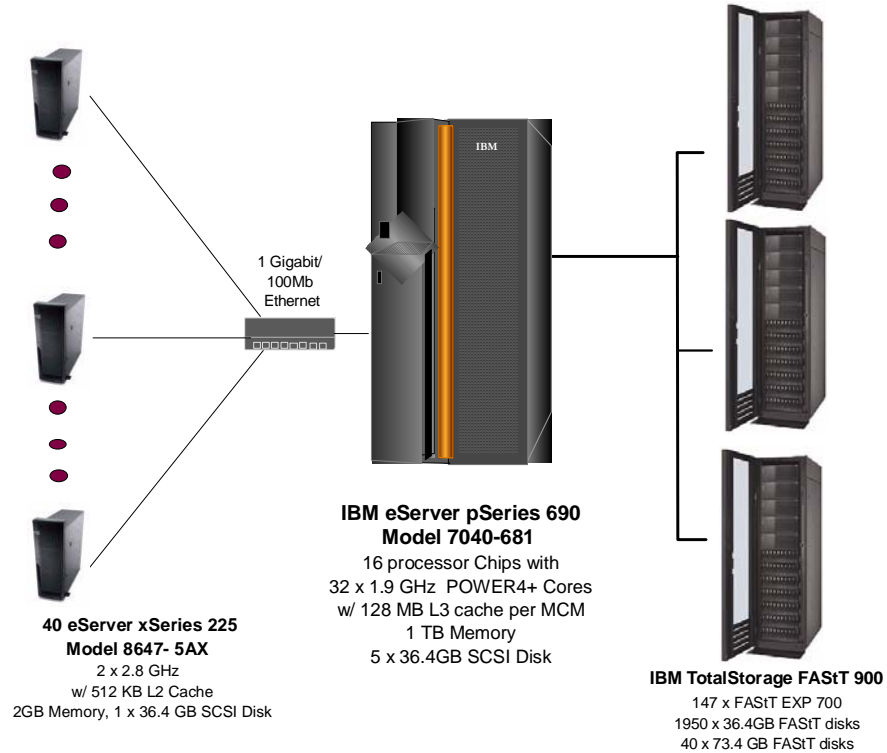
	IBM eServer pSeries 690 Model 7040-681		TPC-C Rev. 5.2	
			Report Date: February 17, 2004 Updated: July 12, 2004	
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$5,565,772	1,025,486.07 tpmC	\$5.43/tpmC	August 16, 2004	
Processors Chip/Core/Thread	Database Manager	Operating System	Other Software	No. Users
16/32/32	DB2 UDB 8.1	AIX 5L V5.2	Microsoft COM+	817,000



System Components	Each Client		Server	
	Quantity	Description	Quantity	Description
Processors chip/Core/Thread	2/2/2	2.8 GHz Xeon W/512KB L2 Cache	16/32/32	1.9 GHz POWER4+ w/ 128 MB L3 cache per MCM, 4 MCMs
Memory	4	512 MB	8	128 GB
Disk Controllers	1	Ultra3 SCSI-2 (Integrated)	1 14 28	SCSI-2 (Integrated) FAStT900 Fiber Channel Adapters
Disk Drives	1	36.4 GB Ultra SCSI	5 1950 40	36.4 GB SCSI 10K RPM disk 36.4 GB FAStT disk 15K RPM 73.4 GB FAStT disks 15K RPM
Total Storage		36.4 GB		74,098GB
Terminals	1	System Console	1	System Console



IBM eServer pSeries 690 Model 7040-681

TPC-C Rev. 5.2

Report Date: February 17, 2004

Updated: July 12, 2004

Description	Part No.	Src	Unit Price	Qty	Ext Price	Maint Price
Server Hardware						
IBM eServer pSeries 690	7040-681	1	13,339	1	13,339	20,760
16X/48X(MAX) IDE DVD-ROM DR	2634	1	275	1	275	0
Ext Cable, Diskette/Op Panel, CEC to Media (3155,3255)	3155	1	250	1	250	0
128MB (4x32) L3 Cache, 567MHz	4199	1	25,000	4	100,000	0
SCSI-To-IDE Interface Bridge	4253	1	100	1	100	0
128GB Memory, 633 MHz, Inward/outward (4470,4471)	4470	1	284,426	8	2,275,408	0
8-Way Power4+Turbo 1.9 GHZ Processor	5241	1	380,000	4	1,520,000	420,000
Programmable Clock Card	5251	1	350	1	350	0
Std CEC Fan Pwr r cbl grp, service proc. 6161,6162	6161	1	600	1	600	0
Standard CEC DC/DC Converter Assembly	6170	1	4,700	2	9,400	0
Power Cable Grp, 1st-4th (6181,82,83,84) proc. modules	6181	1	720	1	720	0
Additional DC/DC Converter Assembly, (DCA)	6189	1	4,200	4	16,800	0
Capacitor book (for 2 MCMs)	6198	1	1,800	2	3,600	0
Service Processor + Dual Rio Loop (GX)	6418	1	7,000	1	7,000	0
Remote I/O Loop adapter	6419	1	8,000	1	8,000	0
Backplane, Central Electronics Complex	6565	1	50,000	1	50,000	0
Attachment Cable, Hardware Management Console	8121	1	75	1	75	0
Media Drawer, 1U, Op Pnl/Dskt/4 SCSI Media Bays	8692	1	1,700	1	1,700	0
I/O Drawer	7040-61D	1	3,980	4	15,920	16,320
Converter Cable, VHDCI to P, 0.3M	2118	1	60	4	240	0
SCSI cable - B&C to Media Drawer	2122	1	275	1	275	0
Fibre Chan. Converter Cable, LC (M) to SC (F), 2M	2456	1	100	4	400	0
RIO-G Cable, 500MHz, 1.2m	3146	1	500	4	2,000	0
RIO-G Cable, 500MHz, 1.75m	3156	1	375	8	3,000	0
36.4 GB 10,000 RPM Ultra3 SCSI Disk Drive	3158	1	1,540	5	7,700	0
GIGABIT ETHERNET-SX PCI-X ADAP	5700	1	1,700	1	1,700	0
PCI-X D.CHAN.U320 BLIND SW.ADP	5710	1	790	1	790	0
Cable Grp, (6121, 6122, 6123)	6121	1	400	3	1,200	0
I/O Drawer DC/DC Converter assembly, (DCA)	6172	1	4000	8	32,000	0
Power Cable, B&C to Media Drawer	6179	1	300	1	300	0
2 Gigabit Fibre Channel PCI-X Adapter	6239	1	3,100	28	86,800	0
Ultra3 SCSI 4-Pack	6564	1	500	16	8,000	0
I/O Drawer PCI-X Planar, 10 Slot, 2 Integrated	6571	1	8,000	8	64,000	0
Rack	7040-61R	1	5,500	1	5,500	3,960
Front Door, 24W, 2M, IBM Black/Copper	6070	1	3000	1	3,000	0
Rear Door, Slim line, Prim/sec.	6074	1	750	1	750	0
Bulk Power Regulator (BPR)	6186	1	4000	6	24,000	0
Bulk Power Controller (BPC), 4 Fans + 3 DCAs	6187	1	1900	2	3,800	0
Bulk Power Distribution (BPD), 10 DCAs	6188	1	3500	4	14,000	0
Line Cord, 60A, 14', IEC309 Plug, Chargeable	8678	1	1000	2	2,000	0
Regatta-H Bulk Power Module (2x BPA, EPO PNL)	8690	1	5000	1	5,000	0
Hardware Management Console, mouse, keyboard, monitor, c	7315-C03	1	4486	1	4,486	696
				Subtotal	4,294,478	461,736
FASt Storage (Data Disks)						
RS/6000 System Rack (6081,6098)	7014-T42	1	4,270	14	59,780	12,432
FASt EXP 700	1740-1RU	1	6,000	147	882,000	111,720
Short Wave SFP	2210	1	499	588	293,412	0

2Gb FC, 36.4GB/15K Drive	5212	1	1,115	1,950	2,174,250	0	
2GB FC 73.4 GB/15K Disk Module	5213	1	2,225	40	89,000	0	
FAStT900 Storage Server	1742-90U	1	66,500	14	931,000	15,218	
Short Wave SFP GBIC	2210	1	499	82	40,918	0	
Fiber Cable 25m	5625	1	189	28	5,292	0	
Fiber Cable 1m	5601	1	79	268	21,172	0	
Fiber Cable 5m	5605	1	129	26	3,354	0	
FAStT Storage Manager V8.4 upgrade for FAStT900	1742-7109	1	2,999	1	2,999	0	
FAStT700 2 gbps Mini HUB	3507	1	899	56	50,344	0	
			Subtotal		4,553,521	139,370	
Server Software							
AIX 5.2 (media only)	5962-A5L	1	50	1	50	0	
AIX SWMA Subscription (3 Years)	5773-SUB	1	743	32	23,776	0	
AIX SWMA Support (0280 + 0382) (3 Years)	5773-SPT	1	2,093	32	0	66,976	
HMC Softw are SUB	5639-SB1	1	275	3	825		
HMC Softw are Support	5639-ST1	1	525	3		1,575	
C for AIX user Lic+SW maint 12 MO	D5A1DLL	1	515	1	515	0	
C for AIX user annual SW maint renew al	E1A1FLL	1	103	2	0	206	
DB2 Enterprise Server Edition Proc Lic/1 yr Maint.	D518GLL	1	19,755	32	632,160	0	
DB2 Enterprise Server Ed Proc Maint Renew (annual).	E00BILL	1	940	64		60,160	
			Subtotal		657,326	128,917	
Client Hardware and Software							
x225 with 2.8GHz/512KB Xeon DP, 512GB memory	8647-5AX	1	1,399	40	55,960	27,920	
2.8GHz/512KB Zeon DP Processor Upgrade	24P8054	1	799	40	31,960	0	
512MB PC2100 CL2.5 ECC DDR SDRAM RDIMM	33L5038	1	275	160	44,000	0	
IBM ServicePac for xSeries	29R5396	1	1,375	40	0	55,000	
36.4 GB 10K Ultra 320 SCSI Drive	32P0726	1	275	40	11,000	0	
NetXtreme 1000 T Dual-Port Ethernet Adaptor	31P6401	1	269	40	10,760	0	
IBM Thinkvision L200p 20.1" LCD color monitor	6736HB0	1	1,349	1	1,349	0	
			Subtotal		155,029	82,920	
Third Party Hardware/Software							
Microsoft Window s 2000 server		2	999	40	39,960	0	
Visual Studio .NET Professional		2	1,079	1	1,079	0	
Adaptec Quartet66 4-port adaptor	1932500	3	550	40	22,000	0	
Netgear Managed Stackable Sw tich w/Gigabit ports -48 ports FSM750SNA		4	759	1	759	0	
			Subtotal		63,798	0	
			Discounts		(4,679,313)	(292,009)	
			Total		5,044,838	520,934	

Audited by: Francois Raab, Info Sizing (www.infosizing.com)

Pricing Sources:

	Three-Year Cost of Ownership	\$5,565,772
1 IBM HW: Bill Casey, eServer pSeries Offering Manager, wr Casey@us.ibm.com, 512-838-1422	tpm C	1,025,486
1 IBM DB2: Paul Rivot, Director Database Servers and Business Intelligence Software, e-mail privot@us.ibm.com, phone 1-914-766-1325	\$/tpm C	\$5.43
2. Microsoft.com		
3. Adaptec.com		
4. Insight.com		

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 the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you

Numerical Quantities Summary for the IBM eServer pSeries 690 Model 7040-681

MQTH, computed Maximum Qualified Throughput: 1,025,486.07 tpmC

<u>Response Times (in seconds)</u>	<u>90th %</u>	<u>Average</u>	<u>Maximum</u>
New Order	0.50	0.32	3.15
Payment	0.51	0.33	3.33
Order-Status	0.50	0.32	2.65
Delivery (interactive)	0.29	0.13	2.06
Delivery (deferred)	0.27	0.17	1.16
Stock-Level	0.49	0.31	2.79
Menu	0.32	0.15	7.55

<u>Transaction Mix, in percent of total transactions</u>	<u>Percent</u>
New Order	44.91%
Payment	43.02%
Order-Status	4.02%
Delivery	4.01%
Stock-Level	4.01%

<u>Keying/Think Times (in seconds)</u>	<u>Min.</u>	<u>Average</u>	<u>Max.</u>
New Order	18.00/0.01	18.01/12.02	19.12/120.30
Payment	3.00/0.01	3.01/12.02	4.56/120.30
Order-Status	2.00/0.01	2.01/10.01	2.81/100.16
Delivery	2.00/0.01	2.01/5.03	2.95/50.26
Stock-Level	2.00/0.01	2.01/5.02	2.91/50.29

Test Duration

Ramp-up Time	58 minutes
Measurement interval	2 hours
Transactions during measurement interval (all types)	273,998,416
Ramp-down time	20 minutes

Checkpoints

Number of checkpoints	N/A
Checkpoint interval	N/A

Approximately two months after the publication this result was found to be in insignificant deviation with TPC-C Version 5.2 Specification. The driver (RTE) did not include the required 0.1-second delay to compensate for the time taken by the web browser to display each user screen. Evidence indicates that the increase in transaction cycle time, without changing any other aspect of the benchmark, would degrade the performance and price / performance metrics by approximately one percent. An amended auditor attestation letter has been attached to the FDR.