

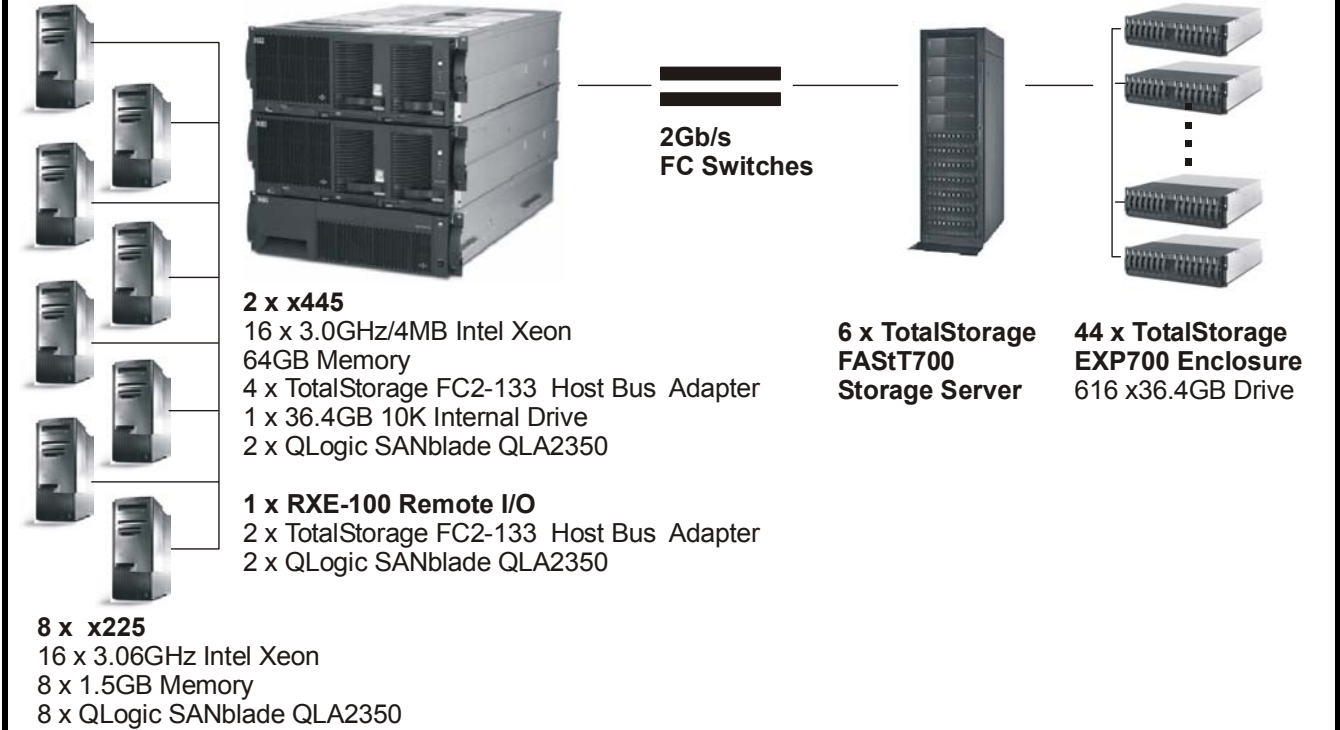
IBM® @server® xSeries® 445 c/s
with
Microsoft® SQL Server 2000

TPC-C Revision 5.2

Report Date: March 26, 2004

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
\$1,879,684	215,485.89 tpmC	\$8.72 / tpmC	Aug. 31, 2004

Database Server	Database Manager	Operating System	Other Software	Number of Users
Processors/Cores/Threads: 16/16/32 Intel Xeon MP Processor 3.0GHz	Microsoft SQL Server 2000 Enterprise Edition SP3 w/QFE	Microsoft Windows® Server 2003 Datacenter Edition w/QFE KB834628	Microsoft Visual C++ 6.0 Win32 Microsoft COM+	172,000



System Component	Qty	Server:	Qty	Each Client:
Processors/Cores/Threads	16/16/32	3.0GHz Xeon Processor MP w/4MB L3 Cache	2/2/4	3.06GHz Xeon DP w/512KB L2 Cache
Cache				
Memory	64	1GB ECC SDRAM	1	1.5GB Memory
Disk Controllers	6	TotalStorage FC2-133 Host Bus Adapter	1	Ultra320 SCSI Interface
Disk Drives	616	36.4GB (15000 rpm)	1	36.4GB (10000 rpm)
	1	36.4GB (10000 rpm)		
Total Storage Priced		20891.62GB		
Tape Drive	1	20/40GB SCSI Tape Drive		

IBM Corporation		IBM @server xSeries 445 c/s with Microsoft SQL Server 2000			TPC-C Revision 5.2		
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Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
x445 with 2 x 3.0GHz/4MB Xeon Processor	8870-4BX	IBM		1	26,599	2	53,198
3 YR onsite repair 24x7x4 hour (x445)	96P2688	IBM		1	3,390	2	6,780
xSeries 3.0GHz/4MB Processor	13N0271	IBM		1	6,599	12	79,188
xSeries 445 SMP Expansion Module	02R1870	IBM		1	4,849	2	9,698
xSeries 445 Two-Chassis 16-Way Configuration Kit	02R2013	IBM		1	4,999	1	4,999
1GB PC2100 DDR ECC SDRAM RDIMM	33L5039	IBM		1	619	64	39,616
36.4GB 10K Ultra320 SCSI Drive	32P0726	IBM		1	275	1	275
IBM TotalStorage FASTT FC2-133 Host Bus Adapter	24P0960	IBM		1	1,485	4	5,940
3.5M Interconnect Management Cable Kit	31P6087	IBM		1	49	5	245
QLogic SANBlade QLA2350 FC-VI Adapter (2 spares)	QLA2350-BK	QLogic		1	2,027	6	12,162
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	119	1	119
3 YR onsite exch. 24x7x4 hour (E54 Monitor)	30L9183	IBM		1	90	1	90
IBM Preferred Pro Full-Size Keyboard PS/2	31P7415	IBM		1	29	1	29
IBM Sleek 2-Button Mouse	28L3673	IBM		1	15	1	15
Subtotal						205,484	6,870
Server Storage							
IBM RXE-100 Remote Expansion Enclosure	8684-1RX	IBM		1	4,569	1	4,569
3 YR onsite repair 24x7x4 hour (RXE-100)	96P2469	IBM		1	1,330	1	1,330
IBM Remote I/O PCI-X 6-Slot Expansion Kit	31P5998	IBM		1	1,699	1	1,699
IBM TotalStorage FASTT FC2-133 Host Bus Adapter	24P0960	IBM		1	1,485	2	2,970
IBM TotalStorage FASTT700 Storage Server	17421RU	IBM		1	46,499	6	278,994
3 YR onsite repair 24x7x4 hour (FASTT700)	41L2768	IBM		1	760	6	4,560
IBM FASTT700 Mini Hub	19K1269	IBM		1	899	10	8,990
IBM Short Wave SFP Module	19K1271	IBM		1	499	186	92,814
IBM 1m LC-LC Fibre Channel Cable	19K1247	IBM		1	79	68	5,372
IBM 5m LC-LC Fibre Channel Cable	19K1248	IBM		1	129	38	4,902
IBM TotalStorage FASTT EXP700 Storage Exp. Unit	17401RU	IBM		1	6,000	44	264,000
3 YR onsite repair 24x7x4 hour (EXP700)	41L2768	IBM		1	760	44	33,440
2Gbps FC 36.4GB 15K Hot-Swap HDD	06P5772	IBM		1	1,115	616	686,840
20/40GB DDS/4 Tape AutoLoader	00N7991	IBM		1	699	1	699
IBM NetBAY Tape Enclosure	0034BOX	IBM		1	849	1	849
NetBAY42SX Standard Rack	9306421	IBM		1	1,439	5	7,195
3 YR onsite repair 24x7x4 hour (NetBAY Rack)	41L2758	IBM		1	168	5	840
IBM UPS 500	33L3477	IBM		1	99	1	99
Enterprise Rack Prep Fee	06P7514	IBM		1	400	5	2,000
Enterprise Rack Installation Fee	06P7515	IBM		1	160	5	800
Option Integration Fee	58P8665	IBM		1	110	5	550
Image Load Fee	06P7505	IBM		1	35	1	35
Subtotal						1,363,377	40,170
Server Software							
Microsoft SQL Server 2000 Enterprise Edition	810-00846	Microsoft		2	16,541	16	264,656
Database Software Support Package		Microsoft		2	1,950	3	5,850
IBM Preload Kit for Datacenter 2003 (1-16 Processors)	4816-7DU	IBM		1	54,555	1	54,555
3 Years of Support for Datacenter - MAPS 10 incidents at \$9000/year	23L9991	IBM		1	9,000	3	27,000
IBM Maintenance Update Subscription (1-16 Processors - 1 Year)	4816-DDX	IBM		1	5,119	3	15,357
Subtotal						319,211	48,207
Client Hardware							
x225 with 3.06GHz/512KB Xeon DP, 1 x 36.4GB Drive	8647-62X	IBM		1	1,775	8	14,200
3 YR onsite repair 24x7x4 hour (x225)	96P2250	IBM		1	1,000	8	8,000
3.06GHz/512KB Xeon DP Processor Upgrade	24P8122	IBM		1	999	8	7,992
512MB PC2100 ECC SDRAM RDIMM	33L5038	IBM		1	249	16	3,984
NetXtreme 1000T Dual-Port Ethernet Adapter	31P6401	IBM		1	269	16	4,304
Adaptec Quartet64 4-Port Adapter (2 spares)	ANA64044	Adaptec		1	550	8	4,400
QLogic SANblade QLA 2350 FC-VI Adapter	QLA2350-BK	QLogic		1	2,027	8	16,216
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		1	119	8	952
3 YR onsite repair 24x7x4 hour (E54)	30L9183	IBM		1	90	8	720
Subtotal						52,048	8,720
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft		2	738	8	5,904
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft		2	109	1	109
Subtotal						6,013	
Network Components							
IBM TotalStorage SAN Fibre Channel Switch Model F08	3534F08	IBM		1	5,250	4	21,000
3 YR onsite repair 24x7x4 hour (Switch)	96P2047	IBM		1	1,152	4	4,608
IBM Short Wave SFP Module	19K1271	IBM		1	499	8	3,992
IBM 5M LC-LC Fibre Channel Cable	19K1248	IBM		1	129	12	1,548
Subtotal						26,540	4,608
Total						1,972,673	108,575
Compsat Technology large volume purchase discount.						Discount	190,083
Grand Totals						1,782,590	97,094
Pricing: 1- Compsat Technology discount is based on the total dollar volume of those components in the configuration; 2 - Microsoft Audited by Francois Raab, InfoSizing, Inc.				Three-Year Cost of Ownership:		\$1,879,684	
						tpmC: 215,485.89	
						\$/tpmC: \$8.72	

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: 215,485.89 tpmC			
Response Times (in seconds)	90th Percentile	Average	Maximum
New-Order	0.71	0.39	6.81
Payment	0.65	0.33	6.69
Delivery (Interactive)	0.11	0.10	0.74
Stock Level	1.44	0.85	6.50
Order Status	0.69	0.37	5.94
Delivery (Deferred)	0.32	0.17	5.05
Menu	0.11	0.10	1.05
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	18.02 / 12.05	18.04 / 120.51
Payment	3.00 / 0.00	3.02 / 12.05	3.04 / 120.51
Delivery	2.00 / 0.00	2.02 / 5.06	2.04 / 50.51
Stock Level	2.00 / 0.00	2.02 / 5.05	2.04 / 50.51
Order Status	2.00 / 0.00	2.02 / 10.04	2.04 / 100.51
Test Duration			
Ramp-up time			46 minutes 30 seconds
Measurement interval			120 minutes
Number of checkpoints			4
Checkpoint interval			30 minutes
Number of transactions (all types) completed in measurement interval			59,839,936