



HP ProLiant DL980 G7

TPC-H Rev. 2.11.0
 TPC Pricing Rev. 1.5.0

Report Date:
 June 21, 2010

Total System Cost

Composite Query per Hour Rating

Price/Performance

\$435,169 USD

162,601.7
 QpH @ 3000G

\$2.68 USD
 \$ / QpH @3000G

Database Size

Database Manager

Operating System

Other Software

Availability Date

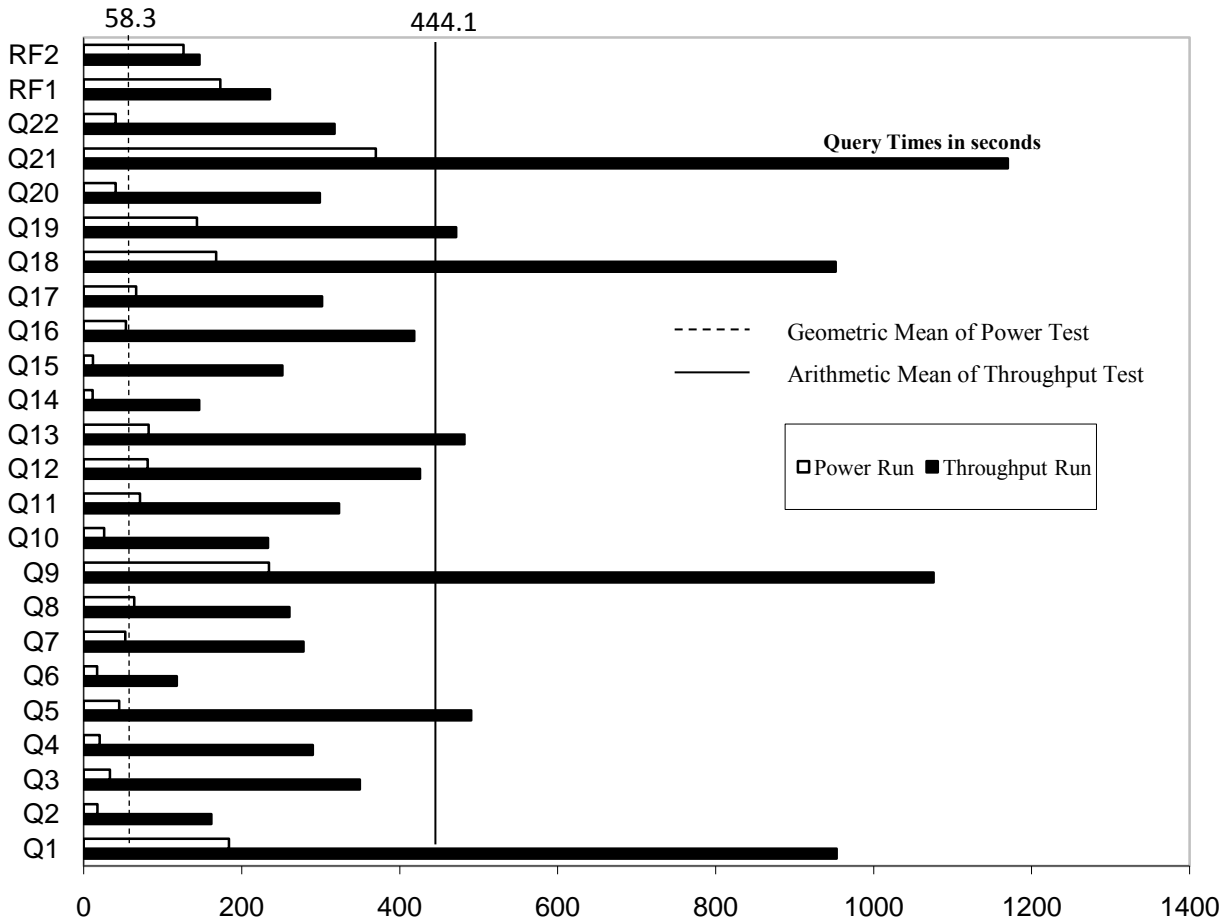
3000GB

**SQL Server 2008 R2
 Enterprise Edition**

**Windows Server 2008
 R2 Enterprise Edition**

None

October 13, 2010



Database Load Time = 8h35m17s

Storage Redundancy Level

Load included backup: Y

Base Tables and Auxiliary Data Structures

0

Total Data Storage / Database Size = 15.18

DBMS Temporary Space

0

Memory/Database Size = 17.1%

OS and DBMS Software

1

System Components

System Total

Per Node

Nodes:	1	n.a.
Intel(R) Xeon(R) CPU X7560 @ 2.27GHz:	8	8
Cores/Threads:	64/128	64/128
Memory:	512GB	512GB
OS Disk Drives(internal):	4	4
Network Interfaces (on-board GigE):	2	2
Storage Controllers LSI SAS 9200 / P411/ HP 82E 8Gb Dual FC:	10 / 3 / 1	10 / 3 / 1
MSA2324fc	1	n.a.
Storage Shelves D2700:	26	n.a.
Storage Subsystem Disk Drives:	660	n.a.
Total Storage:	45,528.59 GB	n.a.



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Description	Price Key	Part Number	Unit Price	Qty.	Extended Price	3 Yr Maint Price
Server Hardware						
HP DL980 CTO Chassis	1	AM426A#0D1	\$13,199	1	\$13,199	
HP DL980 8p FIO Kit	1	597871-L21#FIO	\$30,359	1	\$30,359	
HP DL980 8p Kit	1	597871-B21#0D1	\$30,359	1	\$30,359	
CPU Installation Assembly	1	AM442A#0D1	\$3,999	1	\$3,999	
HP 4GB 1Rx4 PC3-10600R-9 Kit	1	593339-B21#0D1	\$230	128	\$29,440	
Memory Board	1	588141-B21#0D1	\$130	8	\$1,040	
SATA DVDRW Optical Kit	1	481043-B21#0D1	\$130	1	\$130	
HP PCI Express Kit	1	588137-B21#0D1	\$349	1	\$349	
HP DL980 LP PCIe I/O Expansion Module	1	AM434A#0D1	\$399	1	\$399	
HP P410i 512MB Flash Backed Write Cache	1	534916-B21#0D1	\$429	1	\$429	
HP 72GB 6G SAS 15K 2.5in DP ENT HDD	1	512545-B21#0D1	\$349	2	\$698	
HP 146GB 6G SAS 15K 2.5in DP ENT HDD	1	512547-B21#0D1	\$499	2	\$998	
HP 3year 4h 24x7 ProLiant DL980 HW Support	1	UV298E	\$3,205	1		\$3,205
HP 17" Flat Panel Monitor	1	GV537A8	\$130	1	\$130	
HP PS/2 Keyboard And Mouse Bundle	1	RC464AA	\$39	1	\$39	
			Subtotal		\$111,568	\$3,205
Storage						
HP 5642 Unassembled Rack	1	358254-B21	\$865	2	\$1,730	
HP 24A High Voltage US/JP Modular PDU	1	252663-D72	\$299	2	\$598	
HP Smart Array Controller P411	1	462832-B21	\$649	3	\$1,947	
HP Smart Array Controller P411 (10% Spares)	1	462832-B21	\$649	2	\$1,298	
LSI 9200-8e SAS HBA	3	LSI00188	\$328	10	\$3,280	
LSI 9200-8e SAS HBA (10% Spares)	3	LSI00188	\$328	2	\$656	
HP ext Mini SAS 4m Cable	1	432238-B21	\$142	26	\$3,692	
HP StorageWorks D2700 Disk Enclosure	1	AJ941A	\$3,399	26	\$88,374	
HP StorageWorks D2700 Disk Enclosure (10% Spares)	1	AJ941A	\$3,399	3	\$10,197	
HP 72GB 15k 2.5" Dual Port 6G SAS Drive	1	512545-B21	\$349	644	\$224,756	
HP 72GB 15k 2.5" Dual Port 6G SAS Drive (10% Spares)	1	512545-B21	\$349	65	\$22,685	
HP 82E 8Gb Dual-port PCI-e FC HBA	1	AJ763A	\$2,250	1	\$2,250	
HP 82E 8Gb Dual-port PCI-e FC HBA (10% Spares)	1	AJ763A	\$2,250	2	\$4,500	
HP 2m Multi-mode OM2 LC/LC FC Cable	1	221692-B21	\$75	2	\$150	
HP MSA2324fc Dual Controller Array	1	AJ797A	\$8,900	1	\$8,900	
HP 72GB 15k 2.5" Dual Port 6G SAS Drive 3yr Warranty HD	1	512545-B21	\$349	16	\$5,584	
HP 3y 4h 24x7 MSA2000 Array HW Support	1	UJ675E	\$1,513	1		\$1,513
			Subtotal		\$380,597	\$1,513
Server Software						
Windows Server 2008 R2 Enterprise Edition	2	P72-04217	\$2,310	1	\$2,310	
SQL Server 2008 R2 Enterprise Edition Server License w/ 25 CALs	2	810-08553	\$8,318	1	\$8,318	\$259
SQL Server 2008 R2 Client Access License	2	359-05354	\$114	55	\$6,270	
			Subtotal		\$16,898	\$259
			Total Extended Price		\$509,063	\$4,977

	Total Discounts	\$78,117	\$755
Price Key: 1 - HP , 2 - Microsoft, 3 - MicroLand, Audited by Francois Raab of InfoSizing, Inc. (www.infosizing.com)	Grand Total	\$430,964	\$4,222
All discounts are based on US list prices and for similar quantities and configurations. A 16% discount was based on the overall specific components pricing from vendor 1 in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration.	3 year cost of ownership USD:		\$435,169
	QphH @ 3000GB:		162,601.7
	\$ USD/QphH @ 3000GB		\$2.68
Sales contact: HP Sales Development, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320 or H-P direct: 800-203-6748			
<p>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.</p>			



Numerical Quantities

Measurement Results

Database Scale Factor	3000
Total Data Storage / Database Size	15.18
Start of Database Load	2010-06-13 10:29:42
End of Database Load	2010-06-13 19:04:59
Database Load Time	8h35m17s
Query Streams for Throughput Test	8
TPC-H Power	185,297.7
TPC-H Throughput	142,685.6
TPC-H Composite Query-per-Hour (QphH@3000GB)	162,601.7
Total System Price over 3 Years	\$435,169 USD
TPC-H Price/Performance Metric (\$ USD / QphH@3000GB)	\$ 2.68 USD / QphH@3000GB

Measurement Interval

Measurement Interval in Throughput Test 13,322 seconds

Duration of Stream Execution

Power Stream	Seed	RF1 Start Time		Query Start Time		RF2 Start Time		Duration
		RF1 End Time	RF1 End Time	Query End Time	Query End Time	RF2 End Time	RF2 End Time	
	613190459	06/14/10	8:45:18	06/14/10	8:48:11	06/14/10	9:18:44	0:35:33
		06/14/10	8:48:11	06/14/10	9:18:44	06/14/10	9:20:50	

Throughput Stream	Seed	Query Start Time		Duration	RF1 Start Time		RF2 Start Time	
		Query End Time	Query End Time		RF1 End Time	RF1 End Time	RF2 End Time	RF2 End Time
1	613190460	06/14/10	9:20:51	2:55:40	06/14/10	12:11:49	06/14/10	12:14:36
		06/14/10	12:03:01		06/14/10	12:14:36	06/14/10	12:16:32
2	613190461	06/14/10	9:20:51	3:01:36	06/14/10	12:16:32	06/14/10	12:20:10
		06/14/10	12:11:00		06/14/10	12:20:10	06/14/10	12:22:28
3	613190462	06/14/10	9:20:51	3:08:07	06/14/10	12:22:28	06/14/10	12:26:25
		06/14/10	11:46:46		06/14/10	12:26:25	06/14/10	12:28:58
4	613190463	06/14/10	9:20:51	3:14:45	06/14/10	12:28:58	06/14/10	12:33:02
		06/14/10	12:07:02		06/14/10	12:33:02	06/14/10	12:35:36
5	613190464	06/14/10	9:20:51	3:21:32	06/14/10	12:35:37	06/14/10	12:39:55
		06/14/10	11:59:20		06/14/10	12:39:55	06/14/10	12:42:24
6	613190465	06/14/10	9:20:51	3:28:20	06/14/10	12:42:24	06/14/10	12:46:38
		06/14/10	12:02:46		06/14/10	12:46:38	06/14/10	12:49:11
7	613190466	06/14/10	9:20:52	3:35:13	06/14/10	12:49:12	06/14/10	12:53:32
		06/14/10	12:07:46		06/14/10	12:53:32	06/14/10	12:56:04
8	613190467	06/14/10	9:20:52	3:42:01	06/14/10	12:56:05	06/14/10	13:00:15
		06/14/10	12:11:48		06/14/10	13:00:15	06/14/10	13:02:53



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TPC-H Timing Intervals (in seconds):

Query	Stream 0	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Q1	183.8	708.6	1,019.8	728.3	993.6	1,004.8
Q2	17.5	41.6	67.2	106.3	52.3	230.5
Q3	33.3	198.2	264.0	218.4	127.8	254.5
Q4	20.1	938.9	118.2	200.8	120.8	195.7
Q5	45.1	335.9	351.0	823.2	511.3	458.5
Q6	17.1	230.3	67.8	81.2	57.5	117.3
Q7	52.6	264.3	512.3	239.7	200.0	271.2
Q8	63.9	149.8	276.5	529.1	320.1	211.9
Q9	234.5	1,262.8	928.7	847.1	848.2	831.2
Q10	25.9	103.1	331.5	287.3	161.7	262.9
Q11	71.4	751.7	207.8	507.9	181.9	203.6
Q12	81.0	380.1	574.4	305.3	550.5	354.1
Q13	82.0	440.6	255.7	432.0	458.7	823.9
Q14	11.3	51.0	590.9	70.1	186.4	113.4
Q15	11.5	138.8	117.8	96.2	361.9	130.4
Q16	53.5	611.1	273.7	376.6	419.9	229.8
Q17	66.4	196.6	588.9	303.2	181.5	183.3
Q18	167.7	838.0	1,082.0	1,019.0	862.4	1,199.4
Q19	143.5	323.3	521.7	468.8	534.6	589.0
Q20	40.6	281.2	425.6	124.4	150.7	443.0
Q21	370.0	1,202.2	1,443.1	757.9	1,763.7	1,151.1
Q22	40.3	281.6	190.6	231.8	925.0	249.1
UF1	173.0	166.6	217.5	236.7	243.3	258.4
UF2	126.3	115.7	137.7	152.7	154.4	148.4



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Query	Stream 6	Stream 7	Stream 8	Min Qi	Max Qi	Avg. Qi
Q1	933.0	730.1	1,507.6	708.6	1,507.6	953.2
Q2	307.9	164.6	323.5	41.6	323.5	161.7
Q3	1,074.0	454.1	206.7	127.8	1,074.0	349.7
Q4	337.6	163.3	244.3	118.2	938.9	290.0
Q5	447.9	226.6	770.7	226.6	823.2	490.6
Q6	62.7	61.5	264.4	57.5	264.4	117.8
Q7	191.9	243.6	301.4	191.9	512.3	278.1
Q8	149.1	300.6	147.3	147.3	529.1	260.6
Q9	1,373.1	1,198.9	1,318.4	831.2	1,373.1	1,076.1
Q10	121.1	136.3	463.6	103.1	463.6	233.4
Q11	205.0	432.6	96.5	96.5	751.7	323.4
Q12	328.8	301.8	610.5	301.8	610.5	425.7
Q13	569.9	359.5	517.3	255.7	823.9	482.2
Q14	61.1	48.5	47.6	47.6	590.9	146.1
Q15	75.7	916.3	175.6	75.7	916.3	251.6
Q16	422.0	312.6	700.1	229.8	700.1	418.2
Q17	296.2	361.7	302.5	181.5	588.9	301.7
Q18	1,009.5	1,089.0	517.2	517.2	1,199.4	952.1
Q19	345.6	467.0	523.2	323.3	589.0	471.7
Q20	233.4	628.3	103.2	103.2	628.3	298.7
Q21	978.5	1,153.7	907.9	757.9	1,763.7	1,169.8
Q22	190.5	264.1	207.3	190.5	925.0	317.5
UF1	253.7	259.9	250.1	166.6	259.9	235.8
UF2	153.0	152.2	157.7	115.7	157.7	146.5