







	<h1>Supermicro Cluster</h1>		TPCx-HS 2.0.3 TPC Pricing 2.7.0 Report Date Sep. 16, 2021
Availability Date Currently Available	TPCx-HS Performance 43.80 HSph@100TB	Price/Performance \$20,225.26 \$/ HSph@100TB	Total System Cost \$885,866 USD
System Under Test Configuration Overview			
Scale Factor 100	Hadoop Software CDP Private Cloud Base Edition 7.1.6	Operating System SUSE Linux Enterprise Server 12 SP5	Other Software None
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="width: 45%;">  <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> </div> <div style="width: 45%;">  <p>Supermicro E1031 48-port 1/10G Ethernet Switch (1U)</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="width: 45%;">  <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> </div> <div style="width: 45%;">  <p>Supermicro SSE-C3632SR 32-port 100GbE QSFP28 Switch (1U)</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="width: 45%;">  <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-5 100 GbE QSFP28 NIC (Cluster Connectivity) 1x Broadcom P210tep NetXtreme-E Dual-port 10GBASE-T (External Connectivity)</p> </div> </div>			
Physical Storage/Scale Factor: 4.48		Scale Factor/Physical Memory: 23.53	
Total Number of Servers: Total Processors/Cores/Threads:		17 (16x AS-1114S-WN10RT; 1x AS-1114S-WTRT) 17/544/1,088	
Server Configuration: Processors Memory Storage Device Network	Per AS-1114S-WN10RT 1x AMD EPYC 75F3 256 GiB 1x 1 TB NVMe (12 nodes) 1x 960 GB NVMe (4 nodes) 7x 3.84 TB NVMe (all nodes) 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)	Per AS-1114S-WTRT 1x AMD EPYC 75F3 256 GiB 2x 1 TB NVMe 1x Mellanox Dual-port 100 GbE 1x Broadcom Dual-port 10 GbE	
Connectivity: Total Rack Units:	1x SSE-C3632R 32-port 100 GbE; 1x E1031 48-port 1/10 GbE 16x(1U)+1x(1U)+1x(1U)+1x(1U) = 16U+1U+1U+1U = 19U		

		<h1>Supermicro Cluster</h1>		TPCx-HS	2.0.3	
				TPC Pricing	2.7.0	
				Report Date	Sep. 16, 2021	
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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<p>SOFTWARE</p> <p>SUSE Linux Enterprise Server, x86 & x86-64, 1-2 Sockets or 1-2 Virtual Machines, Priority Subscription, 3 Year 874-006883</p> <p>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.</p> <p>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</p>	<p>Part Number Source Qty Unit Price Extended Price 3 Yr. Maint. Price</p> <p>SFT-NV-SU2P3YBAC 1 17 \$2,916.00 \$49,572.00</p> <p>SMC-CDP-PVCBASE-BUS 1 51 \$9,600.00 \$489,600.00</p> <p>SMC-CDP-COMPUTE 1 816 75 \$61,200.00</p>	<p>SOFTWARE Subtotals \$600,372.00 \$0.00</p>
<p>Pricing: 1 = Supermicro; 2 = APC; 3 = Amazon</p> <p>* Discount applies to all line items where Key = 1. Discount based upon total system cost as purchased by a regular customer.</p> <p style="text-align: center;">Audited by Doug Johnson, InfoSizing</p>	<p style="text-align: right;">Three-Year Cost of Ownership: \$885,866</p> <p style="text-align: right;">HSpH@100TB: 43.80</p> <p style="text-align: right;">\$ / HSpH@100TB: \$20,225.26</p>	
<p><i>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.</i></p>		

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		TPC Pricing 2.7.0
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Numerical Quantities	
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Performance Run – Run 1	
Scale Factor	100TB
Run Start Time	2021-09-02 08:33:35.000
Run End Time	2021-09-02 10:50:30.000
Run Elapsed Time	8,218.000
HSGen Start Time	2021-09-02 08:33:36.000
HSGen End Time	2021-09-02 09:00:39.000
HSGen Elapsed Time	1,624.553
HSSort Start Time	2021-09-02 09:00:50.000
HSSort End Time	2021-09-02 10:37:49.000
HSSort Elapsed Time	5,820.704
HSValidate Start Time	2021-09-02 10:38:00.000
HSValidate End Time	2021-09-02 10:50:30.000
HSValidate Elapsed Time	751.080
Repeatability Run – Run 2	
Scale Factor	100TB
Run Start Time	2021-09-02 10:55:36.000
Run End Time	2021-09-02 13:12:19.000
Run Elapsed Time	8,206.000
HSGen Start Time	2021-09-02 10:55:37.000
HSGen End Time	2021-09-02 11:22:53.000
HSGen Elapsed Time	1,637.588
HSSort Start Time	2021-09-02 11:23:04.000
HSSort End Time	2021-09-02 12:59:42.000
HSSort Elapsed Time	5,799.461
HSValidate Start Time	2021-09-02 12:59:53.000
HSValidate End Time	2021-09-02 13:12:19.000
HSValidate Elapsed Time	747.356



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Run Reports

Run Report for Performance Run – Run 1

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 1 Details	Total Time =	8218
	Total Size =	1000000000000
	Scale-Factor =	100

TPCx-HS Performance Metric (HSph@SF): 43.8077

Run Report for Repeatability Run – Run 2

TPCx-HS Performance Metric (HSph@SF) Report

Test Run 2 Details	Total Time =	8206
	Total Size =	1000000000000
	Scale-Factor =	100

TPCx-HS Performance Metric (HSph@SF): 43.8711



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Revision History

Date	Edition	Description
September 16, 2021	First	Initial Publication