

**IBM® @server® xSeries® 365
with
IBM DB2® UDB 8.2**

TPC-H Rev 2.1.0

Report Date: Oct. 26, 2004

Total System Cost

Composite Query-per-Hour Metric

Price/Performance

US\$228,654

**5,090.0
QphH @ 300GB**

**US\$45
per QphH @ 300GB**

Database Size

Database Manager

Operating System

Other Software

Availability Date

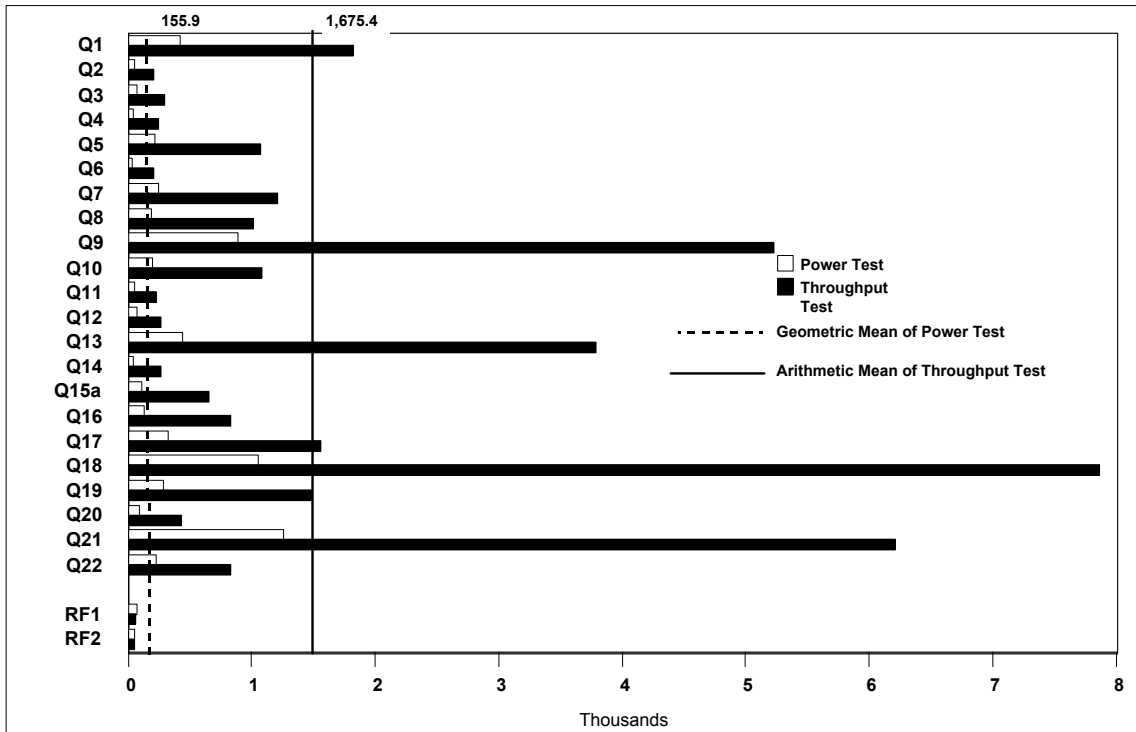
300GB

IBM DB2 UDB 8.2

**SUSE®
Linux® Enterprise
Server 9**

None

Jan. 31, 2005



Database Load Time: 04:59:16

Load Included Backup: Y

Total Data Storage /
Database Size: 12.77

RAID (Base Tables Only): N

RAID (Base Tables and Auxiliary
Data Structures): N

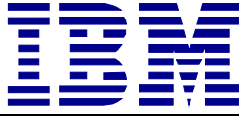
RAID (All): N

Configuration

Processors 4
Memory 16
Disk Controllers 4
Disk Drives 112
1

**Intel Xeon MP 3.0GHz / 4MB ECC L3 Cache
1GB PC2100 DDR ECC SDRAM RDIMM
ServeRAID-6M Ultra320 SCSI Adapter
36.4GB 15K Ultra320 SCSI Drive
36.4GB 15K Ultra320 SCSI Drive
3830.7GB**

Total Disk Storage



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TPC-H 2.1.0 Executive Summary

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Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
IBM e(logo)server xSeries 365 w/3.0GHz Xeon MP w/2 x 3.0GHz/4MB Xeon MP Processors w/4 x 512MB ECC SDRAM RDIMMs Integrated Dual-Channel Gigabit Ethernet	8862-6RX	IBM	1	15,599	1	15,599	
ServicePac for 3-Year 24x7x4 Support	96P2253	IBM	1	1,000	1		1,000
xSeries 3.0GHz/4MB Processor	13N0710	IBM	1	5,499	2	10,998	
1GB PC2100 DDR ECC SDRAM RDIMM	73P2031	IBM	1	619	16	9,904	
Memory Upgrade Card	73P9710	IBM	1	999	1	999	
36.4GB 15K Ultra320 SCSI Hot-Swap Drive	90P1318	IBM	1	349	1	349	
ServerRAID-6M Ultra320 SCSI Contoller	32P0033	IBM	1	999	4	3,996	
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	30L9183	IBM	1	90	1		90
Subtotal						42,008	1,090
Server Storage							
IBM EXP400 Rack Storage Exp. Enclosure	17331RU	IBM	1	3,099	8	24,792	
ServicePac for 3-Year 24x7x4 Support	41L2768	IBM	1	760	8		6,080
36.4GB 15K Ultra320 SCSI Hot-Swap Drive	90P1318	IBM	1	349	112	39,088	
Netfinity 2M Ultra2 SCSI Cable	03K9310	IBM	1	75	8	600	
NetBAY4SX Rack	93074SX	IBM	1	1,489	1	1,489	
ServicePac for 3-Year 24x7x4 Support	41L2762	IBM	1	300	1		300
Subtotal						65,969	6,380
Server Software							
DB2 UDB ESE 8.2 SW Lic.& Maintenance 12 Months	D518GLL	IBM	1	21,425	4	85,700	
SW Maintenance Renewal - 1 Year	E00BILL	IBM	1	1,020	8		8,160
DPF SW License & Maintenance 12 Months	D518JLL	IBM	1	6,436	4	25,744	
DPF SW Maintenance Renewal - 1 Year	E00BJLL	IBM	1	306	8		2,448
SUSE Linux Enterprise Server 9 Annual Upgr. License	874-002960-001	SUSE	2	899	3	2,697	
SUSE Linux Enterprise Server 9 24x7 Support - 1 Year	051-002673-001	SUSE	2	900	3		2,700
Subtotal						114,141	13,308
Compsat Technology discount of 12.30%						Discount	897
Total						\$208,773	\$19,881

Three-Year Cost of Ownership: \$228,654

Pricing: 1 - Compsat Technology; 2 - Novell

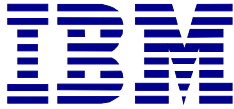
Warranty and Maintenance: The standard warranty has been upgraded to 3 years of 24x7x4 coverage.

QphH@300GB: 5,090.0

US\$/QphH@300GB: \$45

Audited by Francois Raab, 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	12:77
Start of Database Load	21:55:57
End of Database Load	02:55:13
Database Load Time	04:59:16
Query Streams for Throughput Test	6
TPC-H Power	6,926.5
TPC-H Throughput	3,740.4
TPC-H Composite Query-per-Hour (QphH@300GB)	5,090.0
Total System Price over 3 Years	US\$228,654
TPC-H Price/Performance Metric (\$/QphH@300GB)	US\$45

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 38,114

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	1009025513	10/09/04 04:03:34 10/09/04 05:53:17	10/09/04 04:03:34 10/09/04 04:04:43	10/09/04 05:52:28 10/09/04 05:53:17	1:49:43
Stream 01	1009025514	10/09/04 05:53:21 10/09/04 16:15:48	10/09/04 05:53:32 10/09/04 16:18:24	10/09/04 16:18:24 10/09/04 16:19:18	10:22:27
Stream 02	1009025515	10/09/04 05:53:21 10/09/04 15:42:35	10/09/04 16:19:18 10/09/04 16:20:13	10/09/04 16:20:13 10/09/04 16:21:08	9:49:15
Stream 03	1009025516	10/09/04 05:53:21 10/09/04 16:15:35	10/09/04 16:21:08 10/09/04 16:22:06	10/09/04 16:22:06 10/09/04 16:23:00	10:22:14
Stream 04	1009025517	10/09/04 05:53:21 10/09/04 16:17:18	10/09/04 16:23:00 10/09/04 16:23:58	10/09/04 16:23:58 10/09/04 16:24:51	10:23:57
Stream 05	1009025518	10/09/04 05:53:21 10/09/04 16:13:34	10/09/04 16:24:51 10/09/04 16:25:48	10/09/04 16:25:48 10/09/04 16:26:42	10:20:13
Stream 06	1009025519	10/09/04 05:53:21 10/09/04 16:01:03	10/09/04 16:26:42 10/09/04 16:27:41	10/09/04 16:27:41 10/09/04 16:28:35	10:08:42



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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	426.1	48.7	68.2	48.4	219.1	38.0	247.7	193.8	886.0	197.6	56.2	70.1
Stream 01	1,271.1	209.4	383.0	108.5	940.8	132.2	913.0	1,105.7	5,917.5	1,157.7	190.7	357.6
Stream 02	2,065.3	209.7	424.9	294.2	640.0	239.3	1,130.0	1,016.3	5,581.2	1,391.6	271.9	162.5
Stream 03	2,082.4	189.9	225.1	363.0	1,236.6	239.5	1,569.7	1,092.3	4,374.6	521.7	274.8	191.2
Stream 04	2,065.3	282.8	165.8	162.2	1,189.3	109.7	1,042.0	793.1	4,175.8	830.0	272.2	287.1
Stream 05	1,700.9	185.9	250.9	410.2	1,433.1	291.4	1,578.9	1,070.0	4,915.1	1,374.5	156.1	294.3
Stream 06	1,783.7	200.4	339.6	143.8	1,003.8	271.5	1,009.7	1,047.6	6,446.5	1,220.5	193.6	284.7
Minimum	426.1	48.7	68.2	48.4	219.1	38.0	247.7	193.8	886.0	197.6	56.2	70.1
Average	1,828.1	213.0	298.2	247.0	1,073.9	213.9	1,207.2	1,020.8	5,235.1	1,082.7	226.6	262.9
Maximum	2,082.4	282.8	424.9	410.2	1,433.1	291.4	1,578.9	1,105.7	6,446.5	1,391.6	274.8	357.6

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	438.8	39.9	109.9	129.0	330.0	1,054.0	284.5	96.6	1,257.0	225.7	68.6	48.9
Stream 01	2,390.7	337.7	643.9	578.1	1,446.3	9,322.7	1,726.0	335.2	6,935.2	944.4	66.0	54.2
Stream 02	2,982.7	280.4	706.4	1,103.9	2,048.3	6,163.1	1,885.7	488.0	5,498.4	770.7	55.2	54.4
Stream 03	3,818.1	188.6	495.0	760.7	1,830.7	9,179.1	1,135.0	564.8	6,158.0	843.6	58.1	54.0
Stream 04	7,476.5	259.6	674.5	828.0	1,206.6	6,581.4	1,300.5	113.0	6,911.1	710.4	57.9	53.0
Stream 05	2,584.1	284.8	755.5	671.4	1,491.2	8,076.5	1,311.2	554.2	6,922.7	900.3	57.4	54.1
Stream 06	3,519.2	281.9	674.1	1,064.7	1,347.3	7,881.5	1,554.0	515.2	4,864.0	815.1	58.4	54.7
Minimum	438.8	39.9	109.9	129.0	330.0	1,054.0	284.5	96.6	1,257.0	225.7	55.2	48.9
Average	3,795.2	272.2	658.2	834.5	1,561.7	7,867.4	1,485.4	428.4	6,214.9	830.8	58.8	54.1
Maximum	7,476.5	337.7	755.5	1,103.9	2,048.3	9,322.7	1,885.7	564.8	6,935.2	944.4	66.0	54.7