

VMware®VMmark®V2.1.1 Results

Vendor and Hardware Platform: Fujitsu PRIMERGY BX924 S3
 Virtualization Platform: VMware ESX 4.1.0 U3 Build 800380
 VMware vCenter Server: VMware vCenter Server 5.1.0 build 799731

**VMmark V2.1.1 Score =
11.88 @ 10 Tiles**

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/core/threads in test: 4 Sockets / 32 Cores / 64 Threads
	Tested By: Fujitsu	Test Date: 10-02-2012
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	324.68	0.98	60.15	4696.00	1.01	158.65	3947.07	1.79	67.15	2821.38	1.86	74.04	2150.55	2.03	75.35	1.46
p1	328.82	1.00	63.70	4666.80	1.01	163.87	3938.32	1.79	67.35	2928.10	1.93	73.26	2171.22	2.05	73.64	1.48
p2	321.40	0.97	63.00	4670.20	1.01	169.62	3897.60	1.77	68.97	2795.30	1.84	75.64	2144.93	2.03	75.57	1.45
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	326.05	0.99	64.00	4684.43	1.01	154.97	4075.70	1.85	62.42	2874.55	1.89	71.18	2247.38	2.12	68.61	1.49
p1	328.32	0.99	64.00	4671.15	1.01	176.18	3888.18	1.77	69.28	2909.45	1.92	74.56	2244.07	2.12	75.11	1.48
p2	326.23	0.99	64.00	4688.82	1.01	171.52	3894.72	1.77	69.08	2804.82	1.85	75.19	2044.60	1.93	75.92	1.45
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.65	0.98	69.05	4675.57	1.01	152.03	3854.80	1.75	71.41	2907.68	1.91	75.22	2172.62	2.05	81.15	1.47
p1	326.73	0.99	63.00	4674.77	1.01	161.78	3918.28	1.78	68.28	2854.95	1.88	72.66	2135.57	2.02	76.46	1.46
p2	321.15	0.97	63.05	4670.50	1.01	176.58	3842.57	1.75	71.10	2813.18	1.85	74.93	2010.20	1.90	78.92	1.43
TILE_3	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	333.02	1.01	74.00	4692.07	1.01	148.21	3750.00	1.71	76.32	2796.53	1.84	82.36	2098.82	1.98	87.38	1.45
p1	328.02	0.99	65.25	4665.45	1.01	163.09	3880.50	1.76	69.92	2818.22	1.86	74.65	2017.42	1.91	78.85	1.44
p2	326.43	0.99	64.00	4667.57	1.01	170.09	3875.72	1.76	69.93	2910.62	1.92	74.61	2115.28	2.00	78.05	1.46
TILE_4	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.80	0.99	75.20	4682.25	1.01	153.10	3946.00	1.79	67.44	2857.60	1.88	72.58	2129.25	2.01	76.80	1.47
p1	333.00	1.01	63.55	4682.35	1.01	161.93	3909.45	1.78	68.85	2841.70	1.87	73.26	2021.35	1.91	77.81	1.45
p2	324.93	0.98	63.00	4663.07	1.00	180.01	3854.53	1.75	70.88	2994.85	1.97	75.14	2170.25	2.05	80.36	1.48
TILE_5	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	324.07	0.98	74.00	4683.45	1.01	161.12	4048.50	1.84	63.45	2939.30	1.94	67.78	2062.88	1.95	74.58	1.47
p1	330.27	1.00	74.00	4665.98	1.01	163.83	3877.22	1.76	69.90	2924.40	1.93	74.12	2109.70	1.99	78.14	1.47

p2	317.90	0.96	72.25	4669.40	1.01	176.82	3884.85	1.77	69.53	2842.60	1.87	73.22	2112.05	2.00	77.81	1.45
TILE_6	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	329.05	1.00	63.27	4685.15	1.01	162.82	3882.28	1.77	70.43	2780.05	1.83	77.22	1974.83	1.87	82.02	1.43
p1	327.93	0.99	63.58	4666.95	1.01	176.92	3865.55	1.76	70.95	2870.75	1.89	76.92	2148.78	2.03	81.92	1.46
p2	329.27	1.00	63.98	4669.95	1.01	186.27	3823.57	1.74	72.46	2835.90	1.87	79.04	1942.53	1.84	84.67	1.43
TILE_7	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.73	0.99	64.00	4665.80	1.01	171.35	3764.90	1.71	75.83	2784.12	1.83	82.86	2001.08	1.89	88.06	1.43
p1	325.62	0.99	64.00	4689.40	1.01	172.13	3864.43	1.76	70.83	2784.70	1.83	76.73	2063.15	1.95	81.93	1.44
p2	325.40	0.99	64.00	4649.85	1.00	187.41	3860.00	1.76	71.31	2865.03	1.89	77.28	1967.17	1.86	82.50	1.43
TILE_8	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	327.98	0.99	63.00	4677.40	1.01	156.69	3928.20	1.79	68.06	2941.88	1.94	72.81	2246.57	2.12	75.36	1.49
p1	324.60	0.98	63.00	4683.23	1.01	170.78	3880.20	1.76	70.03	2807.35	1.85	75.84	1987.50	1.88	80.83	1.43
p2	326.20	0.99	63.00	4648.50	1.00	187.15	3859.55	1.75	70.87	2870.75	1.89	76.80	2071.07	1.96	81.50	1.45
TILE_9	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	325.93	0.99	63.00	4684.12	1.01	165.69	4035.88	1.84	63.78	2937.38	1.93	68.08	2207.30	2.09	70.96	1.49
p1	326.00	0.99	63.00	4678.75	1.01	163.03	3852.68	1.75	71.33	2766.53	1.82	77.66	1964.35	1.86	82.69	1.43
p2	327.05	0.99	63.00	4678.77	1.01	175.28	3846.57	1.75	71.60	2956.57	1.95	77.32	2154.75	2.04	81.76	1.47
p0_score:	14.65															
p1_score:	14.56															
p2_score:	14.51															

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	16.50	11.00	5.00
Avg_Seconds_To_Complete	35.82	19.47	292.20
Failures	0.00	0.00	0.00
Ratio	1.03	1.22	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	14.56		
Unreviewed_VMmark2_Infrastructure_Score	1.16		
Unreviewed_VMmark2_Score	11.88		

Configuration

Virtualization Software

Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESX 4.1.0 U3 Build 800380 / 08-30-2012
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 5.1.0 build 799731 / 09-10-2012
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	Fujitsu PRIMERGY BX924 S3
Processor Vendor and Model	Eight-core Intel Xeon E5-2690
Processor Speed (GHz)	2.90
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	V4.6.5.3 R2.4.0
Memory Size (in GB, Number of DIMMs)	256GB, 16
Memory Type and Speed	16GB DIMMs 2Rx4 L DDR3-1600 R ECC
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (disabled)
Disk Controller Vendors and Models	Intel Patsburg SAS/SATA SCU
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	PY FC Mezz. Card 8Gb 2 Port (MC-FC82E, LPe12000 based)
Number of Network Controllers	2
Network Controller Vendors and Models	Emulex 0C111102-LOM 2-p OneConnect 10Gb NIC (be3), PY Eth Mezz Card 1Gb 4 Port (Intel 82575EB)
Other Hardware	PY CB FC Pass Thru 8Gb 18/18
Other Software	vmware-esx-drivers-net-be2net_400.4.0.355.2-1vmw.2.17.249663
Hardware Availability Date (MM-DD-YYYY)	06-01-2012
Software Availability Date (MM-DD-YYYY)	08-30-2012

Network	
Network Switch Vendors and Models	1xFujitsu PRIMERGY BX600 GbE Switch Blade 30/12 2xFujitsu PRIMERGY BX900 CB Eth Switch/IBP 10Gb 18/8, 1xFujitsu PRIMERGY BX900 CB Eth Switch/IBP 1Gb 36/8+2, 1xCISCO 4900M
Network Speed	1Gbps for SUT management, Clients and VMotion, 10Gbps for all VMs
Storage	
Array Vendors, Models, and Firmware Versions	1xFujitsu ETERNUS DX80, Firmware version V10L20-0000 1xViolin Memory Array V6616 6TB, Firmware version G5.2.0
Fibre Channel Switch Vendors and Models	2xFujitsu PRIMERGY BX900 CB FC Switch 8Gb 18/18
Disk Space Used	8482GB
Array Cache Size	2GB (Fujitsu ETERNUS DX80)
Total Number of Physical Disks Used	4 HDs, 64 Flash VIMMs
Total Number of Enclosures/Pods/Shelves Used	2
Number of Physical Disks Used per Enclosure/Pod/Shelf	Details in section Storage Notes
Total Number of Storage Groups Used	4
Number of LUNs Used	24
LUN Size and Number of Disks Per LUN	Details in section Storage Notes
RAID Type	Fujitsu ETERNUS DX80: 0 Violin Memory Array V6616: Violin Memory vRAID
Number of Members per RAID Set	Details in section Storage Notes
Disk Vendors, Models, and Speeds	4xSeagate, ST3450856SS, 15krpm; 64 x Violin 256 GB Flash VIMMs
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	8GB
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, SP2

Other Hardware	none
Other Software	none
Clients	
Number of Clients	1 physical client (Prime Client) used as a dedicated Benchmark Controller 2 physical clients (ESX server) used for 5 virtual clients each
System Model(s)	Prime Client: Fujitsu PRIMERGY BX620S4 ESX server : Fujitsu PRIMERGY RX600S6
Processor Vendor(s) and Model(s)	Prime Client: Intel Xeon X5470 ESX server : Intel Xeon E7-4870
Processor Speed(s) (GHz)	Prime Client: 3.33 ESX server : 2.4
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 4 Cores / 4 Threads ESX server : 4 Sockets / 40 Cores / 80 Threads
Memory per Client	Prime Client: 4 GB ESX server : 512 GB
Network Controller(s) Vendors and Models	Prime Client: 3xDual Port Broadcom NetXtreme, 4 Ports disabled ESX server : 2xDual Port Broadcom NetXtreme(3 ports used for client traffic), 1xFujitsu D2745 Quad Port 1GbE Adapter(all ports used for client traffic)
Operating System, Version, and Service Pack	Prime Client : Microsoft(R) Windows(R) Server 2003 R2 Enterprise Edition (32-bit), SP2 ESX server : ESX 4.1.0 U2 Build 502767 Virtual clients: Microsoft(R) Windows(R) Server 2008 Enterprise Edition (64-bit), SP2
Other Hardware	ESX server: 1xDual-channel Emulex LPe12002, 1xFujitsu ETERNUS DX80 with 24x300GB disks
Other Software	none

Notes for Workload

Virtualization Software Notes

- Floppy and CDROM removed for all VMs (default enabled)
- Firewall disabled for the Console OS (default enabled)
- Hardware version 7 used for all VMs (default 7)
- Logging disabled for all VMs (default enabled)
- Logical CPU layout changed for all VMs (except Standby and Mailserver) to one socket with multiple cores (default: multiple sockets with one core per socket)
- SCSI adapter type PVSCSI used for all Standby VMs (default LSI Logic parallel)
- SCSI adapter type PVSCSI used for all Mailserver and Linux VMs (default LSI Logic SAS)
- VMXNET3 enabled for all VMs (default VMXNET2)
- Changes in esx.conf:
 - /adv/Cpu/CoschedCrossCall = 0 (default 1)
 - /adv/Cpu/CreditAgePeriod = 500 (default 1)
 - /adv/Cpu/HaltingIdleMsecPenalty = 0 (default 1)
 - /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 100)
/adv/Misc/TimerMinHardPeriod = 2000 (default 100)
/adv/Net/MaxNetifRxQueueLen = 500 (default 100)
/adv/Net/MaxNetifTxQueueLen = 1000 (default 500)
/adv/Net/NetTxCompletionWorldlet = 0 (default 2)
/adv/Net/NetTxWorldlet = 0 (default 2)
/adv/Numa/LTermFairnessInterval = 0 (default 5)
/adv/Numa/MonMigEnable = 0 (default 1)
/adv/Numa/PageMigEnable = 0 (default 1)
/adv/Numa/RebalancePeriod = 60000 (default 2000)
/adv/Numa/SwapLoadEnable = 0 (default 1)
/adv/Numa/SwapLocalityEnable = 0 (default 1)
/adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)
/vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=3 lpfc_cr_delay=1" (defaults 31,1,0)

Server Notes

- Server BIOS settings:
 - Adjacent Cache Line Prefetch: Disabled (default enabled)
 - Energy Performance: Performance (default Energy Efficient)
 - Hardware Prefetcher: Disabled (default enabled)
 - Onboard CNA Oprom: Disabled (default enabled)
 - Onboard SAS/SATA SCU: Disabled (default enabled)
 - Serial 1: Disabled (default enabled)
 - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.8GHz, default enabled)
- PY FC Mezz. Card 8Gb 2 Port (MC-FC82E) 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 vmnic2 for VMotion (1Gb)
 - vSwitch2 on vmnic4 (10Gb) for all Standby, Mail and Deploy VMs; for Olio VMs 2,3,4,5,8,9
 - vSwitch3 on vmnic5 (10Gb) for all DS2 VMs; for Olio VMs 0,1,6,7

Storage Notes

- ETERNUS DX80[0] (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)
- Violin 1 Memory Array V6616 (64 VIMMs)
 - LUN 1 : Target Deploy (30GB)
 - LUN 2 : Target Storage VMotion (30GB)

LUN 3 : Tile 0,6 second VHD from DS2DB (190GB)
LUN 4 : Tile 1,7 second VHD from DS2DB (190GB)
LUN 5 : Tile 2,8 second VHD from DS2DB (190GB)
LUN 6 : Tile 3,9 second VHD from DS2DB (190GB)
LUN 7 : Tile 4 second VHD from DS2DB (190GB)
LUN 8 : Tile 5 second VHD from DS2DB (190GB)

LUN 9 : Tile 0,6 OlioDB (100GB)
LUN 10 : Tile 1,7 OlioDB (100GB)
LUN 11 : Tile 2,8 OlioDB (100GB)
LUN 12 : Tile 3,9 OlioDB (100GB)
LUN 13 : Tile 4 OlioDB (100GB)
LUN 14 : Tile 5 OlioDB (100GB)

LUN 15 : Tile 0,2,4,6,8 Standby, Source Deploy (30GB)
LUN 16 : Tile 1,3,5,7,9 Standby (30GB)

LUN 17 : Tile 0,6 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)
LUN 18 : Tile 1,7 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)
LUN 19 : Tile 2,8 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)
LUN 20 : Tile 3,9 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)
LUN 21 : Tile 4 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)
LUN 22 : Tile 5 Mailserver, OlioWeb, DS2Web, first VHD from DS2DB(1100GB)

- The filesystems of all Linux and Standby VMs were aligned to a 4KB boundary to match the underlying 4KB block size of the Violin Memory Array V6616

Datacenter Management Server Notes

None

Operating System Notes

Mailserver VMs: Microsoft Windows 2008 R2 Enterprise 64-bit.
Linux VMs : All SLES11 VMs were updated with SP2

Software Notes

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

Client Notes

Prime Client was running VMware vSphere PowerCLI 4.1 build 264274.
All client drivers were run on virtual machines that were each defined with 4 virtual cpus, 4GB of memory, 1 vmxnet3 network and 32GB of disk space.

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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