# SPEC® CFP2006 Result

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## NEC Corporation

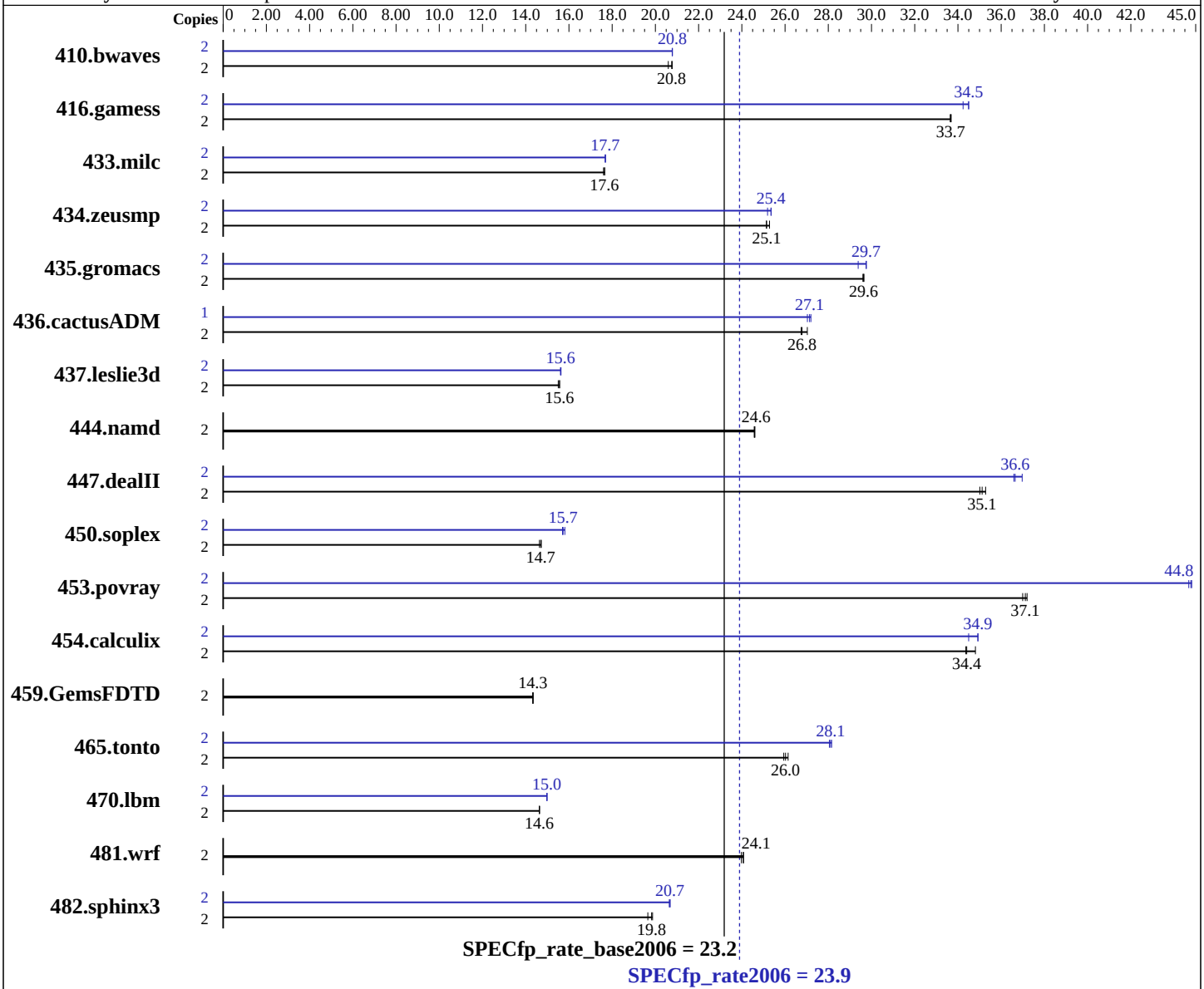
Express5800/iR110a-1H
(Intel Core 2 Duo P8400)

**SPECfp®_rate2006 = 23.9**

**SPECfp_rate_base2006 = 23.2**

**CPU2006 license:** 9006
**Test sponsor:** NEC Corporation
**Tested by:** NEC Corporation

**Test date:** Nov-2009
**Hardware Availability:** Jul-2009
**Software Availability:** Feb-2009




### Hardware

| | |
|---|---|
| CPU Name: | Intel Core 2 Duo P8400 |
| CPU Characteristics: | 1066 MHz system bus |
| CPU MHz: | 2266 |
| 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: | 3 MB I+D on chip per chip |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp |
| Compiler: | Intel C++ and Fortran Compiler Professional 11.0 for Linux<br>Build 20090131 Package ID: l_cproc_p_11.0.081, l_cprof_p_11.0.081 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (multi-user) |

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L3 Cache: None
Other Cache: None
Memory: 8 GB (4x2 GB PC2-5300P, 1 rank, CL5-5-5, ECC)
Disk Subsystem: 1x73.2 GB SAS, 15000 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 2 | 1320 | 20.6 | **1310** | **20.8** | 1308 | 20.8 | 2 | 1307 | 20.8 | 1308 | 20.8 | **1308** | **20.8** |
| 416.gamess | 2 | 1164 | 33.6 | **1163** | **33.7** | 1163 | 33.7 | 2 | **1135** | **34.5** | 1144 | 34.2 | 1135 | 34.5 |
| 433.milc | 2 | 1043 | 17.6 | 1040 | 17.7 | **1040** | **17.6** | 2 | 1038 | 17.7 | 1038 | 17.7 | **1038** | **17.7** |
| 434.zeusmp | 2 | 720 | 25.3 | **724** | **25.1** | 724 | 25.1 | 2 | 723 | 25.2 | **718** | **25.4** | 718 | 25.4 |
| 435.gromacs | 2 | **482** | **29.6** | 482 | 29.7 | 482 | 29.6 | 2 | **480** | **29.7** | 480 | 29.8 | 486 | 29.4 |
| 436.cactusADM | 2 | 894 | 26.7 | 884 | 27.0 | **892** | **26.8** | 1 | **440** | **27.1** | 442 | 27.0 | 439 | 27.2 |
| 437.leslie3d | 2 | 1213 | 15.5 | **1208** | **15.6** | 1208 | 15.6 | 2 | 1203 | 15.6 | **1203** | **15.6** | 1205 | 15.6 |
| 444.namd | 2 | 652 | 24.6 | **652** | **24.6** | 653 | 24.6 | 2 | 652 | 24.6 | **652** | **24.6** | 653 | 24.6 |
| 447.dealII | 2 | 653 | 35.0 | **652** | **35.1** | 649 | 35.3 | 2 | 619 | 37.0 | **624** | **36.6** | 625 | 36.6 |
| 450.soplex | 2 | **1135** | **14.7** | 1133 | 14.7 | 1140 | 14.6 | 2 | 1062 | 15.7 | **1060** | **15.7** | 1055 | 15.8 |
| 453.povray | 2 | 286 | 37.2 | 288 | 37.0 | **287** | **37.1** | 2 | 237 | 44.8 | **238** | **44.8** | 238 | 44.7 |
| 454.calculix | 2 | 474 | 34.8 | **480** | **34.4** | 480 | 34.4 | 2 | 472 | 34.9 | **473** | **34.9** | 478 | 34.5 |
| 459.GemsFDTD | 2 | **1481** | **14.3** | 1479 | 14.3 | 1481 | 14.3 | 2 | **1481** | **14.3** | 1479 | 14.3 | 1481 | 14.3 |
| 465.tonto | 2 | **756** | **26.0** | 753 | 26.1 | 759 | 25.9 | 2 | **700** | **28.1** | 702 | 28.1 | 699 | 28.2 |
| 470.lbm | 2 | 1878 | 14.6 | 1878 | 14.6 | **1878** | **14.6** | 2 | 1834 | 15.0 | 1834 | 15.0 | **1834** | **15.0** |
| 481.wrf | 2 | **928** | **24.1** | 932 | 24.0 | 928 | 24.1 | 2 | **928** | **24.1** | 932 | 24.0 | 928 | 24.1 |
| 482.sphinx3 | 2 | 1984 | 19.7 | **1966** | **19.8** | 1962 | 19.9 | 2 | 1888 | 20.6 | 1885 | 20.7 | **1885** | **20.7** |

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.
 taskset was used to bind processes to cores except
 for 436.cactusADM peak
```

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 64M
```

## Platform Notes

```
Bios settings:
Hardware Prefetcher:                Enabled
Adjacent Cache Line Prefetch:       Enabled
```

## 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:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

C++ benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

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## Base Optimization Flags (Continued)

Fortran benchmarks:
`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

Benchmarks using both Fortran and C:
`-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`icc`

482.sphinx3: `/opt/intel/Compiler/11.0/081/bin/ia32/icc -L/opt/intel/Compiler/11.0/081/ipp/ia32/lib -I/opt/intel/Compiler/11.0/081/ipp/ia32/include`

C++ benchmarks (except as noted below):
`icpc`

450.soplex: `/opt/intel/Compiler/11.0/081/bin/ia32/icpc -L/opt/intel/Compiler/11.0/081/ipp/ia32/lib -I/opt/intel/Compiler/11.0/081/ipp/ia32/include`

Fortran benchmarks (except as noted below):
`ifort`

437.leslie3d: `/opt/intel/Compiler/11.0/081/bin/ia32/ifort -L/opt/intel/Compiler/11.0/081/ipp/ia32/lib -I/opt/intel/Compiler/11.0/081/ipp/ia32/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
470.lbm: -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) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias

470.lbm: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
-auto-ilp32

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-

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

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -ansi-alias
-scalar-rep-

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

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-malloc-options=3 -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -auto

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# Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

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

436.cactusADM: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -opt-prefetch -parallel -auto-ilp32`

454.calculix: `-xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32`

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-ic11.0-fp-linux64-revH.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revH.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.xml


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