

## Sun Fire™ X4540 with Sybase IQ 15 Single Application Server

TPC-H Rev. 2.8

Report Date: March 4, 2009

Total System Cost

Composite Query per Hour Metric

Price/Performance

**\$60,118.67**

**11,435**  
QphH@3000GB

**\$5.26**  
per QphH@3000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

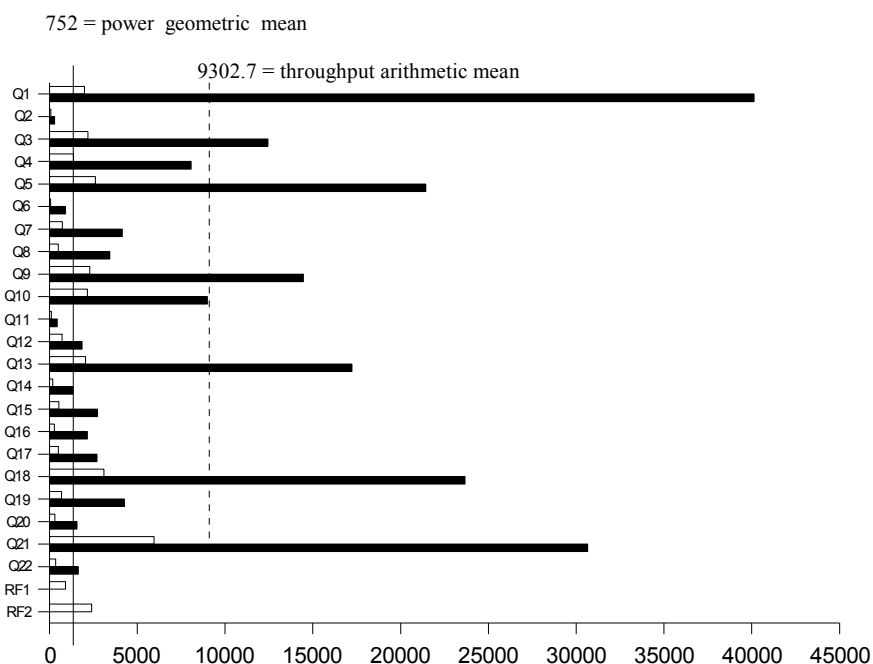
**3000GB**

**Sybase IQ 15 Single  
Application Server**

**Solaris 10**

**Solaris Volume  
Manager**

**April 9, 2009**



Database Load Time = 19 Hrs 33 min

Load Includes Backup: N

Total Storage/Database Size= 4

RAID (Base tables): RAID 1

RAID (Base tables and auxiliary data structures): RAID 1

RAID (All): N

### System Configuration:

SunFire X4540 each with  
2 Opteron 2.3 GHz Quad Core processors  
64 GB memory  
48 x 250GB internal disks (7.2K RPM)

**Total Storage:** 11176 GB

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



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| Description | Part Number | Source | Unit Price | Qty | Ext. Price | 3 Yr. maint. |
|-------------|-------------|--------|------------|-----|------------|--------------|
|-------------|-------------|--------|------------|-----|------------|--------------|

**Server Hardware**

|                                                             |              |   |           |   |           |          |
|-------------------------------------------------------------|--------------|---|-----------|---|-----------|----------|
| SunFire X4540, 2x2.3GHz CPUs, 64GB memory, 48 x 250GB disks | B24-FSZ2-32F | 1 | 21,995.00 | 1 | 21,995.00 |          |
| 8 GB memory kit DDR2 – 667                                  | X5035        | 1 | 1,180.00  | 8 | 9,440.00  |          |
| 3 Year Gold Warranty Upgrade – X4540 Server                 | IWU-B24-36   | 1 | 7069.91   | 1 |           | 7,069.91 |
| Sun Server and Support Discount                             |              |   |           |   | -11127.04 |          |
| Server Hardware and Support Subtotal                        |              |   |           |   | 20,307.96 | 7,069.91 |

**External Storage**

None

**Server Software**

|                                           |       |   |          |   |           |           |
|-------------------------------------------|-------|---|----------|---|-----------|-----------|
| Sybase IQ Single App Svr – per cpu core   | 12193 | 2 | 2,595.00 | 8 | 20,760.00 |           |
| Sybase IQ 3 Years Extended Support 24 x 7 | 98477 | 2 | 1,713    | 8 |           | 13,704.00 |
| Sybase discount                           |       |   |          |   | 1,038.00  | 685.00    |
| Server Software Subtotal                  |       |   |          |   | 19,722.00 | 13,018.80 |

|                       |           |           |
|-----------------------|-----------|-----------|
| <b>Total</b>          | 40,029.96 | 20,088.71 |
| <b>3 Yr. Cost</b>     | 60,118.67 |           |
| <b>QphH@ 100GB</b>    | 11,435.0  |           |
| <b>\$/QphH@ 100GB</b> | 5.26      |           |

Service for Sun products is from Sun Microsystems, Inc.

Service for Sybase products is from Sybase Inc.

**Notes (Source):**

1. Sun Microsystems Inc.

2. Sybase Inc.

PriceQuotes provided in Appendix G

**Audited by:** Brad Askins, 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](mailto:pricing@tpc.org). Thank you.



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## Numerical Quantities

### Measurement Results:

|                                                     |                       |
|-----------------------------------------------------|-----------------------|
| Database Scale Factor                               | = 3000GB              |
| Total Data Storage / Database Size                  | = 4                   |
| Start of database load time                         | = 02-17-2009 18:26:11 |
| End of database load time                           | = 02-18-2009 13:58:40 |
| Database Load Time                                  | = 19 Hrs 33 Mins      |
| Query Streams for Throughput Test                   | = 8                   |
| TPC-H Power                                         | = 14,362.5            |
| TPC-H Throughput                                    | = 9,104.2             |
| TPC-H Composite Query-per-Hour Rating (QphH@3000GB) | = 11,435.0            |
| Total System Price Over 3 Years (\$US)              | = 60,118.67           |
| TPC-H Price/Performance Metric (\$/QphH@3000GB)     | = 5.26                |

### Measurement Intervals:

|                                              |                   |
|----------------------------------------------|-------------------|
| Measurement Interval in Throughput Test (Ts) | = 208,783 seconds |
|----------------------------------------------|-------------------|

### Duration of Stream Execution:

| Seed      | Start Date | Start Time | End Date  | End Time | Duration  |
|-----------|------------|------------|-----------|----------|-----------|
| 218135840 | 21-Feb-09  | 9:08:58    | 21-Feb-09 | 18:05:26 | 0:8:16:18 |
| 218135841 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 3:41:19  | 2:9:35:43 |
| 218135842 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 3:25:51  | 2:9:20:15 |
| 218135843 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 1:25:41  | 2:7:20:5  |
| 218135844 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 4:03:17  | 2:9:57:41 |
| 218135845 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 3:14:39  | 2:9:9:3   |
| 218135846 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 4:05:19  | 2:9:59:43 |
| 218135847 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 2:25:49  | 2:8:20:13 |
| 218135848 | 21-Feb-09  | 18:05:36   | 24-Feb-09 | 1:19:46  | 2:7:14:10 |
| Refresh   | 21-Feb-09  | 18:05:36   | 22-Feb-09 | 23:00:30 | 1:4:54:54 |



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**TPC-H Timing Intervals (in seconds)**

|           | Q1      | Q2    | Q3      | Q4      | Q5      | Q6      | Q7     | Q8     | Q9      | Q10     | Q11   | Q12    |
|-----------|---------|-------|---------|---------|---------|---------|--------|--------|---------|---------|-------|--------|
| Stream 00 | 1993.3  | 83.9  | 2190.7  | 1367.4  | 2620    | 63.1    | 740.7  | 513.4  | 2297.4  | 2157.1  | 105.5 | 719.6  |
| Stream 01 | 43189.5 | 143.8 | 13517.7 | 4278    | 20359.1 | 381.2   | 5344.2 | 2663.6 | 16917.5 | 6053.2  | 472   | 1846.3 |
| Stream 02 | 40735.8 | 252.5 | 8416.3  | 7968.8  | 19146   | 1909.1  | 3667.4 | 6727.6 | 14990.8 | 7545.3  | 365.2 | 1861.9 |
| Stream 03 | 36616   | 158.6 | 17189.3 | 10734.3 | 26994.2 | 1861.9  | 3691.5 | 5718.4 | 9606.8  | 5872.7  | 475.2 | 3053.1 |
| Stream 04 | 34500.2 | 173.7 | 9791.9  | 7702.7  | 28872.7 | 1345.3  | 3866.5 | 2048.4 | 16817.5 | 7501.8  | 456.6 | 1415.6 |
| Stream 05 | 39950.2 | 218.3 | 16186.6 | 7967.5  | 18725.8 | 447.1   | 4598.6 | 2841.3 | 7458    | 10206.9 | 411.8 | 1509.4 |
| Stream 06 | 38224.9 | 971.5 | 14279.8 | 8526    | 17918.6 | 579.1   | 4557.5 | 2196.8 | 20831   | 16834.4 | 474.5 | 1512.9 |
| Stream 07 | 40186.2 | 261.3 | 8489.7  | 9356    | 20199.3 | 347.3   | 4574.5 | 3131.3 | 9872.6  | 9881.9  | 308.8 | 1365.2 |
| Stream 08 | 47663.9 | 144.1 | 11712.3 | 8086.1  | 19239.2 | 453.1   | 2981.3 | 2226   | 19189.3 | 8075.8  | 563.7 | 2337.6 |
| Minimum   | 34500.2 | 83.9  | 2190.7  | 1367.4  | 2620.0  | 63.1    | 740.7  | 513.4  | 2297.4  | 2157.1  | 105.5 | 719.6  |
| Average   | 35895.6 | 267.5 | 11308.2 | 7331.8  | 19341.6 | 820.8   | 3780.2 | 3118.5 | 13108.9 | 8236.6  | 403.7 | 1735.7 |
| Maximum   | 43189.5 | 971.5 | 17189.3 | 10734.3 | 28872.7 | 1909.10 | 5344.2 | 6727.6 | 20831.0 | 16834.4 | 563.7 | 3053.1 |



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|           | Q13     | Q14    | Q15    | Q16    | Q17    | Q18     | Q19    | Q20    | Q21     | Q22    | RF1    | RF2    |
|-----------|---------|--------|--------|--------|--------|---------|--------|--------|---------|--------|--------|--------|
| Stream 00 | 2059.2  | 182.8  | 531.4  | 283    | 500.9  | 3104.6  | 696    | 310.9  | 5969.2  | 357.4  | 921.3  | 2407.9 |
| Stream 01 | 16811.7 | 1491.8 | 2424.6 | 1334   | 2735   | 19717.3 | 3302.5 | 2343.8 | 40747.6 | 1204.1 | 2449.1 | 6287.8 |
| Stream 02 | 19412.3 | 2585.1 | 3077.3 | 4224.5 | 3100   | 22711.1 | 4745.3 | 845.6  | 30999.7 | 919.7  | 1872   | 5138.1 |
| Stream 03 | 16034.6 | 985.5  | 2769   | 1970.3 | 3167   | 22703   | 3774.8 | 920.2  | 22917.5 | 1957.7 | 1621.6 | 4511.6 |
| Stream 04 | 19277.8 | 1089.9 | 2641   | 1516.8 | 5476.1 | 21347.4 | 4491.2 | 2456.3 | 34377.6 | 1494.2 | 1604.9 | 3711.8 |
| Stream 05 | 18708.6 | 857.2  | 3422   | 1517.9 | 988.9  | 19595.7 | 4303.7 | 1049.7 | 43171   | 1526.7 | 1532.4 | 3366.6 |
| Stream 06 | 21211.8 | 1602.8 | 3234.3 | 3188.7 | 3663.7 | 22875.8 | 2113.3 | 1304.1 | 20689.9 | 1897.7 | 1428.8 | 4341.8 |
| Stream 07 | 13281.7 | 1090.9 | 2203.8 | 1981.8 | 923.3  | 33949.4 | 6364.1 | 1153.3 | 31264.2 | 2597.9 | 1405.4 | 4120.5 |
| Stream 08 | 13136.2 | 1059.4 | 2194   | 1541   | 1584.9 | 26441.1 | 5083.8 | 2463.1 | 21054.6 | 1595.3 | 1536.7 | 4467   |
| Minimum   | 13136.2 | 857.2  | 2194   | 1334   | 923.3  | 19595.7 | 2113.3 | 845.6  | 20689.9 | 919.7  | 1405.4 | 3366.6 |
| Average   | 17234.3 | 1345.3 | 2745.7 | 2159.3 | 2704.8 | 23667.6 | 4272.3 | 1567.0 | 30652.7 | 1649.1 | 1681.3 | 4493.2 |
| Maximum   | 21211.8 | 2585.1 | 3422   | 4224.5 | 5476.1 | 33949.4 | 6364.1 | 2463.1 | 43171   | 2597.9 | 2449.1 | 6287.8 |