









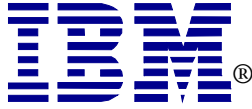
	<b>IBM® System x™ 3950 M2</b> <b>Microsoft® SQL Server 2008</b>		TPC-E Revision 1.4.0 TPC Pricing 1.3.0
			Report Date: April 11, 2008
TPC-E Throughput <b>804.00 tpsE</b>	Price/Performance <b>\$ 1,450.05</b> <b>USD per tpsE</b>	Availability Date <b>August 30, 2008</b>	Total System Cost <b>\$ 1,165,837 USD</b>
<b>Database Server Configuration</b>			
Operating System <b>Microsoft Windows Server 2008 Enterprise x64 Edition</b>	Database Manager <b>Microsoft SQL Server 2008 Enterprise x64 Edition</b>	Processors/Cores/Threads <b>8/32/32</b>	Memory <b>256GB</b>
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><b>Driver</b></p> </div> <div style="text-align: center;">  <p>D-Link Gigabit Switch</p> </div> <div style="text-align: center;">  <p>2 x IBM System Storage EXP3000 16 x 73.4GB SAS Drives RAID-10</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p>Ethernet Cables</p> </div> <div style="text-align: center;">  <p>Ethernet Cables</p> </div> <div style="text-align: center;">  <p>SAS Cable</p> </div> <div style="text-align: center;">  <p>6 x Fibre Cables</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p><b>Tier A - Clients</b> 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)</p> </div> <div style="text-align: center;">  <p><b>Tier B - Database Server</b> IBM System x3950 M2 8 x Quad-Core Intel Xeon Processor X7350 2.93GHz (8 Processors, 32 Cores, 32 Threads) 256GB of Memory 2 x Emulex 8Gb FC 1-Port HBA 2 x Emulex 8Gb FC 2-Port HBA 1 x IBM ServeRAID-MR10M SAS Controller 2 x IBM NetXtreme II 1000 Express Ethernet Adapter</p> </div> <div style="text-align: center;">  <p>3 x IBM System Storage DS4800 34 x IBM System Storage EXP810 Enclosure Each EXP810 contains up to 16 x 15K rpm drives for a total of 528 drives arrayed as: 22 x 24-Disk (73.4GB) RAID-5</p> </div> </div>			
Initial Database Size <b>3,171.45 GB</b>	Redundancy Level: 1 <b>RAID-10 Log + RAID-5 Data</b>		Storage <b>544 x 73.4 GB Drives</b>



# IBM System x3950 M2 Microsoft SQL Server 2008

TPC-E Revision 1.4.0  
TPC Pricing Spec 1.3.0

Report Date:  
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Description	Part Number	Price Source	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
<b>Server Hardware</b>						
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	1b	22,999	2	45,998	
Intel Xeon Processor X7350 (2.93GHz/2x4MB L2)	44E4243	1b	3,579	4	14,316	
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 SDRAM	41Y2768	1b	1,699	32	54,368	
73GB 15K 2.5" Hot-Swap SAS SFF	43X0837	1b	519	2	1,038	
IBM 8Gb FC Single-Port PCIe HBA for IBM System x	42D0485	1a*	1,469	2	2,938	
IBM 8Gb FC Dual-Port PCIe HBA for IBM System x	42D0494	1a*	2,279	2	4,558	
IBM ServeRAID-MR10M SAS/SATA Controller	43W4339	1b	1,049	1	1,049	
NetXtreme II 1000 Express Ethernet Adapter	39Y6066	1b	279	2	558	
IBM T115 15-inch TFT Display	494215U	1a	209	1	209	
IBM Preferred Pro USB Keyboard	40K9584	1b	29	1	29	
IBM 3-Button Optical Mouse - Black - USB	40K9201	1b	19	1	19	
ServicePac for 3-Year 24x7x4 Support (x3950 M2)	96P2688	1b	3,390	2		6,780
ServicePac for 3-Year 24x7x4 Support (Display)	10N3110	1b	90	1		90
				<b>Subtotal</b>	<b>125,080</b>	<b>6,870</b>
<b>Server Storage</b>						
4 Gbps SW SFP Transceiver 4 Pack	22R4897	1b	550	14	7,700	
IBM 1m LC-LC Fibre Channel Cable	39M5696	1b	79	60	4,740	
IBM 5m LC-LC Fibre Channel Cable	39M5697	1b	129	18	2,322	
IBM S2 42U Standard Rack	93074RX	1b	1,489	4	5,956	
PowerCom KingPro UPS (2 spares)	KIN-1500AP	4	135	21	2,835	
IBM System Storage EXP3000 Enclosure	1727-01X	1b	3,199	2	6,398	
IBM 1M SAS cable	39R6529	1b	119	1	119	
IBM 3M SAS cable	39R6531	1b	135	1	135	
IBM Hot-Swap 3.5 inch 73.4GB 15K SAS HDD	43W7523	1b	329	16	5,264	
ServicePac for 3-Year 24x7x4 Support (EXP3000)	41L2768	1b	760	2		1,520
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	1b	300	4		1,200
IBM System Storage DS4800 Disk Upgrade to 8GB Cache	1815-82A	2	53,995	3	161,985	
IBM System Storage DS4000 EXP810 Storage Exp. Unit	1812-81A	2	6,000	34	204,000	
73.4GB 15K 4Gbps FC E-DDM Hot-Swap HDD	40K6816	2S	1,301	528	686,928	
ServicePac for 3-Year 24x7x4 Support (EXP810)	10N3651	2	960	34		32,640
ServicePac for 3-Year 24x7x4 Support (DS4800)	41C5953	2	3,200	3		9,600
				<b>Subtotal</b>	<b>1,088,382</b>	<b>44,960</b>
<b>Server Software</b>						
Microsoft SQL Server 2008 Enterprise x64 Edition	N/A	3a	24,999	8	199,992	
Microsoft Windows Server 2008 Enterprise x64 Edition	P72-03168	3a	3,999	1	3,999	
Microsoft Problem Resolution Services	N/A	3b	245	1		245
				<b>Subtotal</b>	<b>203,991</b>	<b>245</b>
<b>Client Hardware</b>						
x3500 with Intel Xeon E5440 (2.83GHz/12MB), 1GB Memory	7977M2U	1b	3,109	2	6,218	
2GB (2x1GB) PC2-5300 CL5 ECC DDR2	39M5785	1b	259	2	518	
73GB 15K 3.5" Hot-Swap SAS	43W7523	1b	329	4	1,316	
ServicePac for 3-Year 24x7x4 Support (x3500)	21P2084	1b	689	2		1,378
				<b>Subtotal</b>	<b>8,052</b>	<b>1,378</b>
<b>Client Software</b>						
Microsoft Windows Server 2003 R2 Standard x86 Edition	P73-01972	3a	999	2	1,998	
				<b>Subtotal</b>	<b>1,998</b>	<b>0</b>
<b>Infrastructure</b>						
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	14	70	
				<b>Subtotal</b>	<b>290</b>	
				<b>Total</b>	<b>1,427,793</b>	<b>53,453</b>
IBM Large Purchase Discount (See Note 2.)	28.62%	1b			-48,375	
Compsat Technology Large Purchase Discount (See Note 3.)	23.03%	2			-252,249	
Microsoft Open Program Discount Schedule	7.17%	3a			-14,785	

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

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

Note 1: "S" mean that one or more components of the measured configuration have been substituted in the Priced Configuration. See the FDR for details.

Note 2: Discount based on IBM Direct guidance applies to all line items where Pricing=1b.

Pricing is for this system or one of similar size.

Note 3: Discount applies to all line items where Pricing=2; pricing is for these or similar quantities.

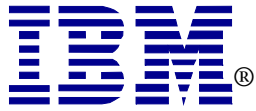
Implementation and results audited by Doug Johnson for InfoSizing, Inc. (www.sizing.com)

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:** \$1,165,837

**TPC-E Throughput:** 804.00

**\$ USD/tpsE:** \$1,450.05



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

TPC-E Revision 1.4.0  
TPC Pricing Spec 1.3.0

Report Date:  
April 11, 2008

Availability Date:  
August 30, 2008

Reported Throughput: 804.00 tpsE		Configured Customers: 410,000		
Response Time (in seconds)	Minimum	Average	90 <sup>th</sup> Percentile	Maximum
Broker-Volume	0.01	0.05	0.09	0.63
Customer-Position	0.00	0.03	0.06	3.03
Market-Feed	0.00	0.03	0.07	4.33
Market-Watch	0.00	0.04	0.08	0.89
Security-Detail	0.00	0.02	0.03	0.74
Trade-Lookup	0.00	0.49	0.70	5.93
Trade-Order	0.00	0.10	0.15	3.16
Trade-Result	0.00	0.11	0.18	7.56
Trade-Status	0.00	0.02	0.04	3.05
Trade-Update	0.02	0.58	0.75	10.41
Data-Maintenance	0.01	0.09	N/A	0.53
Transaction Mix		Transaction Count	Mix %	
Broker-Volume		2,836,029	4.900	
Customer-Position		7,524,105	13.000	
Market-Feed		578,889	1.000	
Market-Watch		10,418,178	18.000	
Security-Detail		8,102,849	14.000	
Trade-Lookup		4,629,718	7.999	
Trade-Order		5,845,845	10.100	
Trade-Result		5,788,830	10.002	
Trade-Status		10,996,937	19.000	
Trade-Update		1,157,423	2.000	
Data-Maintenance		125	N/A	
Test Duration and Timings				
Ramp-up Time			00:57:00	
Measurement Interval			02:00:00	
Business Recovery Time			01:16:16	
Total Number of Transactions Completed in Measurement Interval			57,878,803	