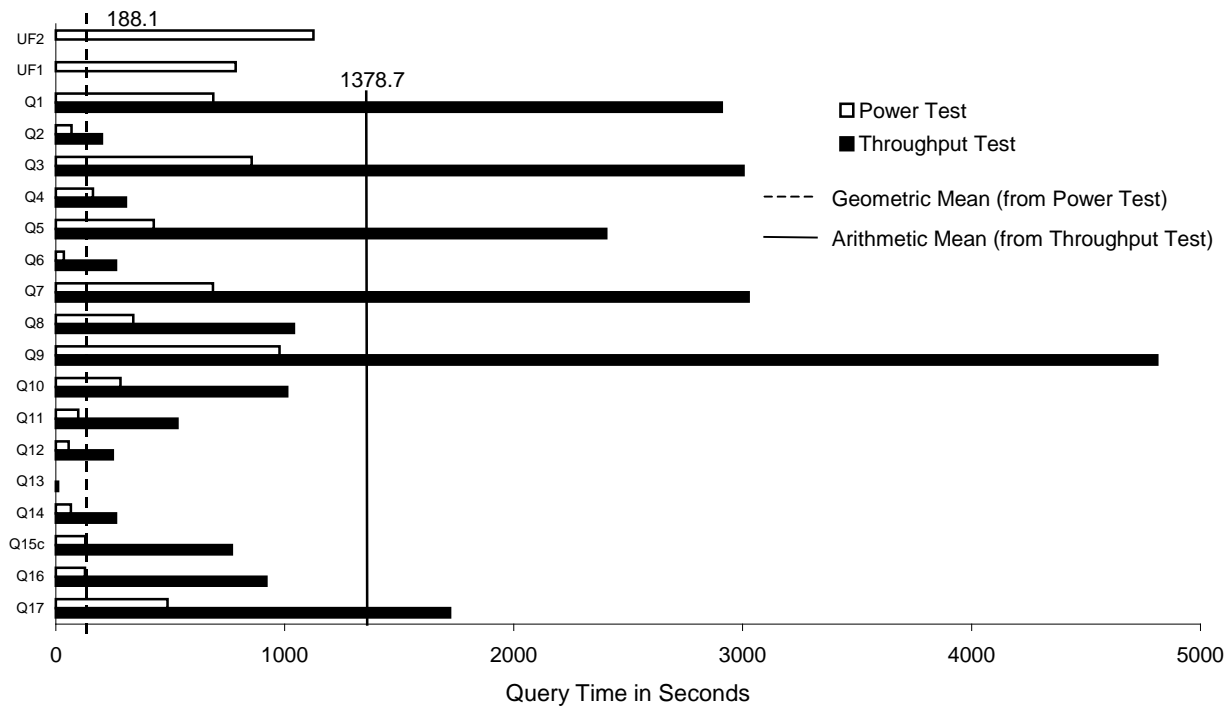


**RS/6000 SP Model 550  
with  
DB2 UDB 5.2.0**

TPC-D Rev. 1.3.1

Report Date: May 11, 1998  
Modified: October 9, 1998

Total System Cost	TPC-D Power	TPC-D Throughput	Price/Performance
<b>\$ 11,380,178</b>	<b>19137.5</b> QppD@1000GB	<b>10661.5</b> QthD@1000GB	<b>\$797</b> per QphD@1000GB
Database Size	Database Manager	Operating System	Other Software
<b>1000 GB</b>	<b>IBM DB2 Universal Database 5.2.0</b>	<b>AIX 4.2.1</b>	<b>None</b>
			Availability Date
			<b>October 31, 1998</b> See note in page 8



Database Load Time:  
20:20:32

Total Data Storage/Database Size: 7.01

RAID: Y

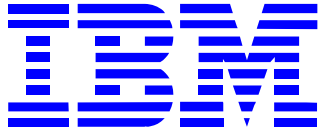
**System Components**

**48 RS/6000 SP nodes, each node with:**

- 4 x 332MHz PowerPC 604e CPUs (256K L2)
- 3GB memory
- 2 x 4.5GB SCSI Disk
- 2 x SSA disk adapters/controllers
- 1 x SP Switch MX Adapter

**External Disk Storage:**

Total Storage: 1536 x 4.5GB SSA disks

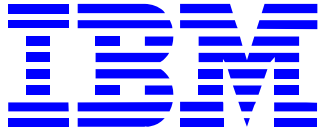


**RS/6000 SP Model 550**  
**With**  
**DB2 UDB 5.2.0**

TPC-D Rev. 1.3.1

Report Date: May 11, 1998  
 Modified: October 9, 1998

Description	Part No.	Source	Ref. Price	Qty	Discount	Ext. Price	5-Yr. Maint.
<b>Server Hardware</b>							
RS/6000 SP - Tall Frame	9076-550	IBM	50,000	1		50,000	12,000
Expansion Frames	1550	IBM	50,000	2		100,000	24,000
332 MHz Thin Node	2050	IBM	24,000	48		1,152,000	506,880
4.5 GB Disk Drive – F/W 1 In High	3000	IBM	1,300	96		124,800	0
SP Switch	4011	IBM	70,000	3		210,000	60,480
SP Switch MX Adapter	4022	IBM	12,500	48		600,000	0
Memory Cards	4093	IBM	1,038	96		99,648	0
256MB DIMM Memory Modules	4110	IBM	3,840	576		2,211,840	0
PowerPC 604e, 332 MHz, 2-Way Processor Card	4320	IBM	12,000	96		1,152,000	552,960
PCI SSA Adapter	6215	IBM	3,000	96		288,000	0
<b>Subtotal</b>						<b>5,988,288</b>	<b>1,156,320</b>
<b>Control Workstation</b>							
RS/6000 Model F30	7025-F30	IBM	12,995	1		12,995	6,720
GXT110P Graphics Adapter (PCI)	2839	IBM	340	1		340	0
8port Async Adapter	2931	IBM	1,195	1		1,195	0
Auto LANstreamer Token Ring Adapter	2979	IBM	795	1		795	0
Ethernet BNC/RJ-45 Adapter, PCI	2985	IBM	195	1		195	0
4.5 GB SCSI-2 Hard Disk Drive	3092	IBM	830	2		1,660	0
P50 Color Monitor	3612	IBM	800	1		800	0
32 MB DIMM Memory	4132	IBM	640	1		640	0
Display Cable	4217	IBM	105	1		105	0
Mouse	6041	IBM	75	1		75	0
Keyboard – English (US)	6900	IBM	140	1		140	0
<b>Subtotal</b>						<b>18,940</b>	<b>6,720</b>



**RS/6000 SP Model 550  
with  
DB2 UDB 5.2.0**

TPC-D Rev. 1.3.1

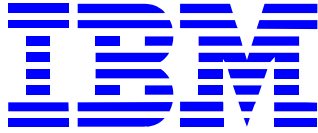
Report Date: May 11, 1998  
Modified: October 9, 1998

Description	Part No.	Source	Ref. Price	Qty	Discount	Ext. Price	5-Yr. Maint.
<b>Storage</b>							
SSA Disk Subsystem with (4) 4.5 GB Drives	7133-020	IBM	19,350	96		1,857,600	921,600
4.5GB SSA Disk Drive Modules	3401	IBM	2,100	1152		2,419,200	0
Power/Cooling	3003	IBM	1,600	96		153,600	0
10.0m SSA Copper Cable	5100	IBM	75	384		28,800	0
Expansion Rack	7015-R00	IBM	3,110	16		49,760	23,808
<b>Subtotal</b>						<b>4,508,960</b>	<b>945,408</b>
<b>Hardware Subtotal</b>						<b>10,516,188</b>	<b>2,108,448</b>
<b>Server Software</b>							
AIX 4.2 unlimited users	5765-C34	IBM	3,660	1		3,660	0
C for AIX	5756-423	IBM	615	1		615	0
AIX 4.2.1 SP License	5756-030	IBM	0	48		0	0
AIX Parallel System Support	5765-296	IBM	0	48		0	0
DB2 UDB V5 4-way Base Program Package	5801-AAR	IBM	69,998	1		69,998	0
DB2 UDB V5 4-way Add'l Servers	5802-AAR	IBM	69,898	47		3,285,206	0
<b>Software Subtotal</b>						<b>3,359,479</b>	<b>0</b>
<b>Total</b>						<b>13,875,667</b>	<b>2,108,448</b>
<b>Discounts</b>							
Hardware Discount				27%		(2,839,371)	
Software Discount				33%		(1,108,628)	
MidRange Service Agreement Discount				17%			(358,436)
Extended Maint. Option Discount				17%			(297,502)
<b>Total</b>						<b>9,927,668</b>	<b>1,452,510</b>
<b>5 Year Cost of Ownership</b>						<b>\$11,380,178</b>	
QphD @ 1000 GB						14284.1	
<b>\$/QphD @ 1000 GB</b>						<b>\$797</b>	

Audited By: Francois Raab, Information Paradigm Inc.

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 section 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](mailto:pricing@tpc.org). Thank you.

Note: Hardware and system software available now; DB2 UDB 5.2.0 software available by October 31, 1998.



RS/6000 SP Model 550  
With  
DB2 UDB 5.2.0

TPC-D Rev. 1.3.1

Report Date: May 11, 1998  
Modified: October 9, 1998

### Numerical Quantities Summary

**Measurement Results:**

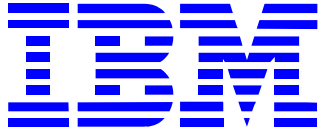
Database Scaling (SF/Size)	=	1000
Total Data Storage/Database Size	=	7.01
Database Load Time	=	20:20:32
Query Streams for Throughput Test	=	7
TPC-D Power Metric (QppD@1000GB)	=	19137.5
TPC-D Throughput Metric (QthD@1000GB)	=	10661.5
Composite Query-per-hour Rating (QphD@1000GB)	=	14284.1
Total System Price over 5 years	=	\$11,380,178
TPC-D Price/Performance Metric (\$/QphD@1000GB)	=	\$797

**Measurement Intervals:**

Measurement Interval in Throughput Test (Ts)	=	40,182 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Total Time
Stream0	225520782	05/04/98	23:36:08	05/05/98	01:39:26	02:03:18
Stream1	1367916679	05/05/98	02:20:12	05/05/98	08:58:31	06:38:19
Stream2	1916419193	05/05/98	02:20:12	05/05/98	08:31:47	06:11:35
Stream3	1175406391	05/05/98	02:20:12	05/05/98	08:57:17	06:37:05
Stream4	1869157532	05/05/98	02:20:13	05/05/98	08:49:24	06:29:11
Stream5	536650117	05/05/98	02:20:13	05/05/98	08:56:44	06:36:31
Stream6	722405354	05/05/98	02:20:13	05/05/98	08:50:33	06:30:20
Stream7	598060941	05/05/98	02:20:14	05/05/98	08:51:44	06:31:30
Updates	n/a	05/05/98	02:20:14	05/05/98	13:29:54	11:09:40



RS/6000 SP Model 550  
With  
DB2 UDB 5.2.0

TPC-D Rev. 1.3.1

Report Date: May 11, 1998  
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**Timing Intervals (in seconds):**

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Stream0	687.4	68.3	855.4	162.8	427.4	35.4	686.3	338.7	977.7	281.7
Stream1	3222.0	235.9	2997.3	194.1	2610.7	162.8	1968.1	982.5	5665.5	1390.6
Stream2	2605.3	219.4	2875.8	477.4	1891.5	289.9	3081.5	999.0	4415.9	1056.9
Stream3	2508.3	197.8	2713.1	335.1	1789.0	316.0	3820.7	1219.5	5163.0	1086.2
Stream4	3055.1	160.2	3051.5	196.3	2119.9	165.5	3309.3	1087.9	4356.2	1278.3
Stream5	3248.2	184.7	3310.0	337.5	2735.1	292.2	2658.8	1135.6	5339.1	685.8
Stream6	2788.6	145.1	2819.2	238.2	2865.1	174.7	3577.1	1026.4	4487.6	733.2
Stream7	2934.1	265.5	3257.6	361.4	2815.9	433.3	2772.1	827.9	4250.2	846.7
Minimum	2508.3	145.1	2713.1	194.1	1789.0	162.8	1968.1	827.9	4250.2	685.8
Average	2908.8	201.2	3003.5	305.7	2403.9	262.1	3026.8	1039.8	4811.1	1011.1
Maximum	3248.2	265.5	3310.0	477.4	2865.1	433.3	3820.7	1219.5	5665.5	1390.6

Stream ID	Q11	Q12	Q13	Q14	Q15c	Q16	Q17	UF1	UF2
Stream0	98.2	56.5	1.0	66.2	128.1	127.4	487.2	786.1	1125.6
Stream1	553.9	265.7	22.8	322.4	865.8	849.3	1588.4	24708.3	1140.9
Stream2	552.4	335.7	7.4	356.0	932.4	902.9	1294.4	1255.4	1125.4
Stream3	652.6	164.4	6.1	108.2	904.5	1138.7	1700.2	1253.7	1128.3
Stream4	547.3	239.2	9.4	234.3	852.4	1074.6	1611.3	1259.5	1134.5
Stream5	436.9	280.5	3.1	187.6	277.1	813.9	1862.7	1259.4	1120.4
Stream6	435.8	221.0	10.4	285.9	821.1	734.9	2052.9	1270.6	1120.7
Stream7	542.2	236.8	3.0	343.4	727.0	923.9	1948.0	1278.0	1125.3
Minimum	435.8	164.4	3.0	108.2	277.1	734.9	1294.4	1253.7	1120.4
Average	531.6	249.0	8.9	262.5	768.6	919.7	1722.6	4612.1	1127.9
Maximum	652.6	335.7	22.8	356.0	932.4	1138.7	2052.9	24708.3	1140.9