

# VMmark® 3.1.1 Results

**Server Vendor & Model: Dell PowerEdge R760**  
**Storage Vendor & Model: Dell PowerMax 8000**  
**Hypervisor: VMware ESXi 8.0 Update 2, Build 22380479**  
**Datacenter Management Software: VMware vCenter Server 8.0 Update 2a, Build 22617221**

**VMmark 3.1.1 Score =  
25.34 @ 28 Tiles**

|  |  |   |
|--|--|---|
| Number of Hosts: 2                                 | Uniform Hosts [yes/no]: yes                            | Total sockets/cores/threads in test: 4/256/512      |
| Tested By: Dell Technologies                       |  | Test Date: 02-04-2024                               |
| Performance Section<br><a href="#">Performance</a> | Configuration Section<br><a href="#">Configuration</a> | Notes Section<br><a href="#">Notes for Workload</a> |

## Performance

|               | weathervane |       |                   | weathervaneE |       |                   | dvdstoreA |       |         | dvdstoreB |       |         | dvdstoreC |       |         |      |
|---------------|-------------|-------|-------------------|--------------|-------|-------------------|-----------|-------|---------|-----------|-------|---------|-----------|-------|---------|------|
| TILE_0        | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3572.56     | 0.99  | 0.94   0.00       | 568.35       | 0.99  | 0.65   0.51       | 879.45    | 1.20  | 1065.00 | 586.55    | 1.17  | 1315.49 | 397.57    | 1.15  | 1508.09 | 1.10 |
| <b>p1</b>     | 3563.32     | 0.99  | 0.86   0.00       | 560.58       | 0.98  | 0.51   0.26       | 874.20    | 1.19  | 1081.08 | 610.88    | 1.22  | 1294.63 | 438.10    | 1.26  | 1489.99 | 1.12 |
| <b>p2</b>     | 3550.10     | 0.99  | 0.87   0.00       | 556.84       | 0.97  | 0.42   0.19       | 883.92    | 1.20  | 1064.20 | 595.10    | 1.19  | 1289.30 | 398.12    | 1.15  | 1496.82 | 1.10 |
| <b>TILE_1</b> | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3570.96     | 0.99  | 0.95   0.00       | 563.59       | 0.98  | 0.42   0.21       | 921.50    | 1.25  | 919.99  | 629.50    | 1.26  | 1110.94 | 437.52    | 1.26  | 1237.21 | 1.14 |
| <b>p1</b>     | 3553.63     | 0.99  | 0.93   0.00       | 561.65       | 0.98  | 0.48   0.28       | 905.25    | 1.23  | 969.80  | 642.27    | 1.28  | 1144.56 | 467.50    | 1.35  | 1299.14 | 1.16 |
| <b>p2</b>     | 3534.37     | 0.98  | 0.95   0.00       | 559.67       | 0.98  | 0.51   0.31       | 919.83    | 1.25  | 937.98  | 621.52    | 1.24  | 1156.90 | 424.93    | 1.23  | 1307.55 | 1.13 |
| <b>TILE_2</b> | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3575.36     | 0.99  | 0.94   0.00       | 569.42       | 1.00  | 0.88   0.67       | 882.12    | 1.20  | 1065.98 | 587.10    | 1.17  | 1327.34 | 399.98    | 1.15  | 1484.87 | 1.10 |
| <b>p1</b>     | 3560.88     | 0.99  | 0.83   0.00       | 561.17       | 0.98  | 0.46   0.17       | 874.65    | 1.19  | 1082.09 | 611.85    | 1.22  | 1288.76 | 436.48    | 1.26  | 1466.84 | 1.12 |
| <b>p2</b>     | 3551.22     | 0.99  | 0.85   0.00       | 555.73       | 0.97  | 0.40   0.21       | 886.52    | 1.21  | 1059.13 | 591.42    | 1.18  | 1293.26 | 395.45    | 1.14  | 1519.14 | 1.09 |
| <b>TILE_3</b> | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3561.47     | 0.99  | 1.03   0.00       | 567.38       | 0.99  | 0.48   0.27       | 875.17    | 1.19  | 1085.73 | 578.90    | 1.16  | 1345.98 | 387.45    | 1.12  | 1569.68 | 1.09 |
| <b>p1</b>     | 3552.44     | 0.99  | 0.93   0.00       | 564.59       | 0.99  | 0.47   0.18       | 872.55    | 1.19  | 1075.92 | 608.12    | 1.22  | 1292.76 | 431.90    | 1.25  | 1503.03 | 1.12 |
| <b>p2</b>     | 3539.95     | 0.98  | 1.00   0.00       | 560.10       | 0.98  | 0.61   0.31       | 889.62    | 1.21  | 1035.90 | 595.52    | 1.19  | 1276.44 | 398.70    | 1.15  | 1475.89 | 1.10 |
| <b>TILE_4</b> | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3576.46     | 0.99  | 0.80   0.00       | 568.09       | 0.99  | 0.91   0.58       | 869.98    | 1.18  | 1106.88 | 574.10    | 1.15  | 1382.71 | 383.70    | 1.11  | 1618.89 | 1.08 |
| <b>p1</b>     | 3563.25     | 0.99  | 0.74   0.00       | 562.56       | 0.98  | 0.48   0.18       | 865.80    | 1.18  | 1107.65 | 604.83    | 1.21  | 1319.19 | 430.25    | 1.24  | 1515.16 | 1.11 |
| <b>p2</b>     | 3549.45     | 0.99  | 0.75   0.00       | 559.25       | 0.98  | 0.51   0.32       | 887.62    | 1.21  | 1042.52 | 591.23    | 1.18  | 1297.16 | 373.93    | 1.08  | 1538.05 | 1.08 |
| <b>TILE_5</b> | Actual      | Ratio | QoS(nRTI MaxPctF) | Actual       | Ratio | QoS(nRTI MaxPctF) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | Actual    | Ratio | QoS(ms) | GM   |
| <b>p0</b>     | 3568.87     | 0.99  | 0.95   0.00       | 569.73       | 1.00  | 0.74   0.42       | 917.88    | 1.25  | 941.90  | 619.60    | 1.24  | 1157.67 | 424.73    | 1.22  | 1317.04 | 1.13 |
| <b>p1</b>     | 3559.83     | 0.99  | 0.88   0.00       | 565.11       | 0.99  | 0.61   0.29       | 895.40    | 1.22  | 999.81  | 631.62    | 1.26  | 1189.99 | 458.65    | 1.32  | 1332.32 | 1.15 |

|                |         |       |                   |        |       |                   |        |       |         |        |       |         |        |       |         |      |
|----------------|---------|-------|-------------------|--------|-------|-------------------|--------|-------|---------|--------|-------|---------|--------|-------|---------|------|
| <b>p2</b>      | 3549.51 | 0.99  | 0.92   0.00       | 562.49 | 0.98  | 0.61   0.36       | 912.88 | 1.24  | 965.67  | 615.30 | 1.23  | 1182.34 | 397.60 | 1.15  | 1371.91 | 1.11 |
| <b>TILE_6</b>  | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3575.41 | 0.99  | 0.87   0.00       | 569.31 | 0.99  | 0.90   0.81       | 946.92 | 1.29  | 848.34  | 646.62 | 1.29  | 1041.08 | 437.25 | 1.26  | 1200.09 | 1.16 |
| <b>p1</b>      | 3557.79 | 0.99  | 0.82   0.00       | 566.50 | 0.99  | 0.81   0.58       | 927.48 | 1.26  | 895.29  | 662.48 | 1.32  | 1062.15 | 477.43 | 1.38  | 1219.11 | 1.18 |
| <b>p2</b>      | 3541.66 | 0.98  | 0.81   0.00       | 565.06 | 0.99  | 0.98   0.61       | 951.98 | 1.30  | 838.05  | 647.77 | 1.29  | 1025.36 | 419.88 | 1.21  | 1189.79 | 1.15 |
| <b>TILE_7</b>  | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3575.32 | 0.99  | 0.85   0.00       | 564.32 | 0.99  | 0.44   0.26       | 866.25 | 1.18  | 1125.95 | 575.62 | 1.15  | 1366.27 | 380.38 | 1.10  | 1633.70 | 1.08 |
| <b>p1</b>      | 3562.11 | 0.99  | 0.86   0.00       | 561.52 | 0.98  | 0.40   0.25       | 864.55 | 1.18  | 1105.25 | 600.90 | 1.20  | 1335.11 | 427.18 | 1.23  | 1535.72 | 1.11 |
| <b>p2</b>      | 3533.77 | 0.98  | 0.91   0.00       | 559.41 | 0.98  | 0.66   0.35       | 882.23 | 1.20  | 1059.39 | 588.98 | 1.18  | 1305.14 | 374.88 | 1.08  | 1513.48 | 1.08 |
| <b>TILE_8</b>  | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3582.07 | 1.00  | 0.91   0.00       | 569.39 | 1.00  | 1.10   0.77       | 881.52 | 1.20  | 1080.18 | 580.33 | 1.16  | 1352.18 | 385.85 | 1.11  | 1579.54 | 1.09 |
| <b>p1</b>      | 3566.68 | 0.99  | 0.83   0.00       | 569.61 | 1.00  | 0.89   0.59       | 870.52 | 1.19  | 1109.64 | 599.50 | 1.20  | 1350.42 | 405.18 | 1.17  | 1576.43 | 1.10 |
| <b>p2</b>      | 3546.54 | 0.99  | 0.85   0.00       | 565.33 | 0.99  | 0.75   0.40       | 886.17 | 1.21  | 1069.82 | 583.23 | 1.17  | 1336.98 | 381.23 | 1.10  | 1617.34 | 1.09 |
| <b>TILE_9</b>  | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3574.94 | 0.99  | 1.09   0.00       | 571.64 | 1.00  | 1.15   0.81       | 896.62 | 1.22  | 1002.71 | 614.45 | 1.23  | 1189.16 | 412.80 | 1.19  | 1379.10 | 1.12 |
| <b>p1</b>      | 3566.03 | 0.99  | 1.03   0.00       | 570.18 | 1.00  | 0.88   0.58       | 900.95 | 1.23  | 1000.11 | 622.08 | 1.24  | 1241.75 | 430.27 | 1.24  | 1416.69 | 1.13 |
| <b>p2</b>      | 3547.49 | 0.99  | 1.04   0.00       | 564.53 | 0.99  | 0.86   0.55       | 898.77 | 1.22  | 1017.42 | 587.58 | 1.17  | 1242.74 | 403.90 | 1.16  | 1447.13 | 1.10 |
| <b>TILE_10</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3581.92 | 1.00  | 0.91   0.00       | 571.35 | 1.00  | 0.94   0.75       | 862.08 | 1.17  | 1140.13 | 582.10 | 1.16  | 1363.03 | 398.43 | 1.15  | 1628.54 | 1.09 |
| <b>p1</b>      | 3573.04 | 0.99  | 0.83   0.00       | 570.60 | 1.00  | 0.88   0.45       | 879.90 | 1.20  | 1072.16 | 598.25 | 1.20  | 1354.16 | 405.77 | 1.17  | 1557.41 | 1.11 |
| <b>p2</b>      | 3558.58 | 0.99  | 0.85   0.00       | 569.25 | 0.99  | 0.93   0.69       | 870.42 | 1.19  | 1102.05 | 562.83 | 1.12  | 1352.56 | 381.65 | 1.10  | 1620.56 | 1.08 |
| <b>TILE_11</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3564.42 | 0.99  | 2.10   0.12       | 566.60 | 0.99  | 0.48   0.27       | 901.48 | 1.23  | 1001.90 | 616.17 | 1.23  | 1177.72 | 431.30 | 1.24  | 1385.45 | 1.13 |
| <b>p1</b>      | 3547.30 | 0.99  | 1.54   0.03       | 561.77 | 0.98  | 0.62   0.34       | 906.67 | 1.23  | 978.98  | 609.08 | 1.22  | 1205.78 | 430.75 | 1.24  | 1381.41 | 1.13 |
| <b>p2</b>      | 3526.49 | 0.98  | 1.63   0.06       | 553.88 | 0.97  | 0.45   0.23       | 905.38 | 1.23  | 995.33  | 605.65 | 1.21  | 1229.31 | 403.85 | 1.16  | 1444.62 | 1.11 |
| <b>TILE_12</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3562.03 | 0.99  | 1.04   0.01       | 562.77 | 0.98  | 0.53   0.18       | 855.42 | 1.16  | 1165.65 | 592.02 | 1.18  | 1414.03 | 393.38 | 1.13  | 1666.44 | 1.09 |
| <b>p1</b>      | 3549.19 | 0.99  | 0.91   0.00       | 561.27 | 0.98  | 0.48   0.14       | 869.90 | 1.18  | 1119.29 | 575.20 | 1.15  | 1388.76 | 396.98 | 1.14  | 1630.54 | 1.09 |
| <b>p2</b>      | 3534.48 | 0.98  | 0.91   0.00       | 556.17 | 0.97  | 0.40   0.11       | 865.20 | 1.18  | 1146.57 | 570.27 | 1.14  | 1407.83 | 377.20 | 1.09  | 1658.95 | 1.07 |
| <b>TILE_13</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3575.95 | 0.99  | 0.84   0.00       | 568.64 | 0.99  | 0.53   0.38       | 853.83 | 1.16  | 1174.60 | 589.75 | 1.18  | 1404.31 | 395.40 | 1.14  | 1647.86 | 1.09 |
| <b>p1</b>      | 3550.54 | 0.99  | 0.86   0.00       | 565.63 | 0.99  | 0.45   0.25       | 873.00 | 1.19  | 1091.64 | 588.80 | 1.18  | 1318.31 | 406.48 | 1.17  | 1559.28 | 1.10 |
| <b>p2</b>      | 3542.75 | 0.98  | 0.88   0.00       | 562.64 | 0.98  | 0.55   0.26       | 879.95 | 1.20  | 1092.19 | 584.45 | 1.17  | 1338.56 | 385.75 | 1.11  | 1575.95 | 1.09 |
| <b>TILE_14</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3573.16 | 0.99  | 0.87   0.00       | 566.37 | 0.99  | 0.50   0.22       | 866.73 | 1.18  | 1128.10 | 602.48 | 1.20  | 1365.54 | 400.05 | 1.15  | 1610.46 | 1.10 |
| <b>p1</b>      | 3557.98 | 0.99  | 0.80   0.00       | 563.72 | 0.99  | 0.41   0.18       | 873.83 | 1.19  | 1099.55 | 583.77 | 1.17  | 1343.61 | 402.35 | 1.16  | 1586.19 | 1.09 |
| <b>p2</b>      | 3538.15 | 0.98  | 0.81   0.00       | 564.51 | 0.99  | 0.63   0.38       | 872.30 | 1.19  | 1111.84 | 580.65 | 1.16  | 1372.12 | 379.43 | 1.09  | 1629.57 | 1.08 |

|                |         |       |                   |        |       |                   |        |       |         |        |       |         |        |       |         |      |
|----------------|---------|-------|-------------------|--------|-------|-------------------|--------|-------|---------|--------|-------|---------|--------|-------|---------|------|
| <b>TILE_15</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3574.31 | 0.99  | 0.94   0.00       | 563.52 | 0.98  | 0.47   0.33       | 854.08 | 1.16  | 1159.01 | 590.77 | 1.18  | 1398.72 | 395.15 | 1.14  | 1640.78 | 1.09 |
| <b>p1</b>      | 3551.81 | 0.99  | 0.88   0.00       | 561.85 | 0.98  | 0.45   0.27       | 873.70 | 1.19  | 1093.20 | 580.95 | 1.16  | 1343.42 | 405.52 | 1.17  | 1564.90 | 1.09 |
| <b>p2</b>      | 3533.85 | 0.98  | 0.95   0.00       | 561.94 | 0.98  | 0.49   0.34       | 876.08 | 1.19  | 1089.05 | 583.70 | 1.17  | 1341.86 | 385.45 | 1.11  | 1566.98 | 1.08 |
| <b>TILE_16</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3576.62 | 0.99  | 0.89   0.00       | 561.96 | 0.98  | 0.42   0.23       | 922.77 | 1.26  | 912.04  | 662.08 | 1.32  | 1079.21 | 449.98 | 1.30  | 1266.06 | 1.16 |
| <b>p1</b>      | 3565.89 | 0.99  | 0.87   0.00       | 560.69 | 0.98  | 0.36   0.07       | 921.40 | 1.25  | 923.71  | 628.65 | 1.26  | 1127.76 | 445.43 | 1.28  | 1292.85 | 1.14 |
| <b>p2</b>      | 3553.53 | 0.99  | 0.93   0.00       | 557.51 | 0.97  | 0.59   0.26       | 928.80 | 1.26  | 896.84  | 634.17 | 1.27  | 1094.45 | 430.68 | 1.24  | 1265.17 | 1.14 |
| <b>TILE_17</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3569.73 | 0.99  | 0.99   0.00       | 571.59 | 1.00  | 1.03   0.72       | 906.02 | 1.23  | 974.49  | 642.60 | 1.28  | 1169.47 | 430.95 | 1.24  | 1387.21 | 1.14 |
| <b>p1</b>      | 3556.54 | 0.99  | 0.91   0.00       | 564.23 | 0.99  | 0.90   0.60       | 907.45 | 1.24  | 976.35  | 612.70 | 1.22  | 1199.00 | 428.88 | 1.24  | 1385.07 | 1.13 |
| <b>p2</b>      | 3559.45 | 0.99  | 0.95   0.00       | 557.69 | 0.97  | 0.47   0.26       | 908.92 | 1.24  | 977.96  | 613.52 | 1.23  | 1198.12 | 409.27 | 1.18  | 1409.09 | 1.12 |
| <b>TILE_18</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3566.14 | 0.99  | 0.98   0.01       | 564.28 | 0.99  | 0.41   0.24       | 872.75 | 1.19  | 1121.39 | 606.88 | 1.21  | 1347.78 | 398.23 | 1.15  | 1639.99 | 1.10 |
| <b>p1</b>      | 3546.68 | 0.99  | 0.90   0.01       | 557.10 | 0.97  | 0.48   0.20       | 874.05 | 1.19  | 1093.97 | 585.67 | 1.17  | 1346.45 | 402.32 | 1.16  | 1610.33 | 1.09 |
| <b>p2</b>      | 3531.87 | 0.98  | 0.93   0.00       | 554.54 | 0.97  | 0.48   0.19       | 875.35 | 1.19  | 1094.27 | 584.15 | 1.17  | 1354.38 | 383.48 | 1.11  | 1611.88 | 1.08 |
| <b>TILE_19</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3574.93 | 0.99  | 1.07   0.00       | 548.51 | 0.96  | 0.61   0.18       | 913.62 | 1.24  | 955.17  | 647.40 | 1.29  | 1146.37 | 429.00 | 1.24  | 1378.27 | 1.14 |
| <b>p1</b>      | 3561.85 | 0.99  | 0.97   0.00       | 523.79 | 0.92  | 0.46   0.06       | 910.95 | 1.24  | 966.06  | 617.92 | 1.23  | 1175.18 | 428.88 | 1.24  | 1401.56 | 1.11 |
| <b>p2</b>      | 3546.42 | 0.99  | 1.02   0.00       | 508.74 | 0.89  | 0.61   0.10       | 910.83 | 1.24  | 970.69  | 621.02 | 1.24  | 1172.88 | 408.07 | 1.18  | 1426.07 | 1.10 |
| <b>TILE_20</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3553.99 | 0.99  | 0.87   0.00       | 571.67 | 1.00  | 0.88   0.54       | 920.88 | 1.25  | 921.56  | 652.42 | 1.30  | 1104.21 | 444.38 | 1.28  | 1284.11 | 1.16 |
| <b>p1</b>      | 3540.98 | 0.98  | 0.90   0.00       | 568.61 | 0.99  | 0.37   0.23       | 931.83 | 1.27  | 901.95  | 623.12 | 1.24  | 1134.09 | 441.10 | 1.27  | 1317.52 | 1.14 |
| <b>p2</b>      | 3527.17 | 0.98  | 0.94   0.01       | 565.84 | 0.99  | 0.53   0.29       | 913.17 | 1.24  | 934.98  | 631.02 | 1.26  | 1108.84 | 425.07 | 1.23  | 1291.27 | 1.13 |
| <b>TILE_21</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3568.31 | 0.99  | 0.83   0.00       | 556.01 | 0.97  | 0.51   0.22       | 901.42 | 1.23  | 1004.48 | 639.15 | 1.28  | 1190.55 | 426.80 | 1.23  | 1420.25 | 1.13 |
| <b>p1</b>      | 3554.23 | 0.99  | 0.83   0.00       | 555.67 | 0.97  | 0.41   0.09       | 912.52 | 1.24  | 973.27  | 608.67 | 1.22  | 1224.04 | 404.45 | 1.17  | 1442.45 | 1.11 |
| <b>p2</b>      | 3539.75 | 0.98  | 0.86   0.00       | 534.84 | 0.93  | 0.50   0.08       | 898.75 | 1.22  | 1016.59 | 614.35 | 1.23  | 1193.08 | 420.45 | 1.21  | 1467.05 | 1.11 |
| <b>TILE_22</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3571.22 | 0.99  | 0.96   0.01       | 566.60 | 0.99  | 0.43   0.24       | 875.77 | 1.19  | 1086.34 | 620.00 | 1.24  | 1273.24 | 428.12 | 1.23  | 1550.01 | 1.12 |
| <b>p1</b>      | 3552.87 | 0.99  | 0.95   0.00       | 567.42 | 0.99  | 0.47   0.19       | 901.48 | 1.23  | 1014.71 | 597.50 | 1.19  | 1281.18 | 398.15 | 1.15  | 1509.03 | 1.11 |
| <b>p2</b>      | 3534.46 | 0.98  | 1.00   0.00       | 559.84 | 0.98  | 0.52   0.32       | 882.00 | 1.20  | 1065.38 | 596.42 | 1.19  | 1279.45 | 409.60 | 1.18  | 1538.80 | 1.10 |
| <b>TILE_23</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3559.98 | 0.99  | 2.03   0.15       | 566.37 | 0.99  | 0.46   0.24       | 854.38 | 1.16  | 1145.01 | 604.52 | 1.21  | 1330.84 | 415.68 | 1.20  | 1606.92 | 1.11 |
| <b>p1</b>      | 3551.44 | 0.99  | 1.52   0.05       | 567.08 | 0.99  | 0.47   0.19       | 885.62 | 1.21  | 1039.41 | 573.12 | 1.15  | 1293.90 | 394.05 | 1.14  | 1508.39 | 1.09 |
| <b>p2</b>      | 3531.54 | 0.98  | 1.73   0.09       | 559.80 | 0.98  | 0.66   0.39       | 878.58 | 1.20  | 1077.74 | 616.60 | 1.23  | 1271.23 | 415.02 | 1.20  | 1488.96 | 1.11 |
| <b>TILE_24</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |

|                |         |       |                   |        |       |                   |        |       |         |        |       |         |        |       |         |      |
|----------------|---------|-------|-------------------|--------|-------|-------------------|--------|-------|---------|--------|-------|---------|--------|-------|---------|------|
| <b>p0</b>      | 3568.38 | 0.99  | 0.93   0.00       | 566.02 | 0.99  | 0.54   0.31       | 910.67 | 1.24  | 954.40  | 655.58 | 1.31  | 1102.63 | 461.30 | 1.33  | 1303.67 | 1.16 |
| <b>p1</b>      | 3555.21 | 0.99  | 0.89   0.00       | 565.51 | 0.99  | 0.51   0.24       | 920.48 | 1.25  | 932.19  | 603.50 | 1.21  | 1149.54 | 416.23 | 1.20  | 1366.12 | 1.12 |
| <b>p2</b>      | 3536.17 | 0.98  | 0.97   0.00       | 559.49 | 0.98  | 0.36   0.08       | 913.83 | 1.24  | 946.06  | 648.75 | 1.30  | 1126.76 | 439.62 | 1.27  | 1322.63 | 1.14 |
| <b>TILE_25</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3570.47 | 0.99  | 1.01   0.00       | 569.41 | 1.00  | 0.78   0.48       | 861.38 | 1.17  | 1125.45 | 601.83 | 1.20  | 1336.11 | 426.48 | 1.23  | 1542.17 | 1.11 |
| <b>p1</b>      | 3553.23 | 0.99  | 0.97   0.00       | 564.96 | 0.99  | 0.43   0.34       | 890.40 | 1.21  | 1031.26 | 602.83 | 1.20  | 1249.26 | 398.77 | 1.15  | 1488.27 | 1.10 |
| <b>p2</b>      | 3536.71 | 0.98  | 1.01   0.00       | 560.06 | 0.98  | 0.60   0.33       | 881.58 | 1.20  | 1060.41 | 619.70 | 1.24  | 1262.39 | 415.88 | 1.20  | 1499.85 | 1.11 |
| <b>TILE_26</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3570.23 | 0.99  | 0.55   0.00       | 566.34 | 0.99  | 0.47   0.20       | 924.62 | 1.26  | 905.90  | 663.35 | 1.33  | 1058.41 | 473.50 | 1.37  | 1233.34 | 1.17 |
| <b>p1</b>      | 3555.11 | 0.99  | 0.59   0.00       | 564.98 | 0.99  | 0.55   0.30       | 930.55 | 1.27  | 894.33  | 640.55 | 1.28  | 1085.08 | 426.80 | 1.23  | 1279.60 | 1.14 |
| <b>p2</b>      | 3543.22 | 0.98  | 0.57   0.00       | 559.12 | 0.98  | 0.48   0.28       | 924.42 | 1.26  | 905.63  | 661.77 | 1.32  | 1074.48 | 450.65 | 1.30  | 1254.11 | 1.16 |
| <b>TILE_27</b> | Actual  | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(nRTI MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM   |
| <b>p0</b>      | 3569.95 | 0.99  | 0.86   0.00       | 566.44 | 0.99  | 0.60   0.35       | 915.73 | 1.25  | 944.75  | 653.75 | 1.31  | 1122.49 | 461.82 | 1.33  | 1316.82 | 1.16 |
| <b>p1</b>      | 3557.93 | 0.99  | 0.82   0.00       | 565.49 | 0.99  | 0.43   0.17       | 929.58 | 1.27  | 916.95  | 627.95 | 1.25  | 1124.05 | 417.57 | 1.20  | 1354.29 | 1.13 |
| <b>p2</b>      | 3539.39 | 0.98  | 0.88   0.00       | 557.73 | 0.97  | 0.55   0.32       | 911.05 | 1.24  | 963.50  | 645.90 | 1.29  | 1145.60 | 437.50 | 1.26  | 1355.33 | 1.14 |

|                  |       |
|------------------|-------|
| <b>p0_score:</b> | 31.35 |
| <b>p1_score:</b> | 31.34 |
| <b>p2_score:</b> | 30.96 |

| <b>Infrastructure_Operations_Scores:</b> | vMotion | SVMotion | XVMotion | Deploy |
|--|---------|----------|----------|--------|
| <b>Completed_Ops_PerHour</b>             | 28.50   | 28.00    | 23.00    | 12.00  |
| <b>Avg_Seconds_To_Complete</b>           | 4.26    | 72.76    | 91.10    | 258.39 |
| <b>Failures</b>                          | 0.00    | 0.00     | 0.00     | 0.00   |
| <b>Ratio</b>                             | 1.10    | 1.56     | 1.28     | 1.50   |
| <b>Number_Of_Threads</b>                 | 1       | 1        | 1        | 1      |

|  |                                 |                  |
|--|---------------------------------|------------------|
| <b>Summary</b>                                 | Run_Is_Compliant                | Turbo_Setting:0  |
|  | Number_Of_Compliance_Issues(0)* | Median_Phase(p1) |
| <b>Unreviewed_VMmark3_Applications_Score</b>   | 31.34                           |                  |
| <b>Unreviewed_VMmark3_Infrastructure_Score</b> | 1.34                            |                  |
| <b>Unreviewed_VMmark3_Score</b>                | 25.34                           |                  |

## Configuration

| <b>Virtualization Software</b>  |   |
|---|---|
| Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY) | VMware ESXi 8.0 Update 2, Build 22380479 / 09-21-2023 |

|   |  |
|---|--|
| Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY) | VMware vCenter Server 8.0 Update 2a, Build 22617221 / 10-26-2023 |
| Supplemental Software   | None   |
| <b>Servers</b>  |  |
| Number of Servers in System Under Test (all subsequent fields in this section are per server)       | 2  |
| Server Manufacturer and Model   | Dell PowerEdge R760  |
| Processor Vendor and Model  | Intel Xeon Platinum 8592+  |
| Processor Speed (GHz) / Turbo Boost Speed (GHz)   | 1.90 / 3.90  |
| Total Sockets/Total Cores/Total Threads   | 2 Sockets / 128 Cores / 256 Threads                              |
| Primary CPU Cache   | 32 KB I + 48KB D on chip per core                                |
| Secondary CPU Cache   | 2 MB I+D on chip per core  |
| Other CPU Cache   | 320 MB I+D on chip per chip                                      |
| BIOS Version  | 2.1.2  |
| Memory Size (in GB, Number of DIMMs)  | 2048,16  |
| Memory Type and Speed   | 128GB 4Rx4 DDR5 5600 MT/s 3DS RDIMMs                             |
| Disk Subsystem Type   | FC SAN   |
| Number of Disk Controllers  | 1  |
| Disk Controller Vendors and Models  | Dell BOSS-N1 Monolithic  |
| Total Number of Physical Disks for Hypervisor   | 2  |
| Disk Vendors, Models, Capacities, and Speeds  | Dell NVMe PE8010 RI M.2 480GB - RAID 1                           |
| Number of Host Bus Adapters   | 1  |
| Host Bus Adapter Vendors and Models   | Emulex LPe36002-M64-D 2-Port 64Gb Fibre Channel Adapter          |
| Number of Network Controllers   | 1  |
| Network Controller Vendors and Models   | Mellanox ConnectX-6 Dx Dual Port 100 GbE QSFP56 Adapter          |
| Other Hardware  | None   |
| Other Software  | None   |
| Hardware Availability Date (MM-DD-YYYY)   | 02-05-2024   |

|  |  |
|--|--|
| BIOS Availability Date (MM-DD-YYYY)                                    | 03-11-2024   |
| Software Availability Date (MM-DD-YYYY)                                | 09-21-2023   |
| <b>Network</b>   |  |
| Network Switch Vendors and Models                                      | 1xDell EMC Z9432F-ON switch  |
| Network Speed  | <ul style="list-style-type: none"> <li>• 1x100Gbps for Management and vMotion</li> <li>• 1x100Gbps for all workload VMs</li> </ul>   |
| <b>Primary Storage</b>   |  |
| Storage Category   | FC-SAN   |
| Storage Vendors, Models, and Firmware Versions                         | Dell PowerMax 8000   |
| Storage Configuration Summary  | FC-SAN Switch<br>1 x Connectrix DS6620B 32 Gb FC Switch<br><br><ul style="list-style-type: none"> <li>• 28x1TB for each of the Tiles</li> <li>• 1TB for Deploy Operations</li> <li>• 4x2TB for svMotion and xvMotion</li> <li>• 2x5TB for DS3WebA and Standby VMs</li> <li>• 1x1TB for template</li> </ul> |
| <b>Datacenter Management Server</b>                                    |  |
| System Model   | Dell PowerEdge R7625   |
| Processor Vendor and Model   | AMD EPYC 9554  |
| Processor Speed (GHz)  | 3.1  |
| Total Sockets/Total Cores/Total Threads                                | 2 Sockets / 128 Cores / 256 Threads  |
| Memory Size (in GB, Number of DIMMs)                                   | 1536, 24   |
| Network Controller(s) Vendors and Models                               | Broadcom BCM57508 2x100G QSFP PCIE   |
| Operating System, Version, Bitness, and Service Pack                   | VMware ESXi 8.0 Update 2 Build 22380479  |
| Virtual Center VM Number of vCPUs                                      | 8  |
| Virtual Center VM Virtual Memory (in GB)                               | 30   |
| Virtual Center VM Operating System, Version, Bitness, and Service Pack | VMware vCenter Server 8.0 Update 2a, Build 22617221  |
| Other Hardware   | None   |
| Other Software   | None   |

| Clients  |  |
|--|--|
| Total Number of Virtual Clients / Virtual Client Hosts | 29 / 4   |
| System Model(s)  | 4 x Dell PowerEdge R7625                               |
| Processor Vendor(s) and Model(s)                       | AMD EPYC 9554  |
| Processor Speed(s) (GHz)                               | 3.1GHz   |
| Total Sockets/Total Cores/Total Threads                | 2 Sockets/128 Cores/256 Threads                        |
| Memory per Virtual Client Host                         | 1536 GB  |
| Network Controller(s) Vendors and Models               | Broadcom BCM57508 2x100G QSFP PCIE                     |
| Virtual Client Networking Notes                        | vSwitch0 for Management and Client VMs at 100Gbps      |
| Virtual Client Storage Notes                           | All Virtual Clients are stored on local server storage |
| Other Hardware   | None   |
| Other Software   | None   |

| Security Mitigations |           |              |                            |                 |      |          |
|----------------------|-----------|--------------|----------------------------|-----------------|------|----------|
| Vulnerability        | CVE       | Exploit Name | Public Vulnerability Name  | Mitigated       |      |          |
|                      |           |              |                            | Server Firmware | ESXi | Guest OS |
| Spectre              | 2017-5753 | Variant 1    | Bounds Check Bypass        | N/A             | Yes  | Yes      |
| Spectre              | 2017-5715 | Variant 2    | Branch Target Injection    | Yes             | Yes  | Yes      |
| Meltdown             | 2017-5754 | Variant 3    | Rogue Data Cache Load      | N/A             | Yes  | Yes      |
| Spectre-NG           | 2018-3640 | Variant 3a   | Rogue System Register Read | Yes             | N/A  | N/A      |
| Spectre-NG           | 2018-3639 | Variant 4    | Speculative Store Bypass   | N/A             | Yes  | Yes      |
| Foreshadow           | 2018-3615 | Variant 5    | L1 Terminal Fault - SGX    | N/A             | N/A  | N/A      |
| Foreshadow-NG        | 2018-3620 | Variant 5    | L1 Terminal Fault - OS     | N/A             | N/A  | Yes      |
| Foreshadow-NG        | 2018-3646 | Variant 5    | L1 Terminal Fault - VMM    | N/A             | Yes  | N/A      |

## Notes for Workload

Template deployed with disk type: Thin

## Virtualization Software Notes

- Logical CPU configuration changed for all multi-CPU VMs to 1 socket with multiple cores (default single core per socket)
- CPU shares set to high for all DS3DB, ElasticDB and ElasticLB VMs (default normal)
- Memory shares set to high for all DS3DB VMs (default normal)

- CDROM removed from all VMs except Prime Client, client and template VMs
- All memory reserved for DS3DB VMs (default non-reserved)
- CPU shares set to low for all Standby VMs (default normal)
- vSphere DRS Migration Threshold set to Fully Automated level 2
- sched.mem.pin set to TRUE for all DS3DB VMs (default False)
- Third virtual disk removed from DS3DB0 before cloning DS3DB VMs for other tiles
- vSphere DRS Advanced Option AggressiveCPUActive set to 1
- Logging disabled for all VMs except Prime Client and template VMs ( default enabled)
- sched.mem.lpage.enable1GPage was set to TRUE for all DS3DB VMs (default FALSE)
- Prime Client's second virtual disk configured to be 1.2TB (default 200GB)

### **SUT Advanced Settings:**

- Cpu.CreditAgePeriod = 1000 (default 3000)
- Cpu.CoschedCrossCall = 0 (default 1)
- Cpu.HTWholeCoreThreshold = 0 (default 800)
- DataMover.HardwareAcceleratedInit = 0 (default 1)
- DataMover.HardwareAcceleratedMove = 0 (default 1)
- Disk.IdleCredit = 64 (default 32)
- Disk.ReqCallThreshold = 1 (default 8)
- Mem.CtlMaxPercent = 0 (default 65)
- Mem.ShareScanGHz = 0 (default 4)
- Numa.LTermFairnessInterval = 0 (default 5)
- Numa.LargeInterleve = 0 (default 1)
- Numa.LocalityWeightActionAffinity = 0 (default 130)
- Numa.MigImbalanceThreshold = 57 (default 10)
- Numa.MigPreventLTermThresh = 20 (default 0)
- Numa.MigThreshold = 0 (default 2)
- Numa.MonMigEnable = 0 (default 1)
- Numa.PageMigEnable = 0 (default 1)
- Numa.RebalancePeriod = 60000 (default 2000)
- Numa.SwapLoadEnable = 0 (default 1)
- Numa.SwapLocalityEnable = 0 (default 1)
- VMkernel.Boot.hyperthreadingMitigation = true (default false)
- UserVars.HostClientCEIPOptIn = 2 (default 0)
- Power.CpuPolicy = High Performance (default Balanced)
- Numa.PreferHT = 1 (default 0)
- UserVars.SuppressShellWarning = 1 (default 0)

### **Server Notes**

Server BIOS Settings:

- Fan speed Offset = Maximum (default off)
- Optimizer mode = Enabled (default Auto)
- Memory Patrol Scrub = Disabled (default enabled)
- System Profile Settings = Custom (default Performance Per Watt (DAPC))

### **Networking Notes**

#### **SUT cluster - vSwitch Configuration**

- vSwitch0 for Management, vMotion vmnic4 at 100Gbps



- vSwitch1 for all workload VMs on vmnic5 at 100Gbps
- All vSwitches, vmnic4, vmnic5, vmk0 and vmk1 have MTU set to 9000 (default 1500)

## Storage Notes

SUT - OS installed on Dell NVMe PE8010 RI M.2 480GB - RAID 1

Dell PowerMax 8000

- Number of Directors:2
- Dell PowerMax OS 5978.479.479
- Single Default Storage Resource Pool(SRP) with 2x Disk Groups (factory pre-configured)
  - Disk Group 1:9x750 GB Intel SSDs configured in RAID 5(7+1) with one spare drive (Usable Capacity 4880.9 GiB)
  - Disk Group 2:25x7.68 TB Samsung NVMe drives configured in RAID 5(7+1) with one spare drive (Usable Capacity 150217.6 GiB)
- Following User Defined Storage Groups were created using the TDEVs
  - 28x1TB for each of the Tiles
  - 1TB for Deploy Operations
  - 4x2TB for svMotion and xvMotion
  - 2x5TB for DS3WebA and Standby VMs
  - 1x1TB for template
- Round Robin IOPS limit set to 1 for all FC LUNS (default:1000)

## Datacenter Management Server Notes

None

## Operating System Notes

The SUT hosts used Dell customized ESXi 8.0 Update 2 ISO (VMware-VMvisor-Installer-8.0.0.update02-22380479.x86\_64-Dell\_Customized-A00.iso)for OS installation

## Software Notes

None

## Client Notes

Client Host Advanced Settings:

- UserVars.HostClientCEIPOptIn = 1 (default 0)
- UserVars.SuppressShellWarning = 1 (default 0)

The Client VMs were distributed across the client hosts as follows:

- Client11:Client0 - Client6
- Client12:Client7 - Cient 13 and VMware vCenter Server
- Client13:Client14 - Client20
- Client14:Client21 - Client27 and Prime Client

## Client cluster - vSwitch Configuration

- vSwitch0 for Management, Prime Client and all client VMs on vmnic0 and vmnic1 at 100Gbps
- All vSwitches, vmnic0, vmnic1, vmk0 and vmk1 have MTU set to 9000 (default 1500)

## Other Notes

Changes to VMmark3.properties file:

- TileDelay=5 (default 60)
- StafMaxThreads was set to 100

The PrimeClient VM STAF.cfg was modified as follows:

- "CONNECTTIMEOUT=10000" was added as follows:

"interface ssl library STAFTCP option Secure=Yes option CONNECTTIMEOUT=10000 option Port=6550"

- "SET CONNECTATTEMPTS 5 CONNECTRETRYDELAY 2s" was added as a new line to STAF.cfg

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