



HP ProLiant DL580G4

TPC-H Rev. 2.3.0

Report Date:
Sep 5, 2006

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$135,384 USD

17,120.3
QphH@100GB

\$7.91 USD
\$/ QphH@100GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

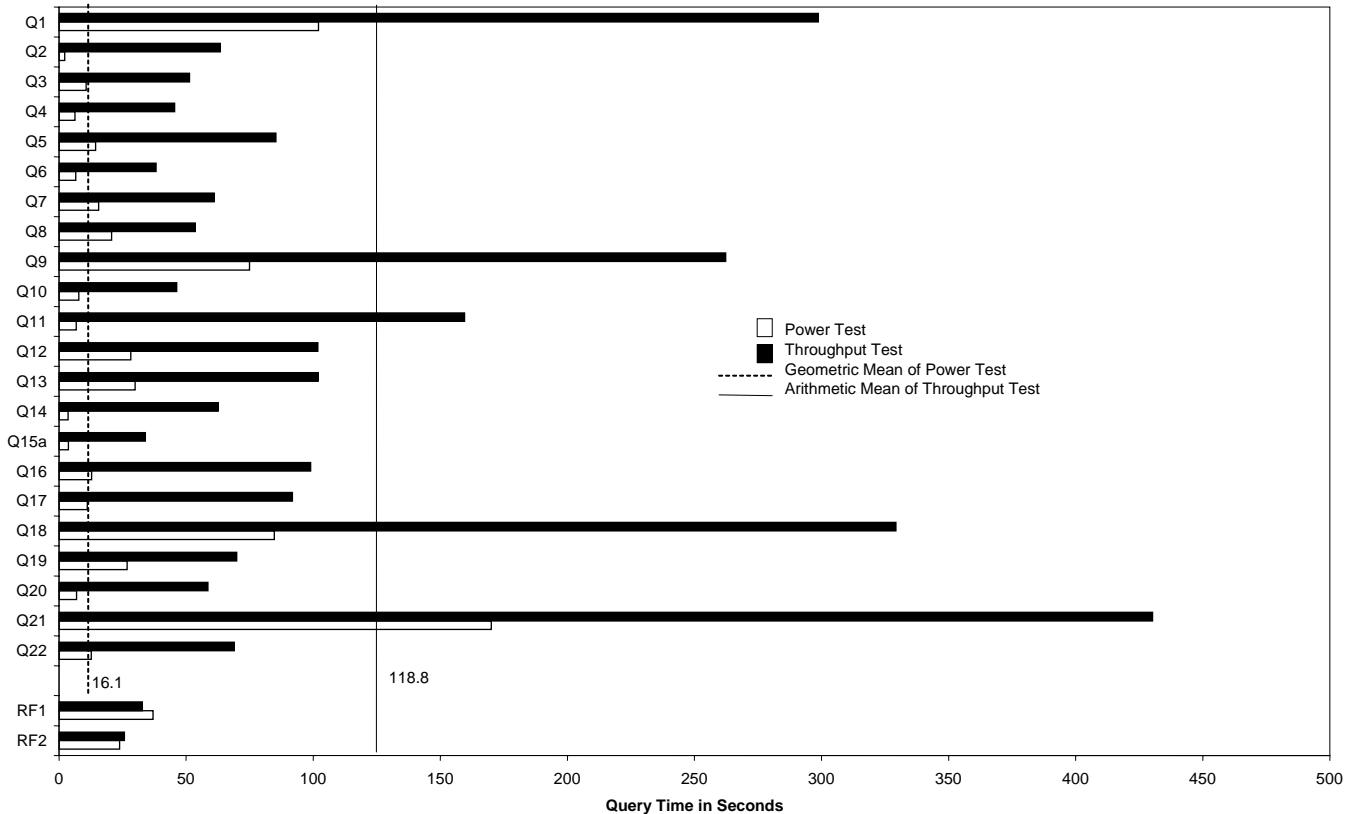
100GB

**Microsoft SQL
Server 2005
Enterprise Edition
SP1**

**Windows Server
2003, Enterprise
Edition SP1**

**Visual C++
Visual Basic**

Nov 22, 2006



Database Load Time = 1:17:20

Load Included Backup: Y

Total Data Storage / Database Size = 31.32

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): Y

RAID (All): N

System Configuration:

Processors : 4x 3.4 GHz DC Intel 7140 w/ 16M L2 Cache
Cores : 8
Threads : 16
Memory : 64 GB
OS Disk Drives : 1x 36 GB 10K rpm SFF SAS (internal)
Network : 2x on-board GigE
Disk Controllers : 6x Smart Array P800, 1x Smart Array P600
Disks : 84x 36 GB 15K rpm SFF SAS drives (external)
 2x36GB 10K rpm SFF SAS drives (internal)
Total Disk Storage: 3132 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	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
		Brand Pricing				
HP DL580R04 ModX CTO Svr	410058-B21	1	3,776	1	3,776	
HP X7140M 580 FIO Kit	430816-L22	1	2,799	4	11,196	
HP DL580G4 Memory Expansion Board Kit	410061-B21	1	499	4	1,996	
HP 2 PCI E X4 Mezz Optn 580 G3 Slot Kit	377522-B21	1	99	1	99	
HP 8GB REG PC2-3200 2X4GB DL580G3 Memory	404122-B21	1	6,299	8	50,392	
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	
HP 3y 4h 24x7 ProLiant D58x HW Support	U4608E	1	1,575	1		1,575
				Subtotal	68,302	1,575
Storage						
HP Smart Array P800 Controller	381513-B21	1*	1,099	6	6,594	
HP Smart Array P600 Controller	337972-B21	1	729	1	729	
HP StorageWorks MSA50 Disk Enclosure	364430-B21	1	1,899	14	26,586	
HP 36GB 10K SAS Single Port SFF Hard Drive (internal)	375859-B21	1	279	3	837	
HP 36GB 15K SAS Single Port SFF Hard Drive	431933-B21	1*	375	84	31,500	
HP 36GB 15K SAS Single Port SFF Hard Drive (10% spare)	431933-B21	1*	375	9		3,375
HP StorageWorks MSA50 Disk Enclosure (10% spare)	364430-B21	1	1,899	2		3,798
				Subtotal	66,246	7,173
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	16.0%	1			(\$21,528)	(\$1,400)
				Hardware Subtotal	113,020	7,348
Software						
SQL Server 2005 Enterprise x64 Edition with 25 CALs	810-04779 Microsoft	2	8,318	1	8,318	
SQL Server 2005 Client License	359-01911 Microsoft	2	156	25	3,900	
Windows Server 2003 Enterprise x64 Edition	P72-00274 Microsoft	2	2,334	1	2,334	
Microsoft Problem Resolution Services	Microsoft	2	245	1		245
Visual C++ Standard Edition	254-00170 Microsoft	2	109	1	109	included
Visual Basic 2003 .Net Professional	046-00856 Microsoft	2	109	1	109	included
				Subtotal	14,770	245
				Total	\$127,790	\$7,593

Three-Year Cost of Ownership: \$135,384 USD**QpH @ 100GB: 17120.3****\$/ QpH @ 100GB: \$7.91 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	= 31.32
Start of Database Load	= 2006-08-30 15:28:51.560
End of Database Load	= 2006-08-30 16:46:11.827
Database Load Time	= 1:17:20
Query Streams for Throughput Test	= 5
TPC-H Power	= 22,401.0
TPC-H Throughput	= 13,084.4
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 17,120.3
Total System Price Over 3 Years	= \$135,384
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$7.91 USD

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 3,026.5 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	830164611	8/30/2006	19:53:18	8/30/2006	20:04:17	0:10:59
Stream01	830164612	8/30/2006	20:04:42	8/30/2006	20:48:34	0:43:52
Stream02	830164613	8/30/2006	20:04:42	8/30/2006	20:46:54	0:42:12
Stream03	830164614	8/30/2006	20:04:43	8/30/2006	20:49:50	0:45:06
Stream04	830164615	8/30/2006	20:04:44	8/30/2006	20:50:08	0:45:24
Stream05	830164616	8/30/2006	20:04:44	8/30/2006	20:45:58	0:41:14
Refresh00		8/30/2006	19:52:41	8/30/2006	20:04:41	0:12:00
Refresh01		8/30/2006	20:50:08	8/30/2006	20:51:10	0:01:02
Refresh02		8/30/2006	20:51:11	8/30/2006	20:52:15	0:01:05
Refresh03		8/30/2006	20:52:17	8/30/2006	20:53:18	0:01:01
Refresh04		8/30/2006	20:53:19	8/30/2006	20:54:14	0:00:55
Refresh05		8/30/2006	20:54:15	8/30/2006	20:55:08	0:00:53



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TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	102.1	2.2	10.7	6.3	14.4	6.6	15.6	20.7
Stream 01	389.6	88.0	51.3	11.5	76.0	23.3	55.1	71.3
Stream 02	190.3	76.7	74.4	22.5	48.4	76.3	97.3	59.4
Stream 03	351.7	70.8	16.4	131.8	164.1	16.6	48.0	75.7
Stream 04	380.0	70.9	15.4	23.7	73.6	64.6	27.5	28.0
Stream 05	182.2	10.7	99.2	38.2	64.7	10.5	77.3	33.6
Min Qi	182.2	10.7	15.4	11.5	48.4	10.5	27.5	28.0
Max Qi	389.6	88.0	99.2	131.8	164.1	76.3	97.3	75.7
Avg Qi	298.8	63.4	51.3	45.5	85.4	38.3	61.0	53.6
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	74.9	7.8	6.8	28.2	30.0	3.6	3.7	12.8
Stream 01	268.0	56.7	130.2	109.4	141.6	24.7	17.1	133.7
Stream 02	196.4	76.0	141.1	92.9	93.6	134.9	21.5	55.3
Stream 03	288.5	38.6	103.3	34.7	76.1	21.6	82.6	28.0
Stream 04	256.2	29.7	285.9	119.8	75.6	85.2	37.3	123.0
Stream 05	302.4	30.4	137.3	152.3	122.9	46.8	11.1	155.0
Min Qi	196.4	29.7	103.3	34.7	75.6	21.6	11.1	28.0
Max Qi	302.4	76.0	285.9	152.3	141.6	134.9	82.6	155.0
Avg Qi	262.3	46.3	159.6	101.8	102.0	62.6	33.9	99.0
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	11.1	84.7	26.8	6.9	170.1	12.7	37.0	23.8
Stream 01	51.4	275.6	38.0	95.5	436.6	87.3	36.5	24.9
Stream 02	163.8	323.5	60.7	99.8	348.5	78.4	36.9	27.1
Stream 03	51.0	431.6	67.3	47.8	521.5	38.7	34.2	26.3
Stream 04	84.4	330.7	142.0	12.6	416.1	41.8	29.8	24.1
Stream 05	108.6	285.0	41.6	37.1	428.3	98.9	26.2	26.0
Min Qi	51.0	275.6	38.0	12.6	348.5	38.7	26.2	24.1
Max Qi	163.8	431.6	142.0	99.8	521.5	98.9	36.9	27.1
Avg Qi	91.8	329.3	69.9	58.6	430.2	69.0	32.7	25.7