

VMmark® 4.0.2 Disclosure

Server Vendor & Model: HPE ProLiant Compute DL380 Gen12
Storage Vendor & Model: VMware vSAN 8.0 Update 3 ESA - All Flash
Hypervisor: VMware ESXi 8.0 Update 3e, Build 24591589
Server Management Software: VMware vCenter Server 8.0 Update 3d, Build 24322831

VMmark 4.0.2 Score =
6.30 @ 7.4 Tiles

Number of Hosts: 4	Uniform Hosts: yes	Total sockets/cores/threads in test: 8/688/1376
Tested By: Hewlett Packard Enterprise	Test Date: 03-04-2025	SUT Availability Date: 04-10-2025
Performance Section Performance	Configuration Section Configuration	Notes Section Notes for Workload
Virtual Machines Section Virtual Machines		

Performance

TILE_0_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	
p0	14140.60	9242.34	2692.30	2032.22	1500.12	61793.06	61792.24	61792.38	71.94	1.00	
p1	14122.56	9237.44	2702.60	2005.50	1413.75	57770.99	57771.36	57771.01	72.01	1.00	
p2	14108.60	9239.78	2750.07	1992.05	1456.90	55056.15	55055.85	55055.78	71.99	1.00	
TILE_0_Ratios	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	Geo.Mean
p0	1.01	1.00	0.93	0.95	0.98	1.09	1.09	1.09	1.00	1.00	1.01
p1	1.01	1.00	0.93	0.93	0.92	1.02	1.02	1.02	1.00	1.00	0.98
p2	1.01	1.00	0.95	0.93	0.95	0.97	0.97	0.97	1.00	1.00	0.97
TILE_0_QoS	WVAuctionVM%	WVAuctionK8S%	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC			
p0	0.38 0.04	0.52 0.00	557.90	557.09	617.03	0.58	0.58	0.58			
p1	0.42 0.07	0.58 0.00	559.54	582.44	654.98	0.64	0.64	0.64			
p2	0.46 0.08	0.64 0.00	532.95	594.34	676.30	0.65	0.65	0.65			
TILE_1_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	
p0	14140.53	9234.36	2785.30	1947.88	1448.97	59529.93	59530.28	59529.92	71.97	1.00	
p1	14137.08	9238.18	2802.35	2117.97	1521.78	56525.92	56526.11	56526.43	71.50	1.00	
p2	14132.40	9227.64	2899.80	2053.82	1559.92	54367.10	54367.24	54367.14	58.69	1.00	
TILE_1_Ratios	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	Geo.Mean
p0	1.01	1.00	0.96	0.91	0.95	1.05	1.05	1.05	1.00	1.00	1.00
p1	1.01	1.00	0.97	0.99	0.99	1.00	1.00	1.00	0.99	1.00	0.99
p2	1.01	1.00	1.00	0.96	1.02	0.96	0.96	0.96	0.82	1.00	0.96
TILE_1_QoS	WVAuctionVM%	WVAuctionK8S%	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC			
p0	0.37 0.05	0.39 0.00	500.03	563.49	602.36	0.59	0.59	0.59			
p1	0.33 0.06	0.39 0.00	492.95	540.20	588.66	0.63	0.63	0.63			
p2	0.45 0.15	0.39 0.00	423.44	465.81	463.79	0.64	0.64	0.64			

TILE_2_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	
p0	14140.83	9242.95	2786.53	1992.05	1393.83	59680.38	59680.39	59680.27	72.01	1.00	
p1	14146.14	9235.55	2749.88	2089.60	1584.17	56881.13	56881.03	56881.33	72.00	1.00	
p2	14129.74	9230.57	2749.03	1946.03	1353.28	54452.85	54452.81	54452.82	71.99	1.00	
TILE_2_Ratios	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	Geo.Mean
p0	1.01	1.00	0.96	0.93	0.91	1.06	1.06	1.06	1.00	1.00	1.00
p1	1.01	1.00	0.95	0.97	1.04	1.01	1.01	1.01	1.00	1.00	1.00
p2	1.01	1.00	0.95	0.91	0.88	0.96	0.96	0.96	1.00	1.00	0.96
TILE_2_QoS	WVAuctionVM%	WVAuctionK8S%	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC			
p0	0.47 0.06	0.56 0.00	492.03	525.84	579.23	0.58	0.58	0.58			
p1	0.46 0.08	0.65 0.00	523.80	562.61	596.94	0.63	0.63	0.63			
p2	0.58 0.18	0.66 0.00	519.80	571.81	641.76	0.64	0.64	0.65			
TILE_3_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	
p0	14150.71	9251.18	2901.68	2176.38	1587.70	62777.90	62777.59	62777.61	69.59	1.00	
p1	14115.79	9240.41	2898.07	2172.65	1641.88	59103.43	59102.13	59102.89	68.41	1.00	
p2	14115.98	9248.49	2891.97	2196.97	1584.28	56302.22	56302.25	56302.10	67.40	1.00	
TILE_3_Ratios	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	Geo.Mean
p0	1.01	1.01	1.00	1.01	1.04	1.11	1.11	1.11	0.97	1.00	1.04
p1	1.01	1.00	1.00	1.01	1.07	1.05	1.05	1.05	0.95	1.00	1.02
p2	1.01	1.01	1.00	1.02	1.04	1.00	1.00	1.00	0.94	1.00	1.00
TILE_3_QoS	WVAuctionVM%	WVAuctionK8S%	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC			
p0	0.39 0.05	0.40 0.00	418.59	416.28	429.74	0.56	0.56	0.56			
p1	0.43 0.11	0.39 0.00	419.74	423.03	444.85	0.61	0.61	0.61			
p2	0.77 0.45	0.42 0.00	421.39	406.41	434.92	0.64	0.64	0.64			
TILE_4_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	
p0	14136.18	9235.37	2849.25	2209.00	1615.92	53483.66	53483.45	53483.60	72.02	1.00	
p1	14117.17	9234.76	2854.35	2039.30	1526.25	53624.26	53624.25	53624.23	72.00	1.00	
p2	14116.82	9239.42	2864.30	2207.75	1609.85	52277.87	52277.89	52277.95	71.97	1.00	
TILE_4_Ratios	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	Geo.Mean
p0	1.01	1.00	0.98	1.03	1.06	0.95	0.95	0.95	1.00	1.00	0.99
p1	1.01	1.00	0.98	0.95	1.00	0.95	0.95	0.95	1.00	1.00	0.98
p2	1.01	1.00	0.99	1.03	1.05	0.93	0.93	0.93	1.00	1.00	0.98
TILE_4_QoS	WVAuctionVM%	WVAuctionK8S%	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC			
p0	0.40 0.04	0.41 0.00	448.84	452.20	481.29	0.58	0.58	0.58			
p1	0.41 0.04	0.46 0.00	444.48	476.40	505.05	0.63	0.63	0.63			
p2	0.48 0.13	0.48 0.00	440.98	453.39	485.44	0.65	0.65	0.65			
TILE_5_Scores	WVAuctionVM	WVAuctionK8S	DVDStoreA	DVDStoreB	DVDStoreC	NoSQLBenchA	NoSQLBenchB	NoSQLBenchC	SocialNetwork	Standby	

p2_score:	7.31				
Infrastructure_Operations_Scores:		vMotion	SVMotion	XVMotion	Deploy
Completed_Ops_PerHour		53.00	26.00	26.00	26.00
Avg_Seconds_To_Complete		11.01	61.56	59.96	225.29
Failures		0.00	0.00	0.00	0.00
Ratio		1.80	2.00	2.00	1.79
Number_Of_Threads		2	2	2	2
Summary			Run_Is_Compliant	Median_Phase(p1)	
Unreviewed_VMmark4_Applications_Score			7.40		
Unreviewed_VMmark4_Infrastructure_Score			1.89		
Unreviewed_VMmark4_Score			6.30 @ 7.4 Tiles		

Configuration

Virtualization Software	
Hypervisor Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware ESXi 8.0 Update 3e, Build 24591589 / 04-10-2025
Server Management Software Vendor, Product, Version, and Build / Availability Date (MM-DD-YYYY)	VMware vCenter Server 8.0 Update 3d, Build 24322831 / 10-21-2024
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	HPE ProLiant Compute DL380 Gen12
Processor Vendor and Model	Intel Xeon 6787P
Processor Speed (GHz) / Turbo Boost Speed (GHz)	2.0 GHz / 3.8 GHz
Total Sockets/Total Cores/Total Threads	2 Sockets / 172 Cores / 344 Threads
NUMA Nodes	4
BIOS Version	1.20
Memory Size (in GB, Number of DIMMs)	Physical Memory (BIOS): 2048 GB Physical Memory (ESXi): 2048 GB Number of DIMMs: 16

Memory Type and Speed	Location	Size	Speed	Max Speed	Rank	Type	Detail
	PROC 1 DIMM 1	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 3	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 5	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 7	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 10	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 12	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 14	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 1 DIMM 16	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 1	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 3	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 5	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 7	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 10	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 12	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
	PROC 2 DIMM 14	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered
PROC 2 DIMM 16	128 GB	6400 MT/s	6400 MT/s	2	DDR5	Synchronous, Registered	
Number of SAS Devices	0						
SAS Device Vendors and Models	None						
Number of Virtual Host Bus Adapters	4						
Virtual Host Bus Adapter Vendors and Models	HBA	Model	Speed	Driver	Firmware		
	vmhba0	HPE SN1700Q 64Gb 2p FC Adapter	64 Gbps	qlnativefc	9.14.01 (d0d5)		
	vmhba1	HPE SN1700Q 64Gb 2p FC Adapter	64 Gbps	qlnativefc	9.14.01 (d0d5)		
	vmhba64	HPE SN1700Q 64Gb 2p FC Adapter	64 Gbps	qlnativefc	9.14.01 (d0d5)		
	vmhba65	HPE SN1700Q 64Gb 2p FC Adapter	64 Gbps	qlnativefc	9.14.01 (d0d5)		
Power Supply Quantity, Name/Part Number, Wattage, Firmware, and Type (Voltage, AC/DC)	<ul style="list-style-type: none"> 2 * HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit (P44712-B21) Voltage Type: AC 						
Cooling Type (Air Cooling, Closed Loop Cooling, Direct Liquid Cooling, or Other)	Air Cooling						
Other Hardware	FC Switch: SN6700B 64Gb 56/24 24P SFP56						
Other Software	None						
BIOS Availability Date (MM-DD-YYYY)	02-14-2025						

Hardware Availability Date (MM-DD-YYYY)	03-25-2025
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Software Availability Date (MM-DD-YYYY)	04-10-2025
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Network

Number of Virtual Network Controllers	4
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Virtual Network Controllers, Speeds, MTUs, Firmware, Drivers, Vendors, and Models	Device	Speed	Duplex	MTU	Firmware	Driver	Description
	vmnic0	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic3	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)

Number of Virtual Switches	2
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Virtual Switches, Ports, Port Groups, MTUs, and Uplinks	Switch	Ports	Configured Ports	MTU	Uplinks
	vSwitch0	9216	128	9000	vmnic0
	DSwitch	9216	512	9000	vmnic1, vmnic2, vmnic3
	Switch	Port Group	VLAN ID	Uplinks	
	vSwitch0	Management Network	0	vmnic0	
	vSwitch0	VM Network	0	vmnic0	
	vSwitch0	VMkernel	0	vmnic0	
	DSwitch	DSwitch-VM-Network	0	vmnic1, vmnic3	
	DSwitch	DSwitch-vSAN	0	vmnic2	

VMkernel Network Adapters, Port Groups, MTUs, TCP/IP Stacks, and Services	Device	Port Group/DVPort	MTU	TCP/IP Stack	Services
	vmk0	Management Network	1500	Default	Management
	vmk1	BMC_Network	1500	Default	None
	vmk2	VMkernel	9000	vMotion	vMotion
	vmk3	69	9000	Default	vSAN

Physical Switch Vendors, Models, and Speeds	HPE SN2700M 100GbE 32QSFP28
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Primary Storage

Storage Category	VMware vSAN 8.0 Update 3 ESA - All Flash
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Datastores	Datastores	Type	Size	Storage Device
	LIO-Dep1	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk
	LIO-Dep2	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk
	LIO-SVM1	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk
	LIO-SVM2	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk

LIO-XVM1	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk
LIO-XVM2	VMFS-6	6.4 TB	LIO-ORG Fibre Channel Disk
OSDATA-67c54abc-75bb2359-f12a-88e9a478d820	VMFSOS	128.6 GB	Local NVMe Disk
datastore1 (8)	VMFS-6	342.5 GB	Local NVMe Disk

Number of Storage Devices

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Storage Device Names, Sizes, Types, Vendors, Models, and Revisions

Storage Device	Size	Type	Vendor	Model	Revision	Path Selection Policy	Path Selection Policy Config	# Working Paths
Local NVMe Disk (Boot Device)	480.0 GB	Direct-Access	NVMe	HPE NS204i-u Gen11 Boot Controller	12141012	FIXED	preferred=none	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-SVM2	4.0	VMW_PSP_MRU	Current Path=vmhba0:C0:T3:L1	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-XVM2	4.0	VMW_PSP_MRU	Current Path=vmhba1:C0:T2:L0	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-SVM1	4.0	VMW_PSP_MRU	Current Path=vmhba0:C0:T3:L0	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-Dep1	4.0	VMW_PSP_MRU	Current Path=vmhba0:C0:T0:L0	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-Dep2	4.0	VMW_PSP_MRU	Current Path=vmhba0:C0:T0:L1	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1
LIO-ORG Fibre Channel Disk	6.4 TB	Direct-Access	LIO-ORG	LIO-XVM1	4.0	VMW_PSP_MRU	Current Path=vmhba1:C0:T3:L0	1
Local NVMe Disk	6.4 TB	Direct-Access	NVMe	MV006400LXUJL	HPK6	FIXED	preferred=none	1

How Datastores Map to Storage Devices

See Storage Notes Section

VMware vSAN Configuration (if used)

VMware vSAN ESA Configuration (per host):

- 8 x SSDs
- On-Disk Format Version: 20
- Disk Models:
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL
 - MV006400LXUJL

RAID Configuration (if used)

None

Server Management

VMware vCenter Server Number of vCPUs	16
VMware vCenter Server Virtual Memory (in GB)	40

Clients

Total Client VMs (including Prime Client)	9
Number of Client Hosts (all subsequent fields in this section are per Client Host)	9

System Model(s)	<ul style="list-style-type: none"> • Client Host 1: HPE ProLiant DL380 Gen10 • Client Host 2: HPE ProLiant DL345 Gen11 • Client Host 3: HPE ProLiant DL345 Gen11 • Client Host 4: HPE ProLiant DL345 Gen11 • Client Host 5: HPE ProLiant DL345 Gen11 • Client Host 6: HPE ProLiant DL345 Gen11 • Client Host 7: HPE ProLiant DL345 Gen11 • Client Host 8: HPE ProLiant DL385 Gen11 • Client Host 9: HPE ProLiant DL380 Gen10 Plus
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Processor Vendor(s) and Model(s)	<ul style="list-style-type: none"> • Client Host 1: Intel Xeon Gold 6238 • Client Host 2: AMD EPYC 9654P • Client Host 3: AMD EPYC 9654P • Client Host 4: AMD EPYC 9654P • Client Host 5: AMD EPYC 9654P • Client Host 6: AMD EPYC 9654P • Client Host 7: AMD EPYC 9654P • Client Host 8: AMD EPYC 9655 • Client Host 9: Intel Xeon Platinum 8380
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Processor Speed(s) (GHz)	<ul style="list-style-type: none"> • Client Host 1: 2.1 GHz • Client Host 2: 2.4 GHz • Client Host 3: 2.4 GHz • Client Host 4: 2.4 GHz • Client Host 5: 2.4 GHz • Client Host 6: 2.4 GHz • Client Host 7: 2.4 GHz • Client Host 8: 2.6 GHz • Client Host 9: 2.3 GHz
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Total Sockets/Total Cores/Total Threads	Client Host	Sockets	Cores	Threads
	Client Host 1	2	44	88
	Client Host 2	1	96	192
	Client Host 3	1	96	192
	Client Host 4	1	96	192
	Client Host 5	1	96	192

Client Host 6	1	96	192
Client Host 7	1	96	192
Client Host 8	2	192	384
Client Host 9	2	80	160
Total	12	892	1784

NUMA Nodes

- Client Host 1: 4
- Client Host 2: 1
- Client Host 3: 1
- Client Host 4: 1
- Client Host 5: 1
- Client Host 6: 1
- Client Host 7: 1
- Client Host 8: 2
- Client Host 9: 4

Memory Size (in GB) per Client Host

Client Host	BIOS	ESXi
Client Host 1	192 GB	192 GB
Client Host 2	512 GB	512 GB
Client Host 3	512 GB	512 GB
Client Host 4	512 GB	512 GB
Client Host 5	512 GB	512 GB
Client Host 6	512 GB	512 GB
Client Host 7	512 GB	512 GB
Client Host 8	1536 GB	1536 GB
Client Host 9	2048 GB	2048 GB

Virtual Network Controllers, Speeds, MTUs, Firmware, Drivers, Vendors, and Models

Client Host	Device	Speed	Duplex	MTU	Firmware	Driver	Description
Client Host 1	vmnic0	1 Gbps	Full	1500	bc 1.46 ncsi 1.5.33.0	ntg3	Broadcom Corporation NetXtreme BCM5719 Gigabit Ethernet
Client Host 2	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 3	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 4	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)

	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 5	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 6	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 7	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 8	vmnic0	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic1	100 Gbps	Full	9000	22.41.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x8000123f:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection
Client Host 9	vmnic0	100 Gbps	Full	9000	22.42.1000	nmlx5_core	Mellanox Technologies ConnectX-6 Dx EN NIC; 100GbE; dual-port QSFP56; PCIe4.0 x16; (MCX623106AS-CDA)
	vmnic2	1 Gbps	Full	1500	1.63.0:0x80001234:1.3682.0	igbn	Intel(R) I350 Gigabit Network Connection

Client Host	Switch	Port Group	VLAN ID	Uplinks
Client Host 1	vSwitch0	Management Network	0	vmnic0
	vSwitch0	VM Network	0	vmnic0
Client Host 2	vSwitch0	Management Network	0	vmnic2
	vSwitch0	VM Network	0	vmnic2
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1
Client Host 3	vSwitch0	Management Network	0	vmnic2
	vSwitch0	VM Network	0	vmnic2
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1
Client Host 4	vSwitch0	Management Network	0	vmnic2
	vSwitch0	VM Network	0	vmnic2
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1
Client Host 5	vSwitch0	Management Network	0	vmnic2
	vSwitch0	VM Network	0	vmnic2

	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1		
Client Host 6	vSwitch0	Management Network	0	vmnic2		
	vSwitch0	VM Network	0	vmnic2		
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1		
Client Host 7	vSwitch0	Management Network	0	vmnic2		
	vSwitch0	VM Network	0	vmnic2		
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1		
Client Host 8	vSwitch0	Management Network	0	vmnic2		
	vSwitch0	VM Network	0	vmnic2		
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1		
Client Host 9	vSwitch0	Management Network	0	vmnic2		
	vSwitch0	VM Network	0	vmnic2		
	DSwitch	DSwitch-VM-Network	0	vmnic0,vmnic1		
VMkernel Network Adapters, Port Groups, MTUs, TCP/IP Stacks, and Services	Client Host	Device	Port Group/DVPort	MTU	TCP/IP Stack	Services
	Client Host 1	vmk0	Management Network	1500	Default	Management
	Client Host 2	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 3	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 4	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 5	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 6	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 7	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 8	vmk0	Management Network	1500	Default	vMotion, Management
	Client Host 9	vmk0	Management Network	1500	Default	vMotion, Management
Client Storage Notes	See Client Notes Section					
Other Hardware	None					
Other Software	VMware ESXi 8.0 Update 3c, Build 24414501					

Notes for Workload

Template deployed with disk type: Thick Eager

Virtualization Software Notes

- vSphere DRS Enabled
- vSphere DRS Automation Level set to Fully Automated
- vSphere DRS Migration Threshold set to 2
- Logical CPU layout changed for all multi-CPU VMs to 1 socket with multiple cores except Client VMs and template VMs (default single core per socket)
- All Client VMs vCPU set to 74 (default 64)
- Logging was disabled for all VMs (default enabled)
- All DS35DB, NoSQLBench, SocialNetwork and Auction K VMs had CPU shares set to High (default Normal)

- All Standby VMs had CPU shares set to Low (default Normal)
- All memory reserved (LockedToMax) for all DS35DB VMs
- sched.mem.lpage.enable1GPage set to TRUE for all DS35DB VMs (default FALSE)
- CD/DVD device was removed from all VMs (default present)
- PrimeClient's second virtual disk configured to be 1.2 TB (default: 50 GB)

SUT Host ESXi Advanced Settings:

Advanced Setting	Host 1	Host 2	Host 3	Host 4	Default
Cpu.CreditAgePeriod	1000	1000	1000	1000	3000
Cpu.HTWholeCoreThreshold	0	0	0	0	800
DataMover.HardwareAcceleratedInit	0	0	0	0	1
DataMover.HardwareAcceleratedMove	0	0	0	0	1
Disk.IdleCredit	64	64	64	64	32
Disk.ReqCallThreshold	1	1	1	1	8
Mem.CtlMaxPercent	0	0	0	0	65
Mem.ShareScanGHz	0	0	0	0	4
Numa.LTermFairnessInterval	0	0	0	0	5
Numa.LocalityWeightActionAffinity	0	0	0	0	130
Numa.MigImbalanceThreshold	57	57	57	57	10
Numa.PageMigEnable	0	0	0	0	1
Numa.RebalancePeriod	60000	60000	60000	60000	2000
Numa.SwapLoadEnable	0	0	0	0	1
Numa.SwapLocalityEnable	0	0	0	0	1
Power.CpuPolicy	Performance	Performance	Performance	Performance	Balanced
UserVars.HostClientCEIPOptIn	2	2	2	2	0

SUT Host ESXi Module Options:

Module	Host 1	Host 2	Host 3	Host 4	Default
tcpip4	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1

Server Notes

Server BIOS settings

- HPE Workload Profile set to "Virtualization - Max Performance" (default: General Power Efficient Compute)
- Thermal Configuration set to Maximum Cooling (default: Optimal Cooling)
- Enhanced Processor Performance set to Aggressive (default: Disabled)
- Memory Patrol Scrubbing set to Disabled (default: Enabled)

Networking Notes

- All SUT and Client hosts (except Client host1) were part of the same distributed vSwitch
- All SUT and Client hosts were additionally configured with vSwitch0

- The MTU of the distributed vSwitch and vSwitch0 on SUT hosts was set to 9000 (default 1500). Except where noted differently below, the same change was made to all vmnics and vmks.

Client host1

- vSwitch0 configuration:
 - Uplink: vmnic0
 - Usage: vmk0 (MTU 1500) - used for management and VM network

SUT hosts

- vSwitch0 configuration:
 - Uplink: vmnic0
 - Usage:
 - vmk0 (MTU 1500) - used for management
 - vmk2 - used for vMotion

Client hosts

- vSwitch0 configuration:
 - Uplink: vmnic2
 - Usage:
 - vmk0 (MTU 1500) - used for management and vMotion
 - One virtual NIC port of PrimeClient VM

Distributed vSwitch configuration

- 'DSwitch-VM-Network' port group:
 - Uplinks:
 - SUT hosts: vmnic1, vmnic3
 - Client hosts 1-8: vmnic0, vmnic1
 - Client host 9: vmnic0
 - Usage:
 - All VMs - including one virtual NIC port of PrimeClient VM
- 'DSwitch-vSAN' port group:
 - Uplinks:
 - SUT hosts: vmnic2
 - Usage:
 - vmk3 on all SUT hosts - used for vSAN

Storage Notes

- On each SUT host, VMware ESXi 8.0 Update 3e was installed on HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device which provides a RAID1 volume on 2 x 480 GB NVMe M.2 SSDs.
- On each client host (except client host 9), VMware ESXi 8.0 Update 3 was installed on HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD.
- On client host 9, VMware ESXi 8.0 Update 3 was installed on HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD.

Primary Storage: VMware vSAN storage

- VMware vSAN 8.0 Update 3 ESA
 - Hardware Configuration
 - 8 x HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM CM7 SSD
 - Software Configuration
 - RDMA support service enabled (for vSAN over RDMA feature)
 - SUTs-Optimal Datastore Default Policy-RAID5 was automatically created by vSAN ESA Auto-Policy management, Following changes were made to the policy:
 - "Object space reservation" set to "Thick provisioning" (default: Thin provisioning)

Client Host ESXi Module Options:

Module	Host 1	Host 2	Host 3	Host 4	Host 5	Host 6	Host 7	Host 8	Host 9	Default
tcpip4	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1	ipv6=1

Client Host ESXi Image Profile: HPE-Custom-AddOn_803.0.0.11.9.0-7

Client Host VMs:

- Client Host 1: VC8
- Client Host 2: Client0
- Client Host 3: Client7
- Client Host 4: Client2
- Client Host 5: Client3
- Client Host 6: Client4
- Client Host 7: Client5
- Client Host 8: Client1, Client6
- Client Host 9: PrimeClient

Other Notes

VMmark4.properties Settings

- ReporterSkipNonCompliant = 1 (default 0)
- ErrorImmediate = 1 (default 0)

Virtual Machines

SUT Host Virtual Machines

VM	vCPUs	Cores Per Socket	Memory (MB)	Sync Time	Logging	CD/DVD	CPU Res	CPU Limit	CPU Shares	Mem Res	Mem Limit	Mem Shares	Mem Pin	Mem 1G Page	Disk Shares	Datastore	Port Group	vHW Version	Tools Version
AuctionAppA0	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA1	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA2	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA3	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA4	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA5	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA6	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppA7	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
VM	vCPUs	Cores Per Socket	Memory (MB)	Sync Time	Logging	CD/DVD	CPU Res	CPU Limit	CPU Shares	Mem Res	Mem Limit	Mem Shares	Mem Pin	Mem 1G Page	Disk Shares	Datastore	Port Group	vHW Version	Tools Version
AuctionAppB0	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppB1	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppB2	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppB3	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppB4	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
AuctionAppB5	4	4	8192	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325

SocialNetwork3	36	36	16384	TRUE	FALSE	Removed	0	Unlimited	high	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
SocialNetwork4	36	36	16384	TRUE	FALSE	Removed	0	Unlimited	high	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
SocialNetwork5	36	36	16384	TRUE	FALSE	Removed	0	Unlimited	high	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
SocialNetwork6	36	36	16384	TRUE	FALSE	Removed	0	Unlimited	high	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
SocialNetwork7	36	36	16384	TRUE	FALSE	Removed	0	Unlimited	high	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
VM	vCPUs	Cores Per Socket	Memory (MB)	Sync Time	Logging	CD/DVD	CPU Res	CPU Limit	CPU Shares	Mem Res	Mem Limit	Mem Shares	Mem Pin	Mem 1G Page	Disk Shares	Datastore	Port Group	vHW Version	Tools Version
Standby0	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby1	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby2	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby3	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby4	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby5	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby6	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
Standby7	1	1	2048	TRUE	FALSE	Removed	0	Unlimited	low	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
VM	vCPUs	Cores Per Socket	Memory (MB)	Sync Time	Logging	CD/DVD	CPU Res	CPU Limit	CPU Shares	Mem Res	Mem Limit	Mem Shares	Mem Pin	Mem 1G Page	Disk Shares	Datastore	Port Group	vHW Version	Tools Version
VMmark-4.0.2-209	4	1	32768	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325
VMmark-4.0.2-209-02	4	1	32768	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	vsanDatastore	dvportgroup-84	17	12325

Client Host Virtual Machines

VM	vCPUs	Cores Per Socket	Memory (MB)	Sync Time	Logging	CD/DVD	CPU Res	CPU Limit	CPU Shares	Mem Res	Mem Limit	Mem Shares	Mem Pin	Mem 1G Page	Disk Shares	Datastore	Port Group	vHW Version	Tools Version
Client0	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS1	dvportgroup-84	17	12325
Client1	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS8	dvportgroup-84	17	12325
Client2	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS3	dvportgroup-84	17	12325
Client3	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS4	dvportgroup-84	17	12325
Client4	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS5	dvportgroup-84	17	12325
Client5	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS6	dvportgroup-84	17	12325
Client6	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS7	dvportgroup-84	17	12325
Client7	74	1	98304	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	Client-DS2	dvportgroup-84	17	12325
PrimeClient	4	4	32768	TRUE	FALSE	Removed	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	PCDS	VM Network, dvportgroup-84	17	12325
VC8	16	1	39936	FALSE	TRUE	Present	0	Unlimited	normal	0	Unlimited	normal	FALSE	FALSE	normal	VC-DS	VM Network	10	12389

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