



# SPEC® CFP2006 Result

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## IBM Corporation

### SPECfp®\_rate2006 = 61.2

## IBM System x3650 (Intel Xeon X5270)

### SPECfp\_rate\_base2006 = 57.4

CPU2006 license: 11

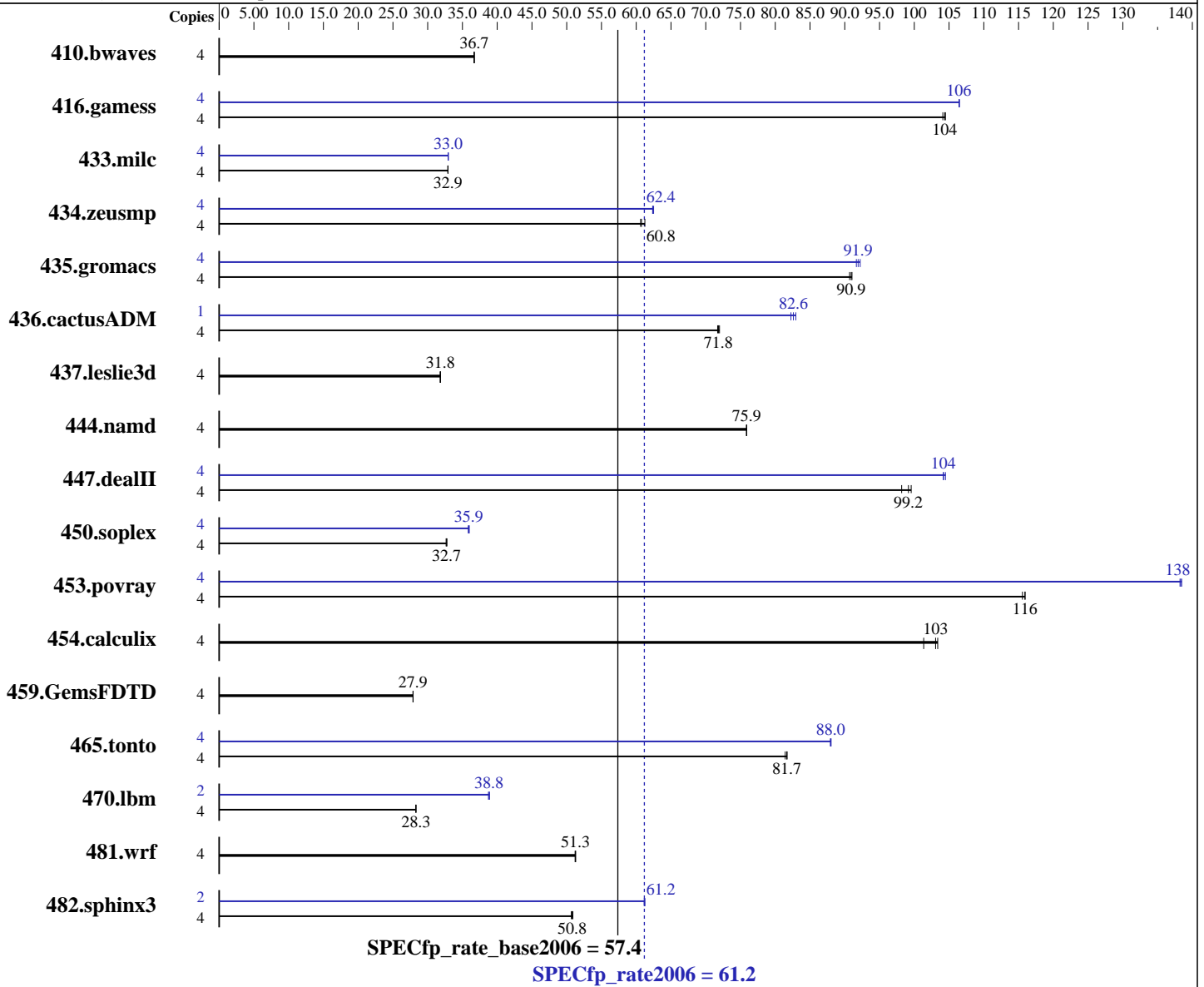
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Sep-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon X5270  
 CPU Characteristics: 1333MHz system bus  
 CPU MHz: 3500  
 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	1481	36.7	<b><u>1481</u></b>	<b><u>36.7</u></b>	1483	36.7	4	1481	36.7	<b><u>1481</u></b>	<b><u>36.7</u></b>	1483	36.7
416.gamess	4	752	104	750	104	<b><u>750</u></b>	<b><u>104</u></b>	4	735	107	<b><u>736</u></b>	<b><u>106</u></b>	736	106
433.milc	4	1115	32.9	1116	32.9	<b><u>1116</u></b>	<b><u>32.9</u></b>	4	1114	33.0	1114	33.0	<b><u>1114</u></b>	<b><u>33.0</u></b>
434.zeusmp	4	<b><u>599</u></b>	<b><u>60.8</u></b>	600	60.6	594	61.2	4	<b><u>583</u></b>	<b><u>62.4</u></b>	582	62.5	584	62.4
435.gromacs	4	315	90.7	314	91.0	<b><u>314</u></b>	<b><u>90.9</u></b>	4	310	92.2	<b><u>311</u></b>	<b><u>91.9</u></b>	312	91.7
436.cactusADM	4	664	72.0	<b><u>665</u></b>	<b><u>71.8</u></b>	667	71.7	1	<b><u>145</u></b>	<b><u>82.6</u></b>	145	82.3	144	83.0
437.leslie3d	4	1181	31.8	<b><u>1181</u></b>	<b><u>31.8</u></b>	1183	31.8	4	1181	31.8	<b><u>1181</u></b>	<b><u>31.8</u></b>	1183	31.8
444.namd	4	423	75.9	423	75.9	<b><u>423</u></b>	<b><u>75.9</u></b>	4	423	75.9	423	75.9	<b><u>423</u></b>	<b><u>75.9</u></b>
447.dealII	4	<b><u>461</u></b>	<b><u>99.2</u></b>	466	98.2	460	99.6	4	439	104	<b><u>439</u></b>	<b><u>104</u></b>	438	104
450.soplex	4	<b><u>1020</u></b>	<b><u>32.7</u></b>	1018	32.8	1022	32.6	4	931	35.8	<b><u>929</u></b>	<b><u>35.9</u></b>	927	36.0
453.povray	4	<b><u>184</u></b>	<b><u>116</u></b>	184	116	184	116	4	154	138	154	138	<b><u>154</u></b>	<b><u>138</u></b>
454.calculix	4	319	103	326	101	<b><u>320</u></b>	<b><u>103</u></b>	4	319	103	326	101	<b><u>320</u></b>	<b><u>103</u></b>
459.GemsFDTD	4	1521	27.9	<b><u>1522</u></b>	<b><u>27.9</u></b>	1522	27.9	4	1521	27.9	<b><u>1522</u></b>	<b><u>27.9</u></b>	1522	27.9
465.tonto	4	<b><u>482</u></b>	<b><u>81.7</u></b>	483	81.4	482	81.7	4	447	88.0	<b><u>447</u></b>	<b><u>88.0</u></b>	448	87.9
470.lbm	4	1942	28.3	<b><u>1942</u></b>	<b><u>28.3</u></b>	1941	28.3	2	707	38.9	<b><u>708</u></b>	<b><u>38.8</u></b>	709	38.7
481.wrf	4	873	51.2	871	51.3	<b><u>871</u></b>	<b><u>51.3</u></b>	4	873	51.2	871	51.3	<b><u>871</u></b>	<b><u>51.3</u></b>
482.sphinx3	4	1539	50.7	<b><u>1535</u></b>	<b><u>50.8</u></b>	1532	50.9	2	<b><u>637</u></b>	<b><u>61.2</u></b>	636	61.2	638	61.1

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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CPU2006 license: 11

Test date: Sep-2008

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Software Availability: Nov-2008

## 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

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: basepeak = yes

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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