

C5. Qualification Vender List

Attention! You must enable BIOS runtime error to monitor correctable and uncorrectable issue during test

Intel CPU

Product Name	Code Name	Q-Spec	Stepping	Cache	System Bus	# of Cores	Processor Base Frequency	Max Turbo Frequency	TDP	Memory Types	Processor Graphics
Skylake-Intel® Xeon® Processor-Intel Xeon D Family											
Intel® Xeon® D-2160T	SKYLAKE-D	D NNM	M-1	16 5MB	N/A	12	2.2 GHz	3 GHz	95W	DDR4-2400	
Intel® Xeon® D-2148N1	SKYLAKE-D	D NNR	M-1	11MB	N/A	8	2.3 GHz	3 GHz	85W	DDR4-2400	
Intel® Xeon® D-2133T	SKYLAKE-D	D NNS	M-1	11MB	N/A	10	2.3 GHz	3 GHz	120W	DDR4-2400	
Intel® Xeon® D-2145N1	SKYLAKE-D	D NNT	M-1	11MB	N/A	8	1.9 GHz	3 GHz	85W	DDR4-2400	
Intel® Xeon® D-2123T	SKYLAKE-D	D NNW	M-1	8.25MB	N/A	4	2.2 GHz	3 GHz	80W	DDR4-2400	
Intel® Xeon® D-2163T	SKYLAKE-D	D NNP	M-1	16 5MB	N/A	12	2.1 GHz	3 GHz	75W	DDR4-2400	

Memory

Product Name	Memory Type	Module Supplier	Size	Chip Brand	Rank	Voltage	Data Transfer Rate	Error Correction	CAS Latency	Pins	Note
RDIMM											
HMA62GR7AFR8N-LH12	DDR4	SK Hynix	16GB	SK Hynix	2R X8	1.2V	2400MHz	ECC Registered	17	288-pin	
HMA62GR7AFR8N-LH12	DDR4	SK Hynix	32GB	SK Hynix	2R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
HMA62GR7AFR8N-LH12	DDR4	SK Hynix	32GB	SK Hynix	2R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
T32G4RFD2AA-38F81	DDR4	Crucial	32GB	Micron	2R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
T32G4RFD42AA-2G3B1 001	DDR4	Crucial	32GB	Micron	2R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
T116GARFD42AA-18F81	DDR4	Crucial	16GB	Micron	1R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
M393BG53C3SJ	DDR4	INNOVISK	32GB	Samsung	2R X4	1.2V	2400MHz	ECC Registered	17	288-pin	
M393AK40B62-CTD	DDR4	Samsung	32GB	Samsung	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
T32G4RFD4266-38F1D1	DDR4	CRUCIAL	32GB	Micron	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
HMA62GR7AFRAN-VK13	DDR4	Skyhynx	32GB	Skyhynx-Montage	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
HMA62GR7AFRAN-VK13	DDR4	Skyhynx	32GB	Skyhynx-IDT	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
HMA62GR7AFRAN-VK13	DDR4	Skyhynx	32GB	Skyhynx-IDT	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
KS28RD4-32HA	DDR4	Kingston	32GB	Skyhynx-IDT	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
KS28RS4-18HA	DDR4	Kingston	16GB	Skyhynx-IDT	1Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
KS28RS4-18HA	DDR4	Kingston	16GB	Skyhynx-IDT	1Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
M393AK40B22-CW6Q	DDR4	Samsung	64GB	Samsung	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
M393AG40M62-CTDQ1	DDR4	Samsung	64GB	Samsung-IDT	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
T32G4RFD4266-2G5H1 001	DDR4	CRUCIAL	32GB	Micron	2Rx4	1.2V	2666MHz	ECC Registered	19	288-pin	
M393AK40M62-CVFBY	DDR4	Samsung	64GB	Samsung-IDT	2Rx4	1.2V	2933MHz	ECC Registered	21	288-pin	
M393AK40M62-CVFBY	DDR4	Samsung	64GB	Samsung-Montage	2Rx4	1.2V	2933MHz	ECC Registered	21	288-pin	
KS28RD4-32MEI	DDR4	Kingston	32GB	Skyhynx	2Rx4	1.2V	2933MHz	ECC Registered	21	288-pin	
HMA62GR7AFRAN-XN 14	DDR4	Skyhynx	32GB	Skyhynx-Montage	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
HMA62GR7AFRAN-XN 14	DDR4	Skyhynx	32GB	Skyhynx-IDT	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
MTA18ASF-207PZD-3G2J3U1	DDR4	Micron	18GB	Micron-Rambus	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
MTA18ASF-407PZP-3G2J3U1	DDR4	Micron	32GB	Micron-Rambus	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
M393AK40B62-CW6Q	DDR4	Samsung	32GB	Samsung-Montage	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
M393AG40M62-CW6Q	DDR4	Samsung	64GB	Samsung-IDT	2Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	
KS28RD4-32MEI	DDR4	Kingston	32GB	Micron-IDT	1Rx4	1.2V	3200MHz	ECC Registered	22	288-pin	

LRDIMM

HMA6GL7AMRAN-LH1E	DDR4	Skyhynx	64GB	Skyhynx	4DRx4	1.2V	2400MHz	ECC Registered	17	288-pin	
HMA6GL7AMRAN-VK1T	DDR4	Skyhynx	64GB	Skyhynx	4DRx4	1.2V	2400MHz	ECC Registered	17	288-pin	
T32GHFD42AA-2G3B1 00T	DDR4	CRUCIAL	32GB	Micron	2Rx4	1.2V	2400MHz	ECC Registered	17	288-pin	
M393AK40M62-CVFBY	DDR4	Samsung	64GB	Samsung-IDT	4DRx4	1.2V	3200MHz	ECC Registered	22	288-pin	
M393AK40M62-CW6Q	DDR4	Samsung	64GB	Samsung-IDT	4DRx4	1.2V	3200MHz	ECC Registered	22	288-pin	

ECC UDIMM

M4C1-8GSSMCRG	DDR4	INNOVISK	8GB	Samsung		1.2V	2133MHz	ECC Unbuffer	15	288-pin	
T51GLH72V1H1	DDR4	Transcend	8GB	Samsung	2Rx8	1.2V	2133MHz	ECC Unbuffer	15	288-pin	
BC1C0MA-4F10B	DDR4	Ascent	8GB	Skyhynx	2Rx8	1.2V	2133MHz	ECC Unbuffer	15	288-pin	
B921AK243B81-CFB	DDR4	SAMSUNG	16GB	Samsung	2Rx8	1.2V	2133MHz	ECC Unbuffer	15	288-pin	
T3704WF0R2AA-18F81	DDR4	Crucial	8GB	Micron	2Rx8	1.2V	2400MHz	ECC Unbuffer	17	288-pin	
KVR24E17D8-18MA	DDR4	Kingston	16GB	Micron	2Rx8	1.2V	2400MHz	ECC Unbuffer	17	288-pin	
AD4U240316G17-B	DDR4	ADATA	16GB		2Rx8	1.2V	2400MHz	ECC Unbuffer	17	288-pin	
HMA62GUFARIN-LH1	DDR4	Skyhynx	16GB	Skyhynx	2Rx8	1.2V	2400MHz	ECC Unbuffer	17	288-pin	
M44A021	DDR4	Panram	16GB		2Rx8	1.2V	2666MHz	ECC Unbuffer	19	288-pin	

Seagate HDD (SAS HDD may need RAID Card support)

Product Name	Type	Vendor	Form Factor	Format	Capacity	Interface Speed	Series	Cache	RPM	Encryption	Note
Seagate Enterprise Capacity 2.5 HDD											
ST2000NM003	SATA	Seagate	2.5"	4Kn	2TB	6Gb/s	Enterprise Capacity V.3	128MB	7200	N/A	Just test this HDD to cover
ST2000NM003	SATA	Seagate	2.5"	512n	2TB	6Gb/s	Enterprise Capacity V.3	128MB	7200	N/A	Just test this HDD to cover
Seagate Enterprise Capacity 3.5 HDD											
ST18000NM005	SATA	Seagate	3.5"	512e	8TB	6Gb/s	Enterprise Capacity V.5	256MB	7200	N/A	
ST18000NM005	SATA	Seagate	3.5"	4Kn	8TB	6Gb/s	Enterprise Capacity V.5	256MB	7200	N/A	Just test this HDD to cover
ST10000MM014E	SATA	Seagate	3.5"	4Kn	10TB	6Gb/s	Enterprise Capacity V.6	256MB	7200	N/A	Just test this HDD to cover
ST10000MM016	SATA	Seagate	3.5"	512e	10TB	6Gb/s	Exos X10 (Enterprise Capacity V.6)	256MB	7200	N/A	
ST14003MM018	SATA	Seagate	3.5"	512e	14TB	6Gb/s	Exos X14 (Enterprise Capacity)	256MB	7200	N/A	SM02
ST18000MM016	SATA	Seagate	3.5"	512e/4Kn	18TB	6Gb/s	EXOS X16	256MB	7200	N/A	FW SM03

WD HDD

Product Name	Type	Vendor	Form Factor	Format	Capacity	Interface Speed	Series	Cache	RPM	Encryption	Note
Datacenter											
WD4002FYYZ-01UL1B2	SATA	WD	3.5"	512n	4TB	6Gb/s	WD Re	64MB	7200	N/A	Just test this HDD to cover
WD8001FYZZ-01SS1B0	SATA	WD	3.5"	512e	8TB	6Gb/s	WD Re	128MB	7200	N/A	Just test this HDD to cover
WD52101DAL1E4	SATA	WD	3.5"	512e	10TB	6Gb/s	Ultrastar DC HC330	256MB	7200	N/A	SD

HGST HDD (SAS HDD may need RAID Card support)

Enterprise Hard Drives											
HUS72060DL6E10	SATA	HGST	3.5"	512e	6TB	6Gb/s	Ultrastar 7K6000	128MB	7200	N/A	Just test this HDD to cover

Toshiba HDD (SAS HDD may need RAID Card support)

Enterprise Hard Drives											
M50SAC800A	SATA	Toshiba	3.5"	4Kn	8TB	6Gb/s	Capacity	128MB	7200	N/A	
M50SACA100N	SATA	Toshiba	3.5"	512e	11TB	6Gb/s	Capacity	128MB	7200	N/A	
M50SACA141E	SATA	Toshiba	3.5"	512e	14TB	6Gb/s	Capacity	256MB	7200	N/A	FW D104

SATA/SAS SSD

Product Name	Type	Vendor	Form Factor	Interface	Capacity	Interface Speed	FW	Note			
SATA/SAS SSD											
MTFD0AK1181DN-1A11ZABY1 (3200 MAX)	SSD	Micron	2.5"	SATA	1.92TB	6Gb/s					
MTFL117H6 803 D0T1 Series	SSD	Samsung	2.5"	SATA	1.92TB	6Gb/s					
SSDCWQ01978 D3-S4510 Series	SSD	Intel	2.5"	SATA	1.92TB	6Gb/s					
SSDCW801978 D3-S4510 Series	SSD	Intel	2.5"	SATA	1.92TB	6Gb/s					
MARSOLE10063	SSD	Seagate	2.5"	SATA	960GB	6Gb/s					
MARSOLE10063	SSD	Seagate	2.5"	SATA	480GB	6Gb/s					
MKHKRSEB90G	SSD	Toshiba	2.5"	SATA	960GB	6Gb/s					

PCIe SSD

Product Name	Type	Vendor	Form Factor	Interface	Capacity	Interface Speed	Note				
PCIe SSD											
SDDPEKXG07T01 P4550 Series PCIe Gen3 x4 4TB	PCIe	Intel	PCIe 3.0	PCIe(NVMe)	4TB	Gen3 x4	Note				
Samsung PM1725B-MZPL312H9AQ PCIe Gen3 x8 3.2TB	PCIe	Samsung	PCIe 3.0	PCIe(NVMe)	3.2TB	Gen3 x8					

U.2

Product Name	Type	Vendor	Form Factor	Interface	Capacity	Interface Speed	Note				
U.2											
SDDPEKXG07T01 P4610 Series	U.2	Intel	2.5"	SFF8083(NVMe)	3.2TB	Gen3 x4					
SDDPEKXG07T01 P4510 Series	U.2	Intel	2.5"	SFF8083(NVMe)	2TB	Gen3 x4					
MZWL3T27AQ PM1733 Series	U.2	Samsung	2.5"	SFF8083(NVMe)	3.2TB	Gen3 x4					
MZWL1T19M4LP PM983 Series	U.2	Samsung	2.5"	SFF8083(NVMe)	1.92TB	Gen3 x4					
MZWL3T38HL3 PM1733 Series	U.2	Samsung	2.5"	SFF8083(NVMe)	3.84TB	Gen4 x4					
MTFDHAL31ZT1CU 9200 Series	U.2	Micron	2.5"	SFF8083(NVMe)	3.2TB	Gen3 x4					
MCFDHL31RS9G-CDS Series	U.2	Toshiba	2.5"	SFF8083(NVMe)	960GB	Gen3 x4					

M.2

Product Name	Type	Vendor	Form Factor	Interface	Capacity	Interface Speed	Series	Cache	RPM	Encryption	Note
M.2											
MZVPV128H3GM	M.2	Samsung	2280	PCIe(NVMe)	128GB						
MZVPV128H3GL	M.2	Samsung	2280	PCIe(NVMe)	512GB						
MTD28C-512GM-MT	M.2	TECHCOMP	2280	PCIe	512GB						
MXP39F8-512GD	M.2	ADATA	2280	PCIe(NVMe)	512GB						

Graphics Card

Product Name	Processor Cores	Memory Bandwidth (GB/sec)	OpenGL	Microsoft DirectX	Graphics Card Power (W)	NVIDIA SLI / AMD CrossFire Ready	Note
Nvidia GeForce (http://www.geforce.com/hardware)							
GeForce 117AN X ( Pascal)	3584	490.5 GB/s	4.5	12	250 W	Yes (4-way)	
RTX 1080Ti MAX-Q ( Pascal)	2560	320 GB/s	4.5	12	180 W	Yes (2-way)	
GTX 1070 Ti Gaming (passive heatsink) ( Pascal)	1920	256 GB/s	4.5	12	150 W	Yes (2-way)	
RTX 1060 Ti Gaming (passive heatsink) ( Pascal)	1920	192 GB/s	4.5	12	120 W		
GeForce GTX 1070 Founders edition ( Pascal)	2560	320 GB/s	4.5	12	180 W	Yes (2-way)	
GeForce GTX 1070 Founders edition ( Pascal)	1920	256 GB/s	4.5	12	150 W	Yes (2-way)	
GeForce GTX 1060 Founders edition ( Pascal)	1920	192 GB/s	4.5	12	120 W		

RAID Cards

Model	RAID-on-Chip Controller	Host Bus Type	Internal Ports	Internal Connector	External Ports	External Connector	Data Transfer Rates	Note			
GIGABYTE Storage Cards											
GC-MS14E	Marvell 9230	PCIe-x8 Gen3 x4 bus	4	SATA III			6Gb/s ports				
GC-MSU21	LSI SAS 2208	MegaSas Gen2 x8 bus	8	2 x Mini-SAS for 8x SAS			6Gb/s ports				
GC-ASU 22	LSI SAS 2208	PCIe-x8 Gen2 x8 bus	8	2 x Mini-SAS for 8x SAS			6Gb/s ports				
RA200-E	LSI SAS 2208	PCIe-x8 Gen3 x8 bus	8	2 x Mini-SAS for 8x SAS			6Gb/s ports				

SA201-A	LSI SAS 2208	PCIe x8 Gen3 x8 bus	8	2 x Mini-SAS for 8x SAS		6Gb/s ports	
SRA3338	LSI SAS 3208	PCIe x8 Gen3 x8 bus	8	2 x Mini-SAS HD for 8x SAS		12Gb/s ports	
SRA3348	LSI SAS 3008	PCIe x8 Gen3 x8 bus	8	2 x external Mini-SAS HD SFF8644		12Gb/s ports	
SRA4448	LSI SAS 3108	PCIe x8 Gen3 x8 bus	8	2 x internal Mini-SAS HD SFF8643		12Gb/s ports	
LSI RAID Controller Cards							
SuperRAID SAS 9341-B	LSISAS3008 PowerPC 476 controller @ 1.2 Gbps	x8 lane PCI Express@ 3.0	8	2 x HD Mini-SAS SFF8643 (Horizontal mount)		Up to 12Gb/s per port	
MegaRAID SAS 9405-16i	SAS3516 dual-core RAID-on-Chip (ROC)	x8 lane PCI Express@ 3.1	8	4 x Mini-SAS HD SFF-8643		12Gb/s SAS 3.0	
LSI Host Bus Adapters (HBAs)							
LSI SAS 9400-16i	SAS3416	x8 lane PCI Express@ 3.1	16	4 x Mini-SAS HD SFF-8643		12Gb/s SAS 3.0	
Microsemi RAID Cards							
SmartRAID 3154-16i	PM8236	8-Lane PCIe Gen3	16	4 x Internal SFF-8643		12 Gb/s per port	
Microsemi Host Bus Adapters							
SmartHBA 2100-B	PM8222	8 Lane PCIe Gen3	8	2 x Internal SFF-8643		12 Gb/s per port	
PMC RAID Cards (Adaptics)							
Adaptec ASR 8885Q	-	8-lane PCIe Gen3	8	2 x internal mini SAS HD (SFF-8643), 2 x external mini SAS HD (SFF-8644)		12Gb/s per port	
LAN Cards							
Product Name	Connector	System Interface Type	# of Ports	System Interface Type	Data rate	Note	
GIGABYTE LAN Cards							
GLN4832	SFP+	PCIe x8 Gen2 x8	Dual	10Gb/s per port	INTEL E2599ES		
GLN4828	RJ45	PCIe x8 Gen2 x8	Dual	10Gb/s per port	INTEL X540		
GLN4761	QSFP+	PCIe x8 Gen3 x8	Single	40Gb/s per port	INTEL XL710		
GLN4752	QSFP+	PCIe x8 Gen3 x8	Dual	40Gb/s per port	INTEL XL710		
GLN4622	RJ45	PCIe x8 Gen3 x4	Dual	10Gb/s per port	INTEL X550-AT2		
GLN4524	SFP28	PCIe Gen3 x16	Quad	25Gb/s per port	Mellanox ConnectX-4		
GL-MNVX21	SFP+	PCIe x8 Gen3 x8	Dual	10Gb/s per port	Mellanox ConnectX-3		
GL-MB-B24	SFP+	PCIe x8 Gen2 x8	Dual	10Gb/s per port	Broadcom BCM57810S		
GL-MNVX20	SFP+	PCIe x8 Gen3 x8	Dual	10Gb/s per port	Mellanox ConnectX-3		
GLN4224	RJ45	PCIe x8 Gen3 x4	Quad	10Gb/s per port	INTEL X550-AT2		
GLN4M34	SFP28	PCIe Gen3 x16	Quad	10Gb/s per port	Mellanox ConnectX-4		
Intel 10GbE							
Intel® Ethernet Converged Network Adapter X710-QDA2	SFP+	PCIe x3.0 (8.0 GT/s)	Dual	10Gb/s per port			
Intel® Ethernet Network Adapter X722-QDA	SFP+	PCIe x3.0 (8.0 GT/s)	Quad	10Gb/s per port			
Intel 25GbE							
Intel® Ethernet Network Adapter XXV710-DA2	SFP28	PCIe x3.0 (8.0 GT/s)	Dual	25Gb/s per port			
Intel 40GbE							
Intel® Ethernet Converged Network Adapter XL710-QDA2	QSFP+	PCIe x3.0 (8.0 GT/s)	Dual	40Gb/s per port			
Mellanox ConnectX							
MCX156A-CCAT	QSFP28	PCIe Gen3 x16	Single	100Gb/s per port	Mellanox ConnectX-5 EN		
MCX555A-ECAT	SFP28	PCIe Gen3 x16	Single	100Gb/s per port	Mellanox ConnectX-4 VPI (InfiniBand)		
MCX4121A-ACAT	SFP28	PCIe Gen3 x8	Dual	25Gb/s per port	Mellanox ConnectX-4 Lx EN		
MCX156A-CCAT	QSFP28	PCIe Gen3 x16	Dual	100Gb/s per port	Mellanox ConnectX-5 EN		
MCX156A-CCAT	QSFP28	PCIe Gen3 x16	Single	100Gb/s per port	Mellanox ConnectX-5 EN		
Mellanox ConnectX-3 VPI Adapter Cards							
MCX196A-FCAT	QSFP	PCIe 3.0	Dual	FDR IB (56Gb/s)			
MCX555A-ECAT	QSFP28	PCIe 3.0 x16	Single	100Gb/s per port	Mellanox ConnectX-3 VPI (InfiniBand)		
Solarflare Onload Server Adapters							
SFN7322	SFP+	8 Gb/s (Gen3)	Dual	10Gb/s per port			
Qlogic LAN Adapters							
QL5811BL-CU	QSFP28	PCIe x16 Gen3 x16	Single	100Gb/s per port			
QL5842-CU-CX	SFP+	PCIe x8 Gen3 x8	Dual	10Gb/s per port			
QL5842-BL-CX	RJ45	PCIe x8 Gen3 x8	Dual	10Gb/s per port			
Broadcom (Emulex) Ethernet Networking Adapters							
BCM4102-NX	SFP+	PCIe 3.0 x8	Dual	10Gb/s per port			
BCM95714M4142CC	SFP28	PCIe 3.0 x8	Dual	25Gb/s per port	BCM57414		
PSU							
Product Name	Vendor	Input Voltage	Wattage	Application	Efficiency	Note	
SP1200-20AAG	FSP	100-240Vac	1200W	Desktop	N/A		
FSP900-50AAG	FSP	100-240Vac	900W	Desktop	N/A		
USB Device							
Product Name	Type	Vendor	Capacity	Note			
USB 3.0							
PURE CLASSIC X178B1FWB075	HDD	Gigabyte	500G				
SE7RA-S7AAS003Q	HDD	Seagate	500G				
TOSHIBA CANVIO BASIC	HDD	Toshiba	500G				
ADBACV500AWT-01	HDD	WD	500G				
ST-DSS-1UB9Q	Device	Western Digital					
ST-111515US-9H	Device	CT BOX					
NA317U	Device	Imac					
SST-1531	Device	Silver Stone					
ST-1023 Plus	Device	CyberStorm					
MB99-1U3-1S	Device	ICYDOCK					
ST10-SB35G	Device	STARDOM					