

## VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: Cisco UCS B250 M2  
 Virtualization Platform: VMware ESX 4.0 U2 Build 261974

**VMmark V1.1.1 Score =  
 38.04 @ 27 Tiles**

Tested By: Cisco Systems

Test Date: 10-2-2010

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### Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1766.17	1.73	17666.00	1.06	1625.42	1.48	17.03	1.33	2330.20	1.56	1.41
p1	1768.55	1.74	18115.10	1.09	1525.22	1.39	16.88	1.32	2328.38	1.56	1.40
p2	1771.00	1.74	18101.70	1.09	1624.90	1.48	16.88	1.32	2323.53	1.56	1.42
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1691.40	1.66	18141.03	1.09	1669.42	1.52	16.70	1.30	2322.43	1.56	1.41
p1	1722.70	1.69	18143.58	1.09	1681.08	1.53	16.86	1.31	2324.60	1.56	1.42
p2	1720.15	1.69	18144.10	1.09	1632.30	1.49	16.81	1.31	2321.90	1.56	1.41
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1766.08	1.73	18151.12	1.09	1548.83	1.41	16.95	1.32	2325.07	1.56	1.41
p1	1766.17	1.73	18145.30	1.09	1532.47	1.40	16.83	1.31	2323.55	1.56	1.40
p2	1763.30	1.73	18156.33	1.09	1557.47	1.42	16.73	1.30	2321.40	1.56	1.40
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1701.70	1.67	18184.47	1.09	1551.22	1.41	16.65	1.30	2327.15	1.56	1.39
p1	1716.70	1.68	17726.62	1.07	1540.35	1.40	16.95	1.32	2322.78	1.56	1.39
p2	1725.53	1.69	18183.67	1.09	1574.67	1.44	16.87	1.32	2321.38	1.56	1.40
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1758.22	1.73	18145.83	1.09	1715.30	1.56	16.99	1.32	2332.00	1.56	1.44
p1	1758.88	1.73	18144.47	1.09	1678.05	1.53	16.94	1.32	2328.43	1.56	1.43
p2	1717.95	1.69	18147.15	1.09	1638.33	1.49	16.79	1.31	2323.10	1.56	1.41
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1724.05	1.69	18157.22	1.09	1575.90	1.44	16.81	1.31	2322.85	1.56	1.40
p1	1720.95	1.69	17749.50	1.07	1592.35	1.45	17.00	1.32	2320.70	1.56	1.40
p2	1664.90	1.63	18213.67	1.10	1598.60	1.46	16.98	1.32	2321.62	1.56	1.40

<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1671.53	1.64	18139.38	1.09	1659.53	1.51	16.91	1.32	2327.82	1.56	1.41
<b>p1</b>	1713.50	1.68	18127.17	1.09	1649.67	1.50	16.83	1.31	2322.78	1.56	1.41
<b>p2</b>	1710.17	1.68	18115.60	1.09	1517.67	1.38	16.94	1.32	2321.18	1.56	1.39
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1734.28	1.70	18133.25	1.09	1602.53	1.46	16.84	1.31	2334.32	1.56	1.41
<b>p1</b>	1740.65	1.71	18150.90	1.09	1597.95	1.46	16.89	1.32	2330.28	1.56	1.41
<b>p2</b>	1741.30	1.71	17678.72	1.06	1578.20	1.44	16.94	1.32	2324.57	1.56	1.40
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1707.65	1.68	18147.50	1.09	1558.85	1.42	17.01	1.33	2323.65	1.56	1.40
<b>p1</b>	1719.22	1.69	18183.28	1.09	1586.67	1.45	16.91	1.32	2321.55	1.56	1.41
<b>p2</b>	1749.70	1.72	18182.28	1.09	1575.03	1.44	16.80	1.31	2319.88	1.55	1.41
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1715.15	1.68	17693.85	1.07	1610.00	1.47	16.85	1.31	2331.97	1.56	1.40
<b>p1</b>	1678.75	1.65	18152.80	1.09	1567.62	1.43	16.93	1.32	2329.25	1.56	1.40
<b>p2</b>	1718.15	1.69	18152.90	1.09	1563.90	1.43	16.94	1.32	2328.50	1.56	1.40
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1755.15	1.72	18197.08	1.10	1607.10	1.47	17.00	1.33	2323.60	1.56	1.42
<b>p1</b>	1741.78	1.71	17732.15	1.07	1619.90	1.48	16.85	1.31	2320.10	1.55	1.41
<b>p2</b>	1768.67	1.74	18168.10	1.09	1578.35	1.44	16.97	1.32	2321.70	1.56	1.41
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1762.60	1.73	17691.03	1.06	1557.00	1.42	16.79	1.31	2012.22	1.35	1.36
<b>p1</b>	1768.53	1.74	18151.10	1.09	1635.00	1.49	16.70	1.30	2006.60	1.34	1.38
<b>p2</b>	1750.00	1.72	18149.45	1.09	1542.45	1.41	16.69	1.30	2010.92	1.35	1.36
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1732.38	1.70	18180.65	1.09	1586.25	1.45	16.87	1.31	2331.72	1.56	1.41
<b>p1</b>	1760.03	1.73	17729.47	1.07	1571.88	1.43	16.70	1.30	2329.25	1.56	1.40
<b>p2</b>	1757.80	1.73	18174.42	1.09	1551.28	1.41	16.87	1.31	2323.97	1.56	1.40
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1759.05	1.73	18144.62	1.09	1631.10	1.49	16.66	1.30	2323.03	1.56	1.41
<b>p1</b>	1756.88	1.72	18145.53	1.09	1691.55	1.54	16.86	1.31	2326.47	1.56	1.43
<b>p2</b>	1764.03	1.73	18147.38	1.09	1637.45	1.49	16.62	1.30	2326.03	1.56	1.42
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1765.33	1.73	18122.88	1.09	1538.00	1.40	17.09	1.33	2333.82	1.56	1.41
<b>p1</b>	1731.78	1.70	17659.88	1.06	1564.97	1.43	16.84	1.31	2332.22	1.56	1.40
<b>p2</b>	1766.78	1.73	18126.50	1.09	1582.25	1.44	17.01	1.33	2327.03	1.56	1.41

<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1754.65	1.72	18178.58	1.09	1578.90	1.44	16.80	1.31	2326.93	1.56	1.41
<b>p1</b>	1759.83	1.73	18176.78	1.09	1664.83	1.52	17.07	1.33	2325.32	1.56	1.43
<b>p2</b>	1758.78	1.73	18150.10	1.09	1561.65	1.42	16.81	1.31	2327.82	1.56	1.41
<b>TILE_16</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1750.90	1.72	18174.58	1.09	1565.60	1.43	16.91	1.32	2329.03	1.56	1.41
<b>p1</b>	1747.83	1.72	17725.10	1.07	1644.30	1.50	16.75	1.31	2326.07	1.56	1.41
<b>p2</b>	1766.53	1.73	18181.53	1.09	1554.62	1.42	16.93	1.32	2321.12	1.56	1.41
<b>TILE_17</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1745.83	1.71	18192.58	1.10	1499.40	1.37	16.85	1.31	2327.55	1.56	1.39
<b>p1</b>	1777.55	1.74	18175.95	1.09	1560.55	1.42	17.02	1.33	2327.40	1.56	1.41
<b>p2</b>	1751.08	1.72	17710.03	1.07	1518.42	1.38	16.99	1.32	2327.18	1.56	1.39
<b>TILE_18</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1783.03	1.75	18197.92	1.10	1530.92	1.40	17.11	1.33	2355.72	1.58	1.41
<b>p1</b>	1783.38	1.75	18127.40	1.09	1650.62	1.50	17.10	1.33	2352.97	1.58	1.43
<b>p2</b>	1788.05	1.75	18120.25	1.09	1580.90	1.44	16.96	1.32	2352.72	1.58	1.42
<b>TILE_19</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1812.12	1.78	18167.17	1.09	1439.40	1.31	17.04	1.33	2371.60	1.59	1.40
<b>p1</b>	1812.92	1.78	18200.05	1.10	1607.75	1.47	17.13	1.33	2371.60	1.59	1.43
<b>p2</b>	1805.58	1.77	17703.75	1.07	1555.97	1.42	17.11	1.33	2365.25	1.58	1.41
<b>TILE_20</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1758.75	1.73	18184.65	1.09	1418.08	1.29	17.02	1.33	2380.57	1.60	1.39
<b>p1</b>	1791.67	1.76	18161.03	1.09	1593.62	1.45	16.83	1.31	2377.57	1.59	1.42
<b>p2</b>	1811.15	1.78	18104.38	1.09	1700.10	1.55	17.00	1.32	2372.25	1.59	1.45
<b>TILE_21</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1802.55	1.77	18163.22	1.09	1348.80	1.23	15.80	1.23	2371.65	1.59	1.36
<b>p1</b>	1787.05	1.75	18147.78	1.09	1609.55	1.47	15.73	1.23	2367.50	1.59	1.40
<b>p2</b>	1820.20	1.79	17690.55	1.06	1667.35	1.52	15.86	1.24	2367.28	1.59	1.41
<b>TILE_22</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1792.78	1.76	18142.90	1.09	1350.70	1.23	17.01	1.33	2380.72	1.60	1.38
<b>p1</b>	1809.28	1.78	17674.95	1.06	1552.58	1.42	16.84	1.31	2375.53	1.59	1.41
<b>p2</b>	1811.83	1.78	18165.75	1.09	1547.72	1.41	16.94	1.32	2372.00	1.59	1.42
<b>TILE_23</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1741.40	1.71	18173.20	1.09	1262.22	1.15	16.94	1.32	2380.72	1.60	1.35
<b>p1</b>	1786.75	1.75	18186.80	1.09	1476.85	1.35	17.07	1.33	2372.72	1.59	1.40
<b>p2</b>	1777.12	1.74	18174.88	1.09	1658.10	1.51	17.09	1.33	2367.10	1.59	1.44

<b>TILE_24</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1788.80	1.76	17682.20	1.06	1288.75	1.18	17.04	1.33	2381.68	1.60	1.36
<b>p1</b>	1791.97	1.76	18130.83	1.09	1528.72	1.39	16.98	1.32	2372.28	1.59	1.41
<b>p2</b>	1796.55	1.76	18114.55	1.09	1657.38	1.51	16.86	1.31	2370.28	1.59	1.43
<b>TILE_25</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1730.33	1.70	18130.35	1.09	1232.75	1.12	17.19	1.34	2384.10	1.60	1.35
<b>p1</b>	1742.50	1.71	18124.00	1.09	1452.28	1.32	16.96	1.32	2377.88	1.59	1.39
<b>p2</b>	1739.10	1.71	18124.15	1.09	1586.20	1.45	17.25	1.34	2373.35	1.59	1.42
<b>TILE_26</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1791.05	1.76	17738.72	1.07	1260.45	1.15	16.98	1.32	2367.70	1.59	1.35
<b>p1</b>	1772.53	1.74	18204.28	1.10	1452.17	1.32	17.11	1.33	2362.22	1.58	1.40
<b>p2</b>	1763.62	1.73	18150.83	1.09	1691.53	1.54	17.09	1.33	2364.32	1.58	1.44
<b>p0_score:</b>	37.65										
<b>p1_score:</b>	38.04										
<b>p2_score:</b>	38.10										
<b>Unreviewed_VMmark_Score:</b>	38.04										

## Configuration

<b>Server and Network</b>	
Server Manufacturer and Model	Cisco UCS B250 M2
Processor Vendor and Model	Intel Xeon X5680
Processor Speed (GHz)	3.33 GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Primary Cache	32KB I + 32KB D on-chip per core
Secondary Cache	256KB I + D on chip per core
Other Cache	12MB I + D on chip per chip L3
BIOS Version	S5500.1.3.1c.0.052020102031
Memory Size (in GB, Number of DIMMs)	192GB, 48x4GB
Memory Type and Speed	Single rank 1333MHz Registered DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (unused)
Disk Controller Vendors and Models	LSI Logic embedded
Number of Host Bus Adapters	2 dual-port (Converged Network Adapters)

Host Bus Adapter Vendors and Models	(1) Cisco UCS VIC M81KR Converged Network Adapter, (1) Cisco UCS M71KR QLogic Converged Network Adapter
Number of Network Controllers	2 dual-port (Converged Network Adapters)
Network Controller Vendors and Models	(see above)
Network Switch Vendors and Models	(2) UCS-6120XP, (1) Cisco Nexus 5010, (1) Cisco Nexus 2148T
Network Speed	10Gbps
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	06-15-2010
Software Availability Date (MM-DD-YYYY)	07-26-2010
<b>Virtualization Software</b>	
Vendor, Product, Version, and Build	VMware ESX 4.0 U2 (build 261974)
Virtualization Type	Hardware
Supplemental Software	VMware vCenter Server 4.0.0 Build 200785, Cisco VEM VEM400-201007310
Virtualization Software Availability Date (MM-DD-YYYY)	06/10/2010
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	EMC CX4-240, version 04.29.000.5.003
Fibre Channel Switch Vendors and Models	Cisco MDS 9134
Disk Space Used	1682.14GB
Array Cache Size	8996MB(CX4-480), 2522MB (CX4-240)
Total Number of Physical Disks Used	79
Total Number of Enclosures/Pods/Shelves Used	6
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	5 @ 14 disks, 1 @ 9 disks
Total Number of Storage Groups Used	2
Number LUNs Used	16
LUN Size and Number of Disks Per LUN	There were 5x200GB LUNS, each created over 8x73GB SSDs (each holding 5 tiles' worth of Fileserver + Mailserver) There was 1x100GB LUN created over 4x73GB SSDs (holding the last 2 tiles' worth Fileserver + Mailserver) There were 5x75GB LUNS, each created over 4x450GB 15K disks (each holding 5 tiles' worth of Database)

	<p>There was 1x75GB LUN created over 4x450GB 15K disks (holding the last 2 tiles' worth of Database)</p> <p>There were 2x300GB LUNS, each created over 3x450GB 15K disks (each holding 10 tiles' worth of Webserver, Javaserer &amp; Standby)</p> <p>There was 1x300GB LUN created over 3x450GB 15K disks (holding the last 7 tiles' worth of Webserver, Javaserer &amp; Standby)</p>
RAID Type	RAID 0 for VMs, RAID 1 for VMware ESX 4.0 U2 O/S
Number of Members per RAID Set	<p>There were 5 RAID sets, each over 8x73GB SSDs, with 1 LUN created per RAID set</p> <p>There was 1 RAID set over 4x73GB SSDs, with 1 LUN created on it</p> <p>There were 3 RAID sets, each over 3x450GB 15K disks, with 1 LUN created per RAID set</p> <p>There were 6 RAID sets, each over 4x450GB 15K disks, with 1 LUN created per RAID set</p> <p>There was 1 RAID set over 2x450GB 15K disks with 1 LUN created on it</p>
Disk Vendors, Models, and Speeds	STEC ZIV2A074 CLAR72, SEAGATE ST345085 CLAR450, SEAGATE ST330065 CLAR300

**Clients**

Number of Clients	26
System Model(s)	<p>clients 0-17: Dell PowerEdge 2950</p> <p>client18: Cisco UCS C200 M1</p> <p>client19: Cisco UCS B200 M1</p> <p>client20: Cisco UCS B200 M1</p> <p>client21: Cisco UCS B200 M1</p> <p>client22: Cisco UCS B200 M1</p> <p>client23: Cisco UCS B200 M1</p> <p>client24: Cisco UCS B200 M1</p> <p>client25: Cisco UCS C200 M1</p> <p>client26: Cisco UCS C200 M1</p>
Processor Vendor(s) and Model(s)	<p>client0-17: Intel Xeon E5430</p> <p>client18: Intel Xeon E5540</p> <p>client19: Intel Xeon E5540</p> <p>client20: Intel Xeon X5670</p> <p>client21: Intel Xeon E5520</p> <p>client22: Intel Xeon X5570</p> <p>client23: Intel Xeon E5540</p> <p>client24: Intel Xeon E5520</p> <p>client25: Intel Xeon X5570</p> <p>client26: Intel Xeon E5520</p>
Processor Speed(s) (GHz)	<p>client0-17: 2.66GHz</p> <p>client18: 2.53GHz</p> <p>client19: 2.53GHz</p> <p>client20: 2.93GHz</p> <p>client21: 2.26GHz</p> <p>client22: 2.93GHz</p> <p>client23: 2.53GHz</p> <p>client24: 2.26GHz</p> <p>client25: 2.93GHz</p> <p>client26: 2.26GHz</p>
Total Sockets/Total Cores/Total Threads	<p>client0-17: 2 Sockets / 8 Cores / 8 Threads</p> <p>client18-19: 2 Sockets / 8 Cores / 16 Threads</p> <p>client20: 2 Sockets / 12 Cores / 24 Threads</p> <p>client21-26: 2 Sockets / 8 Cores / 16 Threads</p>

Memory per Client	client0-17: 16GB client18-26: 24GB
Network Controller Vendors and Models	client0-17: Broadcom BMC5708C (1Gb/s) client18, client25, client26: Intel 82576 (1Gb/s) client19-24: Intel 82598EB (10Gb/s)
Operating System, Version, and Service Pack	Windows Server 2003 Enterprise Edition SP2
Other Hardware	None
Other Software	None

## Notes for Workload

### Server BIOS Settings

- Intel Turbo Boost enabled up to 3.6GHz
- Hardware Prefetcher Disabled (default enabled)
- Adjacent Sector Prefetcher Disabled (default enabled)
- DCU Streamer Disabled (default enabled)
- Data Reuse Disabled (default enabled)
- Intel DirectPath Enabled (default disabled)

### Virtual Switch Configuration

- The COS and all even-numbered tile virtual machines with the exception of the webservers connected to vSwitch0
  - The vSwitch was configured with 120 ports (default 24) on vmnic30.
- All odd-numbered tile virtual machines with the exception of the webservers connected to vSwitch1
  - The vSwitch was configured with 120 ports (default 24) on vmnic29.
- 27 dynamic virtual NICs were configured on the Cisco UCS VIC M81KR CNA using the physical interfaces of vmnic0 & vmnic1
- These 27 virtual NICs were configured as a Distributed Virtual Switch in VMware vCenter new-DVS
- The 27 webservers were assigned to this Distributed Virtual Switch

### Storage Configuration

- There were 5x200GB RAID 0 LUNs, each created over 8x73GB SSDs. These LUNs each housed 5 tiles' worth of Fileserver and Mailserver VMs.
- There was 1x100GB RAID 0 LUN, created over 4x73GB SSDs. This LUN housed 2 tiles' worth of Fileserver and Mailserver VMs.
- There were 5x75GB RAID 0 LUNs, each created over 4x450GB 15K disks. These LUNs each housed 5 tiles' worth of Database VMs.
- There was 1x75GB RAID 0 LUN, created over 4x450GB 15K disks. This LUN housed 2 tiles' worth of Database VMs.
- There were 2x300GB RAID 0 LUNs, each created over 3x450GB 15K disks. These LUNs each housed 10 tiles' worth of Javasever, Webserver and Standby VMs.
- There was 1x300GB RAID 0 LUN, created over 3x450GB 15K disks. This LUN housed 7 tiles' worth of Javasever, Webserver and Standby VMs.
- There was 1x146GB RAID 1 LUN, created over 2x450GB 15K disks. This was the boot LUN.

### Virtualization Software Notes

- Virtual hardware upgraded from V4 to V7
- Virtual MMU was enabled for all VMs
- Ethernet adapter type set to vmxnet3 for all VMs
- Logging was disabled for all VMs

- Storage multipathing was set to "Fixed" (default MRU)
- IDE & Floppy removed for all VMs (default enabled)
- BufferCache.SoftMaxDirty=85 (default 15)
- Disk.SchedNumReqOutstanding = 120 (default 32)
- IRQ.RoutingPolicy = 0 (default 2)
- Mem.BalancePeriod=0 (default 15)
- Mem.SamplePeriod=0 (default 60)
- Mem.ShareScanGHz=0 (default 4)
- Net.MaxNetifRxQueueLen=300 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- Net.TcpipHeapMax=120 (default 64)
- Net.vmxnetThroughputWeight=255 (default 0)
- CPU.Quantum=60 (default 50)
- CPU.HaltingIdleMsecPenalty=0 (default 100)
- CPU.HaltingIdleMsecPenaltyMax=2020 (default 800)
- Numa.PageMigEnable=0 (default 1)
- Used the AutoPart utility to expand all mailserver data partitions
- /vmkernel/module/qla2xxx.o/options = "ql2xenablesi=1 ql2xmaxqdepth=128" set in /etc/vmware/esx.conf (defaults 0, 32)

## Operating System Notes

- Microsoft Windows Server 2003 virtual machines were updated to Service Pack 2
- Microsoft Windows Server 2003 virtual machines updated with KB955839
- Fileserver and Webserver VMs were updated to SLES 10 SP2

## Software Notes

Used a delay in parallel setup for KillLockMem in benchmark setup.

## Client Notes

- Microsoft Windows Server 2003 client machines were updated to Service Pack 2
- TCP TOE chimney was disabled on all clients (default enabled)
- Microsoft Windows Server 2003 clients updated with KB943545 & KB955839
- Clients19-24 were Cisco UCS B200 M1 blade servers housed in the same chassis as the SUT.
- Network traffic between these (6) clients and the SUT leaves the blade chassis and is switched at the UCS 6120 fabric interconnects.
- The other clients are connected to the Nexus 2148T which is in turn connected to the Nexus 5010.
- The UCS 6120 fabric interconnects are connected to the Nexus 5010.

## Other Notes

- The TILEDELAY and DELAYTIME values were modified in the VMMARK.CONFIG file
  - MailServer/DELAYTIME="0" (default 5)
  - JavaServer/DELAYTIME="25" default 540)
  - Standby/DELAYTIME="35" (default 170)
  - WebServer/DELAYTIME="50" default 180)
  - Database/DELAYTIME="75" (default 360)
  - Fileserver/DELAYTIME="100" (default 450)
  - TILEDELAY=335 (default 600)



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