



SPEC[®] CFP2006 Result

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NEC Corporation

Express5800/120Bb-m6
(Intel Xeon X5460)

SPECfp[®]_rate2006 = 42.6

SPECfp_rate_base2006 = 39.2

CPU2006 license: 9006

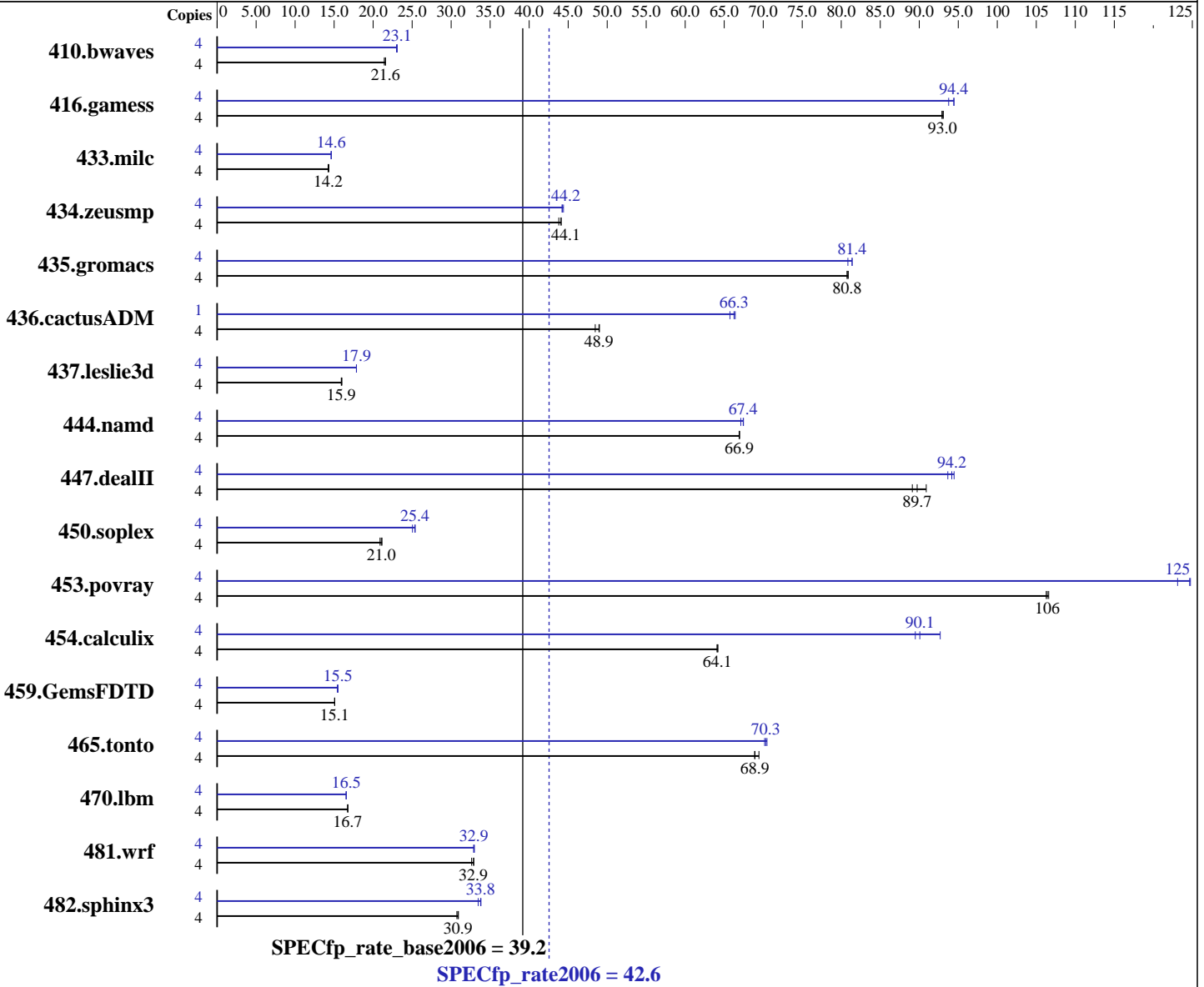
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: May-2008

Hardware Availability: Feb-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

Continued on next page

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: 8 GB (8x1 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 | <u>2520</u> | <u>21.6</u> | 2519 | 21.6 | 2537 | 21.4 | 4 | 2364 | 23.0 | 2355 | 23.1 | <u>2357</u> | <u>23.1</u> |
| 416.gamess | 4 | 843 | 92.9 | <u>843</u> | <u>93.0</u> | 841 | 93.1 | 4 | 835 | 93.8 | <u>829</u> | <u>94.4</u> | 829 | 94.5 |
| 433.milc | 4 | <u>2578</u> | <u>14.2</u> | 2579 | 14.2 | 2563 | 14.3 | 4 | <u>2508</u> | <u>14.6</u> | 2514 | 14.6 | 2508 | 14.6 |
| 434.zeusmp | 4 | 831 | 43.8 | 825 | 44.1 | <u>826</u> | <u>44.1</u> | 4 | 820 | 44.4 | <u>823</u> | <u>44.2</u> | 823 | 44.2 |
| 435.gromacs | 4 | 354 | 80.8 | 353 | 80.9 | <u>354</u> | <u>80.8</u> | 4 | <u>351</u> | <u>81.4</u> | 353 | 80.9 | 351 | 81.4 |
| 436.cactusADM | 4 | 975 | 49.0 | <u>977</u> | <u>48.9</u> | 986 | 48.5 | 1 | 180 | 66.4 | <u>180</u> | <u>66.3</u> | 182 | 65.7 |
| 437.leslie3d | 4 | 2350 | 16.0 | <u>2361</u> | <u>15.9</u> | 2361 | 15.9 | 4 | <u>2105</u> | <u>17.9</u> | 2106 | 17.9 | 2105 | 17.9 |
| 444.namd | 4 | <u>479</u> | <u>66.9</u> | 479 | 66.9 | 479 | 67.0 | 4 | 478 | 67.1 | <u>476</u> | <u>67.4</u> | 475 | 67.5 |
| 447.dealII | 4 | 514 | 89.1 | 503 | 90.9 | <u>510</u> | <u>89.7</u> | 4 | 489 | 93.7 | <u>486</u> | <u>94.2</u> | 484 | 94.5 |
| 450.soplex | 4 | 1597 | 20.9 | <u>1586</u> | <u>21.0</u> | 1578 | 21.1 | 4 | 1332 | 25.0 | 1314 | 25.4 | <u>1315</u> | <u>25.4</u> |
| 453.povray | 4 | 200 | 107 | <u>200</u> | <u>106</u> | 200 | 106 | 4 | 173 | 123 | <u>171</u> | <u>125</u> | 171 | 125 |
| 454.calculix | 4 | <u>515</u> | <u>64.1</u> | 515 | 64.1 | 514 | 64.2 | 4 | 356 | 92.7 | 369 | 89.5 | <u>366</u> | <u>90.1</u> |
| 459.GemsFDTD | 4 | <u>2816</u> | <u>15.1</u> | 2815 | 15.1 | 2817 | 15.1 | 4 | <u>2742</u> | <u>15.5</u> | 2753 | 15.4 | 2740 | 15.5 |
| 465.tonto | 4 | 571 | 68.9 | 567 | 69.5 | <u>571</u> | <u>68.9</u> | 4 | <u>560</u> | <u>70.3</u> | 558 | 70.5 | 561 | 70.2 |
| 470.lbm | 4 | 3282 | 16.7 | 3281 | 16.7 | <u>3282</u> | <u>16.7</u> | 4 | <u>3321</u> | <u>16.5</u> | 3321 | 16.5 | 3320 | 16.6 |
| 481.wrf | 4 | <u>1360</u> | <u>32.9</u> | 1358 | 32.9 | 1370 | 32.6 | 4 | 1358 | 32.9 | 1355 | 33.0 | <u>1358</u> | <u>32.9</u> |
| 482.sphinx3 | 4 | 2521 | 30.9 | <u>2526</u> | <u>30.9</u> | 2537 | 30.7 | 4 | 2330 | 33.5 | 2305 | 33.8 | <u>2308</u> | <u>33.8</u> |

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
except for 436.cactusADM at peak.
OMP_NUM_THREADS set to number of cores

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



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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

C++ benchmarks:

-fast

Fortran benchmarks:

-fast

Benchmarks using both Fortran and C:

-fast



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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 (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.deall: -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-rep- -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

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:

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>



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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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