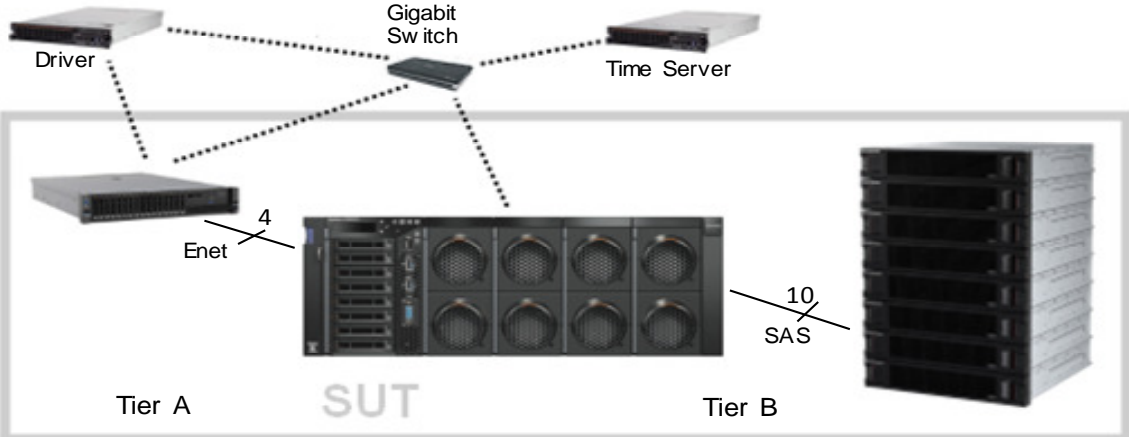
	<b>Lenovo® System x® 3850 X6</b> <b>Microsoft® SQL Server® 2016</b>		<b>TPC-E™ 1.14.0</b> <b>TPC Pricing 2.0.0</b>
			Report Date: June 6, 2016
			Revision Date: June 6, 2016
TPC-E Throughput <b>9,068.00 tpsE</b>	Price/Performance <b>\$139.85</b> <b>USD per tpsE™</b>	Availability Date <b>July 31, 2016</b>	Total System Cost <b>\$1,268,101 USD</b>
<b>Database Server Configuration</b>			
Operating System <b>Microsoft Windows Server® 2012 R2 Standard Edition</b>	Database Manager <b>Microsoft SQL Server 2016 Enterprise Edition</b>	Processors/Cores/Threads <b>4/96/192</b>	Memory <b>4096GB</b>
			
<b>System x3650 M5, with:</b> <ul style="list-style-type: none"> <li>- 2 x Intel® Xeon® Processor E5-2699 v3 2.30GHz (2 Procs/36 Cores/72 Threads)</li> <li>- 64GB Memory</li> <li>- 2 x 300GB SFF SAS (RAID-1)</li> <li>- 1 x ServeRAID M5210</li> <li>- Onboard Quad Gb Ethernet</li> <li>- 2 x Dual 10Gb-T Ethernet</li> </ul>	<b>System x3850 X6, with:</b> <ul style="list-style-type: none"> <li>- 4 x Intel® Xeon® Processor E7-8890 v4 2.20GHz (4 Procs/96 Cores/192 Threads)</li> <li>- 4096GB Memory</li> <li>- 2 x 900GB 10K SAS (RAID-1)</li> <li>- 6 x 800GB SAS SSD (RAID-10)</li> <li>- 1 x ServeRAID M5210</li> <li>- 6 x ServeRAID M5225</li> <li>- 4 x Dual 10Gb-T Ethernet</li> </ul>	<b>10 x Lenovo E1024 JBOD Enclosures, with:</b> <ul style="list-style-type: none"> <li>- 82 x 800GB 2.5" SAS SSD (5 x 16-drive RAID-5)</li> <li>(1 x 2-drive RAID-1)</li> </ul>	<b>82 Total External Drives</b>
Initial Database Size <b>37,362 GB</b>	Redundancy Level: <b>1</b> <b>RAID-10 Log</b> <b>RAID-5 Data</b> <b>RAID-1 tempdb</b>	Storage <b>2 x 900GB 2.5" 10K SAS</b> <b>88 x 800GB 2.5" SAS SSD</b>	



# Lenovo System x3850 X6 Microsoft SQL Server 2016

**TPC-E 1.14.0**  
**TPC Pricing 2.0.0**

Report Date:  
June 6, 2016

Revision Date:  
June 6, 2016

Availability Date:  
July 31, 2016

Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
<b>Server Hardware</b>						
System x3850 X6 Configure-To-Order, includes:	6241AC1	1	544,518	1	544,518	
x3850 X6 4U Chassis + Midplane	ASMH, A4A4			1		
X6 Compute Book Intel Xeon Processor E7-8890 v4 24C 2.2GHz	ATXZ			4		
x3850/x3950 X6 I/O Planar III	ASFB			1		
X6 Storage Book	A4A1			1		
X6 Half-length I/O Book	A4A2			2		
4x 2.5" HDD Riser	A4A6			2		
ServeRAID M5210 SAS/SATA Controller	A3YZ			1		
Intel X540 ML2 Dual Port 10GbBaseT Adapter	A40P			1		
Intel X540-T2 Dual Port 10GbBaseT Adapter	A2ED			3		
1400W HE Redundant Power Supply	A54E			4		
800GB 12G SAS 2.5" MLC G3HS Enterprise SSD	A57G			6		
900GB 10K 12Gbps SAS 2.5" G3HS HDD	AT8B			2		
Rail Kit	A4AA			1		
Power Cable	6311			4		
64GB TruDDR4 Memory PC4-17000 CL15 2133MHz LP LRDIMM	A5UK			64		
ServeRAID M5225-2GB SAS/SATA Controller	00AE938	1	899	6	5,394	
ServeRAID M5200 Series Performance Accelerator- FoD	47C8710	1	49	1	49	
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	110	1	110	
ServicePac for 3-Year 24x7x4 Support (x3850 X6)	67568BU	1	1,500	1		1500
				<b>Subtotal</b>	<b>550,119</b>	<b>1,500</b>
<b>Server Storage</b>						
S2 42U Standard Rack	93074RX	1	1,565	1	1,565	
Lenovo Storage E1024	64111B4	1	4,000	10	40,000	
1.5m SAS Cable (mSAS HD to mSAS)	00MJ163	1	129	10	1,290	
Lenovo Storage 2.5" 800GB SSD (SAS)	00MM715	1	4,999	82	409,918	
ServicePac for 3-Year 24x7x4 Support (E1024)	00WX880	1	1,146	10		11,460
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	1	315	1		315
				<b>Subtotal</b>	<b>452,773</b>	<b>11,775</b>
<b>Server Software</b>						
SQL Server 2016 Enterprise Edition (2 Core License)	N/A	2a	13,472.50	48	646,680	
Windows Server 2012 R2 Standard Edition (2 Processor License)	N/A	2b	882	2	1,764	
Microsoft Problem Resolution Services (1 Incident)	N/A	2a	259	1		259
				<b>Subtotal</b>	<b>648,444</b>	<b>259</b>
<b>Client Hardware</b>						
System x3650 M5 Configure-To-Order, includes:	5462AC1	1	20,099	1	20,099	
x3650 M5 Base + Planar + Power Paddle Card	A5FD, A5EA, A5FT			1		
750W High Efficiency Platinum AC Power Supply	A5EU			2		
Intel Xeon Processor E5-2699 v3 18C 2.3GHz 45MB 145W	ARYJ, ARYT			2		
x3650 M5 PCIe Risers 1 & 2 + Thermal Kit	A5FQ, A5R6, ASQD			1		
System x Gen-II Universal Slides Kit	A5FW			1		
300GB 10K 12Gbps SAS 2.5" G3HS HDD	AT89			2		
x3650 M5 8x 2.5" HS HDD Assembly Kit (Single RAID)	A5G6			1		
8GB TruDDR4 Memory PC4-17000 CL15 2133MHz LP RDIMM	A5B8			8		
Power Cable	6311			2		
ServeRAID M5210 SAS/SATA Controller	A3YZ			1		
Intel X540 ML2 & PCIe Dual Port 10GbBaseT Adapters	A40P, A2ED			1		
x3650 M5 Riser Bracket	A5G5			2		
x3650 M5 Right EIA & EIA Plate	A5V5, A5G1			1		
ServicePac for 3-Year 24x7x4 Support (x3650 M5)	67568HG	1	790	1		790
				<b>Subtotal</b>	<b>20,099</b>	<b>790</b>
<b>Client Software</b>						
Windows Server 2012 R2 Standard Edition (2 Processor License)	N/A	2b	882	1	882	
				<b>Subtotal</b>	<b>882</b>	<b>0</b>
<b>Infrastructure</b>						
10 ft. Cat 6A Network Cable (2 spares)	CAT6A-10S	3		7	42	
				<b>Subtotal</b>	<b>42</b>	<b>0</b>
				<b>Total</b>	<b>1,672,359</b>	<b>14,324</b>
Dollar Volume Discount (See Note 1)	40.32%	1			418,141	
Microsoft Open Program Discount Schedule	16.67%	2b			441	
Pricing: 1 - Lenovo 1-877-782-7134; 2 - Microsoft; 3 - Newegg				<b>Three-Year Cost of Ownership USD:</b>		\$1,268,101
Note 1: Discount applies to all line items where Pricing=1; pricing is for these or similar quantities.				<b>TPC-E Throughput:</b>		9,068.00
Discounts for similarly sized configurations will be similar to what is quoted here, but may vary based on the specific components priced.				<b>\$ USD/tpsE:</b>		\$139.85

Benchmark results and test methodology audited by Doug Johnson for InfoSizing, Inc. ([www.sizing.com](http://www.sizing.com))

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. 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 components. For complete details, see the pricing section of the TPC benchmark specifications. If you find that stated prices are not available according to these terms, please inform the TPC at [pricing@tpc.org](mailto:pricing@tpc.org). Thank you.



**Lenovo System x3850 X6  
Microsoft SQL Server 2016**

**TPC-E 1.14.0  
TPC Pricing 2.0.0**

Report Date:  
June 6, 2016

Revision Date:  
June 6, 2016

Availability Date:  
July 31, 2016

**Numerical Quantities Summary**

<b>Reported Throughput: 9,068.00 tpsE</b>		<b>Configured Customers: 4,550,000</b>		
<b>Response Time (in seconds)</b>	<b>Minimum</b>	<b>Average</b>	<b>90<sup>Th</sup> Percentile</b>	<b>Maximum</b>
Broker-Volume	0.01	0.01	0.02	1.27
Customer-Position	0.01	0.01	0.01	3.59
Market-Feed	0.01	0.01	0.02	3.59
Market-Watch	0.01	0.01	0.01	0.33
Security-Detail	0.01	0.01	0.01	1.30
Trade-Lookup	0.01	0.04	0.07	1.33
Trade-Order	0.01	0.05	0.11	1.37
Trade-Result	0.01	0.01	0.02	1.28
Trade-Status	0.01	0.01	0.01	1.01
Trade-Update	0.01	0.05	0.07	1.24
Data-Maintenance	0.01	0.01	N/A	0.03
<b>Transaction Mix</b>		<b>Transaction Count</b>	<b>Mix %</b>	
Broker-Volume		31,990,401	4.9000%	
Customer-Position		84,872,679	13.0000%	
Market-Feed		6,528,972	1.0000%	
Market-Watch		117,516,586	18.0000%	
Security-Detail		91,401,448	14.0000%	
Trade-Lookup		52,229,040	8.0000%	
Trade-Order		65,939,425	10.1000%	
Trade-Result		65,289,646	10.0000%	
Trade-Status		124,044,833	19.0000%	
Trade-Update		13,057,306	2.0000%	
Data-Maintenance		120	N/A	
<b>Test Duration and Timings</b>				
Ramp-up Time (hh:mm:ss)			00:32:13	
Measurement Interval (hh:mm:ss)			02:00:00	
Business Recovery Time (hh:mm:ss)			00:20:45	
Total Number of Transactions Completed in Measurement Interval			652,870,336	