

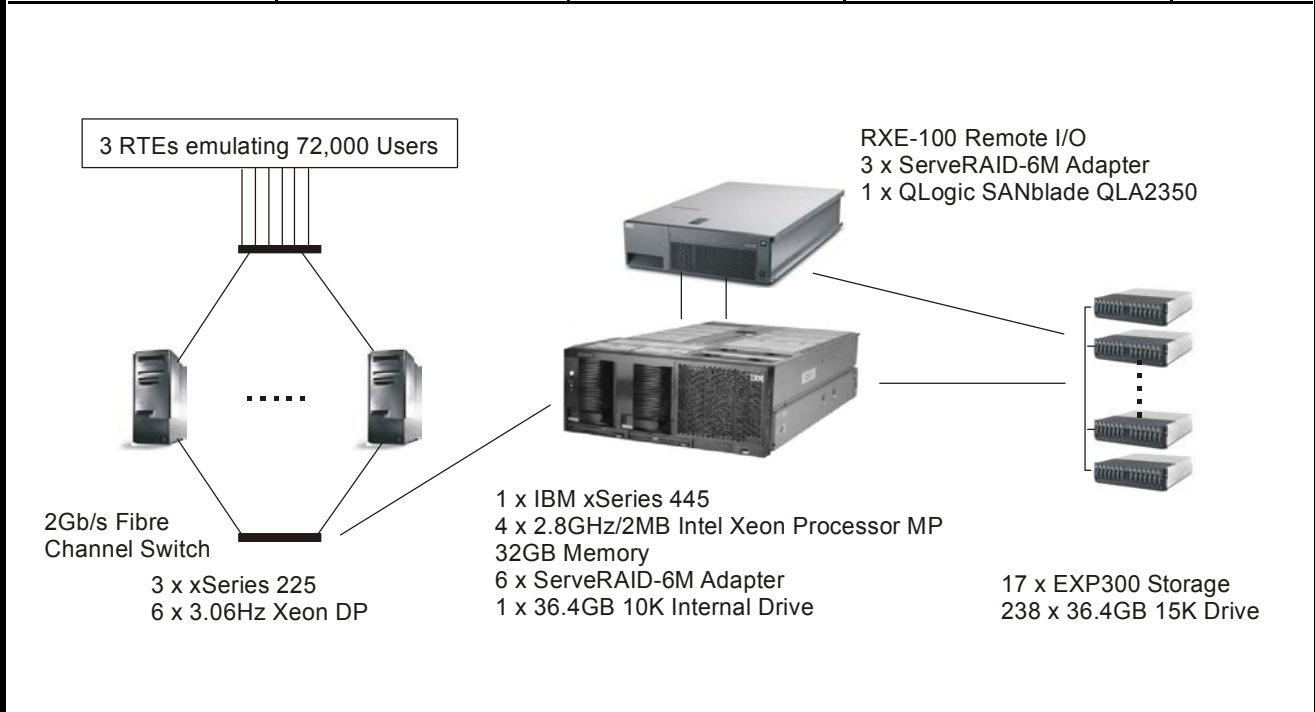
IBM®@server®xSeries® 445 c/s
with
Microsoft® SQL Server 2000

TPC-C Rev. 5.1

Report Date: Oct. 17, 2003

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
\$357,969	90,271.76 tpmC	\$3.97 / tpmC	Dec. 31, 2003

Database Server	Database Manager	Operating System	Other Software	Number of Users
Processors/Cores/Threads: 4/4/8 Intel Xeon Processor MP 2.8GHz	Microsoft SQL Server 2000 Enterprise Edition SP3 with QFE	Microsoft Windows® Server 2003 Enterprise Edition	Microsoft Visual C++ 6.0 Microsoft COM+	72,000



System Component	Qty	Server:	Qty	Each of Three Clients:
Processors/Cores/Threads	4/4/8	2.8GHz Xeon Processor	2/2/4	3.06GHz Xeon DP
Cache		MP w/2MB L3 Cache		w/512KB L2 Cache
Memory	16	2GB ECC RDIMM	4	512MB
Disk Controllers	9	ServeRAID-6M Adapter	1	Ultra320 SCSI Interface
Disk Drives	1	36.4GB (10000 rpm)	1	36.4GB Hard Disk
Total Storage	238	36.4GB (15000 rpm)		
Tape Drive	1	8102.43GB		
		20/40GB SCSI Tape Drive		

IBM Corporation	IBM @server xSeries 445 c/s				TPC-C Revision 5.1			
	with Microsoft SQL Server 2000				Report Date: October 17, 2003			
Description	Part Number	Brand	Third Party	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware								
xSeries 445 with:	8870-4AX	IBM			1	26,379	26,379	3,390
2 x 2.8GHz/2MB Xeon Processor								
2.8GHz/2MB Xeon Processor Upgrade	02R2064	IBM			1	6,599	13,198	0
2GB PC2100 DDR ECC SDRAM RDIMM	33L5040	IBM			1	2,899	46,384	0
36.4GB 10K Ultra320 SCSI Hot-Swap Drive	32P0726	IBM			1	299	299	0
IBM Preferred Pro Full-Size Keyboard PS/2	31P7415	IBM			1	29	29	0
IBM Sleek 2-Button Mouse	28L3673	IBM			1	15	15	0
IBM ServeRAID-6M Ultra320 SCSI Adapter	32P0033	IBM			1	999	8,991	0
QLLogic SANBlade QLA2350 FC-VI Adapter (2 spares)	QLA2350-BK	QLLogic			1	1,995	5,985	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM			1	119	119	90
						Subtotal	101,399	3,480
Server Storage								
IBM RXE-100 Remote Expansion Enclosure	8684-1RX	IBM			1	4,569	4,569	1,330
IBM EXP300 Rack Storage Exp. Enclosure	35311RU	IBM			1	3,179	54,043	3,400
36.4GB 15K Ultra160 SCSI Hot-Swap Drive	06P5768	IBM			1	495	117,810	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	IBM			1	105	1,890	0
NetBAY42S Standard Rack	9306421	IBM			1	1,439	2,878	336
IBM UPS 500	34L3477	IBM			1	99	99	0
IBM NetBAY Tape Enclosure	0034BOX	IBM			1	849	849	120
20/40GB DDS/4 Tape AutoLoader	00N7991	IBM			1	699	699	0
						Subtotal	182,837	5,186
Server Software								
Microsoft SQL Server 2000 Enterprise Edition	810-00846	Microsoft			2	16,541	66,164	0
Database Software Support Package (Includes OS)	PRO-PRORS-16U-01	Microsoft			2	1,950	3,900	5,850
Microsoft Windows Server 2003 Enterprise Edition	P7200264	IBM			1	2,399	2,399	0
						Subtotal	68,563	5,850
Client Hardware								
x225 w/3.06GHz/512KB Xeon DP, one 36GB Drive	8647-62X	IBM			1	1,775	5,325	2,094
3.06GHz/512KB Xeon DP Processor Upgrade	24P8122	IBM			1	999	2,997	0
512MB PC2100 ECC SDRAM RDIMM	33L5038	IBM			1	305	3,660	0
QLLogic SANblade QLA 2350 FC-VI Adapter	QLA2350-BK	QLLogic			1	1,995	5,985	0
NetXtreme 1000T Dual-Port Ethernet Adapter	31P6401	NetXtreme			1	269	1,614	0
Adaptec Quartet64 4-Port Adapter	ANA64044	Adaptec			1	550	1,650	0
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM			1	119	357	270
						Subtotal	21,588	2,364
Client Software								
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft			2	738	2,214	0
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft			2	109	109	0
						Subtotal	2,323	0
Network Components								
SAN Fibre Channel 8-Port Switch	3534F08	IBM			1	6,000	6,000	2,300
IBM 5M LC-LC Fibre Channel Cable	19K1248	IBM			1	129	516	0
						Subtotal	6,516	2,300
						Total	383,226	19,180
Compsat Technology discount of 13.64%.							Discount	44,437
1 - Compsat Technology; 2 - Microsoft						Three-Year Cost of Ownership:		\$357,969
Audited by Brad Askins, InfoSizing, Inc.						tpmC:		90,271.76
						\$/tpmC:		\$3.97
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: **90,271.76 tpmC**

Response Times (in seconds)	90th Percentile	Average	Maximum
New-Order	0.48	0.31	5.80
Payment	0.42	0.26	4.56
Delivery	0.27	0.16	1.08
Stock Level	1.06	0.79	2.15
Order Status	0.44	0.28	8.01
Delivery (Deferred)	0.18	0.13	0.78
Menu	0.28	0.16	1.63
Response Time Delay Added for Emulated Components: 0.1 Seconds			
Transaction Mix (in percent of total transactions)			Percent
New-Order			44.94
Payment			43.03
Delivery			4.01
Stock-Level			4.01
Order Status			4.01
Keying/Think Times (in seconds)	Minimum	Average	Maximum
New Order	18.00 / 0.00	18.01 / 12.05	18.04 / 120.52
Payment	3.00 / 0.00	3.02 / 12.05	3.04 / 120.51
Delivery	2.00 / 0.00	2.01 / 5.05	2.04 / 50.51
Stock Level	2.00 / 0.00	2.01 / 5.05	2.04 / 50.51
Order Status	2.00 / 0.00	2.01 / 10.05	2.04 / 100.51
Test Duration			
Ramp-up time			51 minutes 30 seconds
Measurement interval			120 minutes
Number of checkpoints			4
Checkpoint interval			30 minutes
Number of transactions (all types) completed in measurement interval			25,071,690