



HP BladeSystem ProLiant BL25p Cluster 8P

TPC-H Rev. 2.3.0

Report Date:
September 16, 2005

Total System Cost

\$454,283

Composite Query per Hour Metric

13284.2
QphH@300GB

Price / Performance

\$34.20 USD
\$ / QphH@300GB

Database Size

300GB

Database Manager

**Oracle Database 10g
Release 2, Enterprise
Edition with Oracle Real
Application Clusters and
Partitioning**

Operating System

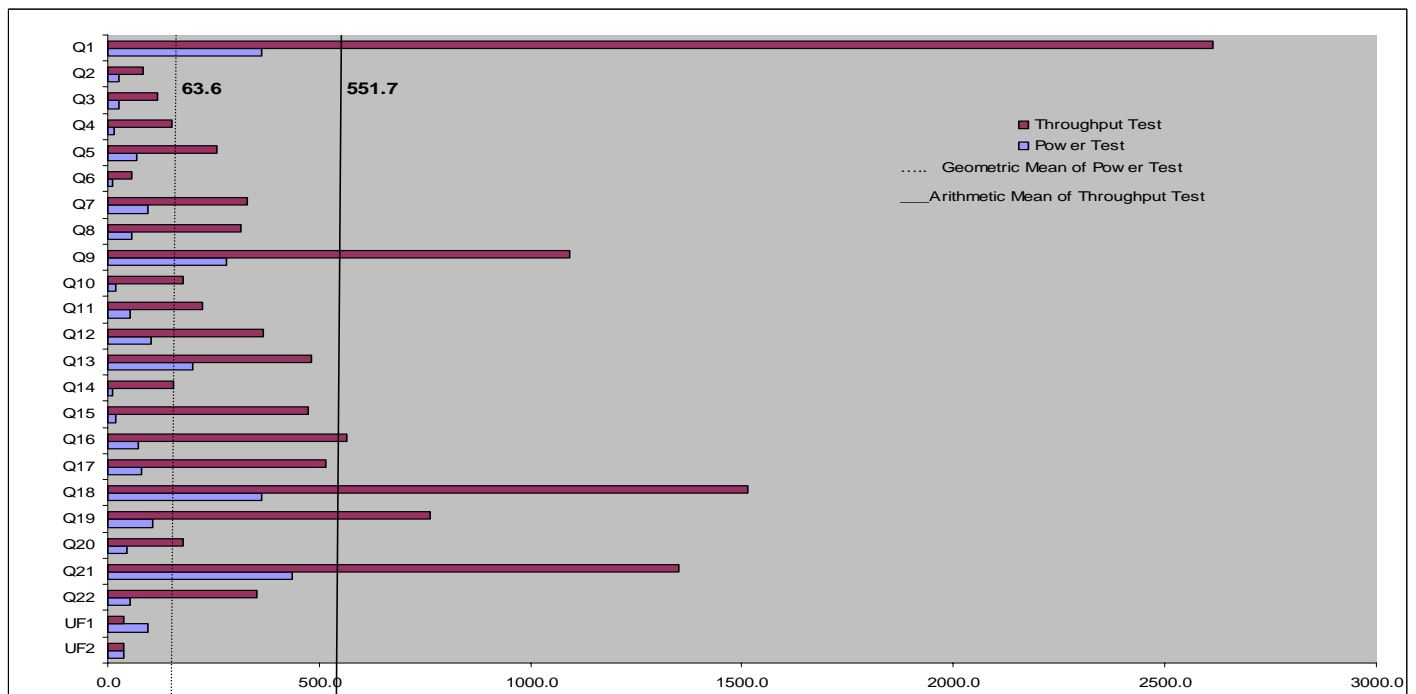
**Red Hat Enterprise
Linux 4 ES**

Other
Software

Availability Date

October 31, 2005*

*Hardware Available Now



Database Load Time = 2:45:26

Load Included Backup: Y

Total Data Storage / Database Size = 15.36

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

8 ProLiant BL25p :

Processors (per blade) :	1 x AMD Opteron 252 2.6Ghz/1GHz Hyper Transport , 1MB processor
Cores (per blade) :	1
Threads (per blade) :	1
Memory (per blade) :	8 GB
OS Disk Drives (per blade) :	2 x 36GB 15krpm HDD Ultra320
Network (per blade) :	2 x on-board GigE (one of them as cluster interconnect)
Host Bus Adapter (per blade) :	2 x on-board
Storage Area Network :	2 x hp StorageWorks SAN Switch 2/16 16 x hp StorageWorks MSA1000 128 x 36GB 15krpm HDD Ultra320
Total Storage :	4608GB



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Description	Part Number	Brand	Pricing	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware							
HP BL25p O2.6GHz 1GB 1P Blade	374798-B21		1	2,699	8	21,592	
HP 4GB Reg PC3200 2x2GB Memory	379300-B21		1	2,049	16	32,784	
HP 5642 Unassembled Rack	358254-B21		1	689	2	1,378	
HP BL25/45p Fiber Channel Adapter	381881-B21		1	599	8	4,792	
HP T2200 XR High Voltage US UPS	204451-002		1	749	2	1,498	
HP BladeSystem p-Class Server Blade Enclosure	243564-B22		1	1,499	1	1,499	
HP ProLiant BL p-Class C-GbE2 Interconnect Kit	283192-B21		1	4,399	1	4,399	
HP BLp 1U Pwr Encl w/6 Pwr Sply Kit	378284-B21		1	2,299	1	2,299	
36GB 15Krpm U320 UNI HDD	286776-B22		1	299	16	4,784	
Blade Carepaq 3YR 4hr 24x7	UA205E		1	424	8		3,392
HP CAT5 KVM USB 1 Pack Interface Adapter	336047-B21		1	99	1	99	
HP s7540 17in. CRT Monitor	PF997AA#ABA		1	149	1	149	
USB Optical Mouse cbt/slvr USB 2-Button Optical Scroll Mouse	PT951AV		1	5	1	5	
Standard Keyboard USB	DX752AV#ABA		1	12	1	12	
Subtotal						75,290	3,392
Storage							
hp Storageworks Modular SAN Array 1000	201723-B22		1	6,995	16	111,920	
hp StorageWorks Modular SAN Array 1000 Support 3YR 24x7 4HR	402164-002		1	3,538	16		56,608
HP StorageWorks SAN switch 2/16V	AA978A		1	9,990	2	19,980	
HP CP 3Y 4H 24x7 HW Edge Switch 2/16	340466-002		1	4,141	2	8,282	
5m LC to LC Cable Kit	221692-B22		1	82	32	2,624	
5m LC to LC Cable Kit (10% spares)	221692-B22		1	82	4	328	
36GB, 15krpm HDD Ultra320 HP	286776-B22		1	299	128	38,272	
36GB, 15krpm HDD Ultra320 HP (10% spares)	286776-B22		1	299	13	3,887	
2Gb SFF-SW Trncvr Kit ALL 2GB Small Form Pluggable Adapter Kit	221470-B21		1	199	32	6,368	
2Gb SFF-SW Trncvr Kit ALL 2GB Small Form Pluggable Adapter Kit (10% spares)	221470-B21		1	199	4	796	
Subtotal						192,457	56,608
Software							
Oracle Database 10g Enterprise Edition Release 2, Named User Plus for 3 Years	run-time	Oracle	2	10,000	8	80,000	
Oracle Real Application Clusters, Named User Plus for 3 Years	run-time	Oracle	2	5,000	8	40,000	
Partitioning, Named User Plus for 3 Years	run-time	Oracle	2	2,500	8	20,000	
Oracle Database Server Support Package for 3 Years	run-time	Oracle	2	16,000	3		48,000
Red Hat Enterprise Linux 4 ES	run-time	RedHat	3	799	8	6,392	
2 Addl. Yrs Subs. to Red Hat Enterprise Linux 4 ES	run-time	RedHat	3	799	16		12,784
Subtotal						146,392	60,784
*hp Large Purchase discount			1			(42,840)	(9,600)
Oracle Mandatory E-Business Discount			2			(28,200)	
Total						343,099	111,184
3-Year Cost of Ownership:							\$454,283
QpH Rating:							13284.2
\$/ QpH@300GB:							\$34.20

Price Key: 1-HP at 16% discount, 2-Oracle at 15% discount, 3-Red Hat, Oracle pricing contact: Mary Beth Pierantoni, mary.beth.pierantoni@oracle.com, 916-315-5081. *All discounts are based on US list prices and for similar quantities and configurations.

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 the TPC at pricing@tpc.org. Results independently audited by Lorna Livingtree of Performance Metrics Inc. Thank you



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Numerical Quantities

Measurement Results:

Database Scale Factor = 300
 Total Data Storage / Database Size = 15.36
 Start of Database Load = 9/7/2005 12:50:49
 End of Database Load = 9/7/2005 15:08:45
 Database Load Time = 02:17:56
 Database Load Time + Backup Time = 02:45:26

Query Streams for Throughput Test = 6
 TPC-H Power = 16981.1
 TPC-H Throughput = 10392.2
 TPC-H Composite Query-per-Hour Metric (QphH@300GB) = 13284.2
 Total System Price Over 3 Years = \$454,283
 TPC-H Price/ Performance Metric (\$/QphH@300GB) = \$34.20

Measurement Intervals:

Measurement Interval in Throughput Test (Ts) = 13718.0 seconds

Duration of Stream Execution:

	Seed	Query Start Time Query End Time	RF1 Start Time RF1 End Time	RF2 Start Time RF2 End Time	Duration
Stream 0	907150845	09/07/2005 17:08:56	09/07/2005 17:07:21	09/07/2005 17:50:46	0:44:01
		09/07/2005 17:50:46	09/07/2005 17:08:56	09/07/2005 17:51:22	
Stream 1	907150846	09/07/2005 17:51:23	09/07/2005 21:32:06	09/07/2005 21:32:45	3:41:57
		09/07/2005 21:06:37	09/07/2005 21:32:45	09/07/2005 21:33:20	
Stream 2	907150847	09/07/2005 17:51:23	09/07/2005 21:33:20	09/07/2005 21:33:53	3:43:04
		09/07/2005 21:05:11	09/07/2005 21:33:53	09/07/2005 21:34:27	
Stream 3	907150848	09/07/2005 17:51:24	09/07/2005 21:34:27	09/07/2005 21:35:05	3:44:20
		09/07/2005 21:32:06	09/07/2005 21:35:05	09/07/2005 21:35:44	
Stream 4	907150849	09/07/2005 17:51:24	09/07/2005 21:35:44	09/07/2005 21:36:23	3:45:42
		09/07/2005 21:09:17	09/07/2005 21:36:23	09/07/2005 21:37:06	
Stream 5	907150850	09/07/2005 17:51:24	09/07/2005 21:37:06	09/07/2005 21:37:47	3:47:07
		09/07/2005 21:03:44	09/07/2005 21:37:47	09/07/2005 21:38:31	
Stream 6	907150851	09/07/2005 17:51:25	09/07/2005 21:38:31	09/07/2005 21:39:19	3:48:36
		09/07/2005 21:25:11	09/07/2005 21:37:47	09/07/2005 21:40:01	



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TPC-H Timing Intervals (in seconds)

Query	Stream 0	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5	Stream 6	Min Qi	Max Qi	Avg Qi
Q1	363.6	2616.7	2311.7	2741.1	2457.4	2708.8	2836.1	2311.7	2836.1	2612.0
Q2	25.2	97.4	96.2	50.4	61.6	105.4	86.4	50.4	105.4	82.9
Q3	28.0	204.5	90.9	110.6	51.9	136.5	188.2	51.9	204.5	130.4
Q4	16.4	71.9	215.3	264.7	210.3	179.9	132.9	71.9	264.7	179.2
Q5	69.8	229.4	272.8	81.2	474.5	149.3	156.1	81.2	474.5	227.2
Q6	12.6	87.1	42.6	364.1	45.8	54.9	34.0	34.0	364.1	104.8
Q7	94.3	696.8	219.9	308.3	302.7	200.4	184.9	184.9	696.8	318.8
Q8	57.4	173.5	329.4	1533.5	449.4	311.7	322.4	173.5	1533.5	520.0
Q9	282.4	425.3	968.8	208.9	1442.4	1255.7	926.1	208.9	1442.4	871.2
Q10	20.7	207.3	109.1	320.2	224.5	59.2	268.7	59.2	320.2	198.1
Q11	53.7	140.8	179.9	98.5	213.2	125.4	363.4	98.5	363.4	186.8
Q12	100.8	413.4	418.9	193.6	273.2	529.3	484.5	193.6	529.3	385.5
Q13	200.5	717.8	413.9	96.0	429.9	480.5	650.9	96.0	717.8	464.8
Q14	10.3	85.0	326.9	600.6	194.8	66.0	169.8	66.0	600.6	240.5
Q15	18.4	156.4	501.8	71.4	281.7	718.7	581.6	71.4	718.7	385.2
Q16	70.8	586.1	969.5	1209.7	660.9	587.2	515.2	515.2	1209.7	754.8
Q17	80.1	383.3	590.9	3409.0	282.7	155.5	467.4	155.5	3409.0	881.5
Q18	363.3	938.5	1170.4	479.1	1007.0	1186.7	1372.2	479.1	1372.2	1025.7
Q19	107.0	1343.2	1133.7	103.5	850.8	487.2	279.1	103.5	1343.2	699.6
Q20	43.7	263.6	103.0	589.6	92.0	89.4	426.9	89.4	589.6	260.7
Q21	436.7	1588.0	945.3	379.2	1527.2	1587.4	1857.6	379.2	1857.6	1314.1
Q22	54.5	288.0	216.4	29.2	338.9	364.9	522.5	29.2	522.5	293.3
UF1	93.8	38.8	32.4	38.6	38.6	41.6	47.9	32.4	47.9	39.7
UF2	36.5	36.0	33.9	39.5	42.6	43.7	42.1	33.9	43.7	39.7