

VMware® VMmark® V2.1 Results

Vendor and Hardware Platform: HP ProLiant DL585 G7
Virtualization Platform: VMware ESX 4.1.0 Build 260247

VMmark V2.1 Score =
9.91 @ 13 Tiles

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/core/threads in test: 8/96/96

Tested By: Hewlett-Packard

Test Date: 02-21-2011

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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	325.55	0.99	136.70	4632.60	1.00	207.65	1574.00	0.72	320.37	1079.10	0.71	260.54	731.70	0.69	208.53	0.81
p1	321.68	0.97	134.00	4632.18	1.00	219.20	1854.35	0.84	254.47	1306.42	0.86	219.76	969.88	0.92	178.38	0.92
p2	325.90	0.99	134.00	4523.38	0.97	353.38	1790.83	0.81	266.22	1209.25	0.80	222.29	829.15	0.78	173.44	0.87
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.68	0.99	105.38	4660.70	1.00	196.57	1966.15	0.89	233.66	1437.05	0.95	192.10	995.48	0.94	153.67	0.95
p1	330.45	1.00	108.75	4592.75	0.99	288.50	2070.75	0.94	214.85	1431.12	0.94	176.15	1048.53	0.99	142.17	0.97
p2	326.55	0.99	114.00	4631.82	1.00	215.37	2060.90	0.94	215.98	1451.03	0.96	173.07	986.12	0.93	138.78	0.96
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.07	0.99	131.20	4570.32	0.98	290.15	2129.57	0.97	207.17	1529.33	1.01	174.40	1097.80	1.04	148.26	1.00
p1	329.77	1.00	124.00	4542.88	0.98	312.20	2156.80	0.98	202.76	1499.62	0.99	166.46	982.65	0.93	140.39	0.97
p2	326.05	0.99	124.25	4526.80	0.98	346.20	2065.25	0.94	213.70	1481.92	0.98	181.52	1000.38	0.95	152.13	0.96
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.88	0.98	113.88	4636.32	1.00	196.20	1870.42	0.85	254.03	1242.12	0.82	215.35	908.35	0.86	173.83	0.90
p1	327.82	0.99	122.47	4642.95	1.00	196.05	1797.75	0.82	263.94	1210.33	0.80	220.89	855.08	0.81	169.61	0.88
p2	326.73	0.99	136.75	4673.27	1.01	189.52	1750.90	0.80	274.63	1208.65	0.80	239.01	897.85	0.85	193.73	0.88
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.20	0.98	87.47	4648.98	1.00	200.53	1852.22	0.84	253.47	1302.88	0.86	202.87	880.25	0.83	163.67	0.90
p1	324.43	0.98	81.00	4656.07	1.00	197.92	1965.05	0.89	229.00	1456.12	0.96	187.30	1004.40	0.95	152.38	0.96
p2	328.20	0.99	83.25	4638.23	1.00	195.92	1857.45	0.84	250.47	1288.45	0.85	204.05	890.23	0.84	176.47	0.90
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.20	0.99	104.75	4621.77	1.00	217.63	2173.70	0.99	199.62	1511.33	1.00	163.46	1057.00	1.00	126.77	0.99
p1	328.93	1.00	102.25	4646.27	1.00	214.08	1984.12	0.90	226.82	1446.40	0.95	187.73	1069.67	1.01	153.81	0.97

p2	324.02	0.98	94.00	4608.18	0.99	239.25	1931.35	0.88	237.19	1353.20	0.89	190.35	940.70	0.89	148.60	0.93
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.23	1.00	168.72	4577.23	0.99	270.09	1775.15	0.81	267.88	1257.20	0.83	226.03	866.08	0.82	181.93	0.88
p1	328.20	0.99	143.00	4605.62	0.99	245.72	1744.40	0.79	277.33	1147.22	0.76	235.78	820.67	0.78	194.29	0.86
p2	331.73	1.00	134.00	4569.07	0.98	295.67	1683.95	0.77	289.26	1129.62	0.74	241.85	771.83	0.73	191.74	0.84
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.88	0.99	126.00	4662.32	1.00	175.59	2178.07	0.99	198.68	1592.97	1.05	164.44	1155.45	1.09	138.63	1.03
p1	327.05	0.99	118.25	4629.15	1.00	202.49	2236.82	1.02	190.75	1545.42	1.02	157.18	1070.97	1.01	123.78	1.01
p2	325.05	0.98	114.00	4643.60	1.00	184.95	2084.47	0.95	211.12	1502.22	0.99	178.34	1036.55	0.98	144.21	0.98
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.45	0.99	150.28	4616.02	0.99	236.01	2063.07	0.94	222.65	1349.22	0.89	195.72	971.85	0.92	160.78	0.95
p1	330.82	1.00	144.00	4594.93	0.99	238.11	1827.25	0.83	258.36	1212.20	0.80	220.26	837.58	0.79	171.51	0.88
p2	325.30	0.99	134.25	4585.27	0.99	270.39	1708.05	0.78	284.86	1160.58	0.76	251.15	845.77	0.80	206.41	0.86
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.00	0.98	103.00	4618.38	1.00	222.95	2190.78	1.00	196.86	1479.08	0.97	167.64	1071.75	1.01	124.48	0.99
p1	324.02	0.98	94.00	4578.07	0.99	272.90	2091.57	0.95	208.95	1509.67	0.99	176.30	1093.88	1.03	134.49	0.99
p2	322.50	0.98	94.00	4601.52	0.99	259.62	2024.95	0.92	220.46	1368.53	0.90	186.60	1047.78	0.99	142.85	0.96
TILE_10	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.12	1.00	137.75	4611.75	0.99	228.09	1694.35	0.77	282.71	1158.95	0.76	233.06	815.73	0.77	178.95	0.85
p1	329.88	1.00	130.50	4622.12	1.00	218.97	1868.78	0.85	244.34	1352.65	0.89	205.48	1004.20	0.95	165.91	0.94
p2	326.60	0.99	125.25	4578.20	0.99	281.63	1797.70	0.82	264.02	1221.35	0.80	219.68	844.45	0.80	172.20	0.87
TILE_11	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.20	0.99	109.72	4619.02	1.00	227.20	2102.35	0.96	209.22	1504.40	0.99	177.24	1057.50	1.00	139.93	0.99
p1	325.60	0.99	100.75	4558.20	0.98	303.12	2020.33	0.92	221.77	1394.47	0.92	182.94	1025.67	0.97	147.32	0.95
p2	330.18	1.00	94.50	4580.30	0.99	283.59	1908.78	0.87	240.78	1331.05	0.88	194.31	939.02	0.89	148.89	0.92
TILE_12	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.52	0.98	107.40	4645.18	1.00	209.67	1913.10	0.87	241.84	1358.22	0.89	203.21	1005.58	0.95	165.13	0.94
p1	324.95	0.98	104.00	4616.55	0.99	217.48	1797.55	0.82	265.29	1214.08	0.80	219.76	836.15	0.79	172.83	0.87
p2	326.95	0.99	101.72	4634.77	1.00	204.21	1718.85	0.78	280.20	1228.20	0.81	233.65	856.25	0.81	185.88	0.87
p0_score:	12.17															
p1_score:	12.16															
p2_score:	11.80															

Infrastructure_Operations_Scores:										vmotion			svmotion			deploy		
Completed_Ops_PerHour										15.00			8.00			3.50		
Avg_Seconds_To_Complete										47.08			44.37			489.60		
Failures										0.00			0.00			0.00		

Ratio	0.94	0.89	0.88
Number_Of_Threads	1	1	1
Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	
Unreviewed_VMmark2_Applications_Score	12.16	Median_Phase(p1)	
Unreviewed_VMmark2_Infrastructure_Score	0.90		
Unreviewed_VMmark2_Score	9.91		

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1.0 Build 260247/ 07-13-2010
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 4.1.0 Build 258902 / 07-13-2010
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	HP ProLiant DL585 G7
Processor Vendor and Model	AMD Opteron 6180 SE
Processor Speed (GHz)	2.5
Total Sockets/Total Cores/Total Threads	4 Sockets / 48 Cores / 48 Threads
Primary Cache	64 KB I + 64 KB D on chip per core
Secondary Cache	512 KB I+D on chip per core
Other Cache	12 MB I+D on chip per chip, 6 MB shared / 6 cores
BIOS Version	A16 12/20/2010
Memory Size (in GB, Number of DIMMs)	256 GB, 32 x 8 GB DIMMs
Memory Type and Speed	dual rank PC3-10600 Registered DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	HP Smart Array P410i
Number of Host Bus Adapters	1

Host Bus Adapter Vendors and Models	LPe12000 dual port 8Gb Fibre HBA
Number of Network Controllers	2
Network Controller Vendors and Models	HP NC375i embedded quad port 1GbE adapter, HP NC550 SFP dual port 10 GbE adapter
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	02-14-2011
Software Availability Date (MM-DD-YYYY)	07-13-2010
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	10xHP StorageWorks MSA 2312, 2xHP StorageWorks MSA 2324
Fibre Channel Switch Vendors and Models	HP StorageWorks SAN Switch 4/32
Disk Space Used	14.5 TB
Array Cache Size	1GB
Total Number of Physical Disks Used	182
Total Number of Enclosures/Pods/Shelves Used	12
Number of Physical Disks Used per Enclosure/Pod/Shelf	Internal: 2 disks 9 enclosures: 12 disks 3 enclosures: 24 disks
Total Number of Storage Groups Used	2
Number of LUNs Used	15
LUN Size and Number of Disks Per LUN	11 LUNs: 819.5GB on 12 disks 4 LUNs: 408.75 GB on 12 disks
RAID Type	RAID 10, RAID 1 for OS
Number of Members per RAID Set	12

Disk Vendors, Models, and Speeds	48 HP 72GB 15K RPM SAS SFF 132 HP 146GB 15K RPM SAS LFF
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	1 Sockets / 4 Cores / 4 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 R2 Enterprise (64-bit)
Other Hardware	none
Other Software	none
Clients	
Number of Clients	7
System Model(s)	HP ProLiant DL360 G5
Processor Vendor(s) and Model(s)	Clients 0-4, Client6: Intel Xeon E5450 Client 5: Intel Xeon E5440
Processor Speed(s) (GHz)	Clients 0-4, Client6: 3.00 Client 5: 2.83
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 8 Threads
Memory per Client	Clients 0-1, Clients 3-6: 16 GB Client 2: 32 GB
Network Controller(s) Vendors and Models	2 x HP NC373i embedded Gigabit adapters, 1 x HP NC360T dual port Gigabit adapter
Operating System, Version, and Service Pack	Prime Client: Microsoft® Windows® 2003 Enterprise SP2 (32-bit) Client0-6: Microsoft® Windows® 2008 R2 Enterprise (64-bit)
Other Hardware	none
Other Software	Prime Client: None Client0-6: VMware ESX 4.1.0 (Build 260247)

Notes for Workload

Virtualization Software Notes

- all VMs used virtual hardware V7
- ethernet adapter type set to vmxnet3 for all VMs

- logging was disabled for all VMs
- 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 1 (VMmark V2.1 default is Fully Automated level 2)
- Driver SVE-be2net-2.102.518.0 installed

Advanced Settings:

- Irq.RoutingPolicy = 0 (default 2)
- 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.TxWorldlet = 1 (default 2)
- Numa.PageMigEnable = 0 (default 1)
- Numa.LTermFairnessInterval = 0 (default 5)

Driver Options:

- /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)
- Collaborative Power Control disabled (default enabled)
- Thermal Configuration set to Increased Cooling (default: Optimal Cooling)

Networking Notes

vSwitch Configuration:

- vSwitch0 for the Service Console on vmnic0 at 1Gb/s
- vSwitch1 for all VMs on vmnic4 at 10Gb/s
- vSwitch2 defined as vmkernel vMotion connection on vmnic5 at 10Gb/s

Storage Notes

- ESX was installed on two disks configured as RAID1 in the internal server storage bay
- All standby VMs were on a single LUN
- The VMs for each tile (except standby) were grouped together on one LUN for each tile.
- The target for the sVMotion and Deploy operations was a single dedicated LUN.

Datacenter Management Server Notes

None

Operating System Notes

- All mailserver VMs running Microsoft® Windows® 2008 R2 Enterprise (64-bit)
- The Shell Hardware Detection service was not running on mailserver VMs 1-11
- 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 4.1 U1 build 332441
- 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.
- Six HP ProLiant DL360 G5 clients ran two client virtual machines.
- One HP ProLiant DL360 G5 client ran one client virtual machine.
- All client operating systems were updated via Windows Update.

Other Notes

None

This is a full disclosure report for a VMmark benchmark result. All published VMmark results must be from fully-compliant tests for which a full disclosure report is publicly available.

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