

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: ProLiant DL980 G7
 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 =
29.35 @ 30 Tiles**

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| Number of Hosts: 2 | Uniform Hosts [yes/no]: yes | Total sockets/core/threads in test: 16/160/320 |
| Tested By: Hewlett-Packard | | Test Date: 09-16-2012 |
| Performance Section Performance | Configuration Section Configuration | Notes Section 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 | 325.02 | 0.98 | 98.75 | 4614.48 | 0.99 | 238.60 | 2987.18 | 1.36 | 117.20 | 2114.18 | 1.39 | 128.25 | 1513.50 | 1.43 | 132.84 | 1.21 |
| p1 | 323.45 | 0.98 | 106.03 | 4588.70 | 0.99 | 263.03 | 2887.50 | 1.31 | 124.52 | 2119.05 | 1.40 | 135.01 | 1532.45 | 1.45 | 140.08 | 1.21 |
| p2 | 330.93 | 1.00 | 115.47 | 4578.35 | 0.99 | 256.66 | 2854.20 | 1.30 | 127.37 | 2020.92 | 1.33 | 138.35 | 1502.97 | 1.42 | 145.09 | 1.19 |
| TILE_1 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.12 | 0.99 | 104.00 | 4580.30 | 0.99 | 271.39 | 2976.35 | 1.35 | 118.13 | 2105.15 | 1.39 | 128.92 | 1521.83 | 1.44 | 131.75 | 1.21 |
| p1 | 325.32 | 0.99 | 108.25 | 4560.43 | 0.98 | 303.96 | 2821.25 | 1.28 | 129.60 | 2050.65 | 1.35 | 142.13 | 1558.67 | 1.47 | 145.97 | 1.20 |
| p2 | 324.38 | 0.98 | 131.00 | 4490.57 | 0.97 | 373.83 | 2843.65 | 1.29 | 128.34 | 1998.12 | 1.32 | 141.17 | 1421.47 | 1.34 | 147.63 | 1.17 |
| TILE_2 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 327.70 | 0.99 | 91.50 | 4603.25 | 0.99 | 257.75 | 2925.90 | 1.33 | 121.68 | 2163.40 | 1.42 | 130.39 | 1561.60 | 1.48 | 135.96 | 1.22 |
| p1 | 326.05 | 0.99 | 100.25 | 4553.12 | 0.98 | 291.77 | 2833.28 | 1.29 | 129.00 | 2012.83 | 1.33 | 139.49 | 1498.92 | 1.42 | 145.29 | 1.19 |
| p2 | 328.10 | 0.99 | 111.75 | 4528.48 | 0.98 | 345.27 | 2829.45 | 1.29 | 129.95 | 2001.45 | 1.32 | 141.09 | 1405.70 | 1.33 | 149.84 | 1.17 |
| TILE_3 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 324.98 | 0.98 | 89.95 | 4599.45 | 0.99 | 245.73 | 2949.35 | 1.34 | 120.10 | 2179.45 | 1.44 | 129.32 | 1636.65 | 1.55 | 135.10 | 1.24 |
| p1 | 324.85 | 0.98 | 106.75 | 4585.25 | 0.99 | 283.92 | 2890.62 | 1.31 | 123.81 | 2084.20 | 1.37 | 131.38 | 1478.58 | 1.40 | 138.27 | 1.20 |
| p2 | 328.38 | 0.99 | 114.00 | 4538.20 | 0.98 | 330.23 | 2873.18 | 1.31 | 124.95 | 2144.12 | 1.41 | 132.26 | 1542.42 | 1.46 | 138.62 | 1.21 |
| TILE_4 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.38 | 0.99 | 92.75 | 4601.05 | 0.99 | 248.97 | 2520.43 | 1.15 | 106.98 | 2193.15 | 1.44 | 120.28 | 1653.78 | 1.56 | 123.74 | 1.20 |
| p1 | 326.40 | 0.99 | 112.75 | 4568.62 | 0.98 | 303.76 | 2431.35 | 1.11 | 114.10 | 2111.30 | 1.39 | 128.48 | 1514.17 | 1.43 | 133.17 | 1.16 |
| p2 | 329.27 | 1.00 | 113.25 | 4481.70 | 0.97 | 364.42 | 2417.07 | 1.10 | 115.42 | 2176.55 | 1.43 | 129.01 | 1663.17 | 1.57 | 131.26 | 1.19 |
| TILE_5 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 330.48 | 1.00 | 74.00 | 4607.07 | 0.99 | 251.13 | 3014.62 | 1.37 | 114.78 | 2157.50 | 1.42 | 123.49 | 1567.70 | 1.48 | 125.54 | 1.23 |
| p1 | 321.75 | 0.97 | 74.00 | 4557.27 | 0.98 | 282.18 | 2914.80 | 1.33 | 121.37 | 2188.30 | 1.44 | 127.47 | 1609.85 | 1.52 | 129.14 | 1.23 |

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|----------------|--------|-------|--------|---------|-------|--------|---------|-------|--------|---------|-------|--------|---------|-------|--------|------|
| p2 | 328.88 | 1.00 | 75.50 | 4518.60 | 0.97 | 370.77 | 2949.93 | 1.34 | 119.19 | 2124.95 | 1.40 | 127.25 | 1610.10 | 1.52 | 129.51 | 1.23 |
| TILE_6 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.98 | 0.99 | 115.25 | 4611.90 | 0.99 | 242.97 | 2786.45 | 1.27 | 110.02 | 2185.80 | 1.44 | 121.39 | 1566.90 | 1.48 | 125.67 | 1.22 |
| p1 | 329.75 | 1.00 | 127.75 | 4557.38 | 0.98 | 301.64 | 2757.60 | 1.25 | 111.78 | 2260.57 | 1.49 | 120.75 | 1711.97 | 1.62 | 124.99 | 1.24 |
| p2 | 327.40 | 0.99 | 146.75 | 4582.15 | 0.99 | 293.71 | 2670.32 | 1.21 | 118.68 | 2101.12 | 1.38 | 129.45 | 1503.08 | 1.42 | 134.36 | 1.18 |
| TILE_7 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 324.60 | 0.98 | 105.50 | 4585.25 | 0.99 | 250.77 | 2762.57 | 1.26 | 111.66 | 2251.35 | 1.48 | 121.98 | 1619.67 | 1.53 | 127.61 | 1.23 |
| p1 | 330.32 | 1.00 | 122.75 | 4581.02 | 0.99 | 264.75 | 2684.18 | 1.22 | 118.33 | 2084.15 | 1.37 | 132.05 | 1552.92 | 1.47 | 137.70 | 1.19 |
| p2 | 325.88 | 0.99 | 134.25 | 4580.85 | 0.99 | 292.76 | 2683.32 | 1.22 | 117.35 | 2099.30 | 1.38 | 129.58 | 1494.55 | 1.41 | 135.58 | 1.18 |
| TILE_8 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 329.73 | 1.00 | 92.25 | 4618.93 | 1.00 | 237.80 | 3026.40 | 1.38 | 114.12 | 2242.85 | 1.48 | 122.15 | 1700.08 | 1.61 | 126.47 | 1.27 |
| p1 | 325.07 | 0.98 | 94.00 | 4609.27 | 0.99 | 233.82 | 2918.57 | 1.33 | 121.74 | 2079.25 | 1.37 | 131.56 | 1494.00 | 1.41 | 135.64 | 1.20 |
| p2 | 326.80 | 0.99 | 87.00 | 4580.10 | 0.99 | 276.46 | 2867.18 | 1.30 | 125.51 | 2104.47 | 1.39 | 136.32 | 1522.70 | 1.44 | 141.09 | 1.20 |
| TILE_9 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 327.68 | 0.99 | 86.75 | 4606.18 | 0.99 | 245.60 | 3027.80 | 1.38 | 114.59 | 2151.20 | 1.42 | 124.53 | 1612.85 | 1.52 | 128.89 | 1.24 |
| p1 | 327.80 | 0.99 | 102.75 | 4530.50 | 0.98 | 310.28 | 2944.50 | 1.34 | 120.05 | 2093.22 | 1.38 | 130.46 | 1493.33 | 1.41 | 135.64 | 1.20 |
| p2 | 327.45 | 0.99 | 114.00 | 4557.90 | 0.98 | 298.78 | 2868.88 | 1.30 | 126.07 | 2174.95 | 1.43 | 136.43 | 1571.95 | 1.49 | 144.03 | 1.22 |
| TILE_10 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 325.12 | 0.98 | 74.00 | 4596.62 | 0.99 | 252.76 | 3022.22 | 1.37 | 114.89 | 2148.93 | 1.42 | 124.75 | 1530.60 | 1.45 | 130.95 | 1.22 |
| p1 | 324.48 | 0.98 | 74.00 | 4581.27 | 0.99 | 268.84 | 2996.47 | 1.36 | 116.41 | 2196.88 | 1.45 | 126.81 | 1589.67 | 1.50 | 131.85 | 1.23 |
| p2 | 326.93 | 0.99 | 74.00 | 4551.35 | 0.98 | 317.75 | 2976.70 | 1.35 | 117.40 | 2204.22 | 1.45 | 126.28 | 1668.38 | 1.58 | 130.74 | 1.25 |
| TILE_11 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.15 | 0.99 | 74.00 | 4610.68 | 0.99 | 245.75 | 2990.70 | 1.36 | 117.11 | 2137.12 | 1.41 | 126.33 | 1528.08 | 1.44 | 130.99 | 1.22 |
| p1 | 327.40 | 0.99 | 74.00 | 4588.52 | 0.99 | 269.08 | 2882.30 | 1.31 | 125.03 | 2121.97 | 1.40 | 135.17 | 1593.58 | 1.51 | 141.29 | 1.22 |
| p2 | 325.65 | 0.99 | 74.00 | 4562.27 | 0.98 | 283.96 | 2894.32 | 1.32 | 124.07 | 2062.10 | 1.36 | 133.81 | 1469.78 | 1.39 | 139.75 | 1.19 |
| TILE_12 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 329.27 | 1.00 | 74.50 | 4593.40 | 0.99 | 253.81 | 3079.72 | 1.40 | 110.72 | 2285.78 | 1.51 | 118.67 | 1657.90 | 1.57 | 122.71 | 1.27 |
| p1 | 329.20 | 1.00 | 76.25 | 4579.55 | 0.99 | 264.18 | 2947.07 | 1.34 | 120.03 | 2191.00 | 1.44 | 127.84 | 1653.12 | 1.56 | 133.10 | 1.24 |
| p2 | 322.68 | 0.98 | 84.00 | 4591.60 | 0.99 | 261.93 | 2994.78 | 1.36 | 116.64 | 2154.75 | 1.42 | 124.31 | 1535.05 | 1.45 | 129.78 | 1.22 |
| TILE_13 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.48 | 0.99 | 75.25 | 4599.93 | 0.99 | 259.65 | 3060.57 | 1.39 | 112.02 | 2277.25 | 1.50 | 119.40 | 1729.97 | 1.64 | 123.25 | 1.27 |
| p1 | 326.30 | 0.99 | 84.00 | 4567.27 | 0.98 | 290.66 | 3018.07 | 1.37 | 114.71 | 2231.05 | 1.47 | 123.51 | 1627.47 | 1.54 | 126.92 | 1.25 |
| p2 | 327.00 | 0.99 | 84.00 | 4560.30 | 0.98 | 314.16 | 2962.30 | 1.35 | 118.83 | 2128.62 | 1.40 | 126.93 | 1532.47 | 1.45 | 130.53 | 1.22 |
| TILE_14 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 323.95 | 0.98 | 74.00 | 4617.18 | 0.99 | 252.09 | 2986.25 | 1.36 | 117.53 | 2130.90 | 1.40 | 127.05 | 1596.60 | 1.51 | 131.01 | 1.23 |
| p1 | 327.02 | 0.99 | 74.00 | 4607.05 | 0.99 | 256.50 | 2951.45 | 1.34 | 119.61 | 2091.82 | 1.38 | 130.45 | 1506.30 | 1.42 | 134.16 | 1.21 |

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|----------------|--------|-------|-------|---------|-------|--------|---------|-------|--------|---------|-------|--------|---------|-------|--------|------|
| p2 | 326.70 | 0.99 | 74.00 | 4598.62 | 0.99 | 260.38 | 2911.45 | 1.32 | 122.25 | 2211.30 | 1.46 | 132.92 | 1627.38 | 1.54 | 136.53 | 1.24 |
| TILE_15 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 325.57 | 0.99 | 73.45 | 4610.25 | 0.99 | 244.77 | 2943.65 | 1.34 | 120.57 | 2098.05 | 1.38 | 130.26 | 1507.83 | 1.43 | 134.28 | 1.21 |
| p1 | 322.88 | 0.98 | 74.00 | 4599.23 | 0.99 | 259.77 | 2837.53 | 1.29 | 128.25 | 2096.18 | 1.38 | 137.55 | 1522.65 | 1.44 | 141.86 | 1.20 |
| p2 | 330.77 | 1.00 | 74.00 | 4573.50 | 0.99 | 270.31 | 2822.20 | 1.28 | 129.85 | 2052.72 | 1.35 | 142.37 | 1548.45 | 1.46 | 147.53 | 1.20 |
| TILE_16 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 328.20 | 0.99 | 74.00 | 4593.40 | 0.99 | 266.13 | 2979.78 | 1.35 | 118.47 | 2097.57 | 1.38 | 130.38 | 1490.85 | 1.41 | 136.32 | 1.21 |
| p1 | 330.15 | 1.00 | 74.00 | 4585.00 | 0.99 | 283.29 | 2893.28 | 1.32 | 124.24 | 2196.97 | 1.45 | 134.21 | 1594.55 | 1.51 | 140.57 | 1.23 |
| p2 | 325.93 | 0.99 | 74.00 | 4562.55 | 0.98 | 304.74 | 2850.95 | 1.30 | 128.69 | 1997.75 | 1.32 | 141.54 | 1476.95 | 1.40 | 149.62 | 1.18 |
| TILE_17 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 323.18 | 0.98 | 74.00 | 4596.48 | 0.99 | 247.31 | 2976.60 | 1.35 | 118.36 | 2170.95 | 1.43 | 129.64 | 1577.20 | 1.49 | 134.00 | 1.23 |
| p1 | 326.80 | 0.99 | 74.00 | 4575.18 | 0.99 | 285.26 | 2829.25 | 1.29 | 129.30 | 2046.12 | 1.35 | 142.88 | 1552.20 | 1.47 | 147.28 | 1.20 |
| p2 | 328.85 | 1.00 | 74.00 | 4570.55 | 0.98 | 295.16 | 2837.57 | 1.29 | 129.05 | 1986.38 | 1.31 | 142.87 | 1405.30 | 1.33 | 150.44 | 1.17 |
| TILE_18 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 329.90 | 1.00 | 73.80 | 4607.05 | 0.99 | 234.58 | 2920.65 | 1.33 | 122.19 | 2229.57 | 1.47 | 130.86 | 1617.20 | 1.53 | 137.45 | 1.24 |
| p1 | 328.20 | 0.99 | 74.00 | 4578.27 | 0.99 | 266.82 | 2860.43 | 1.30 | 127.05 | 2024.10 | 1.33 | 138.01 | 1512.88 | 1.43 | 143.60 | 1.19 |
| p2 | 325.95 | 0.99 | 74.00 | 4555.80 | 0.98 | 326.90 | 2815.00 | 1.28 | 130.95 | 1987.83 | 1.31 | 142.54 | 1397.03 | 1.32 | 151.98 | 1.16 |
| TILE_19 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 324.45 | 0.98 | 84.00 | 4621.73 | 1.00 | 229.75 | 2938.62 | 1.34 | 121.11 | 2161.68 | 1.42 | 130.95 | 1618.25 | 1.53 | 137.56 | 1.23 |
| p1 | 327.77 | 0.99 | 84.00 | 4561.88 | 0.98 | 278.81 | 2887.00 | 1.31 | 124.79 | 2071.15 | 1.36 | 132.66 | 1462.00 | 1.38 | 141.20 | 1.19 |
| p2 | 328.43 | 0.99 | 84.00 | 4543.18 | 0.98 | 310.31 | 2840.45 | 1.29 | 127.80 | 2114.35 | 1.39 | 135.97 | 1520.28 | 1.44 | 142.45 | 1.20 |
| TILE_20 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 331.10 | 1.00 | 84.00 | 4614.20 | 0.99 | 237.15 | 2957.28 | 1.34 | 119.12 | 2120.18 | 1.40 | 127.84 | 1589.47 | 1.50 | 131.41 | 1.23 |
| p1 | 325.02 | 0.98 | 84.00 | 4560.18 | 0.98 | 306.67 | 2881.25 | 1.31 | 124.80 | 2056.70 | 1.35 | 134.04 | 1475.60 | 1.39 | 138.99 | 1.19 |
| p2 | 325.95 | 0.99 | 84.00 | 4560.43 | 0.98 | 307.12 | 2811.55 | 1.28 | 130.01 | 2078.00 | 1.37 | 139.01 | 1583.33 | 1.50 | 142.26 | 1.20 |
| TILE_21 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 327.62 | 0.99 | 85.75 | 4615.00 | 0.99 | 228.81 | 2997.97 | 1.36 | 116.69 | 2206.25 | 1.45 | 126.74 | 1545.45 | 1.46 | 128.89 | 1.23 |
| p1 | 328.90 | 1.00 | 84.00 | 4585.18 | 0.99 | 267.15 | 2930.18 | 1.33 | 120.81 | 2187.95 | 1.44 | 128.13 | 1607.30 | 1.52 | 129.90 | 1.23 |
| p2 | 327.10 | 0.99 | 84.00 | 4541.45 | 0.98 | 324.05 | 2935.80 | 1.33 | 120.39 | 2098.85 | 1.38 | 129.76 | 1594.78 | 1.51 | 131.27 | 1.22 |
| TILE_22 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 328.15 | 0.99 | 85.25 | 4631.65 | 1.00 | 220.12 | 2986.95 | 1.36 | 117.64 | 2147.72 | 1.41 | 125.64 | 1525.72 | 1.44 | 131.55 | 1.22 |
| p1 | 334.38 | 1.01 | 84.00 | 4556.10 | 0.98 | 292.75 | 3007.12 | 1.37 | 115.33 | 2229.72 | 1.47 | 124.01 | 1688.55 | 1.60 | 128.02 | 1.26 |
| p2 | 327.95 | 0.99 | 84.00 | 4575.18 | 0.99 | 278.65 | 2873.38 | 1.31 | 125.75 | 2050.88 | 1.35 | 134.98 | 1459.92 | 1.38 | 140.97 | 1.19 |
| TILE_23 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 328.20 | 0.99 | 85.00 | 4624.12 | 1.00 | 225.55 | 2928.00 | 1.33 | 121.71 | 2193.57 | 1.44 | 127.45 | 1589.65 | 1.50 | 132.19 | 1.23 |
| p1 | 332.45 | 1.01 | 84.00 | 4604.73 | 0.99 | 245.72 | 2827.68 | 1.29 | 129.39 | 2075.15 | 1.37 | 133.09 | 1550.67 | 1.47 | 138.14 | 1.21 |

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| p2 | 330.73 | 1.00 | 84.00 | 4593.15 | 0.99 | 258.48 | 2888.80 | 1.31 | 124.47 | 2069.78 | 1.36 | 133.01 | 1472.65 | 1.39 | 138.81 | 1.20 |
| TILE_24 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 326.07 | 0.99 | 94.00 | 4611.27 | 0.99 | 237.06 | 3010.90 | 1.37 | 115.08 | 2230.70 | 1.47 | 123.97 | 1682.67 | 1.59 | 128.70 | 1.26 |
| p1 | 320.07 | 0.97 | 94.00 | 4593.50 | 0.99 | 256.13 | 2917.82 | 1.33 | 121.98 | 2081.70 | 1.37 | 131.29 | 1501.53 | 1.42 | 134.92 | 1.20 |
| p2 | 324.73 | 0.98 | 94.00 | 4563.90 | 0.98 | 300.31 | 2846.20 | 1.29 | 127.75 | 2096.68 | 1.38 | 138.03 | 1498.33 | 1.42 | 145.53 | 1.20 |
| TILE_25 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 328.35 | 0.99 | 90.25 | 4634.52 | 1.00 | 223.02 | 3033.38 | 1.38 | 113.80 | 2154.60 | 1.42 | 123.78 | 1614.62 | 1.53 | 128.46 | 1.24 |
| p1 | 323.30 | 0.98 | 84.00 | 4606.73 | 0.99 | 258.83 | 2930.65 | 1.33 | 121.01 | 2084.35 | 1.37 | 131.11 | 1492.12 | 1.41 | 136.30 | 1.20 |
| p2 | 328.20 | 0.99 | 84.00 | 4589.52 | 0.99 | 267.43 | 2847.00 | 1.29 | 127.75 | 2078.85 | 1.37 | 139.41 | 1559.92 | 1.47 | 145.83 | 1.21 |
| TILE_26 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 319.25 | 0.97 | 87.78 | 4619.93 | 1.00 | 219.35 | 2999.62 | 1.36 | 116.58 | 2139.15 | 1.41 | 126.11 | 1513.38 | 1.43 | 133.15 | 1.21 |
| p1 | 333.38 | 1.01 | 83.95 | 4604.62 | 0.99 | 263.01 | 3006.32 | 1.37 | 115.74 | 2209.05 | 1.45 | 125.78 | 1594.30 | 1.51 | 131.05 | 1.25 |
| p2 | 331.68 | 1.00 | 84.00 | 4556.15 | 0.98 | 295.31 | 2963.78 | 1.35 | 118.37 | 2124.68 | 1.40 | 126.97 | 1592.62 | 1.51 | 131.12 | 1.23 |
| TILE_27 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 325.65 | 0.99 | 86.25 | 4606.70 | 0.99 | 219.00 | 2966.45 | 1.35 | 119.19 | 2110.50 | 1.39 | 128.99 | 1499.70 | 1.42 | 134.99 | 1.21 |
| p1 | 328.45 | 0.99 | 84.00 | 4567.18 | 0.98 | 287.24 | 2879.45 | 1.31 | 125.71 | 2097.88 | 1.38 | 137.45 | 1581.12 | 1.49 | 142.85 | 1.21 |
| p2 | 325.40 | 0.99 | 84.00 | 4564.40 | 0.98 | 295.06 | 2892.95 | 1.32 | 124.20 | 2055.93 | 1.35 | 134.74 | 1460.58 | 1.38 | 141.50 | 1.19 |
| TILE_28 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 327.12 | 0.99 | 83.97 | 4637.82 | 1.00 | 211.32 | 3047.07 | 1.39 | 113.12 | 2264.60 | 1.49 | 120.65 | 1637.58 | 1.55 | 125.17 | 1.26 |
| p1 | 323.93 | 0.98 | 83.53 | 4586.23 | 0.99 | 252.66 | 2977.68 | 1.35 | 118.28 | 2129.70 | 1.40 | 126.87 | 1572.65 | 1.49 | 134.62 | 1.22 |
| p2 | 330.45 | 1.00 | 83.08 | 4589.93 | 0.99 | 265.72 | 2968.20 | 1.35 | 118.81 | 2130.55 | 1.40 | 126.99 | 1516.00 | 1.43 | 132.87 | 1.22 |
| TILE_29 | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | Actual | Ratio | QoS | GM |
| p0 | 330.73 | 1.00 | 87.75 | 4619.43 | 1.00 | 223.44 | 3027.40 | 1.38 | 114.64 | 2232.53 | 1.47 | 123.52 | 1689.60 | 1.60 | 128.16 | 1.26 |
| p1 | 330.05 | 1.00 | 92.00 | 4573.93 | 0.99 | 269.54 | 3032.35 | 1.38 | 113.92 | 2173.15 | 1.43 | 122.57 | 1556.12 | 1.47 | 126.86 | 1.23 |
| p2 | 324.77 | 0.98 | 94.00 | 4545.12 | 0.98 | 303.78 | 2939.22 | 1.34 | 121.12 | 2175.15 | 1.43 | 129.63 | 1574.55 | 1.49 | 134.46 | 1.22 |
| p0_score: | 36.98 | | | | | | | | | | | | | | | |
| p1_score: | 36.40 | | | | | | | | | | | | | | | |
| p2_score: | 36.06 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|---------|--|--|----------|--|--|--------|--|--|
| Infrastructure_Operations_Scores: | | | | | | | | | | vmotion | | | svmotion | | | deploy | | |
| Completed_Ops_PerHour | | | | | | | | | | 16.00 | | | 10.00 | | | 5.00 | | |
| Avg_Seconds_To_Complete | | | | | | | | | | 34.12 | | | 32.44 | | | 369.70 | | |
| Failures | | | | | | | | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Ratio | | | | | | | | | | 1.00 | | | 1.11 | | | 1.25 | | |
| Number_Of_Threads | | | | | | | | | | 1 | | | 1 | | | 1 | | |

| | | | | | | | | | | | | | | | | | |
|----------------|--|--|--|--|--|------------------|--|--|---------------------------------|--|--|--|--|--|------------------|--|--|
| Summary | | | | | | Run_Is_Compliant | | | Number_Of_Compliance_Issues(0)* | | | | | | Median_Phase(p1) | | |
|----------------|--|--|--|--|--|------------------|--|--|---------------------------------|--|--|--|--|--|------------------|--|--|

| | |
|--|-------|
| Unreviewed_VMmark2_Applications_Score | 36.40 |
| Unreviewed_VMmark2_Infrastructure_Score | 1.12 |
| Unreviewed_VMmark2_Score | 29.35 |

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 / Availability Date (MM-DD-YYYY) | VMware vCenter Server 5.0.0 Build 455964 / 08-24-2011 |
| Supplemental Software | none |
| Servers | |
| Quantity | 2 |
| Server Manufacturer and Model | HP ProLiant DL980 G7 |
| Processor Vendor and Model | Intel Xeon E7-4870 |
| Processor Speed (GHz) | 2.4 |
| Total Sockets/Total Cores/Total Threads | 8 Sockets / 80 Cores / 160 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 | P66 6/24/2011 |
| Memory Size (in GB, Number of DIMMs) | 1024GB, 64 |
| Memory Type and Speed | Quad rank 1066 MHz Registered ECC 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 | 2 |
| Host Bus Adapter Vendors and Models | HP StorageWorks 82Q PCIe Dual Port 8Gb FC HBA |

| | |
|---|--|
| Number of Network Controllers | 3 |
| Network Controller Vendors and Models | 1 x HP NC375i Quad Port Gigabit Server Adapter on board 2 x Intel X520-SR2 Dual Port Server Adapter |
| Other Hardware | none |
| Other Software | none |
| Hardware Availability Date (MM-DD-YYYY) | 06-01-2011 |
| Software Availability Date (MM-DD-YYYY) | 10-27-2011 |
| Network | |
| Network Switch Vendors and Models | 1 x HP ProCurve Switch 5406zl |
| Network Speed | 10 Gigabit for SUTs 1 Gigabit for vcenter server and prime client |
| Storage | |
| Array Vendors, Models, and Firmware Versions | 13 x StorageWorks P2000 firmware TS230P008 1 x Violin Memory Array 3210 10.5TB with formatted capacity of 5.2TB (50%) firmware A3.7.3-19248 1 x Violin Memory Array 3205 5.2TB with formatted capacity of 2.6TB (50%) firmware A3.7.2-18917 1 x Violin Gateway Server |
| Fibre Channel Switch Vendors and Models | HP StorageWorks SAN Switch 8/40 |
| Disk Space Used | 10365 GB |
| Array Cache Size | 2 GB |
| Total Number of Physical Disks Used | SUTs(DL980): 4 disks P2000s: 136 disks VMAs: 126 VIMMs |
| Total Number of Enclosures/Pods/Shelves Used | 15 |
| Number of Physical Disks Used per Enclosure/Pod/Shelf | SUT internal: 2 disks for each 1 x P2000: 24 disks 2 x P2000: 16 disks for each 10 x P2000: 8 disks for each 1 x VMA V3205: 42 1 x VMA V3210: 84 |
| Total Number of Storage Groups Used | 0 |
| Number of LUNs Used | 82 |
| LUN Size and Number of Disks Per LUN | Details in section Storage Notes |
| RAID Type | SUT: RAID1 P2000: RAID0 VMA: vRAID |

| | | |
|---|---|--|
| Number of Members per RAID Set | Details in section Storage Notes | |
| Disk Vendors, Models, and Speeds | 4 x HP 146GB 3G SAS 15K SFF DP HDD 136 x HP 146GB 6G SAS 15K SFF DP ENT HDD 126 x 128GB Violin Flash VIMMs | |
| Datacenter Management Server | | |
| System Model | HP ProLiant DL360 G5 | |
| Processor Vendor and Model | Intel Xeon E5450 | |
| Processor Speed (GHz) | 3.0 | |
| Total Sockets/Total Cores/Total Threads | 2 Sockets / 8 Cores / 8 Threads | |
| Memory | 8.0 GB | |
| Network Controller(s) Vendors and Models | 2 x HP NC373i embedded Gigabit adapters | |
| Operating System, Version, and Service Pack | Microsoft® Windows® 2008 Enterprise SP2 (64-bit) | |
| Other Hardware | none | |
| Other Software | none | |
| Clients | | |
| Number of Clients | 16 physical servers: - 1 physical server used for non-virtualized prime client - 15 physical servers used for hosting 30 virtual clients (2 virtual clients per physical server) | |
| System Model(s) | HP ProLiant DL360 G5 (prime client) HP ProLiant BL460c G6 (virtual client hosts) | |
| Processor Vendor(s) and Model(s) | Prime client: Intel Xeon E5450 Physical clients: Intel Xeon E5520 | |
| Processor Speed(s) (GHz) | Prime client: 3.00 Physical clients: 2.27 | |
| Total Sockets/Total Cores/Total Threads | Prime client: 2 Sockets / 8 Cores / 8 Threads Physical clients: 2 Sockets / 8 Cores / 8 Threads | |
| Memory per Client | Prime client: 8GB Physical clients: 32GB | |
| Network Controller(s) Vendors and Models | Prime client: 2 x HP NC373i embedded Gigabit adapters Physical clients: 2 x Broadcom Corporation NetXtreme II 57711E/NC532i 10Gigabit Ethernet | |
| Operating System, Version, and Service Pack | Prime client: Microsoft® Windows® 2003 Enterprise SP2 (32-bit) Physical clients: VMware ESXi 4.1.0 U2 Build 502767 Virtual clients: Microsoft® Windows® 2008 Enterprise R2 (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 (default vmxnet2)
- Logging was disabled for all VMs (default enabled)
- IDE and 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
- 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)
- Disk.SchedNumReqOutstanding = "256" (default 32)
- Mem.BalancePeriod = "0" (default 15)
- Mem.SamplePeriod = "0" (default 60)
- Mem.ShareScanGHz = "0" (default 4)
- Mem.VMOverheadGrowthLimit = "0" (default 4294967295)
- 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.NetTxWorldlet = "0" (default 2)
- Numa.AutoSplitVM = "0" (default 1)
- Numa.LTermFairnessInterval = "0" (default 5)
- Numa.MigThreshold = "4" (default 2)
- Numa.PreferHT = "1" (default 0)
- Numa.RebalancePeriod = "60000" (default 2000)
- Numa.SwapLoadEnable = "0" (default 1)
- Numa.SwapLocalityEnable = "0" (default 1)
- Vmkernel.netNetqueueEnabled = "FALSE" (default True)
- Vmkernel.pageSharing = "FALSE" (default True)

Driver Options:

- /vmkernel/module/qla2xxx.o/options = "ql2xmaxqdepth=256 ql2xintrdelaytimer=2 ql2xenablemsi=1" (default 32 0 0)
- /vmkernel/module/ixgbe.o/options = "VMDQ=1,1,1,1 InterruptThrottleRate=2000,2000,2000,2000" (default 8 and 16000)
- /vmkernel/module/ata_piix.o/enabled = "false" (default enabled)

Server Notes

Server BIOS settings:

- HP Power Regulator: HP Static High Performance Mode (default: Balanced Performance)
- Memory Power Capping: Disabled (default: Enabled)

- Thermal configuration: Increased Cooling (default: Optimal Cooling)
- HW Prefetcher: Disabled (default: Enabled)
- Adjacent Sector Prefetch Disabled (default: Enabled)
- Intel(R) SATA Controller #1 Disabled (default: Enabled)
- Intel Turbo Boost Technology up to 2.8 GHz (default: Enabled)

Networking Notes

- vSwitch0 for the Service Console on vmnic0 at 1 Gb/s
- vSwitch2 defined as vmkernel vMotion connection on vmnic5 (sut1 and sut2) at 10 Gb/s
 - MTU set to 9000 (default:1500)
- vSwitch1 for all VMs of tiles 0 1 6 7 12 13 18 19 24 25 on vmnic6(sut1 and sut2) at 10 Gb/s
- vSwitch3 for all VMs of tiles 2 3 8 9 14 15 20 21 26 27 on vmnic7(sut1 and sut2) at 10 Gb/s
- vSwitch4 for all VMs of tiles 4 5 10 11 16 17 22 23 28 29 and deploy VMs on vmnic4(sut1 and sut2) at 10 Gb/s

Storage Notes

- ESX was installed on two disks configured as RAID1 in the internal server storage bay
- VAAI plugin for the P2000 storage(version 1.0.0 <1 Jul 2011>) was installed in ESX
- VMW_PSP_FIXED Path Selection Policy was set for all LUNs
- 1 x P2000 contains 24 disks was configured with 5 LUNs and each LUN was striped across 6 disks
 - 2 x 120 GB LUNs for all standby VMs, one for even number VMs and one for odd number VMs (The 2 LUNs were created from the same vdisk, which was striped across 6 disks)
 - 3 x 60 GB LUNs for source deploy template LUN, target deploy LUN, and target storage vMotion LUN
- 12 x P2000, each contains 24 disks was configured with 3 LUNs and each LUN was striped across 8 disks
 - Each LUN contains a single mailserver VM
 - 2 x P2000 contain 2 x mailserver VMs (only 16 disks were being used)
 - 10 x p2000 contain 1 x mailserver VM (only 8 disks were being used)
- Violin Memory Array V3210
 - 16 x 180 GB LUNs for all OlioWeb VMs, 2 VMs per LUN
 - 15 x 35 GB LUNs for all OilODB VMs, 2 VMs per LUN
 - 8 x 180 GB LUNs for all DS2WebA, DS2WebB, DS2WebC VMs, 12 VMs per LUN
 - 2 x 168 GB LUNs contain 2 x mailserver VMs
 - 1 x 90 GB LUN contains 1 x mailserver VM
- Violin Memory Array V3205
 - 15 x 110 GB LUNs for all DS2DB VMs, 2 VMs per LUN
 - 5 x 168 GB LUNs contain 2 x mailserver VMs
 - 1 x 84 GB LUN contains 1 x mailserver VM

Datacenter Management Server Notes

None

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

- Microsoft® Exchange Server 2007 Enterprise SP3 (64-bit) was installed on each mailservr 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 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.
- All client operating systems were updated via Windows Update.

Other Notes

Prime client run on a dedicated, non-client machine.

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