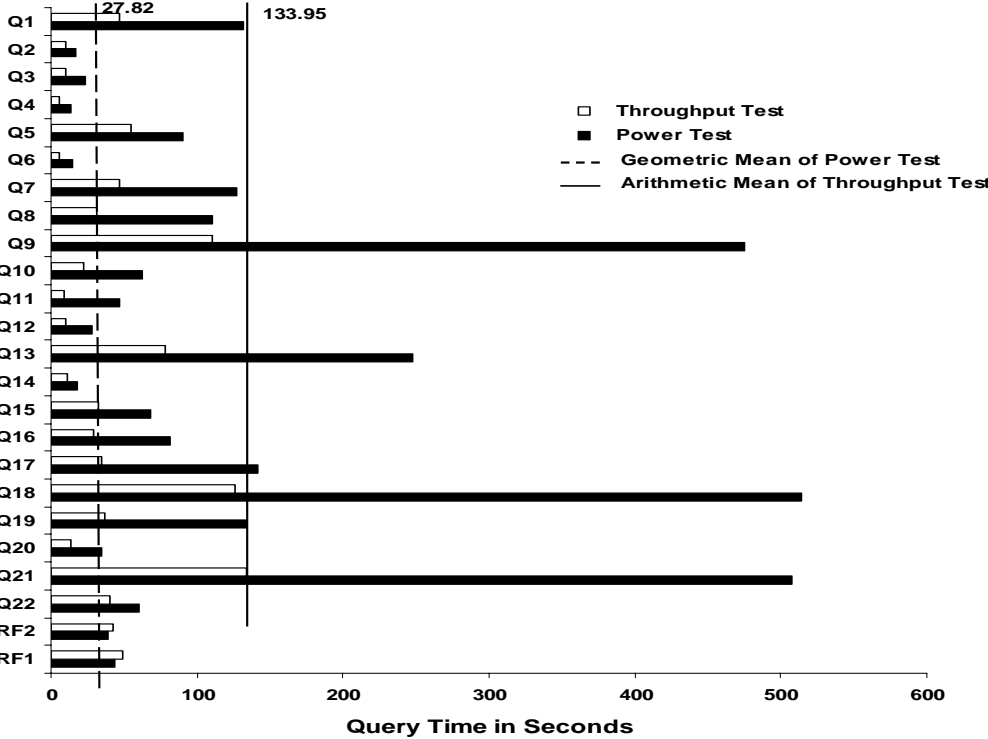
	<b>IBM® @server™ 325</b> with <b>IBM DB2® UDB 8.1</b>		<b>TPC-H Revision 2.0</b>
			Report Date: <b>July 29, 2003</b>
Total System Cost		Composite Query-per-hour Metric	Price/Performance
<b>851,953</b>		<b>12,216.1</b> <b>QphH@100GB</b>	<b>70/QphH</b> <b>per QphH@100GB</b>
Database Size	Database Manager	Operating System	Availability Date
<b>100GB</b>	<b>IBM DB2 UDB 8.1</b>	<b>SuSE Linux</b> <b>Enterprise Server 8</b>	<b>November 8, 2003</b>
			
Database Load Time: <b>00:37:30</b>		Load Included Backup: <b>N</b>	Total Data Storage / Database Size: <b>58.31</b>
RAID (Base Table): <b>Y</b>		RAID (Base Tables and Auxiliary Data Structures): <b>Y</b>	RAID (ALL): <b>Y</b>
<b>System Configuration: 8 nodes</b> <b>Processors: 2 x 2GHz AMD 64-bit Opteron Model 246 processor</b> <b>Memory: 6 x DIMMS 1GB ECC 2700 2.5 CL</b> <b>Disk Controllers: 1 x QLA2342 HBA (2 ports x 2G bps FC)</b> <b>1 x IBM FC2-133 HBA (1 ports x 2G bps FC)</b> <b>Disk Drives: 3 (IBM TotalStorage FASTT EXP700 cases) x 14 (15K FC Hot-Swap Drive) x 18.2 GB</b> <b>1 x 18.2GB 15K Ultra160 SCSI Hot-Swap Drive</b> <b>Total Disk Storage: 5831.06 GB</b>			



**IBM® @server™ 325**  
with  
**IBM DB2® UDB 8.1**

**TPC-H Revision 2.0**

Report Date:  
**July 29, 2003**

Description	Part #	Source	Unit Price	Qty	Extended Price	3-Yr. Maint. Price
<b>Server Hardware</b>						
IBM e(logo)server 325 w/2GHz AMD 246	8831-51X		1 3,039	8	24,312	0
2GHz Opteron Processor Upgrade	24P8191		1 1,539	8	12,312	0
DIMMS 1GB ECC 2700 2.5 CL	73P2267		1 725	48	34,800	0
18.2GB 15K Ultra160 SCSI Hot-Swap Drive	06P5767		1 329	8	2,632	0
IBM FC2-133 Host Bus Adapter	24P0960		1 1,485	8	11,880	0
Qlogic QLA 2342 Host Bus Adapter	408082		3 2,291	8	18,326	0
NetBay Console Kit 2/8	09N4291		1 1,359	1	1,359	0
NetBay Console Cable Kit 17ft	94G7447		1 65	8	520	0
IBM Full size Keyboard PS/2	31P7415		1 29	1	29	
IBM Mouse	31P8700		1 25	1	25	
APC Smart-UPS Model 1400	32P1020		1 855	1	855	0
E54 15" (13.8" Viewable) Color Monitor	633147N		1 129	1	129	90
NetBAY42S Enterprise Rack	9306421		1 1,439	4	5,756	300
<b>Subtotal</b>					<b>112,935</b>	<b>390</b>
<b>Server Storage</b>						
IBM TOTALSTORAGE FASTT EXP700	1740-1RU		1 3,000	24	72,000	17,280
18.2GB 15K FC Hot-Swap Drive	5211		1 681	336	228,816	
Short Wave SFP	2210		1 499	24	11,976	
1M LC-LC FIBRE OPTIC CABLE	5601		1 79	24	1,896	
<b>Subtotal</b>					<b>300,816</b>	<b>17,280</b>
<b>Server Software</b>						
DB2 UDB ESE V8.1 License/1-yr. Maint.	D518GLL		1 20,451	16	327,216	
DB2 UDB ESE V8.1 Support – 1Yr/Proc	E00BILL		1 974	32		31,168
DB2 UDB ESE V8.1 DPF License/1-yr. Maint.	D518JLL		1 6,143	16	98,288	
DB2 UDB ESE V8.1 DPF Support – 1Yr/Proc	E00BJLL		1 293	32		9,376
SuSE SLES8 8 proc + 1 yr maint.	2119-3INT-8		2 2,585	1	2,585	
SuSE SLES 8 Main. 1 yr/8proc	2119-MFJ-8		2 2,456	4		9,824
<b>Subtotal</b>					<b>428,089</b>	<b>50,368</b>
Large volume discount on IBM hardware of 14%; prices vary if purchased separately.14%					<b>Discount</b>	<b>57,925</b>
<b>Total</b>					<b>783,915</b>	<b>68,038</b>
<b>Five-Year Cost of Ownership:</b>						<b>851,953</b>
Pricing: 1 - IBM Business Partner; 2 - SuSE, 3 - CDW shop online					<b>QphH:</b>	12216.1
Warranty and Maintenance: The standard warranty has been upgraded to 3 years of 24x7x4 coverage.					<b>\$/QphH:</b>	\$70
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 stated prices are not available according to these terms, please inform the TPC at <a href="mailto:pricing@tpc.org">pricing@tpc.org</a> . Thank you.						



**IBM<sup>®</sup> @server<sup>™</sup> 325**  
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**TPC-H Revision 2.0**

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**Measurement Results:**

Database Scale Factor	100
Total Data Storage/Database Size	58.31
Start of Database Load	21:44:56
End of Database Load	22:22:26
Database Load Time	00:37:30
Query Streams for Throughput Test	5
TPC-H Power	12941.2
TPC-H Throughput	11531.7
TPC-H Composite Query-per-Hour (QphH@100GB)	12216.1
Total System Price over 3 Years	851,953
TPC-H Price/Performance Metric (\$/QphH@100GB)	70

**Measurement Interval:**

Measurement Interval in Throughput Test (Ts) = 3435 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
<b>Stream 00</b>	722222226	07/22/03 23:04:03	07/22/03 23:03:14	07/22/03 23:18:59	00:16:27
		07/22/03 23:18:59	07/22/03 23:04:03	07/22/03 23:19:41	
<b>Stream 01</b>	722222227	07/22/03 23:19:47	07/23/03 00:10:05	07/23/03 00:10:55	00:47:42
		07/23/03 00:07:29	07/23/03 00:10:55	07/23/03 00:11:35	
<b>Stream 02</b>	722222228	07/22/03 23:19:48	07/23/03 00:11:35	07/23/03 00:12:17	00:48:54
		07/23/03 00:08:42	07/23/03 00:12:17	07/23/03 00:12:56	
<b>Stream 03</b>	722222229	07/22/03 23:19:47	07/23/03 00:12:56	07/23/03 00:13:39	00:48:46
		07/23/03 00:08:33	07/23/03 00:13:39	07/23/03 00:14:19	
<b>Stream 04</b>	722222230	07/22/03 23:19:47	07/23/03 00:14:19	07/23/03 00:15:01	00:50:18
		07/23/03 00:10:05	07/23/03 00:15:01	07/23/03 00:15:41	
<b>Stream 05</b>	722222231	07/22/03 23:19:48	07/23/03 00:15:41	07/23/03 00:16:23	00:49:53
		07/23/03 00:09:41	07/23/03 00:16:23	07/23/03 00:17:02	



IBM<sup>®</sup> @server<sup>™</sup> 325  
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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	46.9	9.7	9.8	5.3	54.7	6.0	47.3	30.8	110.4	22.8	8.9	10.1
Stream 01	140.8	14.0	32.5	12.8	72.0	11.8	156.1	93.3	393.6	54.4	64.7	33.7
Stream 02	119.4	12.6	25.2	10.8	74.6	16.9	112.8	116.7	453.6	56.6	33.6	26.2
Stream 03	104.1	27.1	20.9	16.0	107.3	8.5	119.0	121.5	460.6	92.0	63.2	27.7
Stream 04	154.7	15.1	10.1	13.0	122.1	16.5	81.0	109.3	559.6	64.8	36.0	21.6
Stream 05	137.2	17.1	27.4	15.5	76.3	17.9	169.3	112.9	506.0	41.8	36.6	29.7
Minimum	104.1	12.6	10.1	10.8	72.0	8.5	81.0	93.3	393.6	41.8	33.6	21.6
Average	117.2	15.9	21.0	12.2	84.5	12.9	114.3	97.4	414.0	55.4	40.5	24.8
Maximum	154.7	27.1	32.5	16.0	122.1	17.9	169.3	121.5	559.6	92.0	64.7	33.7

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	77.6	10.7	31.9	29.0	34.4	125.7	36.9	13.1	133.3	40.7	49.2	42.1
Stream 01	247.0	20.9	56.5	80.3	106.8	458.8	161.9	34.8	529.4	86.0	50.0	39.5
Stream 02	198.4	17.9	60.5	82.6	198.7	619.5	167.0	41.8	438.0	51.1	42.4	39.3
Stream 03	296.0	16.0	69.8	82.5	146.0	450.5	99.3	34.6	508.8	54.7	42.8	39.8
Stream 04	235.1	15.1	61.2	94.0	123.8	564.3	137.9	12.7	527.2	43.3	42.0	39.6
Stream 05	259.5	17.8	93.5	69.7	131.9	480.0	104.2	50.0	533.0	65.7	42.2	39.5
Minimum	198.4	15.1	56.5	69.7	106.8	450.5	99.3	12.7	438.0	43.3	42.0	39.3
Average	218.9	16.4	62.2	73.0	123.6	449.8	117.9	31.2	445.0	56.9	44.8	40.0
Maximum	296.0	20.9	93.5	94.0	198.7	619.5	167.0	50.0	533.0	86.0	50.0	42.1