

VMmark[®] 3.1.1 Results

Server Vendor & Model: Supermicro AS-1115CS-TNR
Storage Vendor & Model: VMware vSAN 8.0 U2 - All Flash
Hypervisor: VMware ESXi 8.0 U2, Build 22380479
Datacenter Management Software: VMware vCenter Server 8.0 U2a, Build 22617221

**VMmark 3.1.1 Score =
14.33 @ 16 Tiles**

Number of Hosts: 4	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 4/128/256
Tested By: Supermicro		Test Date: 03-18-2024
Performance Section Performance	Configuration Section Configuration	Notes Section Notes for Workload

Performance

	weathervane			weathervaneE			dvdstoreA			dvdstoreB			dvdstoreC			
TILE_0	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3552.63	0.99	2.48 0.16	565.73	0.99	0.30 0.02	877.25	1.19	1012.89	596.12	1.19	1235.03	429.40	1.24	1382.73	1.11
p1	3533.26	0.98	2.69 0.39	562.47	0.98	0.29 0.02	856.33	1.17	1092.76	583.90	1.17	1296.47	397.80	1.15	1476.95	1.09
p2	3512.93	0.98	2.61 0.21	562.69	0.98	0.34 0.00	866.02	1.18	1057.98	609.90	1.22	1260.75	421.45	1.22	1424.88	1.11
TILE_1	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3561.19	0.99	1.74 0.06	567.59	0.99	0.34 0.00	870.92	1.19	1046.80	588.67	1.18	1280.33	382.80	1.10	1452.95	1.09
p1	3550.47	0.99	1.37 0.06	558.16	0.98	0.31 0.01	864.65	1.18	1069.57	611.25	1.22	1272.98	441.65	1.27	1426.64	1.12
p2	3529.51	0.98	1.43 0.03	559.78	0.98	0.26 0.02	880.08	1.20	1014.65	593.27	1.19	1263.90	404.02	1.17	1417.61	1.10
TILE_2	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3576.52	0.99	1.16 0.03	564.34	0.99	0.32 0.01	820.42	1.12	1220.63	558.12	1.12	1447.89	372.80	1.07	1680.55	1.06
p1	3549.78	0.99	1.28 0.04	560.37	0.98	0.31 0.01	832.92	1.13	1174.45	584.58	1.17	1395.77	402.10	1.16	1582.87	1.08
p2	3531.17	0.98	1.19 0.03	557.70	0.97	0.30 0.01	834.83	1.14	1169.68	563.33	1.13	1409.50	380.52	1.10	1632.61	1.06
TILE_3	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3558.41	0.99	2.06 0.12	570.65	1.00	0.38 0.00	798.02	1.09	1291.84	564.88	1.13	1492.36	386.15	1.11	1683.77	1.06
p1	3541.34	0.98	2.29 0.16	567.13	0.99	0.33 0.00	807.12	1.10	1255.46	541.10	1.08	1532.15	366.50	1.06	1739.22	1.04
p2	3530.55	0.98	2.45 0.22	567.88	0.99	0.35 0.01	801.35	1.09	1267.13	546.50	1.09	1484.03	384.30	1.11	1715.95	1.05
TILE_4	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3555.18	0.99	1.61 0.07	569.72	1.00	0.41 0.00	871.73	1.19	1040.86	614.12	1.23	1249.75	446.85	1.29	1403.06	1.13
p1	3548.15	0.99	1.64 0.09	564.70	0.99	0.32 0.00	866.62	1.18	1072.32	582.90	1.16	1315.72	378.50	1.09	1496.47	1.08
p2	3537.34	0.98	1.68 0.08	563.24	0.98	0.33 0.01	860.88	1.17	1077.42	611.58	1.22	1283.51	441.88	1.27	1428.41	1.12
TILE_5	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(nRTIMaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM

p0	3579.48	0.99	1.18 0.04	566.24	0.99	0.31 0.00	867.12	1.18	1046.48	594.73	1.19	1245.81	430.55	1.24	1378.59	1.11
p1	3559.26	0.99	0.98 0.01	563.98	0.99	0.29 0.02	867.25	1.18	1051.62	591.95	1.18	1271.96	404.62	1.17	1433.45	1.10
p2	3545.66	0.99	1.05 0.02	559.57	0.98	0.31 0.00	873.45	1.19	1038.73	612.52	1.22	1254.07	426.43	1.23	1405.22	1.12
TILE_6	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3566.16	0.99	1.91 0.10	567.22	0.99	0.33 0.01	836.70	1.14	1140.81	567.45	1.13	1373.88	385.70	1.11	1540.61	1.07
p1	3542.81	0.98	1.64 0.10	564.37	0.99	0.33 0.01	821.08	1.12	1216.53	580.95	1.16	1418.30	399.77	1.15	1606.31	1.08
p2	3531.46	0.98	1.67 0.04	564.64	0.99	0.30 0.01	836.27	1.14	1151.10	563.90	1.13	1410.04	381.62	1.10	1593.06	1.06
TILE_7	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3568.17	0.99	2.69 0.16	569.28	0.99	0.43 0.01	799.85	1.09	1285.92	545.58	1.09	1510.84	363.10	1.05	1743.74	1.04
p1	3547.96	0.99	3.17 0.28	562.75	0.98	0.38 0.00	786.98	1.07	1337.76	549.90	1.10	1583.58	393.12	1.13	1787.74	1.05
p2	3536.22	0.98	3.00 0.34	562.93	0.98	0.38 0.01	801.58	1.09	1266.10	543.10	1.09	1508.72	343.30	0.99	1759.95	1.03
TILE_8	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3569.82	0.99	1.17 0.03	572.77	1.00	0.36 0.02	858.17	1.17	1083.19	613.40	1.23	1254.06	425.65	1.23	1409.33	1.12
p1	3557.28	0.99	1.26 0.06	569.44	1.00	0.34 0.02	869.02	1.18	1033.79	589.62	1.18	1276.18	424.82	1.22	1413.72	1.11
p2	3552.75	0.99	1.20 0.02	562.39	0.98	0.33 0.00	866.50	1.18	1053.85	586.60	1.17	1279.88	404.93	1.17	1431.69	1.09
TILE_9	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3574.56	0.99	1.26 0.09	565.00	0.99	0.29 0.00	861.40	1.17	1073.39	611.27	1.22	1275.82	443.73	1.28	1420.98	1.12
p1	3559.13	0.99	1.05 0.02	563.34	0.98	0.31 0.00	879.70	1.20	1025.97	592.58	1.18	1247.43	408.15	1.18	1406.67	1.10
p2	3548.23	0.99	1.28 0.04	558.27	0.98	0.31 0.01	848.27	1.16	1114.32	598.85	1.20	1324.65	416.25	1.20	1469.40	1.10
TILE_10	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3567.89	0.99	1.44 0.05	570.41	1.00	0.35 0.00	833.00	1.13	1164.86	559.65	1.12	1394.44	404.00	1.16	1545.30	1.08
p1	3557.03	0.99	1.57 0.05	567.91	0.99	0.38 0.00	835.90	1.14	1154.82	569.05	1.14	1372.76	387.30	1.12	1560.01	1.07
p2	3547.79	0.99	1.58 0.08	563.13	0.98	0.34 0.00	823.25	1.12	1187.60	579.77	1.16	1395.01	416.10	1.20	1588.92	1.09
TILE_11	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3563.18	0.99	2.60 0.23	569.68	1.00	0.36 0.00	820.08	1.12	1209.83	546.52	1.09	1473.40	370.85	1.07	1673.30	1.05
p1	3550.31	0.99	3.11 0.42	562.81	0.98	0.29 0.00	801.08	1.09	1272.77	562.88	1.12	1486.12	387.27	1.12	1673.17	1.06
p2	3532.34	0.98	2.73 0.20	561.58	0.98	0.33 0.02	813.30	1.11	1240.67	543.35	1.09	1508.17	362.85	1.05	1743.04	1.04
TILE_12	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3571.80	0.99	1.00 0.01	565.81	0.99	0.26 0.00	880.45	1.20	1029.12	601.33	1.20	1232.21	409.98	1.18	1401.47	1.11
p1	3564.87	0.99	1.09 0.01	559.63	0.98	0.32 0.01	866.25	1.18	1055.54	613.42	1.23	1249.39	445.20	1.28	1411.21	1.12
p2	3552.67	0.99	1.00 0.01	555.88	0.97	0.31 0.02	877.12	1.19	1015.97	598.58	1.20	1237.32	406.80	1.17	1419.26	1.10
TILE_13	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3573.10	0.99	1.08 0.02	569.96	1.00	0.32 0.00	859.05	1.17	1069.46	616.25	1.23	1235.51	429.05	1.24	1389.37	1.12
p1	3557.23	0.99	0.98 0.02	564.26	0.99	0.26 0.00	863.85	1.18	1049.85	594.25	1.19	1242.08	427.70	1.23	1394.98	1.11
p2	3551.06	0.99	1.05 0.02	561.11	0.98	0.26 0.01	862.25	1.17	1062.23	595.08	1.19	1242.21	409.48	1.18	1391.48	1.10

TILE_14	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3563.50	0.99	2.08 0.32	572.48	1.00	0.40 0.00	829.85	1.13	1168.69	587.30	1.17	1378.64	424.20	1.22	1538.40	1.10
p1	3546.05	0.99	1.57 0.07	573.35	1.00	0.37 0.00	863.67	1.18	1082.00	591.50	1.18	1272.48	397.23	1.15	1480.70	1.09
p2	3532.10	0.98	1.70 0.06	570.46	1.00	0.33 0.00	839.75	1.14	1154.84	591.00	1.18	1378.49	404.62	1.17	1559.17	1.09
TILE_15	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(nRTI MaxPctF)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	Actual	Ratio	QoS(ms)	GM
p0	3575.06	0.99	1.98 0.11	573.08	1.00	0.39 0.00	811.83	1.11	1231.23	567.58	1.13	1474.70	392.68	1.13	1648.25	1.07
p1	3559.49	0.99	2.44 0.14	566.37	0.99	0.37 0.00	812.73	1.11	1234.72	530.80	1.06	1476.62	369.05	1.06	1691.92	1.04
p2	3545.34	0.99	2.49 0.18	559.75	0.98	0.31 0.01	805.50	1.10	1255.60	565.38	1.13	1477.60	403.12	1.16	1686.51	1.07
p0_score:	17.45															
p1_score:	17.35															
p2_score:	17.32															

Infrastructure_Operations_Scores:	vMotion	SVMotion	XVMotion	Deploy
Completed_Ops_PerHour	56.00	44.00	38.00	19.00
Avg_Seconds_To_Complete	6.58	118.61	136.71	344.60
Failures	0.00	0.00	0.00	0.00
Ratio	2.15	2.44	2.11	2.38
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	17.35	
Unreviewed_VMmark3_Infrastructure_Score	2.27	
Unreviewed_VMmark3_Score	14.33	

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 8.0 U2, build 22380479 / 09-21-2023
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 8.0 U2a, Build 22617221 / 10-26-2023
Supplemental Software	None
Servers	
Number of Servers in System Under Test	4

(all subsequent fields in this section are per server)	
Server Manufacturer and Model	Supermicro AS-1115CS-TNR
Processor Vendor and Model	AMD EPYC 9374F
Processor Speed (GHz) / Turbo Boost Speed (GHz)	3.85 / 4.3
Total Sockets/Total Cores/Total Threads	1 Socket / 32 Cores / 64 Threads
Primary CPU Cache	32 KB I + 32 KB D on chip per core
Secondary CPU Cache	1 MB I+D on chip per core
Other CPU Cache	256 MB I+D on chip per chip, 32MB shared / 4 cores
BIOS Version	1.4
Memory Size (in GB, Number of DIMMs)	1536, 12
Memory Type and Speed	128GB 4Rx4 DDR5-4800 MHz RDIMM
Disk Subsystem Type	VMware vSAN 8.0 U2
Number of Disk Controllers	0
Disk Controller Vendors and Models	N/A
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Samsung SM963
Number of Host Bus Adapters	0
Host Bus Adapter Vendors and Models	N/A
Number of Network Controllers	1
Network Controller Vendors and Models	Supermicro AOC-A100G-m2CM
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	11-29-2022
BIOS Availability Date (MM-DD-YYYY)	04-17-2023
Software Availability Date (MM-DD-YYYY)	10-26-2023
Network	
Network Switch Vendors and Models	Supermicro SSE-SN3700-CS2RC
Network Speed	100Gb/s
Primary Storage	
Storage Category	VMware vSAN 8.0 U2
Storage Vendors, Models, and Firmware Versions	vSAN-ESA-AF-0-Supermicro-AS-1115CS-TNR
Storage Configuration Summary	VMware vSAN 8.0 U2 ESA : 6x KIOXIA 1.6TB CD8-V u.2 NVME

Datacenter Management Server

System Model	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 8.0U1 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 U2a, Build 22617221
Other Hardware	none
Other Software	none

Clients

Total Number of Virtual Clients / Virtual Client Hosts	17 / 3
System Model(s)	AS-1124US-TNRP
Processor Vendor(s) and Model(s)	AMD EPYC 7453, AMD EPYC 7453, AMD EPYC 75F3
Processor Speed(s) (GHz)	2.75, 2.75, 2.95
Total Sockets/Total Cores/Total Threads	6 Sockets / 176 Cores / 352 Threads
Memory per Virtual Client Host	2 TB for first two host. 1 TB for third host.
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 Client share same NFS datastore.
Other Hardware	None
Other Software	ESXi 8.0 Update 2

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	Not Vulnerable	Not Vulnerable
Spectre	2017-5715	Variant 2	Branch Target Injection	Not Vulnerable	Not Vulnerable	Not Vulnerable
Meltdown	2017-5754	Variant 3	Rogue Data Cache Load	N/A	Not Vulnerable	Not Vulnerable
Spectre-NG	2018-3640	Variant 3a	Rogue System Register Read	Not Vulnerable	N/A	N/A
Spectre-NG	2018-3639	Variant 4	Speculative Store Bypass	N/A	Not Vulnerable	Not Vulnerable
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	Not Vulnerable
Foreshadow-NG	2018-3646	Variant 5	L1 Terminal Fault - VMM	N/A	Not Vulnerable	N/A

Notes for Workload

Templates deployed with disk type: Thin

Virtualization Software Notes

- All Standby VMs had CPU shares set to low (default normal)
- All DS3DB, ElasticDB and ElasticLB, and DS3WebA VMs had CPU shares set to High (default normal)
- All DS3DB VM memory shares set to High (default normal)
- Added sched.mem.lpage.enable1GPage to TRUE for all DS3DB VMs. (default normal)
- All memory was pinned and all memory reserved for DS3DB VMs and PrimeClient.
- Clients VM's had CD-ROM removed.
- CD-ROM was removed from all VMs except PrimeClient VM and templates.
- Logical CPU configuration changed for all multi-CPU VMs except for PrimeClient and clients to 1 socket with multiple cores. (default single core per socket)
- vSphere DRS Automation level set to Fully Automated.
- vSphere DRS Migration Threshold set to Fully Automated level 1.
- Logging was disabled for all VMs except template.
- UserVars.HostClientCEIPOptIn = 1 (default 0) for all SUTs and Clients.
- All DS3DB VMs has their third virtual disk removed.

Server Notes

- Under Advanced Menu Tab -> CPU Configuration -> Global C-state Control was changed to "Disabled". (Default: Global C-state Control = Auto)
- Under Advanced Menu Tab -> CPU Configuration -> L2 Stream HW Prefetcher Set to "Disabled". (Default: L2 Stream HW Prefetcher = Auto)
- Under Advanced Menu Tab -> NB Configuration -> TDP control changed to "Manual" and set TDP to "400". (Default: TDP Control = Auto)
- Under Advanced Menu Tab -> NB Configuration -> Package Power Limit Control set to "Manual" and Package Power Limit set to "400". (Default: Package Power Limit Control = Auto)
- Under Advanced Menu Tab -> Determinism Control Set to "Manual" and Determinism Enable set to "Disable Performance Determinism". (Default: Determinism Control = Auto)

Networking Notes

- Single Distributed Switch with one uplink at vmnic0.
- Uplink1 contains the following distributed portgroup: Management Network, VM_10-16, vSAN_10-17.
- vLAN ID 1007 consist of vSAN network.
- Management traffic route on vLAN ID 1.
- All VM are on vLAN ID 1006.
- MTU of DSwitch, vmnic0, vmk0, vmk1, and vmk2 set to 9000.

Storage Notes

- All client server OS installed on M.2 drive.
- All SUT hosts OS installed on M.2 drive
- 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 Storage section."
 - Deploy1 datastore -> /data/deploy1
 - Deploy2 datastore -> /data/deploy2

- NFS3 datastore -> /data/data3
- NFS4 datastore -> /data
- System under Test configuration
 - AMD EPYC 9374F 3.85GHz processors
 - 1.5TB Memory (12 x 128GB 4800MHz)
 - 6 x KIOXIA 1.6TB CD8-V u.2 NVMe
- Software configuration
 - All Flash vSAN ESA.
 - vSAN Default Storage Policy used.
- 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 SSD's
 - 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 RAIDZ-1 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

- MTU of DSwitch and vmnic1 (vmnic0 for fourth client hosts) set to 9000.
- DRS set to level 1.

Other Notes

- VCscratchDir= /root/VMmark3/results/scratch (default /root/VMmark3/samples/)

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.

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

VMware and VMmark are trademarks or registered trademarks of VMware, Inc. VMmark is a product of [VMware, Inc.](http://www.vmware.com) VMmark utilizes the SPEC Power and Temperature Daemon (SPEC PTDaemon), which is available from the Standard Performance Evaluation Corporation (SPEC®). VMmark results are not SPEC metrics and cannot be compared to SPEC metrics in any way.