



PARACCEL

Sun Fire™ X4100 Server with ParAccel Analytic Database™

TPC-H Rev. 2.6.0

Report Date: Oct. 29, 2007

Revision Date: Nov. 8, 2007

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$1,442,050.52

315,842.9
QphH@1000GB

\$4.57
per QphH@1000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

1000GB

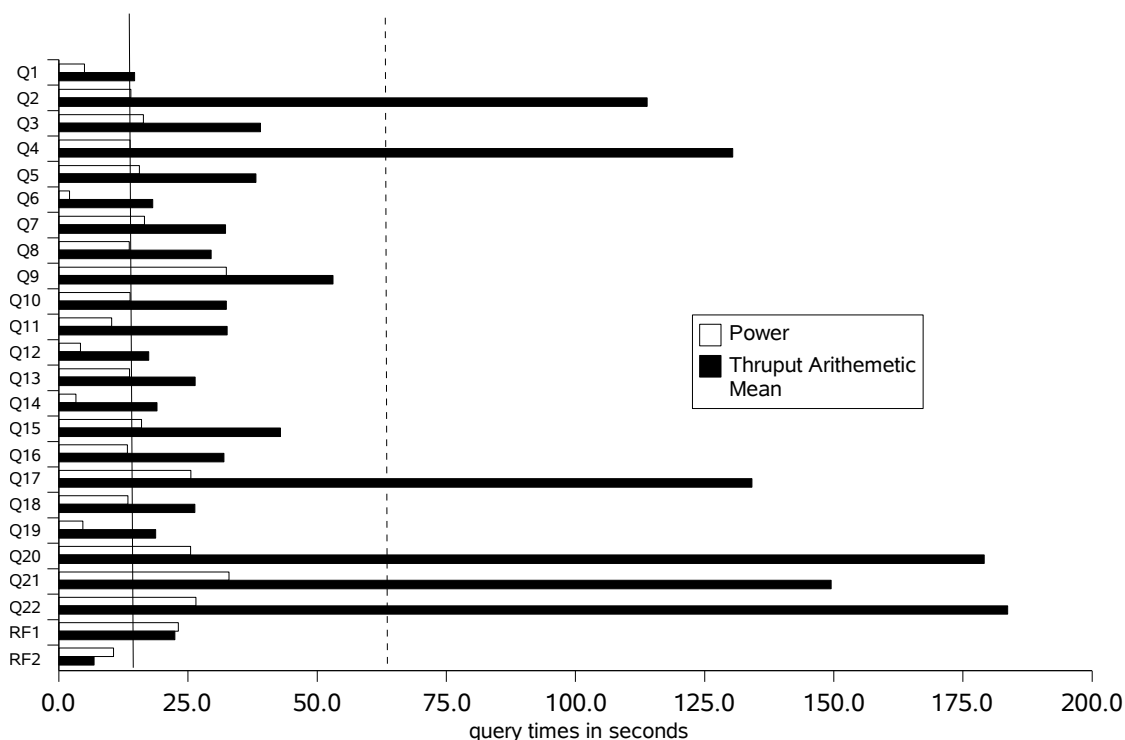
**ParAccel Analytic
Database™**

**Linux Red Hat
RHEL 4.4
Enterprise Server**

October 29, 2007

geometric mean = 12.4

arithmetic mean = 62



Database Load Time = 0Hrs41Min44Sec

Load Includes Backup: N

Total Storage/Database Size=13.05

RAID (Base tables): Y

RAID (Base tables and auxiliary data structures): Y

RAID (All): Y

System Configuration:

48 x SunFire X4100 Server, each server with
2 AMD Opteron 2.8GHz processors (each processor is 1 chip, 2 cores, 2 threads)
16 GB memory
2 x 146 GB (10K RPM) internal SAS disks

Total Storage: 13,053 GB

(in this calculation 1 GB is defined as 1024 * 1024 * 1024) bytes



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Description	Part Number	Source	Unit Price	Qty	Ext. Price	3 Yr. maint
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Server Hardware

SunFire X4100 M2 x64 Server

2 X AMD Opteron Model 2220 (2.8GHz) processor

4 X 2GB DDR2-667 Memory

2 X 146 GB HDD

A86-FPZ2BH8GKBA

2

6,590.00

48

316,320.00

4 GB Memory Kit DDR2-667 DIMMS (2 X 2GB) for SunFire X4100 M2

4226A-Z

2

750.00

96

72,000.00

Server Discount (14%)

2

-54,364.80

SunFire X4100 M2 Server upgrade to 3 years.

24x7 hardware only support with 4 hour response

W9D-A87-24-3H

2

792.00

48

38,016.00

Support Discount (10%)

2

-3,801.60

Cisco Catalyst 3750-24TS 24-port switch

WS-C3750-24TS-E

2

5,990.00

4

23,960.00

3750 Discount

2

-2,239.47

4

-8957.88

Cisco Catalyst 3750-24TS 24-port switch 1 year premium service

CON-OSP-375024TE

2

1,006.00

12

12,072.00

3750 Support Discount

2

-111.78

12

-1341.36

Ethernet 100Base-TX cable

A3L791-05-GRN

2

5.99

96

575.04

Cable discount

2

-1.13

96

-108.48

APC Smart-UPS 3000VA USB

592679

3

1,182.99

10

11,829.90

1 Year PC/Peripheral Extended Service \$701-\$1200

54439

3

53.99

30

1619.7

Server Hardware Subtotal

361,253.78

46,564.74

External Storage

None

Server Software

ParAccel Analytic Database, per GB data

PAR-ADB

1

1,000.00

1000

1,000,000.00

ParAccel Support \$10 per Gb data per year

PAR-SUP-B

1

10.00

1000

30,000.00

ParAccel Discount 10%

1

-100,000.00

-3,000.00

RHEL 4.4 24x7 Support per node 3 years (up to 2 sockets)

2

3,702.00

48

177,696.00

RHEL Discount

2

-1,468.00

48

-70,464.00

Server Software Subtotal

900,000.00

134,232.00

Total

1,261,253.78

180,796.74

3 Yr. Cost

1,442,050.52

QphH @1000GB

315,842.9

\$/QphH @1000GB

\$4.57

Service for Sun products from Sun Microsystems, Inc.

Service for ParAccel products is from ParAccel, Inc.

Service for RHEL is from Red Hat Inc.

Service for APC Smart-UPS is from cdw.com

Sources

1. ParAccel, Inc.

2. Continental Resources, Inc.

3. cdw.com

Audited by: Francois Raab, 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 standard components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchase 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	= 1000GB
Total Data Storage / Database Size	= 13.05
Start of database load time	= 15:57:46
End of database load time	= 16:39:30
Database Load Time	= 0Hrs41Min44Sec
Query Streams for Throughput Test	= 7
TPC-H Power	= 289,877.5
TPC-H Throughput	= 344,134.1
TPC-H Composite Query-per-Hour Rating (QphH@1000GB)	= 315,842.9
Total System Price Over 3 Years	= \$1,442,050.52
TPC-H Price/Performance Metric (\$/QphH@1000GB)	= \$4.57

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 1601 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 0	1026163930	2007-10-26	17:11:13	2007-10-26	17:17:19	6mins:06secs
Stream 1	1026163931	2007-10-26	17:17:20	2007-10-26	17:39:53	22mins:33secs
Stream 2	1026163932	2007-10-26	17:17:20	2007-10-26	17:40:44	23mins:24secs
Stream 3	1026163933	2007-10-26	17:17:20	2007-10-26	17:39:37	22mins:17secs
Stream 4	1026163934	2007-10-26	17:17:20	2007-10-26	17:39:19	21mins:59secs
Stream 5	1026163935	2007-10-26	17:17:20	2007-10-26	17:40:38	23mins:18secs
Stream 6	1026163936	2007-10-26	17:17:20	2007-10-26	17:39:24	22mins:04secs
Stream 7	1026163937	2007-10-26	17:17:20	2007-10-26	17:40:46	23mins:26secs
Refresh		2007-10-26	17:40:46	2007-10-26	17:44:11	3mins:25secs



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	4.9	14.0	16.4	13.8	15.6	2.1	16.6	13.6	32.4	13.8	10.2	4.2
Stream 01	15.5	104.3	23.6	129.1	33.0	1.8	39.8	19.6	64.8	27.3	35.5	41.9
Stream 02	9.6	93.6	43.5	120.5	38.3	2.4	33.1	29.3	66.9	25.5	31.1	13.1
Stream 03	10.8	113.0	38.5	125.2	43.4	40.7	24.6	41.4	57.1	38.3	24.7	6.5
Stream 04	9.1	128.9	41.8	101.9	51.0	7.6	26.8	21.5	43.5	29.9	50.2	23.9
Stream 05	24.4	111.3	32.0	144.9	32.8	29.7	30.8	30.0	46.4	37.2	48.3	17.5
Stream 06	23.0	135.6	54.6	134.6	45.3	20.6	35.9	26.3	57.6	16.6	16.4	14.3
Stream 07	10.1	110.5	39.0	156.5	23.4	24.5	34.7	38.1	35.0	52.3	21.9	4.8
Minimum	4.9	14.0	16.4	13.8	15.6	1.8	16.6	13.6	32.4	13.8	10.2	4.2
Average	13.4	101.4	36.2	115.8	35.3	16.2	30.3	27.5	50.5	30.1	29.8	15.8
Maximum	24.4	135.6	54.6	156.5	51.0	40.7	39.8	41.4	66.9	52.3	50.2	41.9

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	13.7	3.3	16.0	13.3	25.5	13.4	4.7	25.5	32.9	26.6	23.1	10.6
Stream 01	22.9	16.0	41.7	36.6	113.3	42.8	26.2	178.1	172.7	167.3	21.2	6.1
Stream 02	26.7	26.2	31.3	51.0	175.4	22.7	35.6	191.6	96.0	240.4	22.5	5.8
Stream 03	23.1	14.6	46.1	40.1	137.2	32.4	11.4	155.1	164.2	148.0	23.0	7.0
Stream 04	24.7	44.1	40.6	20.0	132.9	25.5	16.1	165.2	149.2	165.1	22.1	8.0
Stream 05	31.2	7.9	40.0	21.9	131.9	12.2	18.7	169.9	175.8	203.0	22.5	6.0
Stream 06	29.8	20.3	43.1	30.8	128.2	21.8	9.8	154.5	139.8	165.7	23.3	8.3
Stream 07	26.2	3.9	57.3	23.2	120.2	26.8	13.3	239.5	148.8	196.2	22.5	6.6
Minimum	13.7	3.3	16.0	13.3	25.5	12.2	4.7	25.5	32.9	26.6	21.2	5.8
Average	24.8	17.0	39.5	29.6	120.6	24.7	17.0	159.9	134.9	164.0	22.5	7.3
Maximum	31.2	44.1	57.3	51.0	175.4	42.8	35.6	239.5	175.8	240.4	23.3	10.6