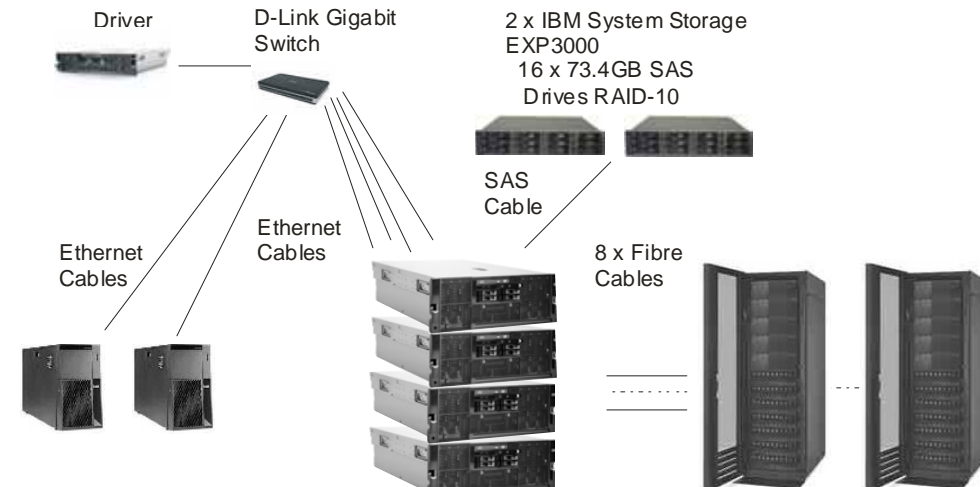
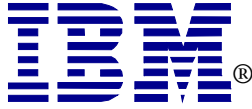
	IBM[®] System x[™] 3950 M2 Microsoft[®] SQL Server 2008		TPC-E Revision 1.5.1 TPC Pricing 1.3.0
			Report Date: July 2, 2008
TPC-E Throughput 1250.00 tpsE	Price/Performance \$ 1,311.26 USD per tpsE	Availability Date August 30, 2008	Total System Cost \$ 1,639,064 USD
Database Server Configuration			
Operating System Microsoft Windows Server 2008 Datacenter x64 Edition	Database Manager Microsoft SQL Server 2008 Enterprise x64 Edition	Processors/Cores/Threads 16/64/64	Memory 512GB
			
Tier A - Clients 2 x IBM System x3500 Each contains: 1 x Quad-Core Intel Xeon Processor E5440 2.83GHz (1 Processor, 4 Cores, 4 Threads) 2GB of Memory 2 x 73.4GB SAS Drive (RAID-1 for OS, Onboard RAID Controller, Onboard Dual-Port 1 Gigabit Ethernet Controller)	Tier B - Database Server IBM System x3950 M2 16 x Quad-Core Intel Xeon Processor X7350 2.93GHz (16 Processors, 64 Cores, 64 Threads) 512GB of Memory 4 x QLogic 8Gb FC Dual-Port HBA 1 x IBM ServeRAID-MR10M SAS Controller 4 x Intel PRO/1000 PT Dual-Port Ethernet Adapter	2 x IBM System Storage EXP3000 16 x 73.4GB SAS Drives RAID-10 4 x IBM System Storage DS4800 48 x IBM System Storage EXP810 Enclosure Each EXP810 contains: 16 x 15K rpm drives for a total of 768 drives arrayed as: 32 x 24-Disk (73.4GB) RAID-5	
Initial Database Size 4,839 GB	Redundancy Level: 1 RAID-10 Log + RAID-5 Data		Storage 784 x 73.4 GB Drives



IBM System x3950 M2 Microsoft SQL Server 2008

TPC-E Revision 1.5.1
TPC Pricing Spec 1.3.0

Report Date:
July 2, 2008

Availability Date:
August 30, 2008

Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware						
IBM System x3950 M2 (2 x Intel Xeon Processor X7350 (2.93GHz/2x4MB L2 Cache) with 4 Memory Cards and 8 x 1GB DIMM)	7141-4SU	1	17,779	4	71,116	
Intel Xeon Processor X7350 (2.93GHz/2x4MB L2)	44E4243	1	3,339	8	26,712	
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 SDRAM	41Y2768	1	849	64	54,336	
Scalability Upgrade Option - 4-Chassis Cable Kit	44E4250	2	319	1	319	
73GB 15K 2.5" Hot-Swap SAS SFF	43X0837	1	369	2	738	
QLogic 8Gb FC Dual-Port HBA for IBM System x	42D0510	2*	2,499	4	9,996	
IBM ServeRAID-MR10M SAS/SATA Controller	43W4339	1	1,049	1	1,049	
Intel PRO/1000 PT Dual Port Server Adapter	39Y6126	1	269	4	1,076	
IBM T115 15-inch TFT Display	494215U	1	209	1	209	
IBM Preferred Pro USB Keyboard	40K9584	1	29	1	29	
IBM 3-Button Optical Mouse - Black - USB	40K9201	1	19	1	19	
ServicePac for 3-Year 24x7x4 Support (x3950 M2)	96P2688	1	3,390	4		13,560
ServicePac for 3-Year 24x7x4 Support (Display)	10N3110	1	90	1		90
				Subtotal	165,599	13,650
Server Storage						
4 Gbps SW SFP Transceiver 4 Pack	22R4897	1	550	18	9,900	
IBM 1m LC-LC Fibre Channel Cable	39M5696	1	79	80	6,320	
IBM 5m LC-LC Fibre Channel Cable	39M5697	1	129	24	3,096	
IBM S2 42U Standard Rack	93074RX	1	1,489	5	7,445	
IBM System Storage EXP3000 Enclosure	1727-01X	1	3,199	2	6,398	
IBM 1M SAS cable	39R6529	1	119	1	119	
IBM 3M SAS cable	39R6531	1	135	1	135	
IBM Hot-Swap 3.5 inch 73.4GB 15K SAS HDD	43W7523	1	329	16	5,264	
ServicePac for 3-Year 24x7x4 Support (EXP3000)	41L2768	1	760	2		1,520
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	1	300	5		1,500
IBM System Storage DS4800 Disk Upgrade to 8GB Cache	1815-82A	1	53,995	4	215,980	
IBM System Storage DS4000 EXP810 Storage Exp. Unit	1812-81A	1	6,000	48	288,000	
73.4GB 15K 4Gbps FC E-DDM Hot-Swap HDD	40K6816	1	1,301	768	999,168	
ServicePac for 3-Year 24x7x4 Support (EXP810)	10N3651	1	960	48		46,080
ServicePac for 3-Year 24x7x4 Support (DS4800)	41C5953	1	3,200	4		12,800
				Subtotal	1,541,825	61,900
Server Software						
Microsoft SQL Server 2008 Enterprise x64 Edition	810-07578	3*	13,969	1	13,969	
Microsoft SQL Server 2008 Client Access License	359-01912	3	163	1225	199,675	
Microsoft Windows Server 2008 DataCenter x64 Ed. 16P	P71-04279	3	2,999	16	47,984	
Microsoft Problem Resolution Services	N/A	3	245	1		245
				Subtotal	261,628	245
Client Hardware						
x3500 with Intel Xeon E5440 (2.83GHz/12MB), 1GB Memory	7977M2U	1	3,109	2	6,218	
2GB (2x1GB) PC2-5300 CL5 ECC DDR2	39M5785	1	169	2	338	
73GB 15K 3.5" Hot-Swap SAS	43W7523	1	329	4	1,316	
ServicePac for 3-Year 24x7x4 Support (x3500)	21P2084	1	689	2		1,378
				Subtotal	7,872	1,378
Client Software						
Microsoft Windows Server 2003 R2 Standard x86 Edition	P73-01972	3	999	2	1,998	
				Subtotal	1,998	0
Infrastructure						
D-Link DGS-2208 10/20/100/1000/2000Mbps Switch (2 spares)	DGS-2208	4	55	4	220	
Ethernet Cable (2 spares)	A3L791-10-BLK	4	5	22	110	
				Subtotal	330	
				Total	1,979,252	77,173
Compsat Technology Large Purchase Discount (See Note 1.)	21.86%	1			-389,503	
Microsoft Open Program Discount Schedule	10.57%	3			-27,858	

Pricing: 1 - Compsat Technology; 2 - IBM - 1-888-SHOP-IBM, ext. 5821;
3 - Microsoft; 4 - newegg.com

* This component is not immediately orderable. See the FDR for more information.

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

Discount for similarly sized configurations will be similar to those quoted here but may vary based on the components in the price quotation

Implementation and results 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.

Three-Year Cost of Ownership USD: \$1,639,064

TPC-E Throughput: 1,250.00
\$ USD/tpsE: \$1,311.26



**IBM System x3950 M2
Microsoft SQL Server 2008**

TPC-E Revision 1.5.1
TPC Pricing Spec 1.3.0

Report Date:
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Reported Throughput: 1250.00 tpsE		Configured Customers: 625,000		
Response Time (in seconds)	Minimum	Average	90th Percentile	Maximum
Broker-Volume	0.01	0.04	0.06	2.95
Customer-Position	0.00	0.02	0.04	1.06
Market-Feed	0.00	0.02	0.05	0.55
Market-Watch	0.00	0.03	0.06	10.82
Security-Detail	0.00	0.01	0.02	0.88
Trade-Lookup	0.00	0.43	0.63	2.34
Trade-Order	0.00	0.05	0.09	1.15
Trade-Result	0.00	0.05	0.10	1.91
Trade-Status	0.00	0.01	0.03	0.93
Trade-Update	0.01	0.51	0.69	12.22
Data-Maintenance	0.00	0.11	N/A	0.88
Transaction Mix		Transaction Count	Mix %	
Broker-Volume		4,468,877	4.900	
Customer-Position		11,856,084	13.000	
Market-Feed		911,879	1.000	
Market-Watch		16,415,825	18.000	
Security-Detail		12,768,001	14.000	
Trade-Lookup		7,295,476	8.000	
Trade-Order		9,211,421	10.100	
Trade-Result		9,118,771	9.999	
Trade-Status		17,327,950	19.000	
Trade-Update		1,823,841	2.000	
Data-Maintenance		120	N/A	
Test Duration and Timings				
Ramp-up Time			00:44:00	
Measurement Interval			02:00:00	
Business Recovery Time			01:41:10	
Total Number of Transactions Completed in Measurement Interval			91,198,125	