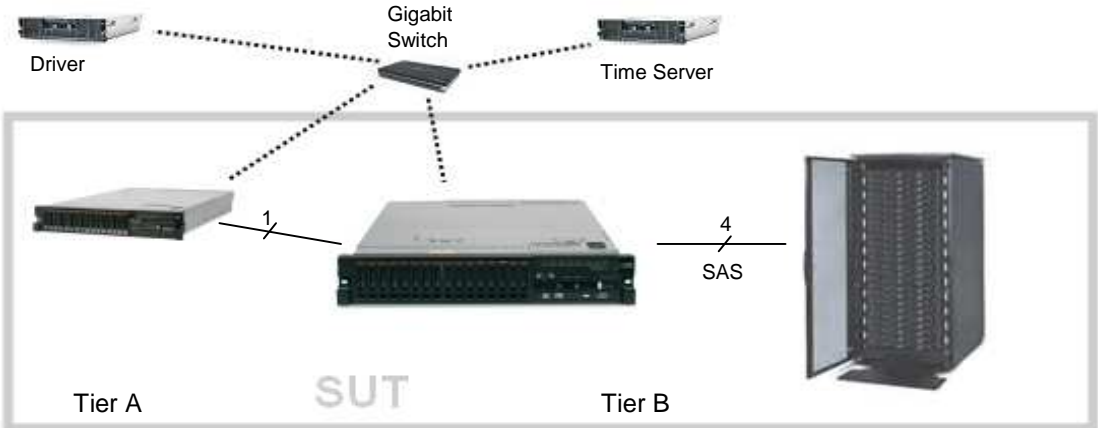
	IBM® System x® 3690 X5 Microsoft® SQL Server 2008 R2		TPC-E 1.12.0 TPC Pricing 1.6.0
			Report Date: May 27, 2011
			Revision Date: May 27, 2011
TPC-E Throughput 1560.70 tpsE	Price/Performance \$143.32 USD per tpsE	Availability Date May 27, 2011	Total System Cost \$223,664 USD
Database Server Configuration			
Operating System Microsoft Windows Server 2008 R2 Enterprise Edition	Database Manager Microsoft SQL Server 2008 R2 Enterprise Edition	Processors/Cores/Threads 2/20/40	Memory 512GB
			
1 x IBM x3650 M3, with: - 2 x Intel Xeon Processor X5650 2.66GHz (2 Procs/12 Cores/24 Threads) - 8GB Memory - 2 x 250GB SFF SATA (RAID-1) - 1 x IBM ServeRAID M1015 - Onboard Dual Gb Ethernet	IBM System x3690 X5, with: - 2 x Intel Xeon Processor E7-2870 2.40GHz (2 Procs/20 Cores/40 Threads) - 512GB Memory - 2 x 250GB SFF SATA (RAID-1) - 6 x 300GB 10K SAS (RAID-10) - 1 x IBM ServeRAID M5015 - 4 x IBM ServeRAID M5025 - Onboard Dual Gb Ethernet	4 x LSI 620J JBOD Enclosures, with: - 52 x 200GB 2.5" SAS SSD (4 x 13-drive RAID-5 DB data) - 6 x 300GB 10K 2.5" SAS (RAID-5 60-Day space) 58 Total External Drives	
Initial Database Size 6,408 GB	Redundancy Level: 1 RAID-10 Log RAID-5 Data	Storage 2 x 250 GB 52 x 200 GB 12 x 300 GB	



IBM System x3690 X5 Microsoft SQL Server 2008 R2

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Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware						
x3690 X5 with 1 x Intel Xeon Processor E7-2870 (2.40GHz / 2.5MB L2 Cache / 30MB L3 Cache) 2x4GB Memory; ServRAID M1015; 2x675W PS	7147A7U	1	11,555	1	11,555	
Intel Xeon Processor E7-2870 (2.40GHz/2.5MB L2/30MB L3)	88Y5663	1	6,465	1	6,465	
16GB (1x16GB) QuadRank PC3-8500 1066MHz LP RDIMM	46C7483	1	899	32	28,768	
IBM x3690 X5 16-DIMM Internal Memory Expansion	81Y8926	1	475	1	475	
IBM 4x 2.5" HS SAS HDD Backplane	60Y0339	1	89	1	89	
IBM UltraSlim Enhanced SATA DVD-ROM	46M0901	1	89	1	89	
IBM ServeRAID-M5015 SAS/SATA Controller	46M0829	1	449	1	449	
IBM 250GB 7200 NL SATA 2.5" SFF HS HDD	81Y9722	1	289	2	578	
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	42D0637	1	409	6	2,454	
IBM ServeRAID-M5025 SAS/SATA Controller	46M0830	1	649	4	2,596	
ServeRAID M5000 Series Performance Accelerator Key	81Y4426	1	399	4	1,596	
IBM Preferred Pro USB Keyboard	40K9584	1	29	1	29	
IBM 2-Button Optical Mouse - Black - USB	40K9200	1	19	1	19	
ServicePac for 3-Year 24x7x4 Support (x3690 X5)	88Y8307	1	660	1	660	660
Hanns-G 17" 5ms Widescreen LCD Monitor (2 spares)	HW-173ABB	3	120	3	360	
Subtotal					55,522	660
Server Storage						
IBM S2 42U Standard Rack	93074RX	1	1,299	1	1,299	
LSI 620J JBOD Enclosure	LSI00217	5 - S	2,042	4	8,168	
LSI 620J JBOD Enclosure (10% spares)	LSI00217	5 - S	2,042	2	2,042	4,084
IBM 1M SAS cable	39R6529	1	119	4	476	
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	42D0637	1	409	6	2,454	
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD (spares)	42D0637	1	409	2	818	818
200GB, 2.5" XceedIOPS SAS Solid-State Drive, eMLC	SG9XCA2E200GE01	4	1,800	52	93,600	
200GB, 2.5" XceedIOPS SAS Solid-State Drive, eMLC (spares)	SG9XCA2E200GE01	4	1,800	6	7,200	10,800
Subtotal					105,997	15,702
Server Software						
SQL Server 2008 R2 Enterprise Edition	810-08529	2	23,848	2	47,696	
Windows Server 2008 R2 Enterprise Edition	P72-04219	2	3,999	1	3,999	
Microsoft Problem Resolution Services	N/A	2a	259	1	259	259
Subtotal					51,695	259
Client Hardware						
IBM System x3650 M3 Configure-To-Order, includes: System Common Planar for 1U/2U	7945AC1	1	5,273	1	5,273	
IBM System x3650 M3 Base with 675W AC power supply	5663	1	5663	1	5,663	
IBM System x3650 M3 Base with 675W AC power supply	5694	1	5694	1	5,694	
Intel Xeon Processor X5650 6C 2.66GHz 12MB 1333MHz 95W	4589, 7709	2	4,589	2	9,178	
IBM System x3650 M3 8 HDD Kit	1745	1	1,745	1	1,745	
2GB PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM	8934	4	8934	4	35,736	
PCI-Express (2 x8 slots) Riser Card	3734	1	3,734	1	3,734	
ServeRAID M1015 SAS/SATA Controller	0095	1	609	1	609	
IBM UltraSlim Enhanced SATA DVD-ROM	4161	1	416	1	416	
IBM 250GB 7200 NL SATA 2.5" SFF HS HDD	81Y9722	1	289	2	578	
ServicePac for 3-Year 24x7x4 Support (x3650 M3)	21P2078	1	660	1	660	660
Subtotal					5,851	660
Client Software						
Microsoft Windows Server 2008 R2 Standard Edition	P73-00352	2	1,029	1	1,029	
Subtotal					1,029	0
Infrastructure						
Ethernet Cables (2 spares)	24501	3	4	3	12	
Subtotal					12	0
Total					220,106	17,281
Dollar Volume Discount (See Note 1)	16.22%	1			10,929	
Microsoft Open Program Discount Schedule	5.27%	2			2,794	

Pricing: 1 - IBM - 1-800-656-0833, x35330; 2 - Microsoft; 3 - newegg.com; 4 - ClearComm; 5 - Avnet
 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.
 S: One or more components of the measured configuration have been substituted in the priced configuration. See the FDR for details.
 Benchmark results and test methodology audited by Doug Johnson for InfoSizing, Inc. (www.sizing.com)

Three-Year Cost of Ownership USD:	\$223,664
TPC-E Throughput:	1,560.70
\$ USD/tpsE:	\$143.32

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.



**IBM System x3690 X5
Microsoft SQL Server 2008 R2**

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TPC Pricing 1.6.0**

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Numerical Quantities Summary				
Reported Throughput: 1560.70 tpsE		Configured Customers: 800,000		
Response Time (in seconds)	Minimum	Average	90 th Percentile	Maximum
Broker-Volume	0.01	0.03	0.05	0.35
Customer-Position	0.01	0.03	0.05	1.67
Market-Feed	0.01	0.02	0.04	1.42
Market-Watch	0.01	0.03	0.05	0.39
Security-Detail	0.01	0.01	0.03	0.59
Trade-Lookup	0.01	0.11	0.17	0.84
Trade-Order	0.01	0.06	0.09	1.04
Trade-Result	0.01	0.08	0.11	2.34
Trade-Status	0.01	0.02	0.03	0.53
Trade-Update	0.01	0.12	0.18	0.90
Data-Maintenance	0.01	0.03	N/A	0.13
Transaction Mix		Transaction Count	Mix %	
Broker-Volume		5,505,975	4.900%	
Customer-Position		14,607,357	13.000%	
Market-Feed		1,123,712	1.000%	
Market-Watch		20,225,939	18.000%	
Security-Detail		15,731,473	14.000%	
Trade-Lookup		8,989,120	8.000%	
Trade-Order		11,349,063	10.100%	
Trade-Result		11,237,044	10.000%	
Trade-Status		21,349,265	19.000%	
Trade-Update		2,247,273	2.000%	
Data-Maintenance		120	N/A	
Test Duration and Timings				
Ramp-up Time (hh:mm:ss)				00:21:25
Measurement Interval (hh:mm:ss)				02:00:00
Business Recovery Time (hh:mm:ss)				00:29:10
Total Number of Transactions Completed in Measurement Interval				112,366,221