



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## NEC Corporation

SPECfp<sup>®</sup>\_rate2006 = 69.0

Express5800/R110e-1E (Intel Pentium G2020)

SPECfp\_rate\_base2006 = 67.3

CPU2006 license: 9006

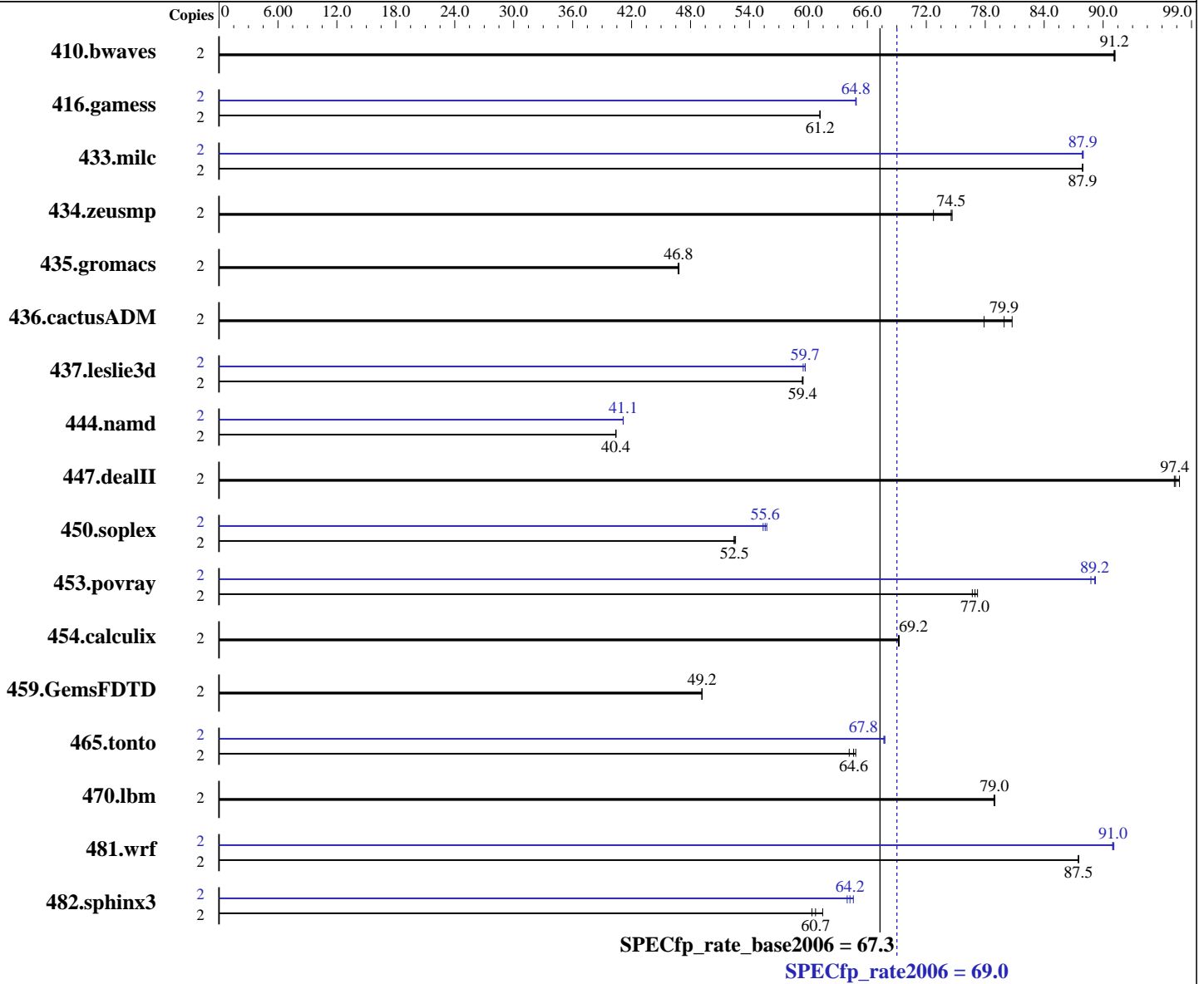
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2013

Hardware Availability: Apr-2013

Software Availability: Feb-2012



**Hardware**

CPU Name: Intel Pentium G2020  
 CPU Characteristics:  
 CPU MHz: 2900  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

*Continued on next page*

**Software**

Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago)  
 Kernel 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.3.293 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: ext4

*Continued on next page*



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

## NEC Corporation

SPECfp\_rate2006 = **69.0**

Express5800/R110e-1E (Intel Pentium G2020)

SPECfp\_rate\_base2006 = **67.3**

CPU2006 license: 9006

Test date: May-2013

Test sponsor: NEC Corporation

Hardware Availability: Apr-2013

Tested by: NEC Corporation

Software Availability: Feb-2012

L3 Cache: 3 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 16 GB (2 x 8 GB 2Rx8 PC3L-12800E-11, ECC, running at 1333 MHz and CL9)  
 Disk Subsystem: 1 x 500 GB SATA, 7200 RPM  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

| Benchmark     | Base   |            |             |            |             |            |             |        | Peak       |             |            |             |            |             |  |  |
|---------------|--------|------------|-------------|------------|-------------|------------|-------------|--------|------------|-------------|------------|-------------|------------|-------------|--|--|
|               | Copies | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Copies | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       |  |  |
| 410.bwaves    | 2      | 298        | 91.2        | 298        | 91.1        | <b>298</b> | <b>91.2</b> | 2      | 298        | 91.2        | 298        | 91.1        | <b>298</b> | <b>91.2</b> |  |  |
| 416.gamess    | 2      | 640        | 61.2        | 640        | 61.2        | <b>640</b> | <b>61.2</b> | 2      | 604        | 64.9        | 604        | 64.8        | <b>604</b> | <b>64.8</b> |  |  |
| 433.milc      | 2      | 209        | 87.9        | 209        | 87.9        | <b>209</b> | <b>87.9</b> | 2      | 209        | 88.0        | <b>209</b> | <b>87.9</b> | 209        | 87.9        |  |  |
| 434.zeusmp    | 2      | 244        | 74.6        | 250        | 72.7        | <b>244</b> | <b>74.5</b> | 2      | 244        | 74.6        | 250        | 72.7        | <b>244</b> | <b>74.5</b> |  |  |
| 435.gromacs   | 2      | 306        | 46.7        | 305        | 46.8        | <b>305</b> | <b>46.8</b> | 2      | 306        | 46.7        | 305        | 46.8        | <b>305</b> | <b>46.8</b> |  |  |
| 436.cactusADM | 2      | 296        | 80.7        | 307        | 77.9        | <b>299</b> | <b>79.9</b> | 2      | 296        | 80.7        | 307        | 77.9        | <b>299</b> | <b>79.9</b> |  |  |
| 437.leslie3d  | 2      | 317        | 59.4        | <b>316</b> | <b>59.4</b> | 316        | 59.5        | 2      | 316        | 59.5        | 315        | 59.7        | <b>315</b> | <b>59.7</b> |  |  |
| 444.namd      | 2      | 397        | 40.4        | 397        | 40.4        | <b>397</b> | <b>40.4</b> | 2      | 390        | 41.2        | 390        | 41.1        | <b>390</b> | <b>41.1</b> |  |  |
| 447.dealII    | 2      | 234        | 97.8        | 235        | 97.2        | <b>235</b> | <b>97.4</b> | 2      | 234        | 97.8        | 235        | 97.2        | <b>235</b> | <b>97.4</b> |  |  |
| 450.soplex    | 2      | <b>318</b> | <b>52.5</b> | 317        | 52.6        | 318        | 52.4        | 2      | 301        | 55.4        | <b>300</b> | <b>55.6</b> | 299        | 55.8        |  |  |
| 453.povray    | 2      | <b>138</b> | <b>77.0</b> | 138        | 77.2        | 139        | 76.7        | 2      | <b>119</b> | <b>89.2</b> | 120        | 88.8        | 119        | 89.2        |  |  |
| 454.calculix  | 2      | 239        | 69.2        | 238        | 69.2        | <b>239</b> | <b>69.2</b> | 2      | 239        | 69.2        | 238        | 69.2        | <b>239</b> | <b>69.2</b> |  |  |
| 459.GemsFDTD  | 2      | 432        | 49.2        | 431        | 49.2        | <b>432</b> | <b>49.2</b> | 2      | 432        | 49.2        | 431        | 49.2        | <b>432</b> | <b>49.2</b> |  |  |
| 465.tonto     | 2      | 304        | 64.8        | 307        | 64.2        | <b>305</b> | <b>64.6</b> | 2      | 290        | 67.8        | 291        | 67.7        | <b>290</b> | <b>67.8</b> |  |  |
| 470.lbm       | 2      | 348        | 79.0        | 348        | 78.9        | <b>348</b> | <b>79.0</b> | 2      | 348        | 79.0        | 348        | 78.9        | <b>348</b> | <b>79.0</b> |  |  |
| 481.wrf       | 2      | 255        | 87.5        | 255        | 87.5        | <b>255</b> | <b>87.5</b> | 2      | 246        | 91.0        | 245        | 91.1        | <b>245</b> | <b>91.0</b> |  |  |
| 482.sphinx3   | 2      | 646        | 60.4        | <b>642</b> | <b>60.7</b> | 634        | 61.5        | 2      | 604        | 64.6        | 610        | 63.9        | <b>607</b> | <b>64.2</b> |  |  |

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

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

Default BIOS settings were used.



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**NEC Corporation**

**SPECfp\_rate2006 = 69.0**

**Express5800/R110e-1E (Intel Pentium G2020)**

**SPECfp\_rate\_base2006 = 67.3**

**CPU2006 license:** 9006

**Test date:** May-2013

**Test sponsor:** NEC Corporation

**Hardware Availability:** Apr-2013

**Tested by:** NEC Corporation

**Software Availability:** Feb-2012

## General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"

Added glibc-static-2.12-1.47.el6.x86\_64.rpm  
to enable static linking

Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled  
Filesystem page cache cleared with:  
echo 1> /proc/sys/vm/drop\_caches  
runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>

## 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



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

NEC Corporation

SPECfp\_rate2006 = 69.0

Express5800/R110e-1E (Intel Pentium G2020)

SPECfp\_rate\_base2006 = 67.3

CPU2006 license: 9006

Test date: May-2013

Test sponsor: NEC Corporation

Hardware Availability: Apr-2013

Tested by: NEC Corporation

Software Availability: Feb-2012

## Base Optimization Flags

C benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

## 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

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

NEC Corporation

SPECfp\_rate2006 = 69.0

Express5800/R110e-1E (Intel Pentium G2020)

SPECfp\_rate\_base2006 = 67.3

CPU2006 license: 9006

Test date: May-2013

Test sponsor: NEC Corporation

Hardware Availability: Apr-2013

Tested by: NEC Corporation

Software Availability: Feb-2012

## Peak Portability Flags (Continued)

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:

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -static -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3  
 -unroll2

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -fno-alias -auto-ilp32

447.dealIII: basepeak = yes

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
 -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

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 -static -opt-prefetch

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

**NEC Corporation**

**SPECfp\_rate2006 = 69.0**

**Express5800/R110e-1E (Intel Pentium G2020)**

**SPECfp\_rate\_base2006 = 67.3**

**CPU2006 license:** 9006

**Test date:** May-2013

**Test sponsor:** NEC Corporation

**Hardware Availability:** Apr-2013

**Tested by:** NEC Corporation

**Software Availability:** Feb-2012

## Peak Optimization Flags (Continued)

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

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120d-RevA.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 15:48:04 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 18 June 2013.