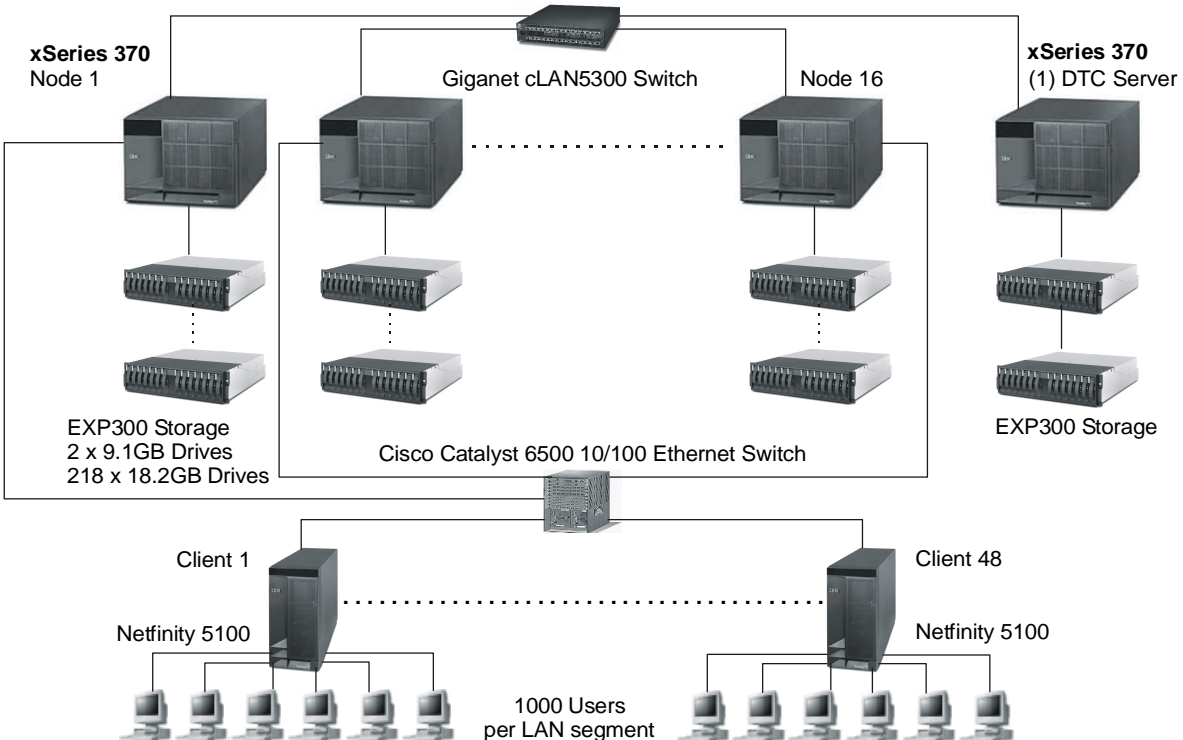




**IBM @server xSeries 370
with
Microsoft SQL Server 2000**

TPC-C Rev. 5.0
Upgrade from Rev. 3.5
Report Date: April 10, 2001
(Original: March 23, 2001)

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$7,915,144	363,129.75 tpmC	\$21.80/tpmC	May 31, 2001	
Processors	Database Manager	Operating System	Other Software	Number of Users
Database Servers = 128 DTC Server = 8 Intel^(R) Pentium^(R) III XeonTM 900MHz 2MB L2 Cache	Microsoft^(R) SQL Server 2000	Microsoft Windows^(R) 2000 Datacenter Server	Microsoft COM+ Microsoft Visual C++ 6.0	288,000



System Component	Qty	Each of 16 Database Servers:	Qty	Each of 48 Clients:
Processors	8	900MHz Pentium III Xeon	2	733MHz Pentium III
Cache		w/2MB L2 Cache		w/256KB L2 Cache
Memory	32	512MB ECC SDRAM	4	128MB
Disk Controllers	8	ServeRAID-4H Ultra160 SCSI Adapter	1	Ultra160 SCSI Onboard
Disk Drives	2 218	9.1GB (10000 rpm) 18.2GB (10000 rpm)	1	9.1GB Hard Disk
Total Storage		58TB (28.995TB online)		
Other			8	One DTC Server:
Tape Drive	1	3502-R14 DLT Tape Library	4	900MHz/2MB Pentium III Xeon
			1	128MB ECC SDRAM
Interconnect	1	Giganet cLAN-1000 Host Adapter	6	ServeRAID-4H Ultra160 SCSI Adapter
	1	Giganet cLAN-5300 Switch	1	9.1GB (10000 rpm) drive
			1	Giganet cLAN-1000 Host Adapter



@server xSeries 370 c/s
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Description	Order Number	Third-Party Brand	Pricing	Unit Price	Qty	Ext. Price	3-Yr. Maint.*
Server Hardware							
xSeries 370 900MHz/2MB Pentium III Xeon*	8681-3RX	IBM	1	\$19,114	17	\$324,938	\$42,415
900MHz/2MB L2 Cache Processor Upgrade	19K4637	IBM	1	6,599	119	785,281	0
8500R Memory Expansion Card	28L4454	IBM	1	625	16	10,000	0
8500 >4X Accelerator Filter	10K2335	IBM	1	1,249	17	21,233	0
512MB ECC SDRAM RDIMM Memory Kit	20L0249	IBM	1	1,575	512	806,400	0
ServeRAID-4H Ultra160 SCSI Adapter	37L6889	IBM	1	2,439	129	314,631	0
Ultra2 SCSI 4m Cable	03K9311	IBM	1	105	369	38,745	0
10/100 Ethernet Server Adapter with IPSec	06P3601	IBM	1	99	16	1,584	0
E54 15" (13.8" Viewable) Color Monitor*	6331N2N	IBM	1	173	17	2,941	1,530
3502-R14 DLT Tape Autoloader*	3502R14	IBM	1	13,779	1	13,779	1,450
IBM Smart-UPS Model 5000RMB	37L6861	IBM	1	3,299	17	56,083	0
Netfinity Rack*	9306900	IBM	1	1,725	40	69,000	12,000
Side Panel Kit	94G6669	IBM	1	195	6	1,170	0
Hardware installation and prep fees		IBM	1			82,700	0
Giganet cLAN-1000 Host Adapter (incl. 10%)	cLAN-1000	Giganet	3	795	19	15,105	45,000
Giganet cLAN5300 30-Port Switch (incl. 10%)	cLAN-5300	Giganet	3	15,995	2	31,990	incl. above
Giganet cLAN-A1011 10M Cable (incl. 10%)	cLAN-A1011	Giganet	3	135	19	2,565	incl. above
Storage Hardware							
Netfinity EXP300 Rack Storage Enclosure*	35311RU	IBM	1	3,179	353	1,122,187	70,600
9.1GB 10K Ultra160 SCSI Drive	37L7204	IBM	1	299	38	11,362	0
18.2GB 10K Ultra160 SCSI Drive	37L7205	IBM	1	467	3,488	1,628,896	0
Subtotal						\$5,340,590	\$172,995
Server Software							
Datacenter OS Preload Kit/Ship Group/Warr.	22P4745	IBM	1			\$972,000	0
Microsoft SQL Server 2000	11K7641	Microsoft	2	15,802	128	2,022,656	0
Microsoft Windows 2000 Advanced Server	C10-00475	Microsoft	2	2,399	1	2,399	0
3-Year Maintenance for Software		Microsoft	2	2,095	48		\$100,560
Subtotal						\$2,994,656	\$100,560
Client Hardware							
Netfinity 5100 / 733MHz/256KB Pentium III*	8658-2RY	IBM	1	2,052	48	\$98,496	\$71,760
733MHz/256KB Pentium III Upgrade	00N7943	IBM	1	399	48	19,152	0
128MB DIMMs	33L3123	IBM	1	185	144	26,640	0
9.1GB 10K Ultra160 SCSI Drive	37L7204	IBM	1	299	48	14,352	0
Intel Pro/100+ Dual-Port Ethernet Adapter**	8472	Intel	1	219	144	31,536	0
E54 15" (13.8" Viewable) Color Monitor*	6331N2N	IBM	1	173	48	8,304	4,320
Subtotal						\$198,480	\$76,080
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft	2	738	48	35,424	incl. above
Microsoft Visual C++ Professional 6.0	048-00317	Microsoft	2	549	1	549	incl. above
Subtotal						\$35,973	\$0
User Connectivity							
Cisco Catalyst 6500 48-Port 10/100 RJ-45	WSX6348RJ45	Cisco	4	45,652	1	45,652	31,500
Subtotal						\$45,652	\$31,500
Total						\$8,615,351	\$381,135
Discount						(1,081,342)	\$0
Grand Total						\$7,534,009	\$381,135

Large volume discount; prices will vary if purchased individually.

Notes: * The standard 3-year warranty and the extended warranty on IBM hardware is for 7x24, 4-hour response. ** 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; 2 - Microsoft; 3 - Giganet; 4 - Cisco

Audited by Brad Askins of InfoSizing, Inc.

Five-Year Cost of Ownership: \$7,915,144

tpmC Rating: 363,129.75

\$/ tpmC: \$21.80

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: % throughput difference, reported and reproducibility runs:			363,129.75 tpmC 0.03%
Response Times (in seconds)	90%	Average	Maximum
New-Order	0.31	0.22	392.15
Payment	0.28	0.19	315.38
Delivery (Interactive)	0.11	0.10	70.07
Stock-Level	0.56	0.36	52.68
Order Status	0.20	0.17	10.58
Delivery (Deferred)	0.24	0.17	6.13
Menu	0.11	0.11	665.21
Transaction Mix (in percent of total transactions)		Total Occurrences	Percent
New-Order		7,262,595	44.84
Payment		6,973,062	43.06
Delivery		652,421	4.03
Stock Level		653,068	4.03
Order Status		652,396	4.04
Emulation Delay (in seconds)	Response Time		Menu
New-Order	0.1		0.1
Payment	0.1		0.1
Order-Status	0.1		0.1
Delivery	0.1		0.1
Stock-Level	0.1		0.1
Keying/Think Times (in seconds)	Minimum	Average	Maximum
New-Order	18.00 / 0.00	18.01 / 12.05	18.06 / 120.50
Payment	3.00 / 0.00	3.02 / 12.04	3.06 / 120.50
Delivery	2.00 / 0.00	2.02 / 5.05	2.06 / 50.50
Stock Level	2.00 / 0.00	2.02 / 5.05	2.03 / 50.50
Order Status	2.00 / 0.00	2.02 / 10.04	2.06 / 100.50
Test Duration			
Ramp-up time			29 minutes 28 seconds
Measurement interval			20 minutes
Number of transactions (all types) completed in measurement interval			16,774,818
Ramp-down time			21 minutes 45 seconds
Number of checkpoints in measurement interval			1
Checkpoint interval			20 minutes