VMware® VMmark™ V2.0 Results

Vendor and Hardware Platform: Fujitsu RX200 S6 **Virtualization Platform: VMware ESX 4.1 Build 260247**	**VMmark V2.0 Score =** **6.81 @ 7 Tiles**

Tested By: Fujitsu	**Test Date: 01-19-2011**

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	326.52	0.99	114.00	4648.10	1.00	187.07	2465.15	1.12	164.57	1773.83	1.17	178.45	1296.53	1.23	192.88	1.10
p1	325.93	0.99	115.00	4624.48	1.00	214.32	2450.55	1.11	166.62	1741.80	1.15	184.32	1158.55	1.09	199.64	1.07
p2	326.35	0.99	124.00	4619.48	1.00	222.72	2313.47	1.05	182.76	1591.17	1.05	200.97	1134.20	1.07	219.15	1.03
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.35	1.00	103.45	4652.12	1.00	169.18	2849.25	1.30	127.89	2011.47	1.32	139.19	1472.33	1.39	149.00	1.19
p1	326.35	0.99	112.50	4653.45	1.00	186.98	2820.97	1.28	130.38	1994.58	1.31	141.29	1382.92	1.31	153.22	1.17
p2	326.93	0.99	114.00	4671.32	1.01	194.24	2749.97	1.25	136.58	2084.80	1.37	146.10	1481.80	1.40	157.88	1.19
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.38	1.00	133.43	4638.10	1.00	194.45	2695.78	1.23	140.58	1938.50	1.28	148.07	1330.42	1.26	162.80	1.14
p1	327.70	0.99	133.43	4634.20	1.00	208.52	2635.88	1.20	146.11	1954.35	1.29	154.47	1357.90	1.28	169.19	1.14
p2	328.23	0.99	133.18	4644.00	1.00	209.61	2623.88	1.19	146.93	1944.40	1.28	155.17	1417.30	1.34	168.66	1.15
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.45	0.99	117.50	4666.25	1.01	172.97	3122.60	1.42	108.71	2163.18	1.42	123.23	1553.50	1.47	126.84	1.24
p1	330.27	1.00	114.00	4653.00	1.00	194.50	3051.22	1.39	113.16	2307.50	1.52	122.73	1673.70	1.58	129.67	1.27
p2	332.20	1.01	119.25	4643.82	1.00	203.65	3046.10	1.39	113.70	2141.72	1.41	124.81	1565.72	1.48	134.82	1.24
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.07	0.99	124.62	4642.45	1.00	193.15	2800.53	1.27	131.34	2014.28	1.33	145.82	1445.20	1.37	153.26	1.18
p1	329.20	1.00	118.20	4642.25	1.00	225.32	2730.07	1.24	137.70	1917.65	1.26	157.80	1472.95	1.39	159.24	1.17
p2	327.07	0.99	114.00	4633.85	1.00	225.76	2752.00	1.25	135.28	1872.35	1.23	155.37	1357.38	1.28	157.78	1.14
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	328.27	0.99	94.00	4650.88	1.00	185.23	3113.15	1.42	110.00	2240.62	1.48	122.43	1701.67	1.61	126.12	1.27
p1	325.35	0.99	94.00	4668.93	1.01	192.99	3113.28	1.42	109.80	2226.18	1.47	123.59	1623.12	1.53	126.93	1.26
p2	326.50	0.99	94.00	4642.23	1.00	200.83	3076.68	1.40	111.76	2135.50	1.41	125.92	1531.58	1.45	129.85	1.23

TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.35	0.99	117.50	4634.30	1.00	206.84	2877.15	1.31	126.59	2054.88	1.35	141.72	1539.55	1.46	148.58	1.21
p1	326.40	0.99	114.00	4651.75	1.00	222.12	2840.97	1.29	129.40	1962.65	1.29	145.16	1386.22	1.31	153.03	1.17
p2	325.98	0.99	114.00	4601.73	0.99	230.65	2808.97	1.28	131.57	2023.42	1.33	145.79	1440.30	1.36	153.91	1.18

p0_score:	8.33
p1_score:	8.25
p2_score:	8.16

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	16.00	9.00	5.00
Avg_Seconds_To_Complete	34.04	30.11	316.01
Failures	0.00	0.00	0.00
Ratio	1.00	1.00	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	8.25		
Unreviewed_VMmark2_Infrastructure_Score	1.08		
Unreviewed_VMmark2_Score	6.81		

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1 Build 260247 / 07-13-2010
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 4.1 Build 258902 / 07-13-2010
Supplemental Software	none

Servers	
Quantity	2
Server Manufacturer and Model	Fujitsu RX200 S6
Processor Vendor and Model	Six-core Intel Xeon X5680
Processor Speed (GHz)	3.33
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads

Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	12MB I+D on chip per chip L3
BIOS Version	Rev R1.02.3031
Memory Size (in GB, Number of DIMMs)	96GB, 12
Memory Type and Speed	1333MHz dual rank 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 Dual Port 1GbE Adapter, Intel 10GB XF SR Dual Port Server Adapter
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	05-20-2010
Software Availability Date (MM-DD-YYYY)	05-20-2010
Network	
Network Switch Vendors and Models	2xFujitsu BX600 GbE Switch Blade 30/12, CISCO 4900M
Network Speed	1Gbps for SUT management and VMs(except OlioDB and OlioWeb), 10Gbps for OlioDB-, OlioWeb-VMs and VMotion
Storage	
Array Vendors, Models, and Firmware Versions	7xFujitsu ETERNUS DX80, Firmware version V10L20-0000
Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	4975GB
Array Cache Size	2GB
Total Number of Physical Disks Used	126
Total Number of Enclosures/Pods/Shelves Used	13
Number of Physical Disks Used per Enclosure/Pod/Shelf	12 except first one with only 4 disks

Total Number of Storage Groups Used	8
Number of LUNs Used	34
LUN Size and Number of Disks Per LUN	2x11GB/4 Disks, 4x50GB/6 Disks, 7x42GB/6 Disks, 7x300GB/6 Disks, 7x37GB/8 Disks, 7x300GB/8 Disks
RAID Type	0
Number of Members per RAID Set	2
Disk Vendors, Models, and Speeds	122xSeagate, ST3300656SS, 15krpm 4xSeagate, ST3450856SS, 15krpm

Datacenter Management Server	
System Model	Fujitsu BX620S4
Processor Vendor and Model	Intel Xeon 5130
Processor Speed (GHz)	2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 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	8 (one Client used as a dedicated Benchmark Controller)
System Model(s)	Fujitsu BX620S4
Processor Vendor(s) and Model(s)	Intel Xeon 5130
Processor Speed(s) (GHz)	2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory per Client	4
Network Controlleri(s) Vendors and Models	3xDual Port Broadcom NetXtreme, 5 Ports disabled (expected Benchmark Controller with only 4 disabled ports)
Operating System, Version, and Service Pack	Microsoft(R) Windows(R) Server 2003 R2 Enterprise Edition, Service Pack 2
Other Hardware	none
Other Software	none

Notes for Workload

Virtualization Software Notes

- 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/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/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)
  /vmkernel/pageSharing = FALSE (default TRUE)

Server Notes

- Server BIOS settings:
  - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.6GHz, default enabled)
  - Adjacent Cache Line Prefetch: Disabled (default enabled)
  - Hardware Prefetch: Disabled (default enabled)
  - DCU Streamer Disabled (default enabled)
  - Data Reuse Optimizations: Disabled (default enabled)
  - Serial: 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 vmnic0 for Service Console (1Gb)
  - vSwitch1 on vmnic7 for VMotion (10Gb)
  - vSwitch2 on vmnic1 (1Gb) for all VMs except Olio-VMs
  - vSwitch3 on vmnic6 (10Gb) for all Olio-VMs

Storage Notes

- ETERNUS DX80[0] 4 disks
  RAID set 0, LUN 0: Boot/Console OS for SUT1 (11GB)
  RAID set 0, LUN 1: Boot/Console OS for SUT2 (11GB)

- ETERNUS DX80[1] 4x6 disks
  RAID set 0, LUN 1: All Standby VMs (50GB)
  RAID set 1, LUN 2: Deploy Template (50GB)
  RAID set 2, LUN 3: Target Storage VMotion (50GB)
  RAID set 3, LUN 4: Target Deploy (50GB)

- ETERNUS DX80[2] 4x6 disks
  RAID set 0, LUN 1: Second VHD from Mail00 (42GB)
  RAID set 0, LUN 2: OlioWeb,Mail and DS2WebA-B-C for Tile 0 (300GB)
  RAID set 1, LUN 3: Second VHD from Mail01 (42GB)
  RAID set 1, LUN 4: OlioWeb,Mail and DS2WebA-B-C for Tile 1 (300GB)
  RAID set 2, LUN 5: Second VHD from Mail02 (42GB)
  RAID set 2, LUN 6: OlioWeb,Mail and DS2WebA-B-C for Tile 2 (300GB)
  RAID set 3, LUN 7: Second VHD from Mail03 (42GB)
  RAID set 3, LUN 8: OlioWeb,Mail and DS2WebA-B-C for Tile 3 (300GB)

- ETERNUS DX80[3] 3x6 disks
  RAID set 0, LUN 1: Second VHD from Mail04 (42GB)
  RAID set 0, LUN 2: OlioWeb,Mail and DS2WebA-B-C for Tile 4 (300GB)
  RAID set 1, LUN 3: Second VHD from Mail05 (42GB)
  RAID set 1, LUN 4: OlioWeb,Mail and DS2WebA-B-C for Tile 5 (300GB)
  RAID set 2, LUN 5: Second VHD from Mail06 (42GB)
  RAID set 2, LUN 6: OlioWeb,Mail and DS2WebA-B-C for Tile 6 (300GB)

- ETERNUS DX80[4] 3x8 disks
  RAID set 0, LUN 1: Second VHD from DS2DB00 (37GB)
  RAID set 0, LUN 2: DS2DB and OlioDB for Tile 0 (300GB)
  RAID set 1, LUN 3: Second VHD from DS2DB01 (37GB)
  RAID set 1, LUN 4: DS2DB and OlioDB for Tile 1 (300GB)
  RAID set 2, LUN 5: Second VHD from DS2DB02 (37GB)
  RAID set 2, LUN 6: DS2DB and OlioDB for Tile 2 (300GB)

- ETERNUS DX80[5] 3x8 disks
  RAID set 0, LUN 1: Second VHD from DS2DB03 (37GB)
  RAID set 0, LUN 2: DS2DB and OlioDB for Tile 3 (300GB)
  RAID set 1, LUN 3: Second VHD from DS2DB04 (37GB)
  RAID set 1, LUN 4: DS2DB and OlioDB for Tile 4 (300GB)
  RAID set 2, LUN 5: Second VHD from DS2DB05 (37GB)
  RAID set 2, LUN 6: DS2DB and OlioDB for Tile 5 (300GB)

- ETERNUS DX80[6] 1x8 disks
  RAID set 0, LUN 1: Second VHD from DS2DB06 (37GB)
  RAID set 0, LUN 2: DS2DB and OlioDB for Tile 6 (300GB)

Datacenter Management Server Notes

Operating System Notes

Mailserver VMs: Micrsoft Windows 2008 Enterprise x64 Edition were updated with SP2

Software Notes

Mailserver VMs: Microsoft Exchange 2007 Enterprise x64 Edition were updated with SP3

Client Notes

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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