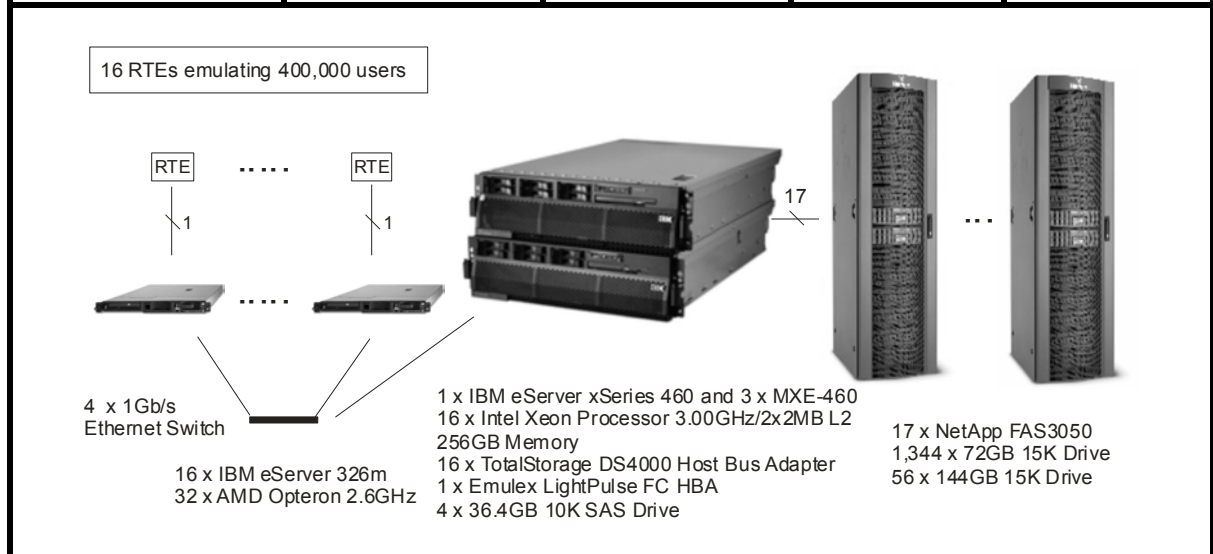


IBM Corporation and Network Appliance, Inc.	IBM® eServer™ xSeries® 460 Microsoft® SQL Server 2005 (SP1)		TPC-C Rev. 5.5	
			Report Date 11/22/05	
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$3,138,060 USD	492,307 tpmC	\$6.37 USD /tpmC	May 20, 2006	
Database Server Processors/Cores/Threads	Database Manager	Operating System	Other Software	Number Of Users
16/32/64 Intel® Xeon® Processor 7040 3.00GHz	Microsoft SQL Server 2005 Enterprise x64 Edition (SP1)	Microsoft Windows Server 2003 Datacenter x64 Edition	Microsoft Visual C++ Standard Edition Microsoft COM+	400,000



System Component	Qty	Server	Qty	Each of 16 Clients
Processors/Cores/Threads	16/32/64	Intel Xeon Processor 7040 3.00GHz	2/2/2	AMD Opteron 2.6GHz
Cache		2x2MB L2		1MB L2 Cache
Memory	32	8 (2x4GB) PC2-3200	4	512MB PC-3200
Disk Controllers	17 16 1	NetApp® FAS3050 IBM TotalStorage DS4000 HBA Emulex LightPulse HBA		
Disk Drives	4 1,344 56	36.4GB 10K SAS Drive NetApp 72GB 15K Drive NetApp 144GB 15K Drive	1	36.4GB 15K U320
Total Storage		96820.31GB		

**IBM
Corporation
and
Network
Appliance, Inc.**

**IBM® eServer™ xSeries® 460
Microsoft® SQL Server 2005 (SP1)**

TPC-C Rev. 5.5

**Report Date
11/22/05**

Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
xSeries 460 with 4 x Intel Xeon Processor 7040 3.00GHz/2x2MB L2	8872-6EU*	IBM		50,779	1	50,779	
Intel Xeon Processor 7040 3.00GHz/2x2MB L2	25R8942	IBM		5,999	12	71,988	
MXE-460 (0 Processors, 0 Memory, 2 Memory Cards)	8874-2EU*	IBM		16,569	3	49,707	
2.3M Scalability Cable	13M7414	IBM		299	6	1,794	
8GB (2x4GB) PC2-3200 CL3 2RX4 ECC DDR2 SDRAM RDIMM	30R5145	IBM		15,499	32	495,968	
Active Memory 4-Slot Memory Expansion Card	13M7409	IBM		499	4	1,996	
xSeries 460 Scalability Enablement/Memory Adapter	40K2450	IBM		849	4	3,396	
IBM 36.4GB 10K 2.5 inch SAS Drive	26K5654	IBM		419	4	1,676	
IBM TotalStorage DS4000 Host Bus Adapter	24P0960	IBM		1,485	16	23,760	
Emulex LightPulse Fibre Channel Host Bus Adapter (2 spares)	LP9002L-F2	Emulex		1,195	3	3,585	
ServicePac for 3-Year 24x7x4 Support (x460 and MXE-460)	96P2688	IBM		3,390	4		13,560
						Subtotal	13,560
							704,649
Server Storage							
FAS3050HA, SAN, IB, Data ONTAP	FAS3050HAS-IB-SYS	NetApp		37,550	16	600,800	
SW_DataONTAP.3XXX-GEN AVAIL2	SW-ONTAP-3XXX-GA2	NetApp		0	17	0	
DS14mk2.AC PSU,14x72GB 15K Drives,-C	X60015A-C	NetApp		22,790	96	2,187,840	
ESH2 Module,-C	X5511A-C	NetApp		1,950	200	390,000	
FC HBA for Disk, OP (2), Rev. B, -C	X2050B-C	NetApp		4,500	18	81,000	
Cluster 4X IB cable, Copper, 5M	X1941A-C	NetApp		97	16	1,552	
FC SFP to SFP Patch Cable,0.5M,-C	X6530-C	NetApp		0	132	0	
5M Optical Cable, LC/LC Ends	X6518A-C	NetApp		150	102	15,300	
Power Cable, North America	X800E-C	NetApp		0	234	0	
System Lift Handle, Detachable	X505-C	NetApp		0	17	0	
Optical SFP, FC, -C	X6529-C	NetApp		0	68	0	
FAS3050, Data ONTAP,-C	FAS3050-BASE-C	NetApp		62,475	1	62,475	
DS14mk2.AC PSU,14x144GB 15K Drives,-C	X70015-C	NetApp		40,990	4	163,960	
iSCSI Software, T5-C	SW-T5-ISCSCI-C	NetApp		0	1	0	
FCP Software, T5-C	SW-T5-FCP-C	NetApp		25,000	1	25,000	
NEMA 30A PDU Upgrade, single PDU	X8712	NetApp		850	2	1,700	
APC SMART UPS 3000VA RM 2U (2 spares)	SUA3000RM2U	APC		1,037	3	3,111	
4hr Parts Replace and SW Subscription-FAS3050C	CS-S-SSP-4R	NetApp		62,209	8		497,671
4hr Parts Replace and SW Subscription-FAS3050	CS-S-SSP-4R	NetApp		45,306	1		45,306
						List Subtotal	542,976
						HW/SW Discount	1,941,295
						Service Discount	108,595
						Subtotal	434,381
							1,591,443
Server Software							
Microsoft SQL Server 2005 Enterprise x64 Edition	810-03134	Microsoft		23,432	16	374,912	
Microsoft Problem Resolution Services		Microsoft		245	1		245
Microsoft Windows Server 2003 Datacenter x64 Edition *	Included with x460	Microsoft		0	0		0
Software Update Subscription for Datacenter x64 Edition	4818-HAX	IBM		2,239	4		8,956
3 Year Remote Technical Support for xSeries and Datacenter	41C6022	IBM		\$13,755	1		13,755
						Subtotal	22,956
							374,912
Client Hardware							
eServer 326m Model 252 2.6 GHz/1MB, 1GB, SCSI H/S open bay	7969-81U	IBM		2,149	16	34,384	
AMD Opteron Processor Model 252 2.6GHz/1MB	13N0703	IBM		1,499	16	23,984	
1GB (2x512MB) PC-3200 DDR ECC SDRAM RDIMM	73P3233	IBM		549	16	8,784	
36.4GB 15K Ultra320 SCSI Drive	90P1380	IBM		299	16	4,784	
NetXtreme 1000T Dual-Port Ethernet Adapter	73P4201	Intel		249	32	7,968	
ServicePac for 3-Year 24x7x4 Support (e326)	96P2250	IBM		419	16		6,704
						Subtotal	6,704
							79,904
Client Software							
Microsoft Windows Server 2003 Standard Edition	P73-00295	Microsoft		719	16	11,504	
Microsoft Visual C++ Standard Edition	254-00170	Microsoft		109	1	109	
						Subtotal	11,613
							11,613
Network Components							
USB-to-PS2 Converter (2 spares)	35700			8	18	144	
Ethernet Cable 20 Ft. (10% spares)	CC5E-B14B			4	27	108	
Netgear 8-Port Switch	GS-108			80	7	560	
AutoView 424 2-Users Switch w/o Receiver / 24 Systems (2 spares)	AV424-AM			1,715	3	5,145	
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM		139	1	139	
IBM USB Keyboard Enhanced Performance Keyboard	73P2620	IBM		35	1	35	
IBM USB Optical Wheel Mouse	06P4069	IBM		14	1	14	
ServicePac for 3-Year 24x7x4 Support (Monitor)	30L9183	IBM		90	1		90
						Subtotal	90
							6,145
							104,596
						Total	477,691
							2,768,666
Pricing: 1 - Compstat Technology (*Datacenter included); 2 - NetApp; 3 - Microsoft; 4 - CDW.com; 5 - ePlus; 6 - newegg.com; 7 - www.cablestogo.com				Three-Year Cost of Ownership USD: \$3,138,060			
Audited by Bradley J. Askins, InfoSizing, Inc.				tpmC: 492,307			
				\$ USD/tpmC: \$6.37			
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.							

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Numerical Quantities Summary

MQTh, Computed Maximum Qualified Throughput: 492,307 tpmC

Response Times (in seconds)	90 th Percentile	Average	Maximum
New Order	1.50	0.57	8.09
Payment	1.46	0.55	8.11
Delivery	1.02	0.33	3.33
Stock Level	1.72	0.77	5.06
Order Status	1.48	0.57	6.52
Delivery (Deferred)	0.16	0.12	5.11
Menu	1.00	0.33	3.98

Response Time Delay Added for Emulated Components: 0.1 Seconds

Transaction Mix (in percent of total transactions)	Percent
New Order	44.95
Payment	43.02
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	18.00 / 12.04	18.02 / 120.31
Payment	3.00 / 0.00	3.00 / 12.04	3.02 / 120.31
Delivery	2.00 / 0.00	2.00 / 5.04	2.02 / 50.31
Stock Level	2.00 / 0.00	2.00 / 5.04	2.02 / 50.31
Order Status	2.00 / 0.00	2.00 / 10.04	2.02 / 100.31

Test Duration

Ramp-up Time	85 minutes 41 seconds
Measurement Interval	120 minutes
Number of Checkpoints	4
Checkpoint Interval	30 minutes
Number of transactions (all types) completed in measurement interval	136,699,824