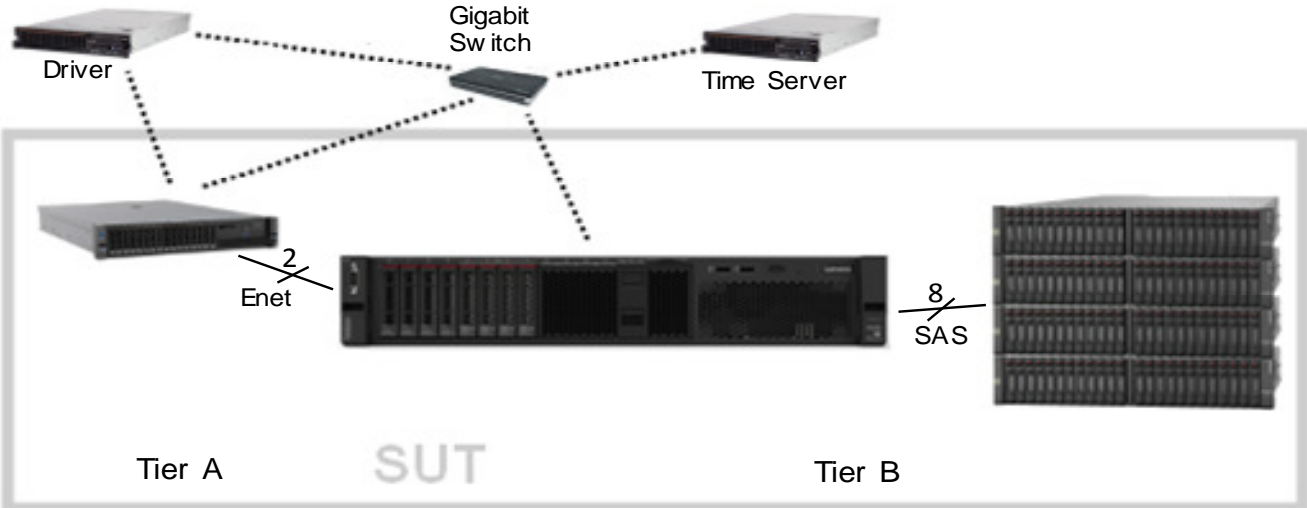
	Lenovo® ThinkSystem™ SR650		TPC-E™ 1.14.0 TPC Pricing 2.1.1
			Report Date: July 11, 2017 Revision Date: July 11, 2017
TPC-E Throughput 6,598.36 tpsE™	Price/Performance \$93.48 USD per tpsE	Availability Date October 19, 2017	Total System Cost \$616,777 USD
Database Server Configuration			
Operating System Microsoft® Windows Server® 2016 Standard Edition	Database Manager Microsoft SQL Server® 2017 Enterprise Edition	Processors/Cores/Threads 2/56/112	Memory 1536GB
			
System x3650 M5, with: <ul style="list-style-type: none"> - 2 x Intel® Xeon® Processor E5-2699 v4 2.20GHz (2 Procs/44 Cores/88 Threads) - 64GB Memory - 2 x 600GB SFF SAS (RAID-1) - 1 x ServeRAID M5210 - Onboard Quad Gb Ethernet - 3 x Dual 10Gb-T Ethernet 	ThinkSystem SR650, with: <ul style="list-style-type: none"> - 2 x Intel® Xeon® Platinum 8180 Processor 2.50GHz (2 Procs/56 Cores/112 Threads) - 1536GB Memory - 2 x 600GB 10K SAS (RAID-1) - 6 x 800GB SAS SSD (RAID-10) - 1 x ThinkSystem RAID 930-8i - 4 x ThinkSystem RAID 930-8e - Onboard Dual Gb Ethernet - 2 x Dual 10Gb-T Ethernet 	4 x Lenovo Storage D1224 JBOD Enclosures, with: <ul style="list-style-type: none"> - 72 x 800GB 2.5" SAS SSD (4 x 17-drive RAID-5) - (1 x 4-drive RAID-10) 72 Total External Drives	
Initial Database Size 29,145 GB	Redundancy Level: 1 RAID-10 Log RAID-5 Data RAID-10 tempdb	Storage 2 x 600GB 2.5" 10K SAS 78 x 800GB 2.5" SAS SSD	



Lenovo ThinkSystem SR650

TPC-E 1.14.0 TPC Pricing 2.1.1

Report Date: July 11, 2017
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Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware						
ThinkSystem SR650 Configure-To-Order, includes:	7X06CTO1WW	1	108,117	1	108,117	
ThinkSystem MS 2U 16x2.5" Chassis & MB	AUVX, AUQB			1		
Intel Xeon Platinum 8180 28C 205W 2.5GHz Processor	AWDF			2		
ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	AUNE			24		
ThinkSystem 2U/Twr 2.5" SATA/SAS 8-Bay Backplane	AURA			1		
ThinkSystem RAID 930-8i 2GB Flash PCIe 12Gb Adapter	AUNJ			1		
ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD	AULZ			2		
ThinkSystem 2.5" 800GB Performance SAS 12Gb Hot Swap SSD	AUMH			6		
ThinkSystem Riser 1, Riser 2, Riser Brackets	AUR4, AURC, AURQ, AURP			1		
ThinkSystem 1Gb 2-port RJ45 LOM	AUKG			1		
Intel X550-T2 Dual Port 10GBase-T Adapter	ATPX			2		
ThinkSystem RAID 930-8e 4GB Flash PCIe 12Gb Adapter	AUNQ			4		
ThinkSystem Toolless Slide Rail	AXCA			1		
ThinkSystem 2U left EIA Latch Standard	AURD			1		
ThinkSystem 1100W (230V/115V) Platinum Hot-Swap Power Supply	AWWF			2		
Power Cable	6311			2		
ServicePac for 3-Year 24x7x4 Support (SR650)	5PS7A01558	1	1,869	1		1869
				Subtotal	108,117	1,869
Server Storage						
Lenovo Storage D1224 SFF Chassis, Dual ESM	4587A31	1	2,999	4	11,996	
External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	00YL848	1	59	8	472	
Lenovo Storage 800GB 10 DWD 2.5" SAS SSD	01DC452	1	2,999	72	215,928	
ServicePac for 3-Year 24x7x4 Support (D1224)	01JR577	1	1,169	4		4,676
				Subtotal	228,396	4,676
Server Software						
SQL Server 2017 Enterprise Edition (2 Core License)	N/A	2*	13,472.50	28	377,230	
Windows Server 2016 Standard Edition (2 Core License)	N/A	2	92	28	2,576	
Microsoft Problem Resolution Services (1 Incident)	N/A	2	259	1		259
				Subtotal	379,806	259
Client Hardware						
System x3650 M5 Configure-To-Order, includes:	5462AC1	1	21,035	1	21,035	
x3650 M5 Base + Planar + Power Paddle Card	ATDY, ATE4, A5FT			1		
750W High Efficiency Platinum AC Power Supply	A5EU			2		
Intel Xeon Processor E5-2699 v4 22C 2.2GHz 55MB 145W	ATF2, ATFT			2		
x3650 M5 PCIe Risers 1 & 2 + Thermal Kit	A5FQ, A5R6, ASQD			1		
System x Gen-II Universal Slides Kit	A5FW			1		
600GB 10K 12Gbps SAS 2.5" G3HS HDD	AT8A			2		
x3650 M5 8x 2.5" HS HDD Assembly Kit (Single RAID)	A5G6			1		
8GB TruDDR4 Memory PC4-19200 CL17 2400MHz LP RDIMM	ATC9			8		
Power Cable	6311			2		
ServeRAID M5210 SAS/SATA Controller	A3YZ			1		
Intel X540-T2 Dual Port 10GBaseT Adapter	A2ED			2		
Intel X540 ML2 Dual Port 10GbaseT Adapter	A40P			1		
x3650 M5 Riser Bracket	A5G5			2		
x3650 M5 EIA L- Blank, Right EIA & EIA Plate	ATEA, A5V5, A5G1			1		
System x3650 M5 Single Rotor Fan	ATEC			4		
ServicePac for 3-Year 24x7x4 Support (x3650 M5)	01GX546	1	790	1		790
				Subtotal	21,035	790
Client Software						
Windows Server 2016 Standard Edition (2 Core License)	N/A	2	92	22	2,024	
				Subtotal	2,024	0
Infrastructure						
S2 42U Standard Rack	93074RX	1	1,565	1	1,565	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with line cord	00YJ776	1	479	1	479	
Preferred Pro Keyboard USB - US English 103P RoHS v2	00AM600	1	29	1	29	
2-Button Optical Mouse - Black - USB	40K9200	1	19	1	19	
ThinkVision E2054 19.5-inch LED Backlit LCD Monitor	60DFAAR1US	1	119	1	119	
1.0m CAT6 Green Cable	00WE127	1	19	2	38	
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	1	315	1		315
				Subtotal	2,249	315
				Total	741,627	7,909
Dollar Volume Discount (See Note 1)	36.13%	1			132,759	

Pricing: 1 - Lenovo 1-877-782-7134; 2 - Microsoft

Note 1: Discount applies to all line items where Pricing=1; pricing is for these or similar quantities.

Discounts for similarly sized configurations will be similar to what is quoted here, but may vary based on the specific components priced.

* These components are not immediately orderable. See the FDR for more information.

Benchmark results and test methodology audited by Doug Johnson for InfoSizing, Inc. (www.sizing.com)

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.

Three-Year Cost of Ownership USD: \$616,777
TPC-E Throughput: 6,598.36
\$ USD/tpsE: \$93.48



Lenovo ThinkSystem SR650

TPC-E 1.14.0 TPC Pricing 2.1.1

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Numerical Quantities Summary

Reported Throughput:

6,598.36 tpsE

Configured Customers:

3,550,000

Response Time (in seconds)	Minimum	Average	90 th Percentile	Maximum
Broker-Volume	0.01	0.01	0.02	3.29
Customer-Position	0.01	0.01	0.02	3.29
Market-Feed	0.01	0.01	0.02	3.87
Market-Watch	0.01	0.01	0.01	0.35
Security-Detail	0.01	0.01	0.01	0.27
Trade-Lookup	0.01	0.04	0.06	0.52
Trade-Order	0.01	0.03	0.06	3.30
Trade-Result	0.01	0.02	0.04	3.29
Trade-Status	0.01	0.01	0.01	1.12
Trade-Update	0.01	0.05	0.07	3.33
Data-Maintenance	0.01	0.01	N/A	0.03

Transaction Mix	Transaction Count	Mix %
Broker-Volume	23,279,036	4.900%
Customer-Position	61,761,097	13.000%
Market-Feed	4,750,827	1.000%
Market-Watch	85,515,279	18.000%
Security-Detail	66,512,177	14.000%
Trade-Lookup	38,006,445	8.000%
Trade-Order	47,983,499	10.100%
Trade-Result	47,508,196	10.000%
Trade-Status	90,266,337	19.000%
Trade-Update	9,501,587	2.000%
Data-Maintenance	120	N/A

Test Duration and Timings

Ramp-up Time (hh:mm:ss)	00:28:41
Measurement Interval (hh:mm:ss)	02:00:00
Business Recovery Time (hh:mm:ss)	00:13:44
Total Number of Transactions Completed in Measurement Interval	475,084,480