



**Sun Fire™ E25K Server
with Oracle Database 10g
Release 2**

TPC-H Rev. 2.3

November 29, 2005

Total System Cost

Composite Query per Hour Metric

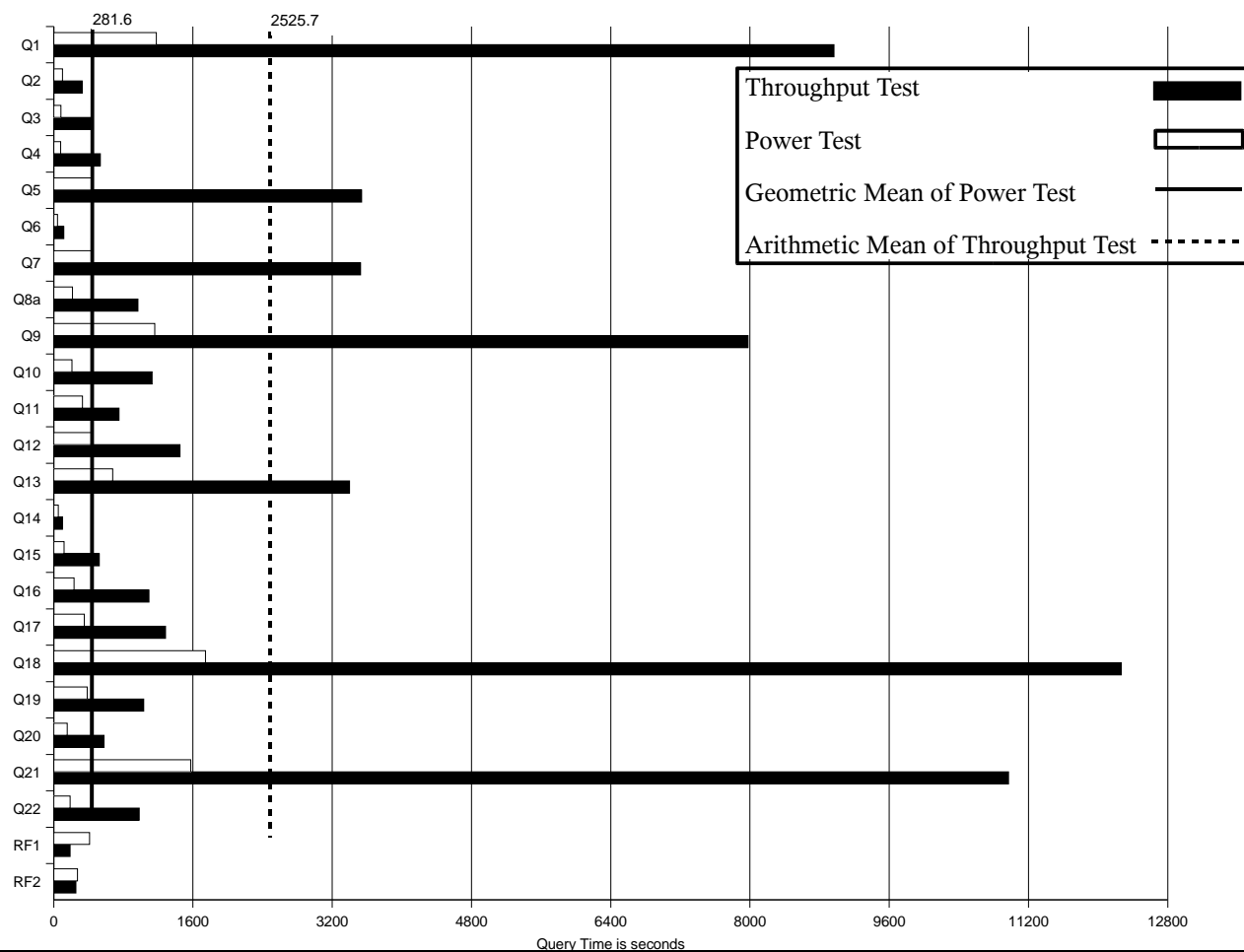
Price/Performance

\$5,815,147

108,099.7
QphH@10000GB

\$53.80
\$/QphH@10000GB

Database Size	Database Manager	Operating System	Other Software	Availability Date
10000GB	Oracle Database 10g Enterprise Edition Release 2 with Partitioning and Oracle Automatic Storage Management	Solaris 10		January 23, 2006



Database Load Time = 18:13

Load Includes Backup: N

Total Data Storage/Database Size=9.7

RAID (Base tables): N

RAID (Base tables and auxiliary data structures): N

RAID (All): Y

System Configuration: Sun Fire™ E25K Server
 Processors: 72 UltraSPARC™ IV+ 1500 MHz processors on 72 chips, 144 cores, 144 threads
 Memory: 288GB memory
 Disks: 108 StorEdge 3510 FC Arrays (12x73.4GB), 1 SE6120 (14x73.4GB), 4 S1 (3x73.4GB)
 Total Storage: 97,034.8 (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.	Unit 3 Yr Maint.
Server Hardware							
Sun Fire E25K base	E25K-BASE		1 315,000	1	315,000	197,244	197,244
UNIBRD 4 US-IV+ @1.5GHz w/16GB	US4BRD-482-1500		1 170,000	18	3,060,000	252,720	14,040
Opt QFE PCI card w/SW	RFBX1034A		1 915	1	915		
PCI Dual GigE + Dual SCSI	RFBX4422A		1 995	1	995		
Cable,SCSI,SCSI-3/SCSI-3, 2.0m	X1139A		1 95	1	95		
hsPCI+ IO Assembly	X4576A		1 15,000	18	270,000		
Opt Pwr Cord For Enterpr.(US)	X3800A		1 0	12	0		
2GB PCI Dual FC Network Adapter	RFBX6768A		1 3,875	54	209,250		
15M Fibre Channel Cable	X9724A		1 190	108	20,520		
<i>Server Hardware Subtotal</i>					3,876,775	449,964	
Storage							
876 GB StorEdge 3510 2 RAID Controllers	TA3510M01A2R876		1 36,495	108	3,941,460	797,040	7,380
StorEdge S1 3x73GB	NS-XDSKS1-373GAC		1 4,695	4	18,780	7,632	1,908
1022 GB StoreEdge 6120	XTA6120R11A1T1022		1 36,995	1	36,995	6,732	6,732
72" StorEdge Expansion Rack	RSG-SG-XARY030A		1 6,500	7	45,500		
Exp Cab 2U Universal Rack Mount Kit	TA-3000-2URK-19U		1 350	96	33,600		
Power Cord for StorEdge	X3858A		1 0	14	0		
<i>Storage Subtotal</i>					4,076,335	811,404	
Server Software							
Solaris 10			3 0	1	0		
Sun One Studio 7	FDEIS-T999-3ST		1 2,376	1	2,376	792	792
Sun StorEdge Comp Mgr	SCMMS-210-R99R		1 0	1	0		
Oracle Database 10g Enterprise Edition, Named User Plus for 3 years			2 10,000	108‡	1,080,000		
Partitioning, Named User Plus for 3 years			2 2,500	108‡	270,000		
Oracle Server Support Package for 3 years			2 6,000	1		6,000	
<i>Server Software Subtotal</i>					1,352,376	6,792	
Sun Volume Discounts (50%) and Support Prepayment (35%)			1		-3,977,743	-441,756	
Oracle Mandatory E-Business Discount (25%)			2		-339,000		
Total					4,988,743	826,404	
Service for all Sun products is from Sun Microsystems, Inc. and is based on SunSpectrum Instant Upgrade Gold 7x24			3 Yr. Cost		5,815,147		
Service for Oracle products is from Oracle Corp.			QphH@10000GB		108,099.70		
			\$/QphH@10000GB		\$53.80		

Notes (Source):

1. Sun Microsystems, Inc. (see Appendix G) ‡108 = 0.75 * 144. Explanation: For the purposes of counting the number of processors which
2. Oracle Corp. (see Appendix G) require licensing, a multicore chip with "n" cores shall be determined by multiplying "n" cores
3. Download from SunSolve by a factor of .75

Audited by: François Raab, 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	= 10000GB
Total Data Storage / Database Size	= 9.7
Start of database load time	= 11-09-2005 22:43:31
End of database load time	= 11-10-2005 16:56:48
Database Load Time	= 18:13
Query Streams for Throughput Test	= 9
TPC-H Power	= 127,836.1
TPC-H Throughput	= 91,410.4
TPC-H Composite Query-per-Hour Rating (QphH@10000GB)	= 108,099.7
Total System Price Over 3 Years	= \$5,815,147
TPC-H Price/Performance Metric (\$/QphH@10000GB)	= \$53.80

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 77,978 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 00	1110165648	11/10/05	17:09:57	11/10/05	20:11:39	03:01:42
Stream 01	1110165649	11/10/05	20:12:22	11/11/05	13:52:38	17:40:16
Stream 02	1110165650	11/10/05	20:12:22	11/11/05	15:05:36	18:53:14
Stream 03	1110165651	11/10/05	20:12:22	11/11/05	15:59:24	19:47:02
Stream 04	1110165652	11/10/05	20:12:23	11/11/05	15:13:35	19:01:12
Stream 05	1110165653	11/10/05	20:12:23	11/11/05	16:45:37	20:33:14
Stream 06	1110165654	11/10/05	20:12:23	11/11/05	15:35:32	19:23:09
Stream 07	1110165655	11/10/05	20:12:23	11/11/05	05:44:53	09:32:30
Stream 08	1110165656	11/10/05	20:12:23	11/11/05	10:16:43	14:04:20
Stream 09	1110165657	11/10/05	20:12:23	11/11/05	12:10:26	15:58:03
Refresh		11/11/05	16:45:37	11/11/05	17:52:00	01:06:23



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	1178.3	101.0	82.5	80.5	435.9	43.3	448.3	215.6	1160.9	209.9	330.0	446.1
Stream 01	2794.3	183.4	612.1	175.6	3771.6	55.3	849.6	412.9	2667.7	464.2	497.8	686.8
Stream 02	2954.8	463.2	332.8	465.6	5460.9	87.1	3954.8	1659.4	13753.1	2404.8	621.9	3597.0
Stream 03	11978.5	159.9	120.8	1094.7	5567.0	101.4	5454.7	1230.2	12467.4	1449.2	913.8	774.3
Stream 04	9008.9	516.1	159.2	191.3	1984.8	75.3	5550.3	391.1	3116.3	2345.8	549.1	728.6
Stream 05	8594.0	251.0	447.7	820.6	748.2	91.9	5127.9	210.5	1274.7	216.8	780.8	439.7
Stream 06	7558.7	334.7	1703.1	741.0	3835.0	344.2	5051.8	1862.1	15509.3	507.9	1101.3	2217.4
Stream 07	12796.5	190.8	156.2	184.0	910.3	73.5	909.2	314.9	2967.4	436.6	567.8	451.8
Stream 08	13865.6	145.1	148.6	164.8	5700.5	71.6	872.5	1391.4	11679.6	461.6	521.4	2317.9
Stream 09	11127.4	701.9	252.1	976.2	3852.7	139.9	3968.0	1229.3	8371.6	1895.2	1184.9	1839.8
Minimum	2794.3	145.1	120.8	164.8	748.2	55.3	849.6	210.5	1274.7	216.8	497.8	439.7
Average	8964.3	327.3	436.9	534.9	3536.8	115.6	3526.5	966.9	7978.6	1131.3	748.8	1450.4
Maximum	13865.6	701.9	1703.1	1094.7	5700.5	344.2	5550.3	1862.1	15509.3	2404.8	1184.9	3597.0

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	677.3	51.9	118.8	233.4	350.9	1745.1	386.2	156.5	1576.2	186.9	413.1	273.0
Stream 01	1664.7	83.7	110.0	496.0	488.6	19412.3	910.0	236.3	26688.7	353.8	212.2	273.3
Stream 02	5004.8	109.8	664.4	1984.9	4162.0	13428.7	1133.5	671.8	3754.4	1324.2	189.6	250.6
Stream 03	669.4	113.4	349.0	277.1	1012.9	21757.9	487.7	664.2	3439.6	1138.4	182.3	251.0
Stream 04	4382.8	104.4	642.6	568.6	652.9	19759.9	975.9	296.9	15194.4	1277.1	189.0	252.3
Stream 05	5175.7	109.7	731.7	2879.2	358.7	17348.8	1148.8	153.9	25839.4	1244.7	185.4	250.7
Stream 06	5612.1	108.8	745.5	1867.0	657.4	3989.8	986.6	593.4	13234.2	1228.0	189.1	250.9
Stream 07	1336.9	99.1	128.4	527.8	801.4	5939.8	810.8	323.6	3992.5	431.0	182.5	252.1
Stream 08	1309.3	97.5	711.7	515.5	814.1	3878.4	1763.9	767.9	3072.3	388.9	183.2	251.3
Stream 09	5438.7	90.9	626.6	729.3	2620.0	4885.7	1080.2	1489.9	3514.0	1468.7	185.3	250.8
Minimum	669.4	83.7	110.0	277.1	358.7	3878.4	487.7	153.9	3072.3	353.8	182.3	250.6
Average	3399.4	101.9	523.3	1093.9	1285.3	12266.8	1033.0	577.5	10969.9	983.9	188.7	253.7
Maximum	5612.1	113.4	745.5	2879.2	4162.0	21757.9	1763.9	1489.9	26688.7	1468.7	212.2	273.3