



**IBM System x3950  
DB2® 9**

TPC-C Rev. 5.7

**Report Date:  
December 15, 2006**

<b>Total System Cost</b>	<b>TPC-C Throughput</b>	<b>Price/Performance</b>	<b>Availability Date</b>	
\$1,754,100 USD	<b>331,087</b>	\$5.30 USD	<b>Feb 14, 2007</b>	
<b>Database Processors/Cores/Threads</b>	<b>Database Manager</b>	<b>Operating System</b>	<b>Other Software</b>	<b>No. Users</b>
4/8/16 3.5 GHz Intel Xeon 7150N	DB2 9	SLES 10	Microsoft Visual C++ Microsoft COM+	280,320

Gigabit Switch

<p><u>16 Clients</u> IBM® System x3500 2x Intel 5160 DC 3.0GHz 2GB Memory 36GB Internal Drive 2 Gigabit Ethernet</p>	<p><u>IBM® System x3950</u> 4xIntel Xeon 7150N (3.5GHz) 128GB Memory 1x DS4000 Single Port 4GB FC 1x36GB Internal SAS Drives 6 x DS4000 Dual Port 4GB FC 2 x Intel Pro/1000 GT Ethernet</p>	<p><u>Storage</u> 6 x IBM® DS4800 Storage Servers 63x IBM® EXP810 DiskEnclosures 1008 x 36.4GB 15K RPM Drives 1 x DS3400 DC Storage Controller 7 x 73.4GB 15K RPM SAS Drives</p>
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System Components	Each of the 16 Clients		Server	
	Quantity	Description	Quantity	Description
<b>Processors/Cores/Threads</b>	2/4/4	3.0GHz 2MB L2 Xeon 5160 Dual Core	4/8/16	3.5 GHz Intel Xeon 7150N
<b>Memory</b>	4	512 MB	32	4 GB
<b>Disk Controllers</b>	1	SAS	2 6 1 6 1	Integrated SAS 4Gb dual-port FC Adapters 4Gb single-port FC Adapters IBM DS4800 Controllers for Data IBM DS3400 Controller for Log
<b>Disk Drives</b>	1	36 GB	1008 1 7	36.4GB 15K RPM FC 36GB 10K RPM SAS 73.4GB 15K RPM SAS
<b>Total Storage</b>		576 GB		36,820 GB
<b>Terminals</b>	1	System Console	1	System Console

IBM Corporation	IBM System x3950 c/s			TPC-C Revision 5.7			
	DB2 9			Report Date: Dec. 15, 2006			
Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
<b>Server Hardware</b>							
IBM System x3950 ( 2 x Intel Xeon Processor 7150N 3.5GHz 667MHz, 2 x 1 MB L2 Cache and 16MB L3 Cache)	8878-5RU	IBM	1	25,199	1	25,199	
Intel Xeon Processor 7150N 3.5GHz/2x1MB L2, 16MB L3	43V4553	IBM	1	5,999	2	11,998	
x3950 E (0 Processors, 0 Memory, 2 Memory Cards)	8879-1RU	IBM	1	6,999	1	6,999	
Scalability Cable 2.3.M	13M7414	IBM	1	299	2	598	
8GB (2x4GB) PC2-3200 CL3 2RX4 ECC DDR2 SDRAM RDIMM	30R5145	IBM	1	5,569	16	89,104	
Active Memory 4-Slot Memory Expansion Card	41Y5000	IBM	1	499	2	998	
IBM 36.4GB 10K 2.5 inch SAS Drive	40K1051	IBM	1	279	1	279	
Intel Pro/1000 GT Single Port Server Adapter	39Y6105	IBM	1	139	2	278	
Display	49387NU	IBM	1	149	1	149	
IBM Preferred Pro USB Keyboard	40K9584	IBM	1	29	1	29	
IBM 3-Button Optical Mouse - Black - USB	40K9201	IBM	1	19	1	19	
ServicePac for 3-Year 24x7x4 Support (x3950)	96P2688	IBM	1	3,390	1		3,390
ServicePac for 3-Year 24x7x4 Support (x3950 E)	10N3059	IBM	1	1,695	1		1,695
ServicePac for 3-Year 24x7x4 Support (Display)	30L9183	IBM	1	90	1		90
<b>Subtotal</b>						<b>135,650</b>	<b>5,175</b>
<b>Server Storage</b>							
IBM DS4000 FC 4Gbps - PCI-X Dual Port HBA	39M5895	IBM	1	2,485	6	14,910	
IBM TotalStorage DS4800 Midrange Disk Subsystem	1815-82H	IBM	1	65,245	6	391,470	
IBM Short Wave SFP Module (4 Pack)	22R0483	IBM	1	550	54	29,700	
IBM 1m LC-LC Fibre Channel Cable	39M5696	IBM	1	79	144	11,376	
IBM 5m LC-LC Fibre Channel Cable	39M5697	IBM	1	129	12	1,548	
IBM TotalStorage DS4000 EXP810 Storage Exp. Unit	1812-81H	IBM	1	6,000	72	432,000	
36.4GB 15K 2Gbps FC Drive	06P5772	IBM	1	1,115	1008	1,123,920	
IBM System Storage DS3400 Dual Controller	1726-42X	IBM	1	10,224	1	10,224	
IBM Short Wave SFP Module	19K1271	IBM	1	499	1	499	
73.4GB 15K SAS Hot-Swap HDD	40K1043	IBM	1	399	7	2,793	
IBM DS4000 FC 4Gbps - PCI-X Single-Port HBA	39M5894	IBM	1	1,485	1	1,485	
1M Fibre Optic Cable	39M5696	IBM	1	79	1	79	
IBM S2 42U Standard Rack	93074RX	IBM	1	1,489	6	8,934	
ServicePac for 3-Year 24x7x4 Support (EXP810)	41L2768	IBM	1	760	72		54,720
ServicePac for 3-Year 24x7x4 Support (DS4800)	96P2062	IBM	1	1,087	6		6,522
ServicePac for 3-Year 24x7x4 Support (DS3400)	41L2768	IBM	1	760	1		760
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	IBM	1	300	6		1,800
<b>Subtotal</b>						<b>2,028,938</b>	<b>63,802</b>
<b>Server Software</b>							
DB2 ESE 9		IBM	2	262.65	400	105,060	
Extended Systems - SW License and Maintenance 12 Months							
SW Maintenance Renewal - 1 Year		IBM	2	12.51	800		10,008
SUSE Linux Enterprise Server 10 for x86, AMD64, and Intel EM64T with Priority Support for 3 Years	4584142100	SUSE	3	3,748	1	3,748	
<b>Subtotal</b>						<b>108,808</b>	<b>10,008</b>
<b>Client Hardware</b>							
Linksys ProConnect KVM Switch - 2 ports (2 spares)	430446		6	40	3	120	
IBM System x3500 (Dual-Core Intel Xeon 5160 3.00GHz, 2x512MB RAM)	7977-92U	IBM	1	2,639	16	42,224	
3.00GHz/1333MHz/2x2MB L2 Xeon Processor 5160 Upgrade	40K1236	IBM	1	1,279	16	20,464	
1GB (2x512MB) PC2-5300 CL5 ECC DDR2 FBD 667MHz	39M5782	IBM	1	259	16	4,144	
36.4GB 15K SAS Hot-Swap Drive	40K1042	IBM	1	249	16	3,984	
ServicePac for 3-Year 24x7x4 Support (x3550)	96P2250	IBM	1	586	16		9,376
<b>Subtotal</b>						<b>70,936</b>	<b>9,376</b>
<b>Client Software</b>							
Microsoft Windows Server 2000 with COM+	C11-00821	Microsoft	4a	738	16	11,808	
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft	4	109	1	109	
Microsoft Problem Resolution Services		Microsoft	4	245	1		245
<b>Subtotal</b>						<b>11,917</b>	<b>245</b>
<b>Network Components</b>							
D-LINK DGS-1024D 24-Port 10/100/1000 Switch (2 spares)	DGS1024D		5	235	3	705	
Ethernet Cable (2 spares)	CC5E-B14B		7	3	20	60	
<b>Subtotal</b>						<b>765</b>	
<b>Total</b>						<b>2,357,014</b>	<b>88,606</b>
Large Purchase Discount (See Note 1.)	29.89%		1				691,520
Pricing: 1 - IBM - 1-888-SHOP-IBM, ext. 5821; 2 - IBM; 3 - Novell; 4 - Microsoft, 4a = 8% discount; 5 - compuplus.com; 6 - CDW.com; 7 - newegg.com				<b>Three-Year Cost of Ownership USD:</b>		\$1,754,100	
Note 1: Discount based on IBM Direct guidance applies to all line items where Pricing=1. Pricing is for this system or one of similar size.				<b>tpmC:</b>		331,087	
Note 2: Pricing for DB2 9 is based on Value Units (VUs) as shown in the price quote in Appendix D.				<b>\$ USD/tpmC:</b>		\$5.30	
Note 3: Fifteen x335 were substituted for the priced clients.							
Audited by Francois Raab, 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 sections 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.							

## Numerical Quantities Summary for the IBM System x3950

MQTH, computed Maximum Qualified Throughput: 331,087 tpmC

<u>Response Times (in seconds)</u>	<u>90<sup>th</sup> %</u>	<u>Average</u>	<u>Maximum</u>
New Order	2.11	1.17	5.35
Payment	2.20	1.19	6.10
Order-Status	1.95	1.15	4.40
Delivery (interactive)	1.30	0.64	4.40
Delivery (deferred)	0.30	0.19	0.81
Stock-Level	2.09	1.30	5.00
Menu	1.42	0.65	5.21

Response time delay added for emulated components was 0.1 seconds

<u>Transaction Mix, in percent of total transactions</u>	<u>Percent</u>
New Order	44.90%
Payment	43.03%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.02%

<u>Keying/Think Times (in seconds)</u>	<u>Min.</u>	<u>Average</u>	<u>Max.</u>
New Order	18.00/0.01	18.01/12.02	18.08/120.20
Payment	3.00/0.01	3.01/12.02	3.05/120.20
Order-Status	2.00/0.01	2.01/10.01	2.05/100.10
Delivery	2.00/0.01	2.01/5.02	2.03/50.20
Stock-Level	2.00/0.01	2.01/5.02	2.05/50.20

### Test Duration

Ramp-up Time	2 hours 19 minutes
Measurement interval	2 hours 00 minutes
Transactions during measurement interval (all types)	88469266
Ramp-down time	17 minutes

### Checkpoints

Number of checkpoints	N/A
Checkpoint interval	N/A