

## VMware®VMmark®V2.1.1 Results

Vendor and Hardware Platform: Fujitsu PRIMERGY RX600 S6  
 Virtualization Platform: VMware ESX 4.1 U1 Build 348481  
 VMware vCenter Server: VMware vCenter Server 4.1.0 build 258902

**VMmark V2.1.1 Score =  
18.20 @ 18 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/core/threads in test: 8 Sockets / 80 Cores / 160 Threads
	Tested By: Fujitsu	Test Date: 11-05-2011
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>	325.23	0.98	188.75	4617.45	0.99	234.70	3167.75	1.44	105.83	2362.07	1.56	86.64	1658.35	1.57	70.48	1.28
<b>p1</b>	326.15	0.99	213.75	4582.15	0.99	259.31	3088.10	1.40	110.87	2284.97	1.50	91.85	1674.03	1.58	77.77	1.27
<b>p2</b>	326.98	0.99	239.25	4548.73	0.98	306.15	3068.03	1.40	111.90	2221.78	1.46	88.61	1523.88	1.44	72.07	1.23
<b>TILE_1</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.02	0.99	251.75	4631.80	1.00	232.25	3117.62	1.42	108.60	2339.93	1.54	88.50	1727.30	1.63	74.04	1.29
<b>p1</b>	327.75	0.99	264.00	4587.43	0.99	246.00	3077.82	1.40	110.71	2278.68	1.50	84.40	1586.85	1.50	67.33	1.25
<b>p2</b>	326.70	0.99	283.75	4583.65	0.99	299.23	2979.18	1.35	117.15	2299.47	1.51	91.07	1609.15	1.52	73.95	1.25
<b>TILE_2</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	322.50	0.98	218.70	4600.75	0.99	233.87	3042.12	1.38	113.59	2250.53	1.48	94.23	1625.62	1.54	72.95	1.25
<b>p1</b>	329.45	1.00	242.55	4610.02	0.99	254.16	2962.28	1.35	119.10	2113.57	1.39	96.32	1568.75	1.48	77.61	1.22
<b>p2</b>	323.55	0.98	256.50	4544.15	0.98	318.61	2889.45	1.31	124.37	2126.18	1.40	103.59	1539.30	1.45	79.62	1.21
<b>TILE_3</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.00	0.99	237.68	4597.57	0.99	241.24	3062.15	1.39	112.23	2191.57	1.44	90.57	1549.58	1.46	70.08	1.24
<b>p1</b>	322.95	0.98	256.00	4593.80	0.99	267.20	2963.80	1.35	119.26	2190.30	1.44	99.39	1567.03	1.48	77.62	1.23
<b>p2</b>	324.43	0.98	265.25	4537.05	0.98	306.45	2904.38	1.32	123.51	2130.72	1.40	103.67	1533.75	1.45	80.18	1.21
<b>TILE_4</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	325.52	0.99	244.00	4638.62	1.00	219.55	3125.22	1.42	108.12	2327.35	1.53	89.02	1593.83	1.51	67.11	1.26
<b>p1</b>	325.80	0.99	259.00	4619.75	1.00	240.24	3021.95	1.37	114.07	2268.10	1.49	93.17	1701.30	1.61	75.70	1.27
<b>p2</b>	333.43	1.01	289.25	4614.02	0.99	250.18	2956.62	1.34	119.20	2131.55	1.40	94.74	1590.47	1.50	75.90	1.23
<b>TILE_5</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	327.62	0.99	206.50	4621.57	1.00	224.76	3077.78	1.40	110.88	2293.22	1.51	91.15	1649.97	1.56	71.06	1.27
<b>p1</b>	329.73	1.00	228.00	4603.80	0.99	247.10	3034.78	1.38	113.81	2181.78	1.44	91.16	1626.28	1.54	72.83	1.25

<b>p2</b>	323.52	0.98	246.00	4594.38	0.99	258.13	2970.40	1.35	118.14	2200.07	1.45	97.77	1519.70	1.44	72.48	1.22
<b>TILE_6</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.23	0.99	221.03	4649.43	1.00	218.01	3158.20	1.44	105.79	2434.93	1.60	89.72	1751.33	1.66	71.91	1.31
<b>p1</b>	324.85	0.98	239.00	4615.73	0.99	245.47	3079.05	1.40	111.20	2216.35	1.46	88.80	1627.15	1.54	72.83	1.25
<b>p2</b>	322.27	0.98	258.95	4570.20	0.98	278.12	3045.60	1.38	113.43	2204.68	1.45	89.68	1529.80	1.45	71.64	1.23
<b>TILE_7</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	326.93	0.99	223.00	4605.65	0.99	224.01	3134.25	1.43	107.65	2250.85	1.48	86.24	1656.03	1.57	70.97	1.27
<b>p1</b>	330.40	1.00	247.25	4586.55	0.99	264.70	3110.85	1.41	108.65	2250.32	1.48	86.25	1575.83	1.49	67.90	1.25
<b>p2</b>	327.85	0.99	271.75	4537.18	0.98	307.17	3013.70	1.37	115.17	2346.68	1.55	95.71	1666.10	1.57	78.30	1.26
<b>TILE_8</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	321.43	0.97	206.68	4633.98	1.00	213.32	3060.20	1.39	111.83	2269.85	1.49	84.83	1681.25	1.59	68.99	1.26
<b>p1</b>	331.38	1.00	219.90	4617.00	0.99	240.50	3011.28	1.37	114.98	2236.70	1.47	87.00	1570.05	1.48	68.50	1.24
<b>p2</b>	325.80	0.99	237.75	4606.38	0.99	249.86	2964.97	1.35	117.93	2264.38	1.49	93.46	1664.78	1.57	78.69	1.25
<b>TILE_9</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	330.32	1.00	221.00	4616.95	0.99	235.24	3038.68	1.38	113.22	2262.62	1.49	85.45	1595.75	1.51	66.97	1.25
<b>p1</b>	326.90	0.99	247.00	4602.30	0.99	262.45	3006.43	1.37	115.16	2402.03	1.58	91.84	1745.60	1.65	72.42	1.28
<b>p2</b>	324.77	0.98	262.75	4604.27	0.99	264.82	2939.55	1.34	120.17	2183.22	1.44	91.17	1611.95	1.52	73.95	1.23
<b>TILE_10</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	320.98	0.97	213.78	4631.73	1.00	235.12	3040.65	1.38	113.76	2199.00	1.45	90.00	1565.20	1.48	69.12	1.23
<b>p1</b>	325.07	0.98	227.25	4599.43	0.99	262.14	2966.82	1.35	118.98	2191.97	1.44	98.70	1659.22	1.57	79.07	1.24
<b>p2</b>	331.75	1.00	244.50	4577.30	0.99	266.20	2925.45	1.33	122.50	2076.65	1.37	99.07	1474.60	1.39	76.09	1.20
<b>TILE_11</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	324.52	0.98	224.50	4620.73	1.00	227.00	2962.80	1.35	119.21	2165.97	1.43	100.65	1629.30	1.54	81.17	1.24
<b>p1</b>	326.98	0.99	232.25	4609.45	0.99	248.37	2921.18	1.33	122.23	2123.97	1.40	104.07	1532.92	1.45	80.36	1.21
<b>p2</b>	323.70	0.98	243.00	4588.95	0.99	267.16	2850.03	1.30	128.11	1996.17	1.31	106.38	1413.70	1.34	81.75	1.17
<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	230.18	4640.70	1.00	226.34	3169.82	1.44	105.37	2322.93	1.53	89.31	1768.95	1.67	70.87	1.29
<b>p1</b>	331.20	1.00	244.50	4599.55	0.99	245.23	3105.50	1.41	109.64	2197.90	1.45	90.14	1564.40	1.48	69.05	1.25
<b>p2</b>	333.25	1.01	252.97	4604.82	0.99	265.19	3042.00	1.38	113.00	2243.05	1.48	94.92	1624.38	1.54	72.86	1.26
<b>TILE_13</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.43	0.99	248.50	4618.07	0.99	229.11	3151.80	1.43	106.32	2249.80	1.48	86.36	1601.40	1.51	66.31	1.26
<b>p1</b>	322.75	0.98	251.75	4593.73	0.99	260.56	3095.62	1.41	109.71	2286.22	1.51	92.15	1641.15	1.55	71.72	1.26
<b>p2</b>	324.70	0.98	270.50	4595.23	0.99	270.09	3019.10	1.37	114.97	2213.18	1.46	97.16	1672.62	1.58	78.00	1.25
<b>TILE_14</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	328.15	0.99	213.12	4629.82	1.00	226.80	3152.05	1.43	106.69	2238.53	1.47	87.21	1584.78	1.50	67.58	1.26
<b>p1</b>	327.80	0.99	223.62	4624.32	1.00	249.50	3046.72	1.39	112.94	2263.50	1.49	93.48	1622.83	1.53	73.16	1.26

<b>p2</b>	327.35	0.99	242.25	4593.12	0.99	258.95	2994.30	1.36	116.78	2197.82	1.45	98.35	1586.15	1.50	76.13	1.24
<b>TILE_15</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	331.88	1.00	230.50	4615.48	0.99	218.93	3122.95	1.42	108.04	2309.00	1.52	90.37	1653.85	1.56	70.88	1.28
<b>p1</b>	325.20	0.98	243.25	4596.52	0.99	247.85	3052.65	1.39	112.76	2255.32	1.49	93.78	1692.22	1.60	76.18	1.26
<b>p2</b>	326.32	0.99	253.38	4573.75	0.99	258.45	2996.95	1.36	116.31	2142.32	1.41	93.74	1517.83	1.43	72.42	1.22
<b>TILE_16</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	329.88	1.00	242.47	4629.48	1.00	223.44	3101.25	1.41	110.40	2289.22	1.51	91.73	1618.28	1.53	73.48	1.27
<b>p1</b>	325.12	0.98	253.50	4606.18	0.99	245.87	3023.20	1.37	114.99	2132.00	1.40	94.56	1573.88	1.49	76.95	1.23
<b>p2</b>	329.48	1.00	265.75	4581.80	0.99	261.07	2932.20	1.33	122.15	2130.97	1.40	103.82	1437.10	1.36	79.60	1.20
<b>TILE_17</b>	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
<b>p0</b>	331.80	1.00	244.68	4653.93	1.00	205.31	3068.07	1.40	110.54	2276.65	1.50	93.03	1706.33	1.61	75.60	1.28
<b>p1</b>	329.07	1.00	251.50	4624.52	1.00	228.65	3010.47	1.37	114.43	2158.00	1.42	93.66	1522.15	1.44	72.88	1.23
<b>p2</b>	322.73	0.98	251.65	4477.95	0.96	310.39	2892.53	1.32	123.53	2078.00	1.37	99.48	1541.12	1.46	80.27	1.20
<b>p0_score:</b>	22.77															
<b>p1_score:</b>	22.46															
<b>p2_score:</b>	22.07															

<b>Infrastructure_Operations_Scores:</b>								vmotion		svmotion		deploy	
<b>Completed_Ops_PerHour</b>								15.50		11.00		5.50	
<b>Avg_Seconds_To_Complete</b>								51.30		41.55		311.12	
<b>Failures</b>								0.00		0.00		0.00	
<b>Ratio</b>								0.97		1.22		1.38	
<b>Number_Of_Threads</b>								1		1		1	
<b>Summary</b>						Run_Is_Compliant		Number_Of_Compliance_Issues(0)*				Median_Phase(p1)	
<b>Unreviewed_VMmark2_Applications_Score</b>						22.46							
<b>Unreviewed_VMmark2_Infrastructure_Score</b>						1.18							
<b>Unreviewed_VMmark2_Score</b>						18.20							

## Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1 U1 Build 348481 / 02-10-2011
Datacenter Management Software Vendor, Product, Version, and Build /	VMware vCenter Server 4.1 Build 258902 / 07-13-2010

Availability Date (MM-DD-YYYY)	
Supplemental Software	none
<b>Servers</b>	
Quantity	2
Server Manufacturer and Model	Fujitsu PRIMERGY RX600 S6
Processor Vendor and Model	Ten-core Intel Xeon E7-4870
Processor Speed (GHz)	2.40
Total Sockets/Total Cores/Total Threads	4 Sockets / 40 Cores / 80 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	30MB I+D on chip per chip L3
BIOS Version	1.00.3141
Memory Size (in GB, Number of DIMMs)	512GB, 64x8GB
Memory Type and Speed	8GB-Dimms, Quad rank 1066 MHz Registered ECC DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (unused)
Disk Controller Vendors and Models	Intel ICH10R
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Dual-channel Emulex LPe12002
Number of Network Controllers	2
Network Controller Vendors and Models	Integrated Intel 82575EB Quad Port 1GbE Adapter, Fujitsu D2755 Dual Port 10GbE Adapter
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	09-30-2011
Software Availability Date (MM-DD-YYYY)	02-10-2011
<b>Network</b>	
Network Switch Vendors and Models	3xFujitsu PRIMERGY BX600 GbE Switch Blade 30/12, CISCO 4900M
Network Speed	1Gbps for SUT management, VMotion and VMs (Standby and Deploy), 10Gbps for all other VMs
<b>Storage</b>	

Array Vendors, Models, and Firmware Versions	10xFujitsu ETERNUS DX80, Firmware version V10L20-0000
Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	5738GB
Array Cache Size	2GB
Total Number of Physical Disks Used	220
Total Number of Enclosures/Pods/Shelves Used	19
Number of Physical Disks Used per Enclosure/Pod/Shelf	Details in section Storage Notes
Total Number of Storage Groups Used	11
Number of LUNs Used	71
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	4xSeagate, ST3450856SS, 15krpm; 206xSeagate, ST3300656SS, 15krpm; 10xSTEC Zeus SSD, Z16IZF2D-100UCT-FUJ

**Datacenter Management Server**

System Model	Fujitsu PRIMERGY BX620S4
Processor Vendor and Model	Intel Xeon X5470
Processor Speed (GHz)	3.33
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 8 Threads
Memory	4GB
Network Controller(s) Vendors and Models	3xDual Port Broadcom NetXtreme, 5 Ports disabled
Operating System, Version, and Service Pack	Microsoft(R) Windows(R) Server 2003 R2 Enterprise x64 Edition, Service Pack 2
Other Hardware	none
Other Software	none

**Clients**

Number of Clients	19 (one Client used as a dedicated Benchmark Controller)
System Model(s)	Fujitsu PRIMERGY BX620S4
Processor Vendor(s) and Model(s)	Intel Xeon 5130 (except Benchmark Controller with Intel Xeon X5470)

Processor Speed(s) (GHz)	2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory per Client	4
Network Controller(s) Vendors and Models	3xDual Port Broadcom NetXtreme, 5 Ports disabled (excepted Benchmark Controller with only 4 disabled ports)
Operating System, Version, and Service Pack	Microsoft(R) Windows(R) Server 2003 R2 Enterprise Edition (32-bit), Service Pack 2
Other Hardware	none
Other Software	none

## Notes for Workload

### Virtualization Software Notes

- Hardware version 7 used for all VMs (default 7)
- Logging disabled for all VMs (default enabled)
- VMXNET3 enabled for all VMs (default VMXNET2)
- SCSI adapter type PVSCSI used for all Standby VMs (default LSI Logic parallel)
- SCSI adapter type PVSCSI used for all Mailserver VMs (default LSI Logic SAS)
- Floppy and CDROM removed for all VMs (default enabled)
- Firewall disabled for the Console OS (default enabled)
- Changes in esx.conf:
  - /adv/Cpu/CoschedCrossCall = 0 (default 1)
  - /adv/Cpu/HaltingIdleMsecPenalty = 0 (default 100)
  - /adv/Irq/RoutingPolicy = 0 (default 2)
  - /adv/Mem/BalancePeriod = 0 (default 15)
  - /adv/Mem/SamplePeriod = 0 (default 60)
  - /adv/Mem/ShareScanGHZ = 0 (default 4)
  - /adv/Misc/TimerMaxHardPeriod = 4000 (default 100000)
  - /adv/Misc/TimerMinHardPeriod = 2000 (default 100)
  - /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
  - /adv/Net/MaxNetifTxQueueLen = 1000 (default 500)
  - /adv/Net/NetTxCompletionWorldlet = 0 (default 1)
  - /adv/Net/NetTxWorldlet = 0 (default 2)
  - /adv/Numa/AutoSplitVM = 0 (default 1)
  - /adv/Numa/LTermFairnessInterval = 0 (default 5)
  - /adv/Numa/MonMigEnable = 0 (default 1)
  - /adv/Numa/PageMigEnable = 0 (default 1)
  - /adv/Numa/SwapLoadEnable = 0 (default 1)
  - /adv/Numa/SwapLocalityEnable = 0 (default 1)
  - /vmkernel/module/ixgbe.o/options = "VMDQ=1,1" (defaults 8,8)
  - /vmkernel/module/lpfc820.o/options = "lpfc\_lun\_queue\_depth=64 lpfc\_cr\_count=5 lpfc\_cr\_delay=1" (defaults 31,1,0)

### Server Notes

- Server BIOS settings:

- Enhanced Idle Power State: Disabled (default enabled)
- Turbo Boost Technology: Enabled (Intel Turbo Boost up to 2.8GHz, default enabled)
- Serial 1: Disabled (default auto)
- Emulex HBA BIOS settings:
  - defaults

## 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 vmnic1 for Service Console (1Gb)
  - vSwitch1 on vmnic0 for VMotion (1Gb)
  - vSwitch2 on vmnic3 (1Gb) for all Standby VMs and Deploy VM
  - vSwitch3 on vmnic4 (10Gb) for all DS2 and Mail VMs
  - vSwitch4 on vmnic5 (10Gb) for all Olio VMs

## Storage Notes

- ETERNUS DX80[1] (1 shelf, total 4 disks)
  - RAID set 0: (4 disks)
    - LUN 0: Boot/Console OS for SUT1 (11GB)
    - LUN 1: Boot/Console OS for SUT2 (11GB)
- ETERNUS DX80[2] (2 shelves, total 24 disks)
  - RAID set 0: (6 disks)
    - LUN 1: All even numbered Standby VMs (110GB)
    - LUN 2: All odd numbered Standby VMs (110GB)
  - RAID set 1: (6 disks)
    - LUN 3: Source Deploy Template (50GB)
  - RAID set 2: (6 disks)
    - LUN 4: Target Storage VMotion (50GB)
  - RAID set 3: (6 disks)
    - LUN 5: Target Deploy Template (50GB)
- ETERNUS DX80[3] (2 shelves, total 24 disks)
  - RAID set 0: (4 disks)
    - LUN 1: For Tile 0 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 2: For Tile 0 OlioDB (20GB)
  - RAID set 1: (4 disks)
    - LUN 3: For Tile 3 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 4: For Tile 3 OlioDB (20GB)
  - RAID set 2: (4 disks)
    - LUN 5: For Tile 6 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 6: For Tile 6 OlioDB (20GB)
  - RAID set 3: (4 disks)
    - LUN 7: For Tile 9 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 8: For Tile 9 OlioDB (20GB)
  - RAID set 4: (4 disks)

- LUN 9: For Tile 12 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
  - LUN 10: For Tile 12 OlioDB (20GB)
- RAID set 5: (4 disks)
  - LUN 11: For Tile 15 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
  - LUN 12: For Tile 15 OlioDB (20GB)
- ETERNUS DX80[4] (2 shelves, total 24 disks)
  - RAID set 0: (4 disks)
    - LUN 1: For Tile 1 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 2: For Tile 1 OlioDB (20GB)
  - RAID set 1: (4 disks)
    - LUN 3: For Tile 4 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 4: For Tile 4 OlioDB (20GB)
  - RAID set 2: (4 disks)
    - LUN 5: For Tile 7 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 6: For Tile 7 OlioDB (20GB)
  - RAID set 3: (4 disks)
    - LUN 7: For Tile 10 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 8: For Tile 10 OlioDB (20GB)
  - RAID set 4: (4 disks)
    - LUN 9: For Tile 13 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 10: For Tile 13 OlioDB (20GB)
  - RAID set 5: (4 disks)
    - LUN 11: For Tile 16 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 12: For Tile 16 OlioDB (20GB)
- ETERNUS DX80[5] (2 shelves, total 24 disks)
  - RAID set 0: (4 disks)
    - LUN 1: For Tile 2 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 2: For Tile 2 OlioDB (20GB)
  - RAID set 1: (4 disks)
    - LUN 3: For Tile 5 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 4: For Tile 5 OlioDB (20GB)
  - RAID set 2: (4 disks)
    - LUN 5: For Tile 8 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 6: For Tile 8 OlioDB (20GB)
  - RAID set 3: (4 disks)
    - LUN 7: For Tile 11 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 8: For Tile 11 OlioDB (20GB)
  - RAID set 4: (4 disks)
    - LUN 9: For Tile 14 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 10: For Tile 14 OlioDB (20GB)
  - RAID set 5: (4 disks)
    - LUN 11: For Tile 17 DS2WebA, DS2WebB, DS2WebC, Mailserver and first VHD from DS2DB (140GB)
    - LUN 12: For Tile 17 OlioDB (20GB)
- ETERNUS DX80[6] (2 shelves, total 22 disks and 2 SSDs)
  - RAID set 0: (11 disks)
    - LUN 1: For Tile 0,10 OlioWeb (180GB)
  - RAID set 1: (11 disks)
    - LUN 2: For Tile 5,15 OlioWeb (180GB)

- RAID set 2: (2 SSDs)
  - LUN 3: For Tile 0 second VHD from DS2DB (37GB)
  - LUN 4: For Tile 5 second VHD from DS2DB (37GB)
  - LUN 5: For Tile 10 second VHD from DS2DB (37GB)
  - LUN 6: For Tile 15 second VHD from DS2DB (37GB)
- ETERNUS DX80[7] (2 shelves, total 22 disks and 2 SSDs)
  - RAID set 0: (11 disks)
    - LUN 1: For Tile 1,11 OlioWeb (180GB)
  - RAID set 1: (11 disks)
    - LUN 2: For Tile 6,16 OlioWeb (180GB)
  - RAID set 2: (2 SSDs)
    - LUN 3: For Tile 1 second VHD from DS2DB (37GB)
    - LUN 4: For Tile 6 second VHD from DS2DB (37GB)
    - LUN 5: For Tile 11 second VHD from DS2DB (37GB)
    - LUN 6: For Tile 16 second VHD from DS2DB (37GB)
- ETERNUS DX80[8] (2 shelves, total 22 disks and 2 SSDs)
  - RAID set 0: (11 disks)
    - LUN 1: For Tile 2,12 OlioWeb (180GB)
  - RAID set 1: (11 disks)
    - LUN 2: For Tile 7,17 OlioWeb (180GB)
  - RAID set 2: (2 SSDs)
    - LUN 3: For Tile 2 second VHD from DS2DB (37GB)
    - LUN 4: For Tile 7 second VHD from DS2DB (37GB)
    - LUN 5: For Tile 12 second VHD from DS2DB (37GB)
    - LUN 6: For Tile 17 second VHD from DS2DB (37GB)
- ETERNUS DX80[9] (2 shelves, total 22 disks and 2 SSDs)
  - RAID set 0: (11 disks)
    - LUN 1: For Tile 3,13 OlioWeb (180GB)
  - RAID set 1: (11 disks)
    - LUN 2: For Tile 8 OlioWeb (180GB)
  - RAID set 2: (2 SSDs)
    - LUN 3: For Tile 3 second VHD from DS2DB (37GB)
    - LUN 4: For Tile 8 second VHD from DS2DB (37GB)
    - LUN 5: For Tile 13 second VHD from DS2DB (37GB)
- ETERNUS DX80[10] (2 shelves, total 22 disks and 2 SSDs)
  - RAID set 0: (11 disks)
    - LUN 1: For Tile 4,14 OlioWeb (180GB)
  - RAID set 1: (11 disks)
    - LUN 2: For Tile 9 OlioWeb (180GB)
  - RAID set 2: (2 SSDs)
    - LUN 3: For Tile 4 second VHD from DS2DB (37GB)
    - LUN 4: For Tile 9 second VHD from DS2DB (37GB)
    - LUN 5: For Tile 14 second VHD from DS2DB (37GB)

## Operating System Notes

Mailserv VMs: Microsoft Windows 2008 Enterprise x64 Edition updated with SP2

## Software Notes

Mailserv VMs: Microsoft Exchange 2007 Enterprise x64 Edition updated with SP3

## Client Notes

Benchmark Controller was running VMware vSphere PowerCLI 4.1 build 264274

## Other Notes

One Client used as a dedicated Benchmark Controller. This system was connected to the SUT- and the Load-VLAN.

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