

VMware® VMmark® V2.1.1 Results

Vendor and Hardware Platform: Cisco UCS B200 M3
 Virtualization Platform: VMware ESX 4.1 U2 Build 502767
 VMware VCenter Server: VMware VCenter Server 5.0.0 Build 455964

**VMmark V2.1.1 Score =
11.30 @ 10 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/core/threads in test: 4/32/64
Tested By: Cisco Systems		Test Date: 06-15-2012
Performance Section Performance	Configuration Section Configuration	Notes Section Notes for Workload

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	328.90	1.00	55.80	4614.55	0.99	229.02	4143.98	1.88	59.37	2770.72	1.82	76.74	2193.32	2.07	64.87	1.48
p1	326.88	0.99	53.45	4586.00	0.99	278.03	3850.00	1.75	71.67	2727.45	1.80	85.36	2072.35	1.96	81.75	1.43
p2	326.80	0.99	53.77	4669.60	1.01	193.09	3675.32	1.67	79.11	2590.20	1.71	88.61	1956.55	1.85	90.57	1.39
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.62	0.99	63.00	4669.35	1.01	170.40	3496.53	1.59	88.64	2530.38	1.67	94.38	1789.50	1.69	100.83	1.35
p1	322.60	0.98	63.00	4661.20	1.00	179.88	3432.47	1.56	91.31	2582.40	1.70	95.40	1937.05	1.83	100.90	1.37
p2	328.12	0.99	63.00	4627.90	1.00	197.56	3376.93	1.54	94.97	2436.05	1.60	100.72	1726.75	1.63	106.73	1.32
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.27	1.00	164.50	4623.43	1.00	227.42	3749.20	1.70	74.82	2901.15	1.91	74.84	2313.90	2.19	63.61	1.48
p1	324.70	0.98	244.72	4547.52	0.98	313.83	3726.10	1.69	76.02	2759.95	1.82	77.64	2211.43	2.09	71.30	1.44
p2	326.70	0.99	209.50	4671.70	1.01	187.74	3658.43	1.66	79.68	2648.35	1.74	85.28	1906.78	1.80	88.28	1.39
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.70	0.99	57.12	4685.70	1.01	164.86	3673.07	1.67	79.25	2738.93	1.80	85.05	2073.62	1.96	88.88	1.43
p1	327.95	0.99	53.00	4660.52	1.00	179.86	3597.18	1.64	83.51	2584.68	1.70	89.88	1824.88	1.72	96.57	1.37
p2	328.45	0.99	53.00	4664.85	1.01	178.54	3578.75	1.63	84.44	2664.75	1.75	90.69	1894.53	1.79	97.70	1.39
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.25	0.98	87.25	4583.00	0.99	274.65	3769.85	1.71	73.62	2830.20	1.86	73.46	2316.40	2.19	63.39	1.47
p1	328.18	0.99	87.75	4561.45	0.98	290.35	3748.35	1.70	74.59	2787.72	1.84	76.05	2128.97	2.01	70.14	1.44
p2	326.32	0.99	84.00	4662.45	1.00	188.07	3611.90	1.64	81.79	2807.68	1.85	86.60	2057.97	1.95	90.13	1.42
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.98	0.99	54.38	4651.48	1.00	188.72	3720.97	1.69	76.50	2723.95	1.79	79.99	1935.55	1.83	85.13	1.41
p1	327.07	0.99	53.00	4618.85	1.00	222.43	3539.00	1.61	85.30	2636.97	1.74	91.56	1907.17	1.80	96.04	1.38

p2	327.25	0.99	53.30	4596.20	0.99	244.62	3541.47	1.61	86.34	2536.68	1.67	93.17	1879.20	1.78	98.96	1.36
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.77	0.99	54.00	4686.43	1.01	144.16	2926.68	1.33	127.37	2015.53	1.33	141.08	1340.25	1.27	160.87	1.17
p1	324.35	0.98	54.00	4673.62	1.01	160.26	3003.38	1.37	120.42	2251.93	1.48	130.66	1545.97	1.46	145.26	1.24
p2	317.90	0.96	54.00	4653.85	1.00	171.13	3046.03	1.39	116.37	2099.43	1.38	130.93	1572.55	1.49	135.73	1.22
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	330.90	1.00	88.38	4691.00	1.01	155.75	3624.47	1.65	81.81	2680.85	1.77	89.04	1940.25	1.83	93.49	1.40
p1	324.10	0.98	94.00	4693.60	1.01	167.26	3576.47	1.63	84.20	2624.25	1.73	92.61	1971.75	1.86	97.46	1.39
p2	326.27	0.99	85.00	4663.77	1.00	182.71	3611.82	1.64	82.84	2568.65	1.69	90.82	1841.47	1.74	94.75	1.37
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.12	0.99	113.00	4617.73	0.99	224.19	3944.47	1.79	66.83	2779.15	1.83	81.62	2253.22	2.13	74.26	1.47
p1	325.60	0.99	104.50	4609.90	0.99	246.38	3791.60	1.72	74.13	2621.07	1.73	86.59	2049.65	1.94	83.69	1.41
p2	329.43	1.00	94.75	4634.98	1.00	192.26	3399.75	1.55	93.62	2463.12	1.62	105.02	1683.92	1.59	111.61	1.32
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.45	0.98	66.53	4685.57	1.01	162.84	3789.10	1.72	73.96	2693.57	1.77	82.06	2041.55	1.93	83.94	1.42
p1	326.38	0.99	63.73	4670.48	1.01	179.94	3598.55	1.64	83.43	2620.05	1.73	93.26	1906.85	1.80	96.31	1.38
p2	325.88	0.99	63.38	4667.85	1.01	166.70	3609.00	1.64	82.36	2651.15	1.75	90.46	1942.33	1.84	93.09	1.39
p0_score:	14.07															
p1_score:	13.85															
p2_score:	13.58															

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	16.50	10.00	5.00
Avg_Seconds_To_Complete	21.02	24.43	317.76
Failures	0.00	0.00	0.00
Ratio	1.03	1.11	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	13.85		
Unreviewed_VMmark2_Infrastructure_Score	1.13		
Unreviewed_VMmark2_Score	11.30		

Configuration

Virtualization Software

Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1 U2 Build 502767 / 10-27-2011
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.0.0 Build 455964 / 08-24-2011
Supplemental Software	None
Servers	
Quantity	2
Server Manufacturer and Model	Cisco UCS B200 M3
Processor Vendor and Model	Intel Xeon E5-2690
Processor Speed (GHz)	2.9
Total Sockets/Total Cores/Total Threads	2 Sockets / 16 Cores / 32 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	20MB I+D on chip per chip L3
BIOS Version	B200M3.2.0.2d
Memory Size (in GB, Number of DIMMs)	128GB, 16
Memory Type and Speed	8GB DIMMs 2Rx4 DDR3-1600MHz Registered ECC
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (unused)
Disk Controller Vendors and Models	MegaRAID SAS SKINNY Controller
Number of Host Bus Adapters	1 dual-port (on the Virtual Interface Card)
Host Bus Adapter Vendors and Models	Cisco UCS VIC M82-4P Virtual Interface Card
Number of Network Controllers	1 4-port (on the Virtual Interface Card)
Network Controller Vendors and Models	Cisco UCS VIC M82-4P Virtual Interface Card
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	06/05/2012
Software Availability Date (MM-DD-YYYY)	06/05/2011

Network	
Network Switch Vendors and Models	(2) Cisco UCS 6248 UP, (1) Cisco Nexus 5548 UP
Network Speed	20Gbps, 10Gbps
Storage	
Array Vendors, Models, and Firmware Versions	1 x Violin V6000 16TB with formatted capacity of 8TB (50%) Firmware A5.1.3
Fibre Channel Switch Vendors and Models	Cisco Nexus 5548 UP (see Network Switch)
Disk Space Used	2715GB
Array Cache Size	N/A
Total Number of Physical Disks Used	0
Total Number of Enclosures/Pods/Shelves Used	1
Number of Physical Disks Used per Enclosure/Pod/Shelf	Violin VMA: 64 Flash VIMMs
Total Number of Storage Groups Used	2
Number of LUNs Used	11
LUN Size and Number of Disks Per LUN	<ul style="list-style-type: none"> • All LUNs spread across 64 Flash VIMMs <ul style="list-style-type: none"> ○ 2 LUNs at 15GB (VMware ESX Boot) ○ 2 LUNs at 20GB (Deploy Source, Deploy Target) ○ 1 LUN at 700GB (DS2DB) ○ 1 LUN at 500GB (DS2Web) ○ 1 LUN at 1TB (Mailserver) ○ 1 LUN at 300GB (OlioDB) ○ 1 LUN at 1TB (OlioWeb) ○ 2 LUNs at 100GB (Standby Source, Standby Target)
RAID Type	Violin Memory vRAID
Number of Members per RAID Set	11
Disk Vendors, Models, and Speeds	64 x Violin 256 GB Flash VIMMs
Datacenter Management Server	
System Model	Cisco UCS C200 M2
Processor Vendor and Model	Intel Xeon E5620
Processor Speed (GHz)	2.40
Total Sockets/Total Cores/Total Threads	2 Sockets / 8 Cores / 16 Threads
Memory	96GB

Network Controller(s) Vendors and Models	Intel 82599EB 10Gigabit 2-port
Operating System, Version, and Service Pack	VMware ESXi 5.0.0 Build 469512 (Windows 2008 R2 Enterprise 64-bit for VM)
Other Hardware	None
Other Software	None
Clients	
Number of Clients	5
System Model(s)	<ul style="list-style-type: none"> • ESX client servers: UCS B200 M1 • Prime Client: Cisco UCS C200 M2
Processor Vendor(s) and Model(s)	<ul style="list-style-type: none"> • Intel Xeon X5570 (clients) • Intel Xeon X5670 (prime client)
Processor Speed(s) (GHz)	<ul style="list-style-type: none"> • 2.93GHz (X5570) • 2.93GHz (X5670)
Total Sockets/Total Cores/Total Threads	<ul style="list-style-type: none"> • 2 Sockets / 8 Cores / 16 Threads (clients) • 2 Sockets / 12 Cores / 12 Threads (prime client)
Memory per Client	<ul style="list-style-type: none"> • 48GB (clients) • 48GB (prime client)
Network Controller(s) Vendors and Models	<ul style="list-style-type: none"> • Intel 82598EB 10Gigabit 2-port (clients) • Intel 82599EB 10Gigabit 2-port (prime client)
Operating System, Version, and Service Pack	<ul style="list-style-type: none"> • Microsoft Windows 2003 Enterprise SP2 32-bit (prime client) • VMware ESX 4.1 U2 Build 502767 (physical clients) • Microsoft Windows 2008 R2 Enterprise 64-bit (virtual clients)
Other Hardware	None
Other Software	None

Notes for Workload

Virtualization Software Notes

- Virtual hardware for all VMs was set to V7
- Ethernet adapter type set to vmxnet3 for all VMs (default vmxnet2)
- IDE and floppy were removed from all VMs (default attached)
- Logging was disabled for all VMs (default enabled)
- All Linux VMs configured to have a single virtual socket with multiple cores (default one core per multiple virtual sockets)
- vSphere DRS Migration Threshold set to Fully Automated level 1
- Patch VEM410-201108406 installed on each SUT
- Installed drivers: BCM-bnx2x-1.64.32.v41.1; enic_driver_2.1.2.20; fnic_driver_1.4.0.201
- /adv/Cpu/CoschedCrossCall = "0" (default 1)

- /adv/Cpu/HaltingIdleMsecPenalty = "0" (default 100)
- /adv/DataMover/HardwareAcceleratedInit = "0" (default 1)
- /adv/DataMover/HardwareAcceleratedMove = "0" (default 1)
- /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/AllowPT = "1" (default 0)
- /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)
- /adv/VMFS3/HardwareAcceleratedLocking = "0" (default 1)
- Firewall was disabled for the COS

Server Notes

- Intel Turbo Boost enabled up to 3.8GHz
- Memory Performance set to Maximum Performance (default Power Saving)
- Hardware Prefetcher set to Disabled (default Enabled)
- Adjacent Cache Line Prefetcher set to Disabled (default Enabled)

Networking Notes

There were 2 vSwitches and 1 vSphere Distributed Switch configured, all at 20Gbps

- vSwitch0 on vmnic0 for Service Console, DS2DB, DS2web, and deploy VMs
- vSwitch1 on vmnic1 for VMkernel traffic (MTU set to 9000)
- Distributed Switch vm-fex configured with two uplinks per host, vmnic2 and vmnic4
- Distributed Switch vm-fex contained Mailserver, OlioWeb, OlioDB, and Standby VMs

Storage Notes

- All LUNs were spread across 64 256GB Violin Memory Array VIMM Flash modules in Violin Memory vRAID:
 - There were 2 LUNs at 15GB, each acting as the VMware ESX Boot LUN for each server.
 - There were 2 LUNs at 20GB, with one used to store the Deploy Template and one to act as the Deploy Target.
 - There was 1 LUN at 700GB, containing the DS2DB VMs.
 - There was 1 LUN at 500GB, containing the DS2Web VMs.
 - There was 1 LUN at 1TB, containing the Mailserver VMs.
 - There was 1 LUN at 300GB, containing the OlioDB VMs.
 - There was 1 LUN at 1TB, containing the OlioWeb VMs.
 - There were 2 LUNs at 100GB, with one used as the Standby Source LUN, and the other to act as the Standby Destination LUN.
- All LUNs were using a Round Robin (VMware) Path Selection Policy and given an I/O Operation Limit of 8.

Datacenter Management Server Notes

The Datacenter Management Server was a virtual machine configured with 4 vcpus and 32GB RAM.

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. (default LSI Logic SAS)
- 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 Microsoft Windows Server 2003 Enterprise SP2 32-bit and 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, 4, and 8 were hosted on physical client1.
- Virtual clients 1, 5, and 9 were hosted on physical client2.
- Virtual clients 2, 6 were hosted on physical client3.
- Virtual clients 3, 7 were hosted on physical client4.
- ESX clients run with hyperthreading and turbo boost enabled. ESX configuration settings unchanged from default.

Other Notes

Prime client run on a dedicated, non-client machine. Hyperthreading was disabled for the Prime Client.

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