
	<h1>Supermicro Cluster</h1>		TPCx-HS	2.0.3
			TPC Pricing	2.7.0
			Report Date	Sep. 16, 2021
Availability Date	TPCx-HS Performance	Price/Performance	Total System Cost	
Currently Available	36.49 HSpH@3TB	\$24,276.96 \$/ HSpH@3TB	\$885,866 USD	
System Under Test Configuration Overview				
Scale Factor	Hadoop Software	Operating System	Other Software	
3	CDP Private Cloud Base Edition 7.1.6	SUSE Linux Enterprise Server 12 SP5	None	
<p>12 x Supermicro AS-1114S-WN10RT (Data Nodes) 1x AMD EPYC 75F3 32-Core Processor 256 GB (8x 32GB RDIMM 3200 MT/s Dual Rank) 1x Kioxia XG6 1TB NVMe M.2 22x80mm 7x Kioxia CM6 3.84TB NVMe PCIe 4x4 2.5" 15mm SIE 1DWPD 1x Mellanox Dual Port ConnectX-5 Ex 100 GbE QSFP28 NIC (Cluster Connectivity) 1x Broadcom P210tep NetXtreme-E Dual-port 10GBASE-T (External Connectivity)</p> <p>4 x Supermicro AS-1114S-WN10RT (Data Nodes) 1x AMD EPYC 75F3 32-Core Processor 256 GB (8x 32GB RDIMM 3200 MT/s Dual Rank) 1x Micron 960 GB NVMe M.2 22x80mm 7x Kioxia CM6 3.84TB NVMe PCIe 4x4 2.5" 15mm SIE 1DWPD 1x Mellanox Dual Port ConnectX-5 Ex 100 GbE QSFP28 NIC (Cluster Connectivity) 1x Broadcom P210tep NetXtreme-E Dual-port 10GBASE-T</p> <p>1 x Supermicro AS-1114S-WTRT (Master Node) 1x AMD EPYC 75F3 32-Core Processor 256 GB (8x 32GB RDIMM 3200 MT/s Dual Rank) 2x Kioxia XG6 1TB NVMe M.2 22x80mm 1x Mellanox Dual Port ConnectX-5 Ex 100 GbE QSFP28 NIC (Cluster Connectivity) 1x Broadcom P210tep NetXtreme-E Dual-port 10GBASE-T (External Connectivity)</p> <p>Supermicro E1031 48-port 1/10G Ethernet Switch (1U)</p> <p>Supermicro SSE-C3632R 32-port 100GbE QSFP28 Switch (1U)</p>				
Physical Storage/Scale Factor: 149.31		Scale Factor/Physical Memory: 0.71		
Total Number of Servers:		17 (16x AS-1114S-WN10RT; 1x AS-1114S-WTRT)		
Total Processors/Cores/Threads:		17/544/1,088		
Server Configuration:	Per AS-1114S-WN10RT	Per AS-1114S-WTRT		
Processors	1x AMD EPYC 75F3	1x AMD EPYC 75F3		
Memory	256 GiB	256 GiB		
Storage Device	1x 1 TB NVMe (12 nodes) 1x 960 GB NVMe (4 nodes) 7x 3.84 TB NVMe (all nodes)	2x 1 TB NVMe		
Network	1x Mellanox Dual-port ConnectX-5 Ex 100 GbE (12 nodes) 1x Mellanox Dual-port ConnectX-5 100 GbE (4 nodes) 1x Broadcom Dual-port 10 GbE (all nodes)	1x Mellanox Dual-port 100 GbE 1x Broadcom Dual-port 10 GbE		
Connectivity:	1x SSE-C3632R 32-port 100 GbE; 1x E1031 48-port 1/10 GbE			
Total Rack Units:	16x(1U)+1x(1U)+1x(1U)+1x(1U) = 16U+1U+1U+1U = 19U			

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Description	Part Number	Source	Qty	Unit Price	Extended Price	3 Yr. Maint. Price
HARDWARE						
Data Nodes						
H12SSW-NTR, CSE-116TS-R706WBPS-N10,RoHS	AS-1114S-WN10RT		1	16	\$1,477.00	\$23,632.00
32GB DDR4-3200 2Rx4 ECC REG DIMM	MEM-DR432L-HL01-ER32		1	128	\$184.60	\$23,628.80
Kioxia CM6 3.84TB NVMe PCIe 4x4 2.5" 15mm SIE 1DWPD	HDS-TUN-KCM6XRUL3T84		1	112	\$859.00	\$96,208.00
Mellanox ConnectX-5 EN network card 100GbE dual-port	AOC-MCX516A-CDAT		1	12	\$1,060.00	\$12,720.00
MCX516A-CCAT PCIe 2-port 100GbE QSFP28 Gen3.0 x16 CX-5	AOC-MCX516A-CCAT		1	4	\$849.00	\$3,396.00
Milan 75F3 DP/UP 32C/64T 2.95G 256M 280W SP3	PSE-MLN75F3-0313		1	16	\$4,834.00	\$77,344.00
Kioxia XG6 1TB NVMe M.2 22x80mm	HDS-TMNO-KXG60ZNV1T02		1	12	\$190.00	\$2,280.00
Micron 7300 PRO 960GB,PCIe NVMe,M.2 22x80mm,3D TLC,1DWPD	HDS-MMN-MTFDHBA960TDF1AW		1	4	\$178.50	\$714.00
Out of Band Firmware Management License-BIOS Flash /Setting	SFT-OOB-LIC		1	16	\$15.00	\$240.00
ASSEMBLY FEE	MC0037		1	16	\$25.00	\$400.00
0% 3 YRS LABOR, 3 YRS PARTS, 1 YR CRS UNDER LIMITED WRNTY	EWCS		1	16	(included)	(included)
On Site 4hrs 24x7x365 Support 3 Years with Extended Wrnty	OS4HR3		1	16	\$516.28	\$8,260.42
Master Node						
H12SSW-NT, CSV-116TS-R504WBP	AS-1114S-WTRT		1	1	\$1,304.00	\$1,304.00
32GB DDR4-3200 2Rx4 ECC REG DIMM	MEM-DR432L-HL01-ER32		1	8	\$184.60	\$1,476.80
Kioxia XG6 1TB NVMe M.2 22x80mm	HDS-TMNO-KXG60ZNV1T02		1	2	\$190.00	\$380.00
Mellanox ConnectX-5 EN network card 100GbE dual-port	AOC-MCX516A-CDAT		1	1	\$1,060.00	\$1,060.00
Milan 75F3 DP/UP 32C/64T 2.95G 256M 280W SP3	PSE-MLN75F3-0313		1	1	\$4,834.00	\$4,834.00
Out of Band Firmware Management License-BIOS Flash /Setting	SFT-OOB-LIC		1	1	\$15.00	\$15.00
ASSEMBLY FEE	MC0037		1	1	\$25.00	\$25.00
0% 3 YRS LABOR, 3 YRS PARTS, 1 YR CRS UNDER LIMITED WRNTY	EWCS		1	1	(included)	(included)
On Site 4hrs 24x7x365 Support 3 Years with Extended Wrnty	OS4HR3		1	1	\$454.36	\$454.36
Network and Cables						
E1031 48-port 1/10G Ethernet ToR switch	SSE-G3648BR		1	1	\$1,675.00	\$1,675.00
Cumulus-Linux SW 1G perpetual license with 3 yr Cumulus	SFT-CLSPL1G-3Y		1	1	\$1,475.00	\$1,475.00
On Site 4hrs 24x7x365 Support 3 Years with Extended Wrnty	OS4HR3		1	1	\$315.00	\$315.00
32-port 100GbE QSFP28,B2F,2x800W R0872-F0004-01,HF	SSE-C3632SR		1	1	\$7,375.00	\$7,375.00
Cumulus-Linux Software 100G Perpetual License with 3 yr SnS	SFT-CLSNWPL-100G-3Y		1	1	\$6,399.00	\$6,399.00
On Site 4hrs 24x7x365 Support 3 Years with Extended Wrnty	OS4HR3		1	1	\$1,377.40	\$1,377.40
ETHERNET, QSFP28, 100GbE, PASSIVE, LSZH, 3m, Molex, RoHS	CBL-NTWK-0943-SQ28C30M		1	17	\$139.50	\$2,371.50
ETHERNET, CAT6, RJ45, SNAGLESS, YELLOW, 15FT (4.6M), 28AWG, Ro	CBL-C6-YL15FT-P		1	17	\$10.80	\$183.60
ETHERNET, CAT6, RJ45, SNAGLESS, GREEN, UTP, 15FT(4.5M), 28AWG, RoHS	CBL-C6-GN15FT-P		1	17	\$10.80	\$183.60
Infrastructure						
42U Enclosure system	SRK-42SE-11		1	1	\$1,516.30	\$1,516.30
Rack PDU, Switched, 2U, 30A, 208V, (16)C13	AP7911B		2	3	\$1,025.00	\$3,075.00
PWCD, US, IEC60320 C14 TO C13, 4FT, 16AWG, RoHS/REACH	CBL-PWCD-0373-IS		1	38	\$6.50	\$247.00
LONCEVON - 12 inch IPS 1920x1080p HDMI Monitor	N/A		3	3	\$99.99	\$299.97
Logitech MK200 Media Keyboard and Mouse Combo	920-002714		3	3	\$41.50	\$124.50
Spares, Accessories						
ETHERNET, QSFP28, 100GbE, PASSIVE, LSZH, 3m, Molex, RoHS	CBL-NTWK-0943-SQ28C30M		1	3	\$139.50	\$418.50
ETHERNET, CAT6, RJ45, SNAGLESS, YELLOW, 15FT (4.6M), 28AWG, Ro	CBL-C6-YL15FT-P		1	3	\$10.80	\$32.40
ETHERNET, CAT6, RJ45, SNAGLESS, GREEN, UTP, 15FT(4.5M), 28AWG, RoHS	CBL-C6-GN15FT-P		1	3	\$10.80	\$32.40
PWCD, US, IEC60320 C14 TO C13, 4FT, 16AWG, RoHS/REACH	CBL-PWCD-0373-IS		1	3	\$6.50	\$19.50
HARDWARE Subtotals					\$275,085.87	\$10,407.17

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Description	Part Number	Source	Qty	Unit Price	Extended Price	3 Yr. Maint. Price
SOFTWARE						
SUSE Linux Enterprise Server, x86 & x86-64, 1-2 Sockets or 1-2 Virtual Machines, Priority Subscription, 3 Year 874-006883	SFT-NV-SU2P3YBAC		1	17	\$2,916.00	\$49,572.00
Cloudera Data Platform Private Cloud Base Edition - Annual Subscription per Node for up to 16 Cores/128 GB RAM for compute and up to 48 TB for storage. BusinessLevel Support.	SMC-CDP-PVCBASE-BUS		1	51	\$9,600.00	\$489,600.00
COMPUTE: price per CCU per year for compute in excess of 16 cores/128GB RAM per Node, where 1 CCU = 1 core + 8 GB RAM	SMC-CDP-COMPUTE		1	816	75	\$61,200.00
SOFTWARE Subtotals					\$600,372.00	\$0.00

Pricing: 1 = Supermicro; 2 = APC; 3 = Amazon
 * Discount applies to all line items where Key = 1. Discount based upon total system cost as purchased by a regular customer.
Audited by Doug Johnson, InfoSizing

Three-Year Cost of Ownership: \$885,866
HSph@3TB: 36.49
\$ / HSph@3TB: \$24,276.96

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated Line Items. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed Line Items. For complete details, see the pricing section of the TPC Benchmark Standard. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

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Numerical Quantities	
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Performance Run – Run 2	
Scale Factor	3TB
Run Start Time	2021-08-27 21:26:23.000
Run End Time	2021-08-27 21:31:17.000
Run Elapsed Time	296.000
HSGen Start Time	2021-08-27 21:26:23.000
HSGen End Time	2021-08-27 21:27:26.000
HSGen Elapsed Time	63.345
HSSort Start Time	2021-08-27 21:27:29.000
HSSort End Time	2021-08-27 21:30:36.000
HSSort Elapsed Time	187.623
HSValidate Start Time	2021-08-27 21:30:40.000
HSValidate End Time	2021-08-27 21:31:17.000
HSValidate Elapsed Time	37.534

Repeatability Run – Run 1	
Scale Factor	3TB
Run Start Time	2021-08-27 21:11:26.000
Run End Time	2021-08-27 21:16:18.000
Run Elapsed Time	294.000
HSGen Start Time	2021-08-27 21:11:26.000
HSGen End Time	2021-08-27 21:12:28.000
HSGen Elapsed Time	62.365
HSSort Start Time	2021-08-27 21:12:31.000
HSSort End Time	2021-08-27 21:15:38.000
HSSort Elapsed Time	187.570
HSValidate Start Time	2021-08-27 21:15:42.000
HSValidate End Time	2021-08-27 21:16:18.000
HSValidate Elapsed Time	36.503



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Run Reports

Run Report for Performance Run – Run 2

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 2 Details	Total Time =	296
	Total Size =	30000000000
	Scale-Factor =	3

TPCx-HS Performance Metric (HSph@SF): 36.4963

Run Report for Repeatability Run – Run 1

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 1 Details	Total Time =	294
	Total Size =	30000000000
	Scale-Factor =	3

TPCx-HS Performance Metric (HSph@SF): 36.7647



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Revision History

Date	Edition	Description
September 16, 2021	First	Initial Publication