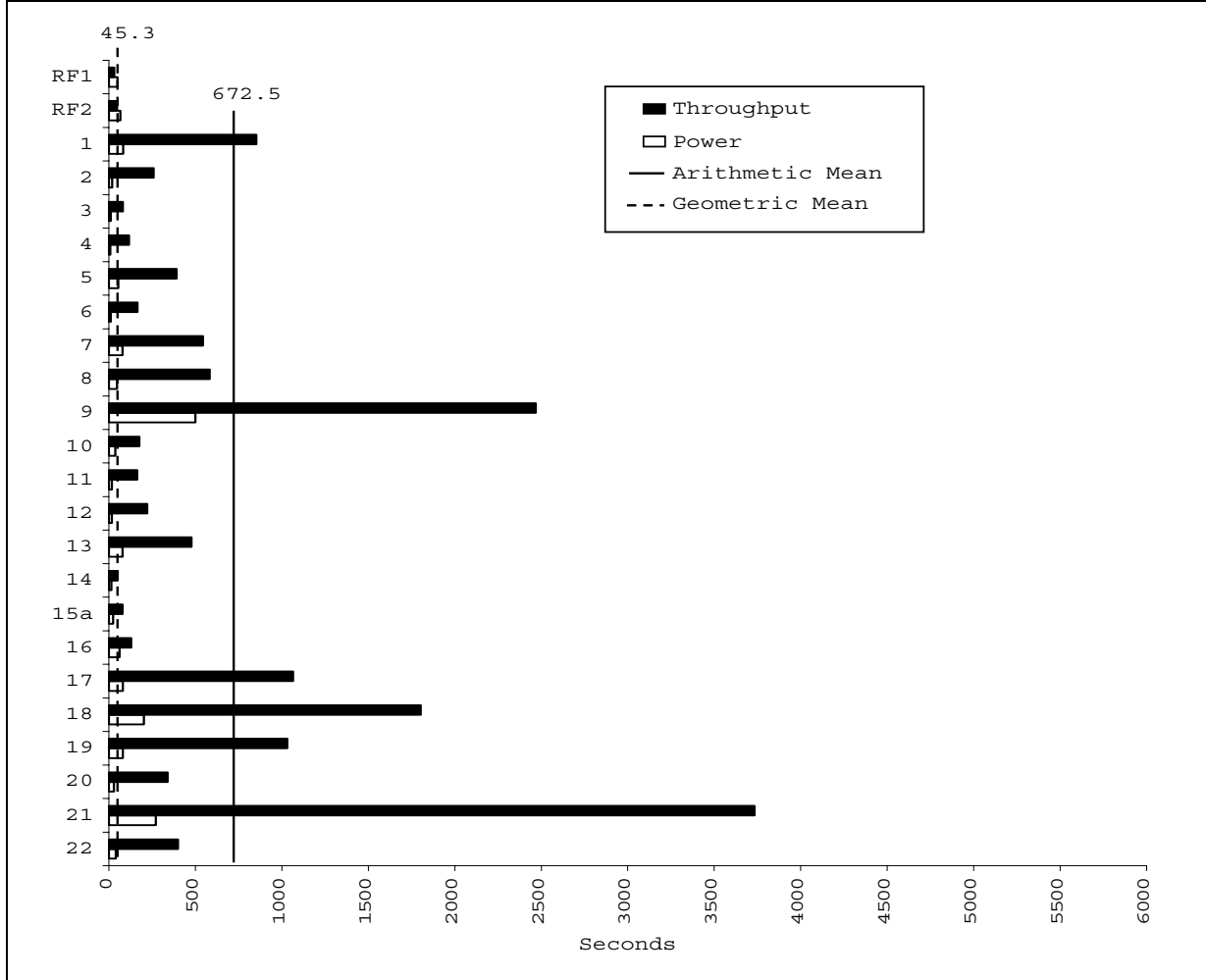
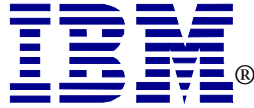
		IBM® @server™ x346 with IBM DB2® UDB 8.2		TPC-H Revision 2.0	
				Report Date: Feb 14, 2005	
Total System Cost		Composite Query-per-hour Metric		Price/Performance	
\$1,753,144		53,451.4 QphH@1000GB		\$ 33 per QphH@1000GB	
Database Size	Database Manager	Operating System		Availability Date	
1000GB	IBM DB2 UDB 8.2	SuSE Linux Enterprise Server 9		February 14, 2005	



Database Load Time: 0:49:01	Load Included Backup: N	Total Data Storage / Database Size: 26.25
RAID (Base Table): Y	RAID (Base Tables and Auxiliary Data Structures): Y	RAID (ALL): Y

System Configuration:
64 IBM @server x346 servers, each server with:
Processor: 1 x 3.6GHz Intel Xeon with 2MB cache on 1 processor, 1 core, 2 threads
Memory: Eight (8) 512MB PC-3200 ECC SDRAM RDIMMs
Disk Controllers: One ServeRAID-7k Ultra320 SCSI controller
Disk Drives: Six (6) 73.4GB 15K Ultra320 SCSI disk drives
Total Disk Storage: 26,249 GB



**IBM® @server™ x346
with IBM DB2® UDB 8.2**

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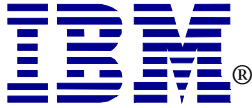
Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
x346 3.6GHz/800MHz/ 2 x 512MB DDR2, Open Bay	884041U	IBM xSeries	1	3,449	64	220,736	
1GB (2x512MB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM (256Mb)	73P3522	IBM xSeries	1	399	192	76,608	
IBM ServeRAID 7k Controller	71P8642	IBM xSeries	1	449	64	28,736	
Epac 3 Year 24x7x4 Warranty Upgrade	21P2078	IBM xSeries	1	600	64		38,400
IBM 73.4 GB Hot-Swap U320 15 K SCSI SSL Drive	90P1319	IBM xSeries	1	499	384	191,616	
IBM S2 42U Standard Rack Cabinet	93074SX	IBM xSeries	1	1,489	4	5,956	
4.3m IEC Power Cable C13/ C14	94G7448	IBM xSeries	1	19	65	1,235	
IBM Preferred Pro Full-size Keyboard PS/2	31P7415	IBM xSeries	1	29	1	29	
IBM Sleek 2-Button Mouse	28L3673	IBM xSeries	1	15	1	15	
E54 15" Colour Monitor (Stealth Grey)	633147N	IBM xSeries	1	139	1	139	
Monitor Shelf	94G7444	IBM xSeries	1	169	1	169	
Keyboard Tray	28L4707	IBM xSeries	1	249	1	249	
connectors	1735L04	IBM xSeries	1	759	1	759	
Cable Kit, KVM Conversion (KCO) Long 1.5m	32P1652	IBM xSeries	1	559	16	8,944	
Universal Jumper Cord - 1.5m	24P7469	IBM xSeries	1	20	4	80	
3U Quick Install Panel Set	25R5560	IBM xSeries	1	75	7	525	
Epac 3 Year 24x7x4 Warranty Upgrade for Racks	41L2760	IBM xSeries	1	300	4		1,200
Epac 3 Year 24x7x4 Warranty Upgrade for LCM	41I2752	IBM xSeries	1	60	1		60
Epac 3 Year 24x7x4 Warranty Upgrade for Monitor	30P9183	IBM xSeries	1	90	1		90
e1350 Cisco 6503 Enclosure Bundle	26K7403	IBM xSeries	1	22,995	1	22,995	2,069
e1350 Cisco Cat6500 48-Port 10/100/1000 GE Mod: RJ-45(WS-X6548-GE-TX=)	02R2052	IBM xSeries	1	15,999	2	31,998	2,879
e1350 Cisco 6503 Air Duct Kit	26K7404	IBM xSeries	1	395	1	395	
Cisco Ethernet Cables	22P5031	IBM xSeries	1	20	64	1,279	
Subtotal						592,463	44,698
Server Software							
DB2 UDB Enterprise Server Edition ICE Edition MAINT 12 MO		IBM DB2	2	12,514	64	800,896	
DB2 UDB Database Partitioning Feature ICE Edition MAINT 12 MO		IBM DB2	2	3,759	64	240,576	
DB2 ICE SW maintenance renewal - 1 year		IBM DB2	2	596	128		76,288
DPF ICE SW maintenance renewal - 1 year		IBM DB2	2	179	128		22,912
SUSE Linux Enterprise Server 9 - incl. 3 yr upgrade	0662694556164	SUSE	3	870	64	55,680	
Subtotal						1,097,152	99,200
Discount						80,369	
Total						1,609,246	143,898
Three-Year Cost of Ownership:						1,753,144	

Pricing: 1 - IBM xSeries (pricing contact Alex Yost, ayost@us.ibm.com, 1-919-543-4505)
2 - IBM DB2 (pricing contact Jonathan Prial, jonprial@us.ibm.com, 1-914-766-1576)
Warranty and Maintenance: The standard warranty has been upgraded to 3 years of 24x7x4 coverage.

QpH@1000GB: 53,451.4
\$/QpH@1000GB: \$33

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.



IBM[®] @server[™] x346
with IBM DB2[®] UDB 8.2

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Measurement Results:

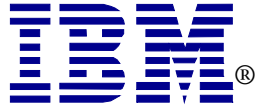
Database Scale Factor	1000
Total Data Storage/Database Size	26.25
Start of Database Load	1:23:12
End of Database Load	2:12:13
Database Load Time	0:49:01
Query Streams for Throughput Test	7
TPC-H Power	79,465.6
TPC-H Throughput	35,953.3
TPC-H Composite Query-per-Hour (QphH@1000GB)	53,451.4
Total System Price over 3 Years	\$1,753,144
TPC-H Price/Performance Metric (\$/QphH@1000GB)	\$33

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 15420 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	209021213	02/09/05 02:55:21 02/09/05 03:24:40	02/09/05 02:54:14 02/09/05 02:55:21	02/09/05 03:24:58 02/09/05 03:25:49	0:31:35
Stream 01	209021214	02/09/05 03:25:52 02/09/05 07:31:39	02/09/05 03:26:06 02/09/05 07:35:10	02/09/05 07:35:10 02/09/05 07:36:12	4:05:47
Stream 02	209021215	02/09/05 03:25:53 02/09/05 07:27:41	02/09/05 07:36:12 02/09/05 07:36:31	02/09/05 07:36:31 02/09/05 07:37:16	4:01:48
Stream 03	209021216	02/09/05 03:25:55 02/09/05 07:29:28	02/09/05 07:37:16 02/09/05 07:37:37	02/09/05 07:37:37 02/09/05 07:38:22	4:03:33
Stream 04	209021217	02/09/05 03:25:54 02/09/05 07:33:48	02/09/05 07:38:22 02/09/05 07:38:45	02/09/05 07:38:45 02/09/05 07:39:29	4:07:54
Stream 05	209021218	02/09/05 03:25:54 02/09/05 07:28:32	02/09/05 07:39:29 02/09/05 07:39:52	02/09/05 07:39:52 02/09/05 07:40:35	4:02:38
Stream 06	209021219	02/09/05 03:25:54 02/09/05 07:33:52	02/09/05 07:40:35 02/09/05 07:41:00	02/09/05 07:41:00 02/09/05 07:41:44	4:07:58
Stream 07	209021220	02/09/05 03:25:54 02/09/05 07:32:22	02/09/05 07:41:44 02/09/05 07:42:08	02/09/05 07:42:08 02/09/05 07:42:52	4:06:28



IBM[®] @server[™] x346
with IBM DB2[®] UDB 8.2

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TPC-H Timing Intervals (in seconds):

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	83.0	19.3	11.1	8.0	55.4	11.8	79.1	47.2	500.7	37.3	18.2	17.8
Stream 01	664.0	222.3	121.2	27.8	383.0	333.8	542.3	616.9	2419.8	129.8	200.2	184.1
Stream 02	846.4	182.6	83.4	132.3	427.2	155.7	543.3	451.3	2615.3	307.9	135.0	435.1
Stream 03	1172.1	212.9	43.4	101.8	466.6	108.3	829.3	489.8	2587.3	139.1	164.7	198.9
Stream 04	976.2	334.2	39.2	170.4	433.1	159.9	358.2	567.5	2214.2	184.3	197.7	259.9
Stream 05	727.0	267.1	84.2	147.1	296.3	180.7	547.5	738.9	2298.3	159.5	170.0	202.8
Stream 06	751.2	253.3	111.9	99.0	402.6	164.6	458.9	402.4	2820.7	209.6	147.8	226.2
Stream 07	828.9	341.8	82.7	141.9	331.3	53.7	530.8	809.9	2327.2	100.1	127.7	42.3
Minimum	664.0	182.6	39.2	27.8	296.3	53.7	358.2	402.4	2214.2	100.1	127.7	42.3
Average	852.3	259.2	80.9	117.2	391.4	165.2	544.3	582.4	2469.0	175.8	163.3	221.3
Maximum	1172.1	341.8	121.2	170.4	466.6	333.8	829.3	809.9	2820.7	307.9	200.2	435.1

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	80.1	14.6	24.6	61.5	81.1	202.9	80.9	29.8	271.6	41.2	66.5	50.9
Stream 01	417.9	66.5	54.1	106.8	1049.7	2162.5	937.4	463.9	3220.9	422.3	77.1	61.7
Stream 02	485.7	37.1	96.0	103.3	882.8	1016.1	982.0	372.3	3642.4	574.7	19.3	45.0
Stream 03	547.0	42.3	98.3	116.1	1025.2	1163.6	1007.2	219.0	5303.4	312.8	20.8	45.0
Stream 04	517.8	46.1	53.2	136.6	1043.9	2400.6	970.2	72.4	3567.1	128.5	23.0	43.8
Stream 05	509.5	73.6	117.8	240.9	1164.3	1522.1	1032.5	357.6	3610.1	495.1	23.3	43.2
Stream 06	473.6	67.8	102.3	135.4	1305.7	2626.4	1083.6	272.6	3224.9	402.1	24.7	44.5
Stream 07	386.4	13.2	37.0	71.1	980.3	1731.8	1203.5	627.0	3560.3	458.8	24.0	44.0
Minimum	386.4	13.2	37.0	71.1	882.8	1016.1	937.4	72.4	3220.9	128.5	19.3	43.2
Average	476.8	49.5	79.8	130.0	1064.6	1803.3	1030.9	340.7	3732.7	399.2	30.3	46.7
Maximum	547.0	73.6	117.8	240.9	1305.7	2626.4	1203.5	627.0	5303.4	574.7	77.1	61.7