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**	**Non-Compliant**

Number of Hosts: 2	**Uniform Hosts [yes/no]: yes**	**Total sockets/core/threads in test: 4/32/64**
Tested By: Cisco Systems	**Test Date: 02-22-2012**	

Performance Section	**Configuration Section**	**Notes Section**
Performance	Configuration	Notes for Workload

It has been determined that this result was not in compliance with the VMmark Run and Reporting Rules. Specifically, this result used a configuration that was not fully disclosed and was not in compliance with section 3.2 of the Run and Reporting Rules and thus violates VMmark publication requirements.

Replacement results have been published and can be found on the VMmark Results page.

Performance - all data has been removed = NC

	mailserver			**olio**			**dvdstoreA**			**dvdstoreB**			**dvdstoreC**			
TILE_0	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																

p2																
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0																
p1																
p2																

p0_score:	NC
p1_score:	NC
p2_score:	NC

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour			
Avg_Seconds_To_Complete			
Failures			
Ratio			
Number_Of_Threads			

Summary	NC	Number_Of_Compliance_Issues- NC	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	NC		
Unreviewed_VMmark2_Infrastructure_Score	NC		
Unreviewed_VMmark2_Score	NC		

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	B200M3.2.0.1.32
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)	06/5/2012
Software Availability Date (MM-DD-YYYY)	10/27/2011
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	2 x EMC VNX 5700 firmware 05.31.000.5.008, 1 x EMC VNX 7500 firmware 05.31.000.5.509
Fibre Channel Switch Vendors and Models	Cisco Nexus 5548 UP (see Network Switch)
Disk Space Used	2715GB
Array Cache Size	7883MB X 2 (VNX 5700), 10601MB (VNX 7500)
Total Number of Physical Disks Used	167
Total Number of Enclosures/Pods/Shelves Used	13

Number of Physical Disks Used per Enclosure/Pod/Shelf	• VNX 7500:
	  ◦ one enclosure with 7x200GB SSDs
	  ◦ one enclosure with 8x200GB SSDs
	• VNX 5700-A:
	  ◦ two enclosures with 17x600GB 10K disks each
	  ◦ two enclosures with 12 (5x200GB SSDs + 7 15K disks)
	  ◦ two enclosures with 13 (5x200GB SSDs + 8 15K disks)
	• VNX 5700-B:
	  ◦ two enclosures with 15x600GB 10K disks each
	  ◦ two enclosures with 13 (8x200GB SSDs + 5 15K disks)
	  ◦ one enclosure with 12 (7x200GB SSDs + 5 15K disks)

Total Number of Storage Groups Used	6
Number of LUNs Used	28

LUN Size and Number of Disks Per LUN	• 10 LUNS at 500GB (DS2WebA, DS2WebB, DS2WebC), each set over 6x600GB 10K disks
	• 1 LUN at 181GB (Deploy Source), set over 1x200GB SSD
	• 1 LUN at 25GB (Deploy Target), set over 15x600GB 15K disks
	• 1 LUN at 300GB (Standby Source), set over 16x600GB 15K disks
	• 1 LUN at 40GB (Standby Target), set over 14x600GB 15K disks
	• 1 LUN at 1.8TB (Mailserver), set over 10x200GB SSDs
	• 1 LUN at 910GB (OlioWeb), set over 5x200GB SSDs
	• 2 LUNs at 181GB (OlioDB), each set over 1x200GB SSD
	• 8 LUNs at 910GB (DS2DB), each set over 5x200GB SSDs
	  ◦ 2 LUNs contain 2xDS2DB
	  ◦ 6 LUNs contain 1xDS2DB

	• 2 LUNs at 30GB (VMware ESX Boot), each set over 2x600GB 10K disks
RAID Type	RAID 0 for VM LUNs (except OlioDB), RAID1 for VMware ESX 4.1 OS, JBOD for Deploy Source and OlioDB
Number of Members per RAID Set	• 10 RAID 0 RAID sets each over 6x600GB 10K disks • 1 RAID 0 RAID set over 14x600GB 15K disks • 1 RAID 0 RAID set over 15x600GB 15K disks • 1RAID 0 RAID set over 16x600GB 15K disks • 1 RAID 0 RAID set over 10x200GB SSDs • 1 RAID 0 RAID set over 5x200GB SSDs • 8 RAID 0 RAID sets each over 5x200GB SSDs • 3 JBOD Disks each over 1x200GB SSDs • 2 RAID 1 RAID sets each over 2x600GB 10K disks
Disk Vendors, Models, and Speeds	Samsung SS160520 CLAR200, Seagate STE60005 CLAR600 15K, Hitachi HUC10606 CLAR600 10K

Datacenter Management Server	
System Model	Cisco UCS C200 M2
Processor Vendor and Model	Intel Xeon X5670
Processor Speed (GHz)	2.93
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Memory	96GB
Network Controller(s) Vendors and Models	Intel X520 DA2
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	4
System Model(s)	UCS B200 M2
Processor Vendor(s) and Model(s)	Intel Xeon X5670 (2 clients), Intel Xeon X5680 (2 clients)
Processor Speed(s) (GHz)	2.93 (X5670), 3.33GHz (X5680)
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Memory per Client	48GB
Network Controlleri(s) Vendors and Models	Intel 82598EB 10Gigabit 2-port
Operating System, Version, and Service Pack	VMware ESX 4.1.0 Build 348341
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)
- /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)
- /vmkernel/pageSharing = "FALSE" (default = TRUE)
- /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)
- 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)

Networking Notes

There were 5 vSwitches configured, all at 20Gbps

- vSwitch0 on vmnic0 for Service Console, standby and deploy VM
- vSwitch1 on vmnic1 for VMkernel traffic (MTU set to 9000)
- vSwitch2 on vmnic2 for all Olio VMs
- vSwitch3 on vmnic3 for all DS2web and DS2DB VMs
- vSwitch4 on vmnic4 for all Mailserver VMs

Storage Notes

- VNX 7500 containing 15 200GB SSDs:
  - There was 1x1.8TB RAID 0 LUN, created over 10x200GB SSDs. This LUN contained the Mailserver VMs.
  - There was 1x910GB RAID 0 LUN, created over 5x200GB SSDs. This LUN contained the OlioWeb VMs.
- VNX 5700-A containing 34 600GB 10K disks, 30 600GB 15K disks, and 20 200GB SSDs:
  - There were 5x500GB RAID 0 LUNs, each created over 6x600GB 10K disks. These LUNs contained the DS2 Webserver VMs.
  - There were 2x30GB RAID 1 LUNs, each created over 2x600GB 10K disks. These LUNs were used for booting ESX over SAN.
  - There was 1x300GB RAID 0 LUNs, created over 16x600GB 15K disks. This LUN contained the Standby Source LUN.
  - There was 1x40GB RAID 0 LUNs, created over 14x600GB 15K disks. This LUN contained the Standby Destination LUN.
  - There were 4x910GB RAID 0 LUNs, each created over 5x200GB SSDs. One of these LUNs contained two DS2DB VMs. Three of these LUNs contained one DS2DB VM.

- VNX 5700-B containing 30 600GB 10K disks, 15 15K disks, and 23 200GB SSDs:
  - There were 5x500GB RAID 0 LUNs, each created over 6x600GB 10K disks. These LUNs contained the DS2 Webserver VMs.
  - There was 1x25GB RAID 0 LUN, created over 15x600GB 15K disks. This LUN contained the VM used for target deployment operations.
  - There was 1x181GB JBOD LUN, created over a single 200GB SSD. This LUN contained the VM used for source deployment operations.
  - There were 2x181GB JBOD LUNs, each created over a single 200GB SSD. These LUNs contained the OlioDB VMs.
  - There were 4x910GB RAID 0 LUNs, each created over 5x200GB SSDs. One of these LUNs contained two DS2DB VMs. Three of these LUNs contained one DS2DB VM.

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.
