

<b>NEC</b>	<b>NEC Express5800/A1160 (16 Processors)</b>		<b>TPC-E 1.70 TPC Pricing 1.4.0</b>
			Report Date 18-March-2009
TPC-E Throughput <b>1568.22 tpsE</b>	Price/Performance <b>\$1,180.01 USD per tpsE</b>	Availability Date <b>18-March-2009</b>	Total System Cost <b>\$1,850,500 USD</b>

**Database Server Configuration**

Operating System <b>Microsoft® Windows Server® 2008 Datacenter x64 Edition</b>	Database Manager <b>Microsoft® SQL Server® 2008 Enterprise x64 Edition</b>	Processors/Cores/ Threads <b>16 / 64 / 64</b>	Memory <b>512GB</b>
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**Tier B: Server**

NEC Express5800/A1160

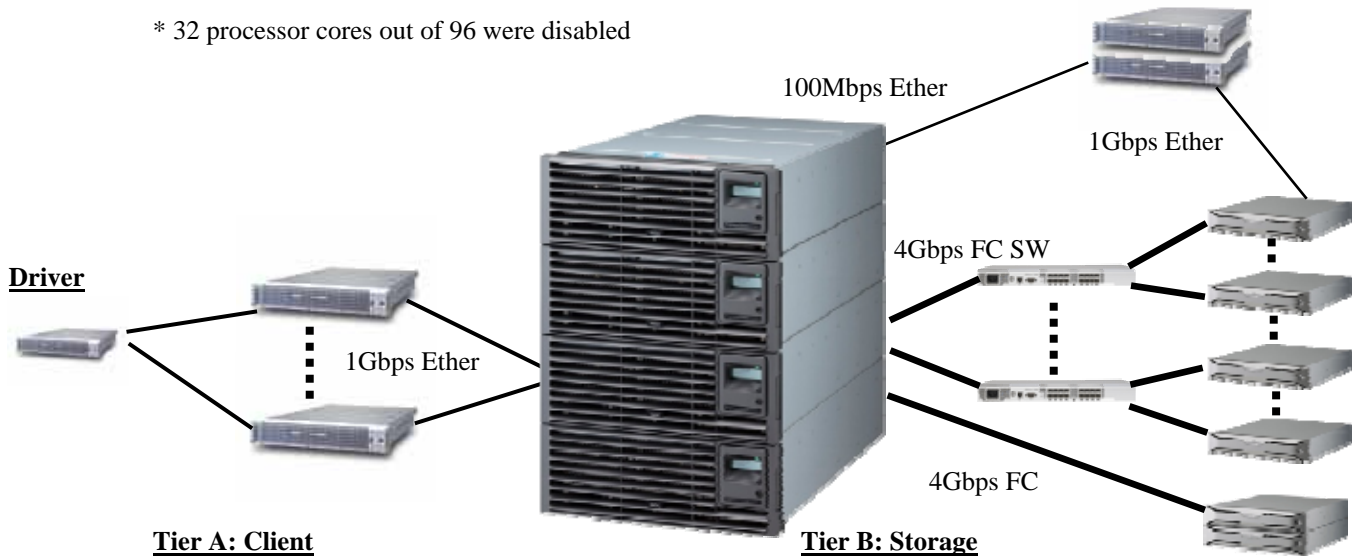
16x Intel® Xeon® processor X7460 2.66GHz, 16MB L3 cache,  
6 processor cores\*, 6 threads  
512GB Memory, 2x 73GB SAS drives  
4x 2-port 4Gbps FC HBA  
1x Internal SAS RAID Controller  
8x Onboard 1Gbps Ether Controllers

\* 32 processor cores out of 96 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**

4x 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

41x NEC Storage D3-10 Controllers  
41x NEC Storage D3-10 SAS/SATA  
Disk Enclosures  
960x 147GB 15k RPM SAS drives  
20x 300GB 15k RPM SAS drives

Initial <b>6,197 GB</b>	Redundancy Level : 1 <b>RAID50 : Log / RAID10 : Data</b>	Storage <b>960 x 147GB 15K 20 x 300GB 15K</b>
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## NEC Express5800/A1160 (16 Processors)

**TPC-E 1.70**  
**TPC Pricing 1.4.0**

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Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
<b>Server Hardware</b>							
NEC Express5800/A1160							
A1160 Server Base Model w/6core Intel Xeon X7460	850200723	NEC	1	36,399	4	145,596	
- 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	56	50,344	
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	4	16,596	
HSI Cable(1)	050-03511-000	NEC	1	799	6	4,794	
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	4	47,984	
Platinum Warranty (Yr 1,2 & 3)	UPPLT-A1160-3Y	NEC	1	5,999	3		17,997
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	145	2	290	
73GB SAS HDD (3.5"), 15k rpm	062-02782-000	NEC	1	230	2	460	
Upgrade to Platinum Warranty for 3 yrs	4HR-GP-YYY	NEC	1	799	2		1,598
NEC AccuSync 73VX 17" LCD Display (+2 spares)	ASLCD73VX-BK	NEC	3	149	5	745	
					<b>Subtotal</b>	<b>285,285</b>	<b>19,595</b>
<b>Disk Subsystem</b>							
NEC Storage D3-10							
NEC Storage D3-10 Base Model	850193310	NEC	1	7,830	41	321,030	
SAS/SATA Enclosure	NF5021-SE60E	NEC	1	2,941	41	120,581	
SAS disk drive (15k rpm/147GB) (+10% spares)	NF5021-SM624E	NEC	1	406	1056	428,736	
SAS disk drive (15k rpm/300GB) (+10% spares)	NF5021-SM625E	NEC	1	606	22	13,332	
1 yr of Platinum SW Maintenance for Base SW	UFSD0M-310000AMAS	NEC	1	1,195	123		146,985
3 yrs of Platinum Warranty Upgrade	OS2X-SD4HR-YYY	NEC	1	176,736	1		176,736
UPS 3kVA	050-02424-000	NEC	1	1,799	2	3,598	
42U Rackframe	050-02378-001	NEC	1	1,799	5	8,995	
FC Cable 10M LC-LC (+10% spares)	F2F202LL-10M	Belklin	3	40	53	2,119	
					<b>Subtotal</b>	<b>898,391</b>	<b>323,721</b>
<b>Server Software</b>							
Microsoft SQL Server 2008 Enterprise x64 Edition	810-07507	Microsoft	2	23,432	16	374,912	245
					<b>Subtotal</b>	<b>374,912</b>	<b>245</b>

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## NEC Express5800/A1160 (16 Processors)

### TPC-E 1.7.0 TPC Pricing 1.4.0

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#### Client Hardware

NEC Express5800/120Rj-2							
Model 120Rj-2 Base Unit, E5450, 2G DIMM, DVD-Combo	850195003	NEC	1	4,490	4	17,960	
2GB (1GB x2) DDR2 667 FB-DIMM	062-03118-000	NEC	1	145	4	580	
73GB SAS HDD (3.5"), 15k rpm	062-02782-000	NEC	1	230	4	920	
Upgrade to Platinum Warranty for 3 yrs	4HR-GP-YYY	NEC	1	799	4		3,196
NEC AccuSync 73VX 17" LCD Display (+2 spares)	ASLCD73VX-BK	NEC	3	149	6	894	
42U Rackframe	050-02378-001	NEC	1	1,799	1	1,799	
Cat5e Patch Cable 25' RJ45-RJ45 (+10% spares)	N001-025-BL	Tripp Lite	3	6	53	317	
Cat5e Crossover Cable 10' RJ45-RJ45 (+2 spares)	N010-010-GY	Tripp Lite	3	5	10	50	
<b>Subtotal</b>						<b>22,520</b>	<b>3,196</b>

#### Client Software

Windows Server 2008 Standard Edition (x86)*	P73-04165	Microsoft	2	711	6	4,266 (Included)	
<b>Subtotal</b>						<b>4,266</b>	<b>0</b>

#### Infrastructure

Brocade Silkworm 300E 24 Port Fibre Switch (+2 spares)	BR-340-0004-A	Brocade	4	5,175	6	31,050	
Rack Mount Kit (+2 spares)	XBR-R000162	Brocade	4	99	6	594	
Advanced Replacement, 24x7 Software Support, 1 yr	300-SVC-ADVANCE-1	Brocade	4	450	18		8,100
6' Null Modem Adapter Cable (+2 spares)	P450-006	Tripp Lite	3	5	3	15	
24-Port 10/100/1000 Gigabit Switch (+2 spares)	SR2024C	Cisco	3	250	4	1,000	
5-port 10/100 switch (+2 spares)	SD205	Cisco	3	32	3	96	
<b>Subtotal</b>						<b>32,755</b>	<b>8,100</b>

**TOTAL** 1,618,130 354,857

NEC Large Volume Discount\*\* -10% -120,207 -2,279

#### Notes:

Pricing: 1-NEC Contact: 1-866-632-3226, 2-Microsoft 3-CDW 4-Synegi  
 \* Qty of Windpws Server 2008 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: **\$1,850,500**

tpsE Throughput: **1568.22**

**\$ / tpsE \$1,180.01**

#### 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				
<b>Reported Throughput : 1568.22 tpsE</b>		<b>Configured Customers : 800,000</b>		
Response Times (in seconds)	Minimum	Average	90 <sup>th</sup> %tile	Maximum
Broker Volume	0.01	0.05	0.08	5.09
Customer Position	0.00	0.03	0.05	0.82
Market Feed	0.00	0.03	0.07	5.05
Market Watch	0.00	0.03	0.06	2.42
Security Detail	0.00	0.01	0.03	1.98
Trade Lookup	0.00	0.53	0.76	3.25
Trade Order	0.00	0.07	0.12	5.12
Trade Result	0.00	0.08	0.15	2.13
Trade Status	0.00	0.02	0.04	2.35
Trade Update	0.01	0.62	0.81	3.44
Data Maintenance	0.01	0.18		2.44
Transaction Mix		Transaction Count	Mix %	
Broker Volume		5,532,312	4.900%	
Customer Position		14,677,165	13.000%	
Market Feed		1,129,132	1.000%	
Market Watch		20,322,714	18.000%	
Security Detail		15,806,601	14.000%	
Trade Lookup		9,031,781	8.000%	
Trade Order		11,403,618	10.100%	
Trade Result		11,291,232	10.001%	
Trade Status		21,451,797	19.000%	
Trade Update		2,257,938	2.000%	
Data Maintenance		120		
Test Duration and Timings				
Ramp-up Time				0:54:22
Measurement Interval				2:00:00
Business Recovery Time				0:51:23
Total Number of Transactions Completed in Measurement Interval				112,904,290