



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

TPC-H Rev. 2.6

April 9, 2007

Total System Cost

Composite Query per Hour Metric

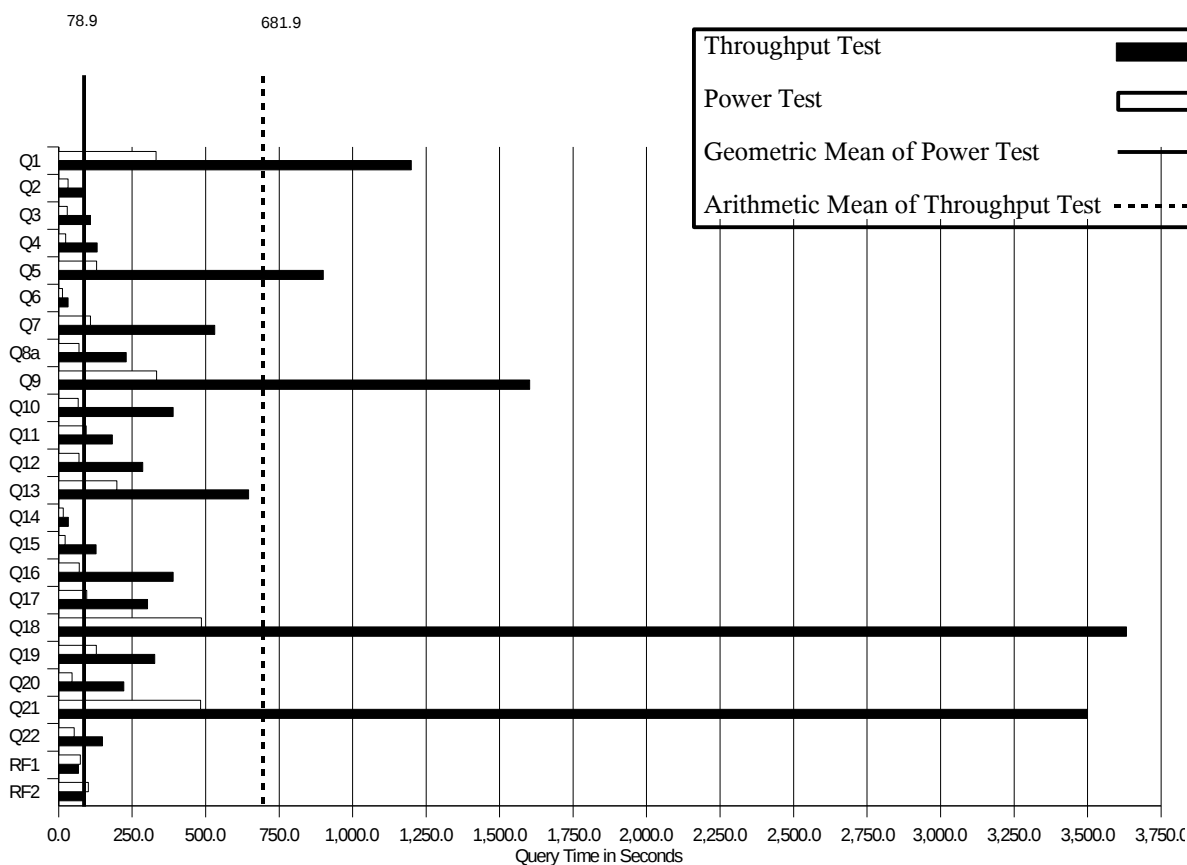
Price/Performance

\$4,207,126

114,713.7
QphH@3000GB

\$36.68
\$/QphH@3000GB

Database Size	Database Manager	Operating System	Other Software	Availability Date
3000GB	Oracle Database 10g Enterprise Edition Release 2 with Partitioning and Automatic Storage Management	Solaris 10		April 9, 2007



Database Load Time = 4:52

Load Includes Backup: N

Total Data Storage/Database Size=21.6

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+ 1800 MHz processors on 72 chips, 144 cores, 144 threads
Memory: 288GB memory
Disks: 27 Sun StorageTek 6140 Arrays (16x146GB), 1 SE3510 (12x73GB), 3 SE3120 (4x73GB)
Total Storage: 64,824 (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-2	1	315,000	1	315,000	197,244	197,244
UNIBRD 4 US-IV+ @1.8GHz w/16GB	US4BD-482-1800-Z	1	195,500	18	3,519,000	252,720	14,040
Opt QFE PCI card w/SW	RFBX1034A	1	775	1	775		
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-Z	1	15,000	18	270,000		
Opt Pwr Cord For Enterpr.(US)	X3800A	1	0	12	0		
4GB PCI-X Dual FC Network Adapter	SG-PCI2FC-QF4	1	2,530	54	136,620		
15M Fibre Channel Cable	X9724A	1	190	108	20,520		
<i>Server Hardware Subtotal</i>					4,263,005	449,964	
Storage							
2336GB ST6140 2 RAID Controllers	XTA6140R11A2C2336Z	1	48,755	27	1,316,385	82,620	3,060
StorEdge 3120 4x73GB	TA3120M01A0T292	1	5,995	3	17,985	14,904	4,968
876 GB StorEdge 3510 2 RAID Controllers	TA3510M01A2R876	1	29,495	1	29,495	7,380	7,380
72" StorEdge Expansion Rack	RSG-SG-XARY030A	1	6,500	3	19,500		
Exp Cab 2U Universal Rack Mount Kit	TA-3000-2URK-19U	1	350	27	9,450		
Power Cord for StorEdge	X3858A	1	0	6	0		
<i>Storage Subtotal</i>					1,392,815	104,904	
Server Software							
Solaris 10		3	0	1	0		
Sun Studio 11		4	15	1	15	2,376	2,376
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>					1,350,015	8,376	
Sun Volume Discounts (50%) and Support Prepayment (35%)		1			-2,827,918	-195,035	
Oracle Mandatory E-Business Discount (25%)		2			-339,000		
				Total	3,838,918	368,209	
Service for all Sun products is from Sun Microsystems, Inc. and is based on SunSpectrum Instant Upgrade Gold 7x24				3 Yr. Cost	4,207,126		
Service for Oracle products is from Oracle Corp.				QphH@3000GB	114,713.70		
				\$/QphH@3000GB	\$36.68		

Notes (Source):

1. Sun Microsystems, Inc. (see Appendix G)
2. Oracle Corp. (see Appendix G)
3. Download from SunSolve
4. Order media kit from sun.com

‡ 108 = 0.75 * 144. Explanation: For purposes of counting the number of processors which require licensing, a multicore chip with "n" cores shall be determined by multiplying "n" cores by a factor of 0.75

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	= 3000GB
Total Data Storage / Database Size	= 21.6
Start of database load time	= 03-24-2007 18:09:54
End of database load time	= 03-24-2007 23:01:52
Database Load Time	= 4:52
Query Streams for Throughput Test	= 8
TPC-H Power	= 136,798.4
TPC-H Throughput	= 96,194.3
TPC-H Composite Query-per-Hour Rating (QphH@3000GB)	= 114,713.7
Total System Price Over 3 Years	= \$4,207,126
TPC-H Price/Performance Metric (\$/QphH@3000GB)	= \$36.68

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 19,760 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time	Duration
Stream 00	324230152	03/24/07	23:06:06	03/24/07	23:57:17	00:51:11
Stream 01	324230153	03/24/07	23:57:30	03/25/07	04:38:54	04:41:24
Stream 02	324230154	03/24/07	23:57:31	03/25/07	02:47:06	02:49:35
Stream 03	324230155	03/24/07	23:57:31	03/25/07	04:40:33	04:43:02
Stream 04	324230156	03/24/07	23:57:31	03/25/07	04:26:43	04:29:12
Stream 05	324230157	03/24/07	23:57:31	03/25/07	05:06:30	05:08:59
Stream 06	324230158	03/24/07	23:57:31	03/25/07	04:45:45	04:48:14
Stream 07	324230159	03/24/07	23:57:31	03/25/07	02:56:35	02:59:04
Stream 08	324230160	03/24/07	23:57:31	03/25/07	03:38:08	03:40:37
Refresh		03/25/07	05:06:30	03/25/07	05:26:50	00:20:20



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TPC-H Timing Intervals (in seconds)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8a	Q9	Q10	Q11	Q12
Stream 00	331.8	31.9	29.7	23.7	128.7	13.2	108.1	69.2	333.2	66.2	93.6	69.1
Stream 01	610.5	53.8	140.5	48.7	1136.4	16.6	163.8	129.7	721.3	148.6	184.3	83.7
Stream 02	750.6	103.7	65.6	46.0	327.3	63.0	233.8	340.2	2936.4	483.4	158.9	149.9
Stream 03	2812.1	94.6	43.7	210.4	2189.6	29.3	830.9	263.2	1010.0	204.5	220.1	150.4
Stream 04	752.1	126.9	53.1	153.9	566.4	28.5	255.6	429.1	3110.8	402.4	168.7	600.3
Stream 05	330.1	31.2	27.8	174.1	129.2	21.5	627.2	67.3	359.6	64.6	111.7	96.6
Stream 06	657.2	38.3	259.8	166.3	238.6	47.7	713.3	362.5	3196.9	211.4	286.1	372.9
Stream 07	733.9	81.4	97.3	68.1	1639.8	28.4	705.2	114.1	744.5	653.1	125.8	656.9
Stream 08	2948.8	122.1	179.7	181.0	977.3	24.0	713.8	133.4	738.4	949.7	204.1	178.6
Minimum	330.1	31.2	27.8	46.0	129.2	16.6	163.8	67.3	359.6	64.6	111.7	83.7
Average	1199.4	81.5	108.4	131.0	900.6	32.4	530.5	229.9	1602.2	389.7	182.5	286.2
Maximum	2948.8	126.9	259.8	210.4	2189.6	63.0	830.9	429.1	3196.9	949.7	286.1	656.9

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	198.0	16.1	21.9	69.8	95.8	486.0	128.3	46.0	483.0	52.5	74.2	101.0
Stream 01	312.4	33.3	39.3	101.8	107.5	4280.0	275.6	171.8	8046.0	78.3	71.8	101.5
Stream 02	374.4	37.4	126.4	553.7	908.9	1023.2	274.4	70.4	1049.8	98.2	66.8	80.9
Stream 03	326.1	33.7	58.1	144.6	233.4	4292.9	589.9	95.9	3075.1	74.4	67.9	83.2
Stream 04	341.6	37.9	164.7	457.5	485.7	3676.3	283.6	85.6	3862.3	109.2	65.8	83.3
Stream 05	176.8	35.5	150.8	662.6	94.4	7617.7	285.7	50.6	7269.0	154.9	67.2	83.2
Stream 06	1191.0	15.7	168.1	92.6	207.4	5147.0	141.0	1001.4	2451.8	326.9	66.8	82.4
Stream 07	1142.9	35.2	150.6	575.3	169.2	1331.1	305.6	74.9	1196.6	114.5	67.6	82.2
Stream 08	1301.7	33.1	160.6	532.1	208.8	1690.1	458.5	222.5	1038.8	239.4	67.6	81.4
Minimum	176.8	15.7	39.3	92.6	94.4	1023.2	141.0	50.6	1038.8	74.4	65.8	80.9
Average	645.9	32.7	127.3	390.0	301.9	3632.3	326.8	221.6	3498.7	149.5	67.7	84.8
Maximum	1301.7	37.9	168.1	662.6	908.9	7617.7	589.9	1001.4	8046.0	326.9	71.8	101.5