



**Sun Fire™ V480 Server
with Sybase IQ 12.5**

TPC-H Rev. 2.0

July 28, 2003

Total System Cost

Composite Query per Hour Metric

Price/Performance

\$94,956

2,140.6
QphH@100GB

\$44
\$/QphH@100GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

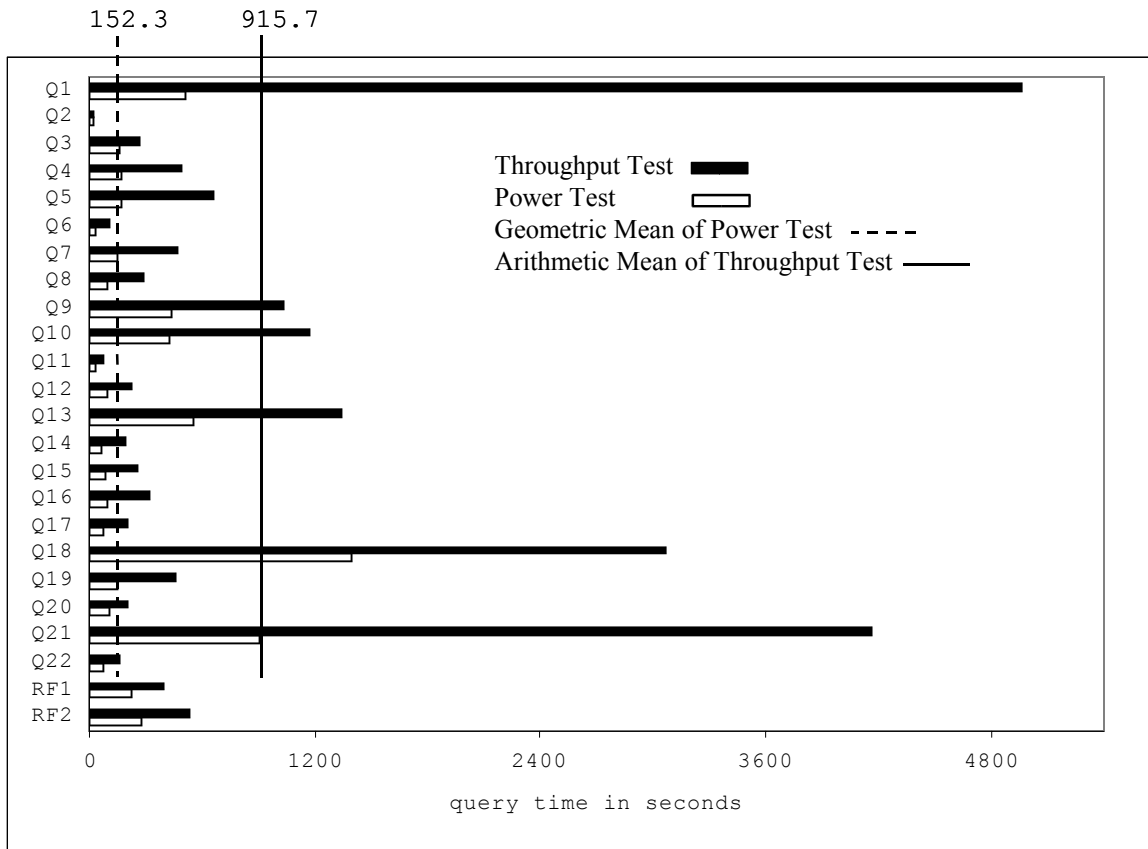
100GB

Sybase IQ 12.5
November 2003

Solaris 9

Solaris Volume
Manager

Nov 26, 2003



Database Load Time = 3:13

Load Includes Backup: N

Total Data Storage/Database Size=8.20

RAID (Base tables): Y

RAID (Base tables and auxiliary data structures): Y

RAID (All): N

System Configuration: Sun Fire™ V480 Server
 Processors: 4 UltraSPARC™ III Cu 1050MHz processors
 Memory: 16 GB memory
 Disks: 2 internal disks (73 GB), 1 SE3310 (10x73GB plus 2 spares)
 Total Storage: 819.6 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 V480 4x1050Mhz CPUs, 16GB MEM, 2x73G disk drives	A37-WTPF4-16GRB		1 35,256	1	35,256	6,912
2M-SCSI-Cable	X1138A		1 78	2	156	
Dual-Ultra-3-SCSI-HBA	X6758A		1 544	1	544	
<i>Server Hardware Subtotal</i>					35,956	6,912
Storage						
SE3310-876GB-12x73-JBOD 10k rpm (10 used, 2 returned)	XTA3310R01A0R876		1 10,347	1	10,347	3,267
Allowance Code, Return Quantity 2 73GB SCSI HDD	ALW-XTA-3310-73GB		1 -700	2	-1,400	
<i>Storage Subtotal</i>					8,947	3,267
Server Software						
Solaris 9 CD SPARC Edition Slim kit	SOLZ-090C9AYS		1 34	1	34	
Sybase IQ-M Single App Svr - 4 cpu's	12841		2 30,000	1	30,000	
Sybase IQ 3 Years Extended Support 24 x 7	98480		2	1		15,840
Sybase discount			2		-6,000	
<i>Server Software Subtotal</i>					24,034	15,840
Total					68,937	26,019
3 Yr. Cost					94,956	
QphH@ 100GB					2,140.60	
\$/QphH@ 100GB					\$44	
Service for all Sun products is from Sun Microsystems, Inc.						
Service for Sybase products is from Sybase Inc.						

Notes (Source):

1. Integrity Networking Solutions, 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	= 8.20
Start of database load time	= 2003-07-24 20:46:30
End of database load time	= 2003-07-24 23:58:57
Database Load Time	= 3:13
Query Streams for Throughput Test	= 5
TPC-H Power	= 2,363.8
TPC-H Throughput	= 1,938.4
TPC-H Composite Query-per-Hour Rating (QphH@100GB)	= 2,140.6
Total System Price Over 3 Years	= \$94,956
TPC-H Price/Performance Metric (\$/QphH@100GB)	= \$44

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 20,429 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 00	724235857	Jul 25, 2003	07:24:25	Jul 25, 2003	09:09:21	01:44:56
Stream 01	724235858	Jul 25, 2003	09:09:21	Jul 25, 2003	14:41:47	05:32:26
Stream 02	724235859	Jul 25, 2003	09:09:21	Jul 25, 2003	14:42:55	05:33:34
Stream 03	724235860	Jul 25, 2003	09:09:21	Jul 25, 2003	14:49:50	05:40:29
Stream 04	724235861	Jul 25, 2003	09:09:21	Jul 25, 2003	14:47:32	05:38:11
Stream 05	724235862	Jul 25, 2003	09:09:21	Jul 25, 2003	14:43:56	05:34:35
Refresh		Jul 25, 2003	09:09:21	Jul 25, 2003	10:26:54	01:17:33



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	507.4	19.4	154.8	166.7	172	36.9	145.3	95.6	433.2	427.2	30.8	95.8
Stream 01	5064.1	25.3	288	305.1	346.1	61.3	319.3	164	914.9	737.7	84.7	275.8
Stream 02	3949.1	30.1	373.1	302.7	441.7	235.1	298	189.3	1168	2253.2	81	300.8
Stream 03	7089.7	27	157.8	1049	902.7	95.6	1011.7	765.9	739.8	658.9	48.8	128.4
Stream 04	4537.5	25.1	200.6	480.4	1284	72.5	324.7	127.4	1148.6	1027.4	69	222.1
Stream 05	4151.5	19.9	328.4	319.5	312.3	84.9	393.1	196.2	1180.5	1198.7	94.5	205.4
Minimum	3949.1	19.9	157.8	302.7	312.3	61.3	298	127.4	739.8	658.9	48.8	128.4
Average	4958.4	25.5	269.6	491.4	657.4	109.9	469.4	288.6	1030.4	1175.2	75.6	226.5
Maximum	7089.7	30.1	373.1	1049	1284	235.1	1011.7	765.9	1180.5	2253.2	94.5	300.8

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	549.1	68	83.2	96.7	72	1394.1	151.1	110	901.3	70.3	228.4	274.1
Stream 01	1252.3	88.3	325.4	199.1	117.1	3376.5	225.6	219.3	5434.1	118.7	538	538.2
Stream 02	1146.7	464	258.1	693.5	306.8	3293.9	910.5	192.4	2889.2	232.9	341.9	525.9
Stream 03	1387	102.2	137.8	167.2	346.1	2544.2	383.8	152.6	2386.2	141.5	328.7	533.2
Stream 04	1672.7	151.9	332.8	222.8	125.8	2954.8	349.2	172.9	4625	157.7	444.8	554.6
Stream 05	1267.9	136.6	206.6	312.3	127.7	3178.6	418.2	261.6	5513.8	162.1	337.3	509.7
Minimum	1146.7	88.3	137.8	167.2	117.1	2544.2	225.6	152.6	2386.2	118.7	328.7	509.7
Average	1345.3	188.6	252.2	319	204.7	3069.6	457.5	199.8	4169.7	162.6	398.1	532.3
Maximum	1672.7	464	332.8	693.5	346.1	3376.5	910.5	261.6	5513.8	232.9	538	554.6