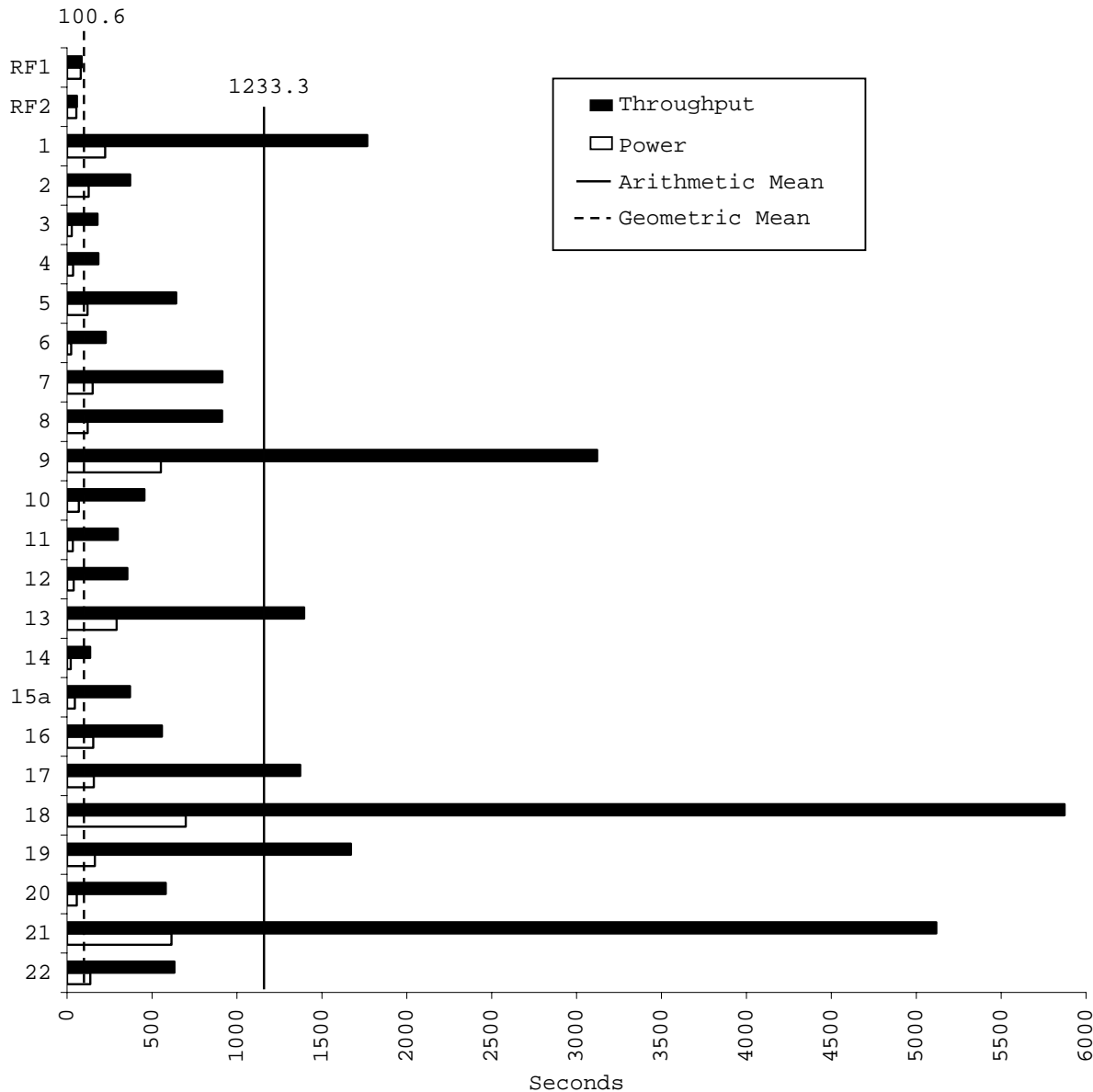


IBM @server p5 570 with DB2 UDB V8.2

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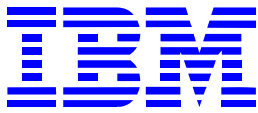
Report Date: Sep. 15, 2004

Total System Cost	Composite Query per Hour Rating			Price/Performance
\$1,397,456	26,156.3 QphH@1000GB			53 \$/QphH@1000GB
Database Size	Database Manager	Operating System	Other Software	Availability Date
1000GB	DB2 UDB V8.2	AIX 5L V5.3	None	December 15, 2004



Database Load Time: 2:32:13	Load included backup: N	Total Data Storage/Database Size: 8.28
RAID (base tables): Y	RAID (Base Tables and Auxiliary Data Structures): Y	RAID (All): N

System Configurations
4 IBM @server p5 570 servers, each server with
Processors 4 x 1900MHz POWER5 with 2x 36MB L3 Cache
Memory 32GB
Disk Controllers 8 x 2Gigabit Fibre Channel PCI-X Adapter & 4 x IBM TotalStorage DS4300 dual controllers
Disk Drives 56 x 36.4GB 15K 2Gb FC drives ; 2 x 73.4GB 15K Ultra4 SCSI drives, with 2 additional on server1
Network 2 Integrated Gigabit Ethernet
Total Disk Storage 8,277.19 GB (GB is defined as 1024 * 1024 * 1024 bytes)

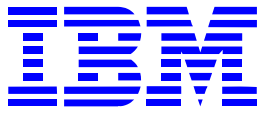


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Description	Part No.	Source	Unit Price	Qty	Ext Price	Maint Price
Server Hardware						
IBM eServer p5 9117 Model 570	9117-570		1,000	4	4,000	113,448
Headless Enclosure	7879		350	4	1,400	0
I/O Backplane	7866		4,100	4	16,400	0
System Midplane	7867		500	4	2,000	0
SCSI disk backplane	7868		1,200	4	4,800	0
Power Distribution Backplane	7870		200	4	800	0
Serial Port Riser Card	7878		100	4	400	0
Power Supply	7888		800	8	6,400	0
L4 1.9 Processor 0/2Way	7832		10,900	8	87,200	0
1-way Activation for 7832	7898		21,800	8	174,400	0
1-way Activation for 7832 - \$0 Priced Value Pack	8454		0	8	0	0
Media Backplane	7869		140	4	560	0
CEC Backplane	7865		1,200	4	4,800	0
L4 CPU Regulator	7875		1,100	12	13,200	0
L4 FSP Card	7881		650	4	2,600	0
IDE DVDROM, Slim Line	2640		378	4	1,512	0
8GB(4x2000MB)	4454		14,746	16	235,936	0
DASD 73.4 10K rpm	3274		1,400	10	14,000	0
Line Cords	6458		14	8	112	0
Op Panel	1846		150	4	600	0
Rack-mount Drawer Rail Kit	7164		168	4	672	0
Hardware Management Console	7315-C03		2,001	1	2,001	816
Model D20 I/O Drawer	7311-D20		4,270	8	34,160	30,336
Remote I/O Cable, 3.5M	3147		550	12	6,600	0
SPCN 2m Cable: Drawer to Drawer	6001		25	12	300	0
AC Power Supply, 435W	6268		625	8	5,000	0
RIO-2 Ports to I/O Planar Riser Card	6417		800	8	6,400	0
2 Gigabit Fibre Channel PCI-X Adapter	5716		2,267	32	72,544	0
Rack Model T00 - 7176, 6246, 6098	7014-T00		4,188	3	12,564	2,304
				Subtotal	711,361	146,904
Storage						
STORAGE SERVER DS4300	1722-60U		14,999	16	239,984	0
SHORT WAVE SFP GBIC	2210		499	32	15,968	0
2GB FC,36.4GB/15K DRIVE MOD.	5212		1,115	224	249,760	0
AIX HOST KIT	7711		4,000	1	4,000	0
Fiber Cable 25m	5625		189	32	6,048	0
3 Year Warranty Service Upgrade 1722 24x7x4	96P2368		2,499	16	0	39,984
				Subtotal	515,760	39,984
Server Software						
AIX 5.3 (media only)	5962-A5L		50	1	50	0
AIX Software	5765-AIX		1,225	16	19,600	0
AIX Software Maintanance (3Y)	5773-SM3		1,958	16	0	31,328
AIX Software Maintanance 24x7 Upgrade (3Y)	0468		496	16	0	7,936



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HMC Software Support 3 Year	5773-RS3	1	675	1	0	675
HMC Software Support 24x7 3 Year	5773-0570	1	236	1	0	236
C for AIX user Lic+SW maint 12 MO	D5A1DLL	1	515	1	515	0
C for AIX user annual SW maint renewal	E1A1FLL	1	103	2	0	206
DB2 UDB ESE License/1-yr. Maint.	D518GLL	1	19,755	16	316,080	
DB2 UDB ESE Support 1Yr/Proc	E00BILL	1	940	32		30,080
DB2 UDB ESE DPF License/1-yr. Maint.	D518JLL	1	6,143	16	98,288	
DB2 UDB ESE DPF Support 1Yr/Proc	E00BJLL	1	293	32		9,376
Subtotal					434,533	79,837
Third Party Hardware/Software						
Cisco Catalyst WS-C3750G-24TS-S 10/100/1000	496453	2	5,129	1	5,129	
Cisco SMARTnet Onsite 1 Year 24x7 4 Hour	137978	2	1,298	3	0	3,894
Subtotal					5,129	3,894
Total					1,666,783	270,619
IBM Total System Discounts*						-539,946
Three-Year Cost of Ownership						1,397,456
QphH						26,157
\$/QphH						53

*Discounts are based on US list prices for similar quantities & configurations

Pricing Sources:

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

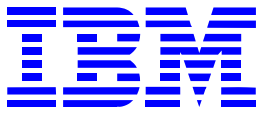
1 IBM DB2: Paul Rivot, Director Database Servers Business Intelligence Software, email pivot@us.ibm.com, phone 914-766-1325

2 CDW.com

Audited by: Francois Raab of Infosizing (www.infosizing.com)

The system as configured for the test will be available December 15, 2004.

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



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with **DB2 UDB V8.2**

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Numerical Quantities Summary

Measurement Results

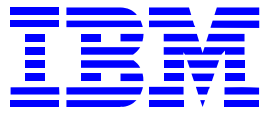
Database Scaling (SF/Size)	=	1000
Total Data Storage/Database Size	=	8.28
Start of Database Load	=	9/5/2004 23:37:25
End of Database Load	=	9/6/2004 2:09:38
Database Load Time	=	2:32:13
Query Streams for Throughput Test	=	7
TPC-H Power Metric (QppH@1000GB)	=	35,789.6
TPC-H Throughput Metric (QthH@1000GB)	=	19,115.9
Composite Query-per-Hour Rating (QphH@1000GB)	=	26,156.3
Total System Price over 3 years	=	\$1,397,456
TPC-H Price/Performance Metric (\$/QphH@1000GB)	=	53

Measurement Intervals

Measurement Interval in Throughput Test (Ts) = 29,002 seconds

Duration of Stream Execution

Stream Id	Seed Used	Start Date & Time	End Date & Time	Duration
Stream 00	906020938	9/6/2004 03:44:19	9/6/2004 04:50:04	1:05:45
Refresh		9/6/2004 03:44:19	9/6/2004 04:50:57	1:06:38
Stream 01	906020939	9/6/2004 04:51:21	9/6/2004 12:37:58	7:46:37
Stream 02	906020940	9/6/2004 04:51:21	9/6/2004 12:32:42	7:41:21
Stream 03	906020941	9/6/2004 04:51:22	9/6/2004 12:37:41	7:46:19
Stream 04	906020942	9/6/2004 04:51:23	9/6/2004 12:22:32	7:31:10
Stream 05	906020943	9/6/2004 04:51:23	9/6/2004 12:11:37	7:20:14
Stream 06	906020944	9/6/2004 04:51:23	9/6/2004 12:19:45	7:28:22
Stream 07	906020945	9/6/2004 04:51:23	9/6/2004 12:02:48	7:11:25
Refresh		9/6/2004 04:51:23	9/6/2004 12:54:43	8:03:21



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Timing Interval (in seconds)

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 0	224.5	127.6	27.3	35.6	120.4	23.9	150.4	121.0	552.5	69.6	33.7	38.6
Stream 01	457.1	325.6	238.6	36.4	653.7	133.9	841.2	868.8	3168.3	348.7	288.7	350.5
Stream 02	1992.3	301.3	247.9	209.6	488.2	275.8	831.0	913.6	3544.9	414.9	326.7	805.3
Stream 03	1927.4	305.2	48.3	188.6	595.6	196.5	908.2	937.5	3199.9	489.7	314.1	62.9
Stream 04	2025.6	363.3	136.2	172.9	863.2	187.4	1007.8	844.9	3074.4	461.7	315.7	246.0
Stream 05	1997.5	404.8	200.6	255.8	523.4	276.9	1011.5	893.4	3105.4	495.2	287.6	267.4
Stream 06	1964.6	359.1	205.2	209.0	752.5	293.5	949.9	988.5	3040.0	528.0	296.1	288.4
Stream 07	2006.5	539.1	176.8	212.3	618.6	226.1	848.9	938.5	2711.3	446.0	258.2	461.6
Minimum	457.1	301.3	48.3	36.4	488.2	133.9	831.0	844.9	2711.3	348.7	258.2	62.9
Average	1767.3	371.2	179.1	183.5	642.2	227.2	914.1	912.2	3120.6	454.9	298.2	354.6
Maximum	2025.6	539.1	247.9	255.8	863.2	293.5	1011.5	988.5	3544.9	528.0	326.7	805.3
Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	291.6	20.8	45.9	154.2	157.1	698.2	163.6	56.3	614.8	136.0	80.9	53.8
Stream 01	1385.6	139.6	310.0	556.9	1416.3	8285.9	1679.6	594.5	5539.4	377.4	92.0	64.4
Stream 02	1110.3	105.2	518.2	641.4	1604.7	6317.5	1819.3	572.9	4071.1	568.3	86.0	68.2
Stream 03	921.1	139.0	248.8	269.2	1522.9	7382.2	1651.8	677.9	5303.4	688.7	87.1	49.2
Stream 04	1677.5	167.6	375.0	613.0	1311.7	5000.7	1913.2	307.8	5344.5	659.6	107.8	61.1
Stream 05	1627.3	127.7	343.0	549.1	1388.4	4452.7	1365.1	507.4	5556.7	777.7	70.5	66.8
Stream 06	1664.9	119.7	306.9	613.7	1301.3	4608.7	1602.3	703.9	5346.0	760.3	67.7	51.3
Stream 07	1388.4	147.5	489.1	664.5	1063.5	5064.5	1665.3	701.1	4661.0	596.1	86.4	46.1
Minimum	921.1	105.2	248.8	269.2	1063.5	4452.7	1365.1	307.8	4071.1	377.4	67.7	46.1
Average	1396.4	135.2	370.1	558.3	1372.7	5873.2	1670.9	580.8	5117.4	632.6	85.4	58.2
Maximum	1677.5	167.6	518.2	664.5	1604.7	8285.9	1913.2	703.9	5556.7	777.7	107.8	68.2