



Dell PowerEdge R710 using EXASolution 4.0

TPC-H Rev. 2.14.0

Report Date
April 5, 2011

Total System Cost

Composite Query per Hour Metric

Price / Performance

\$ 82,963**377,012.0**
QphH@100GB**\$ 0.22**
\$ / QphH@100GB

Database Size

Database Manager

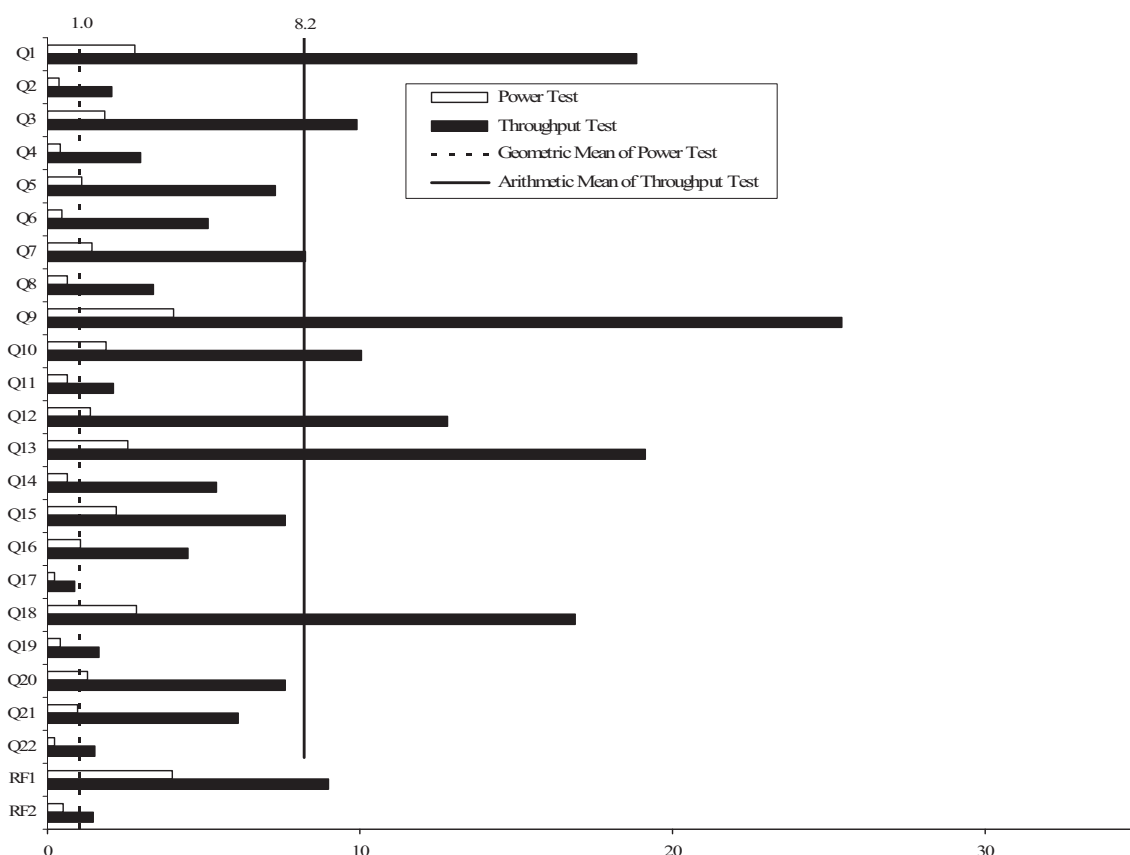
Operating System

Other Software

Availability Date

100 GB**EXASolution 4.0****EXACluster OS 4.0****C++ Compiler****October 1, 2011**

Query Times in seconds



Storage Redundancy Levels:

Database Load Time = 00:27:39

Base Tables

2

Load Includes Backup: N

Auxiliary Data Structures

2

Total Data Storage / Database Size = 22.35

DBMS Temporary Space

1

Memory to Database Size Percentage = 48.0

OS and DBMS Software

1

System Configuration:

2 x Dell PowerEdge R710 Server, each with:

2 Intel Xeon X5690 QC 3.46 GHz processors (each is 1 chip, 6 cores, 12 threads)

24 GB RAM

2x 600 GB (10k rpm) internal SAS disks

Total Storage: 2,235 GB (GB = 1024*1024*1024 bytes)



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Description	Part Number	Pricing	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
R710 with Chassis for up to 8, 2.5-in. Hard Drives	210-31964	1	\$11,618.94	2	\$23,237.88	included
Intel Xeon X5690,3.46GHz,12M,XN,6.4GT/s,6C	213-12953	1	\$0.00	2	\$0.00	
Intel Xeon X5690,3.46GHz,12M,XN,6.4GT/s,6C	374-13955	1	\$0.00	2	\$0.00	
HO Pwr Sply,Redundant,870W UPG	450-12451	1	\$0.00	2	\$0.00	
Rizer with 2 PCIe x8 +2 PCIe x4 Slots	330-10106	1	\$0.00	2	\$0.00	
24GB,6x4G,1333M,2R,RDIMM	370-19192	1	\$0.00	2	\$0.00	
IDRAC6 Enterprise	565-10114	1	\$0.00	2	\$0.00	
PERC H700 INTG RAID CTL 512MB,x8	405-11392	1	\$0.00	2	\$0.00	
HDD, 600GB 10K SAS,6G,2.5,Hot Plug	400-20817	1	\$0.00	4	\$0.00	
DVD+-RW, SATA, INTERNAL	429-14713	1	\$0.00	2	\$0.00	
Broadcom GbE 4P LOM with TOE	541-10013	1	\$0.00	2	\$0.00	
Qlogic Infiniband Adapter QLE7340-CK	690-86219	1	\$0.00	2	\$0.00	
Sliding Ready Rack Rails with Cable Management	770-10763	1	\$0.00	2	\$0.00	
3Yr ProSupport and Next Business Day On-Site Service	710-16539	1	\$0.00	2	\$0.00	
PE 4220 42U Rack with Doors and Side Panels	210-26840	1	\$2,705.21	1	\$2,705.21	
DELL PowerConnect 5524 Switch 24 GbE Ports	210-34478	1	\$1,527.51	1	\$1,527.51	
RPS720 External Red. PSU for PC 5524 Switch	450-16399	1	\$770.87	1	\$770.87	
Dell Discount (30%)		1			-\$8,472.44	
PATCH CABLE CAT5E 5M GREY STP	A2900570	1	\$4.39	4	\$17.56	
Mouse : Dell Optical USB	570-11147	1	\$9.78	1	\$9.78	
Keyboard Dell Standard Quietkey USB	580-14755	1	\$15.53	1	\$15.53	
Qlogic 12300-B518, 18-port Infiniband QDR Switch	A4897759	1	\$7,305.91	1	\$7,305.91	
Qlogic 5.0M Copper 26 AWG QSFP to QSFP Passive	A4897774	1	\$160.33	2	\$320.66	
DELL 17" TFT Display E1709W	855-10385	1	\$141.22	3	\$423.66	
Dell Discount (10%)		1			-\$809.31	
Subtotal					\$27,052.82	\$0.00
Storage						
No external storage required						
Software						
EXASolution 4.0 licence (1GB DB RAM*)	EXA-1G	2	\$1,560.00	32	\$49,920.00	\$5,990.40
EXASOL Support 24x7 (4% per year)	EXA-SUP	2				\$5,990.40
Subtotal					\$49,920.00	\$5,990.40
Total					\$76,972.82	\$5,990.40

3-Year Cost of Ownership **\$82,963**QphH Rating: **377,012.0**\$/QphH@100GB: **\$0.22**

Price Key: 1-Dell: Pricing may be verified by calling 1-800-BUY-DELL
contact: Ronny Lenz, ronny_lenz@ dell.com
and referencing quote # 24898030.2
2-EXASOL, contact: Steffen Weissbarth, sales@exasol.com

* Memory size allocated to EXASolution (see also section 7.2)

All discounts are based on list prices and for similar quantities and configurations.

Results independently audited by: Francois Raab of InfoSizing, Inc. (www.sizing.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 the TPC at pricing@tpc.org. Thank you.



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Numerical Quantities

Measurement Results

Database Scale Factor	100 GB
Total Data Storage / Database Size	22.35
Start of Database Load	07:26:42
End of Database Load	07:54:21
Database Load Time	0h 27m 39s
Query Streams for Throughput Test	9
TPC-H Power	362,922.5
TPC-H Throughput	391,648.4
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	377,012.0
Total System Price Over 3 Years	\$82,963
TPC-H Price/ Performance Metric (\$/QphH@100GB)	\$0.22

Measurement Interval

Measurement Interval in Throughput Test (Ts)	182 seconds
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Duration of Stream Execution

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 0	329075421	2011-03-29	07:57:55	2011-03-29	07:58:29	0:34 min
Stream 1	329075422	2011-03-29	07:58:29	2011-03-29	08:01:26	2:57 min
Stream 2	329075423	2011-03-29	07:58:29	2011-03-29	08:01:29	3:00 min
Stream 3	329075424	2011-03-29	07:58:29	2011-03-29	08:01:29	3:00 min
Stream 4	329075425	2011-03-29	07:58:29	2011-03-29	08:01:28	2:59 min
Stream 5	329075426	2011-03-29	07:58:29	2011-03-29	08:01:29	3:00 min
Stream 6	329075427	2011-03-29	07:58:29	2011-03-29	08:01:29	3:00 min
Stream 7	329075428	2011-03-29	07:58:29	2011-03-29	08:01:26	2:57 min
Stream 8	329075429	2011-03-29	07:58:29	2011-03-29	08:01:28	2:59 min
Stream 9	329075430	2011-03-29	07:58:29	2011-03-29	08:01:30	3:01 min
Refresh		2011-03-29	07:58:29	2011-03-29	08:00:05	1:36min



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TPC-H Timing Intervals (in seconds)

Query	Power	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5	Stream 6	Stream 7	Stream 8	Stream 9	Min Q _i	Avg Q _i	Max Q _i
1	2.8	17.7	18.5	19.1	17.8	18.2	19.3	18.2	22.4	18.7	17.7	18.9	22.4
2	0.3	1.6	2.3	1.9	2.2	2.2	1.9	1.9	1.8	3.1	1.6	2.1	3.1
3	1.8	11.7	9.0	8.1	8.8	10.6	12.0	10.0	9.3	9.7	8.1	9.9	12.0
4	0.4	2.5	2.4	3.0	2.7	5.3	3.0	2.9	2.8	2.3	2.3	3.0	5.3
5	1.1	7.6	7.6	8.1	7.8	6.8	7.4	6.7	7.3	6.3	6.3	7.3	8.1
6	0.5	4.5	5.1	8.0	4.6	4.7	4.8	5.0	4.5	4.8	4.5	5.1	8.0
7	1.4	8.0	8.7	8.9	7.7	8.2	9.1	7.5	8.8	7.4	7.4	8.3	9.1
8	0.6	3.1	3.4	3.9	2.9	2.8	3.8	3.1	3.4	3.9	2.8	3.4	3.9
9	4.0	25.0	25.8	25.5	25.0	25.1	26.7	24.8	24.5	26.4	24.5	25.4	26.7
10	1.9	8.9	9.8	10.3	10.5	9.8	11.1	9.9	9.5	10.5	8.9	10.0	11.1
11	0.6	2.3	1.9	2.0	2.3	2.2	2.0	2.2	1.7	2.4	1.7	2.1	2.4
12	1.4	13.2	13.1	12.2	13.7	13.0	11.7	12.1	13.1	13.3	11.7	12.8	13.7
13	2.6	19.0	19.0	18.8	18.7	18.8	19.3	18.8	18.5	21.2	18.5	19.1	21.2
14	0.7	4.9	5.5	5.1	7.9	5.1	4.6	5.3	5.4	4.9	4.6	5.4	7.9
15	2.2	8.2	7.3	7.2	7.3	8.1	7.4	7.3	7.8	8.0	7.2	7.6	8.2
16	1.1	4.7	7.3	4.4	4.5	4.5	4.4	4.5	4.1	2.1	2.1	4.5	7.3
17	0.2	0.8	1.1	0.9	0.8	0.8	0.7	0.8	0.7	1.1	0.7	0.9	1.1
18	2.8	15.9	15.9	16.5	17.5	17.0	17.1	19.3	15.8	17.1	15.8	16.9	19.3
19	0.4	1.5	1.6	1.5	1.7	1.6	1.3	1.8	2.1	1.7	1.3	1.7	2.1
20	1.3	7.8	7.7	7.4	7.0	7.4	7.2	7.6	8.0	8.5	7.0	7.6	8.5
21	0.9	6.8	5.5	6.2	6.5	6.7	4.5	6.4	6.1	6.3	4.5	6.1	6.8
22	0.2	1.5	1.8	1.5	1.5	1.5	1.3	1.6	1.4	1.4	1.3	1.5	1.8
RF1	4.0	6.2	8.1	8.8	8.8	8.9	11.3	9.6	9.3	10.1	6.2	9.0	11.3
RF2	0.5	1.2	3.6	1.5	1.3	1.4	1.1	1.4	1.7	1.8	1.1	1.7	3.6