

# VMmark® 3.1.1 Results

**Server Vendor & Model:** Supermicro SYS-221BT-DNTR  
**Storage Vendor & Model:** VMware vSAN 8.0 - All Flash  
**Hypervisor:** VMware ESXi 8.0 GA, Build 20513097  
**Datacenter Management Software:** VMware vCenter Server 8.0 GA, Build 20519528

**VMmark 3.1.1 Score =  
27.01 @ 27 Tiles**

Number of Hosts: 4	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 8/416/832
Tested By: Supermicro		Test Date: 04-15-2023
Performance Section <a href="#">Performance</a>	Configuration Section <a href="#">Configuration</a>	Notes Section <a href="#">Notes for Workload</a>

## 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	3576.02	0.99	0.41   0.00	562.78	0.98	0.38   0.06	990.77	1.35	681.34	699.08	1.40	809.76	513.88	1.48	910.31	1.22
p1	3559.07	0.99	0.47   0.00	559.04	0.98	0.37   0.04	994.45	1.35	680.91	703.30	1.41	798.16	487.48	1.41	905.82	1.21
p2	3540.61	0.98	0.47   0.00	562.04	0.98	0.38   0.01	984.65	1.34	708.08	717.85	1.43	819.30	533.83	1.54	907.79	1.23
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	3572.58	0.99	0.43   0.00	562.08	0.98	0.37   0.04	1008.62	1.37	646.30	709.92	1.42	761.65	498.23	1.44	854.09	1.22
p1	3556.08	0.99	0.45   0.00	560.31	0.98	0.39   0.02	999.02	1.36	658.92	735.95	1.47	759.43	522.17	1.51	848.25	1.24
p2	3538.24	0.98	0.44   0.00	561.46	0.98	0.41   0.02	996.38	1.36	667.88	704.77	1.41	777.03	519.65	1.50	867.00	1.23
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	3566.94	0.99	0.37   0.00	562.97	0.98	0.34   0.02	1009.38	1.37	652.98	717.02	1.43	754.30	500.88	1.44	852.60	1.23
p1	3558.04	0.99	0.38   0.00	559.88	0.98	0.31   0.02	987.50	1.34	681.14	733.67	1.47	767.89	541.40	1.56	869.67	1.24
p2	3541.87	0.98	0.37   0.00	560.84	0.98	0.41   0.06	1003.10	1.37	660.66	712.70	1.42	762.72	492.43	1.42	870.51	1.22
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	3578.87	0.99	0.36   0.00	561.85	0.98	0.34   0.02	965.88	1.32	753.15	706.50	1.41	865.87	492.12	1.42	1003.04	1.21
p1	3559.37	0.99	0.40   0.00	559.68	0.98	0.33   0.01	964.02	1.31	759.75	672.67	1.34	894.32	489.75	1.41	1016.49	1.19
p2	3537.92	0.98	0.41   0.00	561.29	0.98	0.42   0.02	961.98	1.31	756.63	681.27	1.36	880.83	466.85	1.35	1013.66	1.18
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	3571.06	0.99	0.41   0.00	562.19	0.98	0.28   0.03	974.12	1.33	735.92	707.00	1.41	859.59	523.77	1.51	947.65	1.23
p1	3559.72	0.99	0.42   0.00	562.53	0.98	0.43   0.08	981.70	1.34	719.40	690.15	1.38	849.81	479.52	1.38	945.70	1.20
p2	3539.29	0.98	0.40   0.00	561.25	0.98	0.36   0.01	972.52	1.32	740.05	713.12	1.42	854.32	502.55	1.45	957.45	1.21
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	3574.54	0.99	0.39   0.00	562.03	0.98	0.39   0.02	1030.33	1.40	589.81	745.98	1.49	673.67	545.30	1.57	758.11	1.26

<b>p1</b>	3559.98	0.99	0.39   0.00	560.51	0.98	0.33   0.02	1035.30	1.41	586.83	744.52	1.49	671.17	522.33	1.51	762.03	1.25
<b>p2</b>	3541.34	0.98	0.42   0.00	559.54	0.98	0.41   0.06	1029.30	1.40	608.33	763.88	1.53	685.68	567.62	1.64	764.13	1.28
<b>TILE_6</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3578.02	0.99	0.40   0.00	563.30	0.98	0.38   0.05	1006.52	1.37	660.12	709.17	1.42	774.11	495.05	1.43	877.65	1.22
<b>p1</b>	3558.02	0.99	0.39   0.01	561.31	0.98	0.35   0.02	999.02	1.36	669.50	714.85	1.43	764.60	520.17	1.50	875.14	1.23
<b>p2</b>	3539.79	0.98	0.42   0.00	562.42	0.98	0.38   0.03	1000.48	1.36	672.26	709.30	1.42	781.84	512.80	1.48	895.50	1.23
<b>TILE_7</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3575.66	0.99	0.44   0.00	563.78	0.99	0.33   0.02	987.65	1.34	698.95	699.23	1.40	809.13	462.00	1.33	922.84	1.20
<b>p1</b>	3559.47	0.99	0.46   0.01	560.51	0.98	0.46   0.15	970.25	1.32	730.92	716.52	1.43	830.35	524.92	1.51	944.54	1.23
<b>p2</b>	3540.95	0.98	0.45   0.00	560.64	0.98	0.39   0.05	981.55	1.34	704.50	671.27	1.34	830.83	481.40	1.39	945.11	1.19
<b>TILE_8</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3578.83	0.99	0.36   0.00	563.60	0.98	0.35   0.03	1002.45	1.37	653.41	716.40	1.43	747.94	498.82	1.44	849.54	1.22
<b>p1</b>	3565.59	0.99	0.40   0.00	561.30	0.98	0.37   0.03	991.75	1.35	679.18	730.58	1.46	788.32	519.92	1.50	863.14	1.24
<b>p2</b>	3543.07	0.98	0.39   0.00	559.39	0.98	0.33   0.03	994.23	1.35	664.11	686.10	1.37	776.56	496.32	1.43	879.85	1.21
<b>TILE_9</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3577.89	0.99	0.38   0.00	564.05	0.99	0.34   0.01	1005.10	1.37	640.05	751.92	1.50	710.08	532.90	1.54	798.06	1.25
<b>p1</b>	3562.29	0.99	0.37   0.00	562.48	0.98	0.41   0.02	1013.27	1.38	623.74	723.48	1.45	717.61	510.93	1.47	789.70	1.23
<b>p2</b>	3538.90	0.98	0.39   0.00	561.11	0.98	0.34   0.02	1001.95	1.36	645.20	720.55	1.44	718.13	531.10	1.53	806.01	1.24
<b>TILE_10</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3576.07	0.99	0.44   0.00	563.79	0.99	0.31   0.01	984.33	1.34	685.36	725.17	1.45	796.78	540.88	1.56	871.57	1.24
<b>p1</b>	3559.05	0.99	0.46   0.00	562.04	0.98	0.42   0.02	988.48	1.35	678.09	705.12	1.41	779.12	469.43	1.35	881.48	1.20
<b>p2</b>	3539.54	0.98	0.44   0.00	561.38	0.98	0.40   0.03	979.55	1.33	699.50	726.08	1.45	793.23	535.50	1.54	890.26	1.24
<b>TILE_11</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3578.97	0.99	0.41   0.00	564.58	0.99	0.35   0.02	988.98	1.35	690.99	698.02	1.39	806.71	515.45	1.49	900.70	1.22
<b>p1</b>	3562.65	0.99	0.43   0.00	561.27	0.98	0.38   0.05	980.70	1.34	709.59	698.35	1.40	814.95	489.40	1.41	908.28	1.21
<b>p2</b>	3544.15	0.99	0.42   0.00	562.03	0.98	0.40   0.02	979.52	1.33	714.22	715.25	1.43	837.75	510.57	1.47	922.65	1.22
<b>TILE_12</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3579.28	0.99	0.33   0.00	562.00	0.98	0.31   0.02	991.33	1.35	694.59	700.55	1.40	811.16	488.77	1.41	920.80	1.21
<b>p1</b>	3564.01	0.99	0.41   0.00	562.70	0.98	0.38   0.04	973.42	1.33	724.02	717.20	1.43	822.41	507.05	1.46	918.98	1.22
<b>p2</b>	3538.87	0.98	0.40   0.00	560.43	0.98	0.40   0.07	982.17	1.34	710.86	691.73	1.38	825.85	483.68	1.39	923.58	1.20
<b>TILE_13</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3577.72	0.99	0.42   0.00	564.53	0.99	0.30   0.02	1008.02	1.37	643.81	729.02	1.46	725.73	505.07	1.46	819.32	1.23
<b>p1</b>	3564.48	0.99	0.46   0.00	561.53	0.98	0.41   0.05	1004.52	1.37	641.74	745.35	1.49	732.34	552.95	1.59	805.03	1.26
<b>p2</b>	3539.78	0.98	0.43   0.00	560.08	0.98	0.35   0.03	1012.65	1.38	632.87	723.48	1.45	732.27	481.62	1.39	826.33	1.22
<b>TILE_14</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3582.93	1.00	0.38   0.00	563.85	0.99	0.38   0.02	1026.78	1.40	605.40	765.38	1.53	677.07	542.90	1.57	769.30	1.27

<b>p1</b>	3560.50	0.99	0.44   0.00	561.78	0.98	0.35   0.02	1026.00	1.40	605.31	727.65	1.45	708.03	538.27	1.55	793.38	1.25
<b>p2</b>	3542.17	0.98	0.42   0.00	560.91	0.98	0.34   0.02	1025.85	1.40	612.01	735.80	1.47	697.88	513.50	1.48	794.42	1.24
<b>TILE_15</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3578.80	0.99	0.39   0.00	563.85	0.99	0.29   0.01	975.33	1.33	714.94	716.60	1.43	837.35	529.67	1.53	927.25	1.23
<b>p1</b>	3561.64	0.99	0.40   0.00	561.22	0.98	0.41   0.07	984.08	1.34	697.42	693.27	1.39	818.66	485.90	1.40	928.52	1.20
<b>p2</b>	3544.17	0.99	0.42   0.00	559.78	0.98	0.41   0.02	970.75	1.32	727.59	713.05	1.42	833.49	503.12	1.45	948.12	1.21
<b>TILE_16</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3578.38	0.99	0.38   0.00	564.77	0.99	0.36   0.05	989.15	1.35	697.52	698.60	1.40	812.19	510.02	1.47	914.08	1.22
<b>p1</b>	3562.63	0.99	0.39   0.00	562.27	0.98	0.38   0.05	989.38	1.35	693.73	700.40	1.40	792.64	487.07	1.40	916.08	1.21
<b>p2</b>	3540.94	0.98	0.41   0.00	559.92	0.98	0.37   0.03	980.23	1.33	711.77	716.85	1.43	818.53	528.17	1.52	914.96	1.23
<b>TILE_17</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3577.16	0.99	0.33   0.00	565.42	0.99	0.36   0.06	1029.40	1.40	589.70	735.38	1.47	680.93	517.62	1.49	768.69	1.25
<b>p1</b>	3568.68	0.99	0.38   0.00	561.25	0.98	0.31   0.02	1019.30	1.39	607.08	757.45	1.51	693.97	540.92	1.56	768.68	1.26
<b>p2</b>	3546.08	0.99	0.32   0.00	561.18	0.98	0.30   0.01	1021.65	1.39	609.63	726.25	1.45	711.07	536.70	1.55	793.60	1.25
<b>TILE_18</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3581.39	1.00	0.39   0.00	565.09	0.99	0.35   0.03	1020.83	1.39	630.94	724.23	1.45	735.84	503.80	1.45	844.83	1.23
<b>p1</b>	3568.53	0.99	0.41   0.00	561.58	0.98	0.35   0.03	1009.12	1.37	653.36	740.45	1.48	758.92	544.38	1.57	856.91	1.25
<b>p2</b>	3542.97	0.98	0.39   0.00	560.58	0.98	0.36   0.03	1016.73	1.38	631.77	722.10	1.44	737.49	501.95	1.45	844.55	1.23
<b>TILE_19</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3587.64	1.00	0.41   0.00	565.96	0.99	0.39   0.04	970.65	1.32	739.59	712.70	1.42	843.66	499.77	1.44	956.61	1.22
<b>p1</b>	3570.10	0.99	0.44   0.00	561.59	0.98	0.36   0.02	970.60	1.32	743.75	679.90	1.36	878.47	494.27	1.43	994.54	1.20
<b>p2</b>	3541.66	0.98	0.39   0.00	560.28	0.98	0.40   0.05	972.45	1.32	737.77	687.35	1.37	852.39	473.55	1.37	990.28	1.19
<b>TILE_20</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3579.55	0.99	0.34   0.00	566.17	0.99	0.32   0.10	986.50	1.34	700.72	724.25	1.45	804.04	533.45	1.54	900.38	1.24
<b>p1</b>	3567.09	0.99	0.38   0.00	562.15	0.98	0.31   0.02	993.17	1.35	691.63	697.33	1.39	811.06	484.48	1.40	924.12	1.21
<b>p2</b>	3548.44	0.99	0.35   0.00	559.39	0.98	0.40   0.04	978.58	1.33	712.81	721.62	1.44	821.47	504.20	1.45	927.58	1.22
<b>TILE_21</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3584.81	1.00	0.37   0.00	563.68	0.99	0.35   0.02	1016.20	1.38	635.16	717.92	1.43	748.85	529.85	1.53	829.62	1.24
<b>p1</b>	3569.65	0.99	0.39   0.00	561.85	0.98	0.31   0.02	1023.42	1.39	623.82	728.90	1.46	727.35	509.00	1.47	823.23	1.24
<b>p2</b>	3546.13	0.99	0.40   0.00	560.06	0.98	0.39   0.02	1010.73	1.38	646.62	744.23	1.49	746.34	548.23	1.58	836.31	1.26
<b>TILE_22</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3584.15	1.00	0.37   0.00	566.06	0.99	0.28   0.02	1015.85	1.38	627.55	724.52	1.45	722.89	504.98	1.46	826.08	1.24
<b>p1</b>	3570.23	0.99	0.40   0.00	561.56	0.98	0.41   0.03	1006.17	1.37	646.93	749.35	1.50	735.05	523.17	1.51	826.54	1.25
<b>p2</b>	3545.54	0.99	0.39   0.00	559.45	0.98	0.32   0.01	1007.65	1.37	645.53	717.65	1.43	750.21	524.77	1.51	838.72	1.23
<b>TILE_23</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3581.92	1.00	0.40   0.00	566.00	0.99	0.40   0.02	979.15	1.33	720.62	690.88	1.38	836.97	478.27	1.38	952.58	1.20

<b>p1</b>	3566.23	0.99	0.44   0.00	563.14	0.98	0.42   0.03	960.05	1.31	757.80	704.35	1.41	868.81	516.00	1.49	985.81	1.22
<b>p2</b>	3550.10	0.99	0.43   0.00	558.15	0.98	0.33   0.01	975.15	1.33	731.14	683.58	1.37	857.78	474.20	1.37	976.99	1.19
<b>TILE_24</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3579.14	0.99	0.37   0.00	565.58	0.99	0.37   0.01	980.80	1.34	710.05	716.90	1.43	826.90	508.12	1.47	914.85	1.22
<b>p1</b>	3565.62	0.99	0.38   0.00	563.21	0.98	0.38   0.02	979.02	1.33	716.38	689.58	1.38	834.28	507.10	1.46	929.72	1.21
<b>p2</b>	3547.16	0.99	0.37   0.00	559.30	0.98	0.31   0.05	984.88	1.34	711.42	692.30	1.38	831.33	483.68	1.39	932.55	1.20
<b>TILE_25</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3584.20	1.00	0.36   0.00	562.16	0.98	0.30   0.00	1008.98	1.37	632.73	771.33	1.54	720.02	561.40	1.62	793.84	1.27
<b>p1</b>	3566.32	0.99	0.40   0.00	564.19	0.99	0.38   0.01	1022.33	1.39	610.90	704.25	1.41	712.02	511.38	1.47	789.76	1.23
<b>p2</b>	3552.90	0.99	0.41   0.00	561.33	0.98	0.39   0.01	1014.58	1.38	626.86	747.83	1.49	721.28	533.45	1.54	798.86	1.25
<b>TILE_26</b>	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(nRT MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
<b>p0</b>	3586.59	1.00	0.38   0.00	564.22	0.99	0.34   0.01	1022.62	1.39	612.25	754.10	1.51	707.62	562.38	1.62	784.91	1.27
<b>p1</b>	3567.60	0.99	0.41   0.00	563.57	0.98	0.40   0.06	1026.25	1.40	615.74	707.40	1.41	714.45	491.40	1.42	797.66	1.22
<b>p2</b>	3549.06	0.99	0.41   0.00	559.41	0.98	0.37   0.05	1010.90	1.38	633.75	776.73	1.55	720.71	558.23	1.61	809.15	1.27
<b>p0_score:</b>	33.29															
<b>p1_score:</b>	33.10															
<b>p2_score:</b>	33.05															

<b>Infrastructure_Operations_Scores:</b>	vMotion	SVMotion	XVMotion	Deploy
<b>Completed_Ops_PerHour</b>	56.00	50.00	40.00	29.00
<b>Avg_Seconds_To_Complete</b>	5.92	90.35	113.31	199.94
<b>Failures</b>	0.00	0.00	0.00	0.00
<b>Ratio</b>	2.15	2.78	2.22	3.62
<b>Number_Of_Threads</b>	2	2	2	2

<b>Summary</b>	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
<b>Unreviewed_VMmark3_Applications_Score</b>	33.10	
<b>Unreviewed_VMmark3_Infrastructure_Score</b>	2.63	
<b>Unreviewed_VMmark3_Score</b>	27.01	

## Configuration

<b>Virtualization Software</b>	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 8.0 GA, Build 20513097 / 10-11-2022

Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 8.0 GA, Build 20519528 / 10-11-2022
Supplemental Software	None
<b>Servers</b>	
Number of Servers in System Under Test (all subsequent fields in this section are per server)	4
Server Manufacturer and Model	Supermicro SYS-221BT-DNTR
Processor Vendor and Model	Intel Xeon Platinum 8470
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.0 / 3.8
Total Sockets/Total Cores/Total Threads	2 Sockets / 104 Cores / 208 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	1.1
Memory Size (in GB, Number of DIMMs)	1536GB, 12
Memory Type and Speed	128GB 4Rx4 DDR5 - 4800 MHz RDIMM
Disk Subsystem Type	VMware vSAN 8.0 OSA, NFS
Number of Disk Controllers	0
Disk Controller Vendors and Models	None
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Samsung, MZ1LW960HMJP, 960GB, 8.0 GT/s
Number of Host Bus Adapters	0
Host Bus Adapter Vendors and Models	None
Number of Network Controllers	1
Network Controller Vendors and Models	Supermicro AOC-A100G-m2CG
Other Hardware	None
Other Software	None

Hardware Availability Date (MM-DD-YYYY)	01-20-2023
BIOS Availability Date (MM-DD-YYYY)	01-20-2023
Software Availability Date (MM-DD-YYYY)	10-11-2022
<b>Network</b>	
Network Switch Vendors and Models	Cisco Nexus 31108TC-V
Network Speed	<ul style="list-style-type: none"> <li>• 6x Quad Small Form Factor Pluggable (QSFP) ports upto 100Gbps</li> <li>• 48x RJ-45 port upto 10 Gbps</li> </ul>
<b>Primary Storage</b>	
Storage Category	vSAN 8.0 OSA
Storage Vendors, Models, and Firmware Versions	4x Supermicro SYS-221BT-DNTR with VMware vSAN 8.0 OSA
Storage Configuration Summary	<p>VMware vSAN 8.0 OSA:</p> <ul style="list-style-type: none"> <li>• 2 x Disk Groups per host</li> <li>• 2 x Intel D7-P5620 Series, SSDPF2KE016T1, 1.6TB for Cache</li> <li>• 4 x Intel D7-P5620 Series, SSDPF2KE016T1, 1.6TB for Capacity</li> </ul>
<b>Datacenter Management Server</b>	
System Model	Supermicro SuperServer SYS-1029U-TN10RT
Processor Vendor and Model	Intel Xeon Platinum 8253 CPU
Processor Speed (GHz)	2.20
Total Sockets/Total Cores/Total Threads	2 Sockets / 32 Cores / 64 Threads
Memory Size (in GB, Number of DIMMs)	384, 12
Network Controller(s) Vendors and Models	Supermicro AOC-M25G-i2s
Operating System, Version, Bitness, and Service Pack	VMware ESXi 7.0 Update 3, Build 18644231
Virtual Center VM Number of vCPUs	4
Virtual Center VM Virtual Memory (in GB)	21
Virtual Center VM Operating System, Version, Bitness, and Service Pack	VMware vCenter Server 8.0 GA, Build 20519528
Other Hardware	None

Other Software	None
<b>Clients</b>	
Total Number of Virtual Clients / Virtual Client Hosts	28 / 3
System Model(s)	Supermicro SYS-120U-TNR
Processor Vendor(s) and Model(s)	Intel(R) Xeon(R) Platinum 8352Y
Processor Speed(s) (GHz)	2.20
Total Sockets/Total Cores/Total Threads	6 Sockets / 192 Cores / 384 Threads
Memory per Virtual Client Host	<ul style="list-style-type: none"> <li>Hosts 1-2 : 1TB</li> <li>Host 3 : 512GB</li> </ul>
Network Controller(s) Vendors and Models	AOC-S25G-i2s
Virtual Client Networking Notes	All management traffic and workload traffic running on vmnic0
Virtual Client Storage Notes	All clients mounted on NFS datastore
Other Hardware	None
Other Software	VMware ESXi, 8.0 GA, Build 20513097

<b>Security Mitigations</b>						
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

- Added sched.mem.lpage.enable1GPage to TRUE for all DS3DB VMs (default normal)
- All DS3DB, ElasticDB and ElasticLB VMs had CPU shares set to High (default normal)
- All memory reserved for DS3DB VMs (default non-reserved)
- CDROM removed from all VMs except for PrimeClient, client, and template VMs.
- Cluster DRS Automation level set to Fully Automated.
- CPU shares set to low for all Standby VMs (default normal)
- DS3DB0 was configured to not use the third virtual disk before building additional tiles.
- Logging was disabled for all VMs except for PrimeClient, client, and template VMs (default enabled)
- Logical CPU configuration changed for all multi-CPU VMs except for PrimeClient and client VMs to 1 socket with multiple cores (default single core per socket)
- vSAN Default Storage Policy has been modified the Failures to Tolerate field was set to zero
- vSphere DRS Advanced Options: AggressiveCPUActive = 1 (default 0).
- vSphere DRS Migration Threshold set to Fully Automated level 2

## Server Notes

### BIOS Settings:

- Hardware Prefetcher = Disabled (default Enabled)
- Adjacent Cache Prefetch = Disabled (default Enabled)
- DCU Streamer Prefetcher = Disabled (default Enabled)
- DCU IP Prefetcher = Disabled (default Enabled)
- LLC Prefetch = Enabled (default Disabled)
- Power Technology = Custom (default Energy Efficient)
- Power Performance Tuning = BIOS Controls EPB (default)
- ENERGY\_PERF\_BIAS\_CFG mode = Maximum Performance (default)
- Package C State = C0/C1 state (default=Auto)

### Advanced Settings:

- Cpu.CreditAgePeriod = 1000 (default 3000)
- 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)
- LSOM.IsomEnableRebuildOnLSE = 2 (default )
- Mem.CtlMaxPercent = 0 (default 65)
- Mem.ShareScanGHz = 0 (default 4)
- Mem.VMOverheadGrowthLimit = 0 (default 4294967295)
- Net.MaxNetifTxQueueLen = 1000 (default 2000)
- Net.MaxPortRxQueueLen = 160 (default 80)
- Numa.LTermFairnessInterval = 0 (default 5)
- Numa.MigImbalanceThreshold = 57 (default 10)
- Numa.PageMigEnable = 0 (default 1)
- Numa.RebalancePeriod = 6000 (default 2000)



- Numa.SwapLoadEnable = 0 (default 1)
- Numa.SwapLocalityEnable = 0 (default 1)
- Power.CpuPolicy = High Performance (default Balanced)
- UserVars.HostClientCEIPOptIn = 1 (default 0)
- UserVars.SuppressShellWarning = 1 (default = 0)
- VMFS3.HardwareAcceleratedLocking = 0 (default 1)
- VMkernel.Boot.hyperthreadingMitigation = true (default false)

## Networking Notes

### Server

- Single Distributed Switch with one uplink at vmnic0.
- Uplink1 contains the following distributed portgroups: Management Network, VMNetwork, and vMotion.
- VLAN ID 1006 consisted of Management Network and VMNetwork
- VLAN ID 1007 consisted of vSAN and vMotion.
- All virtual machines used VMNetwork for traffic.
- MTU set to 9000 (default 1500) for the DSwitch, vmk0, vmk1, vmk2, vmk3, and all uplinks

### Client

- Single Standard Switch with one uplink at vmnic0
- MTU set to 9000 (default 1500)

## Storage Notes

- All client server OS installed on SATADOM.
- All SUT hosts OS installed on M.2 drive.
- NFS Folder configuration:
  - All folders are backed by the same NFS server on a single striped zfs array, mounted storage device detailed in the "Secondary Storage section."
  - Deploy1 datastore -> /data/VMmark2021/deploy1
  - Deploy2 datastore -> /data/VMmark2021/deploy2
  - NFS datastore -> /data/VMmark2021
  - NFS-Tile0 datastore -> /data/VMmark2021/NFS-Tile0 (used for backup)
  - vMotion1 datastore -> /data/VMmark2021/vmotion1
  - vMotion2 datastore -> /data/VMmark2021/vmotion2
- Software configuration
  - All Flash vSAN 8.0 OSA.
  - Two diskgroups per host.
  - Each disk group contains 1 x Intel D7-P5620 Series for caching and 2 x Intel D7-P5620 Series for capacity.
  - vSAN Default Storage Policy has been modified the Failures to Tolerate field was set to zero.

- Virtual Machine LUN Distribution:
  - vsanDatastore contains the following workloads:
  - AuctionAppA\*
  - AuctionAppB\*
  - AuctionDB\*
  - AuctionLB\*
  - AuctionMSQ\*
  - AuctionNoSQL\*
  - AuctionWebA\*
  - AuctionWebB\*
  - DS3DB\*
  - DS3WebA\*
  - DS3Webb\*
  - DS3WebC\*
  - ElasticAppA\*
  - ElasticAppb\*
  - ElasticDB\*
  - ElasticLB\*
  - ElasticWebA\*
  - ElasticWebB\*
  - Standby\*

## Secondary Shared Storage Device:

- Hardware:
  - SuperServer SYS-1029P-N32R
  - 768GB Memory 12x 72ASS8G72LZ-2G6D2 64GB 2666 DIMM @ 2666MHz; 1DPC
  - 2x MCX455A-ECAT - Single Port; bonded 100G LACP
  - 2x Xeon 6230; Turbo Enabled, H0 Stepping
  - 24x Intel 4TB P4500 (SSDPE2KX040T7) NVMe SSD's
  - 1x SuperMicro SSD 32GB SATADOM
- Firmware:
  - BIOS - 3.1a
  - IPMI - 1.56
  - MCX455A-ECAT - 12.27.1016 (MT\_2180110032)
  - 4TB P4500 (SSDPE2KX040T7) - QDV101D0
  - SuperMicro SSD 32GB SATADOM - SOB20R
- Software:
  - Ubuntu 18.04.4 w/ Updates as of 04/09/2020
  - Kernel 4.15.0-91-generic

- zfs module - 0.7.5-1ubuntu16.11
- zfs release - 0.7.5-1ubuntu16.11

- Configuration:

- 3x raidz3 pools on one large pool over all 24 disks, mounted to /data
- MCX455A-ECAT set to MTU 9000
- LACP Bond of MCX455A-ECAT set to MTU 9000
- ufw disabled
- nfs-kernel-server modified /etc/default/nfs-kernel-server `RPCNFSDCOUNT=40`

- Virtual Machine LUN Distribution:

- deploy1 contains the following workload: deploy1
- deploy2 contains the following workload: deploy2

## Datacenter Management Server Notes

None

## Operating System Notes

None

## Software Notes

None

## Client Notes

- Primeclient VM configured with a 200GB sized second disk.
- NFS contains all the client and PrimeClient virtual machines.
- MTU set to 9000 (default 1500) for the Standard Switch
- Host1 contains the following workloads: Client0, Client1, Client4, Client7, Client10, Client13, Client16, Client19, Client22, Client25, Primeclient
- Host2 contains the following workloads: Client2, Client5, Client8, Client11, Client14, Client17, Client20, Client23, Client26
- Host3 contains the following workloads: Client3, Client6, Client9, Client12, Client15, Client18, Client21, Client24

## Other Notes

VMmark3.properties file modifications:

- VCsupportTimeOut = 4800 (default 2400)

None

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