



**Sun Fire™ V440 Server
with Sybase IQ 12.5**

TPC-H Rev. 2.0

Sept 16, 2003

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$67,704

2,428.6
QphH@100GB

\$28
\$/QphH@100GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

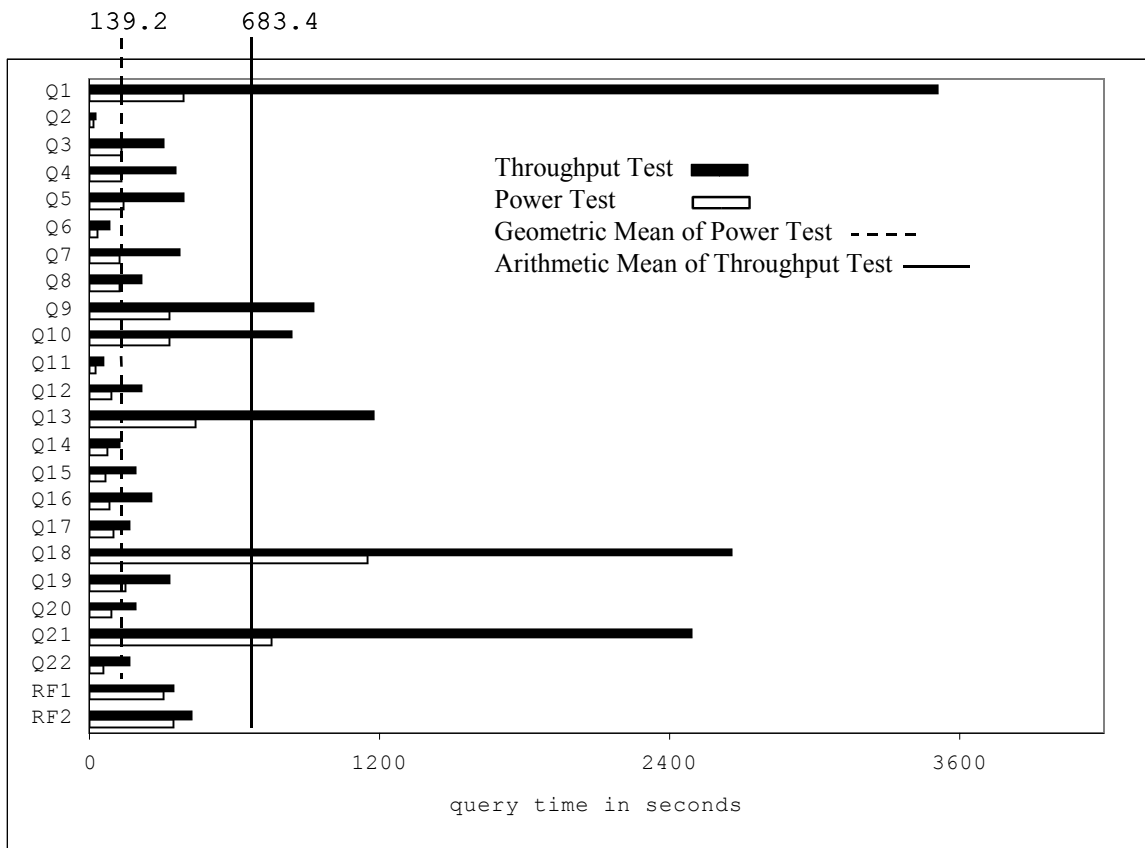
100GB

Sybase IQ 12.5
November 2003

Solaris 9

Solaris Volume
Manager

Nov 26, 2003



Database Load Time = 2:39

Load Includes Backup: N

Total Data Storage/Database Size=2.73

RAID (Base tables): RAID 1

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

RAID (All): N

System Configuration: Sun Fire™ V440 Server
 Processors: 4 UltraSPARC™ IIIi Cu 1.28GHz processors
 Memory: 16 GB memory
 Disks: 4 internal disks (73 GB)
 Total Storage: 273.2 GB (in this calculation one GB is defined as 1024*1024*1024 bytes)



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Description	Part Number	Source	Unit Price	Qty	Ext. Price	3 Yr. maint.
Server Hardware						
SunFire V440 4x1.28Ghz CPUs, 16G memory, 4x36G disk drives	A42-XCB4-16GD	1	\$22,095.75	1	22,095.75	
73G Ultra320 SCSI Disk Drives (Upgrade from 36G to 73G)	X5264A	1	\$487.50	4	1,950.00	
3 Year Gold Warranty Upgrade - V440 Server (includes all disks)	W9D-A42-3G	1	3,790.80	1		3,790.80
<i>Server Hardware Subtotal</i>					24,045.75	3,790.80
Storage						
External Storage				0	0	
<i>Storage Subtotal</i>						0
Server Software						
Solaris 9 CD SPARC Edition Slim kit	SOLZS-090C9AYS	1	27.50	1	27.50	
Sybase IQ-M Single App Svr - 4 cpu's	12841	2	30,000.00	1	30,000.00	
Sybase IQ 3 Years Extended Support 24 x 7	98480	2		1		15,840.00
Sybase discount		2			-6,000.00	
<i>Server Software Subtotal</i>					24,027.50	15,840.00
Total					48,073.25	19,630.80
3 Yr. Cost					67,704.05	
QphH@ 100GB					2,428.60	
\$/QphH@ 100GB					\$28	

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.

Price Quotes 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	= 100GB
Total Data Storage / Database Size	= 2.73
Start of database load time	= 2003-09-03 13:04:13
End of database load time	= 2003-09-03 15:43:04
Database Load Time	= 2:39
Query Streams for Throughput Test	= 5
TPC-H Power	= 2,585.4
TPC-H Throughput	= 2,281.4
TPC-H Composite Query-per-Hour Rating (QphH@100GB)	= 2,428.6
Total System Price Over 3 Years	= \$67,704
TPC-H Price/Performance Metric (\$/QphH@100GB)	= \$28

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 17,358 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 00	903154304	Sept 3, 2003	22:05:53	Sept 3, 2003	23:37:43	01:31:50
Stream 01	903154305	Sept 3, 2003	23:37:43	Sept 4, 2003	03:41:26	04:03:43
Stream 02	903154306	Sept 3, 2003	23:37:43	Sept 4, 2003	03:48:20	04:10:37
Stream 03	903154307	Sept 3, 2003	23:37:43	Sept 4, 2003	03:50:04	04:12:21
Stream 04	903154308	Sept 3, 2003	23:37:43	Sept 4, 2003	03:53:43	04:16:00
Stream 05	903154309	Sept 3, 2003	23:37:43	Sept 4, 2003	03:48:47	04:11:04
Refresh		Sept 4, 2003	03:22:43	Sept 4, 2003	04:27:01	01:04:18



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	391.4	18.4	134.4	135.4	144.4	33.2	122.2	123.2	330.5	330.7	23.1	87.8
Stream 01	3853.8	22.2	249.4	450.2	335.9	71.9	303.8	178.7	654.5	579.6	68.7	165.0
Stream 02	2987.6	30.6	317.1	258.7	365.3	116.7	272.8	206.4	867.5	987.4	46.1	252.4
Stream 03	4375.1	22.8	356.9	415.7	329.8	47.2	415.0	355.8	770.5	562.1	39.3	252.2
Stream 04	3196.7	15.2	432.8	352.3	581.7	86.8	512.3	154.1	838.2	1150.2	53.8	215.3
Stream 05	3128.9	19.1	178.8	320.4	313.7	77.9	346.6	162.2	1518.2	908.7	72.8	191.8
Minimum	2987.6	15.2	178.8	258.7	313.7	47.2	272.8	154.1	654.5	562.1	39.3	165.0
Average	3508.4	22.0	307.0	359.5	385.3	80.1	370.1	211.5	929.8	837.6	56.1	215.4
Maximum	4375.1	30.6	432.8	450.2	581.7	116.7	512.3	355.8	1518.2	1150.2	72.8	252.4

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	439.4	72.9	66.9	79.8	101.0	1148.7	150.6	94.7	757.3	58.8	308.3	347.9
Stream 01	818.5	112.8	283.1	273.4	167.7	2795.1	204.4	228.9	2670.4	117.8	401.7	606.7
Stream 02	921.3	171.6	177.5	238.4	167.3	2807.7	408.3	196.5	3003.3	229.0	417.8	464.0
Stream 03	1575.6	108.2	117.6	363.6	157.0	2615.4	339.5	132.4	1653.0	127.8	309.7	335.0
Stream 04	1507.7	112.5	224.5	202.4	125.5	2397.2	349.0	218.2	2465.3	160.1	316.5	342.7
Stream 05	1046.5	135.2	154.7	220.4	220.5	2672.1	344.0	177.4	2673.7	173.5	312.8	349.8
Minimum	818.5	108.2	117.6	202.4	125.5	2397.2	204.4	132.4	1653.0	117.8	309.7	335.0
Average	1173.9	128.1	191.5	259.6	167.6	2657.5	329.0	190.7	2493.2	161.6	351.7	419.6
Maximum	1575.6	171.6	283.1	363.6	220.5	2807.7	408.3	228.9	3003.3	229.0	417.8	606.7