

VMmark® 3.1.1 Results

Server Vendor & Model: Dell PowerEdge R760
Storage Vendor & Model: VMware vSAN 8.0U2 - All Flash
Hypervisor: VMware ESXi 8.0 Update 2, Build 22380479
Datacenter Management Software: VMware vCenter Server 8.0 Update 2, Build 22385739

VMmark 3.1.1 Score =
39.11 @ 42 Tiles

Number of Hosts: 4	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 8/448/896
Tested By: Dell Technologies		Test Date: 10-16-2023
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	3572.12	0.99	0.61 0.00	568.88	0.99	0.94 0.59	871.05	1.19	954.41	633.95	1.27	1080.33	440.55	1.27	1217.26	1.14
p1	3549.71	0.99	0.68 0.00	565.04	0.99	0.46 0.39	863.05	1.18	970.92	599.50	1.20	1133.43	435.32	1.26	1260.75	1.11
p2	3533.77	0.98	0.67 0.00	559.39	0.98	0.62 0.25	871.27	1.19	944.29	614.58	1.23	1084.13	421.25	1.21	1225.24	1.11
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	3575.62	0.99	0.68 0.00	567.77	0.99	0.56 0.34	880.45	1.20	926.75	638.62	1.28	1052.65	442.12	1.27	1196.64	1.14
p1	3559.31	0.99	0.69 0.00	563.40	0.98	0.58 0.35	873.83	1.19	946.73	606.05	1.21	1109.09	434.18	1.25	1254.90	1.12
p2	3547.37	0.99	0.70 0.00	557.45	0.97	0.61 0.29	880.98	1.20	927.87	616.67	1.23	1060.59	420.10	1.21	1215.41	1.11
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	3573.50	0.99	0.91 0.00	565.85	0.99	0.60 0.36	884.60	1.20	886.31	642.92	1.28	1017.53	454.82	1.31	1119.89	1.15
p1	3554.93	0.99	0.82 0.00	560.72	0.98	0.51 0.18	887.05	1.21	880.94	624.00	1.25	1020.47	451.57	1.30	1139.78	1.14
p2	3550.18	0.99	0.94 0.00	558.25	0.98	0.57 0.21	883.08	1.20	884.69	619.08	1.24	1028.75	434.45	1.25	1123.22	1.12
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	3582.39	1.00	0.65 0.00	570.52	1.00	0.89 0.51	919.62	1.25	810.43	668.77	1.34	938.40	473.82	1.37	1033.67	1.18
p1	3576.59	0.99	0.63 0.00	568.25	0.99	0.73 0.37	920.38	1.25	797.97	644.35	1.29	932.75	473.82	1.37	1034.47	1.17
p2	3555.17	0.99	0.60 0.01	564.06	0.99	0.47 0.19	934.02	1.27	778.71	653.05	1.30	917.19	459.07	1.32	1005.84	1.16
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	3581.93	1.00	0.80 0.00	569.19	0.99	1.10 0.75	900.85	1.23	852.83	662.70	1.32	958.40	480.05	1.38	1092.48	1.17
p1	3571.04	0.99	0.82 0.00	568.56	0.99	1.07 0.63	896.83	1.22	873.57	605.35	1.21	1014.75	432.32	1.25	1142.48	1.13
p2	3562.63	0.99	0.87 0.00	564.23	0.99	1.08 0.64	891.60	1.21	873.17	647.80	1.29	1001.23	450.68	1.30	1145.26	1.15
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	3566.48	0.99	0.69 0.00	561.04	0.98	0.52 0.27	929.75	1.27	790.37	695.62	1.39	919.91	495.05	1.43	1023.92	1.20

p1	3553.97	0.99	0.67 0.00	560.22	0.98	0.65 0.31	930.75	1.27	793.83	620.88	1.24	950.67	449.75	1.30	1054.39	1.15
p2	3541.65	0.98	0.66 0.02	558.90	0.98	0.54 0.22	928.15	1.26	790.49	670.83	1.34	923.16	477.43	1.38	1010.70	1.18
TILE_6	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3568.92	0.99	0.87 0.00	560.97	0.98	0.66 0.29	905.20	1.23	840.81	658.65	1.32	971.49	484.10	1.40	1078.89	1.17
p1	3554.95	0.99	0.82 0.00	558.28	0.98	0.45 0.16	907.55	1.24	843.28	633.88	1.27	979.78	439.52	1.27	1114.55	1.14
p2	3545.12	0.99	0.87 0.00	555.97	0.97	0.57 0.32	910.40	1.24	833.82	664.45	1.33	950.08	468.82	1.35	1057.81	1.16
TILE_7	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3561.10	0.99	0.55 0.00	570.94	1.00	0.83 0.46	936.98	1.28	766.23	685.65	1.37	878.65	503.57	1.45	974.69	1.20
p1	3554.71	0.99	0.53 0.00	569.25	0.99	0.84 0.52	947.25	1.29	738.47	667.60	1.33	856.09	463.57	1.34	964.33	1.18
p2	3533.40	0.98	0.51 0.00	569.83	1.00	0.73 0.46	944.33	1.29	755.19	689.92	1.38	862.39	481.60	1.39	968.75	1.19
TILE_8	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3574.73	0.99	0.69 0.00	563.70	0.99	0.46 0.23	904.55	1.23	857.29	662.00	1.32	970.60	477.52	1.38	1116.22	1.17
p1	3558.67	0.99	0.74 0.00	562.53	0.98	0.63 0.35	902.60	1.23	857.83	633.77	1.27	990.64	431.68	1.24	1141.98	1.14
p2	3547.83	0.99	0.77 0.00	558.93	0.98	0.53 0.21	898.98	1.22	866.10	662.88	1.32	981.20	454.52	1.31	1122.30	1.15
TILE_9	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3563.58	0.99	0.92 0.00	563.81	0.99	0.56 0.37	875.48	1.19	943.29	625.65	1.25	1104.86	460.52	1.33	1218.85	1.14
p1	3547.74	0.99	0.84 0.00	560.15	0.98	0.50 0.21	894.23	1.22	886.22	611.65	1.22	1067.69	410.10	1.18	1174.74	1.11
p2	3536.02	0.98	0.86 0.00	558.72	0.98	0.69 0.36	885.12	1.21	905.60	637.20	1.27	1069.05	469.30	1.35	1181.53	1.15
TILE_10	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3582.88	1.00	0.80 0.00	564.10	0.99	0.61 0.42	931.70	1.27	784.61	678.02	1.35	920.21	501.25	1.45	1004.85	1.20
p1	3562.74	0.99	0.76 0.00	558.80	0.98	0.46 0.19	932.00	1.27	776.05	636.00	1.27	899.90	436.05	1.26	1012.39	1.14
p2	3555.94	0.99	0.76 0.00	555.96	0.97	0.59 0.21	930.60	1.27	783.12	707.00	1.41	883.96	501.73	1.45	998.85	1.20
TILE_11	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.49	0.99	0.60 0.00	564.56	0.99	0.48 0.14	930.20	1.27	784.63	655.17	1.31	906.63	476.82	1.37	1019.36	1.17
p1	3556.50	0.99	0.54 0.00	559.74	0.98	0.36 0.19	933.77	1.27	775.60	660.02	1.32	901.38	455.05	1.31	1015.55	1.16
p2	3542.34	0.98	0.52 0.00	558.02	0.98	0.47 0.27	934.60	1.27	779.79	683.73	1.37	894.37	499.45	1.44	1010.98	1.19
TILE_12	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.34	0.99	0.74 0.01	568.86	0.99	0.64 0.38	928.15	1.26	788.64	652.02	1.30	908.20	478.12	1.38	1000.74	1.18
p1	3557.64	0.99	0.82 0.00	565.52	0.99	0.52 0.24	912.77	1.24	819.96	645.40	1.29	939.13	448.68	1.29	1056.11	1.15
p2	3543.20	0.98	0.79 0.00	564.00	0.99	0.64 0.26	904.42	1.23	837.20	659.30	1.32	958.22	487.10	1.40	1061.52	1.17
TILE_13	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3580.65	1.00	0.76 0.00	566.93	0.99	0.80 0.44	917.65	1.25	811.12	650.73	1.30	937.52	470.90	1.36	1059.77	1.17
p1	3563.42	0.99	0.74 0.00	564.76	0.99	0.74 0.48	929.40	1.27	792.02	653.08	1.30	921.04	448.43	1.29	1054.48	1.16
p2	3558.52	0.99	0.76 0.00	559.90	0.98	0.48 0.26	917.92	1.25	822.48	671.88	1.34	944.06	488.98	1.41	1076.28	1.18
TILE_14	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3575.61	0.99	0.81 0.00	568.07	0.99	1.17 0.79	927.50	1.26	780.02	660.25	1.32	892.35	483.05	1.39	982.45	1.18

p1	3564.42	0.99	0.75 0.00	566.77	0.99	0.87 0.54	922.17	1.26	793.56	657.85	1.31	900.88	456.02	1.31	1008.23	1.16
p2	3549.09	0.99	0.81 0.00	561.74	0.98	0.58 0.25	931.83	1.27	783.70	681.73	1.36	886.44	505.05	1.46	977.35	1.20
TILE_15	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3566.43	0.99	0.72 0.00	571.76	1.00	0.74 0.36	941.58	1.28	745.32	673.00	1.34	839.81	489.57	1.41	952.92	1.19
p1	3559.46	0.99	0.71 0.00	571.08	1.00	0.86 0.52	945.40	1.29	737.62	673.50	1.35	844.31	469.43	1.35	945.95	1.18
p2	3541.54	0.98	0.66 0.00	565.53	0.99	0.44 0.16	937.23	1.28	766.85	688.85	1.38	865.60	510.57	1.47	969.83	1.20
TILE_16	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3575.81	0.99	0.66 0.00	565.62	0.99	0.66 0.33	885.73	1.21	905.10	618.58	1.24	1053.32	426.77	1.23	1192.45	1.13
p1	3558.39	0.99	0.74 0.00	563.06	0.98	0.73 0.36	876.35	1.19	930.23	614.33	1.23	1065.97	443.25	1.28	1209.57	1.13
p2	3537.48	0.98	0.74 0.00	561.00	0.98	0.61 0.25	868.77	1.18	946.50	624.33	1.25	1099.44	439.85	1.27	1241.99	1.13
TILE_17	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3582.04	1.00	0.65 0.01	568.75	0.99	1.02 0.69	937.75	1.28	768.12	639.17	1.28	899.73	457.50	1.32	1009.26	1.16
p1	3571.25	0.99	0.69 0.02	569.41	1.00	1.02 0.67	934.50	1.27	769.09	697.85	1.39	852.55	483.68	1.39	984.32	1.20
p2	3561.86	0.99	0.65 0.00	563.49	0.98	0.61 0.33	933.88	1.27	778.43	661.92	1.32	892.33	478.30	1.38	1012.91	1.18
TILE_18	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.88	0.99	0.87 0.00	570.14	1.00	1.13 0.76	900.52	1.23	863.95	630.30	1.26	1005.41	437.23	1.26	1127.95	1.14
p1	3562.63	0.99	0.84 0.00	561.19	0.98	0.69 0.48	898.30	1.22	858.72	656.92	1.31	970.62	466.00	1.34	1084.75	1.16
p2	3545.48	0.99	0.84 0.00	557.66	0.97	0.55 0.19	888.33	1.21	891.93	619.62	1.24	1042.36	450.40	1.30	1160.54	1.13
TILE_19	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3585.40	1.00	0.58 0.00	563.56	0.98	0.51 0.18	914.33	1.25	807.53	647.00	1.29	938.62	454.02	1.31	1023.39	1.16
p1	3557.54	0.99	0.54 0.05	559.81	0.98	0.53 0.22	916.38	1.25	808.98	666.80	1.33	930.02	479.30	1.38	1007.88	1.17
p2	3543.99	0.99	0.54 0.00	553.11	0.97	0.46 0.12	925.88	1.26	782.01	650.12	1.30	910.08	482.75	1.39	993.72	1.17
TILE_20	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.95	0.99	0.61 0.00	564.78	0.99	0.59 0.37	907.40	1.24	837.48	639.42	1.28	958.62	447.80	1.29	1059.60	1.15
p1	3562.85	0.99	0.68 0.00	561.00	0.98	0.56 0.23	880.83	1.20	904.28	643.65	1.29	1038.94	449.20	1.30	1164.17	1.14
p2	3551.66	0.99	0.68 0.00	557.82	0.97	0.61 0.31	897.08	1.22	863.43	633.25	1.27	994.96	460.23	1.33	1112.28	1.15
TILE_21	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3576.40	0.99	0.59 0.00	567.57	0.99	0.58 0.43	938.30	1.28	756.39	662.98	1.32	875.18	458.48	1.32	999.13	1.17
p1	3564.69	0.99	0.65 0.00	564.94	0.99	0.50 0.21	923.38	1.26	773.30	686.77	1.37	867.92	483.57	1.39	976.22	1.19
p2	3557.91	0.99	0.63 0.00	560.17	0.98	0.48 0.32	930.62	1.27	775.93	663.02	1.32	882.71	482.32	1.39	989.86	1.18
TILE_22	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3574.11	0.99	0.85 0.00	564.12	0.99	0.56 0.22	910.38	1.24	822.58	649.25	1.30	941.57	450.73	1.30	1055.16	1.15
p1	3556.41	0.99	0.83 0.02	560.01	0.98	0.69 0.45	900.75	1.23	852.45	666.33	1.33	951.28	472.50	1.36	1047.27	1.17
p2	3543.45	0.98	0.91 0.00	553.72	0.97	0.46 0.19	919.30	1.25	806.01	646.27	1.29	939.66	452.02	1.30	1036.98	1.15
TILE_23	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3582.22	1.00	0.56 0.00	567.08	0.99	0.40 0.13	923.50	1.26	790.44	639.60	1.28	894.61	465.57	1.34	977.08	1.16

p1	3572.08	0.99	0.53 0.00	564.93	0.99	0.47 0.26	912.80	1.24	820.99	697.92	1.39	908.16	501.48	1.45	1006.39	1.20
p2	3559.17	0.99	0.50 0.00	560.34	0.98	0.44 0.22	934.92	1.27	758.93	645.98	1.29	850.35	472.62	1.36	939.24	1.17
TILE_24	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3567.02	0.99	0.76 0.00	564.36	0.99	0.74 0.43	908.77	1.24	835.49	636.62	1.27	971.09	449.23	1.30	1056.85	1.15
p1	3551.50	0.99	0.88 0.01	561.68	0.98	0.57 0.22	880.20	1.20	908.60	638.23	1.28	1047.75	475.05	1.37	1137.42	1.15
p2	3539.75	0.98	0.81 0.00	555.64	0.97	0.50 0.23	899.67	1.23	862.35	626.75	1.25	1013.86	441.15	1.27	1119.84	1.13
TILE_25	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3565.70	0.99	0.89 0.00	561.73	0.98	0.65 0.29	865.50	1.18	948.29	605.80	1.21	1093.88	417.77	1.20	1226.51	1.11
p1	3556.91	0.99	0.80 0.00	560.72	0.98	0.54 0.20	856.48	1.17	971.38	621.42	1.24	1103.39	456.98	1.32	1222.57	1.13
p2	3534.33	0.98	0.83 0.00	558.13	0.98	0.68 0.29	863.10	1.18	945.55	602.20	1.20	1103.04	421.10	1.21	1218.20	1.10
TILE_26	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.33	0.99	0.84 0.00	568.26	0.99	0.74 0.30	917.38	1.25	820.35	646.12	1.29	952.86	448.57	1.29	1061.75	1.16
p1	3551.36	0.99	0.86 0.00	563.05	0.98	0.44 0.18	917.52	1.25	821.09	670.77	1.34	926.30	495.20	1.43	1025.91	1.18
p2	3543.76	0.98	0.84 0.00	563.74	0.99	0.56 0.24	910.98	1.24	849.85	636.75	1.27	985.34	440.60	1.27	1109.11	1.14
TILE_27	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3578.80	0.99	0.50 0.00	562.36	0.98	0.38 0.16	929.95	1.27	789.67	650.92	1.30	929.65	458.75	1.32	1012.50	1.16
p1	3565.47	0.99	0.49 0.00	558.32	0.98	0.43 0.14	929.70	1.27	784.67	678.00	1.35	902.60	505.07	1.46	987.28	1.19
p2	3557.72	0.99	0.49 0.00	558.67	0.98	0.50 0.21	945.10	1.29	747.44	664.50	1.33	874.78	469.00	1.35	957.98	1.17
TILE_28	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3586.42	1.00	0.76 0.00	567.46	0.99	0.61 0.33	859.65	1.17	958.44	602.35	1.20	1101.85	422.20	1.22	1204.11	1.11
p1	3572.34	0.99	0.78 0.00	557.91	0.98	0.68 0.29	859.38	1.17	962.34	612.33	1.22	1126.53	440.23	1.27	1210.26	1.12
p2	3555.59	0.99	0.78 0.00	554.65	0.97	0.52 0.19	856.50	1.17	970.92	594.95	1.19	1121.53	414.05	1.19	1240.98	1.10
TILE_29	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3574.12	0.99	0.79 0.00	570.29	1.00	0.99 0.76	864.05	1.18	962.26	610.20	1.22	1076.61	427.23	1.23	1184.45	1.12
p1	3561.95	0.99	0.78 0.00	566.98	0.99	0.78 0.42	866.08	1.18	950.61	629.23	1.26	1084.51	442.45	1.28	1224.87	1.13
p2	3549.19	0.99	0.80 0.01	563.49	0.98	0.61 0.32	879.73	1.20	909.10	594.27	1.19	1056.01	430.43	1.24	1158.17	1.11
TILE_30	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.94	0.99	0.89 0.00	570.01	1.00	1.04 0.67	880.50	1.20	913.95	635.92	1.27	1052.82	450.80	1.30	1165.24	1.14
p1	3557.45	0.99	0.88 0.00	571.75	1.00	0.90 0.49	892.65	1.22	883.00	619.85	1.24	1032.97	452.85	1.31	1138.10	1.14
p2	3552.55	0.99	0.88 0.00	565.92	0.99	0.59 0.26	874.58	1.19	935.10	606.25	1.21	1099.43	420.07	1.21	1223.11	1.11
TILE_31	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3582.11	1.00	0.54 0.00	569.95	1.00	0.78 0.50	940.77	1.28	750.37	690.30	1.38	858.52	492.73	1.42	938.60	1.20
p1	3563.52	0.99	0.52 0.00	568.58	0.99	0.71 0.37	952.12	1.30	732.72	675.20	1.35	847.64	496.27	1.43	921.57	1.20
p2	3554.09	0.99	0.49 0.00	564.42	0.99	0.44 0.19	955.23	1.30	726.32	678.23	1.36	829.50	472.18	1.36	936.10	1.19
TILE_32	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3577.47	0.99	0.69 0.00	567.52	0.99	0.63 0.38	867.30	1.18	947.61	623.50	1.25	1107.14	441.20	1.27	1224.95	1.13

p1	3574.66	0.99	0.75 0.00	565.89	0.99	0.68 0.38	868.42	1.18	963.65	598.60	1.20	1131.11	435.07	1.25	1253.95	1.12
p2	3559.24	0.99	0.73 0.00	559.34	0.98	0.55 0.26	864.90	1.18	972.12	591.35	1.18	1165.83	412.40	1.19	1278.47	1.10
TILE_33	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.45	0.99	0.89 0.00	569.33	1.00	1.15 0.71	909.40	1.24	840.42	658.67	1.32	969.87	461.38	1.33	1102.39	1.16
p1	3559.77	0.99	0.88 0.00	569.27	0.99	1.05 0.67	918.92	1.25	822.18	640.08	1.28	967.57	459.65	1.33	1090.05	1.16
p2	3550.78	0.99	0.86 0.00	564.04	0.99	0.60 0.28	912.70	1.24	828.93	638.02	1.27	969.88	441.27	1.27	1085.82	1.14
TILE_34	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.39	0.99	0.83 0.00	569.31	0.99	1.06 0.66	881.05	1.20	906.57	638.55	1.28	1032.56	454.35	1.31	1135.89	1.15
p1	3560.54	0.99	0.84 0.00	569.39	1.00	0.92 0.52	893.70	1.22	860.60	622.90	1.24	1011.83	454.48	1.31	1117.41	1.14
p2	3551.79	0.99	0.83 0.00	562.95	0.98	0.52 0.27	888.33	1.21	889.10	620.48	1.24	1018.69	429.05	1.24	1137.95	1.12
TILE_35	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.49	0.99	0.56 0.00	569.26	0.99	0.80 0.56	914.50	1.25	810.77	675.85	1.35	899.83	475.07	1.37	1003.88	1.18
p1	3556.41	0.99	0.57 0.00	567.84	0.99	0.77 0.42	918.23	1.25	793.56	645.90	1.29	916.74	454.18	1.31	1014.23	1.16
p2	3543.45	0.98	0.55 0.00	562.80	0.98	0.48 0.22	910.83	1.24	821.56	647.17	1.29	923.09	468.95	1.35	1040.02	1.16
TILE_36	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3578.85	0.99	0.62 0.00	560.43	0.98	0.43 0.20	881.00	1.20	899.10	641.38	1.28	1032.56	465.88	1.34	1163.96	1.15
p1	3564.92	0.99	0.69 0.00	558.75	0.98	0.67 0.37	880.88	1.20	912.68	588.12	1.18	1075.05	421.32	1.21	1207.61	1.11
p2	3546.22	0.99	0.70 0.00	553.17	0.97	0.66 0.31	877.90	1.20	915.20	632.40	1.26	1058.83	445.15	1.28	1168.80	1.13
TILE_37	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3575.31	0.99	0.78 0.00	569.93	1.00	1.14 0.83	844.75	1.15	1020.43	598.48	1.20	1192.61	447.07	1.29	1282.43	1.12
p1	3561.37	0.99	0.84 0.00	570.11	1.00	0.72 0.59	857.90	1.17	975.43	586.33	1.17	1159.96	411.12	1.19	1280.91	1.10
p2	3554.83	0.99	0.78 0.00	564.07	0.99	0.53 0.19	851.48	1.16	989.86	606.42	1.21	1160.69	431.27	1.24	1259.19	1.11
TILE_38	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3569.39	0.99	0.81 0.00	563.50	0.98	0.58 0.33	896.65	1.22	869.02	656.80	1.31	969.36	483.65	1.39	1081.68	1.17
p1	3549.47	0.99	0.74 0.00	559.29	0.98	0.58 0.30	911.70	1.24	833.85	641.67	1.28	958.88	446.10	1.29	1086.48	1.15
p2	3524.57	0.98	0.86 0.00	560.51	0.98	0.59 0.26	903.08	1.23	850.32	661.62	1.32	959.91	465.25	1.34	1074.90	1.16
TILE_39	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3585.73	1.00	0.46 0.00	569.42	1.00	0.86 0.67	906.62	1.23	843.65	658.85	1.32	974.27	488.38	1.41	1055.76	1.18
p1	3566.43	0.99	0.46 0.00	570.69	1.00	0.58 0.34	931.95	1.27	786.58	653.30	1.31	909.41	459.55	1.33	1001.08	1.17
p2	3555.33	0.99	0.45 0.00	563.89	0.99	0.47 0.30	926.05	1.26	796.72	675.92	1.35	913.03	478.27	1.38	1016.02	1.18
TILE_40	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3569.22	0.99	0.65 0.00	571.75	1.00	0.99 0.55	893.35	1.22	876.68	647.80	1.29	1024.23	474.23	1.37	1132.77	1.16
p1	3552.15	0.99	0.73 0.00	566.93	0.99	1.01 0.54	891.55	1.21	891.28	619.95	1.24	1032.76	427.50	1.23	1175.67	1.13
p2	3541.69	0.98	0.68 0.00	560.73	0.98	0.47 0.18	883.70	1.20	904.58	642.33	1.28	1030.95	450.32	1.30	1156.52	1.14
TILE_41	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3581.64	1.00	0.61 0.00	568.43	0.99	0.72 0.42	926.05	1.26	787.17	664.00	1.33	941.56	494.90	1.43	1024.08	1.19

p1	3571.38	0.99	0.62 0.00	565.52	0.99	0.40 0.17	930.12	1.27	782.23	645.20	1.29	939.72	432.07	1.25	1038.80	1.15
p2	3560.52	0.99	0.63 0.00	561.01	0.98	0.64 0.33	917.48	1.25	817.92	663.92	1.33	940.17	489.23	1.41	1045.01	1.18
p0_score:	48.70															
p1_score:	48.30															
p2_score:	48.37															
Infrastructure_Operations_Scores:							vMotion	SVMotion	XVMotion	Deploy						
Completed_Ops_PerHour							54.00	38.00	34.00	17.00						
Avg_Seconds_To_Complete							11.01	168.86	179.76	372.91						
Failures							0.00	0.00	0.00	0.00						
Ratio							2.08	2.11	1.89	2.12						
Number_Of_Threads							2	2	2	2						
Summary							Run_Is_Compliant					Turbo_Setting:0				
							Number_Of_Compliance_Issues(0)*					Median_Phase(p2)				
Unreviewed_VMmark3_Applications_Score							48.37									
Unreviewed_VMmark3_Infrastructure_Score							2.05									
Unreviewed_VMmark3_Score							39.11									

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	Dell Customized Image of 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 2, Build 22385739 / 09-21-2023
Supplemental Software	None
Servers	
Number of Servers in System Under Test (all subsequent fields in this section are per server)	4
Server Manufacturer and Model	Dell PowerEdge R760
Processor Vendor and Model	Intel(R) Xeon(R) Platinum 8480+

Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.00 / 3.80
Total Sockets/Total Cores/Total Threads	2 Sockets / 112 Cores / 224 Threads
Primary CPU Cache	32KB I + 48KB D on chip per core
Secondary CPU Cache	2MB I+D on chip per core
Other CPU Cache	105MB I+D on chip per chip
BIOS Version	1.6.6
Memory Size (in GB, Number of DIMMs)	4096,16
Memory Type and Speed	256GB 8Rx4 DDR5 4800 MT/s RDIMMs
Disk Subsystem Type	vSAN,FC-NVMe SAN
Number of Disk Controllers	0
Disk Controller Vendors and Models	N/A
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Dell Ent NVMe v2 AGN MU U.2 6.4TB - no RAID
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	QLogic QLE2772 32Gbps Dual Port Fibre Channel Controller
Number of Network Controllers	2
Network Controller Vendors and Models	2 x Mellanox ConnectX-6 Dx Dual Port 100 GbE QSFP56 Adapter
Other Hardware	None
Other Software	The client hosts used VMware ESXi 8.0 Update 1c Build 222088125 for operating system
Hardware Availability Date (MM-DD-YYYY)	02-15-2023
BIOS Availability Date (MM-DD-YYYY)	12-06-2023
Software Availability Date (MM-DD-YYYY)	09-21-2023
Network	
Network Switch Vendors and Models	1xDell EMC Z9432F-ON switch
Network Speed	<ul style="list-style-type: none"> • 1x100Gbps for Management and vMotion • 2x100G for Workload and template VMs • 1x100Gbps for vSAN

Primary Storage	
Storage Category	VMware vSAN
Storage Vendors, Models, and Firmware Versions	4 x Dell PowerEdge R760 servers in a VMware vSAN 8.0U2 cluster
Storage Configuration Summary	VMware vSAN <ul style="list-style-type: none"> • 3 x Disk Groups per Host • 3 x Dell Ent NVMe v2 AGN MU U.2 1.6TB for cache • 9 x Dell Ent NVMe PM1735a MU 6.4TB for capacity
Datacenter Management Server	
System Model	Dell PowerEdge R7625
Processor Vendor and Model	AMD EPYC 9654
Processor Speed (GHz)	2.4
Total Sockets/Total Cores/Total Threads	2 Sockets / 192 Cores / 384 Threads
Memory Size (in GB, Number of DIMMs)	3072, 24
Network Controller(s) Vendors and Models	Mellanox ConnectX-6 Dx Dual Port 100 GbE QSFP56 Adapter
Operating System, Version, Bitness, and Service Pack	VMware ESXi 8.0 Update 1c Build 22088125
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 2, Build 22385739
Other Hardware	None
Other Software	None
Clients	
Total Number of Virtual Clients / Virtual Client Hosts	43 / 3
System Model(s)	3 x Dell PowerEdge R7625
Processor Vendor(s) and Model(s)	AMD EPYC 9654
Processor Speed(s) (GHz)	2.4GHz
Total Sockets/Total Cores/Total Threads	2 Sockets/192 Cores/384 Threads
Memory per Virtual Client Host	<ul style="list-style-type: none"> • Client1 and Client 2 : 3072GB • Client3 : 6144GB

Network Controller(s) Vendors and Models	<ul style="list-style-type: none"> Client1 and Client2 : Mellanox ConnectX-6 Dx Dual Port 100 GbE QSFP56 Adapter Client3 : Broadcom BCM57508 dual port NIC
Virtual Client Networking Notes	vSwitch0 for Management and Client VMs at 100Gbps (only Client2 has vSwitch1 at 1Gbps for VMware vCenter Server)
Virtual Client Storage Notes	All Virtual Clients are stored on local server storage
Other Hardware	None
Other Software	The client hosts used VMware ESXi 8.0 Update 1c Build 22088125 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	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 and memory shares set to high for all DS3DB, ElasticDB and ElasticLB 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 template VMs (default enabled)
- 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.PreferHT = 1 (default 0)
- 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)
- LSOM.enableLargeWb = 1 (default 0)
- UserVars.SuppressShellWarning = 1 (default 0)

Server Notes

Server BIOS Settings:

- Fan speed Offset = Maximum (default off)
- Optimizer mode = Enabled (default Auto)
- Sub-Numa Node = 2 Way Clustering (default disabled)
- MADT Core Enumeration = Linear (default Round Robin)
- System Profile Settings = Performance (default Perfomance Per Watt (DAPC))

Networking Notes

SUT cluster - vSwitch Configuration

- vSwitch0 for Management and vMotion on vmnic0 at 100Gbps
- vSwitch1 for DS3*,Elastic* and template VMs on vmnic1 at 100Gbps
- vSwitch2 for Auction* and Standby VMs on vmnic2 at 100Gbps
- vSwitch3 for vSAN on vmnic3 at 100Gbps

- All vSwitches, vmnic0 - vmnic3, vmk0 - vmk2 have MTU set to 9000 (default 1500)

Storage Notes

Host OS installed on Dell Ent NVMe v2 AGN MU U.2 6.4TB

Primary Storage - VMware vSAN

- VMware vSAN 8.0.2 OSA
- Capacity : 209.59TB
- Cache : 17.52TB

Hardware Configuration:

Each Host has 3 disk groups. Each disk group used:

- Caching device : 1xDell Ent NVMe v2 AGN MU U.2 1.6TB for vSAN Caching tier
- Capacity device :3xDell Ent NVMe PM1735a MU 6.4TB for vSAN capacity tier
- SUT vSAN Datastore was used for all SUT VMs and template VMS

Software Configuration:

- RDMA support service enabled for vSAN over RDMA
- Following changes were made to "vSAN Default Storage Policy"
- "Disable object checksum" set to enable (default:disable)
- "Object space reclamation" set to "Thick Provisioning" (default:Thin provisioning)

Secondary Storage - Dell EMC Powerstore 1200T

- 12 x Dell Ent NVMe U.2 7.68TB SSD
- NVMe over FC is used for Infrastructure Operation LUNs
- All SUT hosts were configured to use LB-IOPS with iops = 1 (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

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

- Client1:Client29 - Client41 and Prime Client
- Client2:Client0 - Cient 11 and VMware vCenter Server

- Client3:Client12 - Client28

Client Host Advanced Settings:

- Cpu.CreditAgePeriod = 1000 (default 3000)
- Cpu.HTWholeCoreThreshold = 0 (default 800)
- 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.LocalityWeightActionAffinity = 0 (default 130)
- 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)
- UserVars.SuppressShellWarning = 1 (default 0)

Client cluster - vSwitch Configuration

- vSwitch0 for Management, Prime Client and all client VMs on vmnic0 at 100Gbps (Only Client2 has vSwitch1 for VMware vCenter Server on vmnic2 at 1Gbps)
- All vSwitches, vmnic0 and vmk0 have MTU set to 9000 (default 1500)

Other Notes

Changes to VMmark3.properties file:

- TileDelay=10 (default 60)
- VCscratchDir = /root/VMmark3/results/scratch (default /root/VMmark3/samples)

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