

Sun Fire™ X4500 Server with IBM DB2 9.1

TPC-H Rev. 2.6

October 12, 2007

Total System Cost

Composite Query per Hour Metric

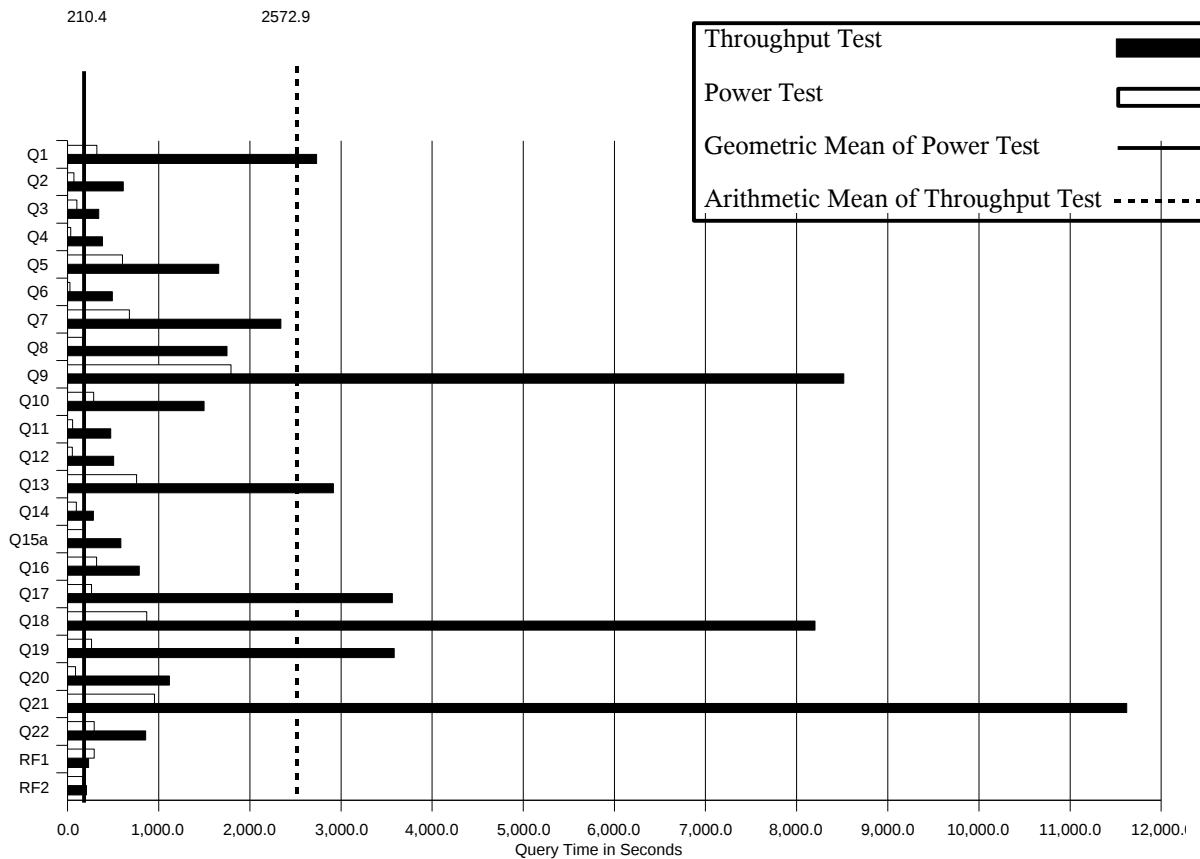
Price/Performance

\$1,136,536 USD

38,672.4
QphH@3000GB

\$29.39 USD
\$/QphH@3000GB

Database Size	Database Manager	Operating System	Other Software	Availability Date
3000GB	IBM DB2 9.1	Solaris 10		October 12, 2007



Database Load Time = 3:39

Load Includes Backup: N

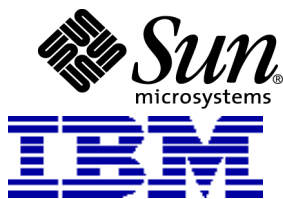
Total Data Storage/Database Size=74.5

RAID (Base tables): N

RAID (Base tables and auxiliary data structures): N

RAID (All): Y

System Configuration: 10 Sun Fire™ X4500 Servers, each server with:
 Processors: 2 AMD Dual Core Opteron Model 285 on 2 chips, 4 cores, 4 threads
 Memory: 16 GB memory
 Disks: 48 465.8 GB SATA Disk Drives @ 7200rpm
 Total Storage: 218.3 TB (in this calculation one TB is defined as 1024*1024*1024*1024 bytes)



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Description	Part Number	Source	Unit Price	Qty	Ext. Price	3 Yr. Maint.
Server Hardware						
Sun Fire X4500 x64 Server	A76-PGZ2-16G-HMH	1	34,995	10	349,950	86,760
Sun Rack 1000-38	SR2-21038A	1	3,075	2	6,150	1,008
CCB/Pwr strips, 1000-38	9233A-2	1	500	4	2,000	
MPS PWR 30A/single phase	9241A-2	1	1,000	4	4,000	
Pwr Jmpr cbles rack 1.0mx1	X9237-1-A	1	6	22	132	
Belkin 8' CAT5e Patch Cable, Snagless Molded, RJ45, Gray	443112	4	8	30	235	
APC Smart-UPS RM 3000VA USB	592697	4	1,332	5	6,662	
3 Year DOP Warranty w/ADH \$701-\$2000	1135230	4	284	5		1,420
NETGEAR JGS524 24-port Gigabit Ethernet Switch	652859	4	270	2	540	
NETGEAR 3 Year ProSupport Maintenance Contract - OnCall 24x7 - Category 1	867761	4	132	2		264
<i>Server Hardware Subtotal</i>					369,669	89,188
Server Software						
Solaris 10 Media		3	30	1	30	0
Sun Studio 11 C/C++ Media		1	10	1	10	3,060
DB2 ESE 9 Value Unit Lic/1 year Maintenance		2	278.52	2000	557,040	0
DB2 ESE SW Maintenance Renewal – 1Year		2	13.27	4000		53,080
DB2 DPF License & 1 year maintenance		2	74.32	2000	148,640	
DB2 DPF Maintenance Renewal – 1Year		2	3.54	4000		14,160
<i>Server Software Subtotal</i>					705,720	70,300
Sun Volume Discounts (18%) and Support Prepayment (35%)		1			-66,540	-31,790
			Total		1,008,848	127,698
Service for all Sun products is from Sun Microsystems, Inc. and is based on SunSpectrum Instant Upgrade Gold 7x24			3 Yr. Cost		1,136,546	
Service for DB2 products is from IBM Corp.			QphH@3000GB		38,672	
			\$/QphH@3000GB		\$29.39	

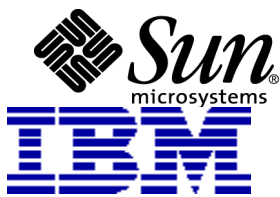
Notes (Source):

1. Sun Store U.S. (<http://store.sun.com>)
2. IBM Corp.
3. Download from SunSolve
4. cdw.com

All prices are in USD

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.



Sun Fire™ 25K Server with IBM DB2 9.1

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Numerical Quantities

Measurement Results:

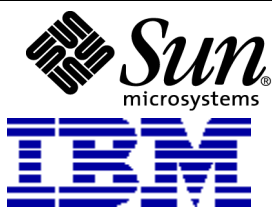
Database Scale Factor	= 3000GB
Total Data Storage / Database Size	= 74.5
Start of database load time	= 09-21-2007 21:35:28
End of database load time	= 09-22-2007 01:14:55
Database Load Time	= 3:39
Query Streams for Throughput Test	= 8
TPC-H Power	= 51,320.0
TPC-H Throughput	= 29,141.8
TPC-H Composite Query-per-Hour Rating (QphH@3000GB)	= 38,672.4
Total System Price Over 3 Years	= \$1,136,536
TPC-H Price/Performance Metric (\$/QphH@3000GB)	= \$29.39

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 65,226 seconds
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Duration of Stream Execution:

Stream Id	Seed Used	Date and Time Stamps						Duration
		Query Start		RF1 Start		RF2 Start		Queries
		Query End		RF1 End		RF2 End		RFs
00	923011455	9/22/07	1:54:31	9/22/07	1:49:41	9/22/07	4:12:09	2:17:38
		9/22/07	4:12:09	9/22/07	1:54:31	9/22/07	4:14:56	0:07:37
01	923011456	9/22/07	4:15:00	9/22/07	4:15:15	9/22/07	21:28:04	17:00:12
		9/22/07	21:15:11	9/22/07	21:28:04	9/22/07	21:31:11	0:15:44
02	923011457	9/22/07	4:15:00	9/22/07	21:31:11	9/22/07	21:34:52	16:56:35
		9/22/07	21:11:34	9/22/07	21:34:52	9/22/07	21:38:14	0:07:03
03	923011458	9/22/07	4:15:00	9/22/07	21:38:14	9/22/07	21:41:55	17:09:18
		9/22/07	21:24:18	9/22/07	21:41:55	9/22/07	21:45:13	0:06:59
04	923011459	9/22/07	4:15:00	9/22/07	21:45:13	9/22/07	21:48:50	16:33:31
		9/22/07	20:48:31	9/22/07	21:48:50	9/22/07	21:52:12	0:06:59
05	923011460	9/22/07	4:15:00	9/22/07	21:52:12	9/22/07	21:55:56	16:58:56
		9/22/07	21:13:56	9/22/07	21:55:56	9/22/07	21:59:57	0:07:45
06	923011461	9/22/07	4:15:00	9/22/07	21:59:57	9/22/07	22:03:43	16:44:05
		9/22/07	20:59:05	9/22/07	22:03:43	9/22/07	22:07:25	0:07:28
07	923011462	9/22/07	4:15:00	9/22/07	22:07:25	9/22/07	22:11:08	16:08:54
		9/22/07	20:23:54	9/22/07	22:11:08	9/22/07	22:14:42	0:07:17
08	923011463	9/22/07	4:15:00	9/22/07	22:14:42	9/22/07	22:18:22	17:03:44
		9/22/07	21:18:44	9/22/07	22:18:22	9/22/07	22:22:06	0:07:24



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TPC-H Timing Interval (in seconds)

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
00	322.1	69.5	102.5	34.8	601.9	26.3	677.8	162.0
01	1,026.3	739.9	520.3	84.9	1,635.0	407.4	2,488.9	2,332.5
02	4,422.0	785.4	458.4	427.3	1,636.2	661.9	1,950.3	1,970.5
03	4,745.4	856.8	104.5	404.1	1,812.8	461.1	2,772.6	1,991.5
04	4,588.3	468.6	270.4	382.9	1,868.6	675.2	3,109.6	1,096.4
05	1,967.5	623.8	380.0	470.9	1,717.4	717.0	2,826.2	2,142.4
06	1,926.4	589.3	498.9	296.6	1,965.8	541.6	1,973.1	1,804.0
07	2,149.4	783.8	449.2	496.3	1,937.2	675.9	2,769.0	2,113.3
08	3,446.0	584.4	301.9	272.4	1,751.0	266.0	2,486.2	2,117.4
Minimum	322.1	69.5	102.5	34.8	601.9	26.3	677.8	162.0
Average	2,732.6	611.3	342.9	318.9	1,658.4	492.5	2,339.3	1,747.8
Maximum	4,745.4	856.8	520.3	496.3	1,965.8	717.0	3,109.6	2,332.5

Stream ID	Q9	Q10	Q11	Q12	Q13	Q14	Q15a	Q16
00	1,794.6	285.2	54.2	52.0	758.5	95.5	176.6	317.6
01	10,800.8	1,684.8	935.3	392.4	3,628.1	321.2	768.9	998.6
02	10,709.6	1,677.7	746.0	658.8	4,041.0	291.0	517.0	760.5
03	8,037.0	1,731.5	450.2	55.1	2,294.1	324.6	866.3	445.8
04	8,566.5	1,370.4	529.9	627.0	2,876.2	307.2	563.2	1,065.7
05	9,122.2	1,695.6	502.8	879.7	3,532.6	313.0	662.0	775.9
06	11,079.6	1,799.9	584.5	445.6	2,790.8	248.9	581.2	1,042.2
07	7,853.6	1,797.5	389.7	756.6	2,402.1	313.8	525.9	831.5
08	8,698.5	1,423.7	69.3	683.2	3,924.0	333.9	611.9	850.4
Minimum	1,794.6	285.2	54.2	52.0	758.5	95.5	176.6	317.6
Average	8,518.0	1,496.3	473.5	505.6	2,916.4	283.2	585.9	787.6
Maximum	11,079.6	1,799.9	935.3	879.7	4,041.0	333.9	866.3	1,065.7

Stream ID	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
00	261.7	869.8	262.2	86.6	954.3	291.8	290.8	167.2
01	2,771.7	10,225.0	4,600.5	959.5	13,050.3	839.7	226.0	187.7
02	4,249.8	8,631.3	4,131.9	1,766.6	9,697.2	804.6	221.1	201.3
03	3,707.4	9,709.3	3,899.9	988.9	15,136.2	963.0	221.0	197.8
04	2,986.4	8,999.7	3,816.2	879.7	13,712.5	850.5	217.7	202.1
05	4,978.2	9,469.2	2,909.1	1,497.5	12,877.5	1,075.5	224.0	240.7
06	4,673.4	9,280.4	3,643.4	1,489.5	12,356.8	633.4	225.9	221.7
07	3,469.2	9,284.3	4,731.6	1,438.7	11,871.7	1,093.2	223.0	214.5
08	4,961.5	7,339.7	4,258.7	944.7	14,933.8	1,165.7	219.9	223.9
Minimum	261.7	869.8	262.2	86.6	954.3	291.8	217.7	167.2
Average	3,562.1	8,201.0	3,583.7	1,116.9	11,621.1	857.5	229.9	206.3
Maximum	4,978.2	10,225.0	4,731.6	1,766.6	15,136.2	1,165.7	290.8	240.7