

## VMware® VMmark® V2.5.2 Results

Vendor and Hardware Platform: Fujitsu Server PRIMERGY RX2530 M1  
 Virtualization Platform: VMware ESXi 5.5.0 U2 Build 2068190  
 VMware vCenter Server : VMware vCenter Server 5.5.0 Build 1312298

**VMmark V2.5.2 Server and Storage PPKW Score =  
 19.7263 @ 22 Tiles**

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/cores/threads in test: 4/72/144

Tested By: Fujitsu

Test Date: 12-08-2014

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### Performance

	mailserver			olio			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.48	0.98	77.25	4685.68	1.01	158.93	3957.57	1.80	67.69	2909.12	1.92	74.73	1960.33	1.85	91.06	1.45
p1	328.23	0.99	85.75	4652.52	1.00	197.65	3933.85	1.79	68.42	2873.10	1.89	76.69	1915.33	1.81	103.77	1.44
p2	326.75	0.99	94.00	4655.62	1.00	172.78	3809.72	1.73	74.03	2683.80	1.77	82.63	1770.65	1.67	102.20	1.38
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	320.12	0.97	76.50	4708.27	1.01	139.74	3917.47	1.78	69.24	2965.62	1.95	76.44	2038.42	1.93	91.31	1.46
p1	328.88	1.00	84.00	4692.15	1.01	154.35	3893.10	1.77	70.27	2741.72	1.81	78.86	1887.60	1.78	97.85	1.42
p2	327.93	0.99	84.00	4678.32	1.01	161.57	3802.85	1.73	74.29	2665.57	1.76	83.56	1740.12	1.64	104.56	1.38
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.77	0.98	84.00	4691.80	1.01	134.75	3939.28	1.79	69.08	2897.32	1.91	76.22	2142.05	2.02	83.07	1.47
p1	327.90	0.99	88.25	4667.35	1.01	167.09	3907.00	1.78	70.35	2773.18	1.83	78.00	1923.22	1.82	86.27	1.43
p2	323.32	0.98	94.00	4692.35	1.01	149.13	3764.32	1.71	76.44	2743.32	1.81	85.22	1928.75	1.82	93.59	1.41
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.85	0.98	77.25	4696.65	1.01	141.28	3903.32	1.77	70.24	2857.65	1.88	78.15	2119.25	2.00	84.58	1.46
p1	327.00	0.99	84.00	4682.27	1.01	155.14	3888.57	1.77	70.84	2762.35	1.82	78.68	1917.62	1.81	86.39	1.42
p2	332.32	1.01	84.50	4680.25	1.01	164.64	3760.03	1.71	76.54	2776.10	1.83	83.43	1948.62	1.84	91.45	1.42
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.62	0.99	74.20	4695.57	1.01	130.99	4009.30	1.82	65.39	2894.07	1.91	70.62	2011.25	1.90	86.61	1.46
p1	326.05	0.99	84.00	4672.38	1.01	166.50	3973.62	1.81	66.50	2878.32	1.90	71.48	1803.30	1.70	98.26	1.42
p2	329.40	1.00	91.50	4685.60	1.01	149.45	3790.28	1.72	74.20	2927.97	1.93	79.21	1936.58	1.83	100.97	1.44
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.43	1.00	73.00	4701.00	1.01	137.28	3962.95	1.80	67.21	2854.43	1.88	72.84	1885.20	1.78	89.97	1.44
p1	330.52	1.00	80.70	4674.40	1.01	146.43	3907.53	1.78	68.91	2925.72	1.93	74.04	1939.05	1.83	92.67	1.45
p2	326.07	0.99	84.00	4714.25	1.02	155.42	3819.60	1.74	72.83	2844.35	1.87	78.69	1956.08	1.85	99.09	1.43

<b>TILE_6</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.12	0.98	74.95	4716.85	1.02	132.54	3976.35	1.81	66.08	2980.25	1.96	66.29	2097.28	1.98	86.78	1.48
<b>p1</b>	327.38	0.99	83.92	4690.98	1.01	167.53	3952.80	1.80	66.79	3057.15	2.01	67.12	1772.00	1.67	101.51	1.43
<b>p2</b>	328.12	0.99	84.00	4680.27	1.01	150.72	3808.68	1.73	72.56	2862.93	1.89	72.84	1878.35	1.78	98.49	1.42
<b>TILE_7</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.98	0.99	77.50	4706.88	1.01	138.83	3969.35	1.80	66.24	2872.30	1.89	71.40	1925.92	1.82	86.21	1.44
<b>p1</b>	326.48	0.99	84.00	4689.73	1.01	149.63	3906.10	1.78	68.44	3026.38	1.99	73.16	2056.85	1.94	89.97	1.47
<b>p2</b>	322.65	0.98	84.00	4693.40	1.01	155.29	3845.05	1.75	71.01	2778.00	1.83	76.51	1913.72	1.81	94.64	1.42
<b>TILE_8</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.15	0.98	78.00	4699.10	1.01	130.70	3987.40	1.81	66.20	2852.75	1.88	72.51	1921.38	1.82	86.90	1.44
<b>p1</b>	326.32	0.99	84.00	4667.73	1.01	164.61	3940.53	1.79	67.93	2902.05	1.91	74.88	1967.65	1.86	98.51	1.45
<b>p2</b>	324.25	0.98	87.50	4692.57	1.01	153.80	3817.18	1.74	73.23	2717.28	1.79	80.38	1824.88	1.72	96.48	1.40
<b>TILE_9</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	321.25	0.97	80.00	4690.38	1.01	142.02	3930.88	1.79	68.25	2907.12	1.91	74.76	1965.38	1.86	90.23	1.44
<b>p1</b>	325.12	0.98	84.00	4669.35	1.01	155.13	3906.03	1.78	69.36	2868.03	1.89	76.87	1915.85	1.81	95.03	1.43
<b>p2</b>	325.07	0.98	84.00	4672.32	1.01	161.63	3829.62	1.74	72.56	2719.62	1.79	80.19	1859.83	1.76	100.46	1.40
<b>TILE_10</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	322.85	0.98	84.00	4696.25	1.01	145.06	3935.72	1.79	69.03	2991.45	1.97	75.80	2147.57	2.03	82.15	1.48
<b>p1</b>	329.48	1.00	84.00	4657.05	1.00	186.39	3908.28	1.78	70.12	2746.15	1.81	79.42	2028.00	1.92	84.96	1.44
<b>p2</b>	333.48	1.01	93.75	4697.48	1.01	162.78	3769.50	1.71	76.08	2656.97	1.75	85.03	1857.88	1.76	92.31	1.40
<b>TILE_11</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.62	0.99	78.75	4695.88	1.01	136.81	3882.68	1.77	71.09	2847.50	1.88	78.56	2117.55	2.00	84.27	1.46
<b>p1</b>	322.45	0.98	84.00	4689.12	1.01	151.93	3875.75	1.76	71.54	2736.05	1.80	79.92	1920.08	1.81	86.49	1.42
<b>p2</b>	328.27	0.99	84.00	4691.45	1.01	155.00	3782.82	1.72	75.25	2725.88	1.80	83.88	1958.17	1.85	90.82	1.42
<b>TILE_12</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.88	0.99	84.00	4696.25	1.01	134.99	3994.47	1.82	66.44	2958.93	1.95	72.56	2045.92	1.93	90.88	1.47
<b>p1</b>	326.73	0.99	84.00	4672.93	1.01	168.19	3955.03	1.80	67.57	2827.93	1.86	74.53	1722.47	1.63	106.63	1.40
<b>p2</b>	325.80	0.99	93.00	4679.55	1.01	148.13	3790.47	1.72	74.76	2811.93	1.85	81.10	1812.70	1.71	105.59	1.40
<b>TILE_13</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.70	0.98	84.00	4709.45	1.01	140.37	3932.50	1.79	68.33	2809.25	1.85	75.05	1949.78	1.84	91.67	1.43
<b>p1</b>	323.98	0.98	84.00	4681.60	1.01	151.57	3923.05	1.78	68.93	2809.32	1.85	75.36	1820.30	1.72	96.18	1.41
<b>p2</b>	329.40	1.00	84.00	4672.18	1.01	159.36	3805.32	1.73	73.87	2911.93	1.92	80.20	1917.72	1.81	102.35	1.43
<b>TILE_14</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	323.93	0.98	83.25	4697.70	1.01	140.08	4014.30	1.83	64.95	2906.32	1.91	69.75	2090.80	1.98	72.47	1.47
<b>p1</b>	324.57	0.98	84.00	4645.50	1.00	180.98	3955.95	1.80	66.70	2968.28	1.95	71.68	2163.78	2.05	74.12	1.48
<b>p2</b>	329.50	1.00	84.00	4685.48	1.01	159.60	3801.05	1.73	73.47	2833.60	1.87	78.96	2154.32	2.04	81.83	1.46

<b>TILE_15</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.38	0.99	84.00	4710.32	1.01	138.13	3941.70	1.79	67.38	2840.07	1.87	73.11	2046.97	1.93	76.37	1.46
<b>p1</b>	329.32	1.00	84.00	4689.73	1.01	148.15	3897.47	1.77	69.37	2922.10	1.92	73.97	2129.00	2.01	76.70	1.47
<b>p2</b>	330.48	1.00	84.00	4701.38	1.01	148.27	3815.70	1.74	72.69	2752.35	1.81	78.49	2073.62	1.96	81.67	1.44
<b>TILE_16</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.80	0.99	84.00	4695.68	1.01	146.96	4012.60	1.82	65.07	2895.03	1.91	70.23	1953.58	1.85	83.77	1.45
<b>p1</b>	327.38	0.99	93.25	4655.68	1.00	186.67	3928.57	1.79	68.13	3035.72	2.00	72.80	2006.28	1.90	94.83	1.46
<b>p2</b>	327.10	0.99	94.00	4695.85	1.01	166.38	3802.18	1.73	73.05	2743.07	1.81	78.82	1931.55	1.83	93.72	1.42
<b>TILE_17</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	322.38	0.98	85.75	4685.43	1.01	140.30	3933.18	1.79	67.70	2843.28	1.87	72.66	1997.10	1.89	87.42	1.44
<b>p1</b>	329.23	1.00	85.25	4701.98	1.01	150.06	3896.82	1.77	69.05	2909.90	1.92	74.55	2029.50	1.92	92.35	1.46
<b>p2</b>	326.95	0.99	94.00	4685.38	1.01	154.89	3833.93	1.74	71.95	2758.53	1.82	77.68	1815.45	1.72	96.85	1.40
<b>TILE_18</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.50	0.99	94.00	4719.93	1.02	139.17	3941.57	1.79	68.52	2885.97	1.90	76.05	2087.30	1.97	79.88	1.47
<b>p1</b>	327.12	0.99	94.00	4661.35	1.00	170.56	3872.82	1.76	71.45	2826.07	1.86	79.54	2139.43	2.02	83.01	1.46
<b>p2</b>	327.43	0.99	94.00	4668.20	1.01	153.57	3775.97	1.72	75.62	2654.90	1.75	84.47	1893.65	1.79	89.08	1.40
<b>TILE_19</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.70	0.99	94.00	4693.02	1.01	156.99	3874.50	1.76	71.16	2935.88	1.93	78.39	2142.35	2.02	82.40	1.47
<b>p1</b>	325.82	0.99	94.00	4662.85	1.00	175.41	3861.85	1.76	71.77	2717.45	1.79	80.74	2032.55	1.92	84.63	1.43
<b>p2</b>	327.23	0.99	94.00	4662.65	1.00	181.38	3771.40	1.71	75.63	2652.03	1.75	84.68	1888.83	1.79	89.58	1.40
<b>TILE_20</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.38	1.00	84.00	4700.73	1.01	137.85	3965.93	1.80	67.78	2915.30	1.92	74.88	1995.62	1.89	95.12	1.46
<b>p1</b>	325.60	0.99	86.50	4670.50	1.01	171.65	3940.90	1.79	68.46	2799.25	1.84	76.06	1683.03	1.59	111.01	1.39
<b>p2</b>	326.52	0.99	94.00	4702.60	1.01	154.83	3761.20	1.71	76.12	2772.28	1.83	83.24	1763.50	1.67	110.38	1.39
<b>TILE_21</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.60	1.00	83.70	4696.00	1.01	140.42	3902.12	1.77	69.87	2876.43	1.89	77.05	2002.40	1.89	94.63	1.45
<b>p1</b>	322.60	0.98	88.00	4684.45	1.01	151.51	3894.47	1.77	70.57	2764.53	1.82	78.18	1770.42	1.67	101.17	1.40
<b>p2</b>	327.12	0.99	94.00	4695.77	1.01	161.19	3777.30	1.72	75.35	2777.78	1.83	82.82	1801.50	1.70	106.48	1.40
<b>p0_score:</b>	32.04															
<b>p1_score:</b>	31.57															
<b>p2_score:</b>	31.07															
<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>										20.47			22.58			309.31
<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>	2						
<b>Number_of_PTD_Phases</b>	3						
<b>PTD_Phase_Timing</b>	2400secs						
<b>PtdTiming:</b>	ptd0	ptd1					
<b>p0</b>	0	0					
<b>p1</b>	0	0					
<b>p2</b>	0	0					
<b>PTD_Results:</b>							
<b>p0</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%
<b>ptd0</b>	SERVER	1076.04	229.08	4.72	0.99	2399.00	0.00
<b>ptd1</b>	EXT_STOR	213.99	229.59	0.96	0.97	2400.00	0.00
<b>p1</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%
<b>ptd0</b>	SERVER	1078.34	230.39	4.70	0.99	2400.00	0.00
<b>ptd1</b>	EXT_STOR	214.45	230.89	0.96	0.97	2400.00	0.00
<b>p2</b>	Target	Avg_Watts	Avg_Volts	Avg_Amps	Avg_PF	Samples	UnCert%
<b>ptd0</b>	SERVER	1079.03	230.52	4.70	0.99	2400.00	0.00
<b>ptd1</b>	EXT_STOR	213.92	231.02	0.95	0.97	2400.00	0.00
<b>Summary</b>			<b>Run_Is_Compliant</b>			<b>Turbo_Setting:0</b>	
			Number_Of_Compliance_Issues(0)*			Median_Phase(p1)	
<b>Unreviewed_VMmark2_Avg_Watts</b>			1292.79				
<b>Unreviewed_VMmark2_Applications_Score</b>			31.57				
<b>Unreviewed_VMmark2_Infrastructure_Score</b>			1.22				
<b>Unreviewed_VMmark2_Score</b>			25.50				
<b>Unreviewed_VMmark2_PPKW</b>			19.7263				

## Configuration

<b>PTD Configuration</b>	
Number of Power Meters	2
Power Meter Vendors and Models	Hioki 3334
Power Meter PTD Target(s) (SERVER/EXT_STOR)	SERVER, EXT_STOR
Power Meter Connection Type(s) (Eth/GPIB/Serial/USB)	Serial
Power Meter Calibration Date(s) (MM-DD-YYYY)	07-17-2014
Power Meter Calibration Info (Calibrated By/Duration/Calibration certificate(s))	Atlas Copco / one year / W14072231, W14072229

Power Meter(s) Volt/Amp Range	300 / 10, 300 / 3
<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	2x Delock Adapter USB 2.0 > 1 x Serial
Other Software	none

## Configuration

<b>Virtualization Software</b>	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 5.5.0 U2 Build 2068190 / 09-09-2014
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.5.0 Build 1312298 / 09-22-2013
Supplemental Software	none
<b>Servers</b>	
Quantity	2
Server Manufacturer and Model	Fujitsu Server PRIMERGY RX2530 M1
Processor Vendor and Model	Intel Xeon E5-2699 v3
Processor Speed (GHz)	2.3
Total Sockets/Total Cores/Total Threads	2 Sockets / 36 Cores / 72 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	45MB I+D on chip per chip L3
BIOS Version	V5.0.0.9 R1.9.0
Memory Size (in GB, Number of DIMMs)	384, 12
Memory Type and Speed	32GB DIMMs 4Rx4 PC4-2133P-L ECC

Disk Subsystem Type	FC SAN
Number of Disk Controllers	0
Disk Controller Vendors and Models	none
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Dual port Emulex LPe12002
Number of Network Controllers	1
Network Controller Vendors and Models	Emulex OneConnect OCe14000 Dual Port Adapter with 10Gb SFP+ DynamicLoM interface module
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	03-01-2015
Software Availability Date (MM-DD-YYYY)	09-09-2014
<b>Network</b>	
Network Switch Vendors and Models	Fujitsu PRIMERGY BX600 GbE Switch Blade 30/12, Cisco Catalyst 4900M
Network Speed	10Gbps except for all Clients and Data Management Server with 1Gbps
<b>Storage</b>	
Array Vendors, Models, and Firmware Versions	Fujitsu Server PRIMERGY RX300 S8, Firmware V4.6.5.4 R1.1.0
Fibre Channel Switch Vendors and Models	none
Disk Space Used	6292GB
Array Cache Size	1GB
Total Number of Physical Disks Used	12xSAS-SSDs, 2xPCIe-SSD
Total Number of Enclosures/Pods/Shelves Used	1
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	31
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	12xSSD Toshiba PX02SMF040; 2xFusion-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
<b>Clients</b>	
Total Number of Clients / Total Physical Clients / Total Virtual Client Hosts	23 / 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: Intel Xeon E7-4870
Processor Speed(s) (GHz)	Prime Client: 2.93 Virtual Client Hosts: 2.4
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 8 Cores / 16 Threads Virtual Client Hosts: 4 Sockets / 40 Cores / 80 Threads
Memory per Physical Client	Prime Client: 12GB Virtual Client Hosts: 512GB
Network Controller(s) Vendors and Models	Prime Client: Three Intel Dual Port 82575EB Virtual Client Hosts: Intel Quad Port 82571EB, two Intel Dual Port 82576NS
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	22
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 6 vSwitches per Virtual Client Host
Virtual Client Storage Notes	none
Other Hardware	One Dual Port Emulex LPe12002 for each virtual client host, one shared Fujitsu ETERNUS DX80 with 24x300GB disks
Other Software	none

## Notes for Workload

### Virtualization Software Notes

- All Guest Memory reserved (Locked into physical memory)
- Floppy and CDRROM 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)
- Mailserver CPU shares set to high (default normal)
- sched.mem.maxmemctl = 0 set for all VMs (disables Ballooning, default enabled)
- 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)
- VMware Tools build 9354 used for all VMs (default 9354)
- VMXNET3 enabled for all VMs (default VMXNET2)
- vSphere DRS Migration Threshold set to Fully Automated level 2

Changes in esx.conf:

- /adv/Cpu/CreditAgePeriod = 1000 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 200)
- /adv/DataMover/HardwareAcceleratedInit = 0 (default 1)
- /adv/DataMover/HardwareAcceleratedMove = 0 (default 1)
- /adv/Mem/BalancePeriod = 0 (default 15)
- /adv/Mem/CtlMaxPercent = 0 (default 65)
- /adv/Mem/SamplePeriod = 0 (default 60)
- /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/MonMigEnable = 0 (default 1)
- /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

- Server BIOS settings:



- Onboard SAS/SATA controller disabled (default enabled)
- Onboard Serial COM1 disabled (default enabled)
- QPI Link Frequency Select: 8.0GT/s (default Auto)
- 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 vmnic0 separated in the three VLANs for Service Console, VMotion and all VMs(10Gb)

## Storage Notes

- 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)
    - Two QLogic QLE2562 8Gb FC HBA used as FC target controllers
    - One Fujitsu RAID SAS 6G Controller with 1GB Cache and BBU (D3116)
    - 12x400GB SAS-SSDs Toshiba PX02SMF040
    - 2xFusion-io ioDrive2 1.2TB PCIe-SSD
  - Software details:
    - Operating System: SUSE Linux Enterprise Server 11 SP3 - 3.0.101-0.8 (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)
  - LUN 5: Boot/Console OS for SUT1 (11GB)
  - LUN 6: Boot/Console OS for SUT2 (11GB)
- 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 4 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 6 Olio/Standby VMs and Mailserver VHDs (186GB)

- SAS-SSD 5:
  - 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 6:
  - 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 7:
  - 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 8:
  - 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 9:
  - 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 10:
  - 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 11:
  - 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 12:
  - LUN 1: For Tile 20 Olio/Standby VMs and Mailserver VHDs (186GB)
  - LUN 2: For Tile 21 Olio/Standby VMs and Mailserver VHDs (186GB)
- First PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2DB VMs for tiles 0, 4, 8, 12, 16, 20 (537GB)
  - LUN 2: Mailserver configuration files and DS2DB VMs for tiles 2, 6, 10, 14, 18 (537GB)
- Second PCIe-SSD:
  - LUN 1: Mailserver configuration files and DS2DB VMs for tiles 1, 5, 9, 13, 17, 21 (537GB)
  - LUN 2: Mailserver configuration files and DS2DB VMs for tiles 3, 7, 11, 15, 19 (537GB)
- All LUNs were configured as block devices; no system memory was used for caching

## **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: Even numbered clients
  - System 2: Odd numbered clients

## Other Notes

- One client used as a dedicated Benchmark Controller.
- TILEDELAY reduced to 35 seconds (default: 60 seconds)

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