



# SPEC® CFP2006 Result

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## NEC Corporation

Express5800/140Rf-4  
(Intel Xeon processor X7350)

SPECfp®2006 = 21.2

SPECfp\_base2006 = 18.5

CPU2006 license: 9006

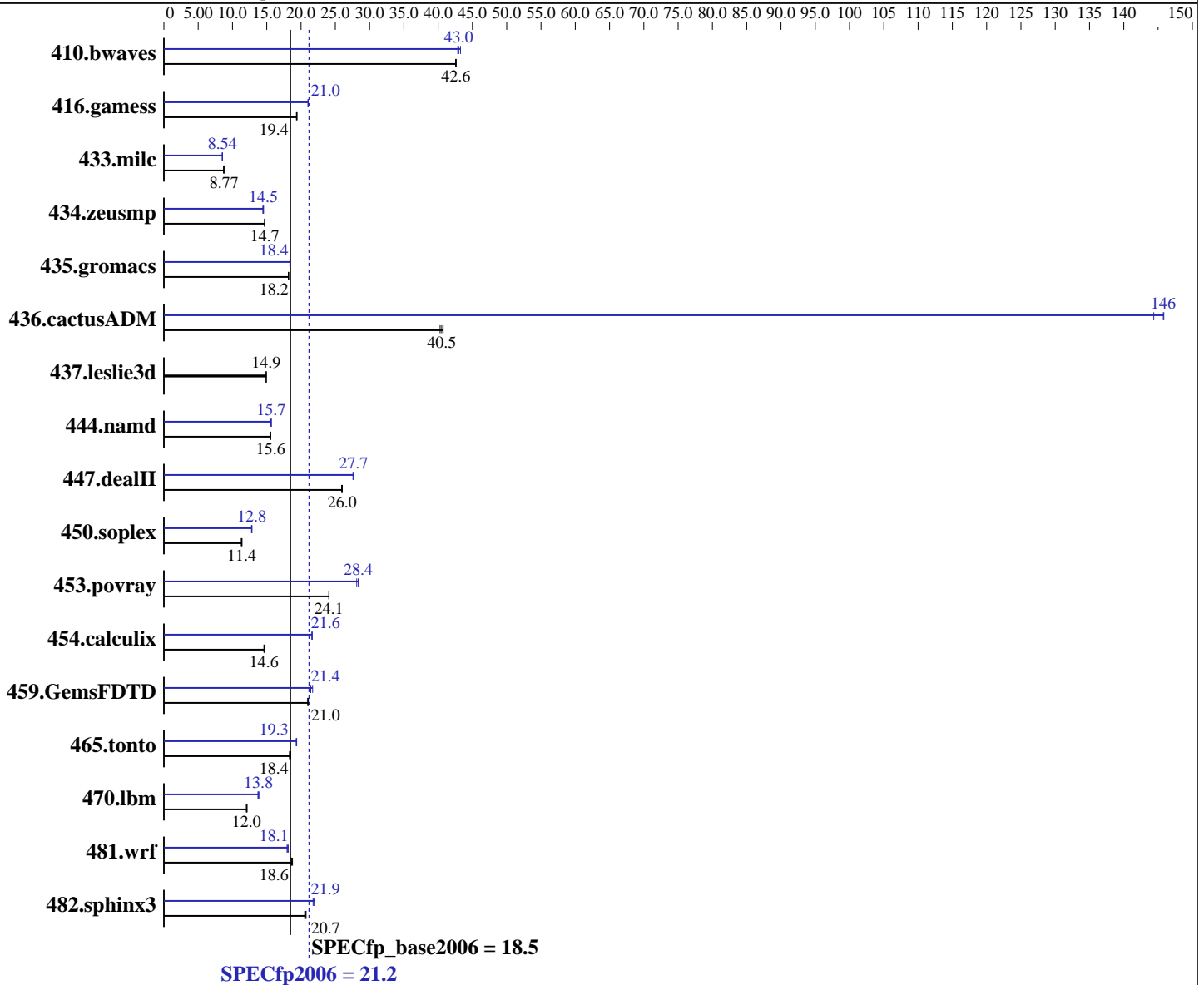
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2007

Hardware Availability: Dec-2007

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X7350  
 CPU Characteristics: 2.93 GHz, 2x4 MB L2 shared, 1066 MHz bus  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip  
 CPU(s) orderable: 1,2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 8 MB I+D on chip per chip, 4 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: ext2

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (16x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x73.2 GB SAS, 10000RPM  
Other Hardware: None

System State: Multiuser, Runlevel 3  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.tar.gz, Version 2.17

## Results Table

| Benchmark     | Base        |             |             |             |            |             | Peak        |             |             |             |            |             |
|---------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
|               | Seconds     | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       |
| 410.bwaves    | 319         | 42.6        | 319         | 42.6        | <b>319</b> | <b>42.6</b> | 314         | 43.3        | <b>316</b>  | <b>43.0</b> | 317        | 42.9        |
| 416.gamess    | <b>1010</b> | <b>19.4</b> | 1009        | 19.4        | 1013       | 19.3        | <b>931</b>  | <b>21.0</b> | 931         | 21.0        | 932        | 21.0        |
| 433.milc      | 1056        | 8.69        | <b>1047</b> | <b>8.77</b> | 1047       | 8.77        | 1081        | 8.49        | <b>1075</b> | <b>8.54</b> | 1073       | 8.56        |
| 434.zeusmp    | 620         | 14.7        | <b>619</b>  | <b>14.7</b> | 618        | 14.7        | 631         | 14.4        | <b>627</b>  | <b>14.5</b> | 626        | 14.5        |
| 435.gromacs   | 393         | 18.1        | 392         | 18.2        | <b>393</b> | <b>18.2</b> | <b>388</b>  | <b>18.4</b> | 388         | 18.4        | 389        | 18.4        |
| 436.cactusADM | 293         | 40.7        | <b>295</b>  | <b>40.5</b> | 297        | 40.3        | <b>82.0</b> | <b>146</b>  | 81.9        | 146         | 82.8       | 144         |
| 437.leslie3d  | 629         | 14.9        | <b>630</b>  | <b>14.9</b> | 635        | 14.8        | 629         | 14.9        | <b>630</b>  | <b>14.9</b> | 635        | 14.8        |
| 444.namd      | 516         | 15.5        | <b>515</b>  | <b>15.6</b> | 515        | 15.6        | 512         | 15.7        | <b>512</b>  | <b>15.7</b> | 514        | 15.6        |
| 447.dealII    | 441         | 25.9        | 440         | 26.0        | <b>440</b> | <b>26.0</b> | 414         | 27.7        | 415         | 27.6        | <b>414</b> | <b>27.7</b> |
| 450.soplex    | <b>734</b>  | <b>11.4</b> | 740         | 11.3        | 732        | 11.4        | <b>651</b>  | <b>12.8</b> | 653         | 12.8        | 649        | 12.8        |
| 453.povray    | 221         | 24.1        | <b>221</b>  | <b>24.1</b> | 221        | 24.1        | <b>188</b>  | <b>28.4</b> | 187         | 28.4        | 189        | 28.1        |
| 454.calculix  | 563         | 14.7        | <b>565</b>  | <b>14.6</b> | 565        | 14.6        | 382         | 21.6        | <b>382</b>  | <b>21.6</b> | 382        | 21.6        |
| 459.GemsFDTD  | <b>505</b>  | <b>21.0</b> | 503         | 21.1        | 506        | 21.0        | <b>495</b>  | <b>21.4</b> | 489         | 21.7        | 496        | 21.4        |
| 465.tonto     | <b>536</b>  | <b>18.4</b> | 537         | 18.3        | 532        | 18.5        | 508         | 19.4        | 510         | 19.3        | <b>509</b> | <b>19.3</b> |
| 470.lbm       | <b>1140</b> | <b>12.0</b> | 1142        | 12.0        | 1132       | 12.1        | 1002        | 13.7        | 991         | 13.9        | <b>996</b> | <b>13.8</b> |
| 481.wrf       | <b>600</b>  | <b>18.6</b> | 601         | 18.6        | 595        | 18.8        | <b>619</b>  | <b>18.1</b> | 616         | 18.1        | 622        | 18.0        |
| 482.sphinx3   | 949         | 20.5        | 940         | 20.7        | <b>943</b> | <b>20.7</b> | 888         | 22.0        | <b>891</b>  | <b>21.9</b> | 896        | 21.8        |

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  
OMP\_NUM\_THREADS set to number of cores (default).

## Platform Notes

Bios settings:  
Adjacent Sector Prefetch: Enabled

## General Notes

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



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**Test sponsor:** NEC Corporation

**Tested by:** NEC Corporation

**Test date:** Dec-2007

**Hardware Availability:** Dec-2007

**Software Availability:** Nov-2007

## 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 -parallel

C++ benchmarks:

-fast -parallel

Fortran benchmarks:

-fast -parallel

Benchmarks using both Fortran and C:

-fast -parallel



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## 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:

ifort

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
437.leslie3d: -DSPEC_CPU_LP64
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
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-req- -prefetch -opt-malloc-options=3
```

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

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

447.dealIII: -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 -parallel

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: basepeak = yes

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

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

### Benchmarks using both Fortran and C:

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 -parallel -prefetch -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.20090714.00.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.20090714.00.xml>



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