

**Sun Fire™ V490 Server
with Sybase IQ Multiplex 12.6**

TPC-H Rev. 2.3.0

Report Date: Jan 5, 2006

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$136,120.70

4367.5
QphH@1000GB

\$31.17
per QphH@1000GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

1000GB

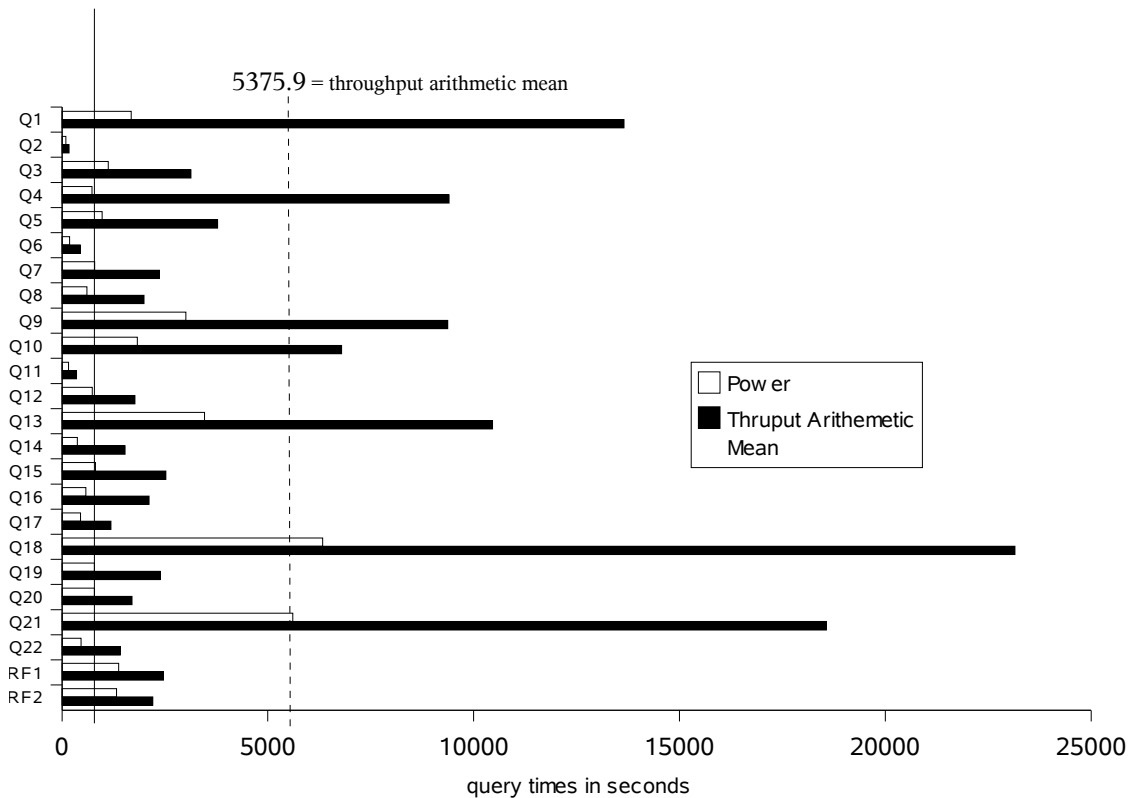
**Sybase IQ 12.6
Single Application
Server**

Solaris 10

**Solaris Volume
Manager**

Jan 5, 2006

870.6 = power geometric mean



Database Load Time = 17hrs 31mins Load Includes Backup: N Total Storage/Database Size=2.72

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

System Configuration:

- SunFire V490 Server with
- 4 UltraSPARC IV 1500 MHz processors (each processor is 1 chip, 2 cores, 2 threads)
- 32 GB memory
- 2 x 146GB (10K RPM) internal disks
- 3 x SE3310 SCSI JBOD disk array, each with 12 x 73GB (10K RPM) disks

Total Storage: 2719 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 V490 4x1.5GHz CPUs, 32G memory, 2x146GB disk drives	A52-CLH4C232GTB		1 80,995.00	1	80,995.00	
3 Year Gold Warranty Upgrade – V880 Server (includes HBAs and Internal disks)	W9D-A52PLS-3G		1 10,332.00	1		10,332.00
Sun Discount			1		-16,199.00	-3,616.20
<i>Server Hardware Subtotal</i>					64,796.00	6,715.80
Storage						
SE3310 JBOD Disk Array(12X73GB 10,000 RPM disks)	XTA3310R01A0R876		2 10,995.00	3	32,985.00	
3 Year Gold Warranty Upgrade – SE3310 (includes all disks)	W9D-SE3310-3G		2 4,356.00	3		13,068.00
SCSI cable	X1138A		1 95.00	6	570.00	
Ultra320 SCSI HBA	XG-XPCI2SCSILM320		1 510.00	3	1,530.00	
Sun Discount			1		-10,525.50	-4,573.80
<i>Storage Subtotal</i>					24,559.50	8,494.20
Server Software						
Sybase IQ-M Single App Svr, per cpu core	12841		3 2,595.00	8	20,760.00	
Sybase IQ 3 Years Extended Support 24 x 7	98480		3 1,557.00	8		12,456.00
Sybase Discount			3		-1,660.80	
<i>Server Software Subtotal</i>					19,099.20	12,456.00
Total					108,454.70	27,666.00
3 Yr. Cost					136,120.70	
QphH@ 1000GB					4,367.50	
\$/QphH@ 100GB					\$31.17	

Service for all Sun products is from Sun Microsystems, Inc.

Service for Sybase products is from Sybase Inc.

Notes (Source):

1. Sun Microsystems Inc.
2. Continental Resources Inc
3. 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. Thank you.



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Numerical Quantities

Measurement Results:

Database Scale Factor	= 1000GB
Total Data Storage / Database Size	=2.72
Start of database load time	= 2005-11-02 09:56:55
End of database load time	= 2005-11-03 03:27:30
Database Load Time	= 17hrs 31mins
Query Streams for Throughput Test	= 7
TPC-H Power	= 4135.2
TPC-H Throughput	= 4612.9
TPC-H Composite Query-per-Hour Rating (QphH@1000GB)	= 4367.5
Total System Price Over 3 Years	= \$136,120.70
TPC-H Price/Performance Metric (\$/QphH@1000GB)	= \$31.17

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 120,184 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 0	1103032730	2005-11-04	22:09:18	2005-11-05	07:40:26	9hrs:31mins:8secs
Stream 1	1103032731	2005-11-05	07:40:38	2005-11-06	16:39:16	1day:8hrs:58mins:38secs
Stream 2	1103032732	2005-11-05	07:40:38	2005-11-06	17:03:42	1day:9hrs:23mins:4secs
Stream 3	1103032733	2005-11-05	07:40:38	2005-11-06	15:34:05	1day:7hrs:53mins:27secs
Stream 4	1103032734	2005-11-05	07:40:38	2005-11-06	16:40:20	1day:8hrs:59mins:42secs
Stream 0	1103032735	2005-11-05	07:40:38	2005-11-06	16:51:13	1day:9hrs:10mins:35secs
Stream 6	1103032736	2005-11-05	07:40:38	2005-11-06	16:42:10	1day:9hrs:1min:32secs
Stream 7	1103032737	2005-11-05	07:40:38	2005-11-06	16:12:06	1day:8hrs:31mins:28secs



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	1679.5	95.4	1123.2	730.9	975.2	182.6	793.7	605.7	3008.7	1825.7	159.1	736.9
Stream 01	20059.3	200.7	2186.3	7788.5	2651.4	291.7	1715.8	896.6	8505.7	6042.9	414.5	1655.6
Stream 02	11732.1	188.3	4076.1	10697.2	3957.4	768.4	3247.6	2361.2	5878	5984.5	434.9	1813.2
Stream 03	13011.3	127	4436.9	10168.8	4367.6	313.2	1339.1	3996.4	8030.9	4793.5	297	1435.8
Stream 04	13929	195.5	1410.3	7438.4	6400.9	414.9	2913.7	1941.4	9045	4935.5	400.9	1834.6
Stream 05	12693.8	164.7	3439.3	13528.1	2507.5	378.3	2542.7	1533.8	7145.7	7713.3	305.2	1768.5
Stream 06	16660	156.5	3845	6541.7	3804.1	226.6	2246.3	1212.1	15420.9	10962.6	297.9	2740.6
Stream 07	7494.3	139.9	2525.5	9661.2	2750.8	695.8	2565.8	2015.3	11576.2	7130.6	305.1	1161.7
Minimum	7494.3	127.0	1410.3	6541.7	2507.5	226.6	1339.1	896.6	5878.0	4793.5	297.0	1161.7
Average	13654.3	167.5	3131.3	9403.4	3777.1	441.3	2367.3	1993.8	9371.8	6794.7	350.8	1772.9
Maximum	20059.3	200.7	4436.9	13528.1	6400.9	768.4	3247.6	3996.4	15420.9	10962.6	434.9	2740.6

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	3462.4	369.7	812.4	575.3	450.8	6333.2	783.8	787.6	5609.8	459.3	1377.3	1323.8
Stream 01	8761.7	1237	2310.4	1757.4	1192.4	22945.6	2261	2114.3	22073.2	1654	3534.8	2404.9
Stream 02	8329.9	2381.6	2454	2629.5	2389.3	30184.3	3354.7	1425.1	13808.4	2085.3	2306.7	2356.4
Stream 03	12433.1	1396.8	3899.1	2780.2	831.3	19441.3	2021.7	980.8	16743.3	1956.9	2195.5	2095
Stream 04	14276.1	2103.1	3378.4	1716.8	1149.3	20769.9	3262.8	606.9	19627.4	1029.2	2078.6	2149.4
Stream 05	11505.9	761.6	1737.1	1864.8	927.8	22258.8	1735.5	2003.5	22076.2	841.7	2720.6	1971.4
Stream 06	7187.9	847.2	1590.2	2062.3	1075.2	19281.6	1720.6	1705	18146.6	1157.6	2199.1	2074.1
Stream 07	10725.3	2016.6	2296.2	1998.6	738.3	27170.3	2358.6	3050.2	17524.2	1185.2	2216.3	2383.3
Minimum	7187.9	761.6	1590.2	1716.8	738.3	19281.6	1720.6	606.9	13808.4	841.7	2078.6	1971.4
Average	10460.0	1534.8	2523.6	2115.7	1186.2	23150.3	2387.8	1698.0	18571.3	1415.7	2464.5	2204.9
Maximum	14276.1	2381.6	3899.1	2780.2	2389.3	30184.3	3354.7	3050.2	22076.2	2085.3	3534.8	2404.9