IBM	**IBM @server xSeries 440 c/s with Microsoft SQL Server 2000**	TPC-C Rev. 5.0
		Report Date: August 20, 2002

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$314,342	**61,168.83 tpmC**	**$5.14 / tpmC**	**Dec. 31, 2002**

Processors	Database Manager	Operating System	Other Software	Number of Users
Server: 4 Xeon Processors 2.4GHz **Clients: 8 Pentium III 1.4GHz**	**Microsoft® SQL Server 2000 Enterprise Edition**	**Microsoft .NET Enterprise Server**	**Microsoft Visual C++ 6.0 Win32 Microsoft COM+**	**49,760**

4 RTEs emulating 49,760 Users

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

2Gb/s IBM 2109
FC Switch

4 x IBM xSeries 220
8 x 1.4GHz Intel Pentium III

1 x IBM xSeries 440
4 x 2.4GHz/512KB Intel Xeon Processor
3 x Mylex eXtremeRAID 2000 Adapter
1 x 18.2GB 10K Internal Drive

14 x EXP300 Storage
186 x18.2GB 15K Drive
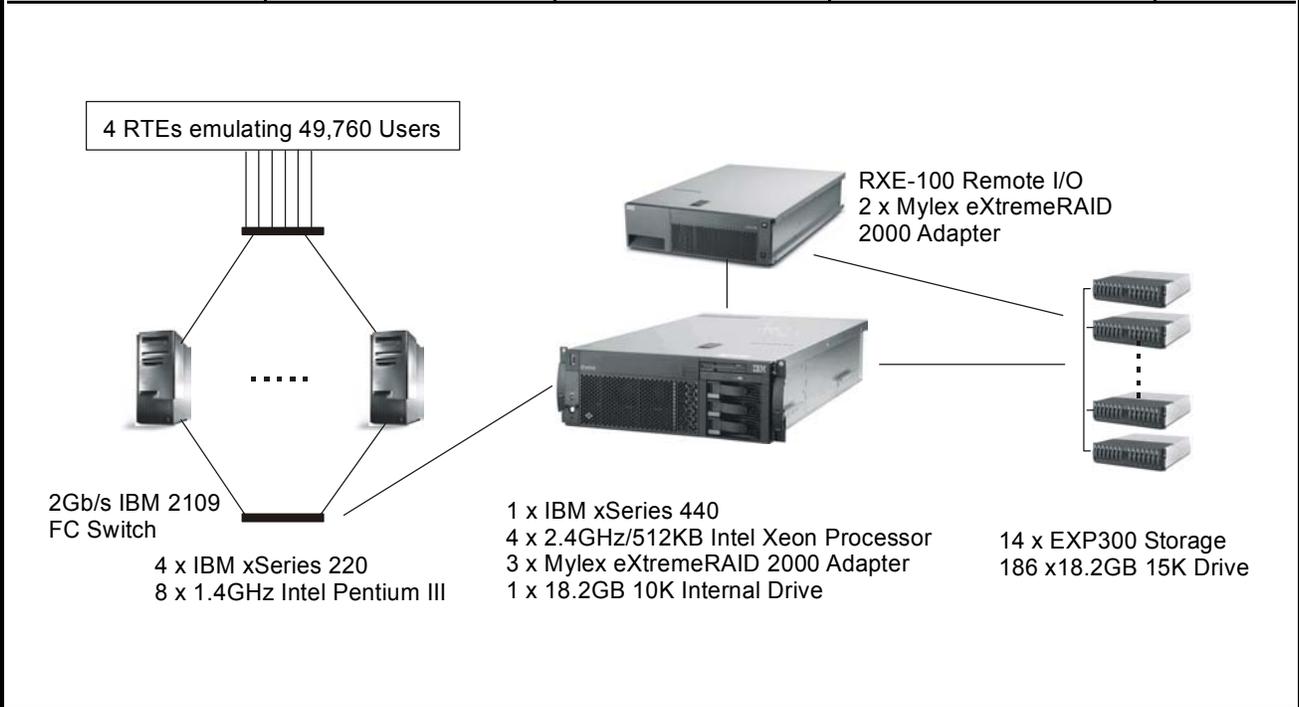
System Component	Qty	One Server with:	Qty	Each of Four Clients:
Processors	**4**	**2.4GHz Xeon Processor**	**2**	**1.4GHz Pentium III**
Cache		**512KB L2 Cache**		**w/512KB L2 Cache**
Memory	**32**	**1GB ECC SDRAM**	**3**	**256MB**
Disk Controllers	**5**	**Mylex eXtremeRAID 2000 Adapter**	**1**	**Ultra160 SCSI Interface**
	1	**Onboard SCSI Interface**		
Disk Drives	**186**	**18.2GB (15,000 rpm)**	**1**	**18.2GB Hard Disk**
	1	**18.2GB (10,000 rpm)**		
Total Storage		**3169.50GB**		
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	8687-4RY	IBM	1	$29,999	1	$29,999	$3,390
Four 2.4GHz/512KB Xeon Processor							
1GB ECC DDR SDRAM RDIMM	31P8300	IBM	1	989	32	31,648	0
Mylex eXtremeRAID 2000 Adapter	08P3834	Mylex	2	1,280	7	8,960	0
18.2GB 10K Ultra160 SCSI Drive	o6P5754	IBM	1	275	1	275	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	IBM	1	99	14	1,386	0
IBM UPS 500	33L3477	IBM	1	99	1	99	0
Qlogic 2350 FC-VI Adaper (incl. 2 spares)	QLA2350-BK	QLogic	3	2,568	3	7,704	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
Storage Hardware							
IBM EXP300 Rack Storage Enclosure*	35311RU	IBM	1	3,179	14	44,506	2,800
18.2GB 15K Ultra160 SCSI Drive	06P5767	IBM	1	439	186	81,654	0
IBM RXE-100 Remote Expansion Enclosure*	8684-1RX	IBM	1	4,569	1	4,569	1,050
3.5M Remote I/O Cable Kit	31P6102	IBM	1	599	1	599	0
					Subtotal	$215,185	$7,930
Server Software							
Microsoft SQL Server 2000 EE	810-00846	Microsoft	4	16,541	4	$66,164	$0
Microsoft .NET Enterprise Server	N/A	Microsoft	4	2,599	1	2,599	0
Three-Year Maintenance for Software		Microsoft	4	1,950	3		5,850
					Subtotal	$68,763	$5,850
Client Hardware							
IBM @server xSeries 220*	8646-5AX	IBM	1	1,409	4	$5,636	$2,992
One 256MB PC133 ECC SDRAM RDIMM							
1.4GHz/512KB Pentium III Processor	25P2090	IBM	1	699	4	2,796	0
256MB 133MHz ECC SDRAM RDIMM	10K0020	IBM	1	245	8	1,960	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	4	1,100	0
Qlogic 2350 FC-VI Adaper	QLA2350-BK	QLogic	3	2,568	4	10,272	0
E54 15" (13.8" Viewable) Color Monitor*	633147N	IBM	1	139	4	556	360
					Subtotal	$22,320	$3,352
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft	4	738	4	2,952	0
Microsoft Visual C++ Professional 6.0 Win32	048-00317	Microsoft	4	549	1	549	0
					Subtotal	$3,501	$0
User Connectivity							
IBM 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	5	645	0
					Subtotal	$17,163	$2,160
					Total	$295,050	$19,292
Large volume discount of 14% on IBM Hardware; prices will vary if purchased separately.				1		(31,882)	$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)	**Three-Year Cost of Ownership:**	$314,342
Pricing: 1 - IBM Corp.; 2 - Computer Giants.; 3 - QLogic; 4 - Microsoft	**tpmC Rating:**	61,168.83
Audited by Bradley J. Askins of InfoSizing, Inc.	**$ / tpmC:**	$5.14

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:			61,168.83 tpmC

Response Times (in seconds)	Average	Maximum	90 %-tile
New-Order	0.61	6.50	0.93
Payment	0.54	5.53	0.86
Delivery	0.27	4.00	0.51
Stock Level	0.95	5.11	1.33
Order Status	0.55	5.81	0.87
Delivery (Deferred)	0.17	1.99	0.24
Menu	0.28	5.93	0.51

Transaction Mix (in percent of total transactions)	Total Occurrences	Percent
New-Order	7,340,260	44.81
Payment	7,058,870	43.09
Delivery	660,876	4.03
Stock-Level	660,776	4.03
Order Status	660,129	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 / 12.05	18.00 / 0.00	18.04 / 120.51
Payment	3.01 / 12.05	3.00 / 0.00	3.04 / 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 / 10.05	2.00 / 0.00	2.04 / 100.51

Test Duration	
Ramp-up time	50 minutes 24 seconds
Measurement interval	120 minutes
Number of transactions (all types) completed in measurement interval	17,041,768
Ramp-down time	1 minute 6 seconds
Number of checkpoints in measurement interval	4
Checkpoint interval	30 minutes