

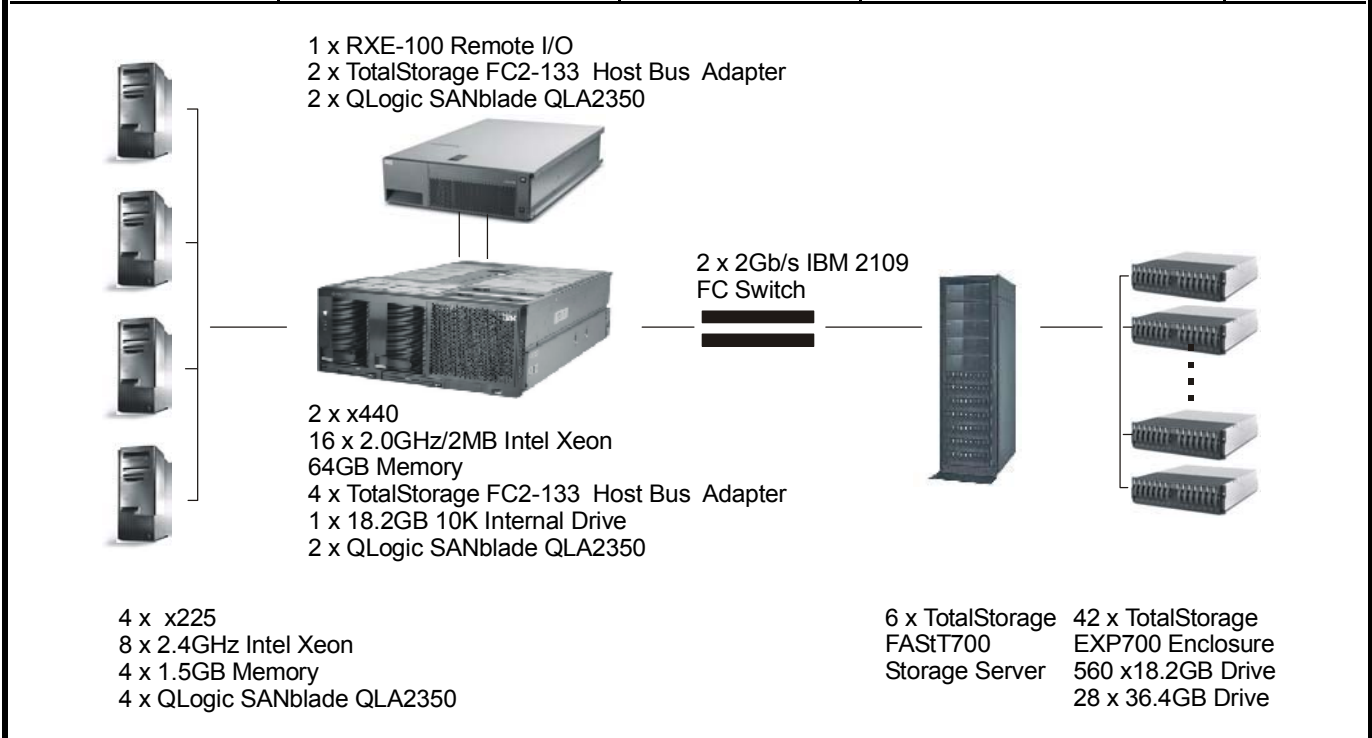
**IBM® @server™ xSeries™ 440 c/s
with
Microsoft® SQL Server 2000**

TPC-C Revision 5.1

Report Date: March 26, 2003

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
\$1,674,017	151,744.13 tpmC	\$11.03 / tpmC	Sept. 25, 2003

Database Server	Database Manager	Operating System	Other Software	Number of Users
Processors/Cores/Threads 16/16/32 Intel Xeon 2.0GHz	Microsoft SQL Server 2000 Enterprise Edition SP3 w/QFE	Microsoft Windows® Server 2003 Datacenter Edition w/QFE	Microsoft Visual C++ 6.0 Win32 Microsoft COM+	124,800



System Component	Qty	Server:	Qty	Each Client:
Processors/Cores/Threads	16/16/32	2.0GHz Xeon Processor	2/2/4	2.4GHz Xeon DP
Cache		MP w/2MB L3 Cache		w/512KB L2 Cache
Memory	64	1GB ECC SDRAM	1	1.5GB Memory
Disk Controllers	6	TotalStorage FC2-133 Host Bus Adapter	1	Ultra320 SCSI Interface
Disk Drives	560	18.2GB (15000 rpm)	1	18.2GB (10000 rpm)
	28	36.4GB (15000 rpm)		
	1	18.2GB (10000 rpm)		
Total Storage		10445.81 GB		
Tape Drive	1	20/40GB SCSI Tape Drive		

IBM Corporation	IBM @server xSeries 440 c/s with Microsoft SQL Server 2000			TPC-C Revision 5.1			
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Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
x440 with 8 Xeon 2.0GHz/2MB	8687-78X	IBM		1	2	144,798	6,442
1GB PC133 ECC SDRAM RDIMM	31P8300	IBM		1	64	63,296	0
IBM TotalStorage FASTT FC2-133 Host Bus Adapter	24P0960	IBM		1	4	5,940	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM		1	1	275	0
QLogic SANBlade QLA2350 FC-VI Adapter	QLA2350-BK	QLogic		1	2	3,990	0
3.5M Interconnect Management Cable Kit	31P6087	IBM		1	5	245	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	1	129	90
IBM Preferred Pro Full-Size Keyboard PS/2	31P7415	IBM		1	1	29	0
IBM Sleek 2-Button Mouse	28L3673	IBM		1	1	19	0
Subtotal						218,721	6,532
Server Storage							
IBM RXE-100 Remote Expansion Enclosure	8684-1RX	IBM		1	1	4,569	2,100
IBM Remote I/O PCI-X 6-Slot Expansion Kit	31P5998	IBM		1	1	1,699	0
IBM TotalStorage FASTT FC2-133 Host Bus Adapter	24P0960	IBM		1	2	2,970	0
QLogic SANBlade QLA2350 FC-VI Adapter (2 spares)	QLA2350-BK	QLogic		1	4	7,980	0
IBM TotalStorage FASTT700 Storage Server	17421RU	IBM		1	6	278,994	4,560
IBM FASTT700 Mini Hub	19K1269	IBM		1	10	8,990	0
IBM Short Wave SFP Module	19K1271	IBM		1	182	90,818	0
IBM 1m LC-LC Fibre Channel Cable	19K1247	IBM		1	62	4,898	0
IBM 5m LC-LC Fibre Channel Cable	19K1248	IBM		1	44	5,676	0
IBM TotalStorage FASTT EXP700 Storage Exp. Unit	17401RU	IBM		1	6,000	252,000	31,920
2Gbps FC 36.4GB 15K Hot-Swap HDD	06P5772	IBM		1	28	31,220	0
2Gbps FC 18.2GB 15K Hot-Swap HDD	06P5771	IBM		1	560	381,360	0
20/40GB DDS/4 Tape AutoLoader	00N7991	IBM		1	1	769	0
IBM NetMEDIA Storage Expansion Unit EL	3551001	IBM		1	1	689	0
NetBAY42SX Standard Rack	9306421	IBM		1	5	7,195	840
IBM UPS 500	33L3477	IBM		3	1	102	0
Enterprise Rack Prep Fee	06P7514	IBM		1	5	2,500	0
Enterprise Rack Installation Fee	06P7515	IBM		1	6	900	0
Option Integration Fee	58P8665	IBM		1	5	550	0
Image Load Fee	06P7505	IBM		1	1	150	0
Subtotal						1,084,029	39,420
Server Software							
Microsoft SQL Server 2000 Enterprise Edition	810-00846	Microsoft		2	16	264,656	
Database Software Support Package		Microsoft		2	3	1,950	5,850
IBM Preload Kit for Datacenter (1-16 Processors)	4816-1DU	IBM		2	1	65,999	41,850
IBM Software Update Subscription (1-16 Processors - 1 Year)	4816-ADX	IBM		2	3	66,474	0
Subtotal						397,129	47,700
Client Hardware							
x225 with 2.4GHz/512KB Xeon DP, 512MB Memory	8647-3AX	IBM		1	4	5,076	2,792
2.4GHz/512KB Xeon DP Processor Upgrade	59P5108	IBM		1	4	2,796	0
512MB PC2100 ECC SDRAM RDIMM	33L5038	IBM		1	8	3,112	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM		1	4	1,100	0
QLogic SANblade QLA 2350 FC-VI Adapter	QLA2350-BK	QLogic		1	4	7,980	0
IBM 10/100 Dual-Port Server Adapter	22P4901	IBM		1	8	1,672	0
Adaptec Quartet64 4-Port Adapter	ANA62044	Adaptec		1	6	3,300	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	4	516	360
Subtotal						25,552	3,152
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft		2	4	2,952	0
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft		2	1	109	0
Subtotal						3,061	0
Network Components							
IBM TotalStorage SAN Switch F16	2109F16	IBM		1	2	62,166	5,760
Subtotal						62,166	5,760
Compsat Technology discount of 13.53%				0.1353		219,205	
Discount						219,205	
Total						1,571,453	102,564
Pricing: 1 - Compsat Technology; 2 - Microsoft; 3 - PC Connection				Three-Year Cost of Ownership: \$1,674,017			
Audited by Brad Askins, InfoSizing, Inc.				tpmC: 151,744.13			
				\$/tpmC: \$11.03			
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			
MQTh, Computed Maximum Qualified Throughput: 151,744.13 tpmC			
Response Times (in seconds)	90th Percentile	Average	Maximum
New-Order	1.21	0.76	7.86
Payment	1.16	0.72	7.27
Order-Status	1.17	0.73	6.89
Delivery (Interactive)	0.74	0.40	5.52
Delivery (Deferred)	0.19	0.14	4.44
Stock-Level	1.49	0.98	7.09
Menu	0.74	0.40	5.53
Response time delay added for emulated components: 0.1 Seconds			
Transaction Mix (in percent of total transactions)			Percent
New-Order			44.96
Payment			43.02
Order-Status			4.00
Delivery			4.01
Stock-Level			4.01
Keying/Think Times (in seconds)	Minimum	Average	Maximum
New-Order	18.00 / 0.00	18.01 / 12.05	18.04 / 120.51
Payment	3.00 / 0.00	3.01 / 12.05	3.04 / 120.51
Order-Status	2.00 / 0.00	2.01 / 10.04	2.03 / 100.51
Delivery	2.00 / 0.00	2.01 / 5.05	2.03 / 50.51
Stock-Level	2.00 / 0.00	2.01 / 5.05	2.04 / 50.51
Test Duration			
Ramp-up time			46 minutes 2 seconds
Measurement interval			120 minutes
Number of checkpoints			4
Checkpoint interval			30 minutes
Number of transactions (all types) completed in measurement interval			42,128,981