



HP ProLiant DL585 2.2GHz 4P DC

TPC-H Rev. 2.3.0

Report Date: **August 31, 2005**Report Date: **February 1, 2006**

Total System Cost

\$271,379

Composite Query per Hour Metric

11915.3

QphH @ 300GB

Price / Performance

\$22.78 USD

per QphH @ 300GB

Database Size

300GB

Database Manager

**IBM
DB2 UDB 8.2**

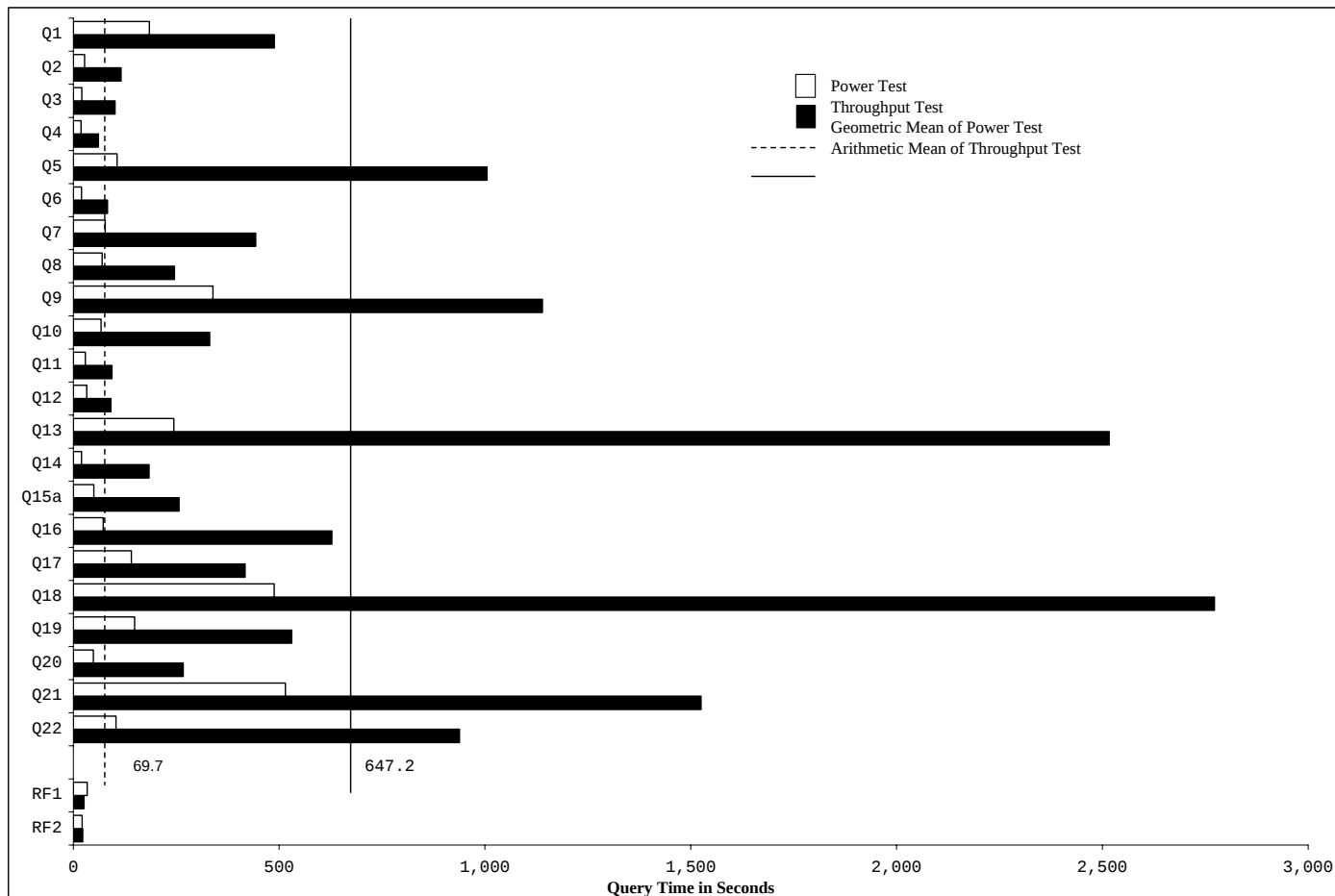
Operating System

**Red Hat Enterprise
Linux 4 AS**

Other Software

none

Availability Date

Oct 5, 2005

Database Load Time = 6:16:45

Load Included Backup: Y

Total Data Storage / Database Size = 19.7

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

System Configuration :

Processors : 4 x 2.2GHz 1MB L2 cache dual core AMD Opteron 875 Processors**Cores :** 8 total**Threads :** 8 total**Memory :** 64 GB memory**Disk Controllers :** 8 x HP Smart Array P600 SAS Controller**Disks :** 160 x 36.4GB SAS 10K SFF drives (external)

2 x 36.4GB 15K U320 drives (internal)

Total Disk Storage: 5896.8 GB

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 DL585 R01 02.2GHz (1 MB) x 2	383357-001	1	10,999	1	10,999	
2 GB PC2700 DDR, Integrated Smart Array Controller 5i, Embedded NC7782 Dual Port PCI-X 10/100/1000T Gigabit NIC						
585 875 02.2GHz/PC2700 8 socket processor option kit	381476-B21	1	3,199	2	6,398	
8 GB PC2700 DDR SDRAM DIMM 2x2048 WW	371049-B21	1	1,699	16	27,184	
17540 17in CRT Monitor	PF997AA#ABA	1	149	1	149	
PS/2 Scroll Mouse Carbonite	DG169AV	1	5	1	5	
2 Standard Keyboard	DG170AV#ABA	1	10	1	10	
5642 Unassembled Rack	358254-B21	1	689	1	689	
ProLiant 24X7 4HR 500 SERIES SVR	U4608E	1	1,575	1		1,575
Subtotal					45,434	1,575
Storage						
SMART Array P600 3G SAS/SATA RAID Controller	337972-B21	1	999	8	7,992	
StorageWorks MSA50 Disk Enclosure	364430-B21	1	1,899	16	30,384	
36GB 15K U320 Pluggable Hard Drive (internal)	286776-B22	1	269	2	538	
36GB 10K SAS Single Port SFF Hard Drive	375859-B21	1	299	160	47,840	
MSA50 Carepaq 3yr 4hr 24x7	U8130E	1	1,827	16		29,232
Subtotal					86,754	29,232
Hardware and Maintenance Discount						
Volume Purchase and Net 30 discount	16.0%	1			(\$21,150)	(\$4,929)
Hardware Subtotal					111,038	25,878
Software						
2 UDB Enterprise Server Edition (ESE) License incl 1-yr Maint	IBM	2	22,608	4	90,432	
2 UDB Enterprise Server Edition (ESE) Support - 1-yr/proc	IBM	2	1,077	8		8,616
2 UDB Data Partitioning Feature (DPF) License incl 1-yr Maint	IBM	2	6,791	4	27,164	
2 UDB Data Partitioning Feature (DPF) Support - 1-yr/proc	IBM	2	323	8		2,584
Red Hat Ent Linux 4 AS w/PRM 24x7 3yr sw tech sprt umlim.	392381-B26	1	6,747	1	6,747	included
Subtotal					124,343	11,200
Software and Maintenance Discount						
Volume Purchase and Net 30 discount	16.0%	1			(\$1,080)	
Software Subtotal					123,263	11,200
Total					\$234,301	\$37,078

Three-Year Cost of Ownership: \$271,379

QphH @ 300GB: 11915.3

\$ / QphH @ 300GB: \$22.78 USD

ing: 1=HP Direct: 800-203-6748; 2=IBM

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

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	= 300
Total Data Storage / Database Size	= 19.7
Start of Database Load	= 8/22/2005 14:46:18
End of Database Load	= 8/22/2005 21:03:03
Database Load Time	= 6:16:45
Query Streams for Throughput Test	= 6
TPC-H Power	= 15504.0
TPC-H Throughput	= 9157.2
TPC-H Composite Query-per-Hour Metric (QphH@300GB)	= 11915.3
Total System Price Over 5 Years	= \$288,751 USD
TPC-H Price/ Performance Metric (\$/QphH@300GB)	= \$22.78 USD

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 15568 seconds
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Duration of Stream Execution:

	Seed	Query Start Date/Time Query End Date/Time	RF1 Start Date/Time RF1 End Date/Time	RF2 Start Date/Time RF2 End Date/Time	Duration
Stream 00	822210303	08/22/05 23:01:06 08/22/05 23:48:14	08/22/05 23:00:33 08/22/05 23:01:06	08/22/05 23:48:14 08/22/05 23:48:35	0:47:07
Stream 01	822210304	08/22/05 23:48:38 08/23/05 3:58:37	08/23/05 3:58:37 08/23/05 4:03:43	08/23/05 4:03:43 08/23/05 4:04:07	4:09:59
Stream 02	822210305	08/22/05 23:48:38 08/23/05 3:52:54	08/23/05 3:52:54 08/23/05 4:04:32	08/23/05 4:04:32 08/23/05 4:04:53	4:04:17
Stream 03	822210306	08/22/05 23:48:38 08/23/05 3:34:32	08/23/05 3:34:32 08/23/05 4:05:18	08/23/05 4:05:18 08/23/05 4:05:44	3:45:55
Stream 04	822210307	08/22/05 23:48:38 08/23/05 3:31:47	08/23/05 3:31:47 08/23/05 4:06:10	08/23/05 4:06:10 08/23/05 4:06:34	3:43:09
Stream 05	822210308	08/22/05 23:48:38 08/23/05 4:03:13	08/23/05 4:03:13 08/23/05 4:06:59	08/23/05 4:06:59 08/23/05 4:07:20	4:14:35
Stream 06	822210309	08/22/05 23:48:38 08/23/05 3:34:28	08/23/05 3:34:28 08/23/05 4:07:46	08/23/05 4:07:46 08/23/05 4:08:06	3:45:50



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TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	185.0	27.4	20.6	18.8	106.4	19.9	77.7	70.2
Stream 01	245.0	119.1	100.1	23.4	700.0	46.4	562.3	309.5
Stream 02	639.2	171.0	31.5	65.9	1322.6	130.9	464.6	164.4
Stream 03	446.0	62.2	70.9	59.4	1243.0	90.0	550.3	262.8
Stream 04	533.8	106.9	153.2	56.9	1178.3	64.0	348.6	248.1
Stream 05	599.6	121.8	85.0	67.5	770.4	95.5	458.7	261.5
Stream 06	468.0	114.7	167.7	93.9	815.9	72.5	273.9	227.3
minimum	245.0	62.2	31.5	23.4	700.0	46.4	273.9	164.4
average	488.6	116.0	101.4	61.2	1005.0	83.2	443.1	245.6
maximum	639.2	171.0	167.7	93.9	1322.6	130.9	562.3	309.5
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15a	Q16
Stream 00	339.2	67.3	29.2	32.8	244.2	19.9	50.0	72.8
Stream 01	655.9	559.1	84.9	97.1	2818.7	228.0	331.1	683.2
Stream 02	1859.4	411.7	43.6	96.3	2163.7	157.7	169.5	694.5
Stream 03	1353.9	194.4	90.2	119.2	1624.5	204.7	220.0	270.1
Stream 04	1258.7	309.0	86.7	96.8	2632.5	215.7	334.7	314.6
Stream 05	328.3	177.5	69.3	54.6	3484.6	192.4	301.1	910.2
Stream 06	1382.3	337.3	189.0	83.5	2376.4	105.7	186.7	896.3
minimum	328.3	177.5	43.6	54.6	1624.5	105.7	169.5	270.1
average	1139.8	331.5	94.0	91.3	2516.7	184.0	257.2	628.2
maximum	1859.4	559.1	189.0	119.2	3484.6	228.0	334.7	910.2
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	141.2	488.2	149.1	48.7	515.4	103.8	33.6	21.6
Stream 01	423.2	4162.5	691.8	107.8	1568.5	480.6	29.5	24.6
Stream 02	504.1	2923.8	682.2	172.0	1025.0	763.1	25.1	20.8
Stream 03	562.6	3270.9	341.4	81.9	1335.1	1101.2	24.5	26.0
Stream 04	530.5	1480.0	504.7	187.5	1649.0	1098.8	25.6	24.0
Stream 05	239.0	2896.1	491.1	921.3	1565.2	1183.1	25.0	21.7
Stream 06	244.8	1900.6	471.9	130.7	2008.8	1001.5	25.4	20.4
minimum	239.0	1480.0	341.4	81.9	1025.0	480.6	24.5	20.4
average	417.4	2772.3	530.5	266.9	1525.3	938.1	25.9	22.9
maximum	562.6	4162.5	691.8	921.3	2008.8	1183.1	29.5	26.0