DS2-2,7 (740GB), DS2-3,8 (740GB)
- 1 RAID0 disk group, across 8x200GB SSDs, containing 2 LUNs: DS24 (740GB), DS29, all Standby (740GB)
- 4 RAID0 disk groups, each across 4x200GB SSDs, containing 1 LUN (350GB): Olio-0,2 Olio-1,3 Olio-4,6, Olio-5,7
- 2 RAID0 disk groups, each across 4x200GB SSDs, containing 1 LUN (350GB): Olio8, Olio9

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)
- 5 physical clients ran 2 virtual clients each
- All physical clients were installed with VMware ESX 4.1.0 (Build 260247)

Other Notes

None

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