

NEC	NEC Express5800/A1160 (12 Processors)		TPC-E 15.1 TPC Pricing 1.3.0
			Report Date November 6, 2008
TPC-E Throughput 1400.00 tpsE	Price/Performance \$1,190.24 USD per tpsE	Availability Date December 31, 2008	Total System Cost \$1,666,334 USD

Database Server Configuration

Operating System Microsoft® Windows Server® 2008 Datacenter x64 Edition	Database Manager Microsoft® SQL Server® 2008 Enterprise x64 Edition	Processors/Cores/ Threads 12 / 64 / 64	Memory 384GB
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Tier B: Server

NEC Express5800/A1160

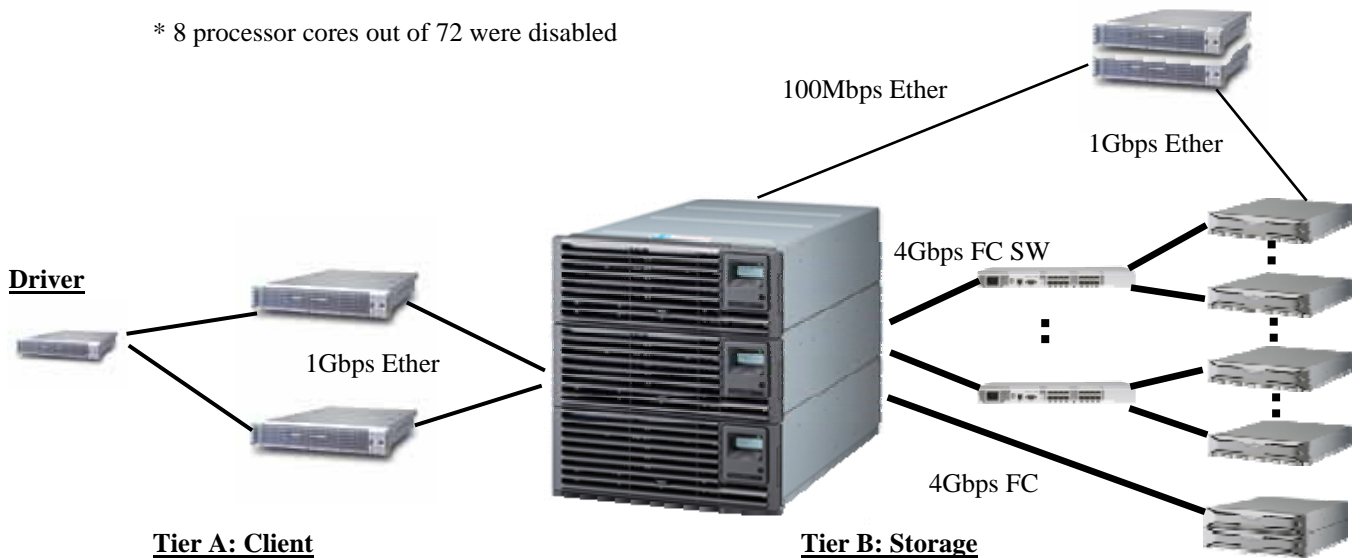
12x Intel® Xeon® processor X7460 2.66GHz, 16MB L3 cache,
6 processor cores*, 6 threads
384GB Memory, 2x 73GB SAS drives
5x 2-port 4Gbps FC HBA
1x Internal SAS RAID Controller
6x Onboard 1Gbps Ether Controllers

* 8 processor cores out of 72 were disabled

Tier B: System Console

2x NEC Express5800/120Rj-2

1x Intel® Xeon® processor E5450
3.0GHz, 12MB L2 cache, 4 processor
cores, 4 threads
4GB Memory
1x 73GB SAS drive
2x Onboard 1Gbps Ether Controllers



Tier A: Client

2x NEC Express5800/120Rj-2

1x Intel® Xeon® processor E5450 3.0GHz, 12MB L2
cache, 4 processor cores, 4 threads
4GB Memory
1x 73GB SAS drive
2x Onboard 1Gbps Ether Controllers

Tier B: Storage

NEC Storage D3-10

37x NEC Storage D3-10 Controllers
37x NEC Storage D3-10 SAS/SATA
Disk Enclosures
864x 147GB 15k RPM SAS drives
20x 300GB 15k RPM SAS drives

Initial 5,421 GB	Redundancy Level : 1 RAID50 : Log / RAID10 : Data	Storage 864 x 147GB 15K 20 x 300GB 15K
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Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
Server Hardware							
NEC Express5800/A1160							
A1160 Server Base Model w/6core Intel Xeon X7460	850200723	NEC	1	36,399	3	109,197	
- 4x 6core Xeon X7460 (2.66GHz/16MB)	included						
- 16GB (2x 8GB Memory Option)	included						
8GB Memory Option (2x 4GB DIMMs)	062-03502-000	NEC	1	899	42	37,758	
Internal SAS RAID (PCIe x4)	062-03503-000	NEC	1	1,399	1	1,399	
73GB 2.5" SAS HDD 15k RPM	062-03504-000	NEC	1	649	2	1,298	
2-port 4Gbps FC-HBA (PCIex4)	062-03507-000	NEC	1	4,149	5	20,745	
HSI Cable(1)	050-03511-000	NEC	1	799	3	2,397	
42U Rackframe	050-02378-001	NEC	1	1,799	1	1,799	
Installation	SP-MX00-STIN001	NEC	1	5,000	1	5,000	
Microsoft Windows Server 2008 Datacenter per 4p	050-03518-000	NEC	1	11,996	3	35,988	
Platinum Warranty (Yr 1,2 & 3)	OSMX-SD4HR-YYY	NEC	1	5,990	3		17,970
NEC Express5800/120Rj-2 (for System Maintenance)							
Model 120Rj-2 Base Unit, E5450, 2G DIMM, DVD-Combo	850195003	NEC	1	4,490	2	8,980	
2GB (1GB x2) DDR2 667 FB-DIMM	062-03118-000	NEC	1	240	2	480	
73GB SAS HDD (3.5"), 15k rpm	062-02782-000	NEC	1	263	2	526	
Upgrade to Platinum Warranty for 3 yrs	4HR-GP-YYY	NEC	1	799	2		1,598
NEC AccuSync LCD52V 15"LCD Display (+2 spares)	ASLCD52V-BK	NEC	3	175	5	875	
					Subtotal	226,442	19,568
Disk Subsystem							
NEC Storage D3-10							
NEC Storage D3-10 Base Model	850193310	NEC	1	7,830	37	289,710	
SAS/SATA Enclosure	NF5021-SE60E	NEC	1	2,941	37	108,817	
SAS disk drive (15k rpm/147GB) (+10% spares)	NF5021-SM624E	NEC	1	486	951	462,186	
SAS disk drive (15k rpm/300GB) (+10% spares)	NF5021-SM625E	NEC	1	768	22	16,896	
1 yr of Standard SW Maintenance for Base SW	UFSD0M-310000AMAS	NEC	1	1,195	111		132,645
3 yrs of Platinum Warranty Upgrade	OS2X-SD4HR-YYY	NEC	1	175,522	1		175,522
UPS 3kVA	050-02424-000	NEC	1	1,799	2	3,598	
42U Rackframe	050-02378-001	NEC	1	1,799	4	7,196	
FC Cable 10M LC-LC (+10% spares)	F2F202LL-10M	Belkin	3	40	51	2,040	
					Subtotal	890,443	308,167
Server Software							
Microsoft SQL Server 2008 Enterprise x64 Edition	810-07507	Microsoft	2	23,432	12	281,184	245
					Subtotal	281,184	245

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Client Hardware

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Model 120Rj-2 Base Unit, E5450, 2G DIMM, DVD-Combo	850195003	NEC	1	4,490	2	8,980	
2GB (1GB x2) DDR2 667 FB-DIMM	062-03118-000	NEC	1	240	2	480	
73GB SAS HDD (3.5"), 15k rpm	062-02782-000	NEC	1	263	2	526	
Upgrade to Platinum Warranty for 3 yrs	4HR-GP-YYY	NEC	1	799	2		1,598
NEC AccuSync LCD52V 15"LCD Display (+2 spares)	ASLCD52V-BK	NEC	3	175	4	700	
42U Rackframe	050-02378-001	NEC	1	1,799	1	1,799	
USB Floppy Disk Drive (+2 spares)	FDUSB-TM2	Verbatim	3	29	3	87	
Floppy Disk (10 Pack)	86269	Verbatim	3	4	1	4	
Cat5e Patch Cable 25' RJ45-RJ45 (+10% spares)	N001-025-BL	Tripp Lite	3	6	48	288	
Cat5e Crossover Cable 10' RJ45-RJ45 (+2 spares)	N010-010-GY	Tripp Lite	3	5	6	30	
Subtotal						12,894	1,598

Client Software

Client Software							
Windows Server 2003 R2 Standard Edition*	P73-01972	Microsoft	2	719	4	2,876	(Included)
Subtotal						2,876	0

Infrastructure

Infrastructure							
Brocade Silkworm 200E 16 Port Fibre Switch (+2 spares)	BR-240E-R001-A	Brocade	4	5,175	5	25,875	
Brocade 4 Port License Upgrade	XBR-SMEDP4POD-0001	Brocade	4	1,050	10	10,500	
6' Null Modem Adapter Cable (+2 spares)	P450-006	Tripp Lite	3	6	3	18	
24-Port 10/100/1000 Gigabit Switch (+2 spares)	SR2024C	Linksys	3	280	4	1,120	
5-port 10/100 switch (+2 spares)	SD205	Linksys	3	32	3	96	
Subtotal						37,609	0

TOTAL 1,451,448 329,578

NEC Large Volume Discount** -10% -112,576 -2,117

Notes:

Pricing: 1-NEC Contact: 1-866-632-3226, 2-Microsoft 3-CDW 4-Synegi
 * Qty of Windpws Server 2003 R2 Standard Edition includes the license of the DB server's maintenance Console
 **10% discount was based on the overall value of the specific components from NEC in this single quotation except 3-yr Mnt. Price for Disk Subsystem
 Discount for similarly sized configurations will be similar to those quoted here but may be vary based on the components in quotation

3-Yr. Cost of Ownership: **\$1,666,334**

tpsE Throughput: **1400.00**

\$ / tpsE \$1,190.24

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.



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Numerical Quantities Summary

Reported Throughput : 1400.00 tpsE **Configured Customers : 700,000**

Response Times (in seconds)	Minimum	Average	90 th %tile	Maximum
Broker Volume	0.01	0.05	0.09	1.63
Customer Position	0.00	0.03	0.06	6.14
Market Feed	0.00	0.03	0.07	2.56
Market Watch	0.00	0.04	0.08	10.71
Security Detail	0.00	0.01	0.03	1.51
Trade Lookup	0.00	0.55	0.76	59.42
Trade Order	0.00	0.09	0.15	12.41
Trade Result	0.00	0.09	0.16	12.81
Trade Status	0.00	0.02	0.04	5.45
Trade Update	0.01	0.64	0.82	2.56
Data Maintenance	0.01	0.25		5.25

Transaction Mix	Transaction Count	Mix %
Broker Volume	4,954,393	4.900%
Customer Position	13,144,303	13.000%
Market Feed	1,011,433	1.000%
Market Watch	18,200,170	18.000%
Security Detail	14,155,481	14.000%
Trade Lookup	8,088,360	7.999%
Trade Order	10,212,064	10.100%
Trade Result	10,114,241	10.003%
Trade Status	19,211,202	19.000%
Trade Update	2,022,069	2.000%
Data Maintenance	120	

Test Duration and Timings

Ramp-up Time	0:29:09
Measurement Interval	2:00:00
Business Recovery Time	1:56:30
Total Number of Transactions Completed in Measurement Interval	101,113,716