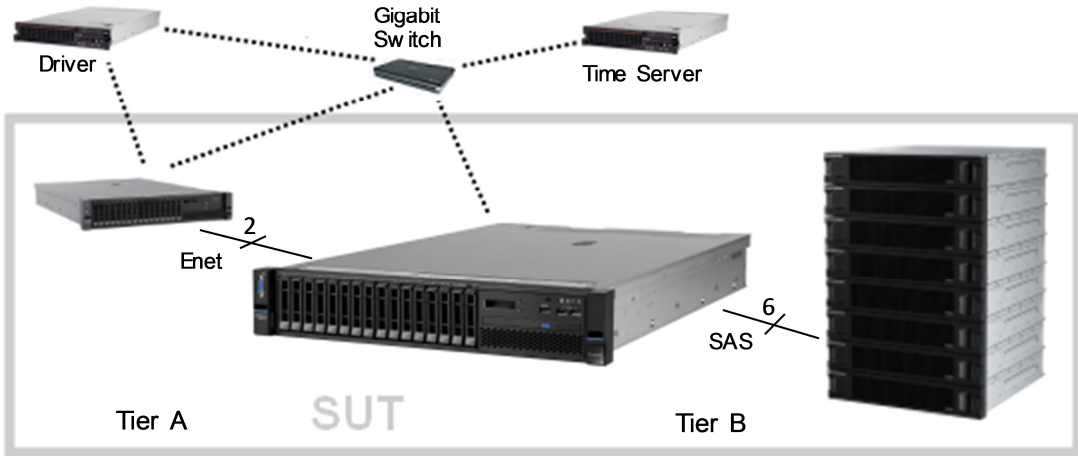
	Lenovo® System x® 3650 M5 Microsoft® SQL Server® 2016		TPC-E™ 1.14.0 TPC Pricing 2.0.0
			Report Date: March 31, 2016
			Revision Date: March 31, 2016
TPC-E Throughput 4,938.14 tpsE	Price/Performance \$117.91 USD per tpsE™	Availability Date July 31, 2016	Total System Cost \$582,236 USD
Database Server Configuration			
Operating System Microsoft Windows Server® 2012 R2 Standard Edition	Database Manager Microsoft SQL Server 2016 Enterprise Edition	Processors/Cores/Threads 2/44/88	Memory 512GB
			
System x3650 M5, with: - 2 x Intel® Xeon® Processor E5-2699 v3 2.30GHz (2 Procs/36 Cores/72 Threads) - 64GB Memory - 2 x 300GB SFF SAS (RAID-1) - 1 x ServeRAID M5210 - Onboard Quad Gb Ethernet - 1 x Dual 10Gb-T Ethernet	System x3650 M5, with: - 2 x Intel® Xeon® Processor E5-2699 v4 2.20GHz (2 Procs/44 Cores/88 Threads) - 512GB Memory - 2 x 900GB 10K SAS (RAID-1) - 4 x 800GB SAS SSD (RAID-10) - 1 x ServeRAID M5210 - 3 x ServeRAID M5225 - Onboard Quad Gb Ethernet - 1 x Dual 10Gb-T Ethernet	6 x Lenovo E1024 JBOD Enclosures, with: - 53 x 800GB 2.5" SAS SSD (3 x 17-drive RAID-5) (1 x 2-drive RAID-1)	53 Total External Drives
Initial Database Size 20,518 GB	Redundancy Level: 1 RAID-10 Log RAID-5 Data RAID-1 tempdb	Storage 2 x 900GB 2.5" 10K SAS 4 x 800GB 2.5" SAS SSD 53 x 800GB 2.5" SAS SSD	



Lenovo System x3650 M5 Microsoft SQL Server 2016

TPC-E 1.14.0

TPC Pricing 2.0.0

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Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware						
System x3650 M5 Configure-To-Order, includes:	8871AC1	1	68,588	1	68,588	
x3650 M5 Base + Planar + Power Paddle Card	A5FD, ATE4, A5FT			1		
900W High Efficiency Platinum AC Power Supply	A5EW			2		
Intel Xeon Processor E5-2699 v4 22C 2.2GHz 55MB 145W	ATF2, A2FT			2		
x3650 M5 PCIe Risers 1 & 2 + Thermal Kit	A5FQ, A5R6, ASQD			1		
System x Gen-II Universal Slides Kit	A5FW			1		
900GB 10K 12Gbps SAS 2.5" G3HS HDD	AT8B			2		
800GB 12G SAS 2.5" MLC G3HS Enterprise SSD	AS7G			4		
x3650 M5 8x 2.5" HS HDD Assembly Kit (Single RAID)	A5G6			1		
Power Cable	6400			2		
ServeRAID M5210 SAS/SATA Controller	A3YZ			1		
Intel X540 ML2 Dual Port 10GbseT Adapter	A40P			1		
x3650 M5 Riser Bracket	A5G5			2		
x3650 M5 Right EIA & EIA Plate	A5V5, A5G1			1		
32GB TruDDR4 Memory PC4-19200 CL17 2400MHz LP RDIMM	ATCB			16		
ServeRAID M5225-2GB SAS/SATA Controller	00AE938	1	899	3	2,697	
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 E1922 18.5-inch LED Backlit LCD Monitor	60B8AAR6US	1	100	1	100	
ServicePac for 3-Year 24x7x4 Support (x3650 M5)	67568HG	1	790	1		790
				Subtotal	71,482	790
Server Storage						
S2 42U Standard Rack	93074RX	1	1,565	1	1,565	
Lenovo Storage E1024	64111B4	1	2,999	6	17,994	
1.5m SAS Cable (mSAS HD to mSAS)	00MJ163	1	129	6	774	
Lenovo Storage 2.5" 800GB SSD (SAS)	00MM715	1	4,999	53	264,947	
ServicePac for 3-Year 24x7x4 Support (E1024)	00WX880	1	1,146	6		6,876
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	1	315	1		315
				Subtotal	285,280	7,191
Server Software						
SQL Server 2016 Enterprise Edition (2-core licenses)	7JQ-00256	2a	13,472.50	22	296,395	
Windows Server 2012 R2 Standard Edition	P73-06284	2b	882	1	882	
Microsoft Problem Resolution Services	N/A	2a	259	1		259
				Subtotal	297,277	259
Client Hardware						
System x3650 M5 Configure-To-Order, includes:	5462AC1	1	19,352	1	19,352	
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 Dual Port 10GbseT Adapter	A40P			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
				Subtotal	19,352	790
Client Software						
Windows Server 2012 R2 Standard Edition	P73-06284	2b	882	1	882	
				Subtotal	882	0
Infrastructure						
10 ft. Cat 6A Network Cable (2 spares)	CAT6A-10S	3	7	4	28	
				Subtotal	28	0
				Total	674,301	9,030
Dollar Volume Discount (See Note 1)	26.19%	1			100,801	
Microsoft Open Program Discount Schedule	16.67%	2b			294	
Pricing: 1 - Lenovo 1-877-782-7134; 2 - Microsoft; 3 - Newegg				Three-Year Cost of Ownership USD:		\$582,236
Note 1: Discount applies to all line items where Pricing=1; pricing is for these or similar quantities.				TPC-E Throughput:		4,938.14
Discounts for similarly sized configurations will be similar to what is quoted here, but may vary based on the specific components priced.				\$ USD/tpsE:		\$117.91
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 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. Thank you.						



**Lenovo System x3650 M5
Microsoft SQL Server 2016**

**TPC-E 1.14.0
TPC Pricing 2.0.0**

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Numerical Quantities Summary

Reported Throughput: 4,938.14 tpsE		Configured Customers: 2,500,000		
Response Time (in seconds)	Minimum	Average	90Th Percentile	Maximum
Broker-Volume	0.01	0.01	0.02	0.71
Customer-Position	0.01	0.01	0.02	0.99
Market-Feed	0.01	0.01	0.04	0.66
Market-Watch	0.01	0.01	0.01	0.32
Security-Detail	0.01	0.01	0.01	0.32
Trade-Lookup	0.01	0.05	0.07	0.38
Trade-Order	0.01	0.04	0.10	1.11
Trade-Result	0.01	0.02	0.04	1.98
Trade-Status	0.01	0.01	0.01	1.01
Trade-Update	0.01	0.06	0.08	0.37
Data-Maintenance	0.01	0.02	N/A	0.09
Transaction Mix		Transaction Count	Mix %	
Broker-Volume		17,421,775	4.9000%	
Customer-Position		46,221,424	13.0000%	
Market-Feed		3,555,471	1.0000%	
Market-Watch		63,998,728	18.0000%	
Security-Detail		49,776,719	14.0000%	
Trade-Lookup		28,443,874	8.0000%	
Trade-Order		35,910,234	10.1000%	
Trade-Result		35,554,652	10.0000%	
Trade-Status		67,554,039	19.0000%	
Trade-Update		7,110,833	2.0000%	
Data-Maintenance		120	N/A	
Test Duration and Timings				
Ramp-up Time (hh:mm:ss)			00:28:32	
Measurement Interval (hh:mm:ss)			02:00:00	
Business Recovery Time (hh:mm:ss)			00:20:40	
Total Number of Transactions Completed in Measurement Interval			355,547,749	