

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Cisco UCS C460 M2
 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 =
18.00 @ 18 Tiles**

Number of Hosts: 2

Uniform Hosts [yes/no]: yes

Total sockets/core/threads in test: 8/80/160

Tested By: Cisco Systems

Test Date: 09-09-2011

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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	327.12	0.99	91.50	4647.43	1.00	184.95	2772.05	1.26	133.16	2118.35	1.39	105.21	1524.60	1.44	81.45	1.20
p1	330.27	1.00	90.25	4638.57	1.00	212.49	2679.15	1.22	141.97	1889.28	1.24	115.80	1425.67	1.35	90.52	1.15
p2	326.10	0.99	94.00	4627.68	1.00	210.09	2619.28	1.19	146.86	1847.10	1.22	119.57	1326.20	1.25	90.44	1.12
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.48	0.99	84.00	4628.35	1.00	226.40	3188.62	1.45	104.50	2302.75	1.52	90.90	1779.50	1.68	70.43	1.30
p1	328.73	1.00	84.00	4602.77	0.99	245.47	3146.68	1.43	106.82	2197.93	1.45	90.13	1590.72	1.50	67.24	1.25
p2	329.07	1.00	88.00	4563.57	0.98	291.48	3055.97	1.39	113.45	2208.80	1.45	98.13	1602.78	1.51	74.84	1.25
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	321.48	0.97	84.00	4653.38	1.00	187.76	2710.68	1.23	139.94	1898.12	1.25	115.44	1400.12	1.32	93.45	1.15
p1	326.20	0.99	84.00	4641.70	1.00	221.62	2673.95	1.22	143.10	1874.72	1.23	117.61	1290.25	1.22	94.26	1.13
p2	325.85	0.99	84.75	4597.00	0.99	238.27	2708.18	1.23	139.07	2063.12	1.36	119.40	1442.65	1.36	98.79	1.17
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.75	0.98	83.15	4618.45	1.00	216.24	2827.10	1.29	128.97	2100.78	1.38	97.90	1472.83	1.39	76.32	1.19
p1	330.12	1.00	84.00	4629.48	1.00	226.53	2849.18	1.30	126.77	2172.88	1.43	100.53	1557.35	1.47	78.60	1.22
p2	329.07	1.00	84.00	4648.00	1.00	198.47	2798.97	1.27	131.59	2107.70	1.39	106.11	1577.50	1.49	86.32	1.21
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.85	0.99	93.85	4654.07	1.00	195.93	3164.10	1.44	105.32	2252.53	1.48	86.13	1611.60	1.52	65.78	1.26
p1	326.62	0.99	94.00	4639.62	1.00	207.95	3037.65	1.38	113.40	2265.47	1.49	93.40	1713.95	1.62	74.83	1.27
p2	326.70	0.99	94.00	4618.82	1.00	220.95	2959.40	1.35	118.17	2236.65	1.47	86.92	1608.75	1.52	66.14	1.24
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.57	0.99	92.30	4611.60	0.99	201.04	2867.07	1.30	126.05	2188.07	1.44	99.54	1589.60	1.50	76.40	1.23
p1	329.23	1.00	94.00	4606.60	0.99	212.88	2927.22	1.33	120.54	2173.85	1.43	91.71	1632.35	1.54	72.70	1.24

p2	327.27	0.99	94.00	4594.00	0.99	208.61	2904.75	1.32	122.53	2222.68	1.46	96.40	1609.08	1.52	74.13	1.24
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.45	0.99	94.00	4650.05	1.00	190.43	3074.22	1.40	111.22	2311.78	1.52	90.50	1723.83	1.63	74.44	1.28
p1	324.98	0.98	94.00	4632.27	1.00	200.15	3019.82	1.37	114.89	2178.18	1.43	91.54	1543.33	1.46	70.84	1.23
p2	323.20	0.98	94.00	4604.18	0.99	203.20	2990.47	1.36	116.80	2231.35	1.47	95.85	1607.20	1.52	74.59	1.24
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	321.23	0.97	84.00	4616.02	0.99	210.46	3030.43	1.38	114.70	2185.20	1.44	91.48	1629.30	1.54	73.20	1.24
p1	334.05	1.01	84.00	4632.68	1.00	231.86	2959.78	1.35	119.27	2153.60	1.42	93.69	1533.47	1.45	71.86	1.23
p2	326.65	0.99	84.00	4607.40	0.99	249.03	2881.65	1.31	124.80	2292.62	1.51	100.15	1660.40	1.57	79.40	1.25
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.98	0.99	94.00	4628.95	1.00	199.91	2879.43	1.31	124.78	2053.12	1.35	101.11	1481.30	1.40	76.03	1.20
p1	325.43	0.99	93.95	4635.45	1.00	216.16	2786.62	1.27	132.45	2041.80	1.34	111.30	1478.88	1.40	85.48	1.19
p2	326.20	0.99	94.00	4431.57	0.95	234.70	2822.28	1.28	129.08	2084.55	1.37	107.37	1577.33	1.49	86.15	1.20
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.62	0.99	83.90	4625.32	1.00	218.18	3061.85	1.39	111.81	2223.15	1.46	88.44	1603.83	1.52	66.35	1.25
p1	329.80	1.00	83.50	4612.93	0.99	238.71	2960.85	1.35	118.87	2289.05	1.51	100.44	1689.03	1.60	77.10	1.26
p2	324.55	0.98	84.00	4611.75	0.99	245.55	2969.10	1.35	118.27	2153.03	1.42	93.74	1613.08	1.52	74.61	1.23
TILE_10	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.80	0.98	94.00	4641.23	1.00	202.62	3129.75	1.42	107.32	2332.88	1.54	88.75	1691.20	1.60	68.40	1.28
p1	324.38	0.98	94.00	4635.82	1.00	212.27	3083.30	1.40	110.61	2269.43	1.49	92.99	1722.40	1.63	74.20	1.27
p2	331.40	1.00	94.00	4624.57	1.00	232.13	3050.47	1.39	113.07	2170.32	1.43	92.20	1547.75	1.46	70.65	1.24
TILE_11	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.15	0.98	91.75	4620.68	1.00	194.61	3106.03	1.41	109.34	2335.50	1.54	89.00	1755.30	1.66	72.47	1.29
p1	324.55	0.98	94.00	4615.90	0.99	209.87	3130.45	1.42	107.76	2336.90	1.54	88.52	1680.90	1.59	69.12	1.28
p2	322.82	0.98	94.00	4610.25	0.99	215.11	3093.43	1.41	110.32	2236.75	1.47	87.48	1599.17	1.51	66.89	1.25
TILE_12	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.52	0.98	94.00	4639.88	1.00	190.53	2903.78	1.32	123.52	2082.30	1.37	99.12	1552.33	1.47	79.12	1.21
p1	327.15	0.99	94.00	4629.82	1.00	201.33	2703.00	1.23	139.69	1979.33	1.30	117.24	1405.08	1.33	92.53	1.16
p2	333.18	1.01	94.00	4609.62	0.99	217.67	2688.18	1.22	140.27	1987.38	1.31	116.03	1424.47	1.35	90.42	1.17
TILE_13	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.10	1.00	93.38	4636.10	1.00	207.63	3097.65	1.41	109.36	2247.05	1.48	86.60	1672.67	1.58	61.96	1.27
p1	326.65	0.99	93.25	4639.80	1.00	201.62	3007.00	1.37	115.74	2253.53	1.48	94.58	1682.72	1.59	69.20	1.26
p2	328.10	0.99	84.25	4611.30	0.99	224.30	3042.80	1.38	113.02	2282.93	1.50	92.36	1787.90	1.69	69.79	1.28
TILE_14	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.90	0.99	88.50	4633.50	1.00	206.62	3114.12	1.42	108.77	2335.40	1.54	88.99	1692.67	1.60	68.61	1.28
p1	324.95	0.98	84.25	4621.90	1.00	221.03	3001.07	1.36	115.76	2255.70	1.49	94.25	1639.30	1.55	72.00	1.25

p2	326.43	0.99	89.50	4595.73	0.99	247.23	2987.07	1.36	117.05	2152.32	1.42	93.35	1604.65	1.52	75.08	1.23
TILE_15	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.57	1.00	95.35	4645.60	1.00	192.02	3170.90	1.44	104.94	2406.07	1.58	84.23	1758.12	1.66	64.20	1.31
p1	329.00	1.00	94.00	4629.15	1.00	211.55	3116.97	1.42	108.45	2350.68	1.55	87.45	1799.47	1.70	68.99	1.30
p2	330.48	1.00	94.00	4622.18	1.00	222.82	3143.50	1.43	106.50	2309.70	1.52	82.65	1648.20	1.56	63.43	1.28
TILE_16	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	322.73	0.98	94.00	4651.23	1.00	199.73	3155.05	1.43	106.26	2447.47	1.61	89.38	1789.20	1.69	69.86	1.31
p1	327.43	0.99	94.00	4647.88	1.00	201.63	3120.57	1.42	107.97	2266.70	1.49	85.54	1694.60	1.60	68.15	1.27
p2	318.43	0.96	94.00	4631.30	1.00	227.79	3126.55	1.42	107.85	2270.82	1.50	85.32	1610.12	1.52	66.12	1.25
TILE_17	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.30	0.99	106.25	4654.77	1.00	192.48	3210.65	1.46	102.50	2409.68	1.59	83.86	1840.25	1.74	66.35	1.32
p1	323.52	0.98	94.00	4639.12	1.00	218.28	3171.90	1.44	104.82	2300.60	1.51	83.06	1655.75	1.56	62.67	1.27
p2	324.70	0.98	94.00	4625.93	1.00	222.15	3128.85	1.42	107.75	2344.25	1.54	88.19	1699.38	1.61	67.80	1.28
p0_score:	22.56															
p1_score:	22.24															
p2_score:	22.14															

Infrastructure_Operations_Scores:										vmotion			svmotion			deploy		
Completed_Ops_PerHour										14.50			10.00			4.50		
Avg_Seconds_To_Complete										50.12			44.14			372.89		
Failures										0.00			0.00			0.00		
Ratio										0.91			1.11			1.12		
Number_Of_Threads										1			1			1		
Summary										Run_Is_Compliant			Number_Of_Compliance_Issues(0)*				Median_Phase(p1)	
Unreviewed_VMmark2_Applications_Score										22.24								
Unreviewed_VMmark2_Infrastructure_Score										1.04								
Unreviewed_VMmark2_Score										18.00								

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 4.1.0 build 258902 / 07-13-2010

Availability Date (MM-DD-YYYY)	
Supplemental Software	<ul style="list-style-type: none"> • INT-intel-lad-ddk-ixgbe-400.3.4.23-1.249663 driver update • BCM-bnx2x-1.64.32.v41.1 driver update • lpfc820.8.2.1.97.30-410624
Servers	
Quantity	2
Server Manufacturer and Model	Cisco UCS C460 M2
Processor Vendor and Model	Intel Xeon E7-4870
Processor Speed (GHz)	2.4 GHz
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	C460.1.3.2e.0.052420111616
Memory Size (in GB, Number of DIMMs)	512GB, 64x8GB
Memory Type and Speed	Dual rank 1333MHz ECC Registered DDR3
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	LSI Logic embedded
Number of Host Bus Adapters	1 dual-port
Host Bus Adapter Vendors and Models	LPe12000 dual port 8Gb Fibre HBA
Number of Network Controllers	2 dual-port 10Gb , 1 dual-port 1Gb (unused)
Network Controller Vendors and Models	Intel X520-DA2 dual-port 10Gb, Broadcom NetXtremeII BCM 5709 dual-port 1Gb (embedded), Broadcom NetXtremeII 57711 dual-port 10Gb (embedded)
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	07-01-2011
Software Availability Date (MM-DD-YYYY)	07-13-2010
Network	
Network Switch Vendors and Models	(1) Cisco Nexus 5010
Network Speed	10Gbps

Storage	
Array Vendors, Models, and Firmware Versions	EMC VNX 5500 (version 05.31.000.5.008), EMC VNX 5700 (version 05.31.000.5.008)
Fibre Channel Switch Vendors and Models	Cisco MDS 9134
Disk Space Used	9502.5GB
Array Cache Size	7883MB X 2 on EMC VNX 5700, 5389MB X 2 on EMC VNX 5500
Total Number of Physical Disks Used	261
Total Number of Enclosures/Pods/Shelves Used	13
Number of Physical Disks Used per Enclosure/Pod/Shelf	<ul style="list-style-type: none"> • 7 enclosures with 25x600GB 10K • 1 enclosure with 9x200GB SSD • 4 enclosures with 9x600GB 15K, 4x200GB SSD and 2x100GB SSD • 1 enclosure with 9x600GB 15K, 1x200GB SSD and 3x100GB SSD • 4 100GB internal SSDs (2 per host)
Total Number of Storage Groups Used	4
Number of LUNs Used	22
LUN Size and Number of Disks Per LUN	<ul style="list-style-type: none"> • 6 LUNs at 500GB (2xOlioDB, 2xDS2Web A-C, 2xMailserver), each over 15x600GB 10K • 5 LUNs at 500GB (1xOlioDB, 1xDS2Web A-C, 1xMailserver), each over 15x600GB 10K • 1 LUN at 333GB (1xOlioDB, 1xDS2Web A-C, 1xMailserver), set over 10x600GB 10K • 1 LUN at 904GB (DS2DB odd), set over 10x100GB SSD • 1 LUN at 1.42TB (DS2DB even), set over 8x200GB SSD • 2 LUNs at 1.60TB (2xOlioWeb), each over 9x200GB SSD • 1 LUN at 90GB (Deploy Source), set over 1x100GB SSD • 1 LUN at 40GB (Deploy Target), set over 14x600GB 15K • 1 LUN at 250GB (Standby Source), set over 15x600GB 15K • 1 LUN at 40GB (Standby Target), set over 16x600GB 15K • 2 LUNs at 184GB (VMware ESX Boot), each set over 2x100GB SSD on embedded LSI controller
RAID Type	RAID 0 for VM LUNs and VMware ESX 4.1 O/S, JBOD for Deploy Source
Number of Members per RAID Set	<ul style="list-style-type: none"> • 11 RAID 0 RAID sets each over 15x600GB 10K disks • 1 RAID 0 RAID set over 10x600GB 10K disks • 1 RAID 0 RAID set over 10x100GB SSD • 1 RAID 0 RAID set over 8x200GB SSD • 2 RAID 0 RAID sets each over 9x200GB SSD • 1 JBOD "Disk" over 1x100GB SSD • 1 RAID 0 RAID set over 14x600GB 15K disks • 1 RAID 0 RAID set over 15x600GB 15K disks • 1 RAID 0 RAID set over 16x600GB 15K disks • 2 RAID 0 RAID sets each over 2x100GB SSD on embedded LSI controller
Disk Vendors, Models, and Speeds	HITACHI HUC10606 CLAR600 10K RPM, SAMSUNG SS160520 CLAR200, SAMSUNG SS160510 CLAR100, SEAGATE STE60005 CLAR600 15K RPM

Datacenter Management Server	
System Model	Cisco UCS C200 M1
Processor Vendor and Model	Intel Xeon E5520
Processor Speed (GHz)	2.27GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Memory	24GB
Network Controller(s) Vendors and Models	Intel 82576NS Gigabit Server Adapter
Operating System, Version, and Service Pack	Microsoft Windows Server 2008 Enterprise 64-bit with SP1
Other Hardware	None
Other Software	None
Clients	
Number of Clients	8
System Model(s)	client1,3: Cisco UCS B200 M2 client2,4,5,7: Cisco UCS B200 M1 client6: Cisco UCS B230 M1 prime client: Dell PowerEdge 2950
Processor Vendor(s) and Model(s)	client1: Intel Xeon X5690 client2: Intel Xeon X5570 client3: Intel Xeon X5690 client4: Intel Xeon X5570 client5: Intel Xeon E5540 client6: Intel Xeon X7560 client7: Intel Xeon E5540 prime client: Intel Xeon E5430
Processor Speed(s) (GHz)	client1: 3.46GHz client2: 2.93GHz client3: 3.46GHz client4: 2.93GHz client5: 2.53GHz client6: 2.26GHz client7: 2.53GHz prime client: 2.66GHz
Total Sockets/Total Cores/Total Threads	client 1, 3: 2 Sockets / 12 Cores / 24 Threads client 2, 4, 5, 7: 2 sockets / 8 cores / 16 Threads client 6: 2 sockets / 16 cores / 32 threads prime client: 2 sockets / 8 cores / 16 Threads
Memory per Client	client1: 96GB client2: 24GB client3: 48GB client4: 24GB client5: 96GB client6: 256GB

	client7: 24GB prime client: 16GB
Network Controller(s) Vendors and Models	client1-4 & client7: Intel 82598EB 10 Gigabit Ethernet Controller client5 & 6: Cisco M81KR 10 Gigabit VIC prime client: Broadcom 5708C Gigabit Ethernet Controller
Operating System, Version, and Service Pack	Prime Client: Microsoft Windows Server 2003 Enterprise 32-bit, Service-Pack 2 Physical Clients 1-7: VMware ESX 4.1 U1 (build 348481) Virtual Clients 0-17: Microsoft Windows Server 2008 Enterprise R2 64-bit
Other Hardware	None
Other Software	VMware ESX 4.1.0 U1 (Build 348481)

Notes for Workload

Virtualization Software Notes

- Virtual hardware for all VMs was set to V7
- Ethernet adapter type set to vmxnet3 for all VMs
- IDE and floppy were removed from all VMs
- Logging was disabled for all VMs (default enabled)
- 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/NetTxWorldlet = 1 (default 2)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/PageMigEnable = 0 (default 1)
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=5 lpfc_cr_delay=1" (defaults 31,1,0)
- /vmkernel/module/ixgbe.o/options = "VMDQ=1,1" (defaults 8,8)
- /vmkernel/pageSharing = FALSE (default TRUE)
- /vmkernel/iovDisableIR = TRUE (default FALSE)
- Module tpm_tis loaded for SUTs 1 & 2
- Firewall was disabled for the COS
- Cluster DRS Automation Level was set to "Fully Automated", Level 1 ("Aggressive")

Server Notes

- SpeedStep Disabled (default enabled)
- Hyperthreading Enabled (default disabled)
- Serial Port Disabled (default enabled)

Networking Notes

- All non-Olio Virtual Machines, Virtual Machine Port Groups, and Service Console Ports were connected to vSwitch0 on vmnic4 at 10Gbps.

- VMkernel ports were all connected to vSwitch1 on vmnic2 at 10Gbps.
- OlioWeb and OlioDB virtual machines were attached to vSwitch2 on vmnic5 at 10Gbps.

Storage Notes

- There were six 500GB RAID0 LUNs, each created over fifteen 600GB 10K disks on the EMC VNX 5700. These LUNs each contained two tiles worth of DS2 Webserver VMs, Mailservers, and OlioDB VMs.
- There were five 500GB RAID0 LUNs, each created over fifteen 600GB 10K disks on the EMC VNX 5700. These LUNs each contained one tile worth of DS2 Webserver VMs, Mailservers, and OlioDB VMs.
- There was one 333GB RAID0 LUN, created over ten 600GB 10K disks on the EMC VNX 5700. This LUN contained one tile worth of DS2 Webserver VMs, a Mailserver, and an OlioDB VM.
- There was one 904GB RAID0 LUN, created over ten 100GB SSDs on the EMC VNX 5500. This LUN contained the odd DS2DB VMs.
- There was one 1.42TB RAID0 LUN, created over eight 200GB SSDs on the EMC VNX 5500. This LUN contained the even DS2DB VMs.
- There was one 1.6TB RAID0 LUN, created over nine 200GB SSDs on the EMC VNX 5500. This LUN contained even-numbered OlioWeb VMs.
- There was one 1.6TB RAID0 LUN, created over nine 200GB SSDs on the EMC VNX 5700. This LUN contained odd-numbered OlioWeb VMs.
- There was one 90GB JBOD LUN, created over a single 100GB SSD on the EMC VNX 5500. This LUN contained the templates used for source deployment operations.
- There was one 40GB RAID0 LUN, created over fourteen 600GB 15K disks on the EMC VNX 5500. This LUN contained the VMs used for target deployment operations.
- There was one 250GB RAID0 LUN, created over fifteen 600GB 15K disks on the EMC VNX 5500. This LUN contained the Standby VMs.
- There was one 40GB RAID0 LUN, created over sixteen 600GB 15K disks on the EMC VNX 5500. This LUN contained the VMs used for Standby Storage VMotion target operations.
- There were two 184GB RAID0 LUNs, each created over two 100GB SSDs. These LUNs contained the VMware ESX Operating System for each respective SUT and were attached to the local LSI controller.
- Both the EMC VNX 5500 and EMC VNX 5700 support VAAI, which is enabled by default and was used in the test.

Datacenter Management Server Notes

- VMware vSphere Center was run on a Cisco UCS C200 M1.
- The vSphere was running on a Windows 2008 Server Enterprise Edition 64-bit, with SP1

Operating System Notes

- All Mailservers running Microsoft Windows Server 2008 R2 Enterprise 64-bit.
- All storage controllers for the virtual machines were set to Paravirtual.
- All SLES 11 VMs were updated to SP1.

Software Notes

None.

Client Notes

- Microsoft Windows Server 2008 R2 64-bit installed on client virtual machines and updated through Windows Update.
- Prime client was running VMware vSphere PowerCLI 4.1.1.2816 build 332441.
- All clients were run on virtual machines that were each defined with 4 virtual CPUs, 4GB of memory, 1 vmxnet3 network, and 40GB of disk space.
- Virtual clients 0, 7, and 14 were hosted on physical client1.
- Virtual clients 1, 8, and 15 were hosted on physical client2.
- Virtual clients 2, 9, and 16 were hosted on physical client3.
- Virtual clients 3, 10, and 17 were hosted on physical client4.
- Virtual clients 4 and 11 were hosted on physical client5.
- Virtual clients 5 and 12 were hosted on physical client6.
- Virtual clients 6 and 13 were hosted on physical client7.
- ESX client run with hyperthreading and turbo boost enabled. ESX configuration settings unchanged from default.

Other Notes

Prime client run on a dedicated, non-client machine.

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