

## VMware® VMmark® V2.1 Results

<b>Vendor and Hardware Platform: HP ProLiant DL580 G7</b> <b>Virtualization Platform: VMware ESX 4.1 U1 Build 260247</b> <b>VMware vCenter Server 4.1 U1 Build 258902</b>	<b>VMmark V2.1 Score =</b> <b>17.11 @ 21 Tiles</b>
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Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/core/threads in test: 8/80/160
Tested By: Hewlett-Packard		Test Date: 04-05-2011
<b>Performance Section</b> <a href="#">Performance</a>	<b>Configuration Section</b> <a href="#">Configuration</a>	<b>Notes Section</b> <a href="#">Notes for Workload</a>

### 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	322.95	0.98	79.50	4608.73	0.99	241.90	2184.00	0.99	194.73	1529.55	1.01	210.54	1119.10	1.06	223.02	1.01
p1	324.27	0.98	82.75	4596.62	0.99	248.60	2146.82	0.98	201.16	1480.83	0.98	220.23	1027.80	0.97	235.83	0.98
p2	323.48	0.98	84.00	4598.02	0.99	248.75	2071.10	0.94	211.60	1484.45	0.98	229.83	1096.08	1.04	243.20	0.98
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.50	1.00	73.25	4592.60	0.99	253.96	2169.97	0.99	197.03	1504.03	0.99	216.07	1036.25	0.98	233.18	0.99
p1	330.57	1.00	74.00	4596.52	0.99	274.53	2142.75	0.97	201.03	1538.33	1.01	219.33	1067.88	1.01	237.91	1.00
p2	326.88	0.99	74.00	4555.32	0.98	287.26	2109.20	0.96	206.46	1451.20	0.96	226.76	1043.30	0.99	245.10	0.97
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	321.75	0.97	82.85	4623.18	1.00	213.30	2221.05	1.01	188.95	1522.62	1.00	210.70	1086.55	1.03	218.33	1.00
p1	329.68	1.00	84.00	4602.30	0.99	246.07	2137.80	0.97	199.36	1523.10	1.00	220.51	1153.45	1.09	226.81	1.01
p2	326.60	0.99	84.00	4598.80	0.99	256.13	2108.90	0.96	204.30	1449.92	0.95	226.15	1022.50	0.97	237.17	0.97
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.40	0.99	81.20	4577.12	0.99	271.23	2300.25	1.05	179.74	1657.53	1.09	196.27	1141.05	1.08	216.14	1.04
p1	327.88	0.99	83.28	4568.65	0.98	290.45	2290.93	1.04	181.44	1581.22	1.04	199.91	1141.15	1.08	216.21	1.03
p2	329.55	1.00	84.00	4482.90	0.97	395.81	2293.80	1.04	180.83	1588.53	1.05	199.38	1085.83	1.03	218.07	1.02
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.10	0.99	84.00	4588.40	0.99	254.37	2325.28	1.06	175.89	1666.53	1.10	194.02	1262.05	1.19	198.97	1.06
p1	322.40	0.98	84.00	4593.68	0.99	262.07	2301.35	1.05	179.21	1596.75	1.05	197.40	1133.55	1.07	205.61	1.03
p2	322.07	0.98	84.00	4598.77	0.99	256.19	2269.15	1.03	183.37	1639.28	1.08	199.97	1168.58	1.10	209.15	1.04
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.85	1.00	84.00	4637.30	1.00	222.28	2187.05	0.99	193.31	1526.15	1.01	210.11	1112.67	1.05	224.41	1.01

<b>p1</b>	329.75	1.00	84.00	4616.55	0.99	242.79	2155.68	0.98	197.15	1502.97	0.99	214.82	1042.70	0.99	230.49	0.99
<b>p2</b>	327.75	0.99	85.75	4602.40	0.99	240.37	2091.38	0.95	206.85	1499.72	0.99	225.84	1092.78	1.03	244.21	0.99
<b>TILE_6</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.57	0.98	84.00	4601.35	0.99	244.90	2395.75	1.09	168.39	1707.65	1.12	178.54	1185.22	1.12	192.80	1.06
<b>p1</b>	330.80	1.00	84.00	4611.88	0.99	254.39	2331.28	1.06	175.55	1718.42	1.13	185.95	1207.55	1.14	199.84	1.06
<b>p2</b>	329.43	1.00	83.97	4557.10	0.98	296.01	2298.20	1.05	179.28	1639.25	1.08	190.15	1191.67	1.13	203.85	1.04
<b>TILE_7</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.32	0.98	94.00	4575.43	0.99	285.61	2244.25	1.02	186.04	1563.12	1.03	204.11	1090.92	1.03	216.55	1.01
<b>p1</b>	326.70	0.99	94.00	4568.00	0.98	293.39	2202.75	1.00	192.06	1588.33	1.05	208.87	1173.08	1.11	220.94	1.02
<b>p2</b>	325.90	0.99	94.00	4492.25	0.97	398.87	2212.22	1.01	191.37	1536.30	1.01	209.75	1073.08	1.01	221.72	1.00
<b>TILE_8</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.35	0.98	84.00	4602.48	0.99	221.20	2328.38	1.06	174.66	1719.85	1.13	185.35	1238.72	1.17	192.76	1.06
<b>p1</b>	327.60	0.99	84.00	4601.20	0.99	236.84	2241.82	1.02	184.18	1600.05	1.05	196.37	1193.90	1.13	203.38	1.04
<b>p2</b>	329.15	1.00	84.00	4599.12	0.99	237.97	2243.97	1.02	184.82	1593.88	1.05	197.34	1133.28	1.07	205.27	1.03
<b>TILE_9</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.55	0.99	92.25	4604.32	0.99	249.27	2212.97	1.01	191.38	1587.92	1.05	208.78	1172.55	1.11	221.35	1.03
<b>p1</b>	327.00	0.99	94.00	4595.12	0.99	261.26	2217.40	1.01	189.23	1539.08	1.01	208.49	1070.03	1.01	222.41	1.00
<b>p2</b>	322.27	0.98	94.00	4575.75	0.99	262.08	2156.53	0.98	199.10	1535.92	1.01	219.69	1075.22	1.02	234.58	0.99
<b>TILE_10</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.55	0.99	87.25	4608.12	0.99	250.68	2416.18	1.10	165.09	1716.70	1.13	177.35	1250.75	1.18	190.04	1.08
<b>p1</b>	325.48	0.99	84.22	4590.95	0.99	260.45	2408.18	1.10	167.17	1689.72	1.11	181.69	1171.30	1.11	195.32	1.06
<b>p2</b>	324.73	0.98	84.00	4578.07	0.99	274.16	2344.43	1.07	174.69	1706.97	1.12	188.03	1256.70	1.19	200.49	1.07
<b>TILE_11</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.05	1.00	94.00	4568.70	0.98	280.99	2096.28	0.95	205.48	1449.55	0.95	225.86	1007.00	0.95	241.40	0.97
<b>p1</b>	326.45	0.99	94.00	4518.10	0.97	325.53	2060.38	0.94	212.22	1463.92	0.96	233.23	1025.38	0.97	250.40	0.97
<b>p2</b>	328.52	0.99	96.75	4514.57	0.97	388.19	2013.12	0.92	220.70	1374.90	0.91	243.54	995.88	0.94	260.54	0.95
<b>TILE_12</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.38	0.98	100.88	4630.90	1.00	234.50	2297.82	1.04	177.44	1664.62	1.10	185.73	1169.53	1.11	196.11	1.04
<b>p1</b>	324.18	0.98	104.00	4607.23	0.99	248.05	2232.20	1.02	186.60	1644.05	1.08	198.21	1234.92	1.17	205.90	1.05
<b>p2</b>	326.43	0.99	104.25	4577.93	0.99	256.85	2215.65	1.01	189.23	1568.78	1.03	202.51	1100.53	1.04	213.94	1.01
<b>TILE_13</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.00	0.98	124.00	4598.07	0.99	236.74	2285.80	1.04	181.21	1643.00	1.08	199.54	1181.85	1.12	205.99	1.04
<b>p1</b>	327.10	0.99	124.00	4590.32	0.99	252.71	2214.72	1.01	189.68	1537.25	1.01	209.01	1150.92	1.09	214.09	1.02
<b>p2</b>	328.00	0.99	124.00	4594.30	0.99	275.57	2224.53	1.01	189.00	1546.50	1.02	207.61	1092.97	1.03	215.96	1.01
<b>TILE_14</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.25	0.98	94.75	4588.15	0.99	246.39	2273.05	1.03	181.71	1656.20	1.09	196.85	1220.53	1.15	208.42	1.05

<b>p1</b>	329.60	1.00	94.00	4570.00	0.98	243.82	2224.53	1.01	186.94	1573.35	1.04	202.19	1086.97	1.03	216.77	1.01
<b>p2</b>	325.85	0.99	94.00	4630.10	1.00	233.55	2188.97	1.00	192.46	1588.62	1.05	208.94	1114.75	1.05	223.35	1.02
<b>TILE_15</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	321.95	0.97	103.60	4571.32	0.98	281.90	2198.32	1.00	189.89	1508.47	0.99	212.39	1120.97	1.06	220.93	1.00
<b>p1</b>	327.05	0.99	97.50	4575.23	0.99	265.09	2183.07	0.99	194.63	1470.22	0.97	221.36	1031.90	0.98	233.33	0.98
<b>p2</b>	324.20	0.98	100.50	4567.50	0.98	273.28	2139.35	0.97	200.22	1500.72	0.99	225.32	1122.12	1.06	234.93	1.00
<b>TILE_16</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.50	0.98	90.53	4599.23	0.99	240.82	2399.80	1.09	168.48	1688.20	1.11	182.16	1235.45	1.17	193.07	1.07
<b>p1</b>	324.70	0.98	94.00	4592.85	0.99	272.54	2331.50	1.06	175.00	1663.95	1.10	186.78	1150.38	1.09	200.47	1.04
<b>p2</b>	327.40	0.99	94.00	4610.52	0.99	234.40	2243.57	1.02	186.40	1678.55	1.11	193.80	1229.12	1.16	206.59	1.05
<b>TILE_17</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.70	1.00	105.92	4594.18	0.99	251.42	2307.45	1.05	177.43	1585.12	1.04	190.16	1082.47	1.02	204.11	1.02
<b>p1</b>	322.52	0.98	102.75	4626.62	1.00	244.27	2232.55	1.02	187.71	1695.17	1.12	198.85	1204.47	1.14	212.23	1.05
<b>p2</b>	328.62	1.00	94.75	4589.75	0.99	239.39	2196.90	1.00	192.88	1492.53	0.98	207.49	1071.85	1.01	221.94	1.00
<b>TILE_18</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.80	0.99	96.62	4578.60	0.99	244.69	1614.33	0.73	258.63	1223.85	0.81	286.45	857.12	0.81	302.01	0.86
<b>p1</b>	322.77	0.98	94.00	4582.62	0.99	264.16	1874.12	0.85	206.30	1487.62	0.98	227.18	1112.95	1.05	236.95	0.97
<b>p2</b>	325.23	0.98	94.00	4596.35	0.99	247.35	1853.70	0.84	212.54	1390.03	0.92	239.60	973.52	0.92	253.29	0.93
<b>TILE_19</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.27	1.00	92.62	4615.95	0.99	228.92	1935.40	0.88	234.16	1390.72	0.92	254.07	980.48	0.93	270.28	0.94
<b>p1</b>	320.57	0.97	84.10	4600.52	0.99	232.73	2101.28	0.96	204.58	1465.05	0.96	222.78	1061.47	1.00	238.64	0.98
<b>p2</b>	326.62	0.99	91.97	4590.68	0.99	256.69	2088.25	0.95	207.44	1450.62	0.96	226.67	991.60	0.94	246.80	0.96
<b>TILE_20</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	329.20	1.00	94.45	4606.15	0.99	236.22	1942.20	0.88	229.36	1376.72	0.91	253.59	1022.67	0.97	266.09	0.95
<b>p1</b>	331.82	1.00	94.00	4601.70	0.99	260.01	1904.58	0.87	237.42	1247.45	0.82	266.67	848.48	0.80	285.83	0.89
<b>p2</b>	323.15	0.98	90.97	4579.50	0.99	247.06	1843.50	0.84	250.66	1332.97	0.88	278.25	934.73	0.88	299.53	0.91
<b>p0_score:</b>	21.28															
<b>p1_score:</b>	21.16															
<b>p2_score:</b>	20.93															

<b>Infrastructure_Operations_Scores:</b>									vmotion			svmotion			deploy		
<b>Completed_Ops_PerHour</b>									14.50			7.00			4.00		
<b>Avg_Seconds_To_Complete</b>									47.39			53.61			485.99		
<b>Failures</b>									0.00			0.00			0.00		
<b>Ratio</b>									0.91			0.78			1.00		
<b>Number_Of_Threads</b>									1			1			1		

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	21.16		
Unreviewed_VMmark2_Infrastructure_Score	0.89		
Unreviewed_VMmark2_Score	17.11		

## Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1 U1 Build 260247/ 02-11-2011
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 4.1 U1 Build 258902 / 02-11-2011
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	HP ProLiant DL580 G7
Processor Vendor and Model	Intel Xeon E7-4870
Processor Speed (GHz)	2.40
Total Sockets/Total Cores/Total Threads	4 Sockets / 40 Cores / 80 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	30 MB I+D on chip per chip L3
BIOS Version	P65 02/28/2011
Memory Size (in GB, Number of DIMMs)	512 GB, 64 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	LPe12002 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	
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	04-05-2011
Software Availability Date (MM-DD-YYYY)	02-11-2011
<b>Network</b>	
Network Switch Vendors and Models	HP ProCurve 2910-al-24G
Network Speed	1 GbE with 10GbE uplinks
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	26xHP StorageWorks MSA 2212, 2xHP StorageWorks MSA 2324, 2xHP StorageWorks P2000 MSA
Fibre Channel Switch Vendors and Models	2 x HP StorageWorks SAN Switch 8/24
Disk Space Used	54.70 TB
Array Cache Size	1GB (MSA 2212, MSA 2324), 2GB (P2000 MSA)
Total Number of Physical Disks Used	410 (2 disks internal, 408 disks external)
Total Number of Enclosures/Pods/Shelves Used	30
Number of Physical Disks Used per Enclosure/Pod/Shelf	26 enclosures: 12 disks 4 enclosures: 24 disks
Total Number of Storage Groups Used	2
Number of LUNs Used	56
LUN Size and Number of Disks Per LUN	2 LUNs: 818.5GB on 12 disks 6 LUNs: 232.75 GB on 12 disks (4 of 6 LUNs were used) 20 LUNs: 1.60 TB on 12 disks (19 of 20 LUNs were used) 12 LUNs: 546.50 GB on 12 disks (9 of 12 LUNs were used) 6 LUNs: 545.50 GB on 12 disks (2 of 6 LUNs were used) 4 LUNs: 819.50 GB on 6 disks 6 LUNs: 819.50 GB on 12 disks
RAID Type	RAID 0, RAID 1 for OS
Number of Members per RAID Set	12 (for 42 LUNs); 6 (for 4 LUNs)
Disk Vendors, Models, and Speeds	HP 72GB 15K RPM SAS SFF HP 146GB 15K RPM SAS LFF HP 146 GB 15K RPM SAS SFF

<b>Datacenter Management Server</b>	
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
<b>Clients</b>	
Number of Clients	11 physical servers (21 virtual clients)
System Model(s)	HP ProLiant DL360 G5
Processor Vendor(s) and Model(s)	Physical Clients 0-4, 6-8: Intel Xeon E5450 Physical Clients 5, 9, 10: Intel Xeon E5440
Processor Speed(s) (GHz)	Physical Clients 0-4, 6-8: 3.00 Physical Clients 5, 9, 10: 2.83
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 8 Threads
Memory per Client	Physical Clients 0-1, 3-10: 16 GB Physical 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) Physical Clients 0-10: VMware ESX 4.1 U1 (Build 260247) Virtual Clients 0-20: 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
- SVE-be2net-2.103.377.0 HP NC550SFP NIC driver for VMware ESX installed on both servers

- EMU-lpfc820-8.2.1.90.28 HP 82E PCI-e 8Gb Fibre HBA driver for VMware ESX installed on both servers
- MEL-mlx4\_en-1.5.5-436 driver for Mellanox 10GbE NIC installed on both servers
  - The Mellanox 10GbE NICs were physically removed from the system, but the drivers were still 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.NetTxWorldlet = 1 (default 2)
- Numa.PageMigEnable = 0 (default 1)
- Numa.LTermFairnessInterval = 0 (default 5)
- Disk.SchedNumReqOutstanding = 128 (default 32)
- Cpu.HaltingIdleMsecPenalty = 0 (default 100)

#### Driver Options:

- /vmkernel/module/lpfc820.o/options = "lpfc\_lun\_queue\_depth=128 lpfc\_cr\_count=5 lpfc\_cr\_delay=1" (default 31,1, and 0)

## Server Notes

#### Server BIOS settings:

- HP Power Profile set to Maximum Performance (default: Balanced Performance)
  - Intel Turbo Boost enabled up to 2.80 GHz
- Thermal Configuration set to Increased Cooling (default: Optimal Cooling)

#### Server Hardware:

- Host 1 had a SATA DVD-ROM drive installed. Host 2 did not have any optical drives nor any devices connected to the embedded SATA controller, which was subsequently disabled automatically by ESX.

## Networking Notes

#### vSwitch Configuration:

- vSwitch0 for the Service Console on vmnic0 at 1Gb/s
- vSwitch1 for all VMs on vmnic4 of host 1 and vmnic6 of host 2 at 10Gb/s
- vSwitch2 defined as vmkernel vMotion connection on vmnic5 on host 1 and vmnic7 on host 2 at 10Gb/s
  - Jumbo frames were enabled
- vSwitch3 unused - no NICs or VMs assigned

## Storage Notes

- All standby VMs were on a single LUN
- Each mailserver VM was on a single LUN by itself.

- The VMs for each tile (except standby and mailserver) 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**

- DRS Migration Threshold set to 1

### **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 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.
- Each virtual machine was running Microsoft® Windows® 2008 R2 Enterprise (64-bit).
- All HP ProLiant DL360 G5 client machines were installed with VMware ESX 4.1 U1 (Build 260247)
  - 10 x HP ProLiant DL360 G5 client machine ran two client virtual machines with Microsoft® Windows® 2008 R2 Enterprise (64-bit) as the guest OS.
  - 1 x HP ProLiant DL360 G5 client machine ran one client virtual machines with Microsoft® Windows® 2008 R2 Enterprise (64-bit) as the guest OS.
    - This client machine had two identical client virtual machines installed, but only one virtual machine was powered on for use.
  - All virtual client operating systems were updated via Windows Update.

### **Other Notes**

None

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