



# HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:  
Nov 12, 2003

Total System Cost

**\$199,475**

Composite Query per Hour Metric

**3385.4**

QphH@1000GB

Price / Performance

**\$59**

\$/ QphH@1000GB

Database Size

**1000GB**

Database Manager

**Microsoft SQL Server 2000 Enterprise Edition**

Operating System

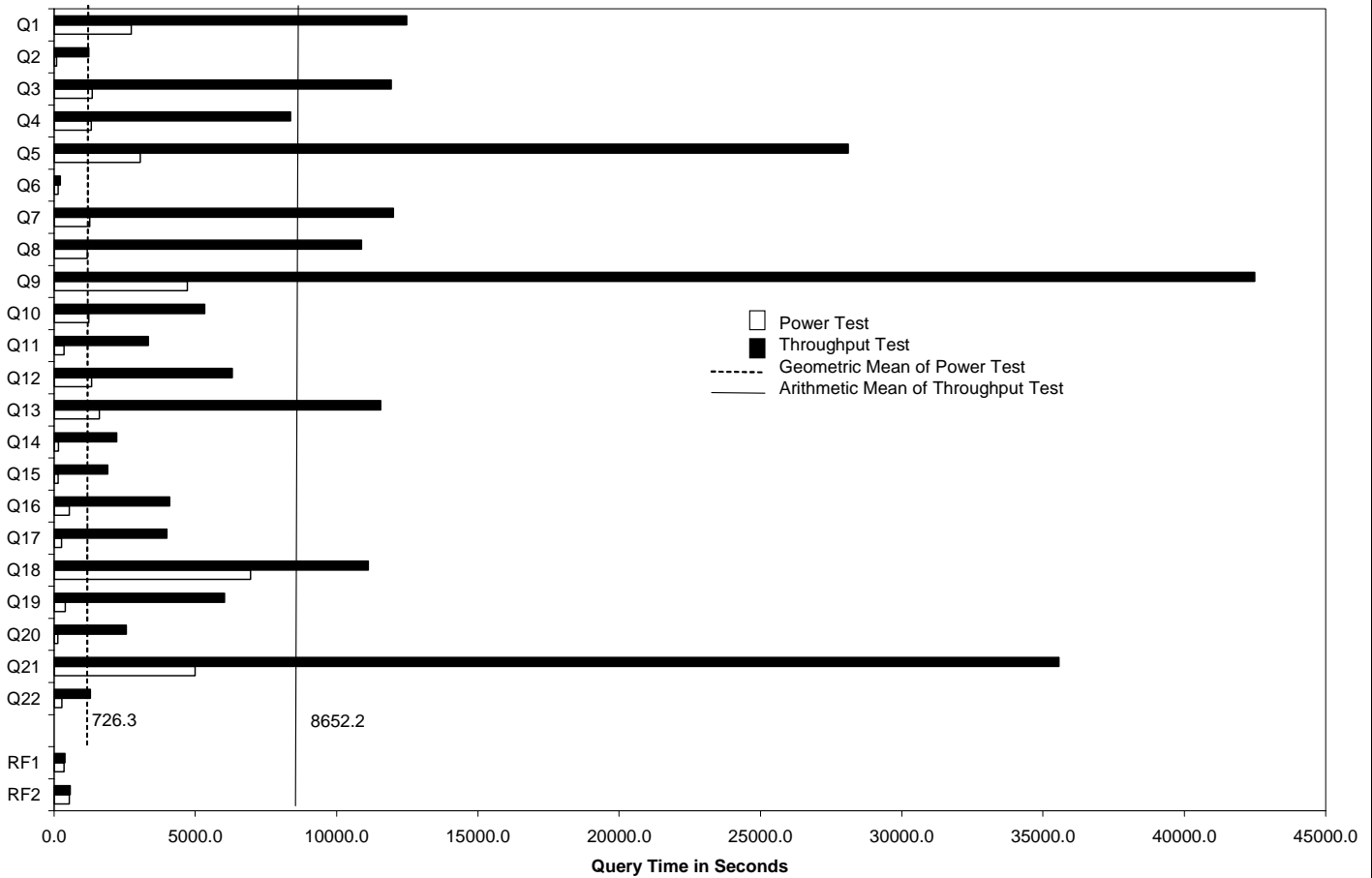
**Windows Server 2003, Enterprise Edition**

Other Software

**Visual C++ .Net Standard**

Availability Date

**Nov 12, 2003**



Database Load Time = 37:54:16

Load Included Backup: Y

Total Data Storage / Database Size = 4.70

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

**System Configuration:**

**Processors :** 8 x Intel Xeon MP 2.8 GHz with 2MB L2 cache  
**Memory :** 16 GB memory  
**Disk Controllers :** 6x Smart Array 5302  
**Disks :** 142 x 18.2GB drives, 16 x 36.4GB drives, 13x 146GB drives  
**Total Disk Storage:** 4,703.8 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
<b>Server Hardware</b>						
<b>Brand Pricing</b>						
ProLiant DL760 G2 X2.8-2M 4P 4G - 4GB addressable RAM, 1GB redundant RAM - integrated Smart Array 5i controller	326703-B21	1	49,199	1	49,199	
X2.8-2M 4P DL760 G2	334037-B21	1	29,699	1	29,699	
512 REG PC133	236853-B21	1	339	22	7,458	
Monitor 15" S5500	261602-169	1	129	1	129	
3-Button PS/2 Mouse	304786-B21	1	5	1	5	
PS/2 Easy Access Keyboard	304788-001	1	10	1	10	
Rack Model 9142 (42U - Opal) - Flat Pallet	120663-B21	1	1,321	1	1,321	
Rack Sidewall Kit	120670-B21	1	207	1	207	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	2	598	
36.4 GB Hot-Plug Wide U320 15K 1"	286776-B22	1	519	2	1,038	
UPS T1500 XR	204155-002	1	621	1	621	
Servers 700 Series CarePaq, 3yr 7x24, 4hr resp. (FM-HE724-3)	401784-002	1	3,390	1		3,390
<b>Subtotal</b>					<b>90,285</b>	<b>3,390</b>
<b>Storage</b>						
Smart Array 5302/128	283552-B21	1	1,299	6	7,794	
StorageWorks Enclosure Model 4314R - Rack-mountable	190209-001	1	2,955	12	35,460	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	140	41,860	
18.2 GB Hot-Plug Wide U320 15K 1" (10% spare)	286775-B22	1	299	14	4,186	
36.4 GB Hot-Plug Wide U320 15K 1"	286776-B22	1	519	14	7,266	
36.4 GB Hot-Plug Wide U320 15K 1" (10% spare)	286776-B22	1	519	2	1,038	
146 GB Hot-Plug Wide U320 10K 1"	286716-B22	1	1,039	13	13,507	
146 GB Hot-Plug Wide U320 10K 1" (10% spare)	286716-B22	1	1,039	2	2,078	
CarePaq 43xx Enclosure, 3yr, 7x24, 4hr resp. (FM-4E724-36)	171242-002	1	157	12		1,884
<b>Subtotal</b>					<b>113,189</b>	<b>1,884</b>
<b>Hardware and Maintenance Discount</b>						
Large Purchase and Net 30 discount	16.0%	1			(\$32,556)	(\$844)
<b>Hardware Subtotal</b>					<b>170,918</b>	<b>4,430</b>
<b>Software</b>						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2	5,549	1	5,549
Database Server Support Package	RO-PRORS-16U-01	Microsoft	2	1,950	3	5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	2	146	70	10,220
Windows Server 2003, Enterprise Edition	P72-00264	Microsoft	2	2,399	1	2,399
Visual C++ .Net Standard	254-00170	Microsoft	2	109	1	109
<b>Subtotal</b>					<b>18,277</b>	<b>5,850</b>
<b>Total</b>					<b>\$189,195</b>	<b>\$10,280</b>

**3-Year Cost of Ownership: \$199,475****QpH Rating: 3385.4****\$/QpH@1000GB: \$59**

Pricing: 1=HP; 2= Microsoft

Note: The benchmark results and test methodology were audited by Lorna Livingtree of Performance Metrics

**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](mailto:pricing@tpc.org). Thank you.



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## Numerical Quantities

### Measurement Results:

Database Scale Factor	= 1000
Total Data Storage / Database Size	= 4.70
Start of Database Load	= 2003-08-04 14:10:05
End of Database Load	= 2003-08-06 04:04:21
Database Load Time	= 37:54:16
Query Streams for Throughput Test	= 7
TPC-H Power	= 4956.6
TPC-H Throughput	= 2312.2
TPC-H Composite Query-per-Hour Metric (QphH@1000GB)	= 3385.4
Total System Price Over 3 Years	= \$199,475
TPC-H Price/ Performance Metric (\$/QphH@1000GB)	= \$59

### Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 239769.3 seconds
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### Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	806040421	8/11/2003	13:18:29	8/11/2003	23:04:48	9:46:19
Stream01	806040422	8/11/2003	23:04:49	8/14/2003	8:01:05	56:56:16
Stream02	806040423	8/11/2003	23:04:49	8/14/2003	15:36:37	64:31:48
Stream03	806040424	8/11/2003	23:04:49	8/14/2003	13:19:17	62:14:28
Stream04	806040425	8/11/2003	23:04:49	8/14/2003	13:33:18	62:28:29
Stream05	806040426	8/11/2003	23:04:49	8/14/2003	10:17:30	59:12:41
Stream06	806040427	8/11/2003	23:04:49	8/14/2003	15:48:28	64:43:39
Stream07	806040428	8/11/2003	23:04:49	8/14/2003	14:43:17	63:38:28
Refresh00		8/11/2003	13:18:29	8/11/2003	23:04:48	9:46:19
Refresh01		8/14/2003	15:48:29	8/14/2003	16:04:11	0:15:43
Refresh02		8/14/2003	16:04:12	8/14/2003	16:20:29	0:16:17
Refresh03		8/14/2003	16:20:29	8/14/2003	16:36:30	0:16:01
Refresh04		8/14/2003	16:36:30	8/14/2003	16:52:36	0:16:06
Refresh05		8/14/2003	16:52:36	8/14/2003	17:08:41	0:16:04
Refresh06		8/14/2003	17:08:41	8/14/2003	17:24:46	0:16:05
Refresh07		8/14/2003	17:24:46	8/14/2003	17:40:58	0:16:12



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## TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	2736.2	93.9	1357.0	1319.8	3056.7	144.0	1259.0	1172.4
Stream 01	10156.3	1073.3	11713.6	4552.6	22489.7	197.5	21281.5	9301.8
Stream 02	13786.8	673.3	10860.9	9619.8	22882.9	425.6	11742.5	6646.4
Stream 03	14037.7	1379.0	7605.8	6213.7	36958.4	178.3	11916.7	15503.0
Stream 04	13177.0	380.1	9302.3	13159.6	25695.1	183.0	7822.5	5840.0
Stream 05	11470.5	1818.8	7501.9	11388.1	30168.5	217.2	10711.2	9310.5
Stream 06	10266.7	2772.0	14649.7	5345.7	40099.2	217.1	13033.3	18170.8
Stream 07	14456.1	487.3	21928.3	8334.2	18445.9	176.1	7577.4	11366.1
Min Qi	10156.3	380.1	7501.9	4552.6	18445.9	176.1	7577.4	5840.0
Max Qi	14456.1	2772.0	21928.3	13159.6	40099.2	425.6	21281.5	18170.8
Avg Qi	12478.7	1226.3	11937.5	8373.4	28105.7	227.8	12012.2	10876.9
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	4724.2	1233.5	360.1	1336.0	1606.7	161.2	150.3	548.2
Stream 01	31974.6	7145.8	3511.0	3033.6	14011.6	3243.2	4156.8	4095.6
Stream 02	62687.6	4805.8	1538.2	6836.4	11538.5	6674.6	1639.6	14492.7
Stream 03	20695.7	4141.3	4778.2	3155.4	10885.7	1249.0	1685.8	1800.1
Stream 04	50661.6	6030.7	1704.6	4801.2	10562.1	1780.5	1611.2	1916.0
Stream 05	20714.4	3935.9	7246.9	16289.7	13245.8	1003.7	1767.0	2637.8
Stream 06	55363.7	8675.0	2712.3	7934.5	10001.0	1152.5	1948.0	2520.6
Stream 07	55362.7	2631.0	1893.5	2147.9	10659.9	443.8	510.3	1183.4
Min Qi	20695.7	2631.0	1538.2	2147.9	10001.0	443.8	510.3	1183.4
Max Qi	62687.6	8675.0	7246.9	16289.7	14011.6	6674.6	4156.8	14492.7
Avg Qi	42494.3	5337.9	3340.7	6314.1	11557.8	2221.0	1902.7	4092.3
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	260.8	6957.9	396.7	137.2	4998.2	276.0	352.1	541.2
Stream 01	3869.6	8592.9	7067.0	1364.6	31115.3	1029.1	359.6	583.1
Stream 02	3504.4	15652.6	5447.3	943.5	19007.1	901.9	396.2	580.8
Stream 03	1529.9	8541.9	6562.7	7279.3	56859.2	1112.0	391.6	569.8
Stream 04	5422.8	15947.2	6859.9	1464.7	39782.5	805.0	396.1	569.7
Stream 05	5099.7	8579.8	6527.7	503.4	42450.3	572.5	394.3	570.3
Stream 06	3579.1	10469.5	6485.7	1676.4	14845.3	1101.5	397.0	568.3
Stream 07	4969.8	10107.4	3342.4	4715.9	44908.2	3460.9	399.9	572.6
Min Qi	1529.9	8541.9	3342.4	503.4	14845.3	572.5	359.6	568.3
Max Qi	5422.8	15947.2	7067.0	7279.3	56859.2	3460.9	399.9	583.1
Avg Qi	3996.5	11127.3	6041.8	2564.0	35566.8	1283.3	390.7	573.5