VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: HP ProLiant DL560 Gen8 **Virtualization Platform: VMware ESX 4.1.0 U2 Build 502767** **VMware vCenter Server: VMware vCenter Server 5.0.0 Build 455964**	**VMmark V2.1.1 Score = 18.27 @ 18 Tiles**

Number of Hosts: 2	**Uniform Hosts [yes/no]: yes**	**Total sockets/core/threads in test: 8/64/128**
Tested By: Hewlett-Packard	**Test Date: 05-28-2012**	

Performance Section	**Configuration Section**	**Notes Section**
Performance	Configuration	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	327.43	0.99	123.00	4639.88	1.00	200.72	3147.55	1.43	103.66	2313.75	1.52	112.34	1652.15	1.56	119.57	1.28
p1	327.18	0.99	114.00	4637.02	1.00	213.88	3224.90	1.47	102.17	2362.78	1.56	110.99	1756.85	1.66	118.67	1.30
p2	332.88	1.01	105.50	4635.93	1.00	214.36	3238.28	1.47	101.44	2305.00	1.52	109.89	1603.35	1.52	119.36	1.28
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.45	0.99	81.20	4643.73	1.00	188.50	3317.47	1.51	97.51	2445.15	1.61	105.40	1756.50	1.66	111.30	1.32
p1	330.40	1.00	87.00	4628.40	1.00	202.43	3314.20	1.51	98.20	2319.35	1.53	109.95	1711.08	1.62	116.64	1.30
p2	318.57	0.96	94.00	4668.88	1.01	193.22	3219.22	1.46	104.19	2272.30	1.50	114.78	1587.17	1.50	123.25	1.26
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.75	0.98	73.92	4659.55	1.00	179.39	2896.28	1.32	125.94	2108.68	1.39	137.12	1544.67	1.46	148.19	1.21
p1	321.73	0.97	74.00	4640.88	1.00	205.51	2734.28	1.24	145.10	1877.60	1.24	163.03	1332.28	1.26	169.33	1.14
p2	330.38	1.00	74.00	4619.00	1.00	239.94	2851.85	1.30	130.02	2083.70	1.37	140.48	1437.83	1.36	155.25	1.19
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	320.95	0.97	63.00	4655.40	1.00	198.80	2975.45	1.35	121.01	2051.53	1.35	136.15	1531.17	1.45	141.83	1.21
p1	325.98	0.99	63.38	4651.30	1.00	211.84	2901.32	1.32	127.18	1994.83	1.31	142.74	1397.30	1.32	152.22	1.18
p2	328.73	1.00	64.00	4623.15	1.00	223.11	2947.10	1.34	122.71	2120.80	1.40	135.56	1591.60	1.50	141.76	1.23
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.10	0.98	78.00	4645.20	1.00	192.80	3218.68	1.46	104.12	2255.45	1.49	115.62	1585.15	1.50	123.39	1.26
p1	328.20	0.99	74.00	4646.50	1.00	204.09	3006.80	1.37	118.26	2181.85	1.44	129.32	1549.62	1.46	138.20	1.23
p2	329.62	1.00	74.00	4610.38	0.99	232.41	3041.75	1.38	116.04	2101.18	1.38	129.89	1522.00	1.44	138.55	1.22
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.12	1.00	74.00	4598.77	0.99	254.45	3182.80	1.45	105.91	2230.00	1.47	117.54	1588.72	1.50	123.22	1.26
p1	324.12	0.98	74.00	4535.82	0.98	308.01	3105.80	1.41	110.53	2250.15	1.48	121.81	1684.17	1.59	128.49	1.26

p2	329.00	1.00	74.00	4482.10	0.97	389.05	3150.50	1.43	108.07	2190.50	1.44	121.02	1536.95	1.45	129.30	1.24
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.20	1.00	63.95	4673.12	1.01	183.15	3275.97	1.49	100.25	2394.90	1.58	109.97	1718.20	1.62	116.02	1.31
p1	326.57	0.99	64.00	4648.23	1.00	194.69	3259.78	1.48	101.19	2267.07	1.49	114.03	1680.58	1.59	119.99	1.28
p2	326.00	0.99	72.25	4624.32	1.00	209.71	3205.50	1.46	105.25	2226.38	1.47	118.06	1550.08	1.47	127.80	1.25
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.82	0.99	63.65	4657.62	1.00	182.63	3283.60	1.49	99.84	2391.88	1.58	109.94	1814.35	1.71	113.40	1.32
p1	326.77	0.99	63.95	4653.20	1.00	202.01	3272.60	1.49	101.34	2290.12	1.51	113.06	1610.47	1.52	120.33	1.28
p2	326.85	0.99	64.00	4649.10	1.00	212.75	3143.25	1.43	109.86	2261.70	1.49	122.41	1613.25	1.52	130.25	1.26
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.93	1.00	63.50	4606.40	0.99	254.85	3307.22	1.50	98.02	2331.65	1.54	108.59	1754.95	1.66	111.95	1.31
p1	331.60	1.00	64.00	4569.68	0.98	298.31	3235.53	1.47	103.16	2287.80	1.51	112.92	1622.28	1.53	119.52	1.27
p2	324.38	0.98	68.75	4596.10	0.99	264.13	3145.60	1.43	109.02	2283.30	1.50	120.25	1711.72	1.62	126.08	1.28
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.80	0.98	63.77	4664.35	1.00	178.30	3327.07	1.51	97.06	2345.85	1.54	107.59	1680.83	1.59	112.20	1.30
p1	324.62	0.98	63.08	4653.52	1.00	191.37	3318.88	1.51	97.61	2436.85	1.60	107.01	1741.78	1.65	113.41	1.31
p2	327.70	0.99	63.60	4656.75	1.00	188.79	3281.55	1.49	99.67	2339.35	1.54	108.14	1745.28	1.65	113.41	1.30
TILE_10	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.15	0.98	84.35	4666.12	1.01	196.42	3248.55	1.48	101.50	2295.90	1.51	111.48	1616.60	1.53	119.19	1.28
p1	330.73	1.00	89.58	4649.98	1.00	220.65	3192.72	1.45	104.38	2352.45	1.55	112.99	1776.75	1.68	117.37	1.31
p2	321.68	0.97	94.00	4632.15	1.00	217.47	3260.38	1.48	100.47	2309.00	1.52	110.08	1641.60	1.55	116.11	1.28
TILE_11	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.52	1.00	86.90	4645.38	1.00	200.28	3154.07	1.43	108.48	2275.62	1.50	120.81	1610.80	1.52	129.41	1.27
p1	327.85	0.99	74.75	4635.65	1.00	207.14	3109.03	1.41	111.38	2127.62	1.40	127.87	1583.47	1.50	132.93	1.24
p2	325.48	0.99	74.00	4655.85	1.00	182.44	3120.47	1.42	110.26	2168.32	1.43	123.24	1514.28	1.43	132.33	1.23
TILE_12	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.85	0.99	70.35	4669.48	1.01	187.37	3307.28	1.50	98.23	2411.78	1.59	108.11	1785.47	1.69	116.26	1.32
p1	326.20	0.99	66.00	4659.27	1.00	194.15	3191.18	1.45	106.67	2226.43	1.47	119.43	1529.65	1.45	131.28	1.25
p2	325.75	0.99	68.75	4652.93	1.00	196.59	3276.75	1.49	100.18	2386.72	1.57	110.74	1697.30	1.60	118.39	1.30
TILE_13	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	331.80	1.00	71.53	4661.18	1.00	186.01	3360.28	1.53	94.76	2394.60	1.58	103.46	1777.58	1.68	108.75	1.33
p1	321.32	0.97	65.47	4635.65	1.00	193.11	3298.53	1.50	98.75	2338.30	1.54	108.08	1657.42	1.57	114.36	1.29
p2	331.02	1.00	74.00	4661.32	1.00	187.06	3260.45	1.48	101.56	2474.40	1.63	110.25	1765.08	1.67	119.41	1.32
TILE_14	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.48	0.99	75.00	4641.70	1.00	188.71	3262.05	1.48	100.30	2285.82	1.51	111.76	1644.25	1.55	115.46	1.28
p1	328.12	0.99	74.00	4641.77	1.00	197.51	2752.35	1.25	148.92	1936.55	1.28	168.70	1358.08	1.28	182.52	1.15

p2	327.23	0.99	74.00	4638.02	1.00	199.78	2343.32	1.07	182.58	1639.47	1.08	205.89	1240.80	1.17	212.69	1.06
TILE_15	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.62	0.99	73.17	4664.45	1.00	177.04	3319.53	1.51	97.48	2333.38	1.54	108.08	1660.05	1.57	113.77	1.29
p1	330.88	1.00	72.75	4676.45	1.01	185.03	3158.68	1.44	107.56	2299.38	1.51	118.08	1707.78	1.61	125.79	1.29
p2	326.62	0.99	67.50	4637.40	1.00	202.42	3187.40	1.45	106.62	2220.30	1.46	118.82	1538.90	1.45	129.17	1.25
TILE_16	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.85	1.00	78.05	4628.38	1.00	190.44	3261.45	1.48	100.99	2356.43	1.55	112.61	1675.85	1.58	120.46	1.29
p1	322.38	0.98	74.00	4648.52	1.00	199.22	3285.88	1.49	99.88	2348.05	1.55	113.43	1761.47	1.66	119.01	1.30
p2	328.60	1.00	74.00	4627.00	1.00	205.49	3267.28	1.49	100.65	2272.62	1.50	113.32	1596.05	1.51	121.65	1.27
TILE_17	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.82	0.99	62.08	4637.90	1.00	192.74	2937.12	1.34	123.26	2195.55	1.45	134.93	1559.30	1.47	146.05	1.23
p1	330.45	1.00	53.42	4645.60	1.00	204.62	2942.78	1.34	123.11	2027.65	1.34	138.06	1486.72	1.41	147.28	1.20
p2	329.00	1.00	53.15	4642.62	1.00	188.82	2857.57	1.30	131.68	1957.70	1.29	148.92	1350.15	1.28	161.82	1.16

p0_score:	23.05
p1_score:	22.59
p2_score:	22.39

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	14.00	11.00	4.00
Avg_Seconds_To_Complete	50.64	35.63	464.49
Failures	0.00	0.00	0.00
Ratio	0.88	1.22	1.00
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	22.59		
Unreviewed_VMmark2_Infrastructure_Score	1.02		
Unreviewed_VMmark2_Score	18.27		

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 /	VMware vCenter Server 5.0.0 Build 455964 / 10-27-2011

Availability Date (MM-DD-YYYY)	
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	HP ProLiant DL560 Gen8
Processor Vendor and Model	Intel Xeon E5-4650
Processor Speed (GHz)	2.70
Total Sockets/Total Cores/Total Threads	4 Sockets / 32 Cores / 64 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	P77 05/16/2012
Memory Size (in GB, Number of DIMMs)	512 GB, 32 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	HP 82Q PCIe dual port 8Gb Fibre HBA
Number of Network Controllers	2
Network Controller Vendors and Models	HP Ethernet 1 Gb 4-port 331FLR Adapter, HP NC550 SFP dual port 10 GbE adapter
Other Hardware	
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	09-24-2012
Software Availability Date (MM-DD-YYYY)	10-27-2011
Network	
Network Switch Vendors and Models	1 x H3C S5820X-28S 4 x HP Virtual Connect Flex-10 10Gb Ethernet Module for BladeSystem
Network Speed	H3C S5820X-28S - 24 x 10 GbE ports, 4 x 1 GbE ports HP Virtual Connect Flex-10 - 10GbE
Storage	

Array Vendors, Models, and Firmware Versions	2 x “VS-SmartArray Storage Server” by id7 Limited System BIOS: P70 05/16/2012 HP Smart Array P420i firmware: 3.01 HP Smart Array P420 firmware: 3.01
Fibre Channel Switch Vendors and Models	2 x HP StorageWorks SAN Switch 8/24
Disk Space Used	10 TB
Array Cache Size	See storage notes for details
Total Number of Physical Disks Used	28 (4 disks internal, 24 disks external)
Total Number of Enclosures/Pods/Shelves Used	2
Number of Physical Disks Used per Enclosure/Pod/Shelf	Internal: 2 disks per host (O/S) External: Storage server #1 - 16 disks, Storage server #2 - 8 disks
Total Number of Storage Groups Used	2
Number of LUNs Used	6
LUN Size and Number of Disks Per LUN	See storage notes for details
RAID Type	RAID 0, RAID 1 for OS
Number of Members per RAID Set	RAID 1: 2 RAID0: 8
Disk Vendors, Models, and Speeds	HP 146 GB 15K RPM SAS SFF HP 400 GB SAS SSD SFF

Datacenter Management Server	
System Model	HP ProLiant BL460c G7
Processor Vendor and Model	Intel Xeon X5675
Processor Speed (GHz)	3.06
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Memory	24 GB
Network Controller(s) Vendors and Models	1 x HP NC553i Dual Port FlexFabric 10Gb Adapter
Operating System, Version, and Service Pack	Microsoft® Windows® 2008 R2 Enterprise (64-bit)
Other Hardware	none
Other Software	VMware ESXi 5.0.0 Build 469512

Clients	
Number of Clients	4 physical servers 1 physical server used for non-virtualized prime client 3 physical servers hosting 18 virtual clients

System Model(s)	HP ProLiant BL460c G7 (prime client) HP ProLiant BL465c G7 (virtual client hosts)
Processor Vendor(s) and Model(s)	Prime client: Intel Xeon X5675 Physical Clients: AMD Opteron 6174
Processor Speed(s) (GHz)	Prime Client: 3.06 Physical Clients: 2.2
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 12 Cores / 24 Threads Physical Clients: 2 Sockets / 24 Cores / 24 Threads
Memory per Client	Prime Client: 24 GB Physical Clients: 64 GB
Network Controller(s) Vendors and Models	Prime Client: 1 x HP NC553i Dual Port FlexFabric 10GbE Adapter Physical Clients 0-1: 1 x HP NC551i Dual Port FlexFabric 10GbE Adapter Physical Client 2: 1 x HP NC551i Dual Port FlexFabric 10GbE Adapter, 1 x HP NC542m Dual Port Flex-10 10GbE adapter
Operating System, Version, and Service Pack	Prime Client: Microsoft® Windows® 2003 Enterprise SP2 (32-bit) Physical Clients 0-2: VMware ESX 4.1 U1 (Build 348481) Virtual Clients 0-17: Microsoft® Windows® 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
- 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 used Hard Disk 1 on LSI Logic SAS controller, Hard Disk 2 on Paravirtual controller
- Logical CPU layout changed for all VMs (except for standby and deploy VMs) to one socket with multiple cores
    - default - multiple sockets with one core per socket
    - The total number of cores per VM remained unchanged.
- Cluster DRS Automation Level set to Fully Automated level 2

Advanced Settings:

- Cpu.CoschedCrossCall = 0 (Default 1)
- Cpu.HaltingIdleMsecPenalty = 0 (Default 800)
- DataMover.HardwareAcceleratedInit = 0 (Default 1)
- DataMover.HardwareAcceleratedMove = 0 (Default 1)
- Disk.SchedNumReqOutstanding = 256 (default 32)
- 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.NetTxCompletionWorldlet = 0 (default 1)
- Net.NetTxWordlet = 0 (default 2)
- Numa.AutoSplitVM = 0 (default 1)
- Numa.LTermFairnessinterval = 0 (default 5)
- Numa.PageMigEnable = 0 (default 1)
- Numa.MonMigEnable = 0 (default 1)
- Numa.SwapLoadEnable = 0 (default 1)
- Numa.SwapLocalityEnable = 0 (default 1)
- VMFS3.HardwareAcceleratedLocking = 0 (default 1)

Driver Options:

- Updated Drivers:
  - net-tg3 400.3.122g.v40.2-1vmw.2.17.00000
  - scsi-hpsa 400.4.1.0-18OEM
  - net-be2net 400.4.1.334.0-1vmw.2.17.249663
- /vmkernel/module/qla2xxx.o/options = "ql2xmaxqdepth=256 ql2xintrdelaytimer=3; (default 32 and 0)

Server Notes

- Intel Turbo Boost Technology up to 3.30 GHz
- 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)

Networking Notes

vSwitch Configuration:

- vSwitch0 for the Service Console on vmnic0 at 1Gb/s
- vSwitch1 defined as vmkernel vMotion connection on vmnic1 at 1Gb/s
- vSwitch2 for all ds2db and ds2web VMs on vmnic4 at 10Gb/s
- vSwitch3 for all oliodb and olioweb VMs on vmnic5 at 10Gb/s
- vSwitch4 for all mailserver VMs on vmnic2 at 1Gb/s
- vSwitch5 for all standby and deploy VMs on vmnic3 at 1Gb/s

Storage Notes

- ESX was installed on two disks configured as RAID1 in the internal server storage bay
- “VS-SmartArray Storage Server” by id7 Limited uses LUNs configured as block devices; as such no system memory is used for write caching.
- “VS-SmartArray Storage Server” by id7 Limited (hardware configuration and VM layout)
  - HP ProLiant DL380p Gen8 server #1
    - 2 x Intel Xeon E5-2690 2.9 GHz processors

- 64 GB memory (8 x 8 GB single rank PC3-12800 Registered DDR3 / 1600 MHz DIMMS)
- HP 380/385 Gen8 8-SFF Cage/Bkpln Kit
- 2 x HP 82Q PCIe dual port 8Gb Fibre HBA
- 1 x 32 GB SDHC memory card
  - used for OS and id7 VS-SmartArray
- HP Smart Array P420i controller with 512 MB FBWC
  - Array A - 8 x HP 400GB SAS SSD SFF disks
    - Logical disk 1 (striped across the 8 disk drives of Array A)
      - 1542 GB, RAID 0
      - exported as fibre target LUN
      - All VMs from tiles 0, 6 & 12 except standby VMs.
      - Deploy target
    - Logical disk 2 (striped across the 8 disk drives of Array A)
      - 1437 GB, RAID 0
      - exported as fibre target LUN
      - All VMs from tiles 1, 7 & 13 except for standby VMs.
      - SV Motion target
- HP Smart Array P420 controller with 2 GB FBWC
  - Array A - 8 x HP 400GB SAS SSD SFF disks
    - Logical disk 1 (striped across the 8 disk drives of Array A)
      - 1552 GB, RAID 0
      - exported as fibre target LUN
      - All VMs from tiles 2, 8 & 14
      - All standby VMs from tiles 0 - 17
      - Deploy Template
    - Logical disk 2 (striped across the 8 disk drives of Array A)
      - 1427 GB, RAID 0
      - exported as fibre target LUN
      - All VMs from tiles 3, 9 & 15 except for standby VMs.

- HP ProLiant DL380p Gen8 server #2
  - 2 x Intel Xeon E5-2680 2.7 GHz processors
  - 64 GB memory (8 x 8 GB dual rank PC3-12800 Registered DDR3 / 1600 MHz DIMMS)
  - HP 380/385 Gen8 8-SFF Cage/Bkpln Kit
  - 2 x HP 82Q PCIe dual port 8Gb Fibre HBA
  - 1 x 32 GB SDHC memory card
    - used for OS and id7 VS-SmartArray
  - HP Smart Array P420i controller with 2 GB FBWC
    - Array A - 8 x HP 400GB SAS SSD SFF disks
      - Logical disk 1 (striped across the 8 disk drives of Array A)
        - 1542 GB, RAID 0
        - exported as fibre target LUN
        - All VMs from tiles 4, 10 & 16 except for standby VMs.
      - Logical disk 2 (striped across the 8 disk drives of Array A)
        - 1437 GB, RAID 0
        - exported as fibre target LUN
        - All VMs from tiles 5, 11 & 17 except for standby VMs.
  - HP Smart Array P420 controller with 2 GB FBWC
    - No disk drives attached.

Datacenter Management Server Notes

- HP ProLiant BL460c G7 had ESXi 5.0.0 installed and had 2 virtual machines
  - vCenter for SUT
    - 4 virtual CPUs
    - 4 GB virtual memory
    - Microsoft® Windows® 2008 R2 Enterprise (64-bit)
  - vCenter for clients
    - 2 virtual CPUs
    - 4 GB virtual memory
    - Microsoft® Windows® 2008 R2 Enterprise (64-bit)

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

None

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.
- Three HP ProLiant BL465 G7 clients ran six client virtual machines each.
- All client operating systems were updated via Windows Update.

Other Notes

None
