VMware® VMmark® V2.5.2 Results

Vendor and Hardware Platform: Fujitsu Server PRIMERGY RX1330 M3 Virtualization Platform: VMware ESXi 6.0.0 U3 Build 5050593 VMware vCenter Server : VMware vCenter Server 6.0.0 U3 Build 5112527	VMmark V2.5.2 Score = 3.96 @ 3 Tiles

Number of Hosts: 2	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 2/8/16

Tested By: Fujitsu	Test Date: 04-22-2017

Performance Section	Configuration Section	Notes Section
Performance	Configuration	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	326.50	0.99	195.03	4762.45	1.03	77.71	4301.02	1.96	56.71	3147.95	2.07	63.89	2251.60	2.13	68.62	1.54
p1	326.38	0.99	149.25	4743.40	1.02	97.69	4254.05	1.93	58.24	3109.38	2.05	65.65	2336.18	2.21	69.61	1.55
p2	325.15	0.98	135.50	4733.68	1.02	113.51	4233.57	1.93	59.32	2977.10	1.96	67.16	2107.85	1.99	72.03	1.50
TILE_1	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.73	0.98	110.75	4739.98	1.02	85.51	4332.25	1.97	56.65	3163.90	2.08	63.18	2245.78	2.12	68.97	1.54
p1	325.75	0.99	104.00	4725.10	1.02	113.63	4357.45	1.98	55.87	3038.38	2.00	64.22	2225.00	2.10	70.63	1.53
p2	325.88	0.99	104.00	4693.40	1.01	133.27	4310.50	1.96	57.56	3017.30	1.99	65.78	2101.45	1.99	72.41	1.50
TILE_2	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	Actual	Ratio	QoS	GM
p0	323.25	0.98	181.88	4757.38	1.02	72.62	4469.30	2.03	52.03	3272.78	2.16	58.96	2394.75	2.26	65.74	1.58
p1	326.45	0.99	152.00	4751.75	1.02	84.10	4499.77	2.05	51.39	3282.30	2.16	57.96	2316.47	2.19	64.45	1.58
p2	326.27	0.99	138.50	4755.30	1.02	101.25	4425.10	2.01	53.44	3136.65	2.07	60.04	2180.45	2.06	66.73	1.54

p0_score:	4.67
p1_score:	4.65
p2_score:	4.54

Infrastructure_Operations_Scores:	vmotion	svmotion	deploy
Completed_Ops_PerHour	17.00	11.00	5.00
Avg_Seconds_To_Complete	33.86	24.71	322.54
Failures	0.00	0.00	0.00
Ratio	1.06	1.22	1.25
Number_Of_Threads	1	1	1

Summary	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p1)
Unreviewed_VMmark2_Applications_Score	4.65	
Unreviewed_VMmark2_Infrastructure_Score	1.18	
Unreviewed_VMmark2_Score	3.96	

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 6.0.0 U3 Build 5050593 / 02-24-2017
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 6.0.0 U3 Build 5112527 / 02-24-2017
Supplemental Software	none
Servers	
Quantity	2
Server Manufacturer and Model	Fujitsu Server PRIMERGY RX1330 M3
Processor Vendor and Model	Intel Xeon E3-1280 v6
Processor Speed (GHz)	3.9
Total Sockets/Total Cores/Total Threads	1 Socket / 4 Cores / 8 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	8MB I+D on chip per chip L3
BIOS Version	V5.0.0.11 R1.3.0 for D3375-B1x
Memory Size (in GB, Number of DIMMs)	64, 4
Memory Type and Speed	16GB DIMMs 2Rx8 PC4-2400T ECC
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1
Disk Controller Vendors and Models	Fujitsu PRAID EP420i

Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Dual port Qlogic QLE2562
Number of Network Controllers	2
Network Controller Vendors and Models	2 x Embedded Intel I210 Single Port 1GbE Adapter Intel I210 Single Port 1GbE Adapter
Other Hardware	none
Other Software	none
Hardware Availability Date (MM-DD-YYYY)	04-26-2017
Software Availability Date (MM-DD-YYYY)	02-24-2017
Network	
Network Switch Vendors and Models	2 x Fujitsu SR-X340TR1
Network Speed	1Gbps for SUT management and VMotion, 1Gbps for Clients and VMs
Storage	
Array Vendors, Models, and Firmware Versions	1 x Fujitsu Server PRIMERGY RX300 S8, Firmware 7.07F
Fibre Channel Switch Vendors and Models	Brocade 6510
Disk Space Used	2195GB
Array Cache Size	1GB
Total Number of Physical Disks Used	4 x SAS-SSD, 2 x PCIe-SSD
Total Number of Enclosures/Pods/Shelves Used	1
Number of Physical Disks Used per Enclosure/Pod/Shelf	Details in section Storage Notes
Total Number of Storage Groups Used	0
Number of LUNs Used	9
LUN Size and Number of Disks Per LUN	Details in section Storage Notes
RAID Type	0
Number of Members per RAID Set	Details in section Storage Notes

Disk Vendors, Models, and Speeds	4 x SSD Toshiba PX02SMF040; 2 x Fusion-io ioDrive2 1.2TB PCIe SSD

Datacenter Management Server	
System Model	Fujitsu Server PRIMERGY RX2540 M1
Processor Vendor and Model	Intel Xeon E5-2697 v3
Processor Speed (GHz)	2.6
Total Sockets/Total Cores/Total Threads	Hypervisor: 2 Sockets / 28 Cores / 56 Threads Virtual Center VM: Details in section Datacenter Management Server Notes
Memory	Hypervisor: 24GB Virtual Center VM: Details in section Datacenter Management Server Notes
Network Controller(s) Vendors and Models	PLAN EM 2 x 1Gb T OCl14000-LOM interface
Operating System, Version, Bitness, and Service Pack	Hypervisor: VMware ESXi 6.0.0 U2 Build 3620759 Virtual Center VM: Details in section Datacenter Management Server Notes
Other Hardware	none
Other Software	none

Clients	
Total Number of Clients / Total Physical Clients / Total Virtual Client Hosts	4 / 1 / 2
System Model(s)	1 x Fujitsu Server PRIMERGY RX2540 M1 (Prime Client) 1 x Fujitsu Server PRIMERGY RX4770 M3 (Virtual Client Host) 1 x Fujitsu Server PRIMERGY CX2570 M2 (Virtual Client Host)
Processor Vendor(s) and Model(s)	Prime Client: Intel Xeon E5-2630 v3 Virtual Client Host(RX4770 M3): Intel Xeon E7-8880 v4 Virtual Client Host(CX2570 M2): Intel Xeon E5-2687W v4
Processor Speed(s) (GHz)	Prime Client: 2.4 Virtual Client Host(RX4770 M3): 2.2 Virtual Client Host(CX2570 M2): 3.0
Total Sockets/Total Cores/Total Threads	Prime Client: 2 Sockets / 16 Cores / 32 Threads Virtual Client Host(RX4770 M3): 4 Sockets / 88 Cores / 176 Threads Virtual Client Host(CX2570 M2): 2 Sockets / 24 Cores / 48 Threads
Memory per Physical Client	Prime Client: 128GB Virtual Client Host(RX4770 M3): 256GB Virtual Client Host(CX2570 M2): 256GB
Network Controller(s) Vendors and Models	PrimeClient: Two Intel Dual Port I350 Virtual Client Host(RX4770 M3):Embedded Dual Port X540-AT2, Intel Dual Port I350 Virtual Client Host(CX2570 M2):2 x Intel Dual Port I350
Operating System, Version, Bitness, and Service Pack	Clients: Windows Server 2008 Enterprise 64-bit SP2 Virtual Client Hosts: VMware ESXi 6.0.0 U2 Build 3620759

Number of Virtual Clients	3
Number of vCPUs Per Virtual Client	4
Number of vMem (GB) Per Virtual Client	4
Virtual Client Networking Notes	All virtual clients were distributed evenly over 2 vSwitches per Virtual Client Host
Virtual Client Storage Notes	none
Other Hardware	One Dual Port Emulex LPe16002 for each virtual client host, one shared Fujitsu ETERNUS DX80 with 12 x 450GB disks, one Brocade 5100 Fibre Channel Switch
Other Software	none

Notes for Workload

Virtualization Software Notes

- CDROM removed for all VMs (default enabled)
- Config.HostAgent.log.level set to warning (default info)
- CPU shares set to high for all DS2DB VMs (default normal)
- Floppy removed for all VMs (default enabled)
- Hardware version 11 used for deploy template and 8 used for all other VMs
- Logging disabled for all VMs except deploy template(default enabled)
- Logical CPU configuration changed for Linux VMs to one socket with multiple cores (default: multiple sockets with one core per socket)
- sched.mem.maxmemctl = 0 set for all VMs except deploy template(default defined through global parameter Mem.CtlMaxPercent)
- sched.mem.min and sched.mem.minsize set to the configured VM memory size for all VMs except deploy template(default 0)
- sched.mem.pin = TRUE set for all VMs except deploy template(default FALSE)
- 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)
- Syslog.global.defaultSize set to 112 (default 1024)
- VMware Tools build 10249 used for all VMs
- VMXNET3 enabled for all VMs (default VMXNET2)
- Vpx.Vpxa.config.log.level set to warning (default verbose)
- vSphere DRS Migration Threshold set to Fully Automated level 2
- The 'Intel® "Haswell" Generation' EVC mode was enabled on the cluster

Changes in esx.conf:

- /adv/Cpu/CreditAgePeriod = 1350 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 200)
- /adv/DataMover/HardwareAcceleratedInit = 0 (default 1)
- /adv/DataMover/HardwareAcceleratedMove = 0 (default 1)
- /adv/Mem/CtlMaxPercent = 0 (default 65)
- /adv/Mem/ShareScanGHz = 0 (default 4)
- /adv/Net/MaxNetifRxQueueLen = 500 (default 100)
- /adv/Net/MaxNetifTxQueueLen = 1000 (default 2000)
- /adv/Power/CpuPolicy = static (default balanced)

- /adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)

Server Notes

- Server BIOS settings:
  - Onboard Serial COM1 disabled (default enabled)
  - Turbo Boost Technology: enabled (Intel Turbo Boost up to 4.2GHz, default enabled)
  - CPU C States: disabled (default enabled)

Networking Notes

- One dedicated VLAN for the systems under test, vCenter Server and Benchmark Controller (Management Network)
- One dedicated VLAN for the VMs and Clients (Load Network)

- vSwitch Configuration:
  - vSwitch0 on vmnic0 for Service Console (1Gb/s)
  - vSwitch1 on vmnic1 for all VMs (1Gb/s)
  - vSwitch2 on vmnic2 for VMotion (1Gb/s)

Storage Notes

- Host OS installed on 1 x 600GB 15K RPM HDD, for each host
- Fujitsu Server PRIMERGY RX300 S8 configured as a Fibre Channel Target:

  - Hardware details:
    - Two Intel Xeon E5-2667@3.3GHz processors
    - 128GB RAM (8 x 16 GB dual rank PC3-12800 Registered DDR3 / 1600 MHz DIMMs)
    - One QLogic QLE2562 8Gb FC HBA used as FC target controller
    - One Fujitsu RAID SAS 6G Controller with 1GB Cache and BBU (D3116)
    - 4 x 400GB SAS-SSD Toshiba PX02SMF040
    - 2 x Fusion-io ioDrive2 1.2TB PCIe-SSD

  - Software details:
    - Operating System: SUSE Linux Enterprise Server 11 SP3 - 3.0.101-0.46 (64-bit)
    - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 11 SP3)

- RAID configuration:

  - SAS-SSD 1:
    - LUN 1: Storage system OS (357GB, this LUN is not counted in the Storage section)

  - SAS-SSD 2:
    - LUN 1: Target LUN for Storage VMotion (9.25GB)
    - LUN 2: Source LUN for Deploy (9.25GB)
    - LUN 3: Target LUN for Deploy (9.25GB)

  - SAS-SSD 3:
    - LUN 1: For Tile 0 Olio/Standby VMs and Mailserver VHDs (185.25GB)
    - LUN 2: For Tile 2 Olio/Standby VMs and Mailserver VHDs (186.50GB)

  - SAS-SSD 4:

        - LUN 1: For Tile 1 Olio/Standby VMs and Mailserver VHDs (186GB)

    - First PCIe-SSD:
        - LUN 1: Mailserver configuration files and DS2 VMs for tiles 0 (536.5GB)
        - LUN 2: Mailserver configuration files and DS2 VMs for tiles 2 (536.5GB)

    - Second PCIe-SSD:
        - LUN 1: Mailserver configuration files and DS2 VMs for tiles 1 (536.5GB)

    - All LUNs were configured as block devices; no system memory was used for caching

Datacenter Management Server Notes

- Virtual Center realized as a VM running on a dedicated Hypervisor system:
    - Number of vCPUs: 4 (one vSocket)
    - Size of vRAM: 10GB
    - Operating System: Windows Server 2008 R2 Enterprise 64-bit

Operating System Notes

- Mailserver VMs: Microsoft Windows 2008 R2 Enterprise 64-bit.

- Linux VMs:
    - All SLES11 VMs were updated with SP2
    - VMXNET3 driver configured to use one receive and one request queue (default: number of queues matches the number of vCPUs)
    - Paravirtualized drivers (VMXNET3, PVSCSI, VMMEMCTL) compiled with gcc 4.3.4

- The file systems of all Linux and Standby VMs were aligned to a 4KB boundary

Software Notes

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

Client Notes

- Prime Client was running VMware vSphere PowerCLI 5.1 Release 1 Build 793510.
- Prime Client was updated via Windows Update.
- Virtual Client Hosts:
    - System 1(RX4770 M3): All even numbered clients
    - System 2(CX2570 M2): All odd numbered clients

Other Notes

- One client used as a dedicated Benchmark Controller.

- TILEDELAY reduced to 19 seconds (default: 60 seconds)

- RMQ_MinInitDelay set to 100 seconds (default: 60 seconds)

For information about VMmark and the rules regarding its usage visit www.vmware.com/products/vmmark.