

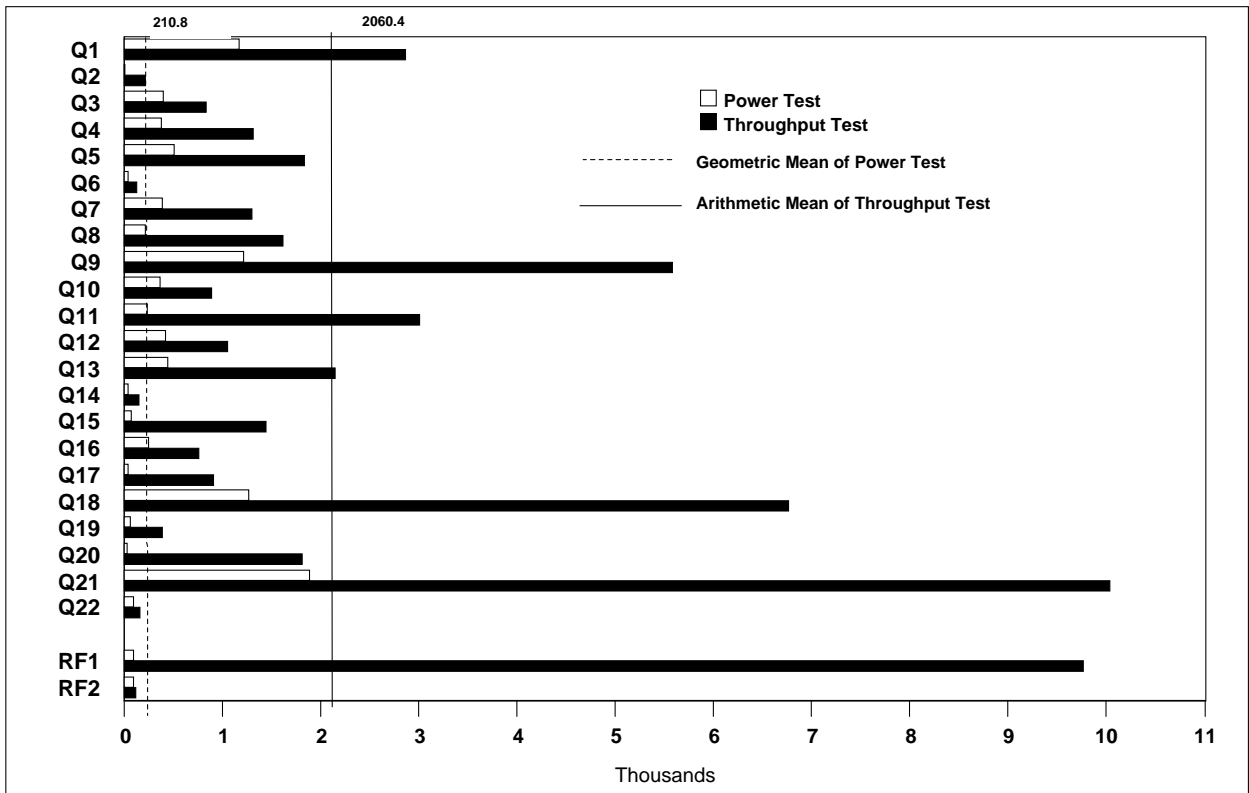


**IBM @server xSeries 350
with
Microsoft SQL Server 2000**


TPC-H Rev 1.3.0

Report Date: Mar. 23, 2001

Total System Cost		Composite Query-per-Hour Metric		Price/Performance
\$193,601		1,169.7 QphH @ 100GB		\$166 per QphH@100GB
Database Size	Database Manager	Operating System	Other Software	Availability Date
100GB	Microsoft SQL Server 2000 Enterprise Edition	Microsoft Windows 2000 Advanced Server	Visual Studio Professional 6.0	May 31, 2001



Database Load Time: 06:59:58		Load Included Backup: Y	Total Data Storage / Database Size: 10.25
RAID (Base Tables Only): N		RAID (Base Tables and Auxiliary Data Structures): N	RAID (All): N
Configuration			
Processors	4	Intel Pentium III Xeon 900MHz / 2MB L2 Cache	
Memory	4	1GB SDRAM ECC RDIMM II	
Disk Controllers	4	Mylex eXtremeRAID 2000 Adapter	
	1	ServeRAID-4H Ultra160 SCSI Adapter	
Disk Drives	121	9.1GB 15K Ultra160 SCSI Drive	
Total Disk Storage		1024.87GB	

	IBM @server xSeries 350 Microsoft SQL Server 2000		TPC-H Revision 1.3.0				
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Description	Part Number	Source	Unit Price	Qty	Ext. Price	5-Yr. Maint.	
Server Hardware							
xSeries 350 / 900MHz/2MB L2 Cache Pentium III Xeon	8682-6RY	1	10,165	1	10,165	10,685	
900MHz / 2MB L2 Cache Processor	19K4633	1	6,599	3	19,797	0	
1GB SDRAM ECC RDIMM II	33L3119	4	2,320	4	9,280	0	
Mylex eXtremeRAID 2000 Adapter*	E2000-4-32NB	3	1,872	6	11,232	0	
ServeRAID-4H Ultra160 SCSI Adapter	37L6889	4	2,190	1	2,190	0	
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	4	99	18	1,782	0	
270W Hot-Swap Redundant Power Supply	37L6880	4	272	1	272	0	
E54 15" (13.8" Viewable) Color Monitor	6331N2N	4	165	1	165	270	
Netfinity Rack	9306900	4	1,580	1	1,580	1,308	
Side Panel Kit	94G6669	4	179	1	179	0	
Subtotal					\$56,642	\$12,263	
Server Storage							
Netfinity EXP300 Rack Storage Expansion Enclosure	35311RU	4	2,858	9	25,722	7,074	
Netfinity 9.1GB 15K Ultra160 SCSI Drive	19K0655	4	538	121	65,098	0	
Subtotal					\$90,820	\$7,074	
Server Software							
Microsoft SQL Server 2000 Enterprise Edition	810-00652	2	5,549	1	5,549	10,475	
Microsoft SQL Server 2000 Client Licenses	359-00532	2	7,300	1	7,300	Incl Above	
Microsoft Windows 2000 Advanced Server	C10-00475	2	2,399	1	2,399	Incl Above	
Visual Studio Professional 6.0 Win32	659-00390	2	1,079	1	1,079	Incl Above	
Subtotal					\$16,327	\$10,475	
Total					\$163,789	\$29,812	
Notes: Standard 3-Year and extended warranties upgraded to 7x24, 4-hour response time coverage. *10% or minimum 2 spares are added in place of on-site service; product has a 5-year return-to-vendor warranty. Pricing: 1 - IBM List Price; 2 - Microsoft Corp.; 3 - Mylex; 4 - Software House International Audited by Brad Askins of InfoSizing, Inc.				5-Year Cost of Ownership: \$193,601 QpH @ 100GB: 1,169.7 \$ / QpH @ 100GB: \$166			
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 specification. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.							



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Measurement Results:

Database Scale Factor	100
Total Data Storage/Database Size	10.25
Start of Database Load	13:35:16
End of Database Load	20:35:14
Database Load Time	06:59:58
Query Streams for Throughput Test	5
TPC-H Power	1708.0
TPC-H Throughput	801.1
TPC-H Composite Query-per-Hour (QphH@100GB)	1,169.7
Total System Price over 5 Years	\$193,601
TPC-H Price/Performance Metric (\$/QphH@100GB)	\$166

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 49,434 seconds

Duration of Stream Execution:

	Seed	Query Start Date/Time Query End Date/Time	RF1 Start Date/Time RF1 End Date/Time	RF2 Start Date/Time RF2 End Date/Time	Duration
Stream 00	213203513	02/14/01 15:38:47	02/14/01 15:37:06	02/14/01 18:20:45	02:45:19
		02/14/01 18:20:44	02/14/01 15:38:45	02/14/01 18:22:26	
Stream 01	213203514	02/14/01 18:22:28	02/14/01 18:22:28	02/15/01 07:48:05	12:19:08
		02/15/01 06:41:35	02/15/01 07:48:04	02/15/01 07:50:00	
Stream 02	213203515	02/14/01 18:22:28	02/15/01 07:50:01	02/15/01 07:51:54	12:50:12
		02/15/01 07:12:40	02/15/01 07:51:53	02/15/01 07:53:56	
Stream 03	213203516	02/14/01 18:22:28	02/15/01 07:53:58	02/15/01 07:56:00	13:23:52
		02/15/01 07:46:20	02/15/01 07:55:58	02/15/01 07:58:01	
Stream 04	213203517	02/14/01 18:22:28	02/15/01 07:58:02	02/15/01 08:00:07	12:24:49
		02/15/01 06:47:18	02/15/01 08:00:05	02/15/01 08:02:08	
Stream 05	213203518	02/14/01 18:22:29	02/15/01 08:02:09	02/15/01 08:04:14	11:59:27
		02/15/01 06:21:55	02/15/01 08:04:13	02/15/01 08:06:22	



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TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	1,176.7	21.1	403.6	383.8	517.0	49.4	400.5	221.7	1,217.8	379.1	245.6	427.4
Stream 01	3,096.4	28.8	912.0	959.6	2,640.0	135.1	1,264.9	422.2	4,954.8	933.1	2,516.7	1,324.5
Stream 02	2,973.1	317.0	939.0	1,067.9	1,453.7	163.7	1,954.1	2,287.0	6,330.8	1,026.1	3,619.9	1,252.1
Stream 03	2,355.6	191.5	379.0	1,830.5	1,934.6	98.8	1,003.2	3,731.2	6,119.6	663.4	5,376.6	427.5
Stream 04	2,732.9	220.6	891.5	1,855.0	1,574.9	140.2	1,363.3	1,194.1	3,916.9	1,252.4	1,402.4	1,579.1
Stream 05	3,181.3	379.8	1,060.1	857.2	1,573.5	117.4	937.4	483.2	6,591.2	621.6	2,133.7	693.3
Minimum	2,355.6	28.8	379.0	857.2	1,453.7	98.8	937.4	422.2	3,916.9	621.6	1,402.4	427.5
Average	2,867.9	227.5	836.3	1,314.0	1,835.3	131.0	1,304.6	1,623.5	5,582.7	899.3	3,009.9	1,055.3
Maximum	3,181.3	379.8	1,060.1	1,855.0	2,640.0	163.7	1,954.1	3,731.2	6,591.2	1,252.4	5,376.6	1,579.1

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	449.8	49.0	81.3	257.5	46.1	1,277.3	73.9	35.9	1,899.4	103.0	98.5	100.6
Stream 01	2,500.6	89.6	2,074.6	962.7	156.1	6,062.4	95.4	2,866.4	10,156.0	195.8	48,336.1	114.3
Stream 02	1,989.7	207.9	1,555.4	642.3	1,537.8	6,232.7	932.2	363.0	9,214.4	152.4	111.8	122.1
Stream 03	463.5	177.3	717.2	253.2	1,567.3	6,868.5	74.0	5,648.7	8,147.3	203.2	120.8	121.2
Stream 04	4,127.3	158.4	1,445.7	493.3	1,263.0	7,210.4	455.5	108.8	11,149.7	153.9	122.5	121.0
Stream 05	1,708.4	135.2	1,453.3	1,486.3	55.2	7,475.9	442.1	123.6	11,527.1	129.7	123.6	128.0
Minimum	463.5	89.6	717.2	253.2	55.2	6,062.4	74.0	108.8	8,147.3	129.7	111.8	114.3
Average	2,157.9	153.7	1,449.2	767.6	915.9	6,770.0	399.8	1,822.1	10,038.9	167.0	9,763.0	121.3
Maximum	4,127.3	207.9	2,074.6	1,486.3	1,567.3	7,475.9	932.2	5,648.7	11,527.1	203.2	48,336.1	128.0