



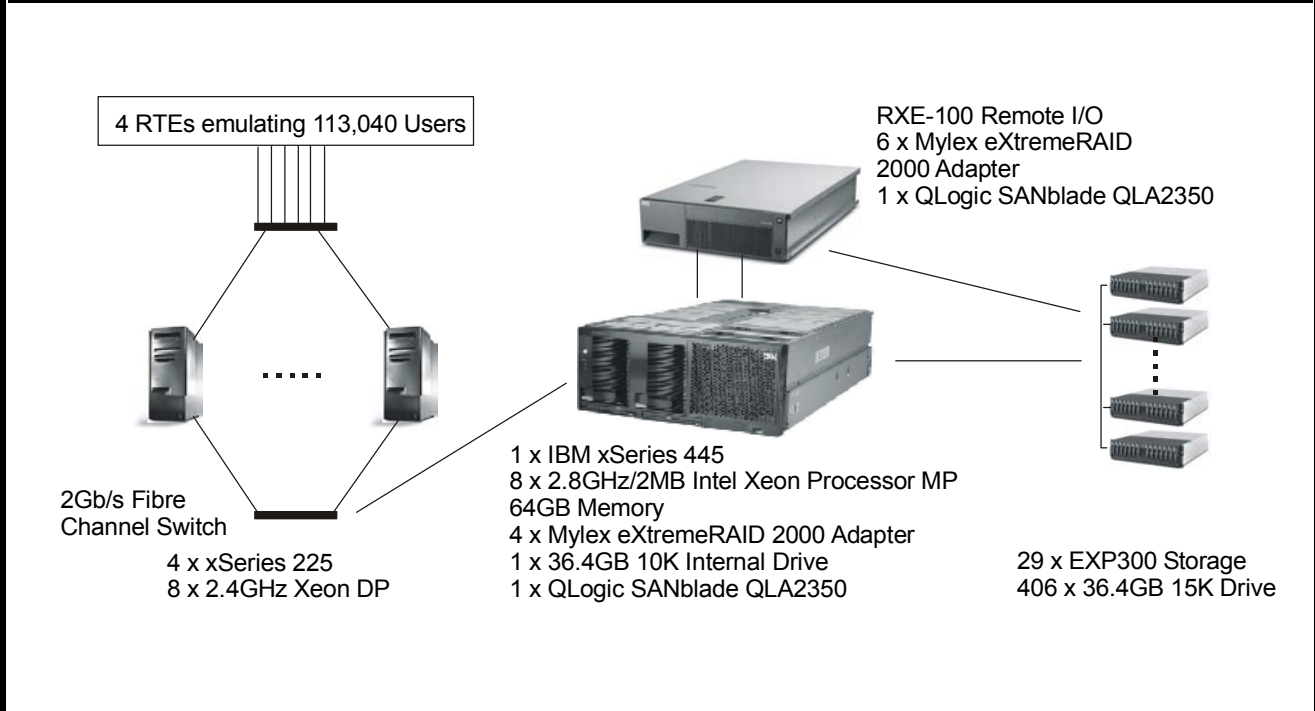
**IBM @server™ xSeries™ 445 c/s**  
**with**  
**Microsoft® SQL Server 2000**

TPC-C Rev. 5.1

Report Date: June 30, 2003

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
<b>\$705,115</b>	<b>139,153.98 tpmC</b>	<b>\$5.07 / tpmC</b>	<b>Dec. 31, 2003</b>

Database Server	Database Manager	Operating System	Other Software	Number of Users
<b>Processors/Cores/Threads: 8/8/16</b> <b>Intel Xeon MP Processor 2.8GHz</b>	<b>Microsoft SQL Server 2000 Enterprise Edition SP3 with QFE</b>	<b>Microsoft Windows® Server 2003 Datacenter Edition</b>	<b>Microsoft Visual C++ 6.0 Win32 Microsoft COM+</b>	<b>113,040</b>



System Component	Qty	Server:	Qty	Each of Four Clients:
Processors/Cores/Threads	8/8/16	2.8GHz Xeon Processor MP w/2MB L3 Cache	2/2/4	2.4GHz Xeon DP w/512KB L2 Cache
Cache				
Memory	32	2GB ECC RDIMM	4	512MB
Disk Controllers	10	Mylex eXtremeRAID 2000 Adapter	1	Ultra320 SCSI Interface
Disk Drives	1	36.4GB (10000 rpm)	1	18.2GB Hard Disk
	406	36.4GB (15000 rpm)		
Total Storage		14814.8GB		
Tape Drive	1	20/40GB SCSI Tape Drive		

IBM Corporation	IBM @server xSeries 445 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
<b>Server Hardware</b>							
xSeries 445 with:	8870-4RX	IBM		1	40,799	1	3,390
4 x 2.8GHz/2MB Xeon Processor						40,799	
4 x 512MB ECC RDIMM							0
xSeries 2.8GHz/2MB Processor	02R2064	IBM		1	6,599	4	0
xSeries 445 SMP Expansion Module	02R1870	IBM		1	4,849	1	0
2GB PC2100 DDR ECC SDRAM RDIMM	33L5040	IBM		1	2,899	32	0
36.4GB 10K Ultra320 SCSI Hot-Swap Drive	32P0726	IBM		1	299	1	0
IBM Preferred Pro Full-Size Keyboard PS/2	31P7415	IBM		1	29	1	0
IBM Slek 2-Button Mouse	28L3673	IBM		1	19	1	0
Mylex eXtremeRAID 2000 Adapter (2 spares)	08P3438	Mylex		1	1,215	12	0
QLogic SANBlade QLA2350 FC-VI Adapter (2 spares)	QLA2350-BK	QLogic		1	1,995	4	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	129	1	90
					<b>Subtotal</b>	<b>187,848</b>	<b>3,480</b>
<b>Server Storage</b>							
IBM RXE-100 Remote Expansion Enclosure	8684-1RX	IBM		1	4,569	1	1,330
IBM Remote I/O PCI-X 6-Slot Expansion Kit	31P5998	IBM		1	1,699	1	0
IBM EXP300 Rack Storage Exp. Enclosure	35311RU	IBM		1	3,179	29	5,800
36.4GB 15K Ultra160 SCSI Hot-Swap Drive	06P5768	IBM		1	549	406	0
3.5M Remote I/O Cable Kit	31P6102	IBM		1	599	1	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	IBM		1	105	29	0
NetBAY42S Standard Rack	9306421	IBM		1	1,439	3	504
IBM UPS 500	252277	IBM		1	102	1	0
IBM NetMEDIA Storage Expansion Unit EL	3551001	IBM		1	689	1	760
20/40GB DDS/4 Tape AutoLoader	00N7991	IBM		1	699	1	0
Enterprise Rack Prep Fee	06P7514	IBM		1	500	3	0
Enterprise Rack Installation Fee	06P7515	IBM		1	150	3	0
Option Integration Fee	58P8665	IBM		1	110	5	0
Image Load Fee	06P7505	IBM		1	150	1	0
					<b>Subtotal</b>	<b>333,454</b>	<b>8,394</b>
<b>Server Software</b>							
Microsoft SQL Server 2000 Enterprise Edition	810-00846	Microsoft		2	16,541	8	132,328
Database Software Support Package		Microsoft		2	1,950	3	5,850
IBM Preload Kit for Datacenter 2003 (1-8 Processors)	4816-4BU	IBM		1	27,279	1	41,850
IBM Maintenance Update Subscription (1-8 Processors-1 Yr)	4816-DBX	IBM		1	2,549	3	0
					<b>Subtotal</b>	<b>167,254</b>	<b>47,700</b>
<b>Client Hardware</b>							
x225 with 2.4GHz/512KB Xeon DP, 512MB RAM	8647-3AX	IBM		1	1,269	4	2,792
2.4GHz/512KB Xeon DP Processor Upgrade	59P5108	IBM		1	699	4	0
512MB PC2100 ECC SDRAM RDIMM	33L5038	IBM		1	305	16	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM		1	275	4	0
QLogic SANblade QLA 2350 FC-VI Adapter	QLA2350-BK	QLogic		1	1,995	4	0
IBM 10/100 Dual-Port Server Adapter	22P4901	IBM		1	209	8	0
Adaptec Quartet64 4-Port Adapter	ANA64044	Adaptec		1	550	4	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	129	4	360
					<b>Subtotal</b>	<b>26,220</b>	<b>3,152</b>
<b>Client Software</b>							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft		2	738	4	0
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft		2	109	1	0
					<b>Subtotal</b>	<b>3,061</b>	<b>0</b>
<b>Network Components</b>							
SAN Fibre Channel 8-Port Switch	3534F08	IBM		1	7,000	1	2,300
IBM Short Wave SFP Module	19K1271	IBM		1	499	2	0
IBM 5M LC-LC Fibre Channel Cable	19K1248	IBM		1	129	6	0
					<b>Subtotal</b>	<b>8,772</b>	<b>2,300</b>
Compsat Technology discount of 13.30%.					<b>Discount</b>	<b>86,520</b>	
					<b>Total</b>	<b>726,609</b>	<b>65,026</b>
1 - Compsat Technology; 2 - Microsoft				<b>Three-Year Cost of Ownership:</b>		\$705,115	
Audited by Brad Askins, InfoSizing, Inc.				<b>tpmC:</b>		139,153.98	
				<b>\$/tpmC:</b>		\$5.07	
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: 139,153.98 tpmC

Response Times (in seconds)	90th Percentile	Average	Maximum
New-Order	0.83	0.52	48.06
Payment	0.77	0.46	21.82
Delivery	0.65	0.35	5.98
Stock Level	1.22	0.86	8.22
Order Status	0.78	0.48	9.57
Delivery (Deferred)	0.22	0.16	4.47
Menu	0.66	0.36	37.80
<b>Response Time Delay Added for Emulated Components: 0.1 Seconds</b>			
Transaction Mix (in percent of total transactions)			Percent
New-Order			44.95
Payment			43.02
Delivery			4.01
Stock-Level			4.01
Order Status			4.00
Keying/Think Times (in seconds)	Minimum	Average	Maximum
New Order	18.00 / 0.00	18.02 / 12.06	18.06 / 120.53
Payment	3.00 / 0.00	3.02 / 12.05	3.06 / 120.52
Delivery	2.00 / 0.00	2.01 / 5.05	2.06 / 50.51
Stock Level	2.00 / 0.00	2.01 / 5.05	2.05 / 50.52
Order Status	2.00 / 0.00	2.01 / 10.05	2.05 / 100.52
<b>Test Duration</b>			
Ramp-up time			51 minutes 53 seconds
Measurement interval			120 minutes
Number of checkpoints			4
Checkpoint interval			30 minutes
Number of transactions (all types) completed in measurement interval			38,636,986