

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: HP ProLiant DL380p Gen8
 Virtualization Platform: VMware ESXi 5.0.0 Build 469512
 VMware vCenter Server: VMware vCenter Server 5.0.0 Build 455964

**VMmark V2.1.1 Score =
10.26 @ 10 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 4/32/64
Tested By: Hewlett-Packard		Test Date: 02-14-2012
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	327.75	0.99	109.47	4674.80	1.01	174.78	3250.70	1.48	101.15	2320.20	1.53	109.69	1621.92	1.53	118.44	1.28
p1	328.62	1.00	109.25	4644.73	1.00	196.15	3187.10	1.45	104.70	2334.22	1.54	115.15	1645.45	1.56	124.37	1.28
p2	327.10	0.99	114.00	4642.07	1.00	208.25	3158.50	1.44	106.69	2241.93	1.48	116.05	1657.75	1.57	122.73	1.27
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.85	0.99	141.53	4657.07	1.00	175.97	3210.50	1.46	103.73	2292.18	1.51	111.88	1596.80	1.51	120.88	1.27
p1	324.88	0.98	144.00	4633.80	1.00	202.45	3127.78	1.42	108.36	2302.38	1.52	117.56	1711.12	1.62	124.86	1.28
p2	326.20	0.99	144.00	4630.43	1.00	210.33	3138.82	1.43	107.88	2226.35	1.47	117.72	1562.55	1.48	125.41	1.25
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.07	0.99	94.00	4677.40	1.01	177.32	3243.53	1.47	101.31	2362.10	1.56	112.24	1694.17	1.60	118.20	1.30
p1	327.82	0.99	94.00	4637.70	1.00	197.92	2966.60	1.35	120.13	2090.75	1.38	131.99	1515.97	1.43	143.67	1.21
p2	329.43	1.00	94.00	4656.77	1.00	193.68	3142.20	1.43	107.56	2207.18	1.45	118.81	1582.70	1.50	123.19	1.25
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.90	1.00	146.07	4662.35	1.00	182.15	3192.72	1.45	105.08	2386.15	1.57	116.72	1715.97	1.62	124.15	1.30
p1	328.90	1.00	146.00	4641.55	1.00	212.65	3167.62	1.44	107.43	2103.30	1.39	122.80	1530.42	1.45	130.18	1.24
p2	323.57	0.98	154.00	4662.30	1.00	200.03	3154.82	1.43	107.98	2244.25	1.48	122.70	1587.50	1.50	132.18	1.26
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.30	0.99	96.50	4652.10	1.00	197.05	3188.68	1.45	104.96	2366.55	1.56	111.35	1782.08	1.68	116.44	1.31
p1	323.90	0.98	94.00	4633.35	1.00	210.28	3194.88	1.45	103.36	2217.60	1.46	111.32	1551.22	1.47	117.75	1.25
p2	325.05	0.98	94.00	4597.07	0.99	223.95	3120.00	1.42	108.50	2405.40	1.58	114.35	1738.83	1.64	121.24	1.29
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.68	0.99	148.28	4654.98	1.00	179.47	3244.80	1.48	101.55	2284.05	1.50	111.79	1696.72	1.60	117.56	1.29
p1	329.07	1.00	144.00	4657.32	1.00	192.43	3155.43	1.43	107.28	2211.03	1.46	119.67	1547.58	1.46	127.63	1.25

p2	325.62	0.99	154.00	4639.45	1.00	198.15	3091.90	1.41	110.95	2252.78	1.48	121.30	1675.50	1.58	128.96	1.27
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.18	0.98	102.22	4643.10	1.00	199.06	3201.57	1.46	103.62	2174.53	1.43	115.36	1519.88	1.44	121.15	1.24
p1	323.45	0.98	103.85	4634.85	1.00	210.50	3116.90	1.42	108.64	2350.55	1.55	119.34	1702.90	1.61	125.84	1.28
p2	323.75	0.98	104.00	4649.20	1.00	193.81	3080.45	1.40	112.29	2136.85	1.41	125.91	1581.88	1.50	132.72	1.24
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.73	0.98	164.00	4648.10	1.00	194.78	3197.18	1.45	104.89	2231.45	1.47	116.56	1551.65	1.47	127.25	1.25
p1	328.43	0.99	166.00	4658.35	1.00	213.62	3124.88	1.42	108.69	2250.10	1.48	121.34	1673.88	1.58	129.38	1.27
p2	327.23	0.99	167.75	4642.12	1.00	203.25	3149.30	1.43	108.08	2171.72	1.43	122.65	1517.12	1.43	131.97	1.24
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.48	1.00	106.80	4651.98	1.00	180.87	3206.22	1.46	103.39	2318.62	1.53	115.65	1688.90	1.60	118.80	1.29
p1	325.65	0.99	104.00	4651.23	1.00	195.65	3155.28	1.43	107.35	2146.35	1.41	117.51	1561.80	1.48	125.15	1.24
p2	328.32	0.99	104.00	4637.68	1.00	207.67	3080.12	1.40	112.13	2212.45	1.46	125.15	1595.03	1.51	130.75	1.25
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.60	0.99	184.22	4655.38	1.00	176.64	3117.00	1.42	108.62	2278.38	1.50	118.64	1715.60	1.62	123.93	1.28
p1	326.02	0.99	177.50	4647.32	1.00	198.18	3082.05	1.40	110.99	2185.03	1.44	121.22	1565.88	1.48	124.86	1.24
p2	327.38	0.99	182.50	4628.43	1.00	213.15	3081.05	1.40	111.21	2257.15	1.49	120.65	1619.78	1.53	126.86	1.26
p0_score:	12.80															
p1_score:	12.55															
p2_score:	12.57															

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	16.00	10.00	4.00
Avg_Seconds_To_Complete	33.79	37.69	440.71
Failures	0.00	0.00	0.00
Ratio	1.00	1.11	1.00
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p2)
Unreviewed_VMmark2_Applications_Score	12.57		
Unreviewed_VMmark2_Infrastructure_Score	1.04		
Unreviewed_VMmark2_Score	10.26		

Configuration

Virtualization Software

Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 5.0.0 Build 469512/ 08-24-2011
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.0.0 Build 455964 / 08-24-2011
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	HP ProLiant DL380p Gen8
Processor Vendor and Model	Intel Xeon E5-2690
Processor Speed (GHz)	2.9
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
BIOS Version	P70 12/40/2011
Memory Size (in GB, Number of DIMMs)	256 GB, 16 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	HP Smart Array P420i
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	LPe12005 dual port 8Gb Fibre HBA
Number of Network Controllers	2
Network Controller Vendors and Models	HP NC551i embedded quad port NetXtreme Gigabit Network adapter, HP Emulex OneConnect dual port 10Gb adapter
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	04-02-2012
Software Availability Date (MM-DD-YYYY)	08-24-2011

Network	
Network Switch Vendors and Models	HP ProCurve 2910-al-24G
Network Speed	1 GbE with 10GbE uplinks
Storage	
Array Vendors, Models, and Firmware Versions	6 x StorageWorks P2000 firmware:TS230P007 1 x Violin VMA 3200 5 TB with formatted capacity of 2.8 TB (66%) Flash version:A3.7.3-19248 1 x Violin Gateway Server
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 8/24
Disk Space Used	12.9 TB
Array Cache Size	2GB
Total Number of Physical Disks Used	146
Total Number of Enclosures/Pods/Shelves Used	7
Number of Physical Disks Used per Enclosure/Pod/Shelf	Internal: 1 disk per host (O/S) Each P2000 enclosure: 24 disks Violin VMA: 42 Flash VIMMs
Total Number of Storage Groups Used	0
Number of LUNs Used	17
LUN Size and Number of Disks Per LUN	12 LUNs: 818.50 GB on 12 disks 5 LUNs: 536.75 GB on 40 VIMMS
RAID Type	RAID 0
Number of Members per RAID Set	12
Disk Vendors, Models, and Speeds	HP 72GB 15K RPM SAS SFF HP 146GB 15K RPM SAS SFF 42 x Violin 128 GB Flash VIMMs
Datacenter Management Server	
System Model	HP ProLiant DL360 G5
Processor Vendor and Model	Intel Xeon E5440
Processor Speed (GHz)	2.83
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 8 Threads
Memory	8 GB
Network Controller(s) Vendors and Models	2 x HP NC373i embedded Gigabit adapters
Operating System, Version, and Service Pack	Microsoft® Windows® 2008 Enterprise (64-bit) Service Pack 2

Other Hardware	none
Other Software	none
Clients	
Number of Clients	6 physical servers (1 non-virtualized Primeclient, 5 Physical clients, 10 virtual clients)
System Model(s)	HP ProLiant DL360 G5
Processor Vendor(s) and Model(s)	Primeclient Intel Xeon E5440 Physical Clients 0-4: Intel Xeon E5450
Processor Speed(s) (GHz)	Primeclient 2.83 Physical Clients 0-4: 3.00
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 8 Threads
Memory per Client	Primeclient 8 GB Physical Clients 0-4: 16 GB
Network Controller(s) Vendors and Models	Primeclient: 2 x HP NC373i embedded Gigabit adapters Physical Clients 0-4: 2 x HP NC373i embedded dual port 1Gb adapters, 1 x NC360T dual port 10GbE adapter
Operating System, Version, and Service Pack	Prime Client: Microsoft® Windows® 2003 Enterprise SP2 (32-bit) Physical Clients 0-4: VMware ESXi 4.1.0 (Build 250247) Virtual Clients 0-9: Microsoft® Windows® 2008 R2 Enterprise (64-bit)
Other Hardware	none
Other Software	none

Notes for Workload

Virtualization Software Notes

- all VMs but mailserver used virtual hardware V7, mailserver VMs used virtual hardware V8
- ethernet adapter type set to vmxnet3 for all VMs (default vmxnet2)
- logging was disabled for all VMs (default enabled)
- IDE & floppy devices were removed on all VMs (default enabled)
- firewall was disabled in the 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

Advanced Settings:

- Cpu.CoschedCrossCall = 0 (Default 1)
- Cpu.HTWholeCoreThreshold = 0 (Default 200)
- Disk.SchedNumReqOutstanding = 256 (default 32)
- Mem.BalancePeriod = 0 (default 15)
- Mem.SamplePeriod = 0 (default 60)
- Mem.ShareScanGHz = 0 (default 4)
- Misc.TimerMaxHardPeriod = 4000 (default 100000)
- Misc.TimerMinHardPeriod = 2000 (default 100)
- Net.MaxNetifRxQueueLen = 500 (default 100)
- Net.MaxNetifTxQueueLen = 1000 (default 500)
- Net.TxCompletionWorldlet = 0 (default 1)

- Net.TxWordlet = 0 (default 2)
- Net.vmxnetThroughputWeight = 255 (default 0)
- Numa.LTermFairnessinterval = 0 (default 5)
- Numa.MigPreventLTermThreshold = 20 (default 0)
- Numa.PageMigEnable = 0 (default 1)
- Numa.PageMigRateMax = 10 (default 1000)
- Numa.MonMigEnable = 0 (default 1)
- Numa.SwapLoadEnable = 0 (default 1)
- Numa.SwapLocalityEnable = 0 (default 1)

Driver Options:

- Updated Drivers:
 - net-tg3 3.120h.v50-1.1OEM.500.0.0.472560
 - scsi-hpsa 5.0.0-180OEM.381646
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=128 lpfc_cr_count=5 lpfc_cf_delay=1" (default 31, 1, and 0)

Server Notes

Server BIOS settings:

- HP Power Profile set to Maximum Performance (default: Balanced Performance)
- Thermal Configuration set to Max Cooling (default: Optimal Cooling)
- HW Prefetcher set to Disabled (default: Enabled)
- Adjacent Sector Prefetch set to Disabled: (default: Enabled)
- Processor Power and Utilization Monitoring set to Disabled: (default: Enabled)
- Memory Pre-Failure Notification set to Disabled: (default: Enabled)
- Intel(R) Turbo Boost Technology set to Optimized for Performance (frequency boost to 3.8 GHz @ 1 core): (default: Optimized for Performance)

Networking Notes

vSwitch Configuration:

- vSwitch0 for the Service Console on 1 x 1Gb/s port using vmnic2
- vSwitch1 for all vms except for OlioWeb and OlioDB 10Gb/s port using vmnic0
- vSwitch2 for all oliodb and olioweb VMs on 10Gb/s port using vmnic1
- vSwitch3 defined as vmkernel vMotion connection (other 3x 1Gb ports) using vmnic3,vmnic4,vmnic5
 - Jumbo frames were enabled

Storage Notes

- ESX was installed on one disk in the internal server storage bay
- All fibre attached LUNs on the P2000s were striped across 12 disk drives.
 - All standby VMs were on a single P2000 LUN, this LUN also served as Deploy target
 - Deploy Template is on a single P2000 LUN, this LUN also served as svMotion target.
 - 10 x P2000 LUNs each contained the DS2WebA, DS2WebB, DS2WebC, mailserver for a single tile
- All fibre attached LUNs on the Violin system were striped across 40 VIMM Flash modules
 - 5 x Violin LUNs each contained the OlioWeb, DS2DB, OlioDB for 2 tiles paired in the following manner
Tile 0 and Tile 5; Tile 1 and Tile 6; Tile 2 and Tile 7; Tile 3 and Tile 8; Tile 4 and Tile 9

Datacenter Management Server Notes

None

Operating System Notes

- All mailserver VMs running Microsoft® Windows® 2008 R2 Enterprise (64-bit)
- All standby VMs running Microsoft® Windows® 2003 Enterprise SP2 (32-bit)

Software Notes

- Microsoft® Exchange Server 2007 Enterprise SP3 (64-bit) was installed on each mailserver VM

Client Notes

- Prime client functionality was split from the client0 driver and was run on a non-virtualized copy of Microsoft® Windows® 2003 Enterprise SP2 (32-bit).
- Prime client was running VMware vSphere PowerCLI 5.0 build 435427
- All client drivers were run on virtual machines that were each defined with 4 virtual cpus, 4GB of memory, 1 vmxnet3 network, and 32GB of disk space.
- Five HP ProLiant DL360 G5 clients ran two client virtual machines.
- All client operating systems were updated via Windows Update.

Other Notes

None

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