



Sun Fire™ X4200 Server with Sybase IQ 12.6 Single Application Server

TPC-H Rev. 2.3.0

Report Date: Jun 23, 2006

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$31033.45

4936.3
QphH@300GB

\$6.29
per QphH@300GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

300GB

**Sybase IQ 12.6
Single Application
Server**

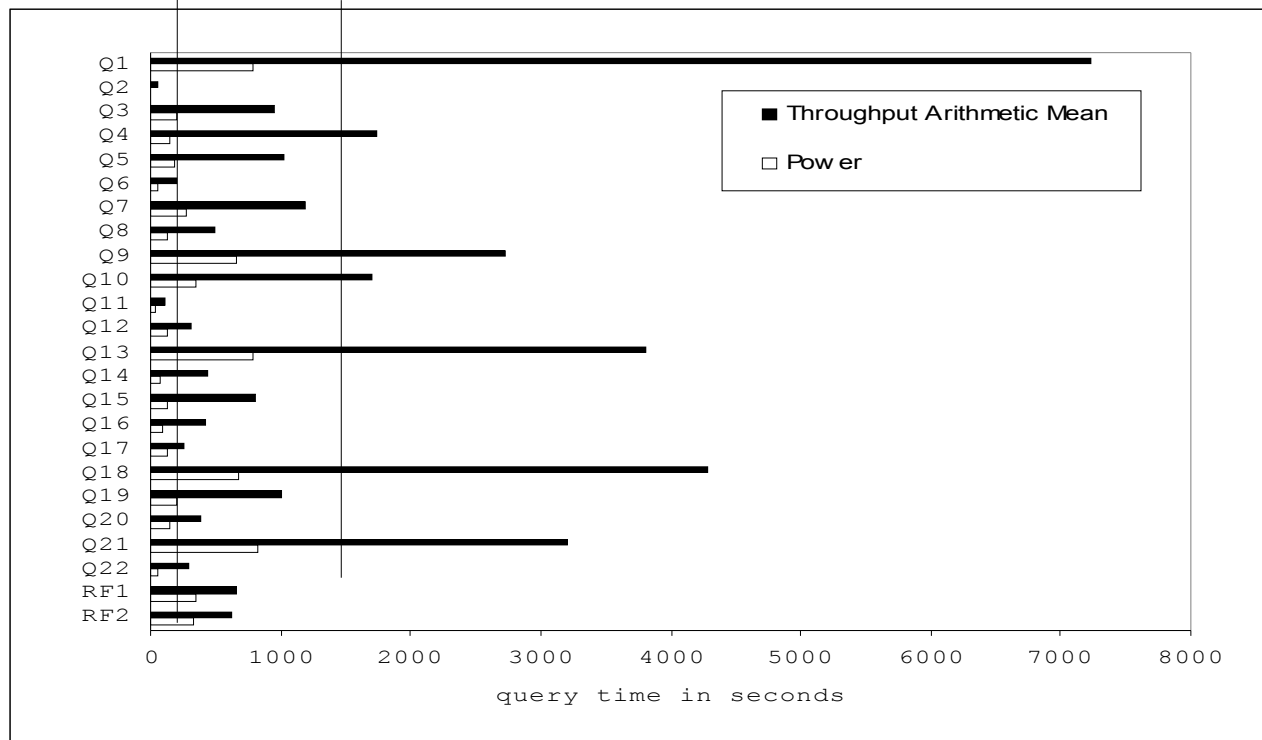
Solaris 10

**Solaris Volume
Manager**

Jun 23, 2006

182.2 = power geometric mean

1486.2 = throughput arithmetic mean



Database Load Time = 05:02:23

Load Includes Backup: N

Total Storage/Database Size=2.95

RAID (Base tables): RAID 1

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

RAID (All): N

System Configuration:

SunFire X4200 Server with

2 AMD Opteron 3.0GHz processors (each processor is 1 chip, 1 core, 1 thread)

16 GB memory

1 x 73 GB (10K RPM) internal SAS disks

1 x SE3320 JBOD SCSI array (12 x 73GB 15Krpm disks)

Total Storage: 884 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.
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Server Hardware

SunFire X4200 X64 Server: XATO base chassis	A65-ZV	1	1,895.00	1	1,895.00	
73GB 10K RPM 2.5" SAS hard disk drive	RA-SS2CD-73G10KZ	1	445.00	1	445.00	
AMD Opteron 256 (3.0GHz/1MB) processor	8035A-Z	1	995.00	2	1,990.00	
4GB Memory kit DDR1-400	8023A-Z	1	1,090.00	4	4,360.00	
SunFire X4200 Server upgrade to 3 year Gold support	W9D-A65-3G	1	2,916.00	1		2,916.00
Sun Discount		1			-608.30	-1,020.60
Subtotal					8,081.70	1,895.40

External Storage

Sun StorEdge 3320 JBOD Chassis, no drives	TA3320ROONOODISK	1	2,297.00	1	2,297.00	
Sun StorEdge 3000 AC Power Kit	TA-3000-2UAC-KIT	1	900.00	1	900.00	
73GB 15K RPM, U320 SCSI LVD disk	TB-SC1NC-73G15K	1	945.00	12	11,340.00	
PCI Single Channel, Ultra320 SCSI HBA	SGXPCI1SCSILM320-Z	1	340.00	2	680.00	
SCSI VHDCI/VHDCI cable	1138A-Z	1	95.00	2	190.00	
Sun StorEdge 3320 JBOD array upgrade to 3 year Gold support	W9D-SE3320-3G	1	4,212.00	1		4,212.00
Sun Discount		1			-5,392.45	-1,474.20
Subtotal					10,014.55	2,737.80

Server Software

Sybase IQ-M Single App Svr, per cpu core	12841	2	2,595.00	2	5,190.00	
Sybase IQ 3 Years Extended Support 24 x 7	98480	2	1,557.00	2		3,114.00
Sybase Discount		2			0.00	
Subtotal					5,190.00	3,114.00

Total	23,286.25	7,747.20
3 Yr. Cost	31,033.45	
QpH@ 1000GB	4,936.30	
\$/QpH@ 100GB	\$6.29	

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. 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	= 300GB
Total Data Storage / Database Size	=2.95
Start of database load time	= 2006-06-14 17:24:34
End of database load time	= 2006-06-14 22:26:57
Database Load Time	= 05:02:23
Query Streams for Throughput Test	= 6
TPC-H Power	= 5928.2
TPC-H Throughput	= 4110.4
TPC-H Composite Query-per-Hour Rating (QphH@300GB)	= 4936.3
Total System Price Over 3 Years	= \$31033.45
TPC-H Price/Performance Metric (\$/QphH@300GB)	= \$6.29

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 34,683 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 0	614222657	2006-06-15	9:54:54	2006-06-15	11:47:43	1hr:52mns:50secs
Stream 1	614222658	2006-06-15	11:47:45	2006-06-15	21:20:21	9hrs:32mins:36secs
Stream 2	614222659	2006-06-15	11:47:45	2006-06-15	19:56:27	8hrs:8mins:42secs
Stream 3	614222660	2006-06-15	11:47:45	2006-06-15	19:57:19	8hrs:9mins:34secs
Stream 4	614222661	2006-06-15	11:47:45	2006-06-15	21:13:26	9hrs:25mins:41secs
Stream 5	614222662	2006-06-15	11:47:45	2006-06-15	21:22:56	9hrs:35mins:11secs
Stream 6	614222663	2006-06-15	11:47:45	2006-06-15	21:25:48	9hrs:38mins:3secs
Refresh		2006-05-31	11:47:45	2006-05-31	19:00:34	7hrs:12mins:49secs



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	782.1	22.8	192.3	152.4	188.2	52.7	283.4	127.3	652.1	349.1	32.8	122.4
Stream 01	6645.0	134.2	1531.1	1401.6	1217.2	159.8	1009.9	475.8	2124.4	1685.0	117.6	302.7
Stream 02	4995.1	39.6	427.1	1420.1	525.2	373.8	1062.6	228.3	2785.7	1706.3	73.6	226.0
Stream 03	6889.8	38.0	495.7	1796.1	1589.0	148.8	1826.5	1090.3	2525.4	1513.5	74.7	285.6
Stream 04	8594.8	51.1	703.8	1832.3	1866.3	179.9	657.1	462.1	3785.0	1582.4	189.2	291.7
Stream 05	7980.4	36.2	1135.1	2265.0	426.3	135.2	1373.7	227.1	1802.1	1067.7	114.7	158.3
Stream 06	8251.9	42.7	1437.8	1758.7	498.1	169.2	1195.7	535.0	3393.3	2654.5	127.6	627.9
Minimum	4995.1	36.2	427.1	1401.6	426.3	135.2	657.1	227.1	1802.1	1067.7	73.6	158.3
Average	7226.2	57.0	955.1	1745.6	1020.4	194.5	1187.6	503.1	2736.0	1701.6	116.2	315.4
Maximum	8594.8	134.2	1531.1	2265.0	1866.3	373.8	1826.5	1090.3	3785.0	2654.5	189.2	627.9

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	779.9	76.6	131.4	92.2	120.6	677.6	208.7	153.5	823.6	57.8	345.5	335.4
Stream 01	4851.6	255.6	737.1	439.2	393.7	4470.3	860.8	437.1	4840.5	265.1	738.3	683.4
Stream 02	4670.7	777.3	530.1	778.0	448.3	4667.9	1273.0	351.7	1756.9	203.0	577.3	721.1
Stream 03	1887.4	481.7	542.4	211.8	187.2	4338.8	885.1	308.4	1843.9	412.1	694.0	684.9
Stream 04	1974.4	553.3	684.5	433.8	245.0	3893.8	935.4	617.4	4138.6	267.7	575.0	548.7
Stream 05	4180.5	311.4	1370.4	374.3	136.5	4388.9	1518.6	293.2	4935.3	279.5	650.4	519.3
Stream 06	5306.5	258.4	1017.4	301.1	172.4	3978.2	614.4	300.6	1664.3	376.5	727.3	544.6
Minimum	1887.4	255.6	530.1	211.8	136.5	3893.8	614.4	293.2	1664.3	203.0	575.0	519.3
Average	3811.9	439.6	813.7	423.0	263.9	4289.6	1014.5	384.7	3196.6	300.7	660.4	631.5
Maximum	5306.5	777.3	1370.4	778.0	448.3	4667.9	1518.6	617.4	4935.3	412.1	738.3	721.1