



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 86.8

IBM System x3200 M3 (Intel Xeon X3460)

SPECfp_rate_base2006 = 83.4

CPU2006 license: 11

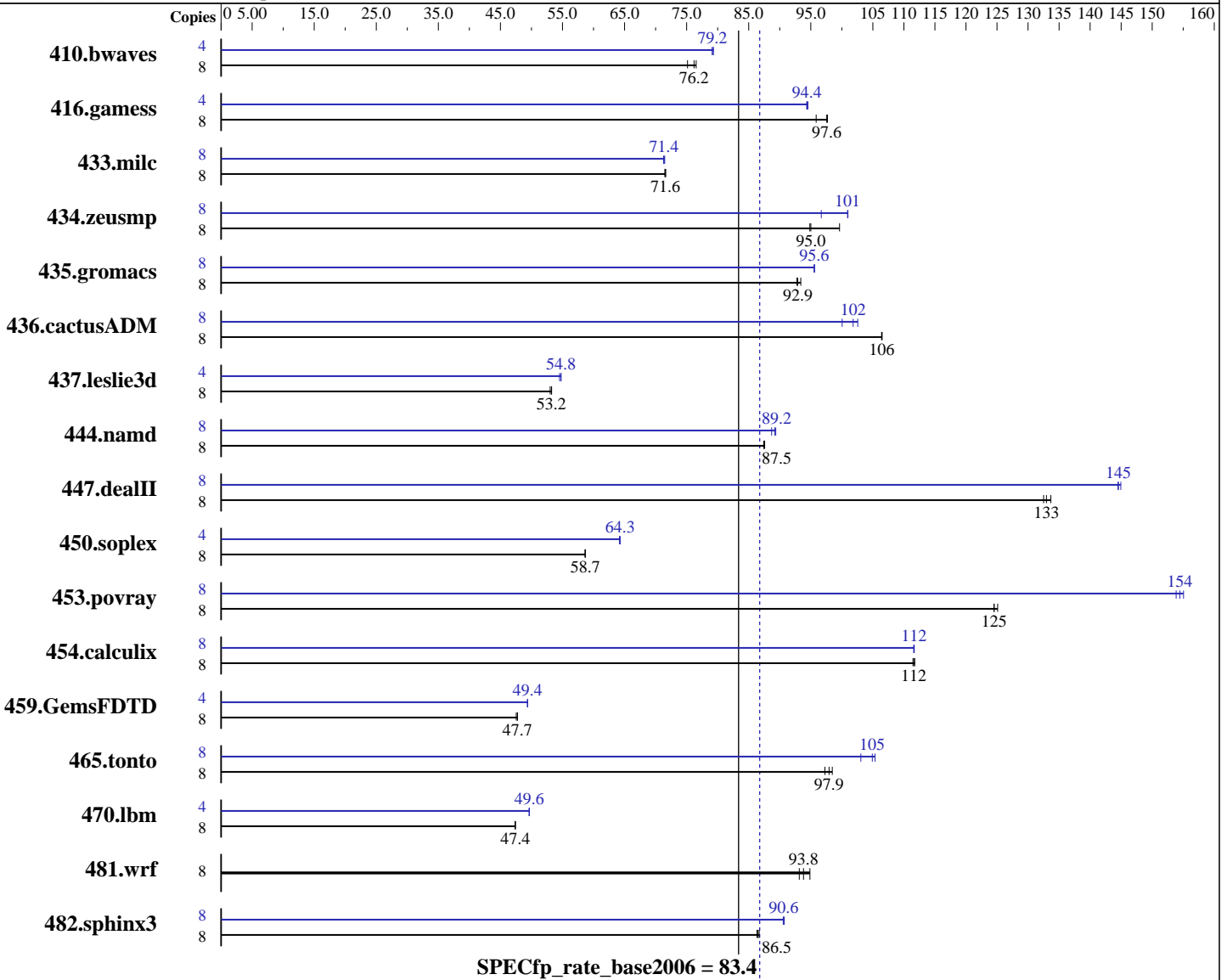
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Oct-2009

Hardware Availability: Oct-2009

Software Availability: Mar-2009



Hardware

CPU Name: Intel Xeon X3460
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
 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

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Software

Operating System: SuSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-default
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (4 x 4 GB PC3-10600R)
Disk Subsystem: 1 x 250 GB SATA, 7200RPM
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 | 8 | 1447 | 75.1 | <u>1427</u> | <u>76.2</u> | 1421 | 76.5 | 4 | <u>687</u> | <u>79.2</u> | 685 | 79.3 | 687 | 79.1 |
| 416.gamess | 8 | 1634 | 95.9 | 1604 | 97.7 | <u>1605</u> | <u>97.6</u> | 4 | 828 | 94.5 | <u>830</u> | <u>94.4</u> | 830 | 94.3 |
| 433.milc | 8 | 1027 | 71.5 | 1025 | 71.6 | <u>1026</u> | <u>71.6</u> | 8 | 1028 | 71.5 | <u>1029</u> | <u>71.4</u> | 1030 | 71.3 |
| 434.zeusmp | 8 | 768 | 94.8 | <u>766</u> | <u>95.0</u> | 731 | 99.6 | 8 | <u>721</u> | <u>101</u> | 753 | 96.7 | 721 | 101 |
| 435.gromacs | 8 | 612 | 93.4 | 616 | 92.8 | <u>615</u> | <u>92.9</u> | 8 | 598 | 95.6 | <u>598</u> | <u>95.6</u> | 598 | 95.6 |
| 436.cactusADM | 8 | <u>898</u> | <u>106</u> | 898 | 106 | 898 | 106 | 8 | <u>939</u> | <u>102</u> | 932 | 103 | 955 | 100 |
| 437.leslie3d | 8 | 1412 | 53.3 | 1419 | 53.0 | <u>1413</u> | <u>53.2</u> | 4 | <u>687</u> | <u>54.8</u> | 690 | 54.5 | 687 | 54.8 |
| 444.namd | 8 | <u>733</u> | <u>87.5</u> | 733 | 87.6 | 734 | 87.4 | 8 | 718 | 89.4 | <u>719</u> | <u>89.2</u> | 723 | 88.7 |
| 447.dealII | 8 | 685 | 134 | 691 | 133 | <u>688</u> | <u>133</u> | 8 | 631 | 145 | <u>633</u> | <u>145</u> | 633 | 144 |
| 450.soplex | 8 | 1137 | 58.7 | 1138 | 58.6 | <u>1137</u> | <u>58.7</u> | 4 | 519 | 64.3 | 520 | 64.2 | <u>519</u> | <u>64.3</u> |
| 453.povray | 8 | 342 | 125 | 340 | 125 | <u>342</u> | <u>125</u> | 8 | 277 | 154 | <u>276</u> | <u>154</u> | 274 | 155 |
| 454.calculix | 8 | 591 | 112 | <u>591</u> | <u>112</u> | 592 | 111 | 8 | 591 | 112 | <u>591</u> | <u>112</u> | 591 | 112 |
| 459.GemsFDTD | 8 | 1785 | 47.5 | <u>1778</u> | <u>47.7</u> | 1778 | 47.7 | 4 | <u>860</u> | <u>49.4</u> | 860 | 49.4 | 859 | 49.4 |
| 465.tonto | 8 | <u>804</u> | <u>97.9</u> | 809 | 97.3 | 799 | 98.5 | 8 | <u>750</u> | <u>105</u> | 764 | 103 | 747 | 105 |
| 470.lbm | 8 | 2319 | 47.4 | <u>2319</u> | <u>47.4</u> | 2320 | 47.4 | 4 | 1106 | 49.7 | <u>1107</u> | <u>49.6</u> | 1107 | 49.6 |
| 481.wrf | 8 | 942 | 94.9 | <u>952</u> | <u>93.8</u> | 959 | 93.1 | 8 | 942 | 94.9 | <u>952</u> | <u>93.8</u> | 959 | 93.1 |
| 482.sphinx3 | 8 | <u>1802</u> | <u>86.5</u> | 1806 | 86.3 | 1799 | 86.7 | 8 | 1722 | 90.6 | 1719 | 90.7 | <u>1720</u> | <u>90.6</u> |

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.
numactl was used to bind copies to the cores

General Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
CPU C-States Enable and Adjacent Sector Prefetch Enable
Turbo Mode Enable



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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:

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

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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



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Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc

450.soplex: icpc -m32

Fortran benchmarks (except as noted below):

ifort

437.leslie3d: ifort -m32

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.deallI: -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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
 -fno-alias

470.lbm: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
 -auto-ilp32

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Peak Optimization Flags (Continued)

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

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

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

Fortran benchmarks:

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

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

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

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

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
-unroll2 -Ob0 -opt-prefetch

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

Benchmarks using both Fortran and C:

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

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Peak Optimization Flags (Continued)

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

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20091028.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20091028.xml>

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