



HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:
Feb 28, 2003

Total System Cost

\$216,782

Composite Query per Hour Metric

3346.6
QphH@100GB

Price / Performance

\$65
\$ / QphH@100GB

Database Size

100GB

Database Manager

**Microsoft SQL
Server 2000
Enterprise Edition**

Operating System

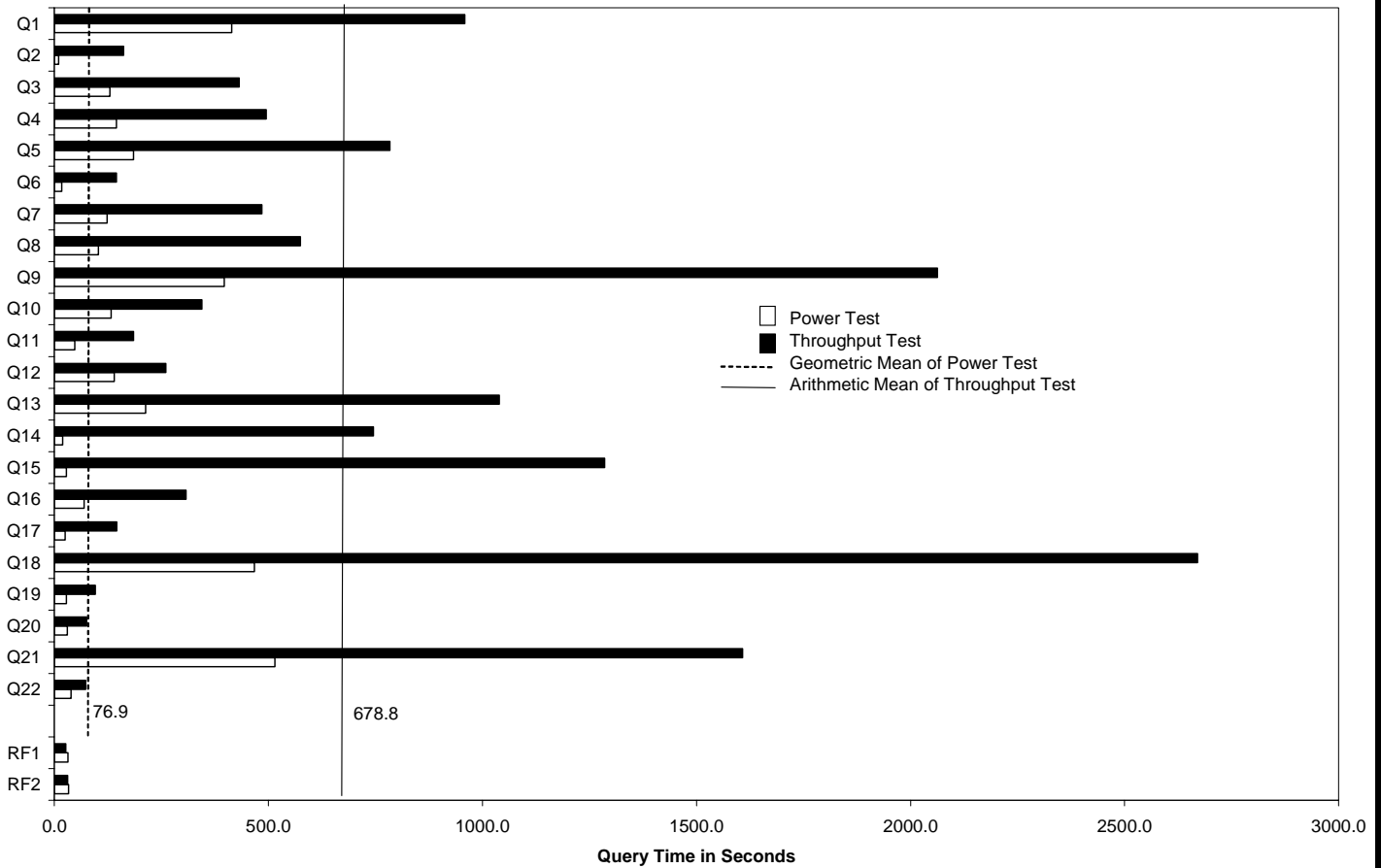
**Windows Server
2003, Enterprise
Server**

Other Software

**Visual C++
.Net Standard**

Availability Date

April 24, 2003



Database Load Time = 2:57:19

Load Included Backup: Y

Total Data Storage / Database Size = 31.47

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

System Configuration:

Processors : 8 x Intel Xeon MP 2.0 GHz with 2MB L2 cache
Memory : 16 GB memory
Disk Controllers : 6x Smart Array 5304, 4x Smart Array 5302
Disks : 186 x 18.2 GB 15K RPM drives
Total Disk Storage: 3147.1 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				
ProLiant DL760 G2 X2.0-2M 4P 4G - 4GB addressable RAM, 1GB redundant RAM - integrated Smart Array 5i controller	171206-B21	1	47,999	1	47,999	
X2.0-2M 4P DL760 G2	287520-B21	1	28,399	1	28,399	
512 REG PC133	236853-B21	1	499	22	10,978	
Monitor 15" S5500	261602-169	1	139	1	139	
Scroll Mouse-Carbon	231947-B21	1	5	1	5	
PS/2 Easy Access Internet Keyboard	265977-001	1	12	1	12	
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	359	4	1,436	
UPS T1500 XR	204155-002	1	621	1	621	
Servers 700 Series CarePak, 3yr 7x24, 4hr resp. (FM-HE724-3	401784-002	1	3,390	1		3,390
			Subtotal		91,117	3,390
Storage						
Smart Array 5302/128	283552-B21	1	1,299	4	5,196	
Smart Array 5304/128	158939-B21	1	2,052	6	12,312	
StorageWorks Enclosure Model 4354R - Rack-mountable	190211-001	1	3,523	11	38,753	
StorageWorks Enclosure Model 4314T - Tower-mountable	190210-001	1	3,182	2	6,364	
Ultra3 Dual I/O module upgrade for 4214, 4254 or 4314	190213-B21	1	569	2	1,138	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	359	182	65,338	
18.2 GB Hot-Plug Wide U320 15K 1" (10% spare)	286775-B22	1	359	19	6,821	
CarePak 43xx Enclosure, 3yr, 7x24, 4hr resp. (FM-4E724-36)	171242-002	1	157	13		2,041
			Subtotal		135,922	2,041
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	16.0%	1			(\$36,326)	(\$869)
			Hardware Subtotal		190,713	4,562
Software						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2	5,549	5,549	5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	2	7,300	7,300	included
Windows Server 2003, Enterprise Server	N/A	Microsoft	2	2,699	2,699	included
Visual C++ .Net Standard	254-00170	Microsoft	2	109	109	included
			Subtotal		15,657	5,850
			Total		\$206,370	\$10,412
3-Year Cost of Ownership:						\$216,782
QpH Rating:						3346.6
\$/QpH@100GB:						\$65
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. Thank you.



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Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 31.47
Start of Database Load	= 2003-02-21 23:45:21
End of Database Load	= 2003-02-22 02:42:40
Database Load Time	= 2:57:19
Query Streams for Throughput Test	= 5
TPC-H Power	= 4681.2
TPC-H Throughput	= 2392.5
TPC-H Composite Query-per-Hour Metric (QphH@300GB)	= 3346.6
Total System Price Over 3 Years	= \$216,782
TPC-H Price/ Performance Metric (\$/QphH@300GB)	= \$65

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 16551.4 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	222024240	2/22/2003	8:58:28	2/22/2003	9:54:12	0:55:44
Stream01	222024241	2/22/2003	9:54:13	2/22/2003	14:14:08	4:19:55
Stream02	222024242	2/22/2003	9:54:13	2/22/2003	14:19:49	4:25:36
Stream03	222024243	2/22/2003	9:54:13	2/22/2003	13:56:01	4:01:48
Stream04	222024244	2/22/2003	9:54:13	2/22/2003	14:25:14	4:31:01
Stream05	222024245	2/22/2003	9:54:13	2/22/2003	13:20:21	3:26:08
Refresh00		2/22/2003	8:58:28	2/22/2003	9:54:12	0:55:44
Refresh01		2/22/2003	14:25:14	2/22/2003	14:26:13	0:00:59
Refresh02		2/22/2003	14:26:13	2/22/2003	14:27:07	0:00:53
Refresh03		2/22/2003	14:27:07	2/22/2003	14:28:06	0:00:59
Refresh04		2/22/2003	14:28:06	2/22/2003	14:29:06	0:01:00
Refresh05		2/22/2003	14:29:06	2/22/2003	14:30:04	0:00:58



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TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	414.3	9.9	129.5	145.4	184.8	17.6	123.3	102.8
Stream 01	1138.1	110.5	495.0	342.8	461.2	165.6	698.7	683.2
Stream 02	870.8	127.7	590.2	478.5	929.3	26.6	473.5	566.5
Stream 03	781.3	160.1	511.6	511.2	1518.1	207.1	426.3	1000.7
Stream 04	1138.2	328.0	127.4	503.5	685.5	142.2	150.1	293.6
Stream 05	866.8	83.5	433.6	638.2	326.0	184.6	674.2	330.9
Min Qi	781.3	83.5	127.4	342.8	326.0	26.6	150.1	293.6
Max Qi	1138.2	328.0	590.2	638.2	1518.1	207.1	698.7	1000.7
Avg Qi	959.0	162.0	431.6	494.8	784.0	145.2	484.6	575.0
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	397.0	132.3	47.3	139.9	213.4	19.3	28.2	69.7
Stream 01	1380.8	363.3	144.3	429.0	1270.0	807.0	1460.5	251.0
Stream 02	1341.3	427.1	345.9	228.8	978.8	1671.6	1412.9	509.0
Stream 03	1849.0	267.5	154.6	194.1	984.7	254.8	1529.7	312.4
Stream 04	3919.4	420.0	148.2	172.1	643.5	437.3	1863.7	278.5
Stream 05	1825.4	243.5	131.9	276.7	1321.0	555.0	159.0	188.5
Min Qi	1341.3	243.5	131.9	172.1	643.5	254.8	159.0	188.5
Max Qi	3919.4	427.1	345.9	429.0	1321.0	1671.6	1863.7	509.0
Avg Qi	2063.2	344.3	185.0	260.1	1039.6	745.1	1285.2	307.9
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	24.8	467.7	27.9	30.1	515.6	38.8	31.5	33.3
Stream 01	159.8	3245.2	74.3	105.3	1755.5	54.7	28.2	30.8
Stream 02	222.0	3421.6	135.4	64.3	1012.7	102.0	23.4	30.0
Stream 03	159.0	2032.4	31.9	92.7	1453.8	75.2	26.4	32.6
Stream 04	58.1	2626.9	143.9	43.3	2098.5	39.5	28.3	31.9
Stream 05	130.7	2024.0	90.4	70.7	1719.6	94.8	26.8	31.8
Min Qi	58.1	2024.0	31.9	43.3	1012.7	39.5	23.4	30.0
Max Qi	222.0	3421.6	143.9	105.3	2098.5	102.0	28.3	32.6
Avg Qi	145.9	2670.0	95.2	75.3	1608.0	73.2	26.6	31.4