



# HP ProLiant ML570G4

TPC-H Rev. 2.3.0

Report Date:  
May 22, 2006

Total System Cost

Composite Query per Hour Metric

Price / Performance

**\$154,937 USD**

**14,242.8**  
QphH@100GB

**\$10.88 USD**  
\$/ QphH@100GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

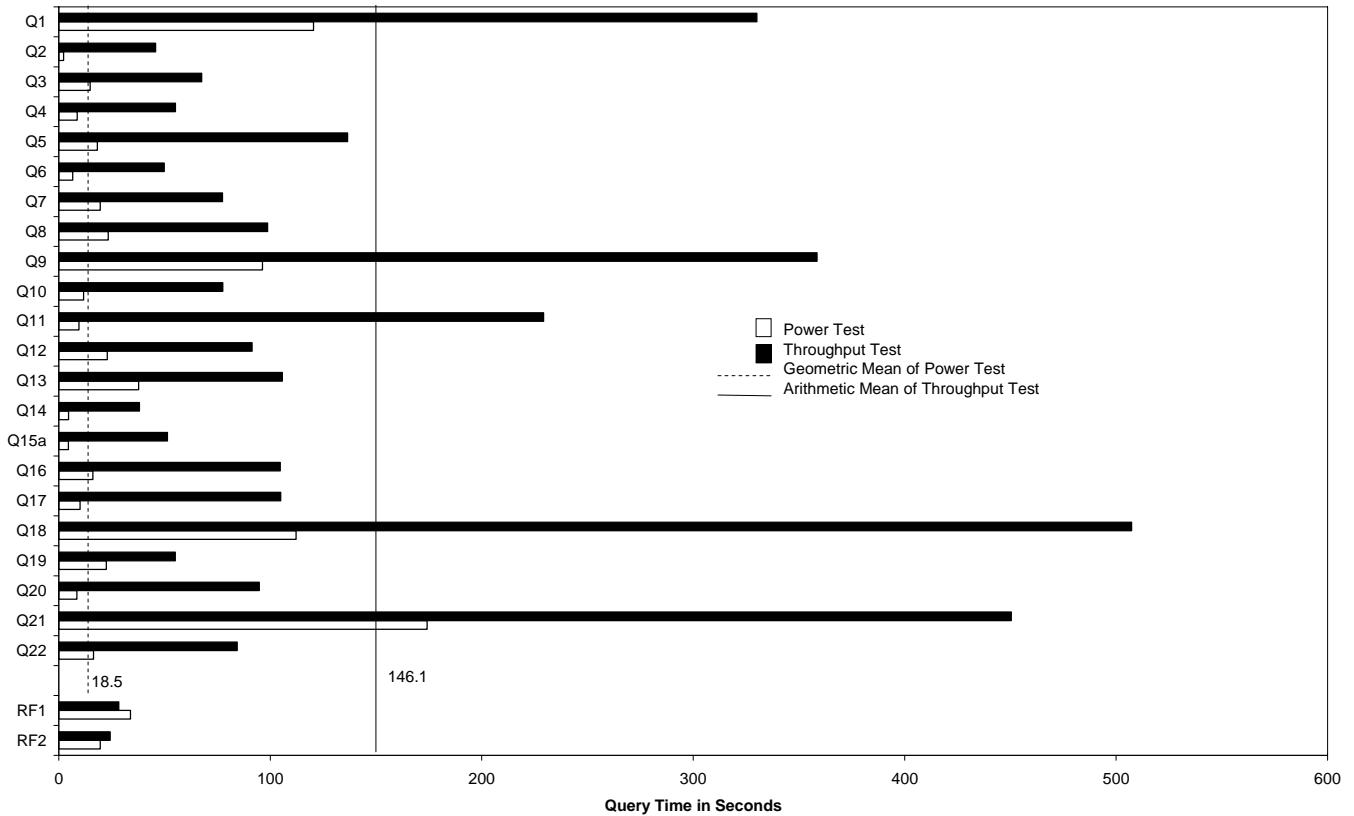
**100GB**

**Microsoft SQL  
Server 2005  
Enterprise Edition  
SP1**

**Windows Server  
2003, Enterprise  
Edition SP1**

**Visual C++  
Visual Basic**

**Nov 22, 2006**



Database Load Time = 1:30:37

Load Included Backup: Y

Total Data Storage / Database Size = 41.04

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): Y

RAID (All): N

**System Configuration:**

**Processors/Cores/Threads :** 4/8/16 3.0 GHz DC Intel 7041 w/ 2x2M L2 Cache  
**Memory :** 64 GB memory  
**Disk Controllers :** 6x Smart Array P800, 1x Smart Array P600  
**Disks :** 96x 36 GB 15K rpm LFF SAS drives (external)  
 18x 36 GB 10k rpm SFF SAS drives + 1x36GB SCSI (internal)  
**Total Disk Storage:** 4104 GB

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



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Description	Part Number	Third Party Brand	Unit Price	Qty	Extended Price	3 yr. Maint. Price
<b>Server Hardware</b>						
HP ML570R04 3.0/4/800 DC 2P US Svr	403684-001	1	14,999	1	14,999	
- 2 GB PC2-3200, SmartArray P400						
- Embedded NC373i Dual Port PCI-X 10/100/1000T Gigabit NIC						
ML570G4 Hot-plug Memory Expansion Board	348107-B21	1	299	2	598	
HP X7041 570/580G4 DC	404752-B21	1	4,799	2	9,598	
HP 8GB REG PC2-3200 2X4GB DL580G3 Memory	404122-B21	1	7,499	8	59,992	
HP Single Ch U320 SCSI Host Bus Adapter	374654-B21	1	129	1	129	
HP s7540 17in CRT Monitor	PF997AA#ABA	1	139	1	139	
HP PS/2 Scroll Mouse Carbonite	DG169AV	1	5	1	5	
PS/2 Standard Keyboard	DG170AV#ABA	1	10	1	10	
HP 5642 Unassembled Rack	358254-B21	1	689	1	689	
3YR 24X7 4HR ML570 SERIES SVR	U4592E	1	1,795	1		1,795
<b>Subtotal</b>					<b>86,159</b>	<b>1,795</b>
<b>Storage</b>						
HP Smart Array P800 Controller	381513-B21	1*	1,299	6	7,794	
HP Smart Array P600 Controller	337972-B21	1	799	1	799	
HP StorageWorks MSA60 Disk Enclosure	418408-B21	1*	3,250	8	26,000	
HP 36GB 15K Ultra320 NHP Hard Drive (internal OS)	357012-B21	1	249	1	249	
HP 36GB 10K SAS Single Port SFF Hard Drive (internal)	375859-B21	1	299	18	5,382	
HP 36GB 15K SAS Single Port LFF Hard Drive	375868-B21	1	299	96	28,704	
HP 36GB 15K SAS Single Port LFF Hard Drive (10% spare)	375868-B21	1	299	10		2,990
HP StorageWorks MSA60 Disk Enclosure (10% spare)	418408-B21	1*	3,250	2		6,500
<b>Subtotal</b>					<b>68,928</b>	<b>9,490</b>
<b>Hardware and Maintenance Discount</b>						
Large Purchase and Net 30 discount	16.0%	1			(\$24,814)	(\$1,806)
<b>Hardware Subtotal</b>					<b>130,273</b>	<b>9,479</b>
<b>Software</b>						
SQL Server 2005 Enterprise x64 Edition with 25 CALs	810-04793	Microsoft	2	8,487	8,487	
SQL Server 2005 Client License	359-01911	Microsoft	2	156	3,900	
Windows Server 2003 Enterprise x64 Edition	P72-00274	Microsoft	2	2,334	2,334	
Microsoft Problem Resolution Services		Microsoft	2	245		245
Visual C++ Standard Edition	254-00170	Microsoft	2	109	109	included
Visual Basic 2003 .Net Professional	046-00856	Microsoft	2	109	109	included
<b>Subtotal</b>					<b>14,939</b>	<b>245</b>
<b>Total</b>					<b>\$145,212</b>	<b>\$9,724</b>

Three-Year Cost of Ownership: \$154,937 USD

QpH @ 100GB: 14242.8

\$/QpH @ 100GB: \$10.88 USD

Pricing: 1=HP Direct: 800-203-6748; 2=Microsoft

Note 1 = Discount based on HP Direct guidance with large purchase and Net 30 discount. Applies to all lines with 1 in pricing column.

\* = These components are not immediately orderable. See the FDR for more information.

Note: The benchmark results and test methodology were audited by Lorna Livingtree of Performance Metrics, Inc. (www.perfmetrics.com).

Audited by: Lorna Livingtree of Performance Metrics 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 the stated prices are not available according to these terms, please inform at pricing@tpc.org. Thank you.



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### Numerical Quantities

#### Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 41.04
Start of Database Load	= 2006-05-03 20:21:55.997
End of Database Load	= 2006-05-03 21:52:33.043
Database Load Time	= 1:30:37
Query Streams for Throughput Test	= 5
TPC-H Power	= 19,497.0
TPC-H Throughput	= 10,404.6
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 14,242.8
Total System Price Over 3 Years	= \$154,937
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$10.88 USD

#### Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 3,806 seconds
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#### Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	503215233	5/4/2006	10:10:02	5/4/2006	10:22:43	0:12:41
Stream01	503215234	5/4/2006	10:23:03	5/4/2006	11:11:24	0:48:21
Stream02	503215235	5/4/2006	10:23:04	5/4/2006	11:19:25	0:56:21
Stream03	503215236	5/4/2006	10:23:12	5/4/2006	11:22:00	0:58:47
Stream04	503215237	5/4/2006	10:23:13	5/4/2006	11:12:47	0:49:34
Stream05	503215238	5/4/2006	10:23:13	5/4/2006	11:18:02	0:54:49
Refresh00		5/4/2006	10:09:28	5/4/2006	10:23:03	0:13:35
Refresh01		5/4/2006	11:22:00	5/4/2006	11:22:50	0:00:50
Refresh02		5/4/2006	11:22:51	5/4/2006	11:23:45	0:00:54
Refresh03		5/4/2006	11:23:46	5/4/2006	11:24:37	0:00:51
Refresh04		5/4/2006	11:24:38	5/4/2006	11:25:33	0:00:55
Refresh05		5/4/2006	11:25:34	5/4/2006	11:26:29	0:00:55



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## TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	120.5	2.3	14.8	8.7	18.2	6.6	19.6	23.4
Stream 01	250.2	35.5	60.3	25.8	93.0	31.6	107.0	100.3
Stream 02	326.9	119.1	60.6	100.8	66.9	108.0	40.8	70.8
Stream 03	396.0	10.6	13.3	89.1	331.5	10.1	52.0	102.1
Stream 04	293.0	35.8	59.4	22.7	100.5	61.2	39.3	124.8
Stream 05	384.4	28.0	144.0	37.2	90.9	38.4	147.8	95.9
Min Qi	250.2	10.6	13.3	22.7	66.9	10.1	39.3	70.8
Max Qi	396.0	119.1	144.0	100.8	331.5	108.0	147.8	124.8
Avg Qi	330.1	45.8	67.5	55.1	136.6	49.9	77.4	98.8
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	96.3	11.7	9.5	22.9	37.7	4.6	4.5	16.1
Stream 01	537.3	45.5	128.4	106.4	101.1	83.2	33.4	117.7
Stream 02	235.6	209.3	58.6	104.3	100.2	37.1	31.7	61.7
Stream 03	346.1	80.3	667.2	38.9	40.3	12.8	82.3	15.6
Stream 04	369.3	39.3	102.7	120.1	99.8	24.1	89.7	79.2
Stream 05	304.3	13.5	189.3	87.1	187.2	33.2	19.7	249.3
Min Qi	235.6	13.5	58.6	38.9	40.3	12.8	19.7	15.6
Max Qi	537.3	209.3	667.2	120.1	187.2	83.2	89.7	249.3
Avg Qi	358.5	77.6	229.2	91.4	105.7	38.1	51.4	104.7
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	10.0	112.2	22.5	8.5	174.2	16.4	33.9	19.6
Stream 01	27.4	314.1	78.0	98.3	479.5	46.7	27.1	22.9
Stream 02	334.2	583.4	75.9	166.0	387.3	102.3	29.5	24.0
Stream 03	42.3	524.8	19.8	118.5	403.4	130.4	27.5	23.4
Stream 04	102.1	634.4	49.6	22.9	452.1	52.1	30.1	24.1
Stream 05	18.5	479.8	52.2	68.3	529.9	90.0	27.6	26.9
Min Qi	18.5	314.1	19.8	22.9	387.3	46.7	27.1	22.9
Max Qi	334.2	634.4	78.0	166.0	529.9	130.4	30.1	26.9
Avg Qi	104.9	507.3	55.1	94.8	450.4	84.3	28.4	24.3