



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 59.6

IBM System x3550 (Intel Xeon X5260)

SPECfp_rate_base2006 = 56.1

CPU2006 license: 11

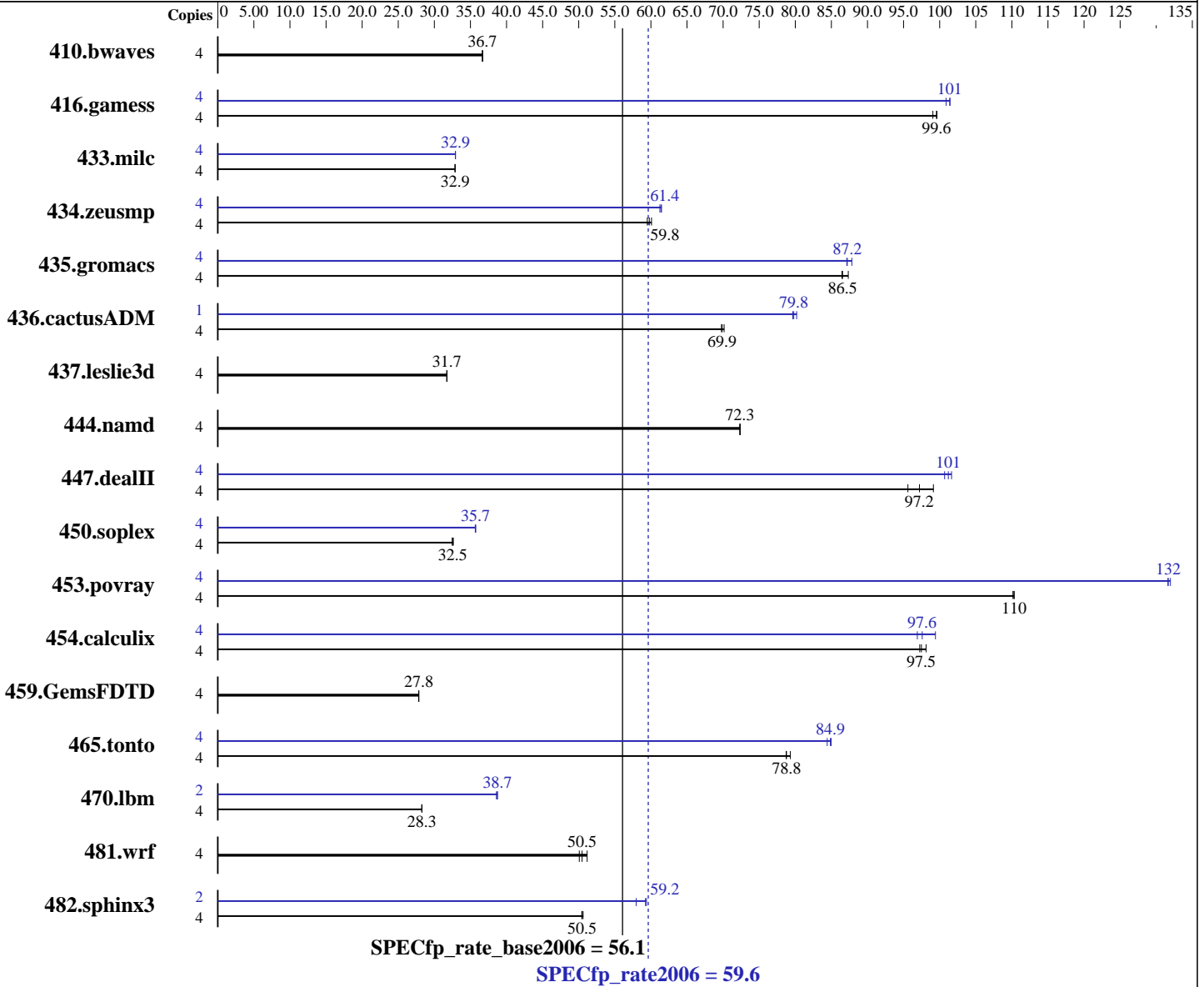
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Oct-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



Hardware

CPU Name: Intel Xeon X5260
 CPU Characteristics: 1333MHz system bus
 CPU MHz: 3333
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 6 MB I+D on chip per chip

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Software

Operating System: SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042
 Auto Parallel: Yes
 File System: ReiserFS
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8 x 2 GB DDR2-5300F ECC)
Disk Subsystem: 1 x 36 GB SAS, 15000 RPM
Other Hardware: None

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 | 4 | 1482 | 36.7 | <u>1482</u> | <u>36.7</u> | 1483 | 36.7 | 4 | 1482 | 36.7 | <u>1482</u> | <u>36.7</u> | 1483 | 36.7 |
| 416.gamess | 4 | <u>787</u> | <u>99.6</u> | 791 | 99.1 | 786 | 99.6 | 4 | 776 | 101 | 772 | 101 | <u>772</u> | <u>101</u> |
| 433.milc | 4 | 1117 | 32.9 | 1117 | 32.9 | <u>1117</u> | <u>32.9</u> | 4 | 1115 | 32.9 | <u>1116</u> | <u>32.9</u> | 1116 | 32.9 |
| 434.zeusmp | 4 | 612 | 59.5 | 606 | 60.1 | <u>609</u> | <u>59.8</u> | 4 | 592 | 61.5 | <u>593</u> | <u>61.4</u> | 594 | 61.2 |
| 435.gromacs | 4 | 327 | 87.3 | <u>330</u> | <u>86.5</u> | 330 | 86.5 | 4 | <u>328</u> | <u>87.2</u> | 328 | 87.1 | 325 | 87.8 |
| 436.cactusADM | 4 | 681 | 70.1 | 685 | 69.8 | <u>684</u> | <u>69.9</u> | 1 | 150 | 79.6 | 149 | 80.2 | <u>150</u> | <u>79.8</u> |
| 437.leslie3d | 4 | <u>1184</u> | <u>31.7</u> | 1184 | 31.8 | 1186 | 31.7 | 4 | <u>1184</u> | <u>31.7</u> | 1184 | 31.8 | 1186 | 31.7 |
| 444.namd | 4 | <u>443</u> | <u>72.3</u> | 444 | 72.3 | 443 | 72.4 | 4 | <u>443</u> | <u>72.3</u> | 444 | 72.3 | 443 | 72.4 |
| 447.dealII | 4 | 479 | 95.6 | <u>471</u> | <u>97.2</u> | 462 | 99.1 | 4 | 450 | 102 | <u>452</u> | <u>101</u> | 454 | 101 |
| 450.soplex | 4 | <u>1025</u> | <u>32.5</u> | 1022 | 32.6 | 1027 | 32.5 | 4 | 933 | 35.7 | 935 | 35.7 | <u>935</u> | <u>35.7</u> |
| 453.povray | 4 | 193 | 110 | <u>193</u> | <u>110</u> | 193 | 110 | 4 | 162 | 132 | 161 | 132 | <u>162</u> | <u>132</u> |
| 454.calculix | 4 | <u>339</u> | <u>97.5</u> | 339 | 97.2 | 336 | 98.1 | 4 | 332 | 99.4 | <u>338</u> | <u>97.6</u> | 341 | 96.9 |
| 459.GemsFDTD | 4 | <u>1524</u> | <u>27.8</u> | 1524 | 27.8 | 1525 | 27.8 | 4 | <u>1524</u> | <u>27.8</u> | 1524 | 27.8 | 1525 | 27.8 |
| 465.tonto | 4 | 496 | 79.3 | 500 | 78.7 | <u>500</u> | <u>78.8</u> | 4 | <u>464</u> | <u>84.9</u> | 463 | 85.0 | 466 | 84.4 |
| 470.lbm | 4 | 1945 | 28.3 | <u>1943</u> | <u>28.3</u> | 1943 | 28.3 | 2 | <u>709</u> | <u>38.7</u> | 709 | 38.7 | 712 | 38.6 |
| 481.wrf | 4 | <u>885</u> | <u>50.5</u> | 892 | 50.1 | 873 | 51.2 | 4 | <u>885</u> | <u>50.5</u> | 892 | 50.1 | 873 | 51.2 |
| 482.sphinx3 | 4 | 1540 | 50.6 | 1546 | 50.4 | <u>1545</u> | <u>50.5</u> | 2 | 673 | 58.0 | <u>658</u> | <u>59.2</u> | 656 | 59.4 |

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

General Notes

OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 64M
Hardware Prefetch Enabled, Adjacent Sector Prefetch Enabled
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run



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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.lelie3d: -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

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



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Peak Compiler Invocation

C benchmarks (except as noted below):

icc

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
             -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
             -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/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
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
```

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Peak Optimization Flags (Continued)

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: basepeak = yes

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: basepeak = yes

459.GemsFDTD: basepeak = yes

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

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



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

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.03.html>

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.13.html>

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

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.03.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.13.xml>

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