VMmark® 3.1 Results

Server Vendor & Model: Fujitsu Server PRIMERGY CX2560 M5 **Storage Vendor & Model: 4 x Fujitsu Server PRIMERGY RX2540 M4** **Hypervisor: VMware ESXi 6.7 EP 08 Build 13473784** **Datacenter Management Software: VMware vCenter Server Appliance 6.7.0d Build 9451876**	**VMmark 3.1 Score = 12.09 @ 12 Tiles**

Number of Hosts: 4	**Uniform Hosts [yes/no]: yes**	**Total sockets/cores/threads in test: 8/192/384**
Tested By: Fujitsu	**Test Date: 11-04-2019**	

Performance Section	Configuration Section	Notes Section
Performance	Configuration	Notes for Workload

Performance

	weathervane			weathervaneE			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3570.64	0.99	0.35 | 0.08	561.68	0.98	0.50 | 0.14	876.85	1.19	1064.06	607.80	1.21	1278.63	439.73	1.27	1442.37	1.12
p1	3553.38	0.99	0.36 | 0.02	561.01	0.98	0.59 | 0.19	885.08	1.21	1055.05	584.75	1.17	1319.29	392.82	1.13	1533.89	1.09
p2	3541.08	0.98	0.33 | 0.00	558.05	0.98	0.49 | 0.15	875.23	1.19	1074.28	603.55	1.21	1299.30	415.82	1.20	1480.20	1.11
TILE_1	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3573.51	0.99	0.36 | 0.11	567.20	0.99	0.62 | 0.37	971.77	1.32	776.09	670.30	1.34	927.57	486.75	1.40	1053.34	1.20
p1	3567.34	0.99	0.35 | 0.13	561.72	0.98	0.78 | 0.48	972.90	1.32	777.09	672.73	1.34	927.30	463.77	1.34	1068.23	1.18
p2	3549.52	0.99	0.35 | 0.00	559.10	0.98	0.61 | 0.40	968.02	1.32	786.00	694.67	1.39	926.48	509.02	1.47	1054.01	1.21
TILE_2	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3584.86	1.00	0.29 | 0.00	562.98	0.98	0.45 | 0.17	1044.60	1.42	599.90	738.30	1.48	714.62	513.12	1.48	817.71	1.25
p1	3570.09	0.99	0.32 | 0.10	557.15	0.97	0.65 | 0.32	1029.25	1.40	627.28	761.75	1.52	720.18	534.80	1.54	823.84	1.26
p2	3556.56	0.99	0.31 | 0.00	557.80	0.97	0.73 | 0.44	1042.10	1.42	610.27	727.45	1.45	730.49	533.10	1.54	823.89	1.25
TILE_3	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3591.42	1.00	0.35 | 0.00	565.13	0.99	0.81 | 0.48	1000.20	1.36	706.12	701.15	1.40	834.53	482.95	1.39	957.99	1.21
p1	3567.89	0.99	0.34 | 0.10	561.74	0.98	0.60 | 0.34	980.55	1.34	752.10	708.42	1.42	886.77	516.95	1.49	1011.38	1.22
p2	3552.25	0.99	0.35 | 0.22	560.74	0.98	0.42 | 0.28	986.45	1.34	734.41	685.98	1.37	891.79	467.02	1.35	1042.95	1.19
TILE_4	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.57	0.99	0.40 | 0.00	567.64	0.99	0.60 | 0.21	1057.17	1.44	550.19	784.12	1.57	635.97	553.50	1.60	729.41	1.29
p1	3556.18	0.99	0.43 | 0.07	564.30	0.99	0.59 | 0.29	1044.08	1.42	589.90	732.88	1.46	709.36	532.55	1.54	814.78	1.26
p2	3546.87	0.99	0.38 | 0.00	564.38	0.99	0.51 | 0.13	1042.22	1.42	600.94	733.60	1.47	710.01	506.00	1.46	820.17	1.24
TILE_5	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM

p0	3582.24	1.00	0.34 | 0.09	561.97	0.98	0.47 | 0.23	1008.30	1.37	669.40	737.95	1.47	780.97	540.27	1.56	891.69	1.25
p1	3571.61	0.99	0.33 | 0.00	561.05	0.98	0.59 | 0.32	1030.20	1.40	631.00	725.35	1.45	750.38	499.15	1.44	873.54	1.23
p2	3548.13	0.99	0.35 | 0.10	559.92	0.98	0.63 | 0.29	1014.65	1.38	657.50	747.77	1.49	751.06	518.67	1.50	882.61	1.24
TILE_6	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3575.05	0.99	0.32 | 0.21	564.48	0.99	0.47 | 0.22	961.60	1.31	810.20	659.10	1.32	986.53	469.23	1.35	1143.98	1.18
p1	3559.01	0.99	0.34 | 0.00	561.61	0.98	0.57 | 0.26	958.88	1.31	816.79	659.05	1.32	990.28	447.27	1.29	1165.61	1.17
p2	3553.16	0.99	0.34 | 0.00	551.75	0.96	0.57 | 0.35	943.35	1.28	855.55	672.77	1.34	1024.05	485.27	1.40	1178.90	1.18
TILE_7	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.47	0.99	0.35 | 0.14	563.67	0.99	0.59 | 0.43	976.17	1.33	778.98	670.48	1.34	949.12	451.27	1.30	1121.92	1.18
p1	3565.23	0.99	0.31 | 0.00	560.12	0.98	0.55 | 0.28	966.17	1.32	803.27	696.42	1.39	929.42	479.12	1.38	1089.13	1.20
p2	3553.18	0.99	0.31 | 0.00	555.77	0.97	0.64 | 0.43	971.88	1.32	774.79	666.77	1.33	961.22	475.75	1.37	1102.69	1.18
TILE_8	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3582.53	1.00	0.30 | 0.00	569.43	1.00	1.00 | 0.76	1024.30	1.39	630.20	696.08	1.39	752.33	498.50	1.44	866.14	1.23
p1	3558.22	0.99	0.33 | 0.19	563.28	0.98	0.53 | 0.32	1013.88	1.38	654.23	739.17	1.48	762.01	548.08	1.58	855.75	1.26
p2	3546.00	0.99	0.33 | 0.00	562.69	0.98	0.67 | 0.37	1023.70	1.39	632.56	713.38	1.43	765.96	494.32	1.43	876.71	1.22
TILE_9	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.37	0.99	0.33 | 0.11	565.28	0.99	0.44 | 0.34	1028.20	1.40	620.76	753.20	1.50	730.77	527.00	1.52	837.99	1.26
p1	3561.42	0.99	0.34 | 0.11	565.44	0.99	0.45 | 0.20	1021.42	1.39	641.53	715.98	1.43	767.28	523.10	1.51	860.28	1.24
p2	3549.07	0.99	0.34 | 0.10	562.88	0.98	0.58 | 0.37	1023.02	1.39	640.52	718.08	1.43	760.21	497.18	1.43	872.12	1.23
TILE_10	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3576.08	0.99	0.29 | 0.00	567.92	0.99	0.99 | 0.56	987.90	1.35	724.17	738.80	1.48	840.90	523.83	1.51	960.23	1.24
p1	3559.26	0.99	0.29 | 0.00	558.62	0.98	0.49 | 0.26	993.27	1.35	706.29	664.85	1.33	862.06	472.73	1.36	994.08	1.19
p2	3530.69	0.98	0.30 | 0.00	554.08	0.97	0.65 | 0.40	984.67	1.34	732.93	716.85	1.43	845.94	499.52	1.44	981.04	1.21
TILE_11	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(nRT|MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3572.17	0.99	0.36 | 0.00	563.91	0.99	0.88 | 0.55	901.40	1.23	1003.80	629.15	1.26	1215.09	430.45	1.24	1407.51	1.13
p1	3567.51	0.99	0.36 | 0.00	562.15	0.98	0.49 | 0.18	966.27	1.32	792.60	643.77	1.29	960.30	449.65	1.30	1131.27	1.16
p2	3553.95	0.99	0.36 | 0.00	561.29	0.98	0.78 | 0.41	952.17	1.30	833.35	679.67	1.36	983.84	491.50	1.42	1124.24	1.19

p0_score:	14.54
p1_score:	14.46
p2_score:	14.46

Infrastructure_Operations_Scores:	vMotion	SVMotion	XVMotion	Deploy
Completed_Ops_PerHour	56.00	56.00	42.00	23.00
Avg_Seconds_To_Complete	6.50	77.50	107.39	259.91

Failures	0.00	0.00	0.00	0.00
Ratio	2.15	3.11	2.33	2.88
Number_Of_Threads	2	2	2	2

Summary	Run_Is_Compliant	Turbo_Setting:0
	Number_Of_Compliance_Issues(0)*	Median_Phase(p2)
Unreviewed_VMmark3_Applications_Score	14.46	
Unreviewed_VMmark3_Infrastructure_Score	2.59	
Unreviewed_VMmark3_Score	12.09	

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 6.7 EP 08, Build 13473784 / 04-30-2019
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server Appliance 6.7.0d, Build 9451876 / 08-14-2018
Supplemental Software	None
Servers	
Number of Servers in System Under Test (all subsequent fields in this section are per server)	4
Server Manufacturer and Model	Fujitsu Server PRIMERGY CX2560 M5
Processor Vendor and Model	Intel Xeon Gold 6252
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.1 / 3.7
Total Sockets/Total Cores/Total Threads	2 Sockets / 48 Cores / 96 Threads
Primary CPU Cache	32KB I + 32KB D on chip per core
Secondary CPU Cache	1MB I+D on chip per core
Other CPU Cache	35.75 MB I + D on chip per chip
BIOS Version	V1.0.0.0 R1.9.0 for D3854-B1x

Memory Size (in GB, Number of DIMMs)	768,12
Memory Type and Speed	64GB 4Rx4 DDR4 2933MHz LRDIMM
Disk Subsystem Type	FC SAN
Number of Disk Controllers	0
Disk Controller Vendors and Models	None
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Micron MTFDDAK480TDC 480GB SATA-SSD 6GB/S
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	Emulex LightPulse LPe31002-M6 2-Port 16Gb
Number of Network Controllers	3
Network Controller Vendors and Models	Intel(R) Ethernet Controller X710 for 10GbE SFP+ Intel(R) Ethernet Connection X722 for 10GbE SFP+ Intel(R) Corporation I210 Gigabit Network Connection
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	04-03-2019
BIOS Availability Date (MM-DD-YYYY)	07-04-2019
Software Availability Date (MM-DD-YYYY)	05-28-2019
Network	
Network Switch Vendors and Models	1 x Fujitsu SR-X340TR1 1 x Fujitsu ET-7648BFERA-FOS
Network Speed	1Gbps for SUT management, 1x10Gbps for VMotion, 2x10Gbps for Clients and VMs
Primary Storage	
Storage Category	SCSI Target
Storage Vendors, Models, and Firmware Versions	4 x Fujitsu Server PRIMERGY RX2540 M4
Storage Configuration Summary	for Storage Server OS: 8 x Micron MTFDDAK480TDC 480GB SATA-SSD 1 x Micron, MTFDDAK960TDC, 960GB, SATA 3.0 6Gb/S SSD for Workload Storage: 13 x Intel P4800X 750GB PCIe SSD 2 x Intel P4600 2TB PCIe SSD 4 x Intel P4600 4TB PCIe SSD

Datacenter Management Server	
System Model	Fujitsu Server PRIMERGY RX2530 M2
Processor Vendor and Model	Intel Xeon E5-2698 v4
Processor Speed (GHz)	2.2
Total Sockets/Total Cores/Total Threads	1 Sockets / 20 Cores / 40 Threads
Memory Size (in GB, Number of DIMMs)	Hypervisor: 64GB, 8
Network Controller(s) Vendors and Models	Emulex OneConnect Oce14000 1GbE Dual Port Adapter
Operating System, Version, Bitness, and Service Pack	Hypervisor: VMware ESXi 6.7 EP 02a Build 9214924
Virtual Center VM Number of vCPUs	4
Virtual Center VM Virtual Memory (in GB)	16
Virtual Center VM Operating System, Version, Bitness, and Service Pack	VMware vCenter Server Appliance 6.7.0d Build 9451876
Other Hardware	None
Other Software	None

Clients	
Total Number of Virtual Clients / Virtual Client Hosts	13 / 4
System Model(s)	ClientHost1-4: Fujitsu PRIMERGY RX2530 M2
Processor Vendor(s) and Model(s)	ClientHost1-2: Intel Xeon E5-2699 v4 ClientHost3-4: Intel Xeon E5-2699A v4
Processor Speed(s) (GHz)	ClientHost1-2: 2.2 ClientHost3-4: 2.4
Total Sockets/Total Cores/Total Threads	ClientHost1-4: 2 Sockets / 44 Cores / 88 Threads
Memory per Virtual Client Host	ClientHost1-4: 256GB
Network Controller(s) Vendors and Models	ClientHost1-4: Emulex OneConnect Oce14000 1GbE Dual Port Adapter Emulex OneConnect Oce14000 10GbE Dual Port Adapter
Virtual Client Networking Notes	1 virtual adapter for management, 2 virtual adapter for workload traffic
Virtual Client Storage Notes	1 x 300GB SAS 10K TOSHIBA AL14SEB03EN HDD with RAID 0 for Client Host OS ClientHost1-4: 2 x 400GB SAS 12G TOSHIBA PX02SMF040 SSD with RAID 0 for Client VMs
Other Hardware	None

Other Software	VMware ESXi 6.7U1 Build 10302608

Security Mitigations						
Vulnerability	**CVE**	**Exploit Name**	**Public Vulnerability Name**	**Mitigated**		
				Server Firmware	**ESXi**	**Guest OS**
Spectre	2017-5753	Variant 1	Bounds Check Bypass	N/A	Yes	Yes
Spectre	2017-5715	Variant 2	Branch Target Injection	Yes	Yes	Yes
Meltdown	2017-5754	Variant 3	Rogue Data Cache Load	N/A	Yes	Yes
Spectre-NG	2018-3640	Variant 3a	Rogue System Register Read	Yes	N/A	N/A
Spectre-NG	2018-3639	Variant 4	Speculative Store Bypass	N/A	Yes	Yes
Foreshadow	2018-3615	Variant 5	L1 Terminal Fault - SGX	N/A	N/A	N/A
Foreshadow-NG	2018-3620	Variant 5	L1 Terminal Fault - OS	N/A	N/A	Yes
Foreshadow-NG	2018-3646	Variant 5	L1 Terminal Fault - VMM	N/A	Yes	N/A

Notes for Workload

Template deployed with disk type: Thick Lazy

Virtualization Software Notes

- Logical CPU configuration changed for multi-cpu VMs to 1 socket with multiple cores for primeclient and all ClientVM(default: Single core per socket)
- CDROM removed for primeclient
- CPU shares set to low for all Standby VMs (default normal)
- vSphere DRS Migration Threshold set to Fully Automated level 2

  Changes in esx.conf:

- /adv/Cpu/CreditAgePeriod = 1000 (default 3000)
- /adv/Cpu/HTWholeCoreThreshold = 0 (default 800)
- /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/UserVars/HostClientCEIPOptIn = 1(default 0)
- /adv/Numa/LTermFairnessInterval = 0 (default 5)
- /adv/Numa/MigImbalanceThreshold = 57 (default 10)
- /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/Disk/ReqCallThreshold = 1 (default 8)
- /adv/Disk/IdleCredit = 64 (default 32)
- /adv/Power/CpuPolicy = High Performance (default balanced)
- /adv/VMFS3/HardwareAcceleratedLocking = 0 (default 1)

- /vmkernel/hyperthreadingMitigation = TRUE (default FALSE)

Server Notes

- Server/Partition BIOS settings:
  - Power Technology: Custom (default Energy Efficient)
  - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.7GHz)
  - UPI Link Frequency Select: 10.4GT/s (default: Auto)
  - Sub NUMA Clustering: Enabled (default: Auto)
  - Stale AtoS: Enabled (default: Disabled)
  - LLC dead line alloc: Disabled (default: Enabled)
  - CPU C1E Support: Disabled (default: Enabled)
  - LLC C6 Report: Disabled (default: Enabled)

Networking Notes

- vSwitch Configuration:
  - vSwitch0 for Service Console on vmnic0 at 1Gb/s
  - vSwitch1 for all workload on vmnic3, vmnic4 at 10Gb/s
  - vSwitch2 for vMotion connection on vmnic1 at 10Gb/s

Storage Notes

- First Fujitsu Server PRIMERGY RX2540 M4 configured as a Fibre Channel Target:
  - Hardware details:
    - 2 x Intel Xeon Gold 6134M@3.2GHz processors
    - 64GB RAM (2 x 32 GB dual rank PC4-2666 Registered DDR4 / 2666 MHz DIMMs)
    - 2 x QLogic QLE2742 Dual Port 32Gb FC HBA used as FC target controller
    - 1 x Fujitsu RAID SAS Controller with 1GB Cache (D3108)
    - 2 x 480GB SATA-SSD Micron MTFDDAK480TDC
    - 3 x Intel P4800X 750GB PCIe SSD
    - 1 x Intel P4600 4TB PCIe SSD

  - Software details:
    - Operating System: SUSE Linux Enterprise Server 12 SP3 - 4.4.162-94.72-default (64-bit)
    - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 12 SP3)

RAID configuration:

  - SATA-SSD 1,2 (RAID 1):
    - LUN 1: Storage system OS (480GB, this LUN is not counted in the Storage section)

  - First PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 0 (600GB)

  - Second PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 1 (600GB)

  - Third PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 2 (600GB)

    - Fourth PCIe-SSD:
        - LUN 1: AuctionNoSQL, ElasticDB for tile 0 (300GB)
        - LUN 2: AuctionNoSQL, ElasticDB for tile 1 (300GB)
        - LUN 3: AuctionNoSQL, ElasticDB for tile 2 (300GB)
        - LUN 4: AuctionDB, ElasticLB for tile 0 (300GB)
        - LUN 5: AuctionDB, ElasticLB for tile 1 (300GB)
        - LUN 6: AuctionDB, ElasticLB for tile 2 (300GB)
        - LUN 7: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 0 (300GB)
        - LUN 8: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 1 (300GB)
        - LUN 9: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 2 (300GB)
        - LUN 10: SvMotion TargetLun (300GB)
        - LUN 11: vmmark3.1-template-020419-02 (300GB)

- Second Fujitsu Server PRIMERGY RX2540 M4 configured as a Fibre Channel Target:

    - Hardware details:
        - 2 x Intel Xeon Gold 6134M@3.2GHz processors
        - 64GB RAM (2 x 32 GB dual rank PC4-2666 Registered DDR4 / 2666 MHz DIMMs)
        - 2 x QLogic QLE2742 Dual Port 32Gb FC HBA used as FC target controller
        - 1 x Fujitsu RAID SAS Controller with 1GB Cache (D3108)
        - 2 x 480GB SATA-SSD Micron MTFDDAK480TDC
        - 3 x Intel P4800X 750GB PCIe SSD
        - 1 x Intel P4600 4TB PCIe SSD

    - Software details:
        - Operating System: SUSE Linux Enterprise Server 12 SP3 - 4.4.162-94.72-default (64-bit)
        - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 12 SP3)

RAID configuration:

- SATA-SSD 1,2 (RAID 1):
    - LUN 1: Storage system OS (480GB, this LUN is not counted in the Storage section)

- First PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 3 (600GB)

- Second PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 4 (600GB)

- Third PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 5 (600GB)

- Fourth PCIe-SSD:
    - LUN 1: AuctionNoSQL, ElasticDB for tile 3 (300GB)
    - LUN 2: AuctionNoSQL, ElasticDB for tile 4 (300GB)
    - LUN 3: AuctionNoSQL, ElasticDB for tile 5 (300GB)
    - LUN 4: AuctionDB, ElasticLB for tile 3 (300GB)
    - LUN 5: AuctionDB, ElasticLB for tile 4 (300GB)
    - LUN 6: AuctionDB, ElasticLB for tile 5 (300GB)
    - LUN 7: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 3 (300GB)
    - LUN 8: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 4 (300GB)

        - LUN 9: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 5 (300GB)
        - LUN 10: vmmark3.1-template-020419 (300GB)
        - LUN 11: XvMotion TargetLun (300GB)

- Third Fujitsu Server PRIMERGY RX2540 M4 configured as a Fibre Channel Target:

    - Hardware details:
        - 2 x Intel Xeon Gold 6134M@3.2GHz processors
        - 64GB RAM (2 x 32 GB dual rank PC4-2666 Registered DDR4 / 2666 MHz DIMMs)
        - 2 x QLogic QLE2742 Dual Port 32Gb FC HBA used as FC target controller
        - 1 x Fujitsu RAID SAS Controller with 1GB Cache (D3108)
        - 2 x 480GB SATA-SSD Micron MTFDDAK480TDC
        - 3 x Intel P4800X 750GB PCIe SSD
        - 1 x Intel P4600 4TB PCIe SSD

    - Software details:
        - Operating System: SUSE Linux Enterprise Server 12 SP3 - 4.4.162-94.72-default (64-bit)
        - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 12 SP3)

  RAID configuration:

    - SATA-SSD 1,2 (RAID 1):
        - LUN 1: Storage system OS (480GB, this LUN is not counted in the Storage section)

    - First PCIe-SSD:
        - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 6 (600GB)

    - Second PCIe-SSD:
        - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 7 (600GB)

    - Third PCIe-SSD:
        - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 8 (600GB)

    - Fourth PCIe-SSD:
        - LUN 1: AuctionNoSQL, ElasticDB for tile 6 (300GB)
        - LUN 2: AuctionNoSQL, ElasticDB for tile 7 (300GB)
        - LUN 3: AuctionDB, ElasticLB for tile 6 (300GB)
        - LUN 4: AuctionDB, ElasticLB for tile 7 (300GB)
        - LUN 5: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 6 (300GB)
        - LUN 6: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 7 (300GB)
        - LUN 7: AuctionNoSQL, ElasticDB for tile 8 (300GB)
        - LUN 8: AuctionDB, ElasticLB for tile 8 (300GB)
        - LUN 9: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 8 (300GB)
        - LUN 10: XvMotion TargetLun (300GB)
        - LUN 11: Deploy Lun(300GB) (300GB)

- Fourth Fujitsu Server PRIMERGY RX2540 M4 configured as a Fibre Channel Target:

    - Hardware details:
        - 2 x Intel Xeon Gold 6134M@3.2GHz processors
        - 64GB RAM (2 x 32 GB dual rank PC4-2666 Registered DDR4 / 2666 MHz DIMMs)

        - 2 x QLogic QLE2742 Dual Port 32Gb FC HBA used as FC target controller
        - 1 x Fujitsu RAID SAS Controller with 1GB Cache (D3108)
        - 2 x 480GB SATA-SSD Micron MTFDDAK480TDC
        - 3 x Intel P4800X 750GB PCIe SSD
        - 1 x Intel P4600 4TB PCIe SSD

    - Software details:
        - Operating System: SUSE Linux Enterprise Server 12 SP3 - 4.4.162-94.72-default (64-bit)
        - Fibre Channel Target SW: LIO (part of SUSE Linux Enterprise Server 12 SP3)

RAID configuration:

- SATA-SSD 1,2 (RAID 1):
    - LUN 1: Storage system OS (480GB, this LUN is not counted in the Storage section)

- First PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 9 (600GB)

- Second PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 10 (600GB)

- Third PCIe-SSD:
    - LUN 1: DS3DB, DS3WebA, DS3WebB, DS3WebC for tile 11 (600GB)

- Fourth PCIe-SSD:
    - LUN 1: AuctionNoSQL, ElasticDB for tile 9 (300GB)
    - LUN 2: AuctionNoSQL, ElasticDB for tile 10 (300GB)
    - LUN 3: AuctionNoSQL, ElasticDB for tile 11 (300GB)
    - LUN 4: AuctionDB, ElasticLB for tile 9 (300GB)
    - LUN 5: AuctionDB, ElasticLB for tile 10 (300GB)
    - LUN 6: AuctionDB, ElasticLB for tile 11 (300GB)
    - LUN 7: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 9 (300GB)
    - LUN 8: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 10 (300GB)
    - LUN 9: AuctionWebA, AuctionWebB, AuctionAppA, AuctionAppB, AuctionLB, AuctionMSQ, Standby, ElasticWebA, ElasticWebB, ElasticAppA, ElasticAppB for tile 11 (300GB)
    - LUN 10: Deploy Lun(300GB)
    - LUN 11: SvMotion TargetLun (300GB)

Datacenter Management Server Notes

- Virtual Center realized as a VM running on a dedicated Hypervisor system:
    - Number of vCPUs: 4 (Four vSocket)
    - Size of vRAM: 16GB

- The host operating system VMware ESXi 6.7.0 EP 02a Build 9214924 was installed using 'Fujitsu Custom Image for VMware ESXi 6.7.0 EP 02a' named VMware-ESXi-6.7.0-9214924-Fujitsu-v451-1.iso

Operating System Notes

VMware ESXi 6.7.0 EP 08 Build 13473784 was installed using 'Fujitsu Custom Image for VMware ESXi 6.7.0 EP 08' named VMware-ESXi-6.7.0-13473784-Fujitsu-v470-1.iso

Software Notes

None

Client Notes

Client Host1: Client4,Client9
Client Host2: Client0,Client1,Client6,Client11
Client Host3: Client2,Client7
Client Host4: Client3,Client5,Client8,Client10,Primeclient

Changes in esx.conf

- /adv/Power/CpuPolicy = High Performance (default balanced)
- /adv/UserVars/HostClientCEIPOptIn = 1 (default 0)

Network Notes

- vSwitch Configuration:
  - vSwitch0 for Service Console on vmnic0 at 1Gb/s
  - vSwitch1 for all workload on vmnic2, vmnic3 at 10Gb/s

Other Notes

- None
