

VMmark® 3.1.1 Results

Server Vendor & Model: Dell PowerEdge R7525
Storage Vendor & Model: Dell PowerMax 8000
Hypervisor: VMware ESXi 7.0 U2a, Build 17867351
Datacenter Management Software: VMware vCenter Server 7.0 U1c Build 17327586

VMmark 3.1.1 Server PPKW Score =
10.3390 @ 24 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: 08-12-2022 |
| Performance Section Performance | Configuration Section Configuration | Notes Section Notes for Workload |

Performance

| | weathervane | | | weathervaneE | | | dvdstoreA | | | dvdstoreB | | | dvdstoreC | | | |
|--------|-------------|-------|------------------|--------------|-------|------------------|-----------|-------|---------|-----------|-------|---------|-----------|-------|---------|------|
| TILE_0 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3579.41 | 0.99 | 0.85 0.00 | 569.55 | 1.00 | 1.05 0.65 | 883.58 | 1.20 | 991.47 | 631.92 | 1.26 | 1162.76 | 444.38 | 1.28 | 1282.88 | 1.14 |
| p1 | 3568.96 | 0.99 | 0.81 0.00 | 563.04 | 0.98 | 0.53 0.35 | 894.80 | 1.22 | 955.78 | 617.30 | 1.23 | 1132.22 | 445.32 | 1.28 | 1264.90 | 1.14 |
| p2 | 3563.82 | 0.99 | 0.80 0.00 | 556.41 | 0.97 | 0.68 0.34 | 894.25 | 1.22 | 963.89 | 617.98 | 1.23 | 1125.90 | 427.50 | 1.23 | 1261.14 | 1.12 |
| TILE_1 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3576.93 | 0.99 | 0.95 0.01 | 565.21 | 0.99 | 0.89 0.56 | 951.08 | 1.30 | 793.93 | 719.58 | 1.44 | 907.59 | 513.77 | 1.48 | 1009.97 | 1.22 |
| p1 | 3559.35 | 0.99 | 0.92 0.01 | 562.87 | 0.98 | 0.50 0.21 | 962.20 | 1.31 | 764.70 | 654.62 | 1.31 | 884.33 | 474.45 | 1.37 | 994.71 | 1.18 |
| p2 | 3541.04 | 0.98 | 0.87 0.00 | 561.91 | 0.98 | 0.67 0.38 | 957.42 | 1.30 | 759.90 | 703.60 | 1.41 | 873.47 | 496.70 | 1.43 | 982.83 | 1.20 |
| TILE_2 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3573.36 | 0.99 | 0.81 0.00 | 568.02 | 0.99 | 0.68 0.36 | 960.42 | 1.31 | 768.13 | 698.80 | 1.40 | 887.23 | 514.27 | 1.48 | 999.95 | 1.22 |
| p1 | 3546.89 | 0.99 | 0.82 0.00 | 565.12 | 0.99 | 0.43 0.17 | 961.35 | 1.31 | 757.66 | 680.67 | 1.36 | 887.82 | 467.75 | 1.35 | 1011.89 | 1.19 |
| p2 | 3539.19 | 0.98 | 0.87 0.01 | 563.94 | 0.99 | 0.56 0.26 | 943.40 | 1.28 | 799.58 | 695.88 | 1.39 | 905.03 | 492.62 | 1.42 | 1008.58 | 1.20 |
| TILE_3 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3566.47 | 0.99 | 0.95 0.01 | 568.69 | 0.99 | 0.89 0.54 | 945.42 | 1.29 | 800.80 | 690.73 | 1.38 | 923.56 | 490.65 | 1.41 | 1023.40 | 1.20 |
| p1 | 3556.70 | 0.99 | 0.86 0.01 | 564.27 | 0.99 | 0.38 0.25 | 954.23 | 1.30 | 773.20 | 651.40 | 1.30 | 905.27 | 468.95 | 1.35 | 1019.32 | 1.17 |
| p2 | 3547.13 | 0.99 | 0.83 0.00 | 561.40 | 0.98 | 0.61 0.31 | 946.08 | 1.29 | 791.16 | 691.33 | 1.38 | 914.10 | 515.70 | 1.49 | 1001.15 | 1.21 |
| TILE_4 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3574.97 | 0.99 | 0.99 0.00 | 566.25 | 0.99 | 0.69 0.37 | 893.92 | 1.22 | 970.35 | 612.05 | 1.22 | 1149.42 | 442.10 | 1.27 | 1304.87 | 1.13 |
| p1 | 3562.62 | 0.99 | 0.96 0.00 | 565.86 | 0.99 | 0.64 0.34 | 899.00 | 1.22 | 954.29 | 613.75 | 1.23 | 1140.47 | 421.98 | 1.22 | 1298.52 | 1.12 |
| p2 | 3557.98 | 0.99 | 0.91 0.00 | 562.68 | 0.98 | 0.47 0.19 | 895.42 | 1.22 | 965.42 | 635.20 | 1.27 | 1143.15 | 443.18 | 1.28 | 1281.41 | 1.14 |
| TILE_5 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3576.92 | 0.99 | 0.98 0.01 | 567.16 | 0.99 | 0.71 0.37 | 978.55 | 1.33 | 714.72 | 690.98 | 1.38 | 828.89 | 488.52 | 1.41 | 915.69 | 1.21 |
| p1 | 3567.49 | 0.99 | 0.89 0.00 | 562.44 | 0.98 | 0.52 0.14 | 975.17 | 1.33 | 723.99 | 695.77 | 1.39 | 820.93 | 510.40 | 1.47 | 918.95 | 1.22 |

| | | | | | | | | | | | | | | | | |
|----------------|---------|-------|------------------|--------|-------|------------------|--------|-------|---------|--------|-------|---------|--------|-------|---------|------|
| p2 | 3546.25 | 0.99 | 0.86 0.00 | 560.77 | 0.98 | 0.59 0.31 | 962.20 | 1.31 | 751.22 | 685.08 | 1.37 | 857.61 | 503.88 | 1.45 | 946.20 | 1.20 |
| TILE_6 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3575.00 | 0.99 | 1.09 0.00 | 565.58 | 0.99 | 0.57 0.40 | 974.10 | 1.33 | 727.30 | 687.42 | 1.37 | 845.56 | 483.05 | 1.39 | 937.70 | 1.20 |
| p1 | 3559.55 | 0.99 | 1.03 0.01 | 561.03 | 0.98 | 0.70 0.42 | 963.42 | 1.31 | 750.70 | 710.40 | 1.42 | 849.08 | 503.40 | 1.45 | 952.05 | 1.21 |
| p2 | 3538.46 | 0.98 | 1.04 0.01 | 556.40 | 0.97 | 0.54 0.28 | 966.83 | 1.32 | 752.21 | 678.17 | 1.35 | 879.92 | 499.62 | 1.44 | 955.31 | 1.20 |
| TILE_7 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3574.73 | 0.99 | 0.95 0.01 | 568.58 | 0.99 | 0.60 0.25 | 969.58 | 1.32 | 740.02 | 684.00 | 1.37 | 856.06 | 459.77 | 1.33 | 959.10 | 1.19 |
| p1 | 3556.70 | 0.99 | 0.84 0.00 | 561.94 | 0.98 | 0.51 0.25 | 973.80 | 1.33 | 730.55 | 715.25 | 1.43 | 829.73 | 532.45 | 1.54 | 911.31 | 1.23 |
| p2 | 3539.44 | 0.98 | 0.84 0.00 | 560.22 | 0.98 | 0.42 0.14 | 960.77 | 1.31 | 756.64 | 653.27 | 1.31 | 890.36 | 472.75 | 1.36 | 987.81 | 1.18 |
| TILE_8 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3579.63 | 0.99 | 0.67 0.00 | 566.26 | 0.99 | 0.79 0.45 | 966.60 | 1.32 | 742.42 | 680.35 | 1.36 | 869.93 | 481.65 | 1.39 | 958.55 | 1.20 |
| p1 | 3564.07 | 0.99 | 0.64 0.00 | 566.45 | 0.99 | 0.63 0.18 | 959.58 | 1.31 | 752.54 | 697.42 | 1.39 | 880.40 | 525.70 | 1.52 | 948.57 | 1.22 |
| p2 | 3546.23 | 0.99 | 0.70 0.00 | 562.79 | 0.98 | 0.52 0.22 | 967.67 | 1.32 | 757.05 | 676.40 | 1.35 | 899.02 | 472.93 | 1.36 | 997.81 | 1.19 |
| TILE_9 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3574.45 | 0.99 | 0.92 0.00 | 568.49 | 0.99 | 0.72 0.39 | 965.35 | 1.31 | 745.21 | 680.58 | 1.36 | 873.34 | 478.02 | 1.38 | 962.80 | 1.19 |
| p1 | 3556.20 | 0.99 | 0.87 0.01 | 565.26 | 0.99 | 0.54 0.28 | 969.85 | 1.32 | 740.83 | 708.25 | 1.42 | 857.38 | 507.80 | 1.46 | 931.04 | 1.22 |
| p2 | 3549.48 | 0.99 | 0.90 0.00 | 560.49 | 0.98 | 0.46 0.16 | 961.33 | 1.31 | 771.06 | 651.65 | 1.30 | 902.58 | 471.68 | 1.36 | 1004.92 | 1.18 |
| TILE_10 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3575.46 | 0.99 | 0.73 0.00 | 570.73 | 1.00 | 1.31 0.98 | 950.02 | 1.29 | 786.86 | 693.90 | 1.39 | 905.76 | 492.70 | 1.42 | 1000.64 | 1.20 |
| p1 | 3561.95 | 0.99 | 0.72 0.01 | 566.00 | 0.99 | 0.83 0.50 | 950.42 | 1.29 | 800.81 | 655.65 | 1.31 | 960.59 | 483.27 | 1.39 | 1052.09 | 1.18 |
| p2 | 3554.34 | 0.99 | 0.75 0.00 | 562.94 | 0.98 | 0.68 0.49 | 952.70 | 1.30 | 801.31 | 659.38 | 1.32 | 953.71 | 460.00 | 1.33 | 1062.92 | 1.17 |
| TILE_11 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3571.40 | 0.99 | 0.69 0.01 | 571.47 | 1.00 | 0.88 0.53 | 951.90 | 1.30 | 781.90 | 696.83 | 1.39 | 892.98 | 491.35 | 1.42 | 993.39 | 1.20 |
| p1 | 3561.38 | 0.99 | 0.66 0.00 | 567.48 | 0.99 | 0.59 0.39 | 967.55 | 1.32 | 744.95 | 677.77 | 1.35 | 875.99 | 499.12 | 1.44 | 960.06 | 1.20 |
| p2 | 3543.60 | 0.98 | 0.69 0.00 | 565.87 | 0.99 | 0.53 0.25 | 967.58 | 1.32 | 736.20 | 684.80 | 1.37 | 856.29 | 478.27 | 1.38 | 952.91 | 1.19 |
| TILE_12 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3568.04 | 0.99 | 1.03 0.00 | 566.53 | 0.99 | 0.88 0.61 | 877.73 | 1.20 | 1009.18 | 628.83 | 1.26 | 1170.65 | 462.12 | 1.33 | 1295.40 | 1.14 |
| p1 | 3546.37 | 0.99 | 1.02 0.00 | 563.10 | 0.98 | 0.63 0.40 | 899.42 | 1.22 | 948.24 | 619.48 | 1.24 | 1119.15 | 423.73 | 1.22 | 1277.36 | 1.12 |
| p2 | 3542.55 | 0.98 | 0.96 0.00 | 561.79 | 0.98 | 0.54 0.29 | 886.08 | 1.21 | 981.45 | 637.33 | 1.27 | 1148.53 | 444.10 | 1.28 | 1292.20 | 1.14 |
| TILE_13 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3566.92 | 0.99 | 0.69 0.00 | 566.04 | 0.99 | 0.64 0.44 | 863.55 | 1.18 | 1056.22 | 610.02 | 1.22 | 1241.09 | 444.90 | 1.28 | 1393.44 | 1.13 |
| p1 | 3559.27 | 0.99 | 0.67 0.00 | 563.96 | 0.99 | 0.50 0.21 | 875.80 | 1.19 | 1026.35 | 575.55 | 1.15 | 1229.32 | 391.43 | 1.13 | 1386.42 | 1.09 |
| p2 | 3530.25 | 0.98 | 0.71 0.01 | 559.07 | 0.98 | 0.64 0.48 | 866.75 | 1.18 | 1054.34 | 638.70 | 1.28 | 1230.17 | 446.30 | 1.29 | 1382.38 | 1.13 |
| TILE_14 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |
| p0 | 3577.03 | 0.99 | 1.84 0.10 | 566.11 | 0.99 | 0.97 0.57 | 969.85 | 1.32 | 743.02 | 681.88 | 1.36 | 860.54 | 503.05 | 1.45 | 947.51 | 1.21 |
| p1 | 3558.08 | 0.99 | 1.95 0.09 | 560.23 | 0.98 | 0.58 0.29 | 979.50 | 1.33 | 717.34 | 690.05 | 1.38 | 843.19 | 483.75 | 1.39 | 922.89 | 1.20 |
| p2 | 3537.04 | 0.98 | 1.64 0.07 | 557.96 | 0.98 | 0.66 0.29 | 975.70 | 1.33 | 724.15 | 713.88 | 1.43 | 837.59 | 531.38 | 1.53 | 911.86 | 1.23 |
| TILE_15 | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(nRT MaxPctF) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | Actual | Ratio | QoS(ms) | GM |

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|--|---------|----------|----------|--------|
| p2_score: | 27.81 | | | |
| Infrastructure_Operations_Scores: | vMotion | SVMotion | XVMotion | Deploy |
| Completed_Ops_PerHour | 28.00 | 26.00 | 21.00 | 11.00 |
| Avg_Seconds_To_Complete | 7.60 | 84.79 | 102.60 | 284.80 |
| Failures | 0.00 | 0.00 | 0.00 | 0.00 |
| Ratio | 1.08 | 1.44 | 1.17 | 1.38 |
| Number_Of_Threads | 1 | 1 | 1 | 1 |

| | | | | | | | |
|------------------------------|----------|-----------|-----------|----------|--------|---------|---------|
| PTD_Summary: | | | | | | | |
| Number_of_PTD_Daemons | 1 | | | | | | |
| Number_of_PTD_Phases | 3 | | | | | | |
| PTD_Phase_Timing | 2400secs | | | | | | |
| PtdTiming: | ptd0 | | | | | | |
| p0 | 0 | | | | | | |
| p1 | 0 | | | | | | |
| p2 | 0 | | | | | | |
| PTD_Results: | | | | | | | |
| p0 | Target | Avg_Watts | Avg_Volts | Avg_Amps | Avg_PF | Samples | UnCert% |
| ptd0 | SERVER | 2184.08 | 202.87 | 10.80 | 1.00 | 2399.00 | 0.00 |
| p1 | Target | Avg_Watts | Avg_Volts | Avg_Amps | Avg_PF | Samples | UnCert% |
| ptd0 | SERVER | 2184.18 | 202.87 | 10.81 | 1.00 | 2400.00 | 0.00 |
| p2 | Target | Avg_Watts | Avg_Volts | Avg_Amps | Avg_PF | Samples | UnCert% |
| ptd0 | SERVER | 2182.47 | 202.88 | 10.79 | 1.00 | 2400.00 | 0.00 |

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|--|---------------------------------|------------------|
| Summary | Run_Is_Compliant | Turbo_Setting:0 |
| | Number_Of_Compliance_Issues(0)* | Median_Phase(p1) |
| Unreviewed_VMmark3_Avg_Watts | 2184.18 | |
| Unreviewed_VMmark3_Applications_Score | 27.91 | |
| Unreviewed_VMmark3_Infrastructure_Score | 1.26 | |
| Unreviewed_VMmark3_Score | 22.58 | |
| Unreviewed_VMmark3_PPKW | 10.3390 | |

Configuration

| PTD Configuration | |
|--|----------------|
| Number of Power Meters | 1 |
| Power Meter Vendors and Models | Yokogawa WT210 |
| Power Meter PTD Target(s) (SERVER/EXT_STOR) | SERVER |
| Power Meter Connection Type(s) (Eth/GPIB/Serial/USB) | Serial |

| | |
|---|---|
| Power Meter Calibration Date(s) (MM-DD-YYYY) | 10-12-2021 |
| Power Meter Calibration Info (Calibrated By/Duration) | Tescom / one year / 91JB09482 |
| Power Meter(s) Volt/Amp Range | 300 / 10 |
| Power Source Voltage/Frequency/Phase | 208V / 60Hz / 3-phase |
| PTD Client Configuration | |
| Number of Power Meter Clients | 1 |
| System Model(s) | PrimeClient, details in client configuration section |
| Processor Vendor(s) and Model(s) | PrimeClient, details in client configuration section |
| Processor Speed(s) (GHz) | PrimeClient, details in client configuration section |
| Total Sockets/Total Cores/Total Threads | PrimeClient, details in client configuration section |
| Memory Per Power Meter Client | PrimeClient, details in client configuration section |
| Network Controller(s) Vendors and Models | PrimeClient, details in client configuration section |
| Operating System, Version, and Service Pack | PrimeClient, details in client configuration section |
| Other Hardware | 1x Prolific Technology, Inc. PL2303, USB-Serial converter |
| Other Software | None |

Configuration

| | |
|---|---|
| Virtualization Software | |
| Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY) | VMware ESXi 7.0 U2a, Build 17867351 / 04-29-2021 |
| Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY) | VMware vCenter Server 7.0 U1c Build 17327586 / 12-17-2020 |
| Supplemental Software | None |
| Servers | |
| Number of Servers in System Under Test (all subsequent fields in this section are per server) | 2 |
| Server Manufacturer and Model | Dell PowerEdge R7525 |
| Processor Vendor and Model | AMD EPYC 7773X |
| Processor Speed (GHz) / Turbo Boost Speed (GHz) | 2.2 / 3.5 |
| Total Sockets/Total Cores/Total Threads | 2 Sockets / 128 Cores / 256 Threads |
| Primary CPU Cache | 32 KB (I) + 32 KB (D) on chip per core |
| Secondary CPU Cache | 512 KB (I+D) on chip per core |
| Other CPU Cache | 768 MB (I+D) on chip per chip, 96 MB shared / 8 cores |
| BIOS Version | 2.7.3 |
| Memory Size (in GB, Number of DIMMs) | 2048,16 |
| Memory Type and Speed | 128GB 4Rx4 DDR4 3200MT/s LRDIMM |
| Disk Subsystem Type | FC SAN |

| | |
|--|--|
| Number of Disk Controllers | 1 |
| Disk Controller Vendors and Models | Dell PERC H745 Front(Embedded) |
| Total Number of Physical Disks for Hypervisor | 1 |
| Disk Vendors, Models, Capacities, and Speeds | Dell, MTFDDAK480TDN, 480GB SSD |
| Number of Host Bus Adapters | 1 |
| Host Bus Adapter Vendors and Models | QLogic QLE2772 |
| Number of Network Controllers | 2 |
| Network Controller Vendors and Models | 2x Mellanox ConnectX-5 Ex 100 GbE Dual-port |
| Other Hardware | None |
| Other Software | None |
| Hardware Availability Date (MM-DD-YYYY) | 03-21-2022 |
| BIOS Availability Date (MM-DD-YYYY) | 03-30-2022 |
| Software Availability Date (MM-DD-YYYY) | 04-29-2021 |
| Network | |
| Network Switch Vendors and Models | 1x Dell PowerSwitch Z9100-ON 100GbE Switch |
| Network Speed | 1 x 100Gbps for vMotion Traffic 1 x 100Gbps for VM traffic |
| Primary Storage | |
| Storage Category | FC SAN |
| Storage Vendors, Models, and Firmware Versions | Dell PowerMax 8000 |
| Storage Configuration Summary | <ul style="list-style-type: none"> • 1x 50TB LUN for all VMs other than DS3DB, AuctionNoSQL, AuctionDB, AuctionLB, ElasticDB and ElasticLB VMs • 1x 20TB LUN for DS3DB VMs • 1x 22TB LUN for AuctionNoSQL VMs • 1x 2TB LUN for AuctionDB VMs • 1x 4TB LUN for AuctionLB VMs • 1x 3TB LUN for ElasticDB VMs • 1x 3TB LUN for ElasticLB VMs • 1x 1TB LUN for Deploy operations • 1x 1TB LUN for Storage vMotion and XVMotion operations |
| Datacenter Management Server | |
| System Model | Dell PowerEdge R7525 |
| Processor Vendor and Model | AMD EPYC 7763 |
| Processor Speed (GHz) | 2.45 /3.50 |
| Total Sockets/Total Cores/Total Threads | 2 Sockets/ 128 Cores/ 256 Threads |
| Memory Size (in GB, Number of DIMMs) | 2048, 32 |
| Network Controller(s) Vendors and Models | 2 x Mellanox ConnectX-5 Ex 100 GbE Dual-port |
| Operating System, Version, Bitness, and Service Pack | VMware ESXi 7.0 U2a, Build 17867351 |
| Virtual Center VM Number of vCPUs | 4 |
| Virtual Center VM Virtual Memory (in GB) | 19 |
| Virtual Center VM Operating System, Version, Bitness, and Service Pack | VMware vCenter Server 7.0 U1c Build 17327586 |

| | |
|--|--|
| Other Hardware | None |
| Other Software | None |
| Clients | |
| Total Number of Virtual Clients / Virtual Client Hosts | 25 / 2 |
| System Model(s) | 2x Dell PowerEdge R7525 |
| Processor Vendor(s) and Model(s) | Client-Host1: AMD EPYC 7763 Client-Host2: AMD EPYC 7763 |
| Processor Speed(s) (GHz) | Client-Host1: 2.45 GHz Client-Host2: 2.45 GHz |
| Total Sockets/Total Cores/Total Threads | Client-Host1: 2 Sockets / 128 Cores / 256 Threads Client-Host2: 2 Sockets / 128 Cores / 256 Threads |
| Memory per Virtual Client Host | Client-Host1: 2048 GB Client-Host2: 2048 GB |
| Network Controller(s) Vendors and Models | Client-Host1: 1x Mellanox ConnectX-5 Ex 100 GbE Dual-port Client-Host2: 1x Mellanox ConnectX-5 Ex 100 GbE Dual-port |
| Virtual Client Networking Notes | vSwitch0 on vmnic2 for VMs and Management (100Gbps) vSwitch2 on vmnic3 for vMotion (100Gbps) |
| Virtual Client Storage Notes | All Virtual Clients storage on PowerMax 8000 FC SAN storage and used the same FC storage LUNs as SUT hosts |
| Other Hardware | None |
| Other Software | All client hosts used VMware ESXi 7.0 U2a Build 17867351 for operating system |

| 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 | Not Vulnerable | Not Vulnerable |
| Spectre | 2017-5715 | Variant 2 | Branch Target Injection | Not Vulnerable | Not Vulnerable | Not Vulnerable |
| Meltdown | 2017-5754 | Variant 3 | Rogue Data Cache Load | N/A | Not Vulnerable | Not Vulnerable |
| Spectre-NG | 2018-3640 | Variant 3a | Rogue System Register Read | Not Vulnerable | N/A | N/A |
| Spectre-NG | 2018-3639 | Variant 4 | Speculative Store Bypass | N/A | Not Vulnerable | Not Vulnerable |
| 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 | Not Vulnerable |
| Foreshadow-NG | 2018-3646 | Variant 5 | L1 Terminal Fault - VMM | N/A | Not Vulnerable | N/A |

Notes for Workload

Template deployed with disk type: Thick Eager

Virtualization Software Notes

- vSphere DRS Migration Threshold level set to 1
- Logical CPU configuration changed for all multi-CPU VMs except for PrimeClient to 1 socket with multiple cores (default: Single core per socket)
- Logging disabled for all VMs except for the template VMs (default: Enabled)

- CPU and Memory shares set to high for all DS3DB, ElasticDB, and ElasticLB VMs (default: Normal)
- CDROM removed from all VMs except for PrimeClient, and template VMs (default: Present)
- All memory reserved for DS3DB VMs (default: Non-reserved)
- sched.mem.pin set to TRUE for all DS3DB VMs (default: FALSE)
- sched.mem.lpage.enable1GPage set to TRUE for all DS3DB VMs (default: FALSE)
- CPU shares set to Low for all Standby VMs (default: Normal)
- Third virtual disk removed from DS3DB0 before cloning DS3DB VMs for other tiles

Advanced Settings

- /adv/Cpu/CreditAgePeriod = 1000 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 800)
- /adv/DataMover/HardwareAcceleratedInit = 0 (default 1)
- /adv/DataMover/HardwareAcceleratedMove = 0 (default 1)
- /adv/Disk/IdleCredit = 64 (default 32)
- /adv/Disk/ReqCallThreshold = 1 (default 8)
- /adv/Mem/CtlMaxPercent = 0 (default 65)
- /adv/Mem/ShareScanGHz = 0 (default 4)
- /adv/Numa/LocalityWeightActionAffinity=0 (default:130)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /adv/Numa/RebalancePeriod = 60000 (default 2000)
- /adv/Numa/SwapLoadEnable = 0 (default 1)
- /adv/Numa/SwapLocalityEnable = 0 (default 1)
- /vmkernel/hyperthreadingMitigation = TRUE (default FALSE)
- /adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)
- /adv/UserVars/SuppressShellWarning=1 (default:0)
- /adv/UserVars/HostClientCEIPOptIn=1 (default:0)
- /adv/VSAN/SwapThickProvisionDisabled=0 (default:1)
- /adv/Power/CpuPolicy = High Performance (default: balanced)

Server Notes

Server BIOS Settings

- L2 Stream HW Prefetcher = Disabled (default: Enabled)
- L2 Up Down Prefetcher = Disabled (default: Enabled)
- System Profile = Performance (default: Performance Per Watt)

Networking Notes

- vSwitch0 on vmnic6 for Management and VMs (100Gbps)
 - vSwitch0 and vmnic6 MTU set to 9000 (default:1500)
 - vmk0 under portgroup Management Network has MTU set to 1500 (default:1500)
- vSwitch3 on vmnic8 for vMotion (100Gbps)
 - vSwitch3 and vmnic8 MTU set to 9000 (default:1500)
 - vmk2 under portgroup vMotion has MTU set to 9000 (default:1500)

Storage Notes

Host OS installed on 2x900GB(RAID1)WD SSDs
Dell PowerMax 8000

- Number of Directors:2
- Dell PowerMax OS 5978.479.479
- 1x 50TB LUN for all VMs other than the DS3DB, AuctionNoSQL, AuctionDB, AuctionLB, ElasticDB and ElasticLB VMs
- 1x 20TB LUN for DS3DB VMs
- 1x 22TB LUN for AuctionNoSQL VMs
- 1x 2TB LUN for AuctionDB VMs
- 1x 4TB LUN for AuctionLB VMs
- 1x 3TB LUN for ElasticDB VMs
- 1x 3TB LUN for ElasticLB VMs
- 1x 1TB LUN for Deploy operations
- 1x 1TB LUN for Storage vMotion and XVMotion operations
- Round Robin IOPS limit set to 1 (default:1000)

Datacenter Management Server Notes

None

Operating System Notes

SUT hosts used Dell customized ESXi 7.0 U2 ISO (VMware-VMvisor-Installer-7.0.0.update02-17867351.x86_64-DellEMC_customized-A04.iso) for OS installation.

Software Notes

None

Client Notes

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

- Client-Host1: Client2, Client4, Client6, Client8, Client10, Client12, Client14, Client16, Client18, Client20, Client22, VMware vCenter Server
- Client-Host2: Client0, Client1, Client3, Client5, Client7, Client9, Client11, Client13, Client15, Client17, Client19, Client21, Client23, PrimeClient

Client host advanced settings:

- /adv/Cpu/CreditAgePeriod = 1000 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 800)
- /adv/DataMover/HardwareAcceleratedInit = 0 (default 1)
- /adv/DataMover/HardwareAcceleratedMove = 0 (default 1)
- /adv/Disk/IdleCredit = 64 (default 32)
- /adv/Disk/ReqCallThreshold = 1 (default 8)
- /adv/Mem/CtlMaxPercent = 0 (default 65)
- /adv/Mem/ShareScanGHz = 0 (default 4)
- /adv/Numa/LocalityWeightActionAffinity=0 (default:130)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /adv/Numa/RebalancePeriod = 60000 (default 2000)
- /adv/Numa/RebalanceEnable = 0 (default 1)
- /adv/Numa/SwapLoadEnable = 0 (default 1)
- /adv/Numa/SwapLocalityEnable = 0 (default 1)
- /vmkernel/hyperthreadingMitigation = TRUE (default FALSE)
- /adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)
- /adv/UserVars/HostClientCEIPOptIn = 1(default:0)

- /adv/UserVars/SuppressShellWarning = 1(default:0)
- /adv/UserVars/HostClientShowOnlyRecentObjects not set on Client-Host1, 0 on Client-Host2 (default 1)

Client host vSwitch settings:

- vSwitch0 on vmnic2 for VMs and Management (100Gbps)
 - vSwitch0 and vmnic2 MTU set to 9000 (default:1500)
- vSwitch2 on vmnic3 for vMotion (100Gbps)
 - vSwitch2 and vmnic3 MTU set to 9000 (default:1500)

Other Notes

Changes to VMmark3.properties file:

- TileDelay=30 (default:60)
- VCscratchDir=/root/VMmark3/results/scratch (default: /root/VMmark3/samples)

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