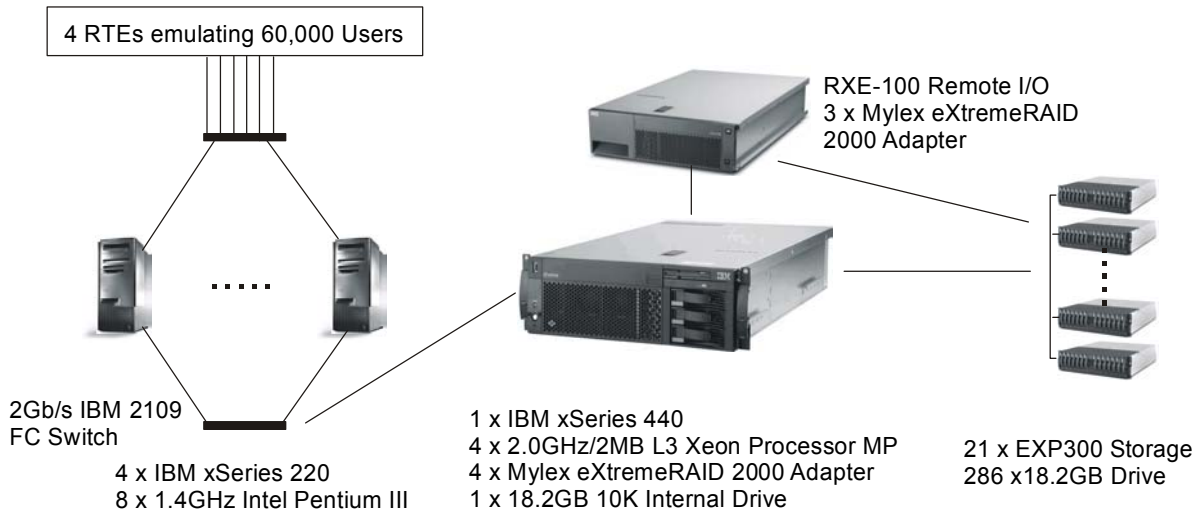
IBM	IBM @server xSeries 440 c/s with Microsoft SQL Server 2000	TPC-C Rev. 5.0 Report Date: Nov. 4, 2002	
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$426,785	**74,206.27 tpmC**	**$5.75 / tpmC**	**March 31, 2003**

Processors	Database Manager	Operating System	Other Software	Number of Users
Server: 4 Intel® Xeon™ Processor MP 2.0GHz Clients: 8 Pentium III 1.4GHz	**Microsoft® SQL Server 2000 Enterprise Edition SP3**	**Microsoft Windows® .NET Enterprise Server 2003**	**Microsoft Visual C++ 6.0 Win32 Microsoft COM+**	**60,000**



System Component	Qty	Server:	Qty	Each Client:
Processors	**4**	**2.0GHz Xeon Processor MP w/2MB L3 Cache**	**2**	**1.4GHz Pentium III w/512KB L2 Cache**
Memory	**16**	**2GB ECC SDRAM**	**3**	**256MB**
Disk Controllers	**7**	**Mylex eXtremeRAID 2000 Adapter**	**1**	**Ultra160 SCSI Interface**
Disk Drives	**286**	**18.2GB (15000 rpm)**	**1**	**18.2GB Hard Disk**
	1	**18.2GB (10000 rpm)**		
Total Storage		**4858.91GB**		
Tape Drive	**1**	**20/40GB SCSI Tape Drive**		

IBM Corporation	IBM @server xSeries 440 c/s with Microsoft SQL Server 2000	TPC-C Rev. 5.0
		Report Date: Nov. 4, 2002

Description	Order Number	Third-Party Brand	Third-Party Pricing	Unit Price	Qty	Ext. Price	3-Yr. Maint.*
Server Hardware							
IBM @server xSeries 440 Four 2.0GHz/2MB Xeon Processor MP	8687-7RX	IBM	1	$40,299	1	$40,299	$3,390
2GB PC133 ECC SDRAM RDIMM	31P8840	IBM	1	4,999	16	79,984	0
Mylex eXtremeRAID 2000 Adapter***	08P3834	Mylex	2	1,228	9	11,052	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	105	21	2,205	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
Storage Hardware							
IBM EXP300 Rack Storage Enclosure*	35311RU	IBM	1	3,179	21	66,759	4,200
18.2GB 15K Ultra160 SCSI Drive	06P5767	IBM	1	439	286	125,554	0
IBM RXE-100 Remote Expansion Encl.*	8684-1RX	IBM	1	4,569	1	4,569	1,050
					Subtotal	$342,385	$9,330
Server Software							
Microsoft SQL Server 2000 EE	810-00846	Microsoft	4	16,541	4	$66,164	$0
Microsoft .NET Enterprise Server 2003	N/A	Microsoft	4	2,699	1	2,699	0
Database Server Support Package 1Year	PROPRORS16U01	Microsoft	4	1,950	3		5,850
					Subtotal	$68,863	$5,850
Client Hardware							
IBM @server xSeries 220* One 256MB 133MHz ECC SDRAM	8646-5AX	IBM	1	1,409	4	$5,636	$2,992
1.4GHz/512KB Pentium III Processor	25P2090	IBM	1	699	4	2,796	0
256MB 133MHz ECC SDRAM RDIMM	10K0020	IBM	1	219	8	1,752	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	4	1,100	0
IBM 10/100 Dual-Port Server Adapter	06P4901	IBM	1	209	8	1,672	0
QLogic 2350 Fibre Channel-VI Adapter***	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	$24,784	$3,352
Client Software							
Microsoft Windows 2000 Server w/COM+	C11-00821	Microsoft	4	738	4	2,952	0
Microsoft Visual C++ Professional 6.0	048-00317	Microsoft	4	549	1	549	0
					Subtotal	$3,501	$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	5	645	0
					Subtotal	$17,163	$2,160
					Total	$455,696	$20,692
Large volume discount of 14% on IBM Hardware; prices will vary if purchased separately. See Microsoft quote for software discount.			1			(49,603)	$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:	$426,785
tpmC Rating:	74,206.27
$ / tpmC:	$5.75

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:	74,206.27 tpmC

Response Times (in seconds)	Average	Maximum	90 %-tile
New-Order	0.50	5.25	0.87
Payment	0.46	4.61	0.82
Delivery	0.27	1.63	0.53
Stock Level	0.82	2.90	1.24
Order Status	0.46	5.17	0.82
Delivery (Deferred)	0.13	3.77	0.18
Menu	0.27	3.26	0.54

Transaction Mix (in percent of total transactions)	Total Occurrences	Percent
New-Order	8,904,752	44.94
Payment	8,527,735	43.04
Delivery	794,541	4.01
Stock-Level	793,901	4.01
Order Status	794,112	4.01

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	18.05 / 120.52
Payment	3.01 / 12.05	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/ 10.05	2.00 / 0.00	2.04 / 100.51

Test Duration	
Ramp-up time	33 minutes
Measurement interval	120 minutes
Number of transactions (all types) completed in measurement interval	20,609,633
Ramp-down time	4 minutes
Number of checkpoints in measurement interval	4
Checkpoint interval	30 minutes