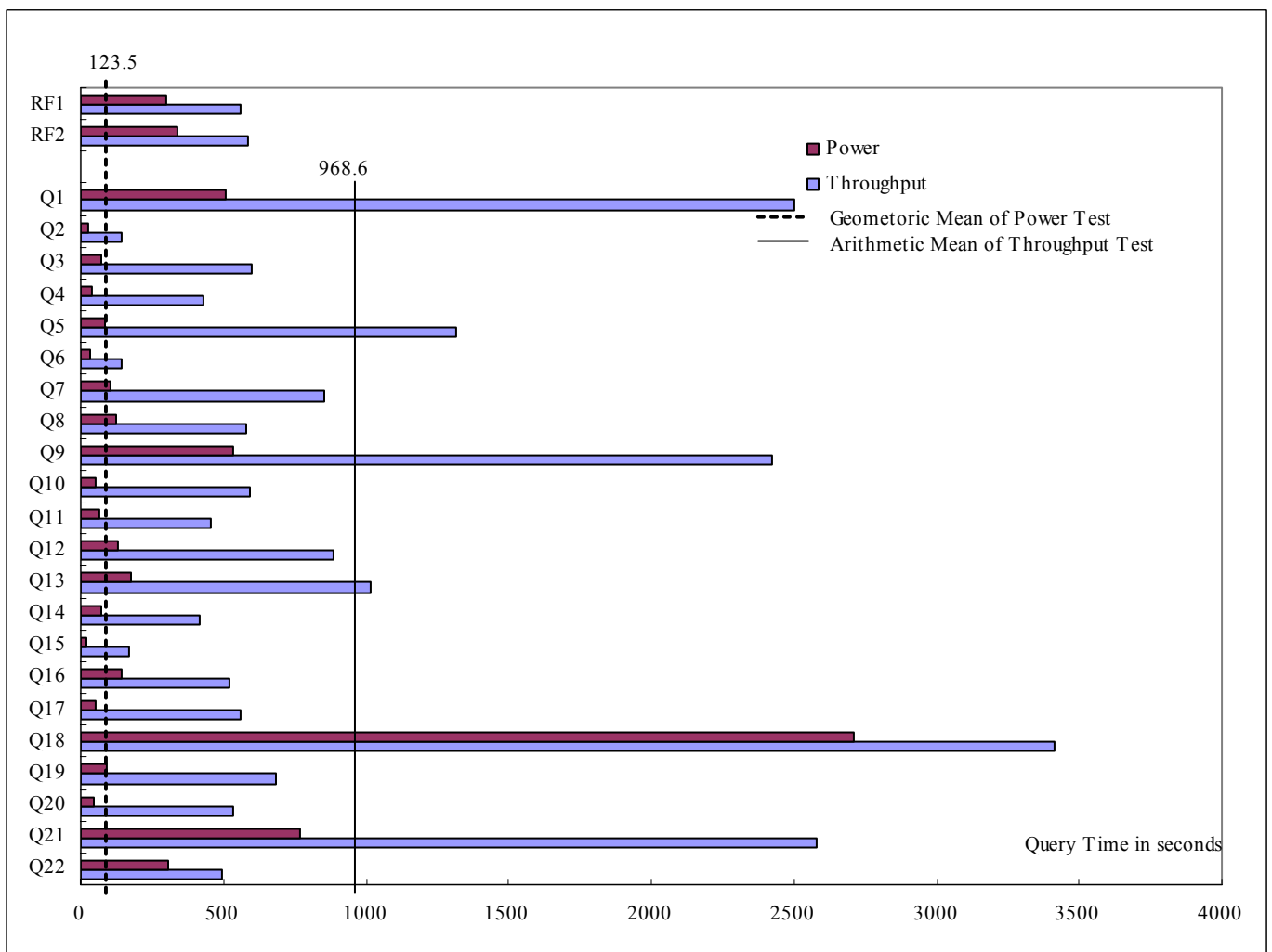




NEC Express5800/1320Xe (32 SMP)

TPC-H Rev. 2.1.0
 Report Date: Jul 19, 2005
 Revision Date: Nov 10, 2005

Total System Cost	Composite Query per Hour Metric		Price/Performance	
\$1,573,303 (USD)	22,967.3 QphH@1000GB		\$68.51 / QphH@1000GB	
Database size	Database Manager	Operating System	Other Software	Availability Date
1000 GB	Microsoft SQL Server 2005 Enterprise Edition 64-bit	Microsoft® Windows® Server 2003, Datacenter Edition for 64-bit Itanium-based Systems SP1	Microsoft® Visual Studio .NET 2003	Dec 7, 2005



Database Load Time = 10:34:00	Load include backup:Y	Disk Size/Database Size = 25.16
RAID(Base table only):N	RAID(Base tables and auxiliary data structures):N	RAID(All):N

System Configuration:

Total Processors/Cores/Threads	32/32/32	Intel® Itanium® 2 1.6GHz 9MB L3 cache
Memory	128GB	Main Memory
Disk Controllers	45	QLogic™ QLA2340
	1	SCSI HBA
Disk Drives	755	36GB FC
	1	36GB SCSI
Total Disk Storage		25,160 GB



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Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
Server Hardware							
Express5800/1320Xe system (32 way model)	850200716	NEC	1	975,106	1	975,106	201,380
Base Original 32(Express5800/1320Xe base system)					1	-	-
Itanium2 1.6GHz/9M cache					32	-	-
Cell Card Original					8	-	-
2GB Memory Option (4 x 512MB DIMMs)					64	-	-
Core PCI box					1	-	-
Base PCI box					3	-	-
PCI Cable					8	-	-
Expansion Cabinet					1	-	-
36GB Ultra 320/m SCSI HDD 10000RPM					1	-	-
10/100/1000Mb Ether card (Intel Pro1000XT)					1	-	-
Ultra160 SCSI card (Adaptec 39160)					1	-	-
Windows Server 2003, Data Center Edition					32	-	-
NEC Express5800/120Rg-2(for System Management)							
120Rg-2 base rack svr, one XEON processor, 3.0 GHz/1MB cache	850174001	NEC	1	3,799	1	3,799	-
1GB (2 x 512MB) interleaved memory DDR333 SDRAM	062-02466-000	NEC	1	999	1	999	-
36.4GB SCSI HDD (1")	062-02012-000	NEC	1	399	1	399	-
CD-ROM, 2 x On-board LAN, KB/MS	Included	NEC	1	-	1	-	-
3 years of warranty service to 4-hour response, 7x24	DE-0000-1095-7244	NEC	1	1,599	1	-	1,599
CTX CRT VL510 15	VL510	CTX	3	109	2	218	-
FC HBA QLA2340 (+10% spares)	QLA2340-CK	QLogic	3	824	50	41,200	-
					Subtotal	1,021,721	202,979
Disk Subsystem							
NEC Storage S2300 Basic Unit	850171001	NEC	1	33,999	23	781,977	-
2 RAID_Cntrl, 1GB Cache, 1DE, w/o drives							
1GB(2 x 512MB) PC133 SDRAM memory	062-02301-000	NEC	1	1,999	3	5,997	-
S2300 DE (+10% spares)	062-02402-000	NEC	1	7,999	31	247,969	-
36GB 15K rpm FC HDD (+10% spares)	062-02431-000	NEC	1	579	831	481,149	-
3 yr Telephone Upgrade Hdw & Storage	IS-THSU-1095-0724	NEC	1	1,499	23	-	34,477
42U Rackframe	050-01790-000	NEC	1	1,799	5	8,995	-
FC Cable 10MLC-LC (+10% spares)	062-02304-000	NEC	1	200	50	10,000	-
					Subtotal	1,536,087	34,477
Server Software							
Microsoft SQL Server 2005 Enterprise Edition (64bit)	810-04793	Microsoft	2	8,487	1	8,487	-
Microsoft SQL Server 2005 Client Licenses	359-01911	Microsoft	2	156	45	7,020	-
Microsoft Windows 2003 Standard Server	P73-00295	Microsoft	2	719	1	719	-
Visual Studio .NET 2003 Professional Special Edition	659-00390	Microsoft	2	799	1	799	-
Microsoft Problem Resolution Service		Microsoft	2	245	1	-	245
					Subtotal	17,025	245
					TOTAL	2,574,833	237,701

NEC brand total(Pricing 1-NEC)						2,516,390	237,456
NEC brand Large Purchase Cash Prepay Discount	-45%					-1,132,376	-106,855

Notes:		
Pricing: 1-NEC 2-Microsoft 3-Compuview Microsystems		3-Yr. Cost of Ownership: \$1,573,303
		QphH@1TB: 22967.3
		\$ / QphH@1TB: \$68.51

Results and methodology audited by Francois Raab of 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 stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflects 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.



Numerical Quantities Summary

Measurement Results

Scale Factor	1000 GB
Total Data Storage / Database Size	25.16
Start of Database Load	7/9/2005 05:41:19
End of Database Load	7/9/2005 16:15:19
Database Load Time	10:34:00
Query Streams for Throughput Test	7
TPC-H Power	29159.7
TPC-H Throughput	18089.9
Composite Query per Hour Rating (QphH@1000GB)	22967.3
Total System Price Over 3 Years	\$1,573,303
TPC-H Price Performance Metric	\$68.51

Measurement Intervals

Measurement Interval in Throughput Test (Ts)	30647 seconds
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Duration of Stream Execution:

	Seed	Query Start Date/Time	RF1 Start Date/Time	RF2 Start Date/Time	Query Duration
		Query End Date/Time	RF1 End Date/Time	RF2 End Date/Time	RF Duration
Stream 0	709161519	07/11/2005 07:09:50 07/11/2005 08:52:20	07/11/2005 07:04:08 07/11/2005 07:09:48	07/11/2005 08:52:22 07/11/2005 08:57:22	
Stream 1	709161520	07/11/2005 08:57:28 07/11/2005 14:46:43	07/11/2005 15:14:33 07/11/2005 15:20:39	07/11/2005 15:20:41 07/11/2005 15:27:45	5:49:15 0:13:09
Stream 2	709161521	07/11/2005 08:57:29 07/11/2005 15:14:33	07/11/2005 15:27:58 07/11/2005 15:35:24	07/11/2005 15:35:34 07/11/2005 15:42:54	6:17:05 0:14:46
Stream 3	709161522	07/11/2005 08:57:29 07/11/2005 15:10:05	07/11/2005 15:43:12 07/11/2005 15:51:34	07/11/2005 15:51:52 07/11/2005 16:00:14	6:12:35 0:16:44
Stream 4	709161523	07/11/2005 08:57:30 07/11/2005 15:08:01	07/11/2005 16:00:35 07/11/2005 16:09:42	07/11/2005 16:10:05 07/11/2005 16:19:18	6:10:31 0:18:20
Stream 5	709161524	07/11/2005 08:57:31 07/11/2005 14:59:34	07/11/2005 16:19:44 07/11/2005 16:29:32	07/11/2005 16:30:01 07/11/2005 16:40:17	6:02:03 0:20:03
Stream 6	709161525	07/11/2005 08:57:32 07/11/2005 14:38:25	07/11/2005 16:40:46 07/11/2005 16:51:30	07/11/2005 16:52:05 07/11/2005 17:03:10	5:40:53 0:21:50
Stream 7	709161526	07/11/2005 08:57:33 07/11/2005 14:11:17	07/11/2005 17:03:43 07/11/2005 17:15:27	07/11/2005 17:16:09 07/11/2005 17:28:15	5:13:43 0:23:50



TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 0	505.5	23.6	70.8	41.6	87.5	29.9	106.5	125.2
Stream 1	1938.1	137.8	458.4	350.4	1705.9	128.2	671.4	366.7
Stream 2	3313.3	238.7	512.8	221.5	723.8	208.1	1284.6	663.6
Stream 3	2912.0	90.9	118.7	601.4	2033.7	171.1	876.7	483.9
Stream 4	3341.2	115.3	148.1	366.2	338.8	89.5	499.2	696.0
Stream 5	2424.6	254.0	253.9	519.8	789.0	166.2	984.5	724.4
Stream 6	2244.1	91.6	2511.8	575.3	1199.7	132.0	453.7	599.4
Stream 7	1337.6	88.8	180.2	391.8	2398.9	99.0	1205.2	526.9
Min Qi	1337.6	88.8	118.7	221.5	338.8	89.5	453.7	366.7
Max Qi	3341.2	254.0	2511.8	601.4	2398.9	208.1	1284.6	724.4
Avg Qi	2501.6	145.3	597.7	432.3	1312.8	142.0	853.6	580.1
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 0	534.5	51.2	67.7	130.2	173.0	71.2	21.4	141.0
Stream 1	3999.5	602.1	247.5	1387.5	1156.1	133.8	168.3	474.6
Stream 2	2118.2	878.3	207.0	1404.1	987.4	1540.8	214.0	669.7
Stream 3	2376.5	419.7	500.6	278.2	728.4	175.1	197.8	528.5
Stream 4	1479.5	754.9	885.8	712.9	1632.8	164.2	112.4	561.4
Stream 5	2715.9	658.8	532.7	692.5	1195.7	305.0	291.7	433.5
Stream 6	2554.4	591.8	359.3	1074.7	702.8	461.5	107.9	592.0
Stream 7	1719.8	221.6	468.6	663.8	724.1	129.1	86.7	401.2
Min Qi	1479.5	221.6	207.0	278.2	702.8	129.1	86.7	401.2
Max Qi	3999.5	878.3	885.8	1404.1	1632.8	1540.8	291.7	669.7
Avg Qi	2423.4	589.6	457.4	887.7	1018.2	415.6	168.4	523.0
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 0	50.3	2706.9	90.9	48.2	766.5	306.5	340.0	300.2
Stream 1	498.7	2771.0	430.2	327.6	2257.3	744.4	665.1	423.8
Stream 2	562.6	3196.4	496.8	1346.8	1398.9	437.3	445.7	440.6
Stream 3	788.4	5099.1	367.7	583.8	2585.6	437.4	502.3	502.1
Stream 4	1369.2	2858.5	1173.6	281.2	4191.8	458.9	546.7	552.9
Stream 5	244.3	4305.1	1195.1	189.3	2294.1	552.6	587.9	615.4
Stream 6	169.8	2761.0	436.2	301.0	2191.4	341.7	644.5	665.4
Stream 7	273.3	2911.2	672.0	717.8	3130.0	475.8	704.2	725.4
Min Qi	169.8	2761.0	367.7	189.3	1398.9	341.7	445.7	423.8
Max Qi	1369.2	5099.1	1195.1	1346.8	4191.8	744.4	704.2	725.4
Avg Qi	558.0	3414.6	681.7	535.4	2578.4	492.6	585.2	560.8