

## VMware® VMmark® V2.5.2 Results

Vendor and Hardware Platform: Fujitsu Server PRIMERGY RX2540 M2  
 Virtualization Platform: VMware ESXi 6.0.0 U1b Build 3380124  
 VMware vCenter Server : VMware vCenter Server 6.0.0 Build 3018524

**VMmark V2.5.2 PPKW Score =  
38.3065 @ 28 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 4/88/176
Tested By: Fujitsu		Test Date: 02-25-2016
Performance Section <a href="#">Performance</a>	Configuration Section <a href="#">Configuration</a>	Notes Section <a href="#">Notes for Workload</a>

### Performance

	mailserver			olio			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	329.75	1.00	54.00	4726.90	1.02	109.74	4269.60	1.94	55.39	3038.95	2.00	63.20	2178.00	2.06	66.36	1.52
<b>p1</b>	323.32	0.98	54.00	4691.77	1.01	135.60	4227.62	1.92	56.42	3246.85	2.14	62.67	2391.75	2.26	65.47	1.56
<b>p2</b>	321.07	0.97	58.00	4680.02	1.01	152.33	4276.85	1.94	55.02	2984.30	1.97	66.01	2249.57	2.13	68.59	1.51
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.80	1.00	53.90	4733.65	1.02	107.78	4236.27	1.93	56.12	3025.03	1.99	63.74	2179.18	2.06	66.59	1.52
<b>p1</b>	323.70	0.98	54.00	4703.62	1.01	128.81	4251.55	1.93	55.81	3129.80	2.06	63.67	2377.97	2.25	66.26	1.55
<b>p2</b>	321.70	0.97	57.00	4711.02	1.01	140.75	4235.10	1.93	56.45	2969.75	1.96	66.50	2137.82	2.02	69.66	1.50
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.70	0.99	54.00	4745.50	1.02	108.51	4250.27	1.93	55.77	3123.45	2.06	64.01	2252.25	2.13	68.01	1.54
<b>p1</b>	327.15	0.99	54.00	4701.55	1.01	132.80	4233.85	1.93	56.36	3149.80	2.07	62.77	2375.40	2.25	66.58	1.55
<b>p2</b>	326.73	0.99	62.25	4696.98	1.01	146.11	4261.80	1.94	55.54	3006.30	1.98	64.90	2139.75	2.02	69.01	1.51
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.60	1.00	53.42	4731.90	1.02	108.89	4238.50	1.93	56.33	3108.20	2.05	64.66	2236.50	2.11	69.16	1.53
<b>p1</b>	328.77	1.00	56.20	4696.25	1.01	135.98	4246.45	1.93	56.00	3029.38	1.99	63.63	2273.95	2.15	66.88	1.53
<b>p2</b>	325.27	0.98	64.00	4685.45	1.01	160.44	4300.45	1.96	54.29	2999.72	1.98	65.07	2152.95	2.03	68.30	1.51
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.88	0.99	54.00	4745.00	1.02	108.23	4266.85	1.94	55.31	3320.55	2.19	59.88	2415.65	2.28	63.90	1.58
<b>p1</b>	325.98	0.99	54.00	4703.12	1.01	131.83	4259.75	1.94	55.31	3093.70	2.04	60.84	2303.80	2.18	64.24	1.54
<b>p2</b>	323.52	0.98	54.00	4676.45	1.01	151.78	4300.00	1.96	54.08	3060.65	2.02	62.33	2169.72	2.05	67.10	1.51
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.48	0.99	53.50	4730.50	1.02	109.69	4247.65	1.93	56.06	3201.97	2.11	60.48	2419.85	2.29	63.67	1.57

<b>p1</b>	329.75	1.00	54.00	4708.23	1.01	134.77	4249.48	1.93	55.77	3110.05	2.05	59.97	2203.30	2.08	64.68	1.53
<b>p2</b>	326.50	0.99	58.00	4688.62	1.01	146.04	4244.35	1.93	56.17	3140.78	2.07	63.27	2251.45	2.13	68.25	1.53
<b>TILE_6</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	321.57	0.97	49.42	4742.90	1.02	108.31	4142.43	1.88	60.12	3087.60	2.03	60.80	2322.45	2.20	63.57	1.53
<b>p1</b>	323.35	0.98	54.00	4712.70	1.02	131.10	4169.57	1.90	59.01	3221.10	2.12	59.41	2339.22	2.21	62.43	1.55
<b>p2</b>	326.68	0.99	59.75	4703.75	1.01	146.34	4102.05	1.87	61.38	3187.10	2.10	60.87	2306.80	2.18	64.56	1.54
<b>TILE_7</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.77	0.99	48.00	4719.27	1.02	113.53	4116.52	1.87	60.72	3084.03	2.03	61.03	2313.97	2.19	64.25	1.53
<b>p1</b>	323.57	0.98	54.00	4701.98	1.01	141.41	4145.45	1.88	59.96	3118.05	2.05	59.37	2232.20	2.11	62.77	1.52
<b>p2</b>	331.15	1.00	54.00	4638.02	1.00	175.40	4119.05	1.87	60.90	3298.65	2.17	60.72	2420.22	2.29	63.56	1.56
<b>TILE_8</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.65	0.98	54.00	4730.35	1.02	109.55	4134.07	1.88	59.85	3207.80	2.11	59.74	2394.65	2.26	58.80	1.55
<b>p1</b>	332.27	1.01	54.00	4695.45	1.01	134.11	4158.48	1.89	59.17	3108.68	2.05	59.46	2287.78	2.16	59.05	1.53
<b>p2</b>	325.10	0.98	54.00	4695.90	1.01	151.17	4088.10	1.86	61.54	3163.07	2.08	61.66	2447.57	2.31	61.59	1.55
<b>TILE_9</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.85	0.99	53.00	4745.27	1.02	107.61	4145.75	1.89	59.49	3103.68	2.04	59.76	2292.18	2.17	58.76	1.53
<b>p1</b>	321.57	0.97	55.27	4717.68	1.02	132.41	4144.00	1.88	59.56	3208.00	2.11	59.74	2398.45	2.27	58.52	1.55
<b>p2</b>	328.95	1.00	64.00	4704.25	1.01	144.42	4042.35	1.84	63.43	3126.95	2.06	63.51	2443.45	2.31	62.27	1.55
<b>TILE_10</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.77	0.99	53.98	4736.88	1.02	107.26	4131.12	1.88	60.17	3166.32	2.09	61.41	2370.57	2.24	60.13	1.55
<b>p1</b>	327.35	0.99	54.00	4713.30	1.02	130.47	4154.80	1.89	59.28	3179.43	2.09	60.86	2381.62	2.25	59.67	1.55
<b>p2</b>	324.02	0.98	64.00	4690.88	1.01	153.02	4102.18	1.87	61.16	3034.12	2.00	63.28	2350.22	2.22	61.80	1.52
<b>TILE_11</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.65	0.99	54.00	4724.93	1.02	111.75	4105.25	1.87	60.89	3063.57	2.02	61.63	2264.72	2.14	60.48	1.52
<b>p1</b>	328.88	1.00	57.00	4691.12	1.01	132.93	4136.57	1.88	59.97	3185.90	2.10	60.68	2486.00	2.35	59.59	1.56
<b>p2</b>	328.73	1.00	64.00	4679.85	1.01	163.05	4126.68	1.88	60.37	3171.95	2.09	61.45	2367.07	2.24	60.40	1.54
<b>TILE_12</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.75	0.99	54.00	4726.98	1.02	107.07	4190.43	1.91	58.59	3167.47	2.09	62.09	2279.88	2.15	66.35	1.54
<b>p1</b>	327.65	0.99	54.00	4699.57	1.01	133.81	4185.70	1.90	58.51	3161.62	2.08	62.29	2384.75	2.25	65.88	1.55
<b>p2</b>	324.98	0.98	54.00	4698.68	1.01	148.44	4152.18	1.89	60.10	3019.47	1.99	64.03	2152.20	2.03	68.41	1.50
<b>TILE_13</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.52	0.99	50.98	4727.93	1.02	103.96	4182.12	1.90	58.95	3155.60	2.08	62.66	2277.60	2.15	66.72	1.54
<b>p1</b>	323.40	0.98	54.00	4710.52	1.01	125.22	4191.73	1.91	58.45	3044.95	2.01	62.89	2280.00	2.15	66.44	1.52
<b>p2</b>	328.45	0.99	54.75	4696.65	1.01	133.68	4104.02	1.87	61.64	3077.22	2.03	66.32	2218.80	2.10	70.33	1.51
<b>TILE_14</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM

<b>p0</b>	323.27	0.98	53.83	4722.70	1.02	111.16	4253.05	1.93	55.85	3232.50	2.13	63.75	2356.03	2.23	67.80	1.56
<b>p1</b>	323.23	0.98	54.00	4700.05	1.01	134.73	4254.80	1.93	55.72	3053.90	2.01	62.81	2266.85	2.14	67.20	1.53
<b>p2</b>	325.43	0.99	53.27	4681.10	1.01	152.02	4280.57	1.95	54.89	3013.32	1.98	64.56	2134.75	2.02	69.49	1.51
<b>TILE_15</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.75	0.98	43.12	4728.60	1.02	108.89	4261.82	1.94	55.55	3120.72	2.06	64.43	2347.68	2.22	68.38	1.55
<b>p1</b>	326.52	0.99	53.00	4702.30	1.01	132.70	4261.40	1.94	55.62	3154.15	2.08	62.59	2262.80	2.14	66.99	1.54
<b>p2</b>	323.43	0.98	53.00	4687.52	1.01	160.35	4309.57	1.96	53.92	3020.32	1.99	64.06	2151.30	2.03	68.31	1.51
<b>TILE_16</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.88	0.98	53.67	4728.77	1.02	111.71	4140.98	1.88	59.71	3240.15	2.13	58.18	2486.15	2.35	59.51	1.57
<b>p1</b>	324.82	0.98	54.00	4708.77	1.01	140.46	4155.15	1.89	59.15	3136.28	2.07	58.01	2275.70	2.15	59.67	1.53
<b>p2</b>	326.30	0.99	63.20	4666.25	1.01	158.54	4071.75	1.85	62.09	3182.00	2.10	60.78	2341.95	2.21	62.04	1.54
<b>TILE_17</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.48	0.99	63.52	4725.85	1.02	111.46	4151.07	1.89	59.57	3122.88	2.06	58.91	2374.25	2.24	60.03	1.54
<b>p1</b>	333.00	1.01	64.00	4700.27	1.01	137.85	4157.55	1.89	59.21	3236.28	2.13	58.60	2384.35	2.25	59.38	1.56
<b>p2</b>	323.80	0.98	64.00	4677.07	1.01	148.90	4046.05	1.84	63.25	3149.97	2.07	62.51	2324.57	2.20	63.29	1.53
<b>TILE_18</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.12	0.98	54.00	4736.60	1.02	108.23	4134.65	1.88	60.09	3106.12	2.05	59.72	2370.80	2.24	60.29	1.54
<b>p1</b>	325.20	0.98	54.00	4716.55	1.02	131.76	4152.07	1.89	59.35	3134.38	2.06	58.44	2277.60	2.15	59.21	1.53
<b>p2</b>	328.52	0.99	64.00	4692.40	1.01	147.31	4078.97	1.85	62.03	3194.47	2.10	60.40	2454.30	2.32	61.46	1.56
<b>TILE_19</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.68	0.99	55.25	4741.27	1.02	106.52	4103.30	1.87	61.39	3094.70	2.04	60.03	2258.65	2.13	61.00	1.52
<b>p1</b>	327.52	0.99	54.00	4706.25	1.01	126.58	4140.90	1.88	59.67	3232.15	2.13	58.71	2386.60	2.26	59.28	1.55
<b>p2</b>	325.82	0.99	63.75	4691.43	1.01	156.27	4110.73	1.87	61.04	3211.55	2.11	59.51	2460.43	2.33	61.01	1.56
<b>TILE_20</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.35	0.99	54.00	4729.65	1.02	109.24	4192.20	1.91	58.30	3062.30	2.02	61.76	2279.22	2.15	59.61	1.53
<b>p1</b>	329.80	1.00	58.25	4694.25	1.01	140.82	4182.15	1.90	58.63	3185.75	2.10	61.12	2372.28	2.24	60.26	1.55
<b>p2</b>	323.93	0.98	64.00	4689.05	1.01	155.95	4114.62	1.87	60.78	3124.55	2.06	63.77	2437.43	2.30	62.85	1.54
<b>TILE_21</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.40	0.99	57.23	4713.18	1.02	108.65	4160.80	1.89	59.27	3058.50	2.01	61.94	2259.03	2.14	61.00	1.52
<b>p1</b>	328.35	0.99	59.00	4692.23	1.01	134.91	4155.80	1.89	59.41	3269.00	2.15	61.90	2487.80	2.35	59.49	1.57
<b>p2</b>	328.73	1.00	64.00	4691.43	1.01	149.64	4068.90	1.85	62.60	2998.68	1.97	65.21	2323.50	2.20	63.59	1.52
<b>TILE_22</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.90	1.00	56.50	4733.02	1.02	107.85	4168.45	1.90	59.05	3029.88	2.00	63.20	2242.75	2.12	61.84	1.52
<b>p1</b>	327.05	0.99	60.00	4705.27	1.01	132.93	4175.90	1.90	58.88	3158.32	2.08	62.16	2469.53	2.33	60.51	1.56
<b>p2</b>	325.57	0.99	64.00	4689.70	1.01	151.95	4125.90	1.88	60.30	3116.65	2.05	64.21	2335.18	2.21	62.80	1.53

<b>TILE_23</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.10	0.99	59.73	4714.60	1.02	112.49	4136.12	1.88	60.21	3113.62	2.05	64.03	2341.68	2.21	62.30	1.54
<b>p1</b>	325.23	0.98	56.25	4706.80	1.01	140.68	4165.32	1.89	59.43	3158.45	2.08	62.06	2463.47	2.33	60.69	1.56
<b>p2</b>	325.70	0.99	61.75	4663.70	1.00	174.63	4146.77	1.89	59.83	3039.55	2.00	62.91	2247.72	2.12	61.54	1.51
<b>TILE_24</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.70	0.99	65.42	4713.70	1.02	106.70	4182.25	1.90	58.96	3171.62	2.09	61.61	2291.47	2.17	65.68	1.54
<b>p1</b>	331.38	1.00	63.85	4700.82	1.01	132.20	4164.55	1.89	59.41	3062.78	2.02	62.05	2283.88	2.16	66.14	1.53
<b>p2</b>	325.50	0.99	64.00	4688.52	1.01	150.17	4124.57	1.88	60.92	3135.68	2.06	63.60	2257.25	2.13	68.02	1.52
<b>TILE_25</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.45	0.99	55.50	4718.80	1.02	107.38	4170.12	1.90	59.51	3262.00	2.15	62.29	2373.70	2.24	66.29	1.56
<b>p1</b>	327.62	0.99	54.00	4709.90	1.01	135.24	4181.82	1.90	58.87	3064.97	2.02	62.07	2275.75	2.15	66.78	1.53
<b>p2</b>	324.02	0.98	63.25	4681.62	1.01	141.73	4098.32	1.86	61.70	2999.80	1.98	65.15	2133.50	2.02	69.69	1.49
<b>TILE_26</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.65	0.99	56.50	4709.82	1.01	111.75	4141.95	1.88	60.01	3149.03	2.07	62.82	2390.62	2.26	65.63	1.55
<b>p1</b>	327.27	0.99	54.00	4716.82	1.02	143.23	4154.57	1.89	59.49	3077.55	2.03	61.29	2204.95	2.08	64.48	1.52
<b>p2</b>	327.38	0.99	64.00	4693.52	1.01	163.19	4116.85	1.87	61.00	3137.28	2.07	63.42	2265.53	2.14	67.33	1.53
<b>TILE_27</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.20	0.99	54.00	4713.90	1.02	107.07	4146.07	1.89	59.97	3139.90	2.07	62.77	2370.78	2.24	66.59	1.54
<b>p1</b>	323.75	0.98	54.00	4701.57	1.01	128.16	4176.52	1.90	58.77	3076.88	2.03	61.49	2190.30	2.07	65.80	1.51
<b>p2</b>	322.52	0.98	54.00	4686.90	1.01	158.62	4141.48	1.88	60.11	3158.10	2.08	62.38	2285.15	2.16	66.22	1.53
<b>p0_score:</b>	43.12															
<b>p1_score:</b>	43.16															
<b>p2_score:</b>	42.72															

<b>Infrastructure_Operations_Scores:</b>										vmotion			svmotion			deploy		
<b>Completed_Ops_PerHour</b>										17.50			11.00			5.50		
<b>Avg_Seconds_To_Complete</b>										26.62			17.58			297.59		
<b>Failures</b>										0.00			0.00			0.00		
<b>Ratio</b>										1.09			1.22			1.38		
<b>Number_Of_Threads</b>										1			1			1		

<b>PTD_Summary:</b>	
<b>Number_of_PTD_Daemons</b>	1
<b>Number_of_PTD_Phases</b>	3
<b>PTD_Phase_Timing</b>	2400secs
<b>PtdTiming:</b>	ptd0

<b>p0</b>	0							
<b>p1</b>	0							
<b>p2</b>	0							
<b>PTD_Results:</b>								
<b>p0</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%	
<b>ptd0</b>	SERVER	906.83	227.58	4.01	0.99	2400.00	0.00	
<b>p1</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%	
<b>ptd0</b>	SERVER	912.72	227.50	4.03	0.99	2400.00	0.00	
<b>p2</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%	
<b>ptd0</b>	SERVER	915.13	227.77	4.04	0.99	2400.00	0.00	
<b>Summary</b>		Run_Is_Compliant				Turbo_Setting:0		
		Number_Of_Compliance_Issues(0)*				Median_Phase(p0)		
<b>Unreviewed_VMmark2_Avg_Watts</b>		906.83						
<b>Unreviewed_VMmark2_Applications_Score</b>		43.12						
<b>Unreviewed_VMmark2_Infrastructure_Score</b>		1.22						
<b>Unreviewed_VMmark2_Score</b>		34.74						
<b>Unreviewed_VMmark2_PPKW</b>		38.3065						

## Configuration

<b>PTD Configuration</b>	
Number of Power Meters	1
Power Meter Vendors and Models	Hioki 3334
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)	07-20-2015
Power Meter Calibration Info (Calibrated By/Duration/Calibration certificate(s))	Atlas Copco / one year / W15072360
Power Meter(s) Volt/Amp Range	300 / 10
<b>PTD Client Configuration</b>	
Number of Power Meter Clients	1
System Model(s)	Prime Client, details in client configuration section
Processor Vendor(s) and Model(s)	Prime Client, details in client configuration section
Processor Speed(s) (GHz)	Prime Client, details in client configuration section
Total Sockets/Total Cores/Total Threads	Prime Client, details in client configuration section
Memory Per Power Meter Client	Prime Client, details in client configuration section
Network Controller(s) Vendors and Models	Prime Client, details in client configuration section

Operating System, Version, and Service Pack	Prime Client, details in client configuration section
Other Hardware	Delock Adapter USB 2.0 > 1 x Serial
Other Software	none

## Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 6.0.0 U1b Build 3380124 / 01-07-2016
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 6.0.0 Build 3018524 / 09-16-2015
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	Fujitsu Server PRIMERGY RX2540 M2
Processor Vendor and Model	Intel Xeon E5-2699 v4
Processor Speed (GHz)	2.2
Total Sockets/Total Cores/Total Threads	2 Sockets / 44 Cores / 88 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	55MB I+D on chip per chip L3
BIOS Version	V5.0.0.11 R1.3.0 for D3289-B1x
Memory Size (in GB, Number of DIMMs)	512, 16
Memory Type and Speed	32GB DIMMs 2Rx4 PC4-2400T ECC
Disk Subsystem Type	FC SAN
Number of Disk Controllers	0
Disk Controller Vendors and Models	
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Dual port Emulex LPe16002

Number of Network Controllers	2
Network Controller Vendors and Models	One Intel I350-T2 Dual Port 1GbE Adapter One Emulex OneConnect OCe14000 Dual Port Adapter with 10Gb SFP+ DynamicLoM interface module
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	06-28-2016
Software Availability Date (MM-DD-YYYY)	01-07-2016
<b>Network</b>	
Network Switch Vendors and Models	Fujitsu PRIMERGY BX600 GbE Switch Blade 30/12, Brocade VDX 6740
Network Speed	1Gbps for SUT management and VMotion, 10Gbps for Clients and VMs
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	Two Fujitsu Server PRIMERGY RX300 S8, Firmware V4.6.5.4 R1.1.0 One Fujitsu ETERNUS DX100 S3, Firmware version V10L32-0000
Fibre Channel Switch Vendors and Models	Brocade 6510
Disk Space Used	9.31TB
Array Cache Size	1GB(Fujitsu Server PRIMERGY RX300 S8), 4GB(Fujitsu ETERNUS DX100)
Total Number of Physical Disks Used	2xSAS-HDDs, 17xSAS-SSDs, 4xPCIe-SSD
Total Number of Enclosures/Pods/Shelves Used	3
Number of Physical Disks Used per Enclosure/Pod/Shelf	Details in section Storage Notes
Total Number of Storage Groups Used	0
Number of LUNs Used	41
LUN Size and Number of Disks Per LUN	Details in section Storage Notes
RAID Type	0
Number of Members per RAID Set	Details in section Storage Notes
Disk Vendors, Models, and Speeds	2xSeagate, ST1200MM0007, 10krpm; 17xSSD Toshiba PX02SMF040; 4xFusion-io ioDrive2 1.2TB PCIe SSD
<b>Datacenter Management Server</b>	
System Model	Fujitsu Server PRIMERGY BX620 S5

Processor Vendor and Model	Intel Xeon X5570
Processor Speed (GHz)	2.93
Total Sockets/Total Cores/Total Threads	Hypervisor: 2 Sockets / 8 Cores / 16 Threads Virtual Center VM: Details in section Datacenter Management Server Notes
Memory	Hypervisor: 24GB Virtual Center VM: Details in section Datacenter Management Server Notes
Network Controller(s) Vendors and Models	3 Intel Dual port 82575EB
Operating System, Version, Bitness, and Service Pack	Hypervisor: VMware ESXi 5.1.0 Build 799733 Virtual Center VM: Details in section Datacenter Management Server Notes
Other Hardware	none
Other Software	none

**Clients**

Total Number of Clients / Total Physical Clients / Total Virtual Client Hosts	29 / 1 / 2
System Model(s)	1xFujitsu Server PRIMERGY BX620 S5 (Prime Client) 2xFujitsu Server PRIMERGY RX600 S6 (Virtual Client Hosts)
Processor Vendor(s) and Model(s)	Prime Client: Intel Xeon Intel Xeon X5570 Virtual Client Hosts: PRIMERGY RX600 S6: Intel Xeon E7-4870
Processor Speed(s) (GHz)	Prime Client: 2.93 Virtual Client Hosts: PRIMERGY RX600 S6: 2.4
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 8 Cores / 16 Threads Virtual Client Hosts: PRIMERGY RX600 S6: 4 Sockets / 40 Cores / 80 Threads
Memory per Physical Client	Prime Client: 12GB Virtual Client Hosts: PRIMERGY RX600 S6: 512GB
Network Controller(s) Vendors and Models	Prime Client: Three Intel Dual Port 82575EB Virtual Client Hosts: PRIMERGY RX600 S6: Two Intel Dual Port 82576NS, Intel Dual Port 82599
Operating System, Version, Bitness, and Service Pack	Clients: Windows Server 2008 Enterprise 64-bit SP2 Virtual Client Hosts: VMware ESX 4.1 U2 Build 502767
Number of Virtual Clients	28
Number of vCPUs Per Virtual Client	4
Number of vMem (GB) Per Virtual Client	4



Virtual Client Networking Notes	All virtual clients were distributed evenly over 2 vSwitches per Virtual Client Host
Virtual Client Storage Notes	none
Other Hardware	One Dual Port Emulex LPe12002 for each virtual client host, three shared Fujitsu ETERNUS DX80 with 24x300GB disks, one Brocade 5100 Fibre Channel Switch
Other Software	none

## Notes for Workload

### Power/PTD Notes

- All equipment measured by PTD used 230V, 50Hz, single phase power
- Only the power consumption of the server systems were measured for this run

### Virtualization Software Notes

- Server OS (ESXi 6.0.0 U1b 3380124) was installed using OEM installation image VMware-ESXi-6.0.update01-3380124-Fujitsu-v362-1.iso which was preloaded with Fujitsu device drivers. No additional driver updates were made after the OS was installed.
- CDROM removed for all VMs (default enabled)
- Config.HostAgent.log.level set to warning (default info)
- CPU shares set to high for all DS2DB VMs (default normal)
- Floppy removed for all VMs (default enabled)
- Hardware version 8 used for all VMs
- Logging disabled for all VMs (default enabled)
- Logical CPU configuration changed for all Linux VMs to one socket with multiple cores (default: multiple sockets with one core per socket)
- sched.mem.maxmemctl = 0 set for all VMs (default defined through global parameter Mem.CtlMaxPercent)
- sched.mem.min and sched.mem.minsize set to the configured VM memory size (default 0)
- sched.mem.pin = TRUE set for all VMs (default FALSE)
- SCSI adapter type PVSCSI used for all Standby VMs (default LSI Logic parallel)
- SCSI adapter type PVSCSI used for all Mailserver and Linux VMs (default LSI Logic SAS)
- Syslog.global.defaultSize set to 112 (default 1024)
- VMware Tools build 10240 used for all VMs (default 10240)
- VMXNET3 enabled for all VMs (default VMXNET2)
- Vpx.Vpxa.config.log.level set to warning (default verbose)
- vSphere DRS Migration Threshold set to Fully Automated level 2

Changes in esx.conf:

- /adv/Cpu/CreditAgePeriod = 1391 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 200)
- /adv/DataMover/HardwareAcceleratedInit = 0 (default 1)
- /adv/DataMover/HardwareAcceleratedMove = 0 (default 1)
- /adv/Disk/UseIOWorlds = 1 (default 0)
- /adv/Mem/CtlMaxPercent = 0 (default 65)
- /adv/Mem/ShareScanGHz = 0 (default 4)

- /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
- /adv/Net/MaxNetifTxQueueLen = 1000 (default 500)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/MigImbalanceThreshold = 57 (default 10)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /adv/Numa/RebalancePeriod = 60000 (default 2000)
- /adv/Numa/SwapLoadEnable = 0 (default 1)
- /adv/Numa/SwapLocalityEnable = 0 (default 1)
- /adv/Power/CpuPolicy = static (default balanced)
- /adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)

## Server Notes

- Power supply:
  - One titanium grade power supply
- Server BIOS settings:
  - COD Enable: Enable (default Auto)
  - Onboard SAS/SATA controller disabled (default enabled)
  - Onboard Serial COM1 disabled (default enabled)
  - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.6GHz, default enabled)

## Networking Notes

- One dedicated VLAN for the systems under test, vCenter Server and Benchmark Controller (SUT-VLAN)
- One dedicated VLAN for the VMs and Clients (Load-VLAN)
- vSwitch Configuration:
  - vSwitch0 on vmnic4 for Service Console (1Gb)
  - vSwitch1 on vmnic5 for VMotion (1Gb)
  - vSwitch2 on vmnic0 (10Gb) All VMs except Olio and Mailserver VMs
  - vSwitch3 on vmnic1 (10Gb) Olio and Mailserver VMs

## Storage Notes

- First Fujitsu Server PRIMERGY RX300 S8 configured as a Fibre Channel Target:
  - Hardware details:
    - Two Intel Xeon E5-2667@3.3GHz processors
    - 128GB RAM (8x16 GB dual rank PC3-12800 Registered DDR3 / 1600 MHz DIMMs)
    - One QLogic QLE2562 8Gb FC HBA used as FC target controller
    - One Fujitsu RAID SAS 6G Controller with 1GB Cache and BBU (D3116)
    - 9x400GB SAS-SSDs Toshiba PX02SMF040
    - 2xFusion-io ioDrive2 1.2TB PCIe-SSD
  - Software details:
    - Operating System: SUSE Linux Enterprise Server 11 SP3 - 3.0.101-0.46 (64-bit)
    - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 11 SP3)

RAID configuration:

- SAS-SSD 1:
  - LUN 1: Storage system OS (12GB, this LUN is not counted in the Storage section)
  - LUN 2: Target LUN for Storage VMotion (10GB)
  - LUN 3: Source LUN for Deploy (10GB)
  - LUN 4: Target LUN for Deploy (10GB)
- SAS-SSD 2:
  - LUN 1: For Tile 0 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 2 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 3:
  - LUN 1: For Tile 1 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 3 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 4:
  - LUN 1: For Tile 8 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 10 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 5:
  - LUN 1: For Tile 9 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 11 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 6:
  - LUN 1: For Tile 16 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 18 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 7:
  - LUN 1: For Tile 17 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 19 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 8:
  - LUN 1: For Tile 24 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 9:
  - LUN 1: For Tile 25 Olio/Standby VMs and Mailserver VHDs (186GB)
- First PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2 VMs for tiles 0, 8, 16, 24 (537GB)
  - LUN 2: Mailserver configuration files and DS2 VMs for tiles 2, 10, 18 (537GB)
- Second PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2 VMs for tiles 1, 9, 17, 25 (537GB)
  - LUN 2: Mailserver configuration files and DS2 VMs for tiles 3, 11, 19 (537GB)
- All LUNs were configured as block devices; no system memory was used for caching

- Second Fujitsu Server PRIMERGY RX300 S8 configured as a Fibre Channel Target:
  - Hardware details:
    - Two Intel Xeon E5-2667@3.3GHz processors
    - 128GB RAM (8x16 GB dual rank PC3-12800 Registered DDR3 / 1600 MHz DIMMs)
    - One QLogic QLE2562 8Gb FC HBA used as FC target controller
    - One Fujitsu RAID SAS 6G Controller with 1GB Cache and BBU (D3116)
    - 9x400GB SAS-SSDs Toshiba PX02SMF040
    - 2xFusion-io ioDrive2 1.2TB PCIe-SSD
  - Software details:
    - Operating System: SUSE Linux Enterprise Server 11 SP3 - 3.0.101-0.46 (64-bit)
    - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 11 SP3)

RAID configuration:

- SAS-SSD 1:(this SSD is not counted in the Storage section)
  - LUN 1: Storage system OS (12GB, this LUN is not counted in the Storage section)
- SAS-SSD 2:
  - LUN 1: For Tile 4 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 6 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 3:
  - LUN 1: For Tile 5 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 7 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 4:
  - LUN 1: For Tile 12 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 14 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 5:
  - LUN 1: For Tile 13 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 15 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 6:
  - LUN 1: For Tile 20 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 22 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 7:
  - LUN 1: For Tile 21 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 23 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 8:
  - LUN 1: For Tile 26 Olio/Standby VMs and Mailserver VHDs (186GB)
- SAS-SSD 9:

- LUN 1: For Tile 27 Olio/Standby VMs and Mailserver VHDs (186GB)
- First PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2 VMs for tiles 4, 12, 20, 26 (537GB)
  - LUN 2: Mailserver configuration files and DS2 VMs for tiles 6, 14, 22 (537GB)
- Second PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2 VMs for tiles 5, 13, 21, 27 (537GB)
  - LUN 2: Mailserver configuration files and DS2 VMs for tiles 7, 15, 23 (537GB)
- All LUNs were configured as block devices; no system memory was used for caching
- Fujitsu ETERNUS DX100 S3(2 disks)
  - RAID set 0: (2 disks)
    - LUN 0: Boot/Console OS for SUT1 (11GB)
    - LUN 1: Boot/Console OS for SUT2 (11GB)

## **Datacenter Management Server Notes**

- Virtual Center realized as a VM running on a dedicated Hypervisor system:
  - Number of vCPUs: 4 (one vCPU per vSocket)
  - Size of vRAM: 10GB
  - Operating System: Windows Server 2008 R2 Enterprise 64-bit

## **Operating System Notes**

- Mailserver VMs: Microsoft Windows 2008 R2 Enterprise 64-bit.
- Linux VMs:
  - All SLES11 VMs were updated with SP2
  - VMXNET3 driver configured to use one receive and one request queue (default: number of queues matches the number of vCPUs)
  - Paravirtualized drivers (VMXNET3, PVSCSI, VMMEMCTL) compiled with gcc 4.3.4
- The file systems of all Linux and Standby VMs were aligned to a 4KB boundary

## **Software Notes**

- Mailserver VMs: Microsoft Exchange 2007 Enterprise x64 Edition updated with SP3.

## **Client Notes**

- Prime Client was running VMware vSphere PowerCLI 5.1 Release 1 Build 793510.
- Prime Client was updated via Windows Update.
- Virtual Client Hosts:
  - System 1 (PRIMERGY RX600 S6): Even numbered clients
  - System 2 (PRIMERGY RX600 S6): Odd numbered clients

## Other Notes

- One client used as a dedicated Benchmark Controller.
- TILEDELAY reduced to 29 seconds (default: 60 seconds)

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