

# VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: IBM® System x® 3850 X5  
 Virtualization Platform: VMware ESXi 4.0 Build 240223

**VMmark V1.1.1 Score =  
71.85 @ 49Tiles**

Tested By: IBM Inc., RTP, NC

Test Date: 03-25-2010

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## Performance

	webserver		javaserver		mailserver		fileserver		database		
	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>TILE_0</b>											
<b>p0</b>	1997.50	1.96	18064.00	1.09	1478.35	1.35	17.58	1.37	2336.07	1.57	1.44
<b>p1</b>	1974.65	1.94	18090.05	1.09	1511.47	1.38	17.72	1.38	2335.70	1.57	1.44
<b>p2</b>	1967.15	1.93	18104.95	1.09	1396.90	1.27	17.50	1.36	2340.35	1.57	1.42
<b>TILE_1</b>											
<b>p0</b>	2009.62	1.97	17709.70	1.07	1619.25	1.48	19.70	1.54	2328.82	1.56	1.49
<b>p1</b>	1986.55	1.95	18138.80	1.09	1394.20	1.27	19.48	1.52	2335.72	1.57	1.45
<b>p2</b>	1992.25	1.96	18112.53	1.09	1412.47	1.29	18.90	1.47	2337.22	1.57	1.45
<b>TILE_2</b>											
<b>p0</b>	1903.95	1.87	17692.22	1.06	1793.80	1.64	17.48	1.36	2337.62	1.57	1.47
<b>p1</b>	1933.33	1.90	18147.17	1.09	1773.55	1.62	17.73	1.38	2338.88	1.57	1.49
<b>p2</b>	1945.88	1.91	18140.75	1.09	1809.92	1.65	17.43	1.36	2341.18	1.57	1.49
<b>TILE_3</b>											
<b>p0</b>	1953.22	1.92	18091.08	1.09	1428.33	1.30	17.80	1.39	2341.07	1.57	1.43
<b>p1</b>	1919.03	1.88	18093.03	1.09	1327.38	1.21	17.71	1.38	2340.28	1.57	1.40
<b>p2</b>	1860.05	1.83	18095.58	1.09	1278.92	1.17	17.58	1.37	2336.22	1.57	1.38
<b>TILE_4</b>											
<b>p0</b>	2009.78	1.97	18109.88	1.09	1763.88	1.61	19.23	1.50	2342.60	1.57	1.52
<b>p1</b>	1984.45	1.95	18111.92	1.09	1538.38	1.40	18.77	1.46	2341.30	1.57	1.47
<b>p2</b>	1988.88	1.95	17669.22	1.06	1602.40	1.46	18.30	1.43	2338.12	1.57	1.47
<b>TILE_5</b>											
<b>p0</b>	1900.40	1.87	17684.83	1.06	1646.22	1.50	19.69	1.53	2333.22	1.56	1.48

<b>p1</b>	1938.92	1.90	18119.80	1.09	1636.25	1.49	19.46	1.52	2337.50	1.57	1.49
<b>p2</b>	1935.55	1.90	18109.50	1.09	1583.85	1.44	18.94	1.48	2338.35	1.57	1.47
<b>TILE_6</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1910.22	1.87	18136.33	1.09	1565.45	1.43	17.69	1.38	2336.32	1.57	1.45
<b>p1</b>	1923.88	1.89	17670.12	1.06	1444.50	1.32	17.83	1.39	2336.60	1.57	1.42
<b>p2</b>	2036.60	2.00	18127.97	1.09	1410.47	1.29	17.60	1.37	2330.50	1.56	1.43
<b>TILE_7</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1964.92	1.93	18103.72	1.09	1831.53	1.67	17.81	1.39	2325.62	1.56	1.50
<b>p1</b>	1864.83	1.83	18100.78	1.09	1782.50	1.63	17.83	1.39	2328.07	1.56	1.48
<b>p2</b>	2002.95	1.97	18125.33	1.09	1814.70	1.65	17.73	1.38	2336.25	1.57	1.50
<b>TILE_8</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1938.70	1.90	18119.78	1.09	1710.72	1.56	19.52	1.52	2328.60	1.56	1.50
<b>p1</b>	1923.35	1.89	18116.35	1.09	1817.92	1.66	19.37	1.51	2350.55	1.58	1.52
<b>p2</b>	1938.25	1.90	18116.20	1.09	1839.90	1.68	18.94	1.48	2331.15	1.56	1.52
<b>TILE_9</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1971.85	1.94	18123.33	1.09	1627.08	1.48	19.60	1.53	2351.05	1.58	1.50
<b>p1</b>	1972.10	1.94	18135.65	1.09	1545.38	1.41	19.46	1.52	2350.12	1.57	1.48
<b>p2</b>	1968.28	1.93	17660.00	1.06	1642.65	1.50	18.85	1.47	2351.22	1.58	1.48
<b>TILE_10</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1969.70	1.93	17715.75	1.07	1749.83	1.60	17.54	1.37	2346.12	1.57	1.48
<b>p1</b>	1980.40	1.94	18150.75	1.09	1654.85	1.51	17.77	1.38	2351.28	1.58	1.48
<b>p2</b>	1975.00	1.94	18134.90	1.09	1808.33	1.65	17.67	1.38	2356.93	1.58	1.50
<b>TILE_11</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2027.92	1.99	18106.92	1.09	1719.50	1.57	19.81	1.54	2341.40	1.57	1.52
<b>p1</b>	1958.12	1.92	17678.30	1.06	1726.00	1.57	19.50	1.52	2346.72	1.57	1.50
<b>p2</b>	2046.53	2.01	18138.25	1.09	1697.30	1.55	19.08	1.49	2348.25	1.57	1.51
<b>TILE_12</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2041.17	2.00	18120.78	1.09	1785.88	1.63	19.61	1.53	2360.30	1.58	1.54
<b>p1</b>	2043.60	2.01	18139.15	1.09	1849.22	1.69	19.40	1.51	2362.80	1.58	1.55
<b>p2</b>	2053.55	2.02	18160.80	1.09	1595.33	1.45	18.81	1.47	2355.95	1.58	1.49
<b>TILE_13</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1964.08	1.93	18125.53	1.09	1790.85	1.63	18.51	1.44	2345.05	1.57	1.51
<b>p1</b>	1977.78	1.94	18124.20	1.09	1702.47	1.55	17.97	1.40	2354.05	1.58	1.49
<b>p2</b>	1964.28	1.93	18114.60	1.09	1800.65	1.64	17.96	1.40	2352.43	1.58	1.50
<b>TILE_14</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1969.38	1.93	18127.12	1.09	1510.67	1.38	17.78	1.39	2323.88	1.56	1.44

<b>p1</b>	1975.08	1.94	18137.55	1.09	1436.15	1.31	17.93	1.40	2324.82	1.56	1.43
<b>p2</b>	1977.33	1.94	17683.72	1.06	1493.80	1.36	17.80	1.39	2333.93	1.56	1.44
<b>TILE_15</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1966.60	1.93	18152.45	1.09	1498.33	1.37	18.53	1.44	2326.10	1.56	1.45
<b>p1</b>	1977.45	1.94	18130.80	1.09	1405.33	1.28	17.70	1.38	2329.40	1.56	1.42
<b>p2</b>	1978.83	1.94	17679.80	1.06	1407.42	1.28	18.08	1.41	2334.75	1.56	1.42
<b>TILE_16</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1938.75	1.90	18122.90	1.09	1656.17	1.51	17.83	1.39	2354.20	1.58	1.47
<b>p1</b>	2038.58	2.00	18130.55	1.09	1787.80	1.63	17.93	1.40	2354.85	1.58	1.51
<b>p2</b>	2052.43	2.01	17656.53	1.06	1637.05	1.49	17.55	1.37	2349.25	1.57	1.47
<b>TILE_17</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1973.62	1.94	18108.75	1.09	1686.25	1.54	19.74	1.54	2346.07	1.57	1.51
<b>p1</b>	1976.00	1.94	18117.15	1.09	1636.33	1.49	19.65	1.53	2353.75	1.58	1.50
<b>p2</b>	1976.88	1.94	17664.30	1.06	1600.78	1.46	19.03	1.48	2354.47	1.58	1.48
<b>TILE_18</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1970.20	1.93	18141.17	1.09	1606.80	1.46	18.82	1.47	2318.05	1.55	1.48
<b>p1</b>	1965.92	1.93	18138.17	1.09	1427.97	1.30	18.24	1.42	2343.85	1.57	1.44
<b>p2</b>	1976.00	1.94	17683.83	1.06	1417.42	1.29	18.44	1.44	2349.82	1.57	1.43
<b>TILE_19</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1967.80	1.93	18104.53	1.09	1605.22	1.46	17.90	1.39	2353.72	1.58	1.47
<b>p1</b>	1980.78	1.94	18105.15	1.09	1766.03	1.61	18.05	1.41	2355.18	1.58	1.50
<b>p2</b>	1916.85	1.88	18119.12	1.09	1657.10	1.51	17.76	1.38	2356.03	1.58	1.47
<b>TILE_20</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1971.72	1.94	18129.60	1.09	1683.78	1.54	19.79	1.54	2354.32	1.58	1.51
<b>p1</b>	1940.42	1.90	18123.38	1.09	1692.22	1.54	19.55	1.52	2351.80	1.58	1.50
<b>p2</b>	1961.92	1.93	18101.62	1.09	1770.30	1.61	19.01	1.48	2350.88	1.58	1.51
<b>TILE_21</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1975.55	1.94	18098.97	1.09	1659.35	1.51	19.73	1.54	2334.55	1.56	1.50
<b>p1</b>	1966.88	1.93	18087.72	1.09	1806.40	1.65	19.65	1.53	2339.38	1.57	1.53
<b>p2</b>	1971.78	1.94	18092.17	1.09	1800.30	1.64	18.90	1.47	2337.15	1.57	1.51
<b>TILE_22</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1966.47	1.93	18123.55	1.09	1605.88	1.46	17.68	1.38	2341.75	1.57	1.46
<b>p1</b>	1940.78	1.90	18115.53	1.09	1690.45	1.54	17.63	1.37	2345.30	1.57	1.47
<b>p2</b>	1941.40	1.91	18109.55	1.09	1785.50	1.63	16.13	1.26	2345.85	1.57	1.46
<b>TILE_23</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1925.67	1.89	18104.10	1.09	1498.20	1.37	19.69	1.53	2328.15	1.56	1.46

<b>p1</b>	1947.45	1.91	18135.42	1.09	1399.05	1.28	19.39	1.51	2332.00	1.56	1.44
<b>p2</b>	1943.67	1.91	18141.05	1.09	1336.75	1.22	18.77	1.46	2339.90	1.57	1.42
<b>TILE_24</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1965.72	1.93	18126.70	1.09	1657.20	1.51	16.52	1.29	2337.03	1.57	1.45
<b>p1</b>	1966.80	1.93	18115.33	1.09	1902.47	1.73	18.09	1.41	2337.93	1.57	1.52
<b>p2</b>	1971.17	1.93	18095.95	1.09	1802.78	1.64	18.03	1.41	2338.70	1.57	1.50
<b>TILE_25</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2051.15	2.01	18129.28	1.09	1578.83	1.44	17.65	1.38	2339.47	1.57	1.47
<b>p1</b>	2056.03	2.02	18129.05	1.09	1652.67	1.51	17.74	1.38	2341.00	1.57	1.48
<b>p2</b>	2043.08	2.01	18129.17	1.09	1725.50	1.57	17.71	1.38	2342.50	1.57	1.49
<b>TILE_26</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1891.90	1.86	18144.22	1.09	1553.75	1.42	17.76	1.38	2326.97	1.56	1.44
<b>p1</b>	1969.03	1.93	18119.25	1.09	1488.45	1.36	17.69	1.38	2325.50	1.56	1.44
<b>p2</b>	1900.10	1.86	18115.83	1.09	1491.22	1.36	17.34	1.35	2331.97	1.56	1.42
<b>TILE_27</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1803.70	1.77	18145.53	1.09	1550.42	1.41	19.38	1.51	2336.20	1.57	1.45
<b>p1</b>	1970.00	1.93	18129.62	1.09	1714.55	1.56	19.30	1.50	2338.90	1.57	1.51
<b>p2</b>	1972.03	1.94	18122.10	1.09	1676.53	1.53	18.68	1.46	2346.57	1.57	1.49
<b>TILE_28</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1926.72	1.89	18121.75	1.09	1513.65	1.38	18.69	1.46	2322.15	1.56	1.45
<b>p1</b>	1943.25	1.91	18101.75	1.09	1498.05	1.37	18.30	1.43	2320.68	1.56	1.44
<b>p2</b>	1941.70	1.91	18120.85	1.09	1421.58	1.30	18.27	1.42	2322.88	1.56	1.43
<b>TILE_29</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1978.78	1.94	18129.58	1.09	1635.95	1.49	17.73	1.38	2335.55	1.56	1.47
<b>p1</b>	1983.22	1.95	18131.78	1.09	1693.40	1.54	17.66	1.38	2337.78	1.57	1.48
<b>p2</b>	1990.28	1.95	18120.70	1.09	1802.00	1.64	17.61	1.37	2338.30	1.57	1.50
<b>TILE_30</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1973.20	1.94	18103.00	1.09	1502.22	1.37	19.94	1.55	2338.25	1.57	1.48
<b>p1</b>	1957.67	1.92	18130.88	1.09	1686.83	1.54	19.50	1.52	2339.97	1.57	1.50
<b>p2</b>	1964.15	1.93	18113.60	1.09	1634.95	1.49	18.96	1.48	2340.43	1.57	1.49
<b>TILE_31</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1928.22	1.89	18136.03	1.09	1456.15	1.33	18.53	1.44	2329.05	1.56	1.44
<b>p1</b>	1853.45	1.82	18118.47	1.09	1670.40	1.52	18.13	1.41	2329.68	1.56	1.46
<b>p2</b>	1934.25	1.90	17671.88	1.06	1770.45	1.61	17.97	1.40	2328.53	1.56	1.48
<b>TILE_32</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2025.55	1.99	18133.35	1.09	1483.95	1.35	19.69	1.53	2328.57	1.56	1.48

<b>p1</b>	1994.25	1.96	18136.90	1.09	1677.22	1.53	19.43	1.51	2333.43	1.56	1.51
<b>p2</b>	1991.28	1.95	18158.65	1.09	1629.58	1.49	18.90	1.47	2342.50	1.57	1.49
<b>TILE_33</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1929.55	1.89	18099.47	1.09	1532.85	1.40	17.80	1.39	2328.75	1.56	1.44
<b>p1</b>	1835.97	1.80	18089.17	1.09	1627.62	1.48	17.86	1.39	2327.90	1.56	1.45
<b>p2</b>	1787.85	1.75	18096.70	1.09	1715.47	1.56	17.58	1.37	2331.60	1.56	1.45
<b>TILE_34</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1968.92	1.93	18160.17	1.09	1440.38	1.31	17.40	1.36	2341.18	1.57	1.43
<b>p1</b>	1939.90	1.90	18123.83	1.09	1563.47	1.43	17.17	1.34	2342.97	1.57	1.44
<b>p2</b>	1961.85	1.93	18107.67	1.09	1708.62	1.56	17.22	1.34	2342.80	1.57	1.47
<b>TILE_35</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1927.55	1.89	18131.12	1.09	1464.67	1.34	17.92	1.40	2345.22	1.57	1.43
<b>p1</b>	1987.35	1.95	18138.15	1.09	1391.85	1.27	17.90	1.40	2346.75	1.57	1.43
<b>p2</b>	2014.00	1.98	18126.33	1.09	1373.10	1.25	17.50	1.36	2343.57	1.57	1.42
<b>TILE_36</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2043.70	2.01	18111.38	1.09	1454.03	1.33	18.82	1.47	2345.25	1.57	1.46
<b>p1</b>	1974.08	1.94	18123.40	1.09	1605.72	1.46	18.35	1.43	2346.45	1.57	1.47
<b>p2</b>	2054.88	2.02	18136.88	1.09	1631.47	1.49	18.39	1.43	2345.20	1.57	1.49
<b>TILE_37</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1974.35	1.94	18118.58	1.09	1392.75	1.27	17.94	1.40	2335.60	1.57	1.42
<b>p1</b>	1983.20	1.95	18098.47	1.09	1445.08	1.32	17.82	1.39	2338.25	1.57	1.43
<b>p2</b>	1886.22	1.85	18119.05	1.09	1363.08	1.24	17.63	1.37	2343.35	1.57	1.40
<b>TILE_38</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2022.78	1.99	18123.08	1.09	1461.45	1.33	17.93	1.40	2344.70	1.57	1.45
<b>p1</b>	2000.78	1.96	18130.35	1.09	1685.03	1.54	17.97	1.40	2346.95	1.57	1.49
<b>p2</b>	1996.30	1.96	18122.92	1.09	1751.70	1.60	17.78	1.39	2345.00	1.57	1.49
<b>TILE_39</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2033.97	2.00	18109.92	1.09	1320.62	1.20	19.82	1.54	2330.93	1.56	1.45
<b>p1</b>	2049.20	2.01	18098.30	1.09	1362.03	1.24	19.51	1.52	2330.28	1.56	1.45
<b>p2</b>	2052.80	2.01	18095.83	1.09	1317.03	1.20	18.92	1.47	2329.93	1.56	1.43
<b>TILE_40</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	1905.28	1.87	18103.60	1.09	1436.33	1.31	17.68	1.38	2350.95	1.58	1.42
<b>p1</b>	1960.05	1.92	18103.65	1.09	1583.08	1.44	17.89	1.39	2346.80	1.57	1.46
<b>p2</b>	1958.42	1.92	18104.65	1.09	1853.80	1.69	17.74	1.38	2344.53	1.57	1.50
<b>TILE_41</b>	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
<b>p0</b>	2026.25	1.99	18105.15	1.09	1323.58	1.21	16.72	1.30	2332.95	1.56	1.40



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**Configuration**

<b>Server and Network</b>	
Server Manufacturer and Model	IBM x3850 X5
Processor Vendor and Model	Intel® Xeon® Processor X7560 2.27GHz/24MB L3 Cache
Processor Speed (GHz)	2.27
Total Sockets/Total Cores/Total Threads	4 Sockets / 32 Cores /64 Threads
Primary Cache	32KB L1 I-cache + 32KB L1 D-cache (per core)
Secondary Cache	256KB per core
Other Cache	24MB L3 cache per processor
BIOS Version	1.01
Memory Size (in GB, Number of DIMMs)	384 GB, 64 (32 x 4GB, 32x8GB)
Memory Type and Speed	4GB 4Rx8 1Gbit PC3-8500 DDR3 1066 LP RDIMM 8GB 4Rx8 2Gbit PC3-8500 DDR3 1066 LP RDIMM
Disk Subsystem Type	SAS (unused)
Number of Disk Controllers	1 SAS (unused)
Disk Controller Vendors and Models	1x ServeRAID-BR10i SAS/SATA Controller (unused)
Number of Host Bus Adapters	4
Host Bus Adapter Vendors and Models	QLogic 4Gb FC Dual-port HBA for IBM System x
Number of Network Controllers	8
Network Controller Vendors and Models	1 x Broadcom® 5709S onboard NIC with dual Gigabit Ethernet ports with TOE 3 x Intel® PRO1000 PT Dual Port NIC
Network Switch Vendors and Models	1 x Cisco Catalyst 6500 Enhanced 6-slot chassis 2 x Cat6500 48-port 10/100/1000 GE Mod
Network Speed	1Gb
Other Hardware	IBM 2GB USB Memory Key for VMware Hypervisor ESXi
Other Software	None
Hardware Availability Date	04/19/2010
Software Availability Date	04/19/2010
<b>Virtualization Software</b>	
Vendor, Product, Version, and Build	VMware ESXi 4.0 (Build 240223)
Virtualization Type	Hardware Virtualization
Supplemental Software	None

Virtualization Software Availability Date	06/28/2010
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	4 x IBM System Storage DS4800, version 07.15.10.01 19 x IBM System Storage EXP 810 storage expansion unit, version B977
Fibre Channel Switch Vendors and Models	none
Disk Space Used	6517 GB
Array Cache Size	IBM System Storage DS4800, 4GB/sec FC
Total Number of Physical Disks Used	539
Total Number of Enclosures/Pods/Shelves Used	43
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	20 enclosures with 16 disks each; 4 enclosures with 15 disks each; 7 enclosures with 14 disks each; 2 enclosure with 9 disks each; 2 enclosures with 8 disks each; 1 enclosure with 6 disks; 7 enclosures with 3 disks each
Total Number of Storage Groups Used	4
Number LUNs Used	49 LUNs 1 per Database VM 49 LUNs , 1 per tile, containing Mailserver, Javasever, Webserver, Fileserver, and Standby VMs for that tile.
LUN Size and Number of Disks Per LUN	49 x 33GB LUNs (DB VMs): 3 disks per LUN 49 x 100GB LUNs (Remaining VMs): 8 disks per LUN
RAID Type	RAID 0 for all VMs
Number of Members per RAID Set	DB LUNs: 3 members All Other LUNs: 8 members
Disk Vendors, Models, and Speeds	Seagate Technologies Inc., ST373455FC, 15K RPM Seagate Technologies Inc., ST336753FC, 15K RPM Seagate Technologies Inc., ST346855FC, 15K RPM Seagate Technologies Inc., ST373554FC, 15K RPM
<b>Clients</b>	
Number of Clients	49
System Model(s)	Prime Client: IBM eServer xSeries 3550 M2 21 Clients: IBM eServer xSeries 336 28 Clients: IBM eServer xSeries 335
Processor Vendor(s) and Model(s)	Prime Client: Intel Xeon CPU E5520 @ 2.27GHz Other Clients: Intel Xeon
Processor Speed(s) (GHz)	Prime Client: 2.27 GHz x336 Clients: 3.2 GHz x335 Clients: 3.06 GHz
Total Sockets/Total Cores/Total Threads	Prime Client: 2 sockets/ 8 cores / 16 threads Other Clients: 2 Sockets / 2 Cores / 4 Threads



Memory per Client	Prime Client: 32GB x336 Clients: 3GB x335 Clients: 2.5GB
Network Controller Vendors and Models	Broadcom NetXtreme Gigabit Ethernet OnBoard adapter
Operating System, Version, and Service Pack	Microsoft Windows Server 2003 R2 Enterprise Edition SP2
Other Hardware	None
Other Software	None

### Notes for Workload

None.

### Server and Network Notes

#### BIOS Settings

- Turbo Enabled (default disabled)
- Hyperthreading Enabled (default disabled)
- Operating mode Custom (default normal)
- Onboard SAS disabled (default enabled)
- Power capping disabled (default enabled)
- Intel Turbo Boost technology up to 2.93GHz

### Virtualization Software Notes

- Eight vSwitches: vSwitch0, vSwitch1, vSwitch2, vSwitch3, vSwitch4, vSwitch5, vSwitch6, vSwitch7
- All vSwitches are configured with 120 ports, with the exception of vSwitch7 which was configured with 56 ports (the default)
- vSwitch0 was attached to vmnic0, vSwitch1 was attached to vmnic1, vSwitch2 was attached to vmnic2, vSwitch3 was attached to vmnic3, vSwitch4 was attached to vmnic4, vSwitch5 was attached to vmnic5, vSwitch6 was attached to vmnic6, vSwitch7 was attached to vmnic7
- vSwitch0 and vSwitch1 use the onboard Broadcom network adapter
- vSwitch2, vSwitch3, vSwitch4, vSwitch5, vSwitch6 and vSwitch7 use the Intel adapters
- All Java and Standby servers are attached to vSwitch0
- Database/File/ Web/Mail/ 0-6 are attached to vSwitch1
- Database/File/ Web/Mail/ 7-13 are attached to vSwitch2
- Database/File/ Web/Mail/ 14-20 are attached to vSwitch3
- Database/File/ Web/Mail/ 21-27 are attached to vSwitch4
- Database/File/ Web/Mail/ 28-34 are attached to vSwitch5
- Database/File/ Web/Mail/ 35-41 are attached to vSwitch6
- Database/File/ Web/Mail/ 42- 48 are attached to vSwitch7

- Network adapter type was set to vmxnet3 for all VMs
- Diskpart was run against each mailserver VM which repartitioned the disk space allocated to the database data drive (from 8 to 12GB) and backup drive (from 8GB to 4GB).
- 2 physical Arrays (1 3-disk RAID0, and 1 8-disk RAID0) are configured for each tile.
  1. The database VM is stored on the 3-disk RAID0 array
  2. The remaining VMs (Fileserver, Javasever, Mailserver, Standby and Webserver) are stored on the 8-disk RAID0 array
- Disabled ESX logging on all VMs
- CPU/MMU Virtualization was set to Hardware on all VMs (CPU/MMU)
- Disk.SchedNumReqOutstanding was set to 128 (default 32)
- Disk.EnableNaviReg was set to 0 (default 1)
- EtherswitchHashSize was set to 4 (default 1)
- BufferCache.SoftMaxDirty was set to 85 (default 15)
- VMFS3.MaxHeapSizeMB = "64" (default 80)
- Net.MaxNetifRxQueueLen was set to 512 (default 100)
- Net.MaxNetifTxQueueLen was set to 1000 (default 500)
- Net.MaxPortRxQueueLen was set to 256 (default 80)
- Net.TcpipUseIOAT was set to 1 (default 0)
- Net.vmxnetThroughputWeight was set to 255 (default is 0)
- CPU.HaltingIdleMsecPenalty was set to 0 (default is 100)
- mem.maxmemctl is not set for Fileserver VMs
- Tcpip2v6 has been disabled
- Firewall has been stopped
- VMFS2 was unloaded prior to the run
- Hardware Version is 7 for all VMs
- IDE and Floppy devices were removed from all VMs, except for database30, prior to run (default connected)

### **Operating System Notes**

- Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2 on Windows-based virtual machines
- KB 933360 was applied
- Suse Linux Enterprise Server 10 (64-bit) Service Pack 2 on 64-bit Linux-based virtual machines
- Suse Linux Enterprise Server 10 (32-bit) Service Pack 2 on 32-bit Linux-based virtual machines

### **Software Notes**

#### **Client Notes**

- Microsoft Windows Server 2003 R2 Enterprise Edition, Service Pack 2
- KB 933360 was applied

#### **Other Notes**

IBM System Storage DS4800

- Cache block size 16KB (default 4KB)

- Background media scan disabled (default enabled)
- Write caching with mirroring disabled (default enabled)
- Write caching without batteries disabled (default enabled)

#### QLogic QLA2462

- Loop reset delay 8 (default 5)
- PortDownRetryCount 14 (default 30)
- Operation Mode 5 (default 0)
- Interrupt Delay Timer 10 (default 0)
- Enable Target Reset No (default Yes)
- Link down timeout 60 (default 30)
- Execution Throttle 256 (default 16)
- LUNs per Target 256 (default 128)
- Maximum queue depth 128 (default 32)
- Loop reset delay 8 (default 5)

#### VMmark.config

The following were altered from their default values in VMmark.config

- Tile Delay = 180 (default 600)
- JavaServer/DELAYTIME="36" (default 540)
- Standby/DELAYTIME="12" (default 170)
- WebServer/DELAYTIME="15" (default 180)
- Database/DELAYTIME="24" (default 360)
- FileServer/DELAYTIME="80" (default 450)

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