

VMmark® 3.1.1 Results

Server Vendor & Model: HPE ProLiant DL385 Gen10 Plus v2
Storage Vendor & Model: HPE 3PAR 9450
Hypervisor: VMware ESXi 6.7.0 P04, Build 17167734
Datacenter Management Software: VMware vCenter Server 7.0 U1, Build 16858589

VMmark 3.1.1 Score =
33.58 @ 36 Tiles

Number of Hosts: 4	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 8/512/1024
Tested By: Hewlett Packard Enterprise		Test Date: 02-22-2021
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	3571.13	0.99	0.43 0.00	572.36	1.00	0.49 0.04	928.45	1.26	936.65	648.67	1.30	1099.86	438.55	1.26	1294.95	1.16
p1	3553.34	0.99	0.42 0.00	570.33	1.00	0.42 0.03	947.60	1.29	827.00	678.20	1.36	981.27	480.05	1.38	1093.95	1.19
p2	3536.23	0.98	0.39 0.00	567.15	0.99	0.31 0.02	909.95	1.24	965.41	605.42	1.21	1148.99	430.02	1.24	1299.32	1.13
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	3575.75	0.99	0.56 0.01	569.40	1.00	0.87 0.48	921.73	1.26	909.31	668.83	1.34	1043.07	466.27	1.34	1197.20	1.17
p1	3551.35	0.99	0.50 0.00	567.01	0.99	0.95 0.59	929.40	1.27	862.27	661.92	1.32	986.11	478.93	1.38	1105.89	1.18
p2	3538.72	0.98	0.51 0.00	562.42	0.98	0.44 0.04	928.08	1.26	898.13	642.73	1.28	1078.98	442.00	1.27	1217.84	1.15
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	3569.00	0.99	0.55 0.00	566.50	0.99	0.42 0.09	921.58	1.26	917.05	665.65	1.33	1064.87	466.18	1.34	1224.16	1.17
p1	3550.54	0.99	0.51 0.00	565.25	0.99	0.39 0.06	958.95	1.31	774.30	671.50	1.34	924.07	465.68	1.34	1041.40	1.18
p2	3540.77	0.98	0.48 0.00	558.64	0.98	0.42 0.04	904.25	1.23	964.95	626.95	1.25	1149.10	450.25	1.30	1297.37	1.14
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	3572.52	0.99	0.70 0.01	568.30	0.99	0.56 0.06	879.42	1.20	1043.24	628.15	1.26	1217.94	462.38	1.33	1353.77	1.15
p1	3559.80	0.99	0.66 0.00	561.56	0.98	0.50 0.08	836.52	1.14	1221.94	556.90	1.11	1498.93	375.52	1.08	1734.27	1.06
p2	3543.58	0.98	0.53 0.00	555.22	0.97	0.40 0.06	827.90	1.13	1257.75	575.05	1.15	1513.47	401.45	1.16	1679.75	1.07
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	3571.24	0.99	0.61 0.00	566.75	0.99	0.44 0.20	930.83	1.27	874.56	670.92	1.34	1032.27	494.98	1.43	1149.38	1.19
p1	3558.76	0.99	0.59 0.01	561.11	0.98	0.42 0.09	941.38	1.28	825.10	660.20	1.32	974.29	435.43	1.26	1098.64	1.16
p2	3537.83	0.98	0.73 0.01	559.32	0.98	0.49 0.01	889.20	1.21	996.25	646.48	1.29	1145.22	477.07	1.38	1251.53	1.16
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	3571.55	0.99	0.55 0.00	566.44	0.99	0.38 0.03	872.52	1.19	1050.26	601.73	1.20	1234.27	434.35	1.25	1377.85	1.12

p1	3551.81	0.99	0.62 0.00	563.93	0.99	0.50 0.22	915.42	1.25	890.68	641.02	1.28	1045.57	447.05	1.29	1159.77	1.15
p2	3546.87	0.99	0.48 0.00	562.60	0.98	0.46 0.11	877.10	1.19	1066.23	629.92	1.26	1243.99	459.25	1.32	1384.28	1.14
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	3577.99	0.99	0.40 0.00	566.18	0.99	0.45 0.25	978.85	1.33	729.35	692.45	1.38	848.04	505.40	1.46	960.20	1.21
p1	3557.84	0.99	0.49 0.04	567.31	0.99	0.37 0.03	983.75	1.34	724.32	704.42	1.41	819.42	493.50	1.42	925.80	1.21
p2	3546.95	0.99	0.44 0.00	561.15	0.98	0.48 0.20	935.83	1.27	889.20	666.08	1.33	1067.80	469.70	1.35	1189.23	1.17
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	3577.11	0.99	0.45 0.00	565.42	0.99	0.40 0.12	962.90	1.31	803.38	677.10	1.35	951.02	468.23	1.35	1090.73	1.19
p1	3556.73	0.99	0.64 0.11	565.08	0.99	0.48 0.13	981.00	1.34	753.75	718.45	1.44	869.89	507.62	1.46	987.30	1.22
p2	3548.80	0.99	0.46 0.00	560.31	0.98	0.32 0.02	871.75	1.19	1099.44	592.30	1.18	1317.58	424.45	1.22	1496.20	1.11
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	3560.46	0.99	0.59 0.00	566.12	0.99	0.45 0.15	879.98	1.20	1068.30	600.40	1.20	1281.25	405.62	1.17	1481.85	1.10
p1	3535.00	0.98	0.57 0.00	562.51	0.98	0.41 0.06	853.67	1.16	1118.01	609.15	1.22	1305.54	423.80	1.22	1456.36	1.11
p2	3513.64	0.98	0.53 0.00	559.86	0.98	0.36 0.05	892.65	1.22	997.53	610.08	1.22	1205.41	422.57	1.22	1343.06	1.12
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	3574.16	0.99	0.62 0.01	566.26	0.99	0.42 0.04	929.95	1.27	888.02	649.58	1.30	1032.53	451.10	1.30	1174.86	1.16
p1	3549.07	0.99	0.70 0.06	561.52	0.98	0.40 0.04	932.50	1.27	854.24	676.77	1.35	1005.11	503.62	1.45	1108.02	1.19
p2	3541.86	0.98	0.77 0.01	560.58	0.98	0.41 0.06	893.90	1.22	1001.07	615.35	1.23	1200.83	419.98	1.21	1379.38	1.12
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	3566.12	0.99	0.70 0.01	560.40	0.98	0.34 0.01	948.60	1.29	822.60	669.02	1.34	958.58	466.70	1.35	1074.04	1.18
p1	3551.95	0.99	0.65 0.00	559.46	0.98	0.39 0.04	954.70	1.30	798.50	699.42	1.40	938.08	500.82	1.44	1008.69	1.20
p2	3531.11	0.98	0.50 0.00	556.45	0.97	0.30 0.01	873.40	1.19	1070.91	578.38	1.16	1280.88	406.73	1.17	1474.48	1.09
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	3573.47	0.99	0.76 0.03	565.29	0.99	0.54 0.06	937.62	1.28	857.83	687.40	1.37	988.45	478.30	1.38	1145.72	1.19
p1	3562.84	0.99	0.87 0.29	564.54	0.99	0.33 0.02	864.25	1.18	1148.22	593.90	1.19	1349.19	422.98	1.22	1550.99	1.11
p2	3552.56	0.99	0.60 0.00	560.15	0.98	0.45 0.07	905.85	1.23	946.77	628.08	1.25	1140.22	427.25	1.23	1297.62	1.13
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	3572.69	0.99	0.46 0.00	564.14	0.99	0.36 0.07	906.50	1.23	1031.74	643.23	1.29	1229.81	439.40	1.27	1434.46	1.14
p1	3558.40	0.99	0.42 0.00	557.67	0.97	0.27 0.00	925.33	1.26	925.06	630.27	1.26	1133.23	456.50	1.32	1277.33	1.15
p2	3538.18	0.98	0.31 0.00	553.14	0.97	0.33 0.01	821.55	1.12	1330.12	544.40	1.09	1605.85	367.38	1.06	1841.74	1.04
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	3574.27	0.99	0.36 0.00	561.85	0.98	0.32 0.20	934.45	1.27	867.81	697.27	1.39	1005.72	492.12	1.42	1144.81	1.20
p1	3551.93	0.99	0.38 0.00	559.49	0.98	0.46 0.18	883.05	1.20	1049.17	583.83	1.17	1242.84	412.68	1.19	1436.39	1.10
p2	3533.66	0.98	0.37 0.00	558.83	0.98	0.47 0.08	901.33	1.23	979.76	645.00	1.29	1149.22	443.05	1.28	1332.68	1.14
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	3580.60	1.00	0.49 0.00	567.01	0.99	0.33 0.01	891.42	1.21	995.80	636.42	1.27	1174.89	468.23	1.35	1289.93	1.15

p1	3568.78	0.99	0.47 0.01	566.93	0.99	0.35 0.00	959.65	1.31	778.64	672.50	1.34	913.06	468.23	1.35	1037.83	1.18
p2	3558.65	0.99	0.46 0.00	564.87	0.99	0.45 0.18	913.52	1.24	929.97	663.25	1.33	1073.56	474.18	1.37	1173.99	1.17
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	3580.83	1.00	0.56 0.04	572.21	1.00	0.55 0.08	929.15	1.27	868.20	649.52	1.30	1010.98	473.07	1.36	1128.09	1.17
p1	3568.18	0.99	0.58 0.01	564.07	0.99	0.43 0.13	885.65	1.21	1050.50	606.45	1.21	1258.08	411.52	1.19	1451.11	1.11
p2	3543.09	0.98	0.59 0.00	558.97	0.98	0.44 0.08	853.55	1.16	1145.45	599.25	1.20	1368.04	433.48	1.25	1546.78	1.11
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	3573.01	0.99	0.74 0.01	571.50	1.00	0.55 0.10	892.35	1.22	997.02	615.80	1.23	1192.52	449.30	1.30	1306.19	1.14
p1	3559.26	0.99	0.78 0.09	567.60	0.99	0.40 0.04	878.83	1.20	1057.19	603.77	1.21	1256.36	419.12	1.21	1426.63	1.11
p2	3548.59	0.99	0.75 0.03	564.30	0.99	0.40 0.05	877.25	1.19	1019.95	625.73	1.25	1191.55	440.50	1.27	1334.86	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	3567.17	0.99	0.85 0.02	569.03	0.99	0.87 0.39	924.15	1.26	872.98	630.27	1.26	1015.13	451.85	1.30	1126.39	1.15
p1	3552.43	0.99	0.62 0.00	564.62	0.99	0.55 0.18	851.10	1.16	1159.90	611.88	1.22	1339.72	415.07	1.20	1569.05	1.11
p2	3548.36	0.99	0.64 0.00	563.69	0.99	0.42 0.05	849.45	1.16	1136.33	583.60	1.17	1346.91	419.82	1.21	1506.91	1.10
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	3576.66	0.99	0.38 0.01	565.77	0.99	0.45 0.16	911.23	1.24	992.69	620.12	1.24	1202.10	418.73	1.21	1417.68	1.13
p1	3562.77	0.99	0.37 0.00	560.35	0.98	0.42 0.15	929.92	1.27	886.23	675.15	1.35	1024.77	471.32	1.36	1164.50	1.18
p2	3550.16	0.99	0.33 0.00	557.01	0.97	0.42 0.05	895.17	1.22	1015.33	614.12	1.23	1217.34	442.77	1.28	1356.69	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	3575.78	0.99	0.64 0.05	570.59	1.00	0.64 0.20	924.23	1.26	948.64	617.25	1.23	1124.86	436.68	1.26	1286.21	1.14
p1	3556.05	0.99	0.40 0.00	568.36	0.99	0.64 0.22	897.00	1.22	1042.39	652.70	1.30	1258.55	456.15	1.32	1431.01	1.16
p2	3548.95	0.99	0.35 0.00	563.94	0.99	0.41 0.06	905.67	1.23	977.29	612.58	1.22	1211.89	418.38	1.21	1382.20	1.12
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	3578.47	0.99	0.71 0.01	571.84	1.00	0.65 0.17	953.48	1.30	809.01	676.60	1.35	927.52	471.10	1.36	1044.52	1.19
p1	3566.85	0.99	0.70 0.01	570.08	1.00	0.54 0.18	941.23	1.28	835.46	681.48	1.36	961.81	509.93	1.47	1059.01	1.20
p2	3556.93	0.99	0.63 0.01	568.57	0.99	0.54 0.22	958.95	1.31	781.77	672.27	1.34	931.85	465.93	1.34	1044.51	1.18
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	3572.99	0.99	0.61 0.01	572.40	1.00	0.86 0.41	879.05	1.20	1041.56	606.65	1.21	1228.26	414.27	1.19	1386.48	1.11
p1	3554.49	0.99	0.61 0.02	565.35	0.99	0.54 0.14	885.70	1.21	1004.27	635.73	1.27	1172.59	446.32	1.29	1303.49	1.14
p2	3544.45	0.99	0.52 0.00	556.99	0.97	0.41 0.04	836.52	1.14	1242.83	542.02	1.08	1512.20	377.20	1.09	1725.66	1.05
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	3580.53	1.00	0.58 0.01	562.57	0.98	0.48 0.04	912.85	1.24	943.73	658.25	1.32	1104.70	460.05	1.33	1249.72	1.16
p1	3563.75	0.99	0.73 0.00	557.00	0.97	0.48 0.16	954.90	1.30	789.82	670.83	1.34	928.34	492.18	1.42	1022.64	1.19
p2	3544.34	0.99	0.55 0.00	556.94	0.97	0.40 0.12	888.40	1.21	1026.90	611.95	1.22	1227.94	418.98	1.21	1405.39	1.11
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	3579.90	0.99	0.64 0.02	567.48	0.99	0.52 0.18	887.75	1.21	1001.30	644.27	1.29	1140.72	443.00	1.28	1317.33	1.14

p1	3572.27	0.99	0.95 0.12	563.84	0.99	0.51 0.13	866.70	1.18	1094.95	591.08	1.18	1320.74	401.45	1.16	1513.58	1.10
p2	3560.74	0.99	0.60 0.00	564.70	0.99	0.42 0.01	885.38	1.21	1032.12	608.60	1.22	1217.92	433.27	1.25	1397.16	1.12
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	3580.49	1.00	0.30 0.00	571.19	1.00	0.67 0.31	863.58	1.18	1147.16	609.95	1.22	1354.83	435.20	1.25	1569.53	1.12
p1	3560.05	0.99	0.31 0.00	569.64	1.00	0.56 0.15	908.83	1.24	976.72	623.10	1.24	1181.33	424.18	1.22	1352.81	1.13
p2	3548.40	0.99	0.39 0.00	565.28	0.99	0.38 0.05	863.17	1.18	1142.47	612.35	1.22	1334.15	414.77	1.20	1561.51	1.11
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	3573.49	0.99	0.48 0.00	570.29	1.00	0.47 0.16	843.40	1.15	1201.63	597.45	1.19	1412.42	428.52	1.24	1615.51	1.11
p1	3545.92	0.99	0.56 0.00	562.97	0.98	0.36 0.05	861.02	1.17	1138.60	591.98	1.18	1340.32	379.02	1.09	1573.08	1.08
p2	3526.35	0.98	0.53 0.00	561.61	0.98	0.39 0.11	870.40	1.19	1071.30	623.95	1.25	1233.39	449.88	1.30	1425.20	1.13
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	3580.88	1.00	0.37 0.00	571.77	1.00	0.58 0.23	964.08	1.31	814.60	675.25	1.35	963.14	490.25	1.41	1119.51	1.20
p1	3565.06	0.99	0.41 0.00	566.33	0.99	0.51 0.10	914.05	1.24	978.00	635.05	1.27	1153.83	424.02	1.22	1366.17	1.14
p2	3548.49	0.99	0.35 0.00	563.02	0.98	0.40 0.12	859.48	1.17	1151.43	608.55	1.22	1359.51	433.73	1.25	1560.50	1.12
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	3577.19	0.99	0.33 0.01	564.18	0.99	0.34 0.01	933.85	1.27	875.57	648.95	1.30	1037.51	474.32	1.37	1140.88	1.17
p1	3571.25	0.99	0.37 0.00	561.61	0.98	0.36 0.03	880.88	1.20	1056.55	608.85	1.22	1239.31	414.90	1.20	1425.64	1.11
p2	3555.21	0.99	0.37 0.00	560.41	0.98	0.32 0.02	838.62	1.14	1227.11	582.83	1.16	1474.53	400.88	1.16	1666.46	1.08
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	3568.15	0.99	0.43 0.00	567.87	0.99	0.69 0.35	892.05	1.21	1046.56	604.98	1.21	1261.04	407.73	1.18	1458.83	1.11
p1	3560.95	0.99	0.44 0.00	561.50	0.98	0.54 0.17	935.70	1.27	887.38	668.77	1.34	1047.04	467.32	1.35	1177.27	1.17
p2	3545.08	0.99	0.40 0.00	557.43	0.97	0.43 0.06	894.85	1.22	1019.41	608.60	1.22	1226.20	436.95	1.26	1387.99	1.12
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	3578.11	0.99	0.51 0.00	564.49	0.99	0.43 0.14	899.88	1.23	989.00	607.60	1.21	1213.77	423.27	1.22	1345.33	1.12
p1	3562.39	0.99	0.49 0.00	561.65	0.98	0.48 0.19	910.38	1.24	934.01	653.90	1.31	1094.20	456.68	1.32	1220.08	1.16
p2	3550.40	0.99	0.38 0.00	554.35	0.97	0.32 0.03	948.88	1.29	827.80	654.25	1.31	996.91	453.12	1.31	1130.61	1.16
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	3577.58	0.99	0.30 0.00	564.41	0.99	0.42 0.12	976.80	1.33	760.20	682.45	1.36	910.52	475.35	1.37	1012.98	1.20
p1	3558.15	0.99	0.33 0.00	561.99	0.98	0.45 0.20	963.15	1.31	798.37	702.40	1.40	929.13	513.75	1.48	1055.55	1.22
p2	3550.13	0.99	0.30 0.00	559.71	0.98	0.29 0.01	933.42	1.27	914.94	646.60	1.29	1082.54	439.20	1.27	1277.07	1.15
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	3594.67	1.00	0.47 0.09	565.40	0.99	0.63 0.31	871.58	1.19	1108.57	593.70	1.19	1340.16	399.52	1.15	1559.11	1.10
p1	3581.00	1.00	0.38 0.02	563.68	0.99	0.31 0.02	890.62	1.21	1029.76	635.08	1.27	1206.61	457.93	1.32	1378.49	1.15
p2	3564.50	0.99	0.38 0.00	564.53	0.99	0.41 0.09	944.88	1.29	860.40	656.17	1.31	1025.31	430.65	1.24	1154.58	1.15
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	3574.32	0.99	0.36 0.00	573.47	1.00	0.63 0.35	911.10	1.24	990.12	643.85	1.29	1195.18	445.85	1.29	1377.84	1.15

p1	3570.73	0.99	0.26 0.00	569.12	0.99	0.73 0.28	960.70	1.31	806.05	666.73	1.33	965.97	481.27	1.39	1091.17	1.19
p2	3551.03	0.99	0.26 0.00	570.04	1.00	0.64 0.21	931.98	1.27	914.60	639.20	1.28	1113.92	437.45	1.26	1264.97	1.15
TILE_33	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3579.88	0.99	0.40 0.00	571.47	1.00	0.58 0.12	888.02	1.21	1033.96	630.88	1.26	1218.77	439.52	1.27	1368.74	1.14
p1	3559.23	0.99	0.43 0.00	565.63	0.99	0.64 0.39	862.58	1.17	1123.21	588.95	1.18	1326.48	421.18	1.21	1506.75	1.10
p2	3537.15	0.98	0.49 0.00	560.44	0.98	0.40 0.14	850.02	1.16	1222.02	572.23	1.14	1481.19	385.68	1.11	1728.26	1.07
TILE_34	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3578.07	0.99	0.34 0.00	569.73	1.00	0.51 0.02	926.42	1.26	946.32	688.27	1.38	1103.33	484.25	1.40	1259.90	1.19
p1	3561.13	0.99	0.31 0.00	569.23	0.99	0.52 0.03	878.50	1.20	1110.68	565.00	1.13	1385.54	395.68	1.14	1581.47	1.09
p2	3542.17	0.98	0.28 0.00	564.18	0.99	0.55 0.09	848.83	1.16	1208.77	592.55	1.18	1444.28	400.50	1.15	1671.09	1.09
TILE_35	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3589.46	1.00	0.62 0.17	567.39	0.99	0.43 0.06	898.75	1.22	998.97	640.12	1.28	1177.38	462.95	1.33	1332.56	1.16
p1	3564.88	0.99	0.50 0.09	564.37	0.99	0.33 0.03	946.60	1.29	837.17	653.73	1.31	1000.71	454.57	1.31	1120.15	1.17
p2	3549.94	0.99	0.41 0.00	562.39	0.98	0.43 0.09	889.83	1.21	1038.30	634.17	1.27	1218.66	436.70	1.26	1416.18	1.13
p0_score:	41.60															
p1_score:	41.39															
p2_score:	40.40															

Infrastructure_Operations_Scores:	vMotion	SVMotion	XVMotion	Deploy
Completed_Ops_PerHour	55.00	48.00	38.00	21.00
Avg_Seconds_To_Complete	8.57	97.51	122.08	300.42
Failures	0.00	0.00	0.00	0.00
Ratio	2.12	2.67	2.11	2.62
Number_Of_Threads	2	2	2	2

Summary	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark3_Applications_Score	41.39	
Unreviewed_VMmark3_Infrastructure_Score	2.36	
Unreviewed_VMmark3_Score	33.58	

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 6.7 P04, Build 17167734 / 11-19-2020

Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 7.0 U1, Build 16858589 / 10-06-2020
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	HPE ProLiant DL385 Gen10 Plus v2
Processor Vendor and Model	AMD EPYC 7763
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.45 / 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	256 MB I+D on chip per chip, 32 MB shared / 8 cores
BIOS Version	A42 v2.40 (02/15/2021)
Memory Size (in GB, Number of DIMMs)	2048,32
Memory Type and Speed	64 GB 2Rx4 PC4-3200 MHz RDIMM
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	HPE Smart Array P408i-a SR Gen10
Total Number of Physical Disks for Hypervisor	2
Disk Vendors, Models, Capacities, and Speeds	HPE 1.2TB 12G SAS 10K SFF HDD (HPE P/N 862431-B21)
Number of Host Bus Adapters	2
Host Bus Adapter Vendors and Models	2 x HPE SN1100Q 16Gb 2P FC HBA (dual port)
Number of Network Controllers	2
Network Controller Vendors and Models	Mellanox MCX562A-ACAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE Intel I350-T4 Ethernet 1Gb 4-port BASE-T Adapter for HPE
Other Hardware	None
Other Software	None

Hardware Availability Date (MM-DD-YYYY)	05-01-2021
BIOS Availability Date (MM-DD-YYYY)	05-01-2021
Software Availability Date (MM-DD-YYYY)	05-01-2021
Network	
Network Switch Vendors and Models	1 x HPE FlexFabric 5950 1 x HPE FlexFabric 5930 1 x HPE FlexFabric 5940
Network Speed	1 Gb/s for management SUT hosts: 2 x 25 Gb/s for vMotion and VMs Client hosts 1-2: 4 x 10 Gb/s for vMotion and VMs Client hosts 3-6: 2 x 10 Gb/s for vMotion and VMs
Primary Storage	
Storage Category	FC SAN
Storage Vendors, Models, and Firmware Versions	HPE 3PAR StoreServ 9450, 3PAR OS 3.3.1.648 (MU5)+P123,P126
Storage Configuration Summary	<p>FC SAN switches:</p> <ul style="list-style-type: none"> • 1 x HPE SN6600B 48 port 32 Gb FC SAN Switch • 1 x HPE SN6000B 48 port 16 Gb FC SAN Switch <p>HPE 3PAR StoreServ 9450</p> <ul style="list-style-type: none"> • 4 Controller nodes (128GB cache per controller node) • 4 Drive enclosures • 64 x HPE 3PAR 9000 920GB SAS SFF SSD • 27 LUNs (RAID6)
Datacenter Management Server	
System Model	HPE ProLiant DL380 Gen9
Processor Vendor and Model	Intel Xeon E5-2620 v3
Processor Speed (GHz)	2.40
Total Sockets/Total Cores/Total Threads	2 Sockets / 24 Cores / 48 Threads
Memory Size (in GB, Number of DIMMs)	16 GB, 8
Network Controller(s) Vendors and Models	HPE Ethernet 10Gb 2-port 560SFP+ Adapter
Operating System, Version, Bitness, and Service Pack	VMware ESXi 6.7 P04, Build 17167734
Virtual Center VM Number of vCPUs	8

Virtual Center VM Virtual Memory (in GB)	28
Virtual Center VM Operating System, Version, Bitness, and Service Pack	VMware vCenter Server Appliance 7.0 U1 Build 16858589
Other Hardware	None
Other Software	None

Clients

Total Number of Virtual Clients / Virtual Client Hosts	37 / 6
System Model(s)	<ul style="list-style-type: none"> • Client hosts 1-2: HPE ProLiant DL580 Gen10 • Client hosts 3-6: HPE ProLiant DL360 Gen9
Processor Vendor(s) and Model(s)	<ul style="list-style-type: none"> • Client hosts 1-2: 4 x Intel Xeon Platinum 8280L • Client hosts 3-6: 2 x Intel Xeon E5-2680 v4
Processor Speed(s) (GHz)	<ul style="list-style-type: none"> • Client hosts 1-2: 2.70 GHz • Client hosts 3-6: 2.40 GHz
Total Sockets/Total Cores/Total Threads	<ul style="list-style-type: none"> • Clients 1-2: 8 Sockets / 224 Cores / 448 Threads • Clients 3-6: 8 Sockets / 112 Cores / 224 Threads
Memory per Virtual Client Host	<ul style="list-style-type: none"> • Client hosts 1-2: 1536 GB • Client hosts 3-6: 384 GB
Network Controller(s) Vendors and Models	<ul style="list-style-type: none"> • Client hosts 1-2 <ul style="list-style-type: none"> ◦ 1 x HPE Ethernet 1Gb 4-port 331FLR Adapter ◦ 2 x HPE Ethernet 10Gb 2-port 562SFP+ Adapter • Client hosts 3-6 <ul style="list-style-type: none"> ◦ 1 x HPE Ethernet 1Gb 4-port 331i Adapter ◦ 1 x HPE Ethernet 10Gb 2-port 560SFP+ Adapter
Virtual Client Networking Notes	1 x vmnic for management (1 Gb/s) 2 x vmnic on distributed vSwitch for vMotion and workload (10 Gb/s)
Virtual Client Storage Notes	Details in Client Notes
Other Hardware	None
Other Software	VMware ESXi 6.7 EP 16 Build 16773714

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

- Cluster DRS Automation Level set to Fully Automated
- vSphere DRS Migration Threshold set to level 2
- Logging was disabled for all VMs except for PrimeClient (default enabled)
- Logical CPU layout changed for all multi-CPU VMs except for PrimeClient to 1 socket with multiple cores (default single core per socket)
- All DS3DB VMs had CPU and memory shares set to High (default Normal)
- All memory reserved for all DS3DB VMs (default 0)
- All Standby VMs had CPU shares set to Low (default Normal)
- CD and floppy devices were removed from all VMs except for PrimeClient (default installed)

Advanced Settings:

- Numa.LocalityWeightActionAffinity = 0 (default 130)
- Numa.PreferHT = 1 (default 0)
- Power.CpuPolicy = High Performance (default balanced)

SUT hosts were configured with following storage claim rules:

- For 3PAR LUNs
 - path policy set to round robin (default: Most Recently Used)
 - round robin path policy modified to set iops =1 (default: 1000)
- For ION LUNs
 - path policy set to round robin (default: Most Recently Used)

Server Notes

Server BIOS settings:

- HPE Workload Profile set to "Virtualization - Max Performance" (default: General Power Efficient Compute)
- Determinism Control set to Manual (default: Auto)
- Last-Level Cache (LLC) as NUMA Node set to Enabled (default: disabled)
- Thermal Configuration set to Maximum Cooling (default: Optimal Cooling)
- Maximum Memory Bus Frequency set to 2933 (default: Auto)

Networking Notes

vSwitch Configuration

- standard vSwitch: vSwitch0
 - Uplink: vmnic0 (1 Gb/s)
 - vmk0 for management
- distributed vSwitch: dSwitch-SUT
 - Uplinks: vmnic4, vmnic5 (both at 25 Gb/s)
 - "SUT-VMs" port group for SUT VMs
 - "SUT-vmotion" port group for vmk1 and vMotion
 - MTU set to 9000 for the distributed vSwitch, vmk1 and all uplinks

Storage Notes

HPE 3PAR Storage

- HPE 3PAR StoreServ 9450
- Physical configuration
 - HPE 3PAR OS version 3.3.1 (MU5)
 - 4 x HPE 3PAR StoreServ 9450 Controller Nodes
 - 128 GB Cache
 - 4 x HPE 3PAR 9000 2-port 32Gb Fiber Channel Host Bus Adapter
 - 4 x HPE 3PAR StoreServ 9000 24-disk 2U SFF SAS Drive Enclosure
 - 4 enclosures had 16 SSDs
 - 64 x HPE 3PAR 9000 920Gb SAS SFF SSD
- Virtual configuration
 - All LUNs were configured from one Common Provisioning Group that was configured as :
 - Uses all SSDs
 - RAID 6
 - Set Size: 14 data, 2 parity
 - All LUNs were configured with following settings:
 - Provisioning set to Full (Thick)
 - Total LUNs: 27
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 0, 9, 18, 27
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 0, 9, 18, 27
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 0, 9, 18, 27
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 1, 10, 19, 28
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 1, 10, 19, 28
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 1, 10, 19, 28
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 2, 11, 20, 29
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 2, 11, 20, 29
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 2, 11, 20, 29
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 3, 12, 21, 30
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 3, 12, 21, 30
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 3, 12, 21, 30
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 4, 13, 22, 31
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 4, 13, 22, 31
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 4, 13, 22, 31
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 5, 14, 23, 32

- 1 LUN (760 GB) for Elastic* VMs for Tiles 5, 14, 23, 32
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 5, 14, 23, 32
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 6, 15, 24, 33
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 6, 15, 24, 33
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 6, 15, 24, 33
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 7, 16, 25, 34
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 7, 16, 25, 34
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 7, 16, 25, 34
 - 1 LUN (1440 GB) for Auction* VMs for Tiles 8, 17, 26, 35
 - 1 LUN (760 GB) for Elastic* VMs for Tiles 8, 17, 26, 35
 - 1 LUN (1600 GB) for DS3* VMs for Tiles 8, 17, 26, 35
- Storage Server (SanDisk ION on HPE ProLiant DL380p Gen8)
 - Hardware Configuration
 - HPE ProLiant DL380p Gen8
 - 2 x Intel Xeon E5-2690 2.90 GHz processors
 - 256 GB (16 x 16 GB 1600 MHz Registered DDR3)
 - 3 x HPE 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator flash cards
 - 2 x HPE SN1000Q dual port 16 Gb fibre HBAs
 - 1 x HPE SmartArray P420i controller for ION OS
 - 2 x 500 GB 7.2K RPM SATA SFF for ION OS
 - SanDisk ION Accelerator version 2.5.5
 - Original general availability date of 09-01-2016
 - Software Configuration
 - A single storage pool was created using 3 x HPE 2.6TB HH/HL Light Endurance (LE) PCIe Workload Accelerator flash cards.
 - All LUNs are RAID0.
 - All LUNs were configured as block devices and no system memory was used for write caching.
 - LUN details:
 - LUN1 (100 GB): template VMs
 - LUN2 (600 GB): Standby VMs for tiles 0, 4, 8, 12, 16, 20, 24, 28, 32
 - LUN3 (600 GB): Standby VMs for tiles 1, 5, 9, 13, 17, 21, 25, 29, 33
 - LUN4 (600 GB): Standby VMs for tiles 2, 6, 10, 14, 18, 22, 26, 30, 34
 - LUN5 (600 GB): Standby VMs for tiles 3, 7, 11, 15, 19, 23, 27, 31, 35
 - LUN6 (120 GB): deploy target LUN
 - LUN7 (120 GB): deploy target LUN
 - LUN8 (100 GB): svMotion target LUN
 - LUN9 (100 GB): svMotion target LUN
 - LUN10 (100 GB): xvMotion target LUN
 - LUN11 (100 GB): xvMotion target LUN

Datacenter Management Server Notes

VMware vCenter Server Appliance 7.0 U1 Build 16858589 was hosted on a HPE DL380 Gen9 system that was not part of the client or SUT clusters.

Operating System Notes

SUT hosts used HPE customized ESXi 6.7.0 U3 ISO for OS installation. The customized ISO used was a pre-release build of the ISO that will be publicly available by May 1, 2021.

Client hosts used VMware ESXi 6.7 U3 (Build 14320388) base install image from VMware for initial OS installation. VMware's patch "ESXi670-201901001" was applied to update the ESXi version. HPE offline bundles were installed and are available at <http://vibsdepot.hpe.com/hpe/jan2021/esxi-670-bundles/> and <http://vibsdepot.hpe.com/hpe/jan2021/esxi-670-devicedrivers/>.

Software Notes

None

Client Notes

All client hosts used disks in internal drive cages connected to an array controller for OS and VM storage.

- Client hosts 1-2
 - 2 x 600 GB 6G SAS 10K HDD in RAID1 for OS and local datastore for client VMs
- Client hosts 3-5
 - 2 x 450 GB 12G SAS 15K HDD in RAID1 for OS and local datastore for client VMs
- Client host 6
 - 2 x 450 GB 12G SAS 15K HDD in RAID1 for OS and local datastore for client VMs
 - 1 x 1 TB 6G SATA 7.2K HDD in RAID1 for local datastore for primeclient VM

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

- Client host 1: Client0, Client6, Client12, Client18, Client24, Client26, Client28, Client30, Client32, Client34
- Client host 2: Client1, Client7, Client13, Client19, Client25, Client27, Client29, Client31, Client33, Client35
- Client host 3: Client2, Client8, Client14, Client20
- Client host 4: Client3, Client9, Client15, Client21
- Client host 5: Client4, Client10, Client16, Client22
- Client host 6: Client5, Client11, Client17, Client23, PrimeClient

The PrimeClient VM had a second virtual disk size of 800 GB (default 200 GB).

Advanced ESXi settings:

- Power.CpuPolicy = High Performance (default balanced)

Client host BIOS settings:

- Client hosts 1-2:
 - Workload Profile set to "Virtualization - Max Performance" (default: General Power Efficient Compute)
 - Thermal Configuration set to "Maximum Cooling" (default: Optimal Cooling)
- Client hosts 3-6:
 - Power Profile set to Maximum Performance (default: Balanced Power and Performance)
 - QPI Snoop Configuration set to Cluster on Die (default: Home Snoop)
 - Thermal Configuration set to Maximum Cooling (default: Optimal Cooling)
 - Memory Refresh Rate set to 1x Refresh (default: 2x Refresh)

Client hosts' network configuration:

- standard vSwitch: vSwitch0
 - Uplink: vmnic0 (1 Gb/s)
 - "Management Network" port group for vmk0 and management
- distributed vSwitch: dSwitch-client
 - Uplinks:
 - vmnic6, vmnic7 (both at 10 Gb/s) for all client hosts
 - vmnic4, vmnic5 (both at 10 Gb/s) for client hosts 1-2

- "Client-VMs" port group for SUT VMs
- "Client-vmotion" port group for vmk1 and vMotion
- MTU set to 9000 for the distributed vSwitch, vmk1 and all uplinks

Other Notes

VMmark3.properties file had the following changes:

- ScrubConfigFile was set to true (default false)
- TileDelay was set to 30 (default 60)

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