

VMmark® 3.1 Results

Server Vendor & Model: QuantaPlex T42S-2U
Storage Vendor & Model: QuantaPlex T42S-2U
Hypervisor: VMware ESXi 6.7 U3 (Build 14320388)
Datacenter Management Software: VMware vCenter Server 6.7 U3 (Build 14367737)

VMmark 3.1 Score =
5.23 @ 6 Tiles

Number of Hosts: 4	Uniform Hosts [yes/no]: yes	Total sockets/cores/threads in test: 8/144/288
Tested By: Quanta Cloud Technology		Test Date: 12-09-2019
Performance Section Performance	Configuration Section Configuration	Notes Section 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	3538.43	0.98	0.95 0.13	562.62	0.98	0.96 0.61	756.12	1.03	1292.05	526.35	1.05	1467.92	372.98	1.08	1572.96	1.02
p1	3546.51	0.99	0.82 0.01	560.89	0.98	0.75 0.41	755.77	1.03	1267.18	550.95	1.10	1428.49	411.23	1.19	1527.76	1.05
p2	3531.69	0.98	0.88 0.11	556.77	0.97	0.90 0.55	730.55	0.99	1379.02	514.10	1.03	1528.07	344.48	0.99	1653.63	0.99
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	3552.53	0.99	0.78 0.03	563.78	0.99	0.77 0.37	693.27	0.94	1553.64	491.80	0.98	1764.77	341.52	0.98	1943.67	0.98
p1	3559.90	0.99	0.78 0.01	559.45	0.98	1.03 0.62	737.15	1.00	1411.48	500.05	1.00	1649.11	361.18	1.04	1805.83	1.00
p2	3543.07	0.98	0.91 0.18	556.71	0.97	0.67 0.39	710.58	0.97	1496.46	490.95	0.98	1683.62	337.45	0.97	1870.77	0.98
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	3545.73	0.99	0.84 0.03	566.73	0.99	1.04 0.74	763.08	1.04	1287.27	549.73	1.10	1450.47	404.20	1.17	1585.80	1.05
p1	3557.20	0.99	0.96 0.33	560.95	0.98	0.70 0.35	759.08	1.03	1281.28	527.40	1.05	1470.21	349.45	1.01	1602.54	1.01
p2	3540.91	0.98	0.93 0.05	558.30	0.98	0.82 0.40	756.92	1.03	1295.41	543.67	1.09	1455.44	407.18	1.17	1549.29	1.05
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	3540.44	0.98	0.80 0.11	566.94	0.99	0.99 0.66	726.35	0.99	1365.25	512.38	1.02	1532.99	376.88	1.09	1633.85	1.01
p1	3554.70	0.99	0.73 0.00	565.03	0.99	0.51 0.42	768.55	1.05	1231.73	539.05	1.08	1400.55	373.82	1.08	1532.27	1.03
p2	3533.51	0.98	0.74 0.01	564.74	0.99	1.02 0.63	739.17	1.01	1324.19	544.42	1.09	1441.25	404.95	1.17	1540.76	1.04
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	3536.41	0.98	1.14 0.24	563.70	0.99	0.91 0.58	768.15	1.05	1283.99	529.67	1.06	1480.48	360.50	1.04	1676.57	1.02
p1	3532.94	0.98	0.81 0.01	563.44	0.98	0.71 0.35	755.02	1.03	1290.90	540.77	1.08	1472.11	385.00	1.11	1581.02	1.04
p2	3460.45	0.96	0.89 0.16	558.94	0.98	0.85 0.56	762.67	1.04	1282.88	526.23	1.05	1471.87	379.45	1.09	1646.61	1.02
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	3558.03	0.99	1.03 0.25	564.46	0.99	0.95 0.58	772.08	1.05	1210.89	550.25	1.10	1329.74	381.70	1.10	1451.01	1.04
p1	3541.78	0.98	0.77 0.01	559.54	0.98	0.98 0.57	781.15	1.06	1176.91	572.42	1.14	1315.63	436.05	1.26	1358.12	1.08

p2	3515.94	0.98	1.07 0.21	557.35	0.97	0.61 0.42	794.77	1.08	1149.47	561.23	1.12	1291.01	377.98	1.09	1396.87	1.05
p0_score:	6.13															
p1_score:	6.22															
p2_score:	6.13															
Infrastructure_Operations_Scores:				vMotion	SVMotion	XVMotion	Deploy									
Completed_Ops_PerHour				52.00	32.00	24.00	12.00									
Avg_Seconds_To_Complete				15.94	204.72	260.51	583.91									
Failures				0.00	0.00	0.00	0.00									
Ratio				2.00	1.78	1.33	1.50									
Number_Of_Threads				2	2	2	2									
Summary				Run_Is_Compliant			Turbo_Setting:0									
				Number_Of_Compliance_Issues(0)*			Median_Phase(p0)									
Unreviewed_VMmark3_Applications_Score				6.13												
Unreviewed_VMmark3_Infrastructure_Score				1.63												
Unreviewed_VMmark3_Score				5.23												

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 6.7 U3, Build 14320388 / 08-20-2019
Datacenter Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 6.7 U3, Build 14367737 / 08-20-2019
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	QuantaPlex T42S-2U
Processor Vendor and Model	Intel® Xeon® Gold 5220
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.2 / 3.9
Total Sockets/Total Cores/Total Threads	2 Sockets / 36 Cores / 72 Threads
Primary CPU Cache	32 KiB I + 32 KiB D on chip per core
Secondary CPU Cache	1 MiB I + D on chip per core
Other CPU Cache	24.75 MiB I + D on chip per chip
BIOS Version	3B14.Q304
Memory Size (in GB, Number of DIMMs)	256, 8

Memory Type and Speed	32GB DDR4 2133MHz
Disk Subsystem Type	VMware vSAN, iSCSI
Number of Disk Controllers	1
Disk Controller Vendors and Models	Quanta 3008A
Total Number of Physical Disks for Hypervisor	1
Disk Vendors, Models, Capacities, and Speeds	Intel SSDSCKJB240G7, 240GB, 6Gb/s
Number of Host Bus Adapters	N/A
Host Bus Adapter Vendors and Models	N/A
Number of Network Controllers	1
Network Controller Vendors and Models	Intel 82599EB
Other Hardware	N/A
Other Software	N/A
Hardware Availability Date (MM-DD-YYYY)	04-02-2019
BIOS Availability Date (MM-DD-YYYY)	11-06-2019
Software Availability Date (MM-DD-YYYY)	08-20-2019
Network	
Network Switch Vendors and Models	Quanta T3048-LY2
Network Speed	10Gb
Primary Storage	
Storage Category	VMware vSAN(with default vSAN storage policy)
Storage Vendors, Models, and Firmware Versions	4 x QuantaPlex T42S-2U, with VMware vSAN 6.7 U3
Storage Configuration Summary	vSAN cache tier: 4 x Intel® SSD DC S4600 Series SSDSC2KG960G7(SATA SSD, 960GB) vSAN capacity tier: 20 x Seagate 10K HDD ST1800mm0018(SAS HDD, 1.8TB)
Datacenter Management Server	
System Model	QuantaPlex T41S-2U
Processor Vendor and Model	Intel E5-2670 v3
Processor Speed (GHz)	2.3
Total Sockets/Total Cores/Total Threads	2 Sockets / 24 Cores / 48 Threads
Memory Size (in GB, Number of DIMMs)	192, 12
Network Controller(s) Vendors and Models	Intel 82599EB
Operating System, Version, Bitness, and Service Pack	VMware ESXi 6.7 U3, Build 14320388
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 6.7 U3, Build 14367737
Other Hardware	N/A
Other Software	N/A

Clients	
Total Number of Virtual Clients / Virtual Client Hosts	7 / 4
System Model(s)	QuantaPlex T41S-2U
Processor Vendor(s) and Model(s)	Intel E5-2670 v3
Processor Speed(s) (GHz)	2.3
Total Sockets/Total Cores/Total Threads	8 Sockets / 96 Cores / 192 Threads
Memory per Virtual Client Host	192
Network Controller(s) Vendors and Models	Intel 82599EB
Virtual Client Networking Notes	1 vmnic for management and kernel traffic, 1 vmnic for workload traffic
Virtual Client Storage Notes	4 x Intel SSD DC S3710 Series, SSDSC2BA400G4, 400GB
Other Hardware	N/A
Other Software	VMware ESXi 6.7 U3, Build 14320388

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 Eager (default: Thick Eager)

Virtualization Software Notes

All the settings on VMs are default.

Cluster DRS Automation Level set to Fully Automated, DRS Migration Threshold set to level 4 (default: Disabled)

Power management Policy = Balanced (default: Balanced)

NTP server set to 118.163.81.61(default: Disabled)

Client and SUT hosts' configuration:

- Following system settings were configured:

- VMkernel.Boot.hyperthreadingMitigation: true
- VMkernel.Boot.hyperthreadingMitigationIntraVM: false
- /adv/UserVars/HostClientCEIPOptIn was set to 2 on one SUT host(sut01) and was default on three SUT hosts(sut02, sut03, sut04)
- /adv/UserVars/HostClientCEIPOptIn was set to 2 on two client hosts(client01 and client03) and was default on two client hosts(client02 and client04)
- /adv/UserVars/SuppressShellWarning was set to 1

Server Notes

Server BIOS setting:

- Intel® Hyper Threading Technology: Enabled (default: Enabled)
- Intel® Turbo Boost Technology: Enabled (Frequency boost up to 3.90 GHz) (default: Enabled)
- Hardware PM State Control: native (default: out of band)
- CPU P State Control:
- C-States: Disabled (default: Disabled)
- Package C State Control: No Limit(default: custom)
- Power Performance Tuning: OS Controls EPB (default: BIOS Controls EPB)
- Intel® TXT Enabled (default: Disabled)

Networking Notes

Client hosts' vSwitch Configuration:

- vSwitch0 for the Management, vMotion, vSAN, iSCSI kernel traffic on vmnic0
- vSwitch1 for VM traffic on vmnic1

SUT hosts' vSwitch Configuration:

- vSwitch0 for the Management, vMotion, vSAN, iSCSI kernel traffic on vmnic0
- vSwitch1 for VM traffic on vmnic1

Storage Notes

- Client hosts' OS was installed on SATADOM flash device.

Storage box#1 (System Under Test): vsanDatastore capacity 32.75TB, cache 3.5TB used.

Hardware Configuration

QuantaPlex T42S-2U

- 4 x Intel® SSD DC S4600 Series SSDSC2KG960G7 6Gb/s(SATA SSD, 960GB)
- 20 x Seagate 10K HDD ST1800mm0018(SAS HDD, 1.8TB)
- Hybrid vSAN configuration with 1 diskgroup, each server node included one S4600 SSD and five Seagate HDD.
- vSAN Default Storage Policy used for all disk object.

LUN/VM layout

- LUN1(32.75TB,3.5TB cache): DS3DB*,DS3WebB*,DS3WebC*,AuctionLB*,AuctionNoSQL*,AuctionAppA*,AuctionAppB*,AuctionDB*,AuctionMSQ*,AuctionWebA*,AuctionWebB*,ElasticLB*,ElasticAppA*,ElasticAppB*,ElasticDB*,ElasticWebA*,ElasticWebB* for tile 0-5,Standby*,template

Storage box#2 (Shared storage): Windows Server 2016 with one volume shared as iSCSI target to SUT and client hosts, the volume consists of 745GB space.

Hardware Configuration

QuantaPlex T41S-2U

- 2 x Intel® Xeon E5-2620 v3 processors
- 256GB Memory (16 x 16 GB DIMMs 1866MHz DDR4)
- 1 x Intel® SSD DC S3710 800GB SSDSC2BA800G4, 2.5", SATA 6Gb/s (used in shelf)

Software Configuration

- One iSCSI Storage Pool was created using Windows Server 2016
- 1 x Intel® SSD DC S3710 800GB was built into a 745GB iSCSI Lun for volume sharing to SUT

LUN/VM layout

LUN1(745GB, no cache): SVMotion, XVMotion and Deploy target LUN

Datacenter Management Server Notes

QuantaPlex T41S-2U running VMware ESXi 6.7 U3 build 14320388.

VMware vCenter Server 6.7 U3, Build 14367737

- 4 vCPUs
- 16GB virtual memory

Operating System Notes

All hosts (Management, Client and SUT) configured with VMware ESXi 6.7 U3, Build 14320388

Software Notes

none

Client Notes

QuantaPlex T41S-2U was used for client hosts.

- Client host1: Client0, PrimeClient
- Client host2: Client1, Client4,
- Client host3: Client2
- Client host4: Client3, Client5,

The PrimeClient VM was deployed on an Intel® SSD DC S3710 Series, SSDSC2BA400G4, 400GB disk

Other Notes

none

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