



**IBM® @server® xSeries® 366
with
IBM DB2® UDB 8.2**

TPC-H Rev 2.1.0

Report Date: Feb. 21, 2005

Total System Cost

Composite Query-per-Hour Metric

Price/Performance

\$257,736 USD

**7,731.9
QphH @ 300GB**

**\$33 USD
per QphH @ 300GB**

Database Size

Database Manager

Operating System

Other Software

Availability Date

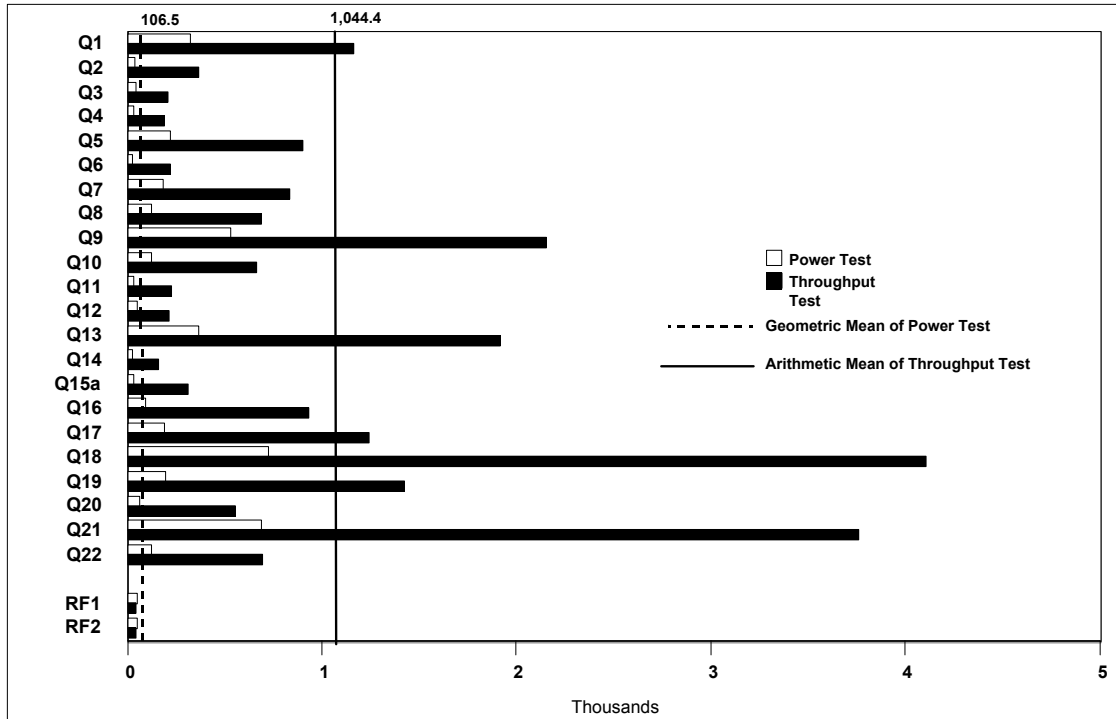
300GB

IBM DB2 UDB 8.2

**Microsoft®
Windows® Server
2003 Enterprise
Edition with QFE
834628**

**Microsoft
Visual C++
.NET
Standard**

Aug. 20, 2005



Database Load Time: 04:20:00

Load Included Backup: Y

Total Data Storage /
Database Size: 18.53

RAID (Base Tables Only): N

RAID (Base Tables and Auxiliary
Data Structures): N

RAID (All): N

Configuration

Processors

4

Memory

16

Disk Controllers

6

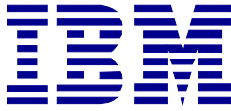
Disk Drives

160

**Intel Xeon MP 3.6GHz / 1MB ECC L2 Cache
2GB PC2-3200 DDR2 ECC SDRAM RDIMM
ServeRAID-6M Ultra320 SCSI Adapter
36.4GB 15K Ultra320 SCSI Drive
36.4GB 15K Ultra320 SCSI Drive
5559.6GB**

Total Disk Storage

4

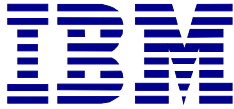


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TPC-H 2.1.0 Executive Summary

Report Date: February 21, 2005

Description	Part Number	Third Party		Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
		Brand	Pricing				
Server Hardware							
IBM eServer xSeries 366	8863-2RY	IBM	1	10,999	1	10,999	
w/1 x 3.6GHz/1MB L2 Cache Xeon Processor MP							
w/2 x 1GB ECC SDRAM RDIMMs							
Integrated Dual-Channel Gigabit Ethernet							
xSeries 3.6GHz/1MB L2 Cache Xeon Processor MP	13N0695	IBM	1	2,199	3	6,597	
4GB (2x2GB) PC2-3200 DDR2 ECC SDRAM RDIMM	73P2867	IBM	1	2,339	8	18,712	
Active Memory™ Memory Expansion Card	13M7409	IBM	1	549	3	1,647	
ServeRAID-6M Ultra320 SCSI Contoller	32P0033	IBM	1	999	6	5,994	
IBM Preferred Pro Full-Size Keyboard	31P7415	IBM	1	29	1	29	
IBM Sleek 2-Button Mouse	28L3673	IBM	1	15	1	15	
E54 15" (13.8" Viewable) Color Monitor	633147N	IBM	1	119	1	119	
ServicePac for 3-Year 24x7x4 Support (x366)	96P2253	IBM	1	1,000	1		1,000
ServicePac for 3-Year 24x7x4 Support (Monitor)	30L9183	IBM	1	90	1		90
					Subtotal	44,112	1,090
Server Storage							
IBM EXP400 Rack Storage Exp. Enclosure	17331RU	IBM	1	3,099	12	37,188	
36.4GB 15K Ultra320 SCSI Hot-Swap Drive	90P1318	IBM	1	349	164	57,236	
Netfinity 2M Ultra2 SCSI Cable	03K9310	IBM	1	75	12	900	
NetBAY4SX Rack	93074SX	IBM	1	1,489	1	1,489	
ServicePac for 3-Year 24x7x4 Support (EXP400)	41L2768	IBM	1	760	12		9,120
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2762	IBM	1	300	1		300
					Subtotal	96,813	9,420
Server Software							
DB2 UDB ESE 8.2 SW Lic. & Maintenance 12 Months		IBM	1	22,260	4	89,040	
SW Maintenance Renewal - 1 Year		IBM	1	1,060	8		8,480
DPF SW License & Maintenance 12 Months		IBM	1	6,686	4	26,744	
DPF SW Maintenance Renewal - 1 Year		IBM	1	318	8		2,544
Microsoft Windows Server 2003 Enterprise Edition		Microsoft	2	2,399	1	2,399	
Microsoft Support		Microsoft	2	245	1		245
Microsoft Visual C++ .NET Standard		Microsoft	3	90	1	90	
					Subtotal	118,273	11,269
Volume Discount of 15% on xSeries hardware, 20% on ServicePacs.					Discount	21,139	2,102
Pricing contact: Rick Rudd, 919-486-0818.					Total	\$238,059	\$19,677
						Three-Year Cost of Ownership USD:	\$257,736
Pricing: 1 - IBM; 2 - Microsoft; 3 - Amazon.com						QphH@300GB:	7,731.9
Warranty and Maintenance: The standard warranty has been upgraded to 3 years of 24x7x4 coverage.						\$/QphH@300GB:	\$33 USD
Audited by Bradley J. Askins, InfoSizing, 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 sections of the TPC benchmark specifications. 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:

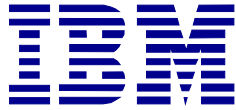
Database Scale Factor	300
Total Data Storage/Database Size	18.53
Start of Database Load	18:26:23
End of Database Load	22:45:51
Database Load Time	4:20
Query Streams for Throughput Test	6
TPC-H Power	10,137.7
TPC-H Throughput	5,897.0
TPC-H Composite Query-per-Hour (QphH@300GB)	7,731.9
Total System Price over 3 Years	\$257,736 USD
TPC-H Price/Performance Metric (\$/QphH@300GB)	\$33 USD

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 24,175

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	215224551	02/16/05 07:24:19 02/16/05 08:37:10	02/16/05 07:24:19 02/16/05 07:25:10	02/16/05 08:36:19 02/16/05 08:37:10	01:12:51
Stream 01	215224552	02/16/05 08:37:13 02/16/05 15:05:37	02/16/05 08:37:13 02/16/05 15:11:27	02/16/05 15:11:27 02/16/05 15:12:18	06:28:24
Stream 02	215224553	02/16/05 08:37:14 02/16/05 15:05:26	02/16/05 15:12:18 02/16/05 15:13:04	02/16/05 15:13:04 02/16/05 15:13:51	06:28:12
Stream 03	215224554	02/16/05 08:37:14 02/16/05 14:30:45	02/16/05 15:13:51 02/16/05 15:14:37	02/16/05 15:14:37 02/16/05 15:15:23	05:53:31
Stream 04	215224555	02/16/05 08:37:16 02/16/05 14:59:11	02/16/05 15:15:23 02/16/05 15:16:09	02/16/05 15:16:09 02/16/05 15:16:57	06:21:55
Stream 05	215224556	02/16/05 08:37:15 02/16/05 15:10:39	02/16/05 15:16:57 02/16/05 15:17:45	02/16/05 15:17:45 02/16/05 15:18:34	06:33:24
Stream 06	2152245517	02/16/05 08:37:15 02/16/05 15:09:26	02/16/05 15:18:34 02/16/05 15:19:19	02/16/05 15:19:19 02/16/05 15:20:08	06:32:11



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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	327.7	39.1	43.7	34.3	221.5	27.6	185.6	126.3	533.2	123.5	33.7	50.2
Stream 01	1,158.9	326.2	237.1	149.9	997.2	202.4	862.0	791.0	2,114.8	596.8	237.7	145.0
Stream 02	1,373.8	307.4	213.8	231.2	886.9	239.9	856.2	680.2	2,249.5	695.3	293.0	271.6
Stream 03	1,413.2	572.7	209.3	236.1	1,102.1	187.1	736.1	778.3	1,959.5	655.9	158.1	269.6
Stream 04	1,309.9	268.0	210.7	212.7	757.0	241.4	759.9	302.4	2,922.4	697.6	169.8	169.6
Stream 05	1,066.0	411.6	166.0	185.8	764.3	227.6	938.8	744.5	1,224.5	726.1	233.5	282.8
Stream 06	665.3	321.6	227.6	148.2	896.1	219.9	859.4	844.4	2,450.8	616.4	266.7	153.8
Minimum	665.3	268.0	166.0	148.2	757.0	187.1	736.1	302.4	1,224.5	596.8	158.1	145.0
Average	1,164.5	367.9	210.8	194.0	900.6	219.7	835.4	690.1	2,153.6	664.7	226.5	215.4
Maximum	1,413.2	572.7	237.1	236.1	1,102.1	241.4	938.8	844.4	2,922.4	726.1	293.0	282.8

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	366.7	29.4	36.0	94.7	189.7	726.6	199.2	66.4	691.4	122.4	50.9	51.6
Stream 01	2,515.4	225.2	201.7	860.6	870.4	3,315.0	1,522.5	754.1	4,437.2	782.9	48.0	51.4
Stream 02	1,649.0	200.0	307.7	804.8	1,489.3	4,151.7	1,309.3	527.7	3,861.0	693.5	45.9	47.3
Stream 03	1,639.2	134.2	332.9	900.2	1,137.4	4,036.2	1,413.7	399.1	2,317.8	622.0	45.7	45.8
Stream 04	1,820.8	159.2	360.6	1,076.5	1,396.7	3,416.4	1,508.5	455.1	4,210.1	489.7	46.1	48.3
Stream 05	1,749.5	74.7	289.4	1,061.0	1,334.9	5,087.7	1,404.9	538.3	4,385.9	705.9	47.5	49.2
Stream 06	2,158.5	178.6	397.9	898.0	1,248.8	4,630.9	1,415.3	671.0	3,372.1	890.0	45.1	48.8
Minimum	1,639.2	74.7	201.7	804.8	870.4	3,315.0	1,309.3	399.1	2,317.8	489.7	45.1	45.8
Average	1,922.1	162.0	315.0	933.5	1,246.3	4,106.3	1,429.0	557.6	3,764.0	697.3	46.4	48.5
Maximum	2,515.4	225.2	397.9	1,076.5	1,489.3	5,087.7	1,522.5	754.1	4,437.2	890.0	48.0	51.4