

## VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Dell PowerEdge R715  
 Virtualization Platform: VMware ESXi 5.1.0 Build 799733  
 VMware vCenter Server: VMware vCenter Server 5.1.0 Build 799731

**VMmark V2.1.1 Score =  
8.89 @ 8 Tiles**

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/core/threads in test: 4/64/64

Tested By: AMD

Test Date: 11-09-2012

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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	330.15	1.00	89.00	4679.32	1.01	173.95	3881.82	1.77	72.68	2771.72	1.83	79.84	1967.10	1.86	85.83	1.43
p1	326.18	0.99	84.50	4638.70	1.00	199.55	3732.22	1.70	77.57	2869.12	1.89	83.07	2096.22	1.98	87.43	1.44
p2	328.93	1.00	90.75	4620.80	1.00	226.40	3824.00	1.74	74.79	2679.68	1.76	84.66	1997.12	1.89	88.88	1.42
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.02	0.99	88.75	4686.73	1.01	161.81	3123.20	1.42	116.67	2278.47	1.50	126.80	1583.47	1.50	140.41	1.26
p1	324.18	0.98	87.50	4671.02	1.01	180.77	3214.78	1.46	106.40	2249.28	1.48	117.57	1629.47	1.54	127.14	1.27
p2	324.95	0.98	89.75	4646.55	1.00	204.40	3264.60	1.48	103.63	2368.20	1.56	114.02	1666.42	1.57	122.62	1.29
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	332.10	1.01	94.00	4664.75	1.01	173.46	3256.93	1.48	104.40	2462.40	1.62	114.51	1736.70	1.64	124.58	1.32
p1	334.12	1.01	94.00	4632.80	1.00	191.26	3319.28	1.51	99.20	2302.53	1.52	112.64	1673.25	1.58	121.83	1.30
p2	326.77	0.99	94.00	4627.23	1.00	216.82	3282.68	1.49	102.97	2282.18	1.50	115.14	1589.42	1.50	124.20	1.27
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	331.05	1.00	104.75	4679.88	1.01	170.62	3687.10	1.68	80.11	2629.93	1.73	87.61	1925.88	1.82	95.29	1.40
p1	328.82	1.00	98.25	4633.80	1.00	196.79	3620.50	1.65	83.85	2581.20	1.70	92.18	1775.88	1.68	102.60	1.36
p2	322.77	0.98	94.00	4616.98	0.99	209.66	3363.82	1.53	96.95	2628.68	1.73	99.81	1857.33	1.76	109.99	1.35
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.45	0.99	92.95	4696.60	1.01	148.42	3361.10	1.53	98.80	2303.00	1.52	112.85	1732.55	1.64	116.45	1.31
p1	327.62	0.99	92.25	4670.38	1.01	161.43	3312.75	1.51	100.36	2292.78	1.51	113.62	1607.97	1.52	122.64	1.28
p2	322.60	0.98	88.75	4680.45	1.01	172.85	3277.05	1.49	102.79	2370.97	1.56	113.53	1763.97	1.67	121.40	1.31
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.27	0.99	92.47	4670.38	1.01	154.65	3892.65	1.77	72.00	2733.55	1.80	82.08	1939.40	1.83	88.31	1.42
p1	332.73	1.01	94.00	4678.20	1.01	170.85	3821.78	1.74	73.43	2892.72	1.90	81.60	2100.55	1.99	86.72	1.46

<b>p2</b>	328.38	0.99	94.00	4664.40	1.00	186.27	3544.88	1.61	89.57	2471.75	1.63	100.97	1842.30	1.74	106.65	1.35
<b>TILE_6</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.77	0.99	130.25	4704.25	1.01	146.12	3747.35	1.70	79.04	2653.03	1.75	87.61	1934.47	1.83	96.68	1.41
<b>p1</b>	323.52	0.98	128.50	4668.57	1.01	159.33	3674.05	1.67	81.30	2660.20	1.75	90.96	1978.67	1.87	97.33	1.40
<b>p2</b>	330.18	1.00	124.00	4691.65	1.01	161.53	3503.90	1.59	90.61	2502.20	1.65	103.19	1681.10	1.59	111.84	1.33
<b>TILE_7</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.30	0.99	84.00	4642.07	1.00	215.32	3338.05	1.52	100.94	2384.35	1.57	113.64	1757.85	1.66	122.31	1.31
<b>p1</b>	328.18	0.99	85.25	4627.82	1.00	216.37	3386.18	1.54	96.58	2414.35	1.59	110.25	1690.80	1.60	119.59	1.31
<b>p2</b>	326.98	0.99	94.00	4685.60	1.01	165.74	3241.30	1.47	105.24	2261.50	1.49	117.09	1551.85	1.47	129.04	1.26
<b>p0_score:</b>	10.86															
<b>p1_score:</b>	10.82															
<b>p2_score:</b>	10.59															

<b>Infrastructure_Operations_Scores:</b>	vmotion	svmotion	deploy
<b>Completed_Ops_PerHour</b>	16.50	10.00	5.00
<b>Avg_Seconds_To_Complete</b>	31.66	31.68	376.53
<b>Failures</b>	0.00	0.00	0.00
<b>Ratio</b>	1.03	1.11	1.25
<b>Number_Of_Threads</b>	1	1	1

<b>Summary</b>	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
<b>Unreviewed_VMmark2_Applications_Score</b>	10.82		
<b>Unreviewed_VMmark2_Infrastructure_Score</b>	1.13		
<b>Unreviewed_VMmark2_Score</b>	8.89		

## Configuration

<b>Virtualization Software</b>	
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
<b>Servers</b>	
Quantity	2
Server Manufacturer and Model	Dell PowerEdge R715
Processor Vendor and Model	AMD Opteron Processor 6386 SE
Processor Speed (GHz)	2.8
Total Sockets/Total Cores/Total Threads	2 Sockets / 32 Cores / 32 Threads
Primary Cache	512 KB I (64KB shared / 2 cores) and 256 KB D (16KB/core on chip per chip)
Secondary Cache	16 MB I+D on chip per chip (2 MB share / 2 cores)
Other Cache	12 MB I+D on chip per chip
BIOS Version	3.0.4
Memory Size (in GB, Number of DIMMs)	128 GB, 8 x 16 GB DIMMs
Memory Type and Speed	dual rank PC3-12800 Registered DDR3 / 1600 MHz
Disk Subsystem Type	FC-SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	Dell PERC H200
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	Emulex LPe12002 dual port 8Gbps Fibre Channel Qlogic QLA-2462 dual port 4Gbps Fibre Channel (not required)
Number of Network Controllers	3
Network Controller Vendors and Models	2 x Dual-Port Broadcom 5709c 1GbE ports onboard Intel X520-SR2 dual port 10Gigabit Network Adapter
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	12-18-2012
Software Availability Date (MM-DD-YYYY)	12-18-2012
<b>Network</b>	
Network Switch Vendors and Models	Dell PowerConnect 6248
Network Speed	10Gbps
<b>Storage</b>	

Array Vendors, Models, and Firmware Versions	1 x Dell PowerVault MD3620f (Firmware 07.80.41.60), 2 x Dell PowerVault MD1220
Fibre Channel Switch Vendors and Models	None
Disk Space Used	2.4 TB
Array Cache Size	4 GB
Total Number of Physical Disks Used	72 (9 SSDs and 63 HDDs)
Total Number of Enclosures/Pods/Shelves Used	3
Number of Physical Disks Used per Enclosure/Pod/Shelf	24
Total Number of Storage Groups Used	11
Number of LUNs Used	21
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 (HDDs) Pliant LB150S (SSDs)

**Datacenter Management Server**

System Model	Sun Fire V20z
Processor Vendor and Model	AMD Opteron 275
Processor Speed (GHz)	2.2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory	8 GB
Network Controller(s) Vendors and Models	Integrated Broadcom NetXtreme GigE
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 SP2 Enterprise (x64)
Other Hardware	None
Other Software	None

**Clients**

Number of Clients	3 (1 physical server for prime client and 2 ESX Servers hosting 8 virtual clients)
System Model(s)	Prime client: Sun Fire V20z Virtual Client Hosts: Dell PowerEdge R815

Processor Vendor(s) and Model(s)	Prime client: AMD Opteron 275 Physical clients: AMD Opteron 6278
Processor Speed(s) (GHz)	Prime client: 2.2 Physical clients: 2.4
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 2 Cores / 4 Threads Physical clients: 4 Sockets / 128 Cores / 128 Threads
Memory per Client	Prime client: 4 GB Physical clients: 256 GB
Network Controller(s) Vendors and Models	Prime client: Integrated Broadcom NetXtreme GigE Physical clients: 2 x Dual-Port Broadcom 5709c 1GbE ports onboard
Operating System, Version, and Service Pack	Prime client: Microsoft Windows Server 2003 SP2 Enterprise (x64) Physical Clients: VMware ESXi 5.1.0 Build 799733 Virtual Clients: Microsoft Windows Server 2008 SP2 (x64)
Other Hardware	None
Other Software	None

## Notes for Workload

### Virtualization Software Notes

- Changed "Default Path Selection Policy" to Round Robin (VMW\_PSP\_RR).
- Logging was disabled for all VMs (default enabled)
- Ethernet adapter type set to vmxnet3 for all VMs (default vmxnet2)
- Virtual hardware for all VMs V7 except Mailservers V8
- All Mailserver VMs: Paravirtual Controller
- All VMs configured to have a single virtual socket with multiple cores (default one core per multiple virtual sockets)
- vSphere DRS Migration Threshold set to Fully Automated level 1

#### Advanced Settings:

- /adv/Cpu/CoschedCrossCall = "0" (default = 1 )
- /adv/Mem/BalancePeriod = "0" (default = 15)
- /adv/Cpu/HTWholeCoreThreshold = "0" (default = 200)
- /adv/Mem/SamplePeriod = "0" (default = 60)
- /adv/Disk/SchedNumReqOutstanding = "256" (default = 32)
- /adv/Mem/ShareScanGHz = "0" (default = 4)
- /adv/Cpu/UseMwait = "1" (default = 2)
- /adv/Misc/TimerMaxHardPeriod = "4000" (default = 100000)
- /adv/Misc/TimerMinHardPeriod = "2000" (default = 30)
- /adv/Net/MaxNetifTxQueueLen = "1000" (default = 500)
- /adv/Net/MaxNetifRxQueueLen = "500" (default = 100)
- /adv/Mem/ShareVmkEnable = "0" (default = 1)
- /adv/Net/NetTxCompletionWorldlet = "0" (default = 1)
- /adv/Net/NetTxWorldlet = "1" (default = 2)

- /adv/Net/vmxnetThroughputWeight = "255" (default = 0)
- /adv/Numa/LTermFairnessInterval = "0" (default = 5)
- /adv/Numa/SwapLocalityEnable = "0" (default = 1)
- /adv/Numa/PageMigRateMax = "10" (default = 16000)
- /adv/Numa/SwapLoadEnable = "0" (default = 1)
- /adv/Numa/PageMigEnable = "0" (default = 1)
- /adv/Numa/MonMigEnable = "0" (default = 1)
- /adv/VMFS3/HardwareAcceleratedLocking = "0" (default = 1)
- /adv/Mem/VMOverheadGrowthLimit = "0" (default = 1)

#### Driver Options:

- /vmkernel/module/ixgbe/options = "VMDQ=4,4 InterruptThrottleRate=2000"
- /vmkernel/module/lpfc820/options = "lpfc\_lun\_queue\_depth=64 lpfc\_cr\_delay=1 lpfc\_cr\_count=4"

## Server Notes

#### Server BIOS Settings:

- HW Prefetch Training on SW Prefetcher set to Disabled (Default = Enabled)
- HW Prefetcher set to Disabled (Default = Enabled)
- Power Management set to "Maximum Performance"
- Core Performance Boost Mode set to Enabled (Max freq 3.5GHz @ 1 core)(Default = Enabled)

## Networking Notes

- vSwitch0 for Service Console at 1Gbps (vmnic0)
- vSwitch1 for Olioweb and Oliodb VMs at 10Gbps (vmnic4)
- vSwitch2 for Ds2web, Ds2db VMS and VMotion at 10Gbps (vmnic5)
- vSwitch3 for Standby and Deploy VMs at 1Gbps (vmnic1)
- vSwitch4 for Mailserver VMs at 1Gbps (vmnic2 & vmnic3)

## Storage Notes

- ESX installed on local disk drive.
- 1 RAID0 disk group, 7x146GB HDDs, contains LUNs SAS\_GRP1\_VOL1 & SAS\_GRP1\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP2\_VOL1 & SAS\_GRP2\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP3\_VOL1 & SAS\_GRP3\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP4\_VOL1 & SAS\_GRP4\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP5\_VOL1 & SAS\_GRP5\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP6\_VOL1 & SAS\_GRP6\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP7\_VOL1 & SAS\_GRP7\_VOL2
- 1 RAID0 disk group, 8x146GB HDDs, contains LUNs SAS\_GRP8\_VOL1 & SAS\_GRP8\_VOL2
- 1 RAID0 disk group, 4x150GB SSDs, contains LUNs SSD\_RAID0\_GRP1\_VOL1 and SSD\_RAID0\_GRP1\_VOL2
- 1 RAID0 disk group, 4x150GB SSDs, contains LUNs SSD\_RAID0\_GRP2\_VOL1 and SSD\_RAID0\_GRP2\_VOL2
- 1 RAID0 disk group, 1x150GB SSDs, contains LUNs SSD\_RAID0\_GRP5\_VOL1
- Tile 0 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP2\_VOL1
- Tile 0 Oliodb VM installed on SAS\_GRP2\_VOL2

- Tile 1 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP3\_VOL1
- Tile 1 Oliodb VM installed on SAS\_GRP3\_VOL2
- Tile 2 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP4\_VOL1
- Tile 2 Oliodb VM installed on SAS\_GRP4\_VOL2
- Tile 3 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP5\_VOL1
- Tile 3 Oliodb VM installed on SAS\_GRP5\_VOL2
- Tile 4 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP6\_VOL1
- Tile 4 Oliodb VM installed on SAS\_GRP6\_VOL2
- Tile 5 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP7\_VOL1
- Tile 5 Oliodb VM installed on SAS\_GRP7\_VOL2
- Tile 6 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP8\_VOL1
- Tile 6 Oliodb VM installed on SAS\_GRP8\_VOL2
- Tile 7 Mailserver, Standby, Olioweb and Ds2web VMs installed on SAS\_GRP1\_VOL1
- Tile 7 Oliodb VM installed on SAS\_GRP1\_VOL2
- Tiles 0 and 4 ds2db VMs installed on SSD\_RAID0\_GRP1\_VOL1
- Tiles 1 and 5 ds2db VMs installed on SSD\_RAID0\_GRP2\_VOL1
- Tiles 2 and 6 ds2db VMs installed on SSD\_RAID0\_GRP2\_VOL2
- Tiles 3 and 7 ds2db VMs installed on SSD\_RAID0\_GRP1\_VOL2
- deploy LUN is SSD\_RAID0\_GRP5\_VOL2

### **Datacenter Management Server Notes**

None

### **Operating System Notes**

- All MailServer VMs running Microsoft Windows Server 2008 R2 SP1 Enterprise (64-bit)
- Mailserver 2 service "Microsoft Exchange System Attendant" wasn't running.
- Mailserver 3 service "WinHTTP Web Proxy Auto-Discovery Service" was running.

### **Software Notes**

None

### **Client Notes**

- 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 SP2 Enterprise (64-bit)
- 2 physical clients ran 8 virtual clients.
- All physical clients were installed with VMware ESX 5.1.0 (Build 799733)

### **Other Notes**

No VMs resided on the LUNs that were accessible via the Qlogic HBAs.

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