



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/120Rh-1  
(Intel Xeon X5460)

SPECfp®\_rate2006 = 42.5

SPECfp\_rate\_base2006 = 39.1

CPU2006 license: 9006

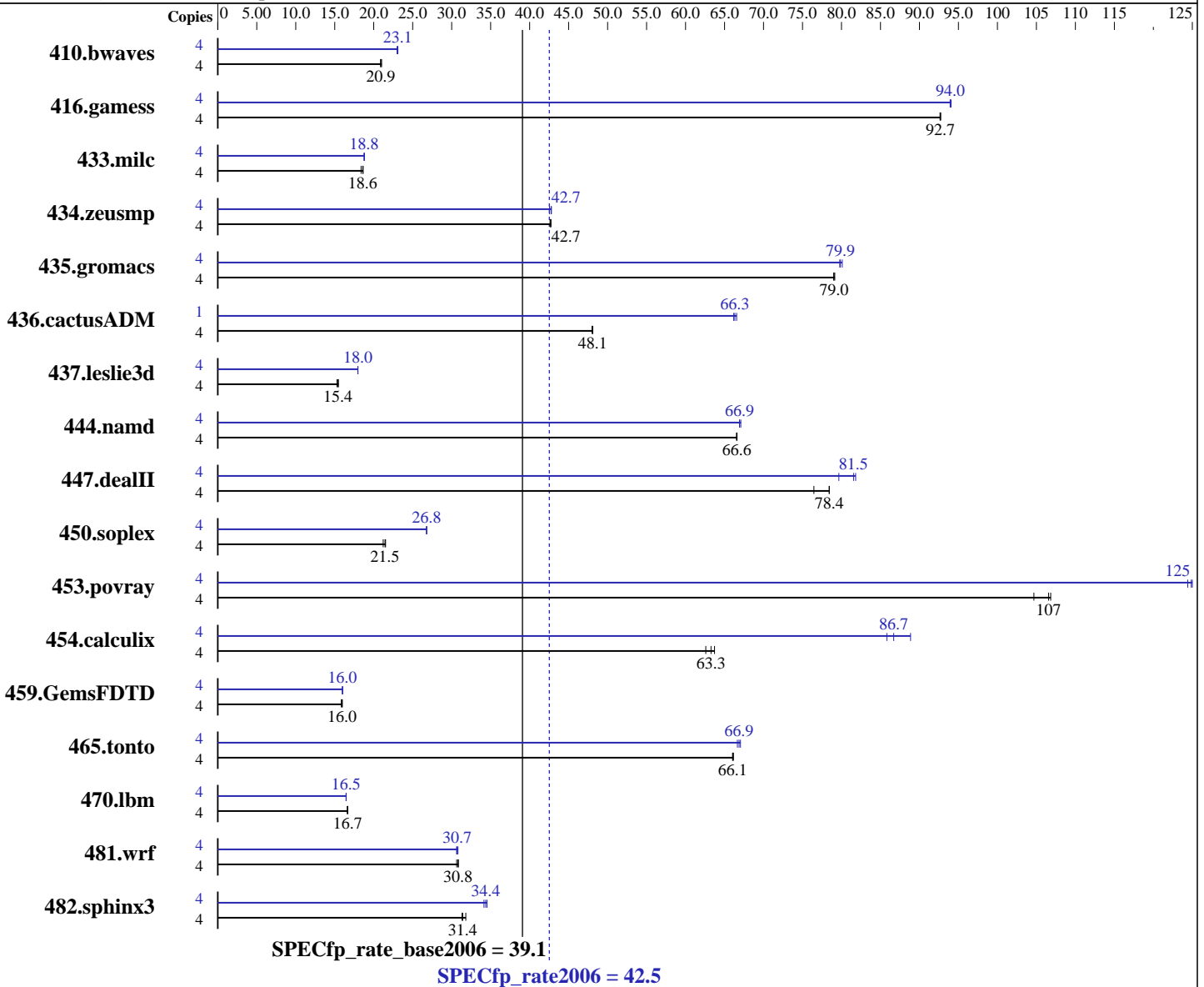
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2008

Hardware Availability: Apr-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 3167  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smpp  
 Compiler: Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ReiserFS

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L3 Cache: None  
Other Cache: None  
Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x73.2 GB SAS, 15000RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.tar.gz, Version 2.17

## Results Table

| Benchmark     | Base   |            |             |             |             |             |             | Peak   |             |             |             |             |             |             |
|---------------|--------|------------|-------------|-------------|-------------|-------------|-------------|--------|-------------|-------------|-------------|-------------|-------------|-------------|
|               | Copies | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Copies | Seconds     | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       |
| 410.bwaves    | 4      | 2604       | 20.9        | <u>2599</u> | <u>20.9</u> | 2587        | 21.0        | 4      | 2353        | 23.1        | 2364        | 23.0        | <u>2357</u> | <u>23.1</u> |
| 416.gamess    | 4      | 845        | 92.7        | 845         | 92.6        | <u>845</u>  | <u>92.7</u> | 4      | <u>834</u>  | <u>94.0</u> | 834         | 93.9        | 833         | 94.1        |
| 433.milc      | 4      | 1998       | 18.4        | <u>1975</u> | <u>18.6</u> | 1969        | 18.6        | 4      | 1952        | 18.8        | 1956        | 18.8        | <u>1956</u> | <u>18.8</u> |
| 434.zeusmp    | 4      | 854        | 42.6        | <u>853</u>  | <u>42.7</u> | 852         | 42.7        | 4      | 856         | 42.5        | 851         | 42.8        | <u>852</u>  | <u>42.7</u> |
| 435.gromacs   | 4      | <u>361</u> | <u>79.0</u> | 362         | 79.0        | 361         | 79.1        | 4      | 358         | 79.8        | 357         | 80.1        | <u>358</u>  | <u>79.9</u> |
| 436.cactusADM | 4      | <u>994</u> | <u>48.1</u> | 996         | 48.0        | 994         | 48.1        | 1      | <u>180</u>  | <u>66.3</u> | 181         | 66.2        | 180         | 66.6        |
| 437.leslie3d  | 4      | 2460       | 15.3        | <u>2439</u> | <u>15.4</u> | 2430        | 15.5        | 4      | <u>2092</u> | <u>18.0</u> | 2093        | 18.0        | 2091        | 18.0        |
| 444.namd      | 4      | 482        | 66.6        | 482         | 66.5        | <u>482</u>  | <u>66.6</u> | 4      | 478         | 67.1        | <u>479</u>  | <u>66.9</u> | 479         | 66.9        |
| 447.dealII    | 4      | 583        | 78.4        | <u>583</u>  | <u>78.4</u> | 598         | 76.5        | 4      | 559         | 81.8        | <u>561</u>  | <u>81.5</u> | 574         | 79.7        |
| 450.soplex    | 4      | 1572       | 21.2        | <u>1555</u> | <u>21.5</u> | 1550        | 21.5        | 4      | 1246        | 26.8        | <u>1246</u> | <u>26.8</u> | 1246        | 26.8        |
| 453.povray    | 4      | <u>200</u> | <u>107</u>  | 199         | 107         | 203         | 105         | 4      | <u>170</u>  | <u>125</u>  | 170         | 125         | 171         | 124         |
| 454.calculix  | 4      | <u>522</u> | <u>63.3</u> | 518         | 63.7        | 527         | 62.6        | 4      | 371         | 88.9        | 385         | 85.8        | <u>381</u>  | <u>86.7</u> |
| 459.GemsFDTD  | 4      | 2679       | 15.8        | <u>2660</u> | <u>16.0</u> | 2658        | 16.0        | 4      | <u>2654</u> | <u>16.0</u> | 2656        | 16.0        | 2649        | 16.0        |
| 465.tonto     | 4      | 595        | 66.1        | 596         | 66.0        | <u>596</u>  | <u>66.1</u> | 4      | 591         | 66.6        | <u>589</u>  | <u>66.9</u> | 587         | 67.0        |
| 470.lbm       | 4      | 3311       | 16.6        | <u>3299</u> | <u>16.7</u> | 3298        | 16.7        | 4      | 3339        | 16.5        | <u>3339</u> | <u>16.5</u> | 3338        | 16.5        |
| 481.wrf       | 4      | 1458       | 30.6        | 1448        | 30.9        | <u>1451</u> | <u>30.8</u> | 4      | 1459        | 30.6        | <u>1456</u> | <u>30.7</u> | 1450        | 30.8        |
| 482.sphinx3   | 4      | 2488       | 31.3        | <u>2482</u> | <u>31.4</u> | 2451        | 31.8        | 4      | <u>2268</u> | <u>34.4</u> | 2257        | 34.5        | 2283        | 34.1        |

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

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
'/usr/bin/taskset' used to bind processes to CPUs  
OMP\_NUM\_THREADS set to number of cores

## Platform Notes

Bios settings:  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetch: Disabled  
Intel SpeedStep Technology: Disabled



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SPECfp\_rate\_base2006 = 39.1

CPU2006 license: 9006

Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2008

Hardware Availability: Apr-2008

Software Availability: Nov-2007

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, for peak, are compiled in 32-bit mode

The NEC Express5800/120Rh-1(Intel Xeon X5460) and the NEC Express5800/120Rj-2(Intel Xeon X5460) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon X5460) model.

## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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:

-fast

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## Base Optimization Flags (Continued)

C++ benchmarks:

-fast

Fortran benchmarks:

-fast

Benchmarks using both Fortran and C:

-fast

## Peak Compiler Invocation

C benchmarks (except as noted below):

/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib

-I/opt/intel/cc/10.1.008/include

433.milc: icc

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib

-I/opt/intel/cc/10.1.008/include

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib

-I/opt/intel/fc/10.1.008/include

Benchmarks using both Fortran and C:

icc ifort

## 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

444.namd: -DSPEC\_CPU\_LP64

447.dealII: -DSPEC\_CPU\_LP64

453.povray: -DSPEC\_CPU\_LP64

454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main

459.GemsFDTD: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

465.tonto: -DSPEC\_CPU\_LP64

481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-scalar-rep- -prefetch -opt-malloc-options=3

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

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## Peak Optimization Flags (Continued)

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.xml>

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

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