IBM	**IBM @server xSeries 440 c/s with Microsoft SQL Server 2000**	TPC-C Rev. 5.0
		Report Date: July 22, 2002

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$711,634	**92,398.49 tpmC**	**$7.70 / tpmC**	**Jan. 21, 2003**

Processors	Database Manager	Operating System	Other Software	Number of Users
Server: 8 Xeon Processors MP 1.6GHz Clients: 6 Pentium III 1.4GHz	**Microsoft® SQL Server 2000 Enterprise Edition**	**Microsoft .NET Datacenter Server**	**Microsoft Visual C++ 6.0 Win32 Microsoft COM+**	**74,760**

6 RTEs emulating 74,760 Users

RXE-100 Remote I/O
4 x Mylex eXtremeRAID 2000 Adapter

2Gb/s IBM 2109 FC Switch

6 x IBM xSeries 220
12 x 1.4GHz Intel Pentium III

1 x IBM xSeries 440
8 x 1.6GHz/1MB Intel Xeon Processor MP
3 x Mylex eXtremeRAID 2000 Adapter
1 x 18.2GB 10K Internal Drive

20 x EXP300 Storage
280 x18.2GB Drive
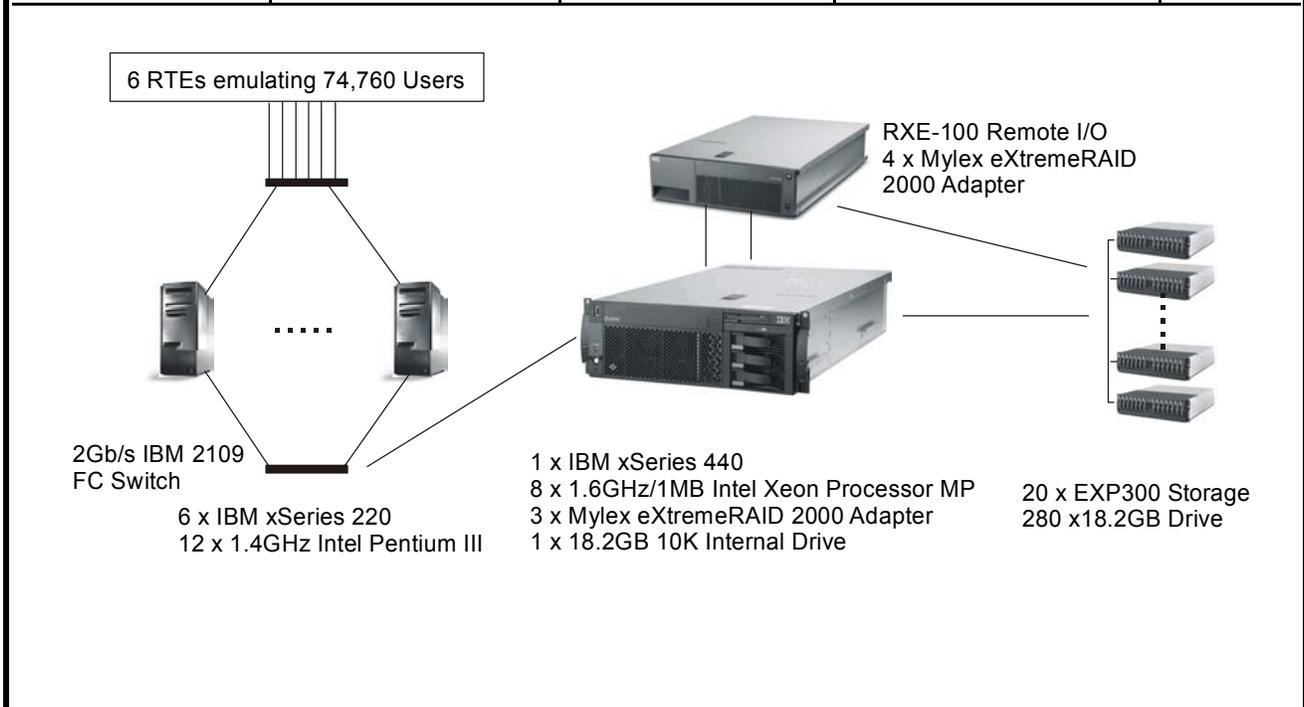
System Component	**Qty**	**Server:**	**Qty**	**Each Client:**
Processors	**8**	**1.6GHz Xeon Processor MP w/1MB L3 Cache**	**2**	**1.4GHz Pentium III w/512KB L2 Cache**
Cache				
Memory	**32**	**2GB ECC SDRAM**	**3**	**256MB**
Disk Controllers	**7**	**Mylex eXtremeRAID 2000 Adapter**	**1**	**Ultra160 SCSI Interface**
Disk Drives	**280**	**18.2GB (15000 rpm)**	**1**	**18.2GB Hard Disk**
Total Storage		**4757.33GB**		
Tape Drive	**1**	**20/40GB SCSI Tape Drive**		

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Description	Order Number	Third-Party Brand	Pricing	Unit Price	Qty	Ext. Price	3-Yr. Maint.*
Server Hardware							
IBM @server xSeries 440	8686-3RX	IBM	1	$27,099	1	$27,099	$3,390
Two 1.6GHz/1MB Xeon Processor MP							
xSeries SMP Expansion Module	32P8340	IBM	1	5,199	1	5,199	0
1.6GHz/1MB Xeon Processor MP	32P8707	IBM	1	6,599	6	39,594	0
2GB PC133 ECC SDRAM RDIMM	31P8840	IBM	1	6,999	32	223,968	0
Mylex eXtremeRAID 2000 Adapter***	08P3834	Mylex	2	1,280	9	11,520	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	1	275	0
QLogic 2350 Fibre Channel-VI Adapter***	QLA2350-BK	QLogic	3	2,568	3	7,704	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	IBM	1	99	20	1,980	0
IBM UPS 500	33L3477	IBM	1	99	1	99	0
E54 14" (13.8" Viewable) Color Monitor*	633147N	IBM	1	139	1	139	90
20/40GB Internal SCSI Tape Drive	00N7991	IBM	1	769	1	769	0
NetBAY42 Standard Rack Cabinet	9306421	IBM	1	1,439	2	2,878	600
Enterprise Rack Prep Fee	o6P5756	IBM	1	500	1	500	0
Enterprise Rack Installation Fee	06P7515	IBM	1	150	1	150	0
Option Integration Fee	58P8665	IBM	1	110	1	110	0
Image Load Fee	06P7505	IBM	1	150	1	150	0
Storage Hardware							
IBM EXP300 Rack Storage Enclosure*	35311RU	IBM	1	3,179	20	63,580	4,000
18.2GB 15K Ultra160 SCSI Drive	06P5767	IBM	1	439	280	122,920	0
IBM RXE-100 Remote Expansion	8684-1RX	IBM	1	4,569	1	4,569	1,050
3.5 Remote I/O Cable Kit	31P6102	IBM	1	599	2	1,198	0
					Subtotal	$514,401	$9,130
Server Software							
Microsoft SQL Server 2000 EE	810-00846	Microsoft	4	16,541	8	$132,328	$0
Microsoft .NET Datacenter Server	4816-2BX	IBM	1	16,000	1	16,000	41,850
Three-Year Maintenance for Software	PROPRORS16U01	Microsoft	4	1,950	3		5,850
					Subtotal	$148,328	$47,700
Client Hardware							
IBM @server xSeries 220*	8646-5AX	IBM	1	1,549	6	$9,294	$4,488
One 256MB 133MHz ECC SDRAM							
1.4GHz/512KB Pentium III Processor	25P2090	IBM	1	1,199	6	7,194	0
256MB 133MHz ECC SDRAM RDIMM	10K0020	IBM	1	245	12	2,940	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	6	1,650	0
QLogic 2350 Fibre Channel-VI Adapter***	QLA2350-BK	QLogic	3	2,568	6	15,408	0
E54 15" (13.8" Viewable) Color Monitor*	633147N	IBM	1	139	6	834	540
					Subtotal	$37,320	$5,028
Client Software							
Microsoft Windows 2000 Server with	C11-00821	Microsoft	4	738	6	4,428	0
Microsoft Visual C++ Professional 6.0	048-00317	Microsoft	4	549	1	549	0
					Subtotal	$4,977	$0
User Connectivity							
SAN Fibre Channel 8-Port Switch*	2109S08	IBM	1	16,518	1	16,518	2,160
IBM 5M LC-LC Fibre Channel Cable	19K1248	IBM	1	129	7	903	0
					Subtotal	$17,421	$2,160
					Total	$647,616	$64,018
Large volume discount of 14% on IBM Hardware; prices will vary if purchased separately.			1			(74,831)	$0

Notes: * The standard 3-year warranties on IBM hardware have been upgraded to 7x24, 4-hour response time coverage. ** Five-year warranty. *** 10% or minimum 2 spares are added in place of on-site service (products have a 5-year return-to-vendor-warranty) Pricing: 1 - IBM Corp.; 2 - Computer Giants; 3 - QLogic; 4 - Microsoft Corp. Audited by Brad Askins of InfoSizing, Inc.	**Three-Year Cost of Ownership:** $711,634
	tpmC Rating: 92,398.49
	$ / tpmC: $7.70

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 specification. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

Numerical Quantities Summary

MQTh, Computed Maximum Qualified Throughput:			92,398.49 tpmC
Response Times (in seconds)	**Average**	**Maximum**	**90 %-tile**
New-Order	0.53	8.90	0.88
Payment	0.49	4.25	0.83
Delivery	0.23	1.85	0.46
Stock Level	0.76	6.25	1.13
Order Status	0.47	10.17	0.80
Delivery (Deferred)	0.17	2.86	0.25
Menu	0.23	1.94	0.47
Transaction Mix (in percent of total transactions)		**Total Occurrences**	**Percent**
New-Order		11,087,819	44.83
Payment		10,652,355	43.07
Delivery		998,378	4.04
Stock-Level		997,062	4.03
Order Status		996,877	4.03
Emulation Delay (in seconds)		**Response Time**	**Menu**
New-Order		0.1	0.1
Payment		0.1	0.1
Delivery		0.1	0.1
Stock-Level		0.1	0.1
Order Status		0.1	0.1
Keying/Think Times (in seconds)	**Average**	**Minimum**	**Maximum**
New Order	18.01 / 12.06	18.00 / 0.00	18.04 / 120.51
Payment	3.01 / 12.04	3.00 / 0.00	3.05 / 120.51
Delivery	2.01 / 5.05	2.00 / 0.00	2.04 / 50.51
Stock Level	2.01 / 5.05	2.00 / 0.00	2.04 / 50.51
Order Status	2.01 / 10.06	2.00 / 0.00	2.05 / 100.51
Test Duration			
Ramp-up time			46 minutes
Measurement interval			120 minutes
Number of transactions (all types) completed in measurement interval			25,730,860
Ramp-down time			2 minute 51 seconds
Number of checkpoints in measurement interval			4
Checkpoint interval			30 minutes