

ORACLE

**IBM eServer p5 595
Model 9119-595**

TPC-C Rev. 5.3

Report Date: April 20, 2005
Updated: April 10, 2006

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$8,096,173 USD	1,601,784.98	\$5.05 USD	April 20, 2005	
Processor Chips/Cores/Threads	Database Manager	Operating System	Other Software	No. Users
16/32/64	Oracle Database 10g Enterprise Edition	AIX 5L V5.3	Microsoft Visual C++ Microsoft COM+	1,276,800

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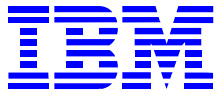


56 Clients
 IBM eServer™ x336
 2x3.2GHz Intel® Xeon™
 1MB L3 Cache
 2GB Memory
 1 80GB Internal Drive
 2 Integrated 10/100/1000 Ethernet

IBM® eServer™ p5 595
 16 processor chips with
 32x 1.9GHz POWER5™ Cores
 36MB L3 Cache per processor chip
 1024GB Memory
 2 36GB Internal SCSI Drives
 48 2Gb Fibre Channel Adapters
 4 10/100/1000 Ethernet Adapters

Storage
 24 IBM TotalStorage DS4500
 248 IBM TotalStorage DS4000 EXP710
 3200 36.4GB 15K RPM Drives
 96 73.4GB 15K RPM Drives

System Components	Each of the 56 Clients		Server	
	Quantity	Description	Quantity	Description
Processor Chips/Cores/Threads	2/2/2	3.2GHz 1MB L3 Xeon Processor	16/32/64	1.9GHz POWER5™ 36MB L3 Cache per Chip
Memory	4	512 MB	2	512GB
Disk Controllers	1	SATA	2 48 24	Integrated Ultra4SCSI FAStT 2Gb FC Adapters IBM DS4500 Controllers
Disk Drives	1	80 GB	3,200 96 2	36.4GB 15K RPM FC 73.4GB 15K RPM FC 36.4GB 15K RPM SCSI
Total Storage		4480 GB		112,885 GB
Terminals	1	System Console	1	System Console



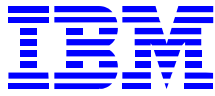
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IBM eServer p5 595 Model 9119-595

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Report Date: April 20, 2005
Updated: October 4, 2005

Description	Part No.	Src	Unit Price	Qty	Ext Price	Maint Price
Server Hardware						
Server 1:- p5 595	9119-595	1	92,000	1	92,000	63,000
RIO-2 (Remote I/O-2) Cable, 3.5M	3147	1	660	16	10,560	
36.4 GB 15,000 RPM Ultra320 SCSI Disk Drive Assembly	3277	1	2,125	2	4,250	
2 Gigabit Fibre Channel PCI-X Adapter	5716	1	2,720	48	130,560	
IBM 10/100/1000 Base-TX Ethernet PCI-X Adapter	5701	1	1,280	4	5,120	
I/O Drawer, 20 Slots, 8 Disk Bays	5791	1	32,000	4	128,000	16,320
I/O Drw.Cbl.Grp, Prim.Rck/9U	6121	1	400	1	400	
I/O Drw.Cbl.Grp, Prim.Rck/5U	6122	1	400	1	400	
I/O Drw.Cbl.Grp, Prim.Rck/1U	6123	1	400	1	400	
I/O Drw.Cbl.Grp, Prim.Rck/13U	6124	1	400	1	400	
Bulk Power Regulator	6186	1	4,000	6	24,000	
Slim Line Doors, System and #5792 Racks	6251	1	6,000	1	6,000	
Ethernet Cable, 6M, HMC to System Unit	7802	1	31	2	62	
Power Controller Assembly	7803	1	4,000	2	8,000	
Cooling Group, 2-4 Processor Books	7807	1	4,000	1	4,000	
DC Power Converter, Processor Book	7809	1	6,000	6	36,000	
Processor Clock Card, Programmable	7810	1	575	2	1,150	
System Service Processor	7811	1	3,500	2	7,000	
Multiplexer Card	7812	1	2,200	2	4,400	
16-Way POWER5 Turbo CUoD Processor Book, 0-Way Active	7813	1	127,000	2	254,000	34,320
Activation, #7813 CUoD Processor Book, One Processor	7815	1	32,000	32	1,024,000	253,440
Remote I/O-2 (RIO-2) Loop Adapter, Two Port	7818	1	3,400	8	27,200	
Pwr.Cbl.Grp, CEC Primary Fans	7821	1	650	1	650	
Pwr.Cbl.Grp, 1st CEC Book	7822	1	650	1	650	
Pwr.Cbl.Grp, 2nd CEC Book	7823	1	650	1	650	
Pwr.Cbl.Grp, 7807 Cooling Grp.	7826	1	650	1	650	
Power Distribution Assembly	7837	1	2,500	4	10,000	
512GB DDR1 Memory (16 X 32GB Cards)	8198	1	2,228,224	2	4,456,448	
Line Cord, 6AWG, 14ft, IEC309 100A Plug	8688	1	2,000	2	4,000	
Storage Device Enclosure	7212-102	1	1,295	1	1,295	264
DVD-ROM Drive	1106	1	500	1	500	72
Drive Panel (Blank)	1204	1	25	1	25	
Rack Mounting Hardware Kit	1205	1	150	1	150	
Rack Power Cord, Single	5060	1	29	1	29	
HMC 1:7310-C03 Desktop Hardw.Mgmt.Console	7310-C03	1	3,052	1	3,052	1,152
				Subtotal	6,246,001	368,568
Storage						
DS4500 Disk System	1742-90U	1	49,900	24	1,197,600	
DS4000 EXP710 Storage Expansion	1740-710	1	6,000	248	1,488,000	
2Gb FC, 36.4GB/15K Drive	5212	1	1,115	3,200	3,568,000	
2Gb FC, 73.4GB/15K Disk Module	5213	1	2,099	96	201,504	
Short Wave SFP	2210	1	499	760	379,240	
Fiber Cable 25m	5625	1	189	48	9,072	
Fiber Cable 1m	5601	1	79	440	34,760	
Fiber Cable 5m	5605	1	129	40	5,160	
2Gb Mini HUB	3507	1	899	48	43,152	
Storage Manager V8.4 upgrade	1742-7109	1	2,999	4	11,996	
3 Year Warranty Service Upgrade 1740-1RU 24x7x4	1740-710W24	1	760	248		188,480
3 Year Warranty Service Upgrade 1742-90U 24x7x4	1742-90UW24	1	1,087	24		26,088
				Subtotal	6,938,484	214,568



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Server Software

AIX 5.3 (media only)	5692-A5L	1	50	1	50	
AIX Software per Processor	5765-G03	1	2,495	32	79,840	
AIX Software Maintenance (3Y)	5773-SM3-474	1	2,836	32		90,752
AIX Software Maintenance 24x7 upgrade(3Y)	5773-SM3-476	1	732	32		23,424
HMC Software SUB (3Y)	5773-0570	1	236	1		236
HMC Software Support (3Y)	5773-0569	1	675	1		675
C for AIX user Lic+SW maint 12 MO	5765-F57	1	1,080	1	1,080	
C for AIX user annual SW maint renewal	5733-M52	1	433	1		433
Oracle Database 10g Enterprise Edition, Unlimited Users, 3 years		4	20,000	24†	480,000	
Oracle Database Server Support Package for 3 years		4	2,000	3		6,000
Oracle Mandatory E-Business Discount		4				-97,200
					Subtotal	463,770
						121,520

Client Hardware and Software

x336 w 3.2GHz/1024KB Xeon	883722U	1	2,419	56	135,464	25,200
xSeries 3.2GHz 800MHz 1MB L2Cache Intel Xeon	13N0663	1	769	56	43,064	
1GB PC2-3200 (2x512MB) ECC DDR2 SDRAM RDIMM	73P2865	1	499	56	27,944	
80GB 7200 RPM SATA HDD with EZ swap Tray	73P8002	1	165	56	9,240	
Microsoft Windows 2000 Server	C11-00821	3	738	56	41,328	
Microsoft Problem Resolution Services		3	245	1		245
NetBay42 Standard Rack	9307-4SX	1	1,489	22	32,758	6,600
xSeries Cable Chain Technology Cable Kit	06P4792	1	54	1	54	
IBM Sleek 2-Button Mouse - (PS/2)	28L3673	1	15	1	15	
Preferred Pro Full Size PS/2 Keyboard	31P7415	1	29	1	29	
E54 15" monitor	W9SP47N	1	119	1	119	
					Subtotal	290,015
						32,045

Third Party Hardware/Software

Visual C++ Standard Edition	254-00170	3	109	1	109	
Linksys 16-Port 10/100/1000 Gigabit Switch	507650	2	350	6	2,097	
					Subtotal	2,206
					Total	13,940,476
						736,701
					IBM Total System Discounts*	-6,581,004
					Three-Year Cost of Ownership	8,096,173
					tpmC	1,601,785.0
					\$/tpmC	5.05

*Discounts are based on US list prices for similar quantities & configurations including pre-payment for maintenance
Audited by: Francois Raab, Info Sizing (www.infosizing.com)

Pricing Sources:

1 IBM: Bill Casey, eServer pSeries Offering Manager, wrcasey@us.ibm.com, 512-838-1422

4 Oracle Corp. MaryBeth Pierantoni, mary.beth.pierantoni@oracle.com, 916-315-5081

† * 24 = 0.75 * 32. Explanation: For the purposes of counting the number of processors which require licensing, a multicore chip with "n" cores shall be determined by multiplying "n" cores by a factor of .75.

2. CDW.com, 3. Microsoft Corporation

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 p5 595 Model 9119-595

MQTH, computed Maximum Qualified Throughput: 1,601,784.98 tpmC

<u>Response Times (in seconds)</u>	<u>90th %</u>	<u>Average</u>	<u>Maximum</u>
New Order	0.98	0.33	2.95
Payment	1.00	0.34	2.90
Order-Status	1.00	0.34	2.75
Delivery (interactive)	0.25	0.18	1.90
Delivery (deferred)	0.05	0.03	1.27
Stock-Level	1.05	0.40	2.95
Menu	0.22	0.16	1.95

Response time delay added for emulated components 0.1 seconds

<u>Transaction Mix, in percent of total transactions</u>	<u>Percent</u>
New Order	44.92%
Payment	43.01%
Order-Status	4.02%
Delivery	4.01%
Stock-Level	4.02%

<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	18.05/120.22
Payment	3.00/0.01	3.01/12.02	3.05/120.20
Order-Status	2.00/0.01	2.01/10.01	2.05/100.10
Delivery	2.00/0.01	2.01/5.02	2.06/50.20
Stock-Level	2.00/0.01	2.01/5.02	2.05/50.21

Test Duration

Ramp-up Time	1 hour 27 minutes 43 Seconds
Measurement interval	2 hours 00 minutes
Transactions during measurement interval (all types)	774,966,659
Ramp-down time	60 minutes

Checkpoints

Number of checkpoints	4
Checkpoint interval	29 minutes 7 sec