



**DELL
PowerEdge 6950
with SQL Server 2005
Enterprise x64 Edition™**

TPC-H Revision 2.3.0

Report Date: Oct 23, 2006

Revision Date: May 17, 2007

**Total System Cost
\$131,204 USD**

**TPC-H Composite Query per
Hour
17,179.7 QphH@100GB**

**Price/Performance
\$7.64 USD/ QphH@100GB**

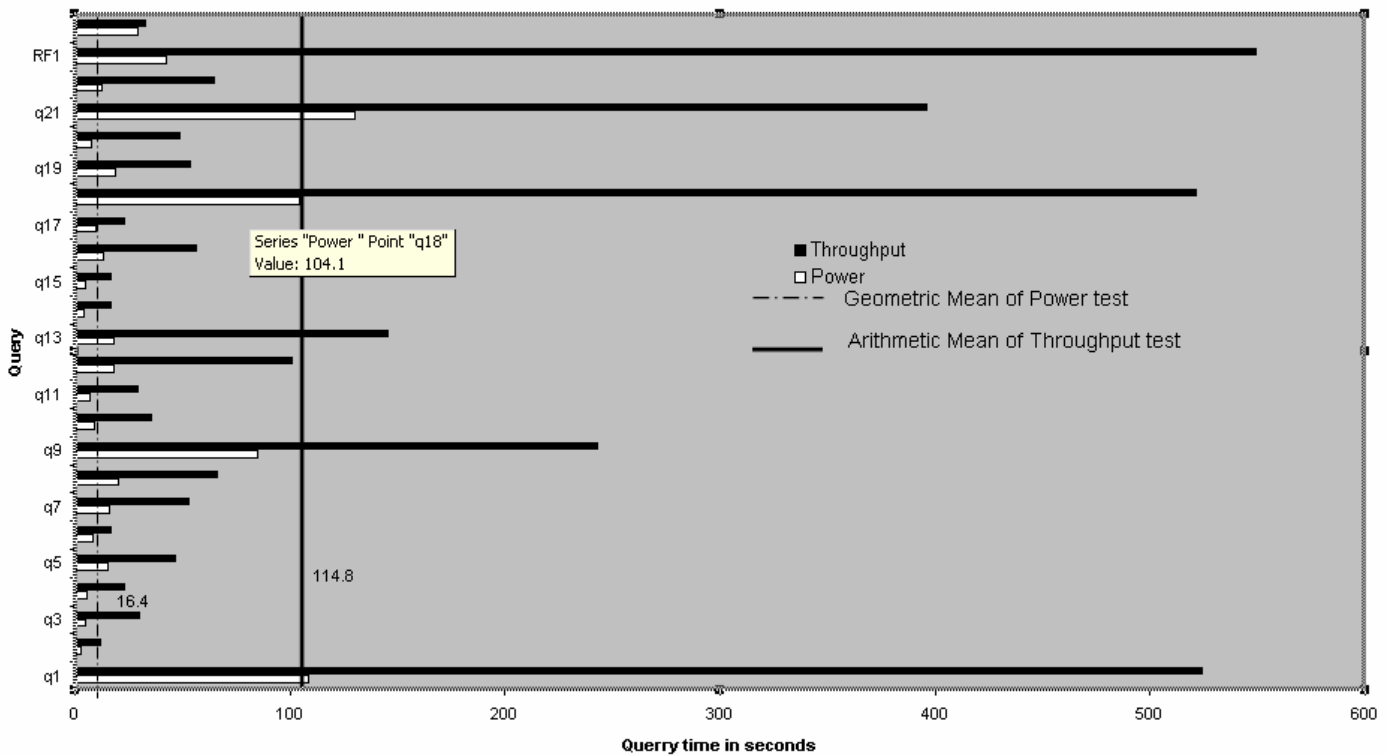
**Database Size
100GB**

**Database Manager
SQL Server 2005 Enterprise x64
Edition™**

**Operating System
Microsoft Windows Server
2003 Enterprise x64
Edition™**

Other Software
Visual C++ Standard Edition
Visual Basic 2003 .Net
Professional

**Availability Date
Dec 4, 2006**



Database Load Time
0:59:42

Total Disk/Database Size
62.8

Load Includes Backup
Y

RAID (Base tables only)
N

**RAID (Base tables and auxiliary data
structures)**
N

RAID (Everything)
N

System Configuration : 1 node
Processors (per node) : 4x AMD Opteron 8220SE DC - 2.8 GHz w/ 2M Cache
Memory: (per node) : 64GB RAM
Disk Drives: 180 – 36GB 15k SAS HDD & 4 – 73GB 10k SAS HDD

“Database Size includes only raw data (e.g., no temp, index, redundant storage space, etc.)”

Dell		PowerEdge PE6950			TPC-H REV 2.3 EXECUTIVE SUMMARY		
		Server			Report Date: 23-Oct-06		
					Revision Date: 17-May-07		
Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
Server Hardware		Brand	Pricing				
PE6950,DUAL 8220SE,2X1MB,2.8GZ	222-5737		6,369.00	1	\$6,369.00	\$320.00	
& 2 Broadcom NICs							
QUAD OPTERON 8220SE PROCESSORS	311-6612		3,499.00	1	\$3,499.00		
64GB,16X4GB,2R,DDR2,667	311-6601		19,988.00	1	\$19,988.00		
1.44MB,3.5IN,USB,EXT FDD	341-2530		\$39.00	1	\$39.00		
24X CD-ROM, INTERNAL	313-2700		\$30.00	1	\$30.00		
PERC5/i,Integrated	341-3025		\$299.00	1	\$299.00		
PERC5/E SAS RAID, 2X4 EXTERNAL	341-3018		\$799.00	6	\$4,794.00		
73GB,3GBPS,SAS,3.5IN,15K	341-3029		\$299.00	4	\$1,196.00		
E773s 17-inch Color CRT Monitor	320-5091		\$199.00	1	\$199.00		
					Subtotal	\$36,413.00	\$320.00
PowerVault Disk Subsystem							
PV MD1000,RACK,3U,15 BAY,LBZL	222-2299		2,680.00	12	\$32,160.00	\$19,776.00	
TWO ENCL MGT MODULES, SAS/SATA	420-5927		\$345.83	12	\$4,149.96		
36GB,3GBPS,SAS,3.5IN,15K	341-2816		\$249.00	180	\$44,820.00		
RACK-111/24U/Dell	A0213544		\$479.95	1	\$479.95		
					Subtotal	\$81,609.91	\$19,776.00
Server Software							
SQL Server 2005 Enterprise x64 Edition **	810-04793	Microsoft	1	\$8,487.00	1	\$8,487.00	
SQL Server 2005 Client Licence **	359-01911	Microsoft	1	156	25	\$3,900.00	
Windows Server 2003 Enterprise x64 Server **	P72-00274	Microsoft	1	\$2,334.00	1	\$2,334.00	
Visual C++ Standard Edition **	254-00170	Microsoft	1	\$109.00	1	\$109.00	
Visual Basic 2003 .Net Professional	046-00856	Microsoft	1	\$109.00	1	\$109.00	
Professional Support (1 Incident)		Microsoft	1	\$245.00	1	\$245.00	
					Subtotal	\$14,939.00	\$245.00
All components from Dell are discounted 16% based on total dollar volume of this configuration.					Other Discounts (16%)	\$22,099.03	
					Total	\$110,863	\$20,341
Notes: * Maint. included in PowerVault MD1000 disk pod				Three-Year Cost of Ownership:		\$131,204	USD
** All Microsoft maintenance is covered by the maintenance costs of Microsoft SQL Server							
Pricing: NIO = These components are Not Immediately Orderable; 1 = Microsoft, all others are Dell				QphH@100G		17,179.7	
Pricing may be verified by calling 1-800-BUY-DELL and referencing quote # 364397064							
as a complex quote.							
Audited by Lorna Livingtree, Performance Metrics Inc.				\$ / QphH@100G:		\$7.64	USD
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 the stated prices are not available according to these items, please inform the TPC at pricing@tpc.org.							



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Numerical Quantities Summary

Measurement Results:

Database Scale Factor	100
Total Data Storage/Database Size	62.8
Start of Database Load	2006-10-14 10:53:03
End of Database Load	2006-10-14 11:52:45
Database Load Time	0:59:42
Query Streams for Throughput Test	5
TPC-H Power	21,949.9
TPC-H Throughput	13,446.1
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	17,179.7
Total System Price Over 3 Years	\$131,204
TPC-H Price Performance Metric (\$/QphH@100GB)	\$7.64

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 2,945.1 seconds

Duration of stream execution:

	Seed	Start Date/Time	End Date/Time	Duration
Stream00	1014115245	10/14/06 13:22:48	10/14/06 13:33:40	0:10:52
Stream01	1014115246	10/14/06 13:34:13	10/14/06 14:16:26	0:42:14
Stream02	1014115247	10/14/06 13:34:13	10/14/06 14:16:48	0:42:35
Stream03	1014115248	10/14/06 13:34:13	10/14/06 14:16:12	0:41:59
Stream04	1014115249	10/14/06 13:34:13	10/14/06 14:15:49	0:41:37
Stream05	1014115250	10/14/06 13:34:13	10/14/06 14:16:15	0:42:02
Refresh00		10/14/06 13:22:05	10/14/06 13:22:47	0:00:42
		10/14/06 13:33:41	10/14/06 13:34:10	0:00:29
Refresh01		10/14/06 13:34:12	10/14/06 14:18:02	0:43:49
Refresh02		10/14/06 14:18:05	10/14/06 14:19:17	0:01:11
Refresh03		10/14/06 14:19:21	10/14/06 14:20:34	0:01:13
Refresh04		10/14/06 14:20:40	10/14/06 14:21:55	0:01:15
Refresh05		10/14/06 14:22:02	10/14/06 14:23:18	0:01:16



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Timing Intervals in Seconds:

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream00	108.4	2.8	5.1	5.9	15.6	8.2	16.0	20.2
Stream01	506.7	14.1	20.3	12.3	45.9	18.1	46.5	56.7
Stream02	544.7	9.8	47.4	17.9	38.6	17.1	58.5	45.3
Stream03	536.6	14.2	10.0	25.8	48.2	15.3	52.8	79.8
Stream04	487.0	9.3	18.7	22.2	43.0	15.9	64.6	94.1
Stream05	546.0	12.9	54.7	35.8	56.5	16.0	42.5	55.7
Min Qi	487.0	9.3	10.0	12.3	38.6	15.3	42.5	45.3
Max Qi	546.0	14.2	54.7	35.8	56.5	18.1	64.6	94.1
Avg Qi	524.2	12.1	30.2	22.8	46.4	16.5	53.0	66.3

Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream00	84.7	9.3	6.8	18.0	45.0	4.1	5.0	13.5
Stream01	243.4	33.9	30.7	148.7	146.6	17.4	16.9	62.0
Stream02	328.6	42.9	26.7	87.8	143.6	16.9	19.7	59.8
Stream03	203.6	29.6	32.8	84.0	156.6	15.2	17.3	58.7
Stream04	223.2	36.0	24.0	92.0	141.0	16.2	18.9	53.2
Stream05	215.3	36.5	32.9	91.5	139.1	16.8	21.6	48.5
Min Qi	203.6	29.6	24.0	84.0	139.1	15.2	16.9	48.5
Max Qi	328.6	42.9	32.9	148.7	156.6	17.4	21.6	62.0
Avg Qi	242.8	35.8	29.4	100.8	145.4	16.5	18.9	56.4

Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream00	9.9	104.1	18.7	7.9	130.3	12.8	42.4	29.4
Stream01	22.9	478.9	68.6	57.1	425.9	60.2	2594.4	31.3
Stream02	29.4	493.0	46.9	56.7	367.1	56.7	37.3	32.1
Stream03	24.9	628.0	50.8	35.9	326.1	73.1	37.7	32.1
Stream04	17.0	522.5	58.7	37.5	434.2	67.1	40.4	33.1
Stream05	21.8	485.0	43.6	56.7	425.3	67.4	36.8	36.1
Min Qi	17.0	478.9	43.6	35.9	326.1	56.7	36.8	31.3
Max Qi	29.4	628.0	68.6	57.1	434.2	73.1	2594.4	36.1
Avg Qi	23.2	521.5	53.7	48.8	395.7	64.9	549.3	32.9