

VMmark[®] 3.1.1 Results

Server Vendor & Model: Supermicro SYS-111C-NR
Storage Vendor & Model: VMware vSAN 8.0 Update 2 - All Flash
Hypervisor: VMware ESXi 8.0 Update 2, Build 22380479
Datacenter Management Software: VMware vCenter Server 8.0 Update 2, Build 22385739

**VMmark 3.1.1 Score =
12.18 @ 12 Tiles**

Number of Hosts: 4

Uniform Hosts [yes/no]: yes

Total sockets/cores/threads in test: 4/128/256

Tested By: Supermicro

Test Date: 04-24-2024

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Performance

	weathervane			weathervaneE			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3565.35	0.99	0.47 0.00	565.92	0.99	0.42 0.04	1024.20	1.39	602.42	756.98	1.51	687.30	571.60	1.65	753.07	1.28
p1	3548.17	0.99	0.52 0.00	561.66	0.98	0.42 0.03	1025.30	1.40	599.30	726.77	1.45	702.74	515.30	1.49	784.01	1.24
p2	3538.78	0.98	0.52 0.00	561.41	0.98	0.39 0.01	1016.98	1.38	612.34	755.02	1.51	698.93	537.55	1.55	767.38	1.26
TILE_1	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3556.97	0.99	0.59 0.00	563.52	0.98	0.45 0.08	1011.62	1.38	618.83	720.75	1.44	719.44	536.75	1.55	786.76	1.24
p1	3536.73	0.98	0.62 0.02	556.51	0.97	0.45 0.03	1018.58	1.39	615.23	725.02	1.45	715.96	508.15	1.47	798.72	1.23
p2	3522.47	0.98	0.60 0.01	555.88	0.97	0.42 0.03	1013.83	1.38	612.40	752.55	1.50	704.40	563.75	1.63	767.57	1.26
TILE_2	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3562.81	0.99	0.57 0.00	559.28	0.98	0.39 0.02	1029.00	1.40	593.70	736.62	1.47	685.54	517.98	1.49	773.33	1.24
p1	3554.58	0.99	0.59 0.00	555.69	0.97	0.36 0.02	1003.40	1.37	641.87	748.88	1.50	720.68	529.85	1.53	817.37	1.25
p2	3536.31	0.98	0.62 0.00	554.29	0.97	0.39 0.02	1002.25	1.36	643.72	716.02	1.43	753.18	519.62	1.50	854.44	1.23
TILE_3	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3562.34	0.99	0.78 0.00	564.97	0.99	0.42 0.01	912.95	1.24	856.00	639.92	1.28	1000.19	446.98	1.29	1108.20	1.15
p1	3548.47	0.99	0.87 0.02	564.45	0.99	0.54 0.02	896.65	1.22	890.63	651.95	1.30	1031.32	481.48	1.39	1129.01	1.17
p2	3529.82	0.98	0.88 0.02	561.81	0.98	0.49 0.02	904.60	1.23	882.53	636.27	1.27	1015.24	436.80	1.26	1152.32	1.14
TILE_4	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3569.11	0.99	0.45 0.00	570.12	1.00	0.43 0.01	995.42	1.36	662.88	739.08	1.48	751.33	520.35	1.50	859.63	1.24
p1	3552.80	0.99	0.53 0.00	566.63	0.99	0.38 0.01	1001.58	1.36	646.79	709.25	1.42	753.31	522.75	1.51	827.38	1.23
p2	3537.29	0.98	0.52 0.00	564.83	0.99	0.29 0.00	1003.38	1.37	642.19	716.20	1.43	736.89	503.82	1.45	820.63	1.22
TILE_5	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM

p0	3578.90	0.99	0.47 0.01	565.02	0.99	0.39 0.01	995.83	1.36	655.07	744.90	1.49	724.38	553.45	1.60	797.17	1.26
p1	3557.38	0.99	0.53 0.01	561.35	0.98	0.43 0.03	1004.92	1.37	631.56	727.95	1.45	706.29	506.68	1.46	796.46	1.23
p2	3553.05	0.99	0.46 0.01	554.67	0.97	0.36 0.03	1005.05	1.37	638.38	747.62	1.49	708.93	536.85	1.55	780.75	1.25
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	3571.19	0.99	0.57 0.00	565.57	0.99	0.37 0.00	1024.62	1.40	612.95	727.30	1.45	712.47	532.73	1.54	803.46	1.25
p1	3559.81	0.99	0.57 0.00	559.65	0.98	0.31 0.00	1014.00	1.38	626.01	723.40	1.45	724.25	503.30	1.45	832.75	1.23
p2	3540.45	0.98	0.60 0.00	556.25	0.97	0.33 0.01	1005.62	1.37	654.87	736.25	1.47	758.40	545.40	1.57	851.62	1.25
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	3571.81	0.99	0.73 0.00	571.39	1.00	0.60 0.01	920.12	1.25	853.93	639.67	1.28	1020.06	436.40	1.26	1175.95	1.15
p1	3560.70	0.99	0.74 0.00	567.74	0.99	0.62 0.02	914.35	1.25	864.60	661.65	1.32	1004.31	462.82	1.33	1134.22	1.17
p2	3552.96	0.99	0.80 0.00	558.27	0.98	0.53 0.03	905.40	1.23	893.29	625.62	1.25	1063.57	448.98	1.29	1200.27	1.14
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	3575.96	0.99	0.47 0.00	566.51	0.99	0.34 0.01	1025.70	1.40	594.78	732.45	1.46	690.24	520.70	1.50	760.27	1.25
p1	3567.13	0.99	0.51 0.00	562.16	0.98	0.41 0.02	1018.55	1.39	602.29	755.15	1.51	684.40	569.80	1.64	734.85	1.27
p2	3554.75	0.99	0.52 0.00	557.46	0.97	0.32 0.03	1033.58	1.41	579.51	742.05	1.48	659.87	531.00	1.53	713.08	1.25
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	3587.16	1.00	0.45 0.00	566.20	0.99	0.54 0.02	1013.55	1.38	615.80	758.23	1.51	680.18	524.77	1.51	726.05	1.26
p1	3573.94	0.99	0.47 0.01	563.40	0.98	0.42 0.04	1016.00	1.38	604.93	739.90	1.48	670.80	580.48	1.67	695.15	1.27
p2	3559.09	0.99	0.47 0.01	562.85	0.98	0.35 0.01	1021.52	1.39	584.20	746.55	1.49	652.74	536.55	1.55	686.55	1.26
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	3577.23	0.99	0.38 0.00	572.25	1.00	0.53 0.02	1018.70	1.39	615.27	780.02	1.56	691.53	565.27	1.63	759.02	1.29
p1	3560.79	0.99	0.41 0.00	565.96	0.99	0.38 0.01	1012.23	1.38	620.94	697.62	1.39	714.15	514.62	1.48	785.05	1.23
p2	3551.42	0.99	0.42 0.00	564.48	0.99	0.38 0.00	997.60	1.36	651.35	739.83	1.48	744.40	530.60	1.53	807.66	1.25
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	3573.81	0.99	0.83 0.01	568.42	0.99	0.70 0.04	921.23	1.25	841.75	640.83	1.28	982.47	471.20	1.36	1082.01	1.17
p1	3559.51	0.99	0.87 0.02	561.88	0.98	0.59 0.04	922.52	1.26	838.19	643.30	1.29	984.00	448.98	1.29	1096.48	1.15
p2	3540.58	0.98	0.93 0.01	557.74	0.97	0.46 0.01	908.30	1.24	877.58	655.10	1.31	1014.15	481.93	1.39	1137.58	1.17
p0_score:	14.77															
p1_score:	14.66															
p2_score:	14.66															

Infrastructure_Operations_Scores:							vMotion		SVMotion			XVMotion			Deploy	
Completed_Ops_PerHour							57.00		44.00			36.00			18.00	
Avg_Seconds_To_Complete							5.28		118.38			143.21			365.65	
Failures							0.00		0.00			0.00			0.00	
Ratio							2.19		2.44			2.00			2.25	

Number_Of_Threads	2	2	2	2
Summary	Run_Is_Compliant		Turbo_Setting:0	
	Number_Of_Compliance_Issues(0)*		Median_Phase(p1)	
Unreviewed_VMmark3_Applications_Score	14.66			
Unreviewed_VMmark3_Infrastructure_Score	2.22			
Unreviewed_VMmark3_Score	12.18			

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 8.0 Update 2, Build 22380479/ 09-21-2023
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 8.0 Update 2, Build 22385739 / 09-21-2023
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	Supermicro SYS-111C-NR
Processor Vendor and Model	Intel Xeon Gold 6548Y+
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.50 / 4.10
Total Sockets/Total Cores/Total Threads	1 Sockets / 32 Cores / 64 Threads
Primary CPU Cache	32KB I + 48KB D on chip per core
Secondary CPU Cache	2MB I+D on chip per core
Other CPU Cache	60MB I+D on chip per chip
BIOS Version	2.1
Memory Size (in GB, Number of DIMMs)	512GB, 8
Memory Type and Speed	64GB 2Rx4 DDR5-5600 MHz RDIMM (running at 5200 MT/s)
Disk Subsystem Type	VMware vSAN 8.0 Update 2 ESA, NFS
Number of Disk Controllers	N/A
Disk Controller Vendors and Models	N/A
Total Number of Physical Disks for Hypervisor	2
Disk Vendors, Models, Capacities, and Speeds	Micron, 7450 MTFDKBA400TFS, 400GB, 16.0 GT/s
Number of Host Bus Adapters	0

Host Bus Adapter Vendors and Models	None
Number of Network Controllers	1
Network Controller Vendors and Models	Mellanox MCX653106A-ECAT (100GbE dual-port QFSP28)
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	02-11-2024
BIOS Availability Date (MM-DD-YYYY)	02-11-2024
Software Availability Date (MM-DD-YYYY)	09-21-2023
Network	
Network Switch Vendors and Models	Supermicro SSE-SN3700-CS2RC
Network Speed	100Gb/s
Primary Storage	
Storage Category	vSAN 8.0 Update 2 ESA
Storage Vendors, Models, and Firmware Versions	4x Supermicro SYS-111C-NR with VMware vSAN 8.0 Update 2
Storage Configuration Summary	<p>VMware vSAN 8.0 Update 2 ESA:</p> <ul style="list-style-type: none"> 4 x Intel D7-P5620 Series, SSDPF2KE064T1, 6.4TB
Datacenter Management Server	
System Model	Supermicro SYS-1029U-TN10RT
Processor Vendor and Model	Intel Xeon Platinum 8153 CPU
Processor Speed (GHz)	2.0GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 32 Cores / 64 Threads
Memory Size (in GB, Number of DIMMs)	384GB, 12
Network Controller(s) Vendors and Models	Supermicro AOC-S25G-i2S
Operating System, Version, Bitness, and Service Pack	VMware ESXi 8.0 Update 1, Build 21495797
Virtual Center VM Number of vCPUs	4
Virtual Center VM Virtual Memory (in GB)	21
Virtual Center VM Operating System, Version, Bitness, and Service Pack	VMware vCenter Server 8.0 Update 2, Build 22385739
Other Hardware	none
Other Software	none
Clients	
Total Number of Virtual Clients / Virtual Client Hosts	13 / 2
System Model(s)	2x Supermicro SYS-120U-TNR
Processor Vendor(s) and Model(s)	Intel Xeon Platinum 8362
Processor Speed(s) (GHz)	2.80

Total Sockets/Total Cores/Total Threads	4 Sockets / 128 Cores / 256 Threads
Memory per Virtual Client Host	512 GB
Network Controller(s) Vendors and Models	Supermicro AOC-S25G-i2S
Virtual Client Networking Notes	All management traffic and workload traffic running on a single 25Gb/s port.
Virtual Client Storage Notes	All clients mounted on NFS datastore
Other Hardware	None
Other Software	VMware ESXi 8.0 Update 2, Build 22380479

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: Thin

Virtualization Software Notes

- All DS3DB VMs had CPU shares set to High (default normal)
- DS3DB0 was configured to not use the third virtual disk before building additional tiles.
- All DS3DB VMs had memory reserved via the vSphere Client (default non-reserved)
- CDROM removed from all VMs except for PrimeClient, client, and template VMs.
- CPU shares set to low for all Standby VMs (default normal)
- Logical CPU configuration changed for all multi-CPU VMs except for PrimeClient and client VMs to 1 socket with multiple cores (default single core per socket)
- Logging was disabled for all VMs except for PrimeClient, client, and template VMs (default enabled)
- vSAN Default Storage Policy has been modified: the Failures to Tolerate field was set to 1 failure - RAID-5 (Erasure Coding)
- Cluster DRS Automation level set to Fully Automated.
- vSphere DRS Migration Threshold set to Fully Automated level 2

Server Notes

BIOS Settings:

- Power Technology = Custom (default Energy Efficient)
- Power Performance Tuning = BIOS Controls EPB (default)
- ENERGY_PERF_BIAS_CFG mode = Maximum Performance (default)
- Package C State = C0/C1 state (default=Auto)

Advanced Settings:

- Cpu.CoschedCrossCall = 0 (default 1)
- Cpu.CreditAgePeriod = 1000 (default 3000)
- Cpu.HTWholeCoreThreshold = 0 (default 800)
- DataMover.HardwareAcceleratedInit = 0 (default 1)
- DataMover.HardwareAcceleratedMove = 0 (default 1)
- Disk.IdleCredit = 64 (default 32)
- Disk.ReqCallThreshold = 1 (default 8)
- Mem.CtlMaxPercent = 0 (default 65)
- Mem.ShareScanGHz = 0 (default 4)
- Numa.LargeInterleave = 0 (default 1)
- Numa.LocalityWeightActionAffinity = 0 (default 130)
- Numa.MigPreventLTermThresh = 20 (default 0)
- Numa.MigThreshold = 0 (default 2)
- Numa.PreferHT = 1 (default 0)
- UserVars.HostClientCEIPOptIn = 2 (default 0)
- UserVars.SuppressShellWarning = 1 (default 0)
- VMkernel.Boot.hyperthreadingMitigation = TRUE (default FALSE)

Networking Notes

Server

- Single Distributed Switch with one uplink at vmnic0.
- Uplink1 contains the following distributed portgroup: Management Network, VM_10-16, vSAN_10-17.
- All VMs are on vLAN ID 1006.
- vSAN network is on vLAN ID 1007.
- MTU set to 9000 (default 1500) for vmk0, vmk1, and all uplinks.

Client

- Single Distributed Switch with one uplink at vmnic0.
- MTU set to 9000 (default 1500).

Storage Notes

- All client hosts OS installed on SATADOM
- All SUT hosts OS installed on M.2 drive
- All Template VMs stored on NFS datastore
- vsanDatastore consisted of 4 nodes Supermicro SYS-111C-RN ReadyNode

- NFS Folder configuration:

- All folders are backed by the same NFS server on a single striped zfs array, mounted storage device detailed in the "Secondary Shared Storage section."
 - Deploy1 datastore -> /data/data4/Deploy1
 - Deploy2 datastore -> /data/data4/Deploy2
 - NFS datastore -> /data/data4/NFS
 - vMotion1 datastore -> /data/data4/Motion1
 - vMotion2 datastore -> /data/data4/Motion2
- Software configuration
 - All Flash vSAN 8.0 Update 2 ESA.
 - vSAN Default Storage Policy has been modified: the Failures to Tolerate field was set to 1 failure - RAID-5 (Erasure Coding)
- Virtual Machine LUN Distribution:
 - vsanDatastore contains the following workloads:
 - AuctionAppA*
 - AuctionAppB*
 - AuctionDB*
 - AuctionLB*
 - AuctionMSQ*
 - AuctionNoSQL*
 - AuctionWebA*
 - AuctionWebB*
 - DS3DB*
 - DS3WebA*
 - DS3Webb*
 - DS3WebC*
 - ElasticAppA*
 - ElasticAppb*
 - ElasticDB*
 - ElasticLB*
 - ElasticWebA*
 - ElasticWebB*
 - Standby*

Secondary Shared Storage Device:

- Hardware:
 - SuperServer SYS-220U-TNR
 - 32GB Memory 4x M393A1G40DB0-CPB 8GB 1Rx4 DIMM @ 2133MHz; 2DPC
 - 1x AOC-2UR68G4-I4XTS; Intel Ethernet Controller X710 - Single Port; 10G
 - 2x Intel Xeon 8358P CPU
 - 12x 7.68TB Micron 7300 (MTFDHBE7T6TDF) NVMe SSDs
 - 1x SuperMicro SSD 32GB SATADOM
- Software:
 - Ubuntu 22.04.2
 - zfs version 2.1.5-1ubuntu6~22.04.2
 - Host OS on ubuntu22.04.2

- Configuration:
 - 3x raidz1 on one large pool over all 12 disks, mounted at /data

Datacenter Management Server Notes

None

Operating System Notes

None

Software Notes

None

Client Notes

- NFS datastore contains all the client, PrimeClient, and Template virtual machines.
- MTU set to 9000 (default 1500)
- Host1 : Client0, Client2, Client4, Client6, Client8, Client10
- Host2 : Client1, Client3, Client5, Client7, Client9, Client11, Primeclient

Other Notes

None

This is a full disclosure report for a VMmark® benchmark result. All published VMmark results must be from fully-compliant tests for which a full disclosure report is publicly available.

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