



# SPEC<sup>®</sup> CFP2006 Result

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## NEC Corporation

SPECfp<sup>®</sup>\_rate2006 = 975

### Express5800/A1080a-E (Intel Xeon X7560)

SPECfp\_rate\_base2006 = 940

CPU2006 license: 9006

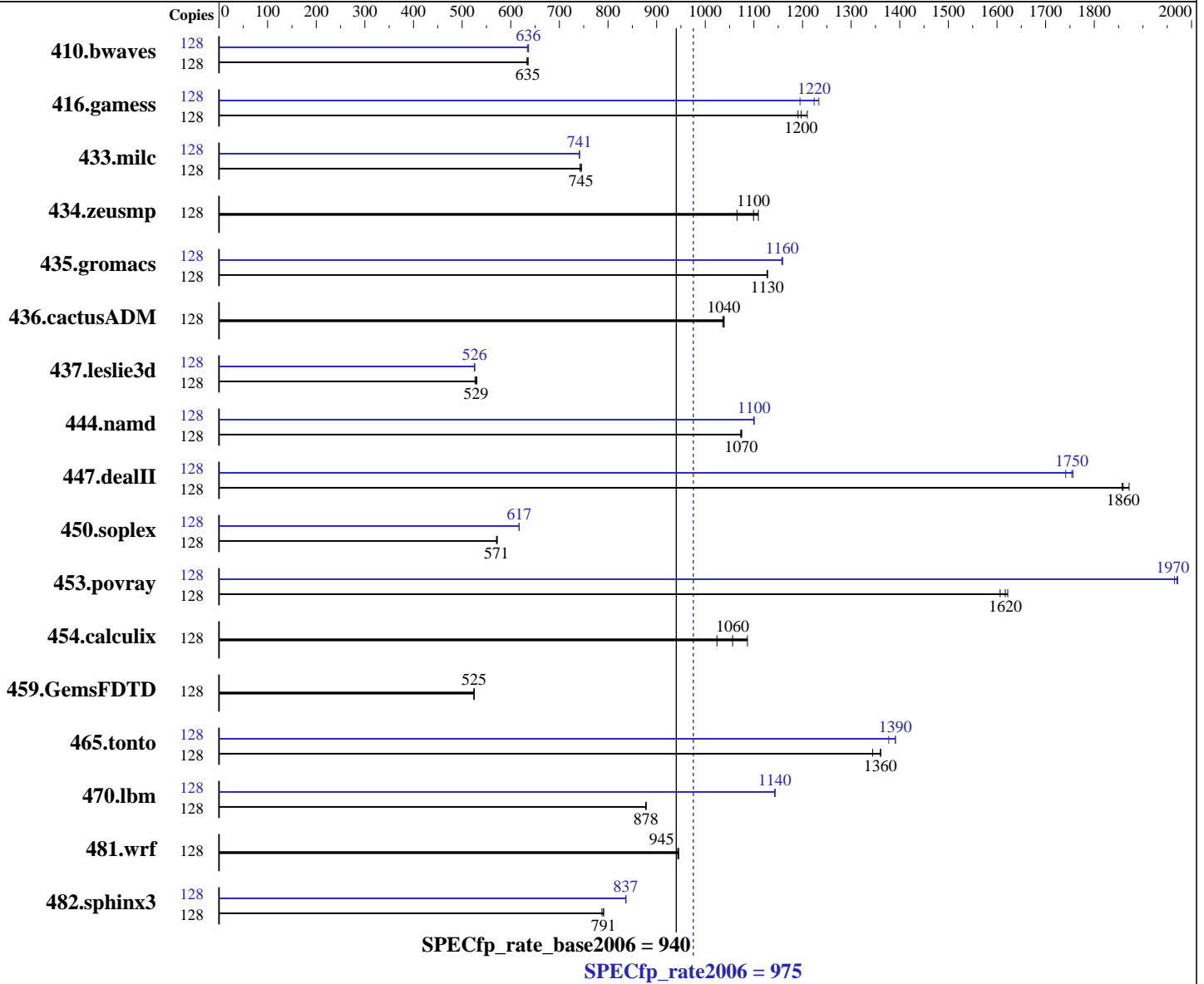
Test date: Nov-2011

Test sponsor: NEC Corporation

Hardware Availability: Aug-2011

Tested by: NEC Corporation

Software Availability: May-2011



#### Hardware

CPU Name: Intel Xeon X7560  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.67 GHz  
 CPU MHz: 2267  
 FPU: Integrated  
 CPU(s) enabled: 64 cores, 8 chips, 8 cores/chip, 2 threads/core  
 CPU(s) orderable: 8 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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#### Software

Operating System: Red Hat Enterprise Linux Server release 5.6, Kernel 2.6.18-238.el5 on an x86\_64  
 Compiler: C/C++/Fortran: Version 12.0.4.191 of Intel Compiler XE Build 20110427  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit

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SPECfp\_rate2006 = **975**

### Express5800/A1080a-E (Intel Xeon X7560)

SPECfp\_rate\_base2006 = **940**

CPU2006 license: 9006

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L3 Cache: 24 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 1 TB (128 x 8 GB 2Rx4 PC3-8500R-7, ECC)  
 Disk Subsystem: 2x300 GB SAS, 10000 RPM, RAID 0  
 Other Hardware: None

Other Software: None

## Results Table

| Benchmark     | Base   |                   |                    |                    |                    |                    |                    | Peak   |                    |                    |                    |                    |                    |                    |
|---------------|--------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|               | Copies | Seconds           | Ratio              | Seconds            | Ratio              | Seconds            | Ratio              | Copies | Seconds            | Ratio              | Seconds            | Ratio              | Seconds            | Ratio              |
| 410.bwaves    | 128    | 2737              | 636                | 2747               | 633                | <b><u>2738</u></b> | <b><u>635</u></b>  | 128    | 2732               | 637                | <b><u>2735</u></b> | <b><u>636</u></b>  | 2743               | 634                |
| 416.gamess    | 128    | 2072              | 1210               | 2105               | 1190               | <b><u>2093</u></b> | <b><u>1200</u></b> | 128    | 2032               | 1230               | <b><u>2048</u></b> | <b><u>1220</u></b> | 2097               | 1190               |
| 433.milc      | 128    | 1583              | 742                | <b><u>1578</u></b> | <b><u>745</u></b>  | 1576               | 745                | 128    | 1585               | 741                | <b><u>1585</u></b> | <b><u>741</u></b>  | 1585               | 741                |
| 434.zeusmp    | 128    | 1050              | 1110               | <b><u>1060</u></b> | <b><u>1100</u></b> | 1093               | 1070               | 128    | 1050               | 1110               | <b><u>1060</u></b> | <b><u>1100</u></b> | 1093               | 1070               |
| 435.gromacs   | 128    | <b><u>810</u></b> | <b><u>1130</u></b> | 810                | 1130               | 811                | 1130               | 128    | 790                | 1160               | <b><u>789</u></b>  | <b><u>1160</u></b> | 788                | 1160               |
| 436.cactusADM | 128    | 1472              | 1040               | <b><u>1473</u></b> | <b><u>1040</u></b> | 1476               | 1040               | 128    | 1472               | 1040               | <b><u>1473</u></b> | <b><u>1040</u></b> | 1476               | 1040               |
| 437.leslie3d  | 128    | 2285              | 527                | <b><u>2275</u></b> | <b><u>529</u></b>  | 2269               | 530                | 128    | 2288               | 526                | 2291               | 525                | <b><u>2288</u></b> | <b><u>526</u></b>  |
| 444.namd      | 128    | 957               | 1070               | <b><u>956</u></b>  | <b><u>1070</u></b> | 955                | 1080               | 128    | <b><u>933</u></b>  | <b><u>1100</u></b> | 933                | 1100               | 934                | 1100               |
| 447.dealII    | 128    | <b><u>787</u></b> | <b><u>1860</u></b> | 782                | 1870               | 788                | 1860               | 128    | <b><u>835</u></b>  | <b><u>1750</u></b> | 834                | 1760               | 841                | 1740               |
| 450.soplex    | 128    | 1870              | 571                | 1865               | 572                | <b><u>1870</u></b> | <b><u>571</u></b>  | 128    | <b><u>1729</u></b> | <b><u>617</u></b>  | 1729               | 617                | 1730               | 617                |
| 453.povray    | 128    | 424               | 1610               | 420                | 1620               | <b><u>421</u></b>  | <b><u>1620</u></b> | 128    | <b><u>346</u></b>  | <b><u>1970</u></b> | 345                | 1970               | 347                | 1970               |
| 454.calculix  | 128    | 972               | 1090               | 1031               | 1020               | <b><u>1000</u></b> | <b><u>1060</u></b> | 128    | 972                | 1090               | 1031               | 1020               | <b><u>1000</u></b> | <b><u>1060</u></b> |
| 459.GemsFDTD  | 128    | 2587              | 525                | <b><u>2588</u></b> | <b><u>525</u></b>  | 2592               | 524                | 128    | 2587               | 525                | <b><u>2588</u></b> | <b><u>525</u></b>  | 2592               | 524                |
| 465.tonto     | 128    | 937               | 1340               | <b><u>926</u></b>  | <b><u>1360</u></b> | 925                | 1360               | 128    | 914                | 1380               | <b><u>906</u></b>  | <b><u>1390</u></b> | 905                | 1390               |
| 470.lbm       | 128    | 2003              | 878                | <b><u>2003</u></b> | <b><u>878</u></b>  | 2002               | 878                | 128    | 1539               | 1140               | 1538               | 1140               | <b><u>1538</u></b> | <b><u>1140</u></b> |
| 481.wrf       | 128    | 1516              | 943                | 1513               | 945                | <b><u>1513</u></b> | <b><u>945</u></b>  | 128    | 1516               | 943                | 1513               | 945                | <b><u>1513</u></b> | <b><u>945</u></b>  |
| 482.sphinx3   | 128    | 3168              | 787                | 3154               | 791                | <b><u>3155</u></b> | <b><u>791</u></b>  | 128    | <b><u>2982</u></b> | <b><u>837</u></b>  | 2981               | 837                | 2982               | 837                |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
echo 1 > /proc/sys/vm/zone_reclaim_mode
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 72000 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```



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CPU2006 license: 9006

Test date: Nov-2011

Test sponsor: NEC Corporation

Hardware Availability: Aug-2011

Tested by: NEC Corporation

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## Platform Notes

Patrol Scrubbing set to disabled in Maintenance Console

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
 416.gamess: -DSPEC\_CPU\_LP64  
 433.milc: -DSPEC\_CPU\_LP64  
 434.zeusmp: -DSPEC\_CPU\_LP64  
 435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main  
 436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
 437.leslie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64  
 447.dealII: -DSPEC\_CPU\_LP64  
 450.soplex: -DSPEC\_CPU\_LP64  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
 459.GemsFDTD: -DSPEC\_CPU\_LP64  
 465.tonto: -DSPEC\_CPU\_LP64  
 470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
 482.sphinx3: -DSPEC\_CPU\_LP64

## Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static

Continued on next page



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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
 416.gamess: -DSPEC\_CPU\_LP64  
 433.milc: -DSPEC\_CPU\_LP64  
 434.zeusmp: -DSPEC\_CPU\_LP64  
 435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main  
 436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
 437.leslie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64  
 447.deallI: -DSPEC\_CPU\_LP64  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
 459.GemsFDTD: -DSPEC\_CPU\_LP64  
 465.tonto: -DSPEC\_CPU\_LP64  
 470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

Continued on next page



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## Peak Optimization Flags (Continued)

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-ansi-alias -opt-prefetch -static -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2

### C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

### Fortran benchmarks:

410.bwaves: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto  
-inline-calloc -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

### Benchmarks using both Fortran and C:

Continued on next page



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## Peak Optimization Flags (Continued)

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch  
-static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20110705.html>

<http://www.spec.org/cpu2006/flags/NEC-platform-linux64-revC.20111206.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20110705.xml>

<http://www.spec.org/cpu2006/flags/NEC-platform-linux64-revC.20111206.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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