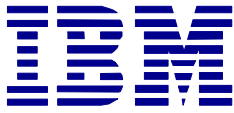| **IBM**	**IBM @server xSeries 250** **with** **Microsoft SQL Server 2000**	TPC-H Rev 1.3.0
		Report Date: Mar. 23, 2001

Total System Cost	Composite Query-per-Hour Metric	Price/Performance
$159,482	**1147.9** QphH @ 100GB	**$139** per QphH@100GB

Database Size	Database Manager	Operating System	Other	Availability Date
100GB	**Microsoft SQL Server 2000 Enterprise Edition**	**Microsoft Windows 2000 Advanced Server**	**Visual Studio Professional 6.0**	**April 13, 2001**

214.7   2070.6

Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
RF1
RF2

☐ Power Test
■ Throughput Test
- - - - Geometric Mean of Power Test
———— Arithmetic Mean of Throughput Test

0   1   2   3   4   5   6   7   8   9   10   11

Thousands
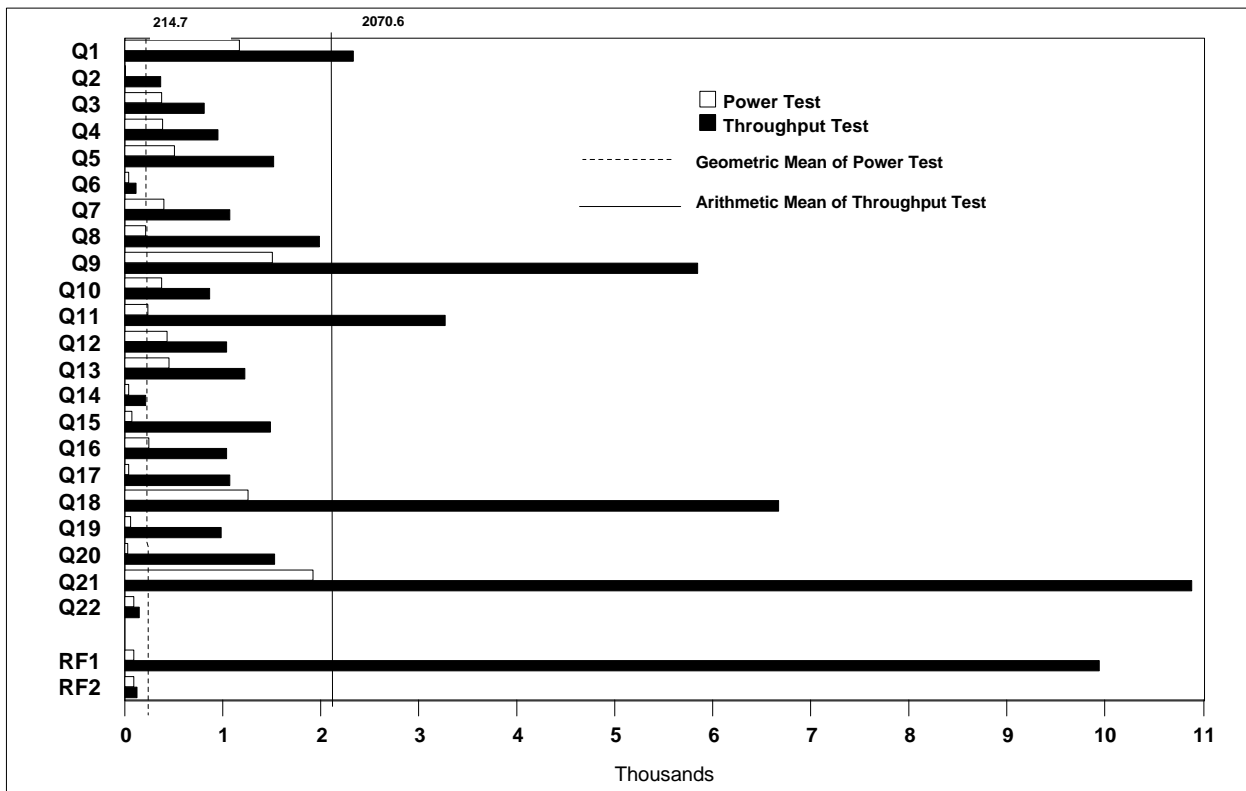
Database Load Time: 07:29:59	**Load Included Backup: Y**	**Total Data Storage / Database Size: 10.25**

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	**5**	**Mylex eXtremeRAID 2000 Adapter**
Disk Drives	**121**	**9.1GB 15K Ultra160 SCSI Drive**
Total Disk Storage		**1024.87GB**

	IBM @server xSeries 250 Microsoft SQL Server 2000	TPC-H Revision 1.3.0
		Report Date: March 23, 2001

Description	Part Number	Source	Unit Price	Qty	Ext. Price	5-Yr. Maint.
Server Hardware						
xSeries 250 / 900MHz/2MB L2 Cache Pentium III Xeon	8665-8RY	1	9,879	1	9,879	10,295
900MHz / 2MB L2 Cache Processor	19K4635	1	6,189	3	18,567	0
1GB SDRAM ECC RDIMM II	33L3119	1	1,689	4	6,756	0
Mylex eXtremeRAID 2000 Adapter*	E2000-4-32NB	3	1,872	7	13,104	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	1	105	18	1,890	0
250W Hot-Swap Redundant Power Supply	37L3760	1	224	1	224	0
E54 15” (13.8” Viewable) Color Monitor	6331N2N	1	159	1	159	270
Netfinity Rack	9306900	1	1,725	1	1,725	1,308
Side Panel Kit	94G6669	1	195	1	195	0
				Subtotal	$52,499	$11,873
Server Storage						
Netfinity EXP300 Rack Storage Expansion Enclosure	35311RU	1	3,179	9	28,611	7,074
Netfinity 9.1GB 15K Ultra160 SCSI Drive	19K0655	1	405	121	49,005	0
				Subtotal	$77,616	$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	InclAbove
Microsoft Windows 2000 Advanced Server	C10-00475	2	2,399	1	2,399	InclAbove
Visual Studio Professional 6.0 Win32	659-00390	2	1,079	1	1,079	InclAbove
				Subtotal	$16,327	$10,475
				Total	$146,442	$29,422
IBM Discount on Hardware 14%					($16,382)	

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 **Audited by Brad Askins of InfoSizing, Inc.**	**5-Year Cost of Ownership:** $159,482
	QphH @ 100GB: 1,147.9
	$ / QphH @ 100GB: $139

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.

Measurement Results:

Database Scale Factor	100
Total Data Storage/Database Size	10.25
Start of Database Load	08:13:11
End of Database Load	15:43:10
Database Load Time	07:29:59
Query Streams for Throughput Test	5
TPC-H Power	1676.5
TPC-H Throughput	785.9
TPC-H Composite Query-per-Hour (QphH@100GB)	1,147.9
Total System Price over 5 Years	$159,482
TPC-H Price/Performance Metric ($/QphH@100GB)	$139

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 50,385 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	311154310	03/12/01 11:16:45	03/12/01 11:15:00	03/12/01 14:04:32	02:51:16
		03/12/01 14:04:31	03/12/01 11:16:40	03/12/01 14:06:16	
Stream 01	311154311	03/12/01 14:06:18	03/12/01 14:06:18	03/13/01 03:46:05	13:37:54
		03/13/01 03:44:12	03/13/01 03:46:01	03/13/01 03:48:18	
Stream 02	311154312	03/12/01 14:06:18	03/13/01 03:48:19	03/13/01 03:50:36	12:35:31
		03/13/01 02:41:49	03/13/01 03:50:34	03/13/01 03:52:52	
Stream 03	311154313	03/12/01 14:06:18	03/13/01 03:52:54	03/13/01 03:55:11	13:00:38
		03/13/01 03:06:56	03/13/01 03:55:10	03/13/01 03:57:25	
Stream 04	311154314	03/12/01 14:06:18	03/13/01 03:57:27	03/13/01 03:59:46	12:38:48
		03/13/01 02:45:07	03/13/01 03:59:45	03/13/01 04:01:52	
Stream 05	311154315	03/12/01 14:06:19	03/13/01 04:01:54	03/13/01 04:04:00	11:23:19
		03/13/01 01:29:38	03/13/01 04:03:59	03/13/01 04:06:03	

TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	1,182.2	21.2	382.5	395.0	519.8	50.3	404.9	221.8	1,518.9	382.7	248.0	434.9
Stream 01	1,165.3	300.4	932.7	399.7	1,423.5	153.8	1,211.3	5,226.5	4,720.7	815.2	1,804.1	936.6
Stream 02	2,167.7	373.6	1,021.4	942.7	1,593.1	170.1	1,258.9	557.0	6,980.2	915.7	3,178.1	1,163.3
Stream 03	3,014.4	295.9	502.2	1,043.2	1,519.8	97.9	1,025.2	3,183.0	6,863.8	910.9	4,650.8	551.9
Stream 04	2,775.6	455.3	739.5	1,437.5	1,698.8	105.2	960.1	579.3	7,062.4	943.3	4,134.6	992.8
Stream 05	2,557.5	459.1	880.6	968.5	1,392.1	105.0	928.6	399.9	3,610.1	789.3	2,582.5	1,579.8
Minimum	1,165.3	295.9	502.2	399.7	1,392.1	97.9	960.1	399.9	3,610.1	789.3	1,804.1	551.9
Average	2,336.1	376.9	815.3	958.3	1,525.5	126.4	1,076.8	1,989.1	5,847.4	874.9	3,270.0	1,044.9
Maximum	3,014.4	459.1	1,021.4	1,437.5	1,698.8	170.1	1,258.9	5,226.5	7,062.4	943.3	4,650.8	1,579.8

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	460.7	51.6	81.6	260.5	45.7	1,266.2	74.1	37.1	1,923.1	103.1	100.1	103.8
Stream 01	2,090.5	195.8	1,548.7	792.2	829.6	7,405.0	514.0	6,070.6	10,434.8	103.4	49,183.2	132.7
Stream 02	1,074.4	254.2	1,518.6	2,001.5	1,046.1	5,875.8	2,185.6	253.9	10,240.9	198.2	135.4	136.0
Stream 03	744.7	253.2	1,579.8	322.3	1,378.1	7,383.9	398.4	354.7	10,594.4	169.5	136.0	134.5
Stream 04	1,306.2	323.7	1,529.0	610.1	294.0	5,970.2	934.4	908.0	11,564.4	203.6	137.9	126.0
Stream 05	922.0	109.9	1,263.4	1,500.6	1,504.0	6,729.9	915.0	76.7	11,587.9	136.9	124.6	123.0
Minimum	744.7	109.9	1,263.4	322.3	294.0	5,875.8	398.4	76.7	10,240.9	103.4	124.6	123.0
Average	1,227.6	227.4	1,487.9	1,045.3	1,082.4	6,673.0	989.5	1,532.8	10,884.5	162.3	9,943.4	130.4
Maximum	2,090.5	323.7	1,579.8	2,001.5	1,504.0	7,405.0	2,185.6	6,070.6	11,587.9	203.6	49,183.2	136.0