



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®\_rate2006 = 42.9

## IBM System x3200 M3 (Intel Xeon L3406)

SPECfp\_rate\_base2006 = 42.0

CPU2006 license: 11

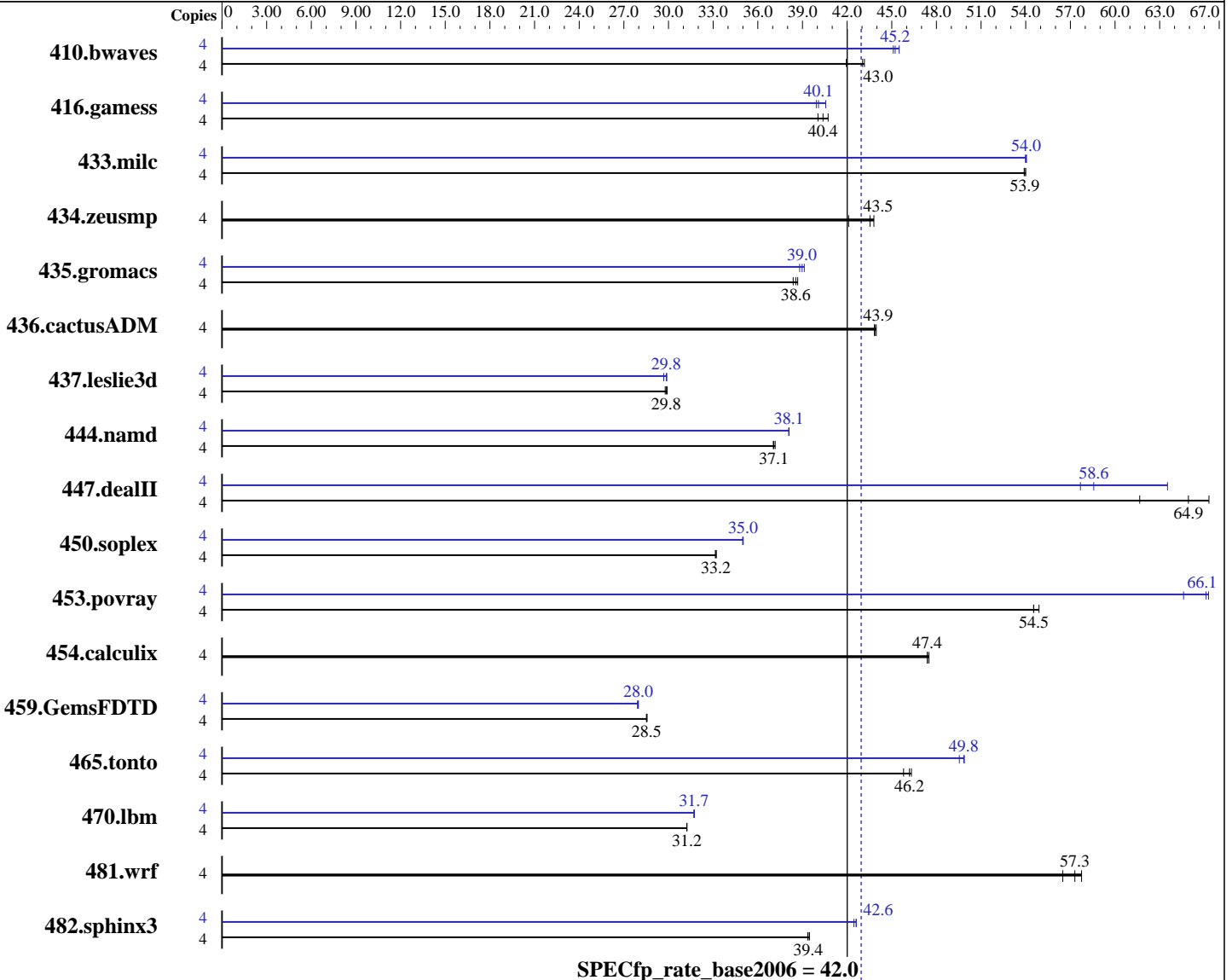
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Oct-2010

Hardware Availability: Nov-2010

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon L3406  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.53 GHz  
 CPU MHz: 2267  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 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) SP1, Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)

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L3 Cache: 4 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 16 GB (4 x 4 GB 2Rx8 PC3-10600E-9, ECC, running at 1066 MHz)  
 Disk Subsystem: 1 x 250 GB SATA, 7200 RPM  
 Other Hardware: None

Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	1296	41.9	<b><u>1263</u></b>	<b><u>43.0</u></b>	1259	43.2	4	<b><u>1202</u></b>	<b><u>45.2</u></b>	1195	45.5	1205	45.1
416.gamess	4	1923	40.7	1956	40.0	<b><u>1940</u></b>	<b><u>40.4</u></b>	4	1962	39.9	<b><u>1954</u></b>	<b><u>40.1</u></b>	1931	40.6
433.milc	4	681	53.9	680	54.0	<b><u>681</u></b>	<b><u>53.9</u></b>	4	679	54.1	680	54.0	<b><u>680</u></b>	<b><u>54.0</u></b>
434.zeusmp	4	831	43.8	865	42.1	<b><u>836</u></b>	<b><u>43.5</u></b>	4	831	43.8	865	42.1	<b><u>836</u></b>	<b><u>43.5</u></b>
435.gromacs	4	738	38.7	744	38.4	<b><u>741</u></b>	<b><u>38.6</u></b>	4	736	38.8	<b><u>733</u></b>	<b><u>39.0</u></b>	730	39.1
436.cactusADM	4	<b><u>1090</u></b>	<b><u>43.9</u></b>	1087	44.0	1091	43.8	4	<b><u>1090</u></b>	<b><u>43.9</u></b>	1087	44.0	1091	43.8
437.leslie3d	4	<b><u>1260</u></b>	<b><u>29.8</u></b>	1263	29.8	1257	29.9	4	1267	29.7	1258	29.9	<b><u>1260</u></b>	<b><u>29.8</u></b>
444.namd	4	<b><u>865</u></b>	<b><u>37.1</u></b>	866	37.0	863	37.2	4	<b><u>842</u></b>	<b><u>38.1</u></b>	842	38.1	842	38.1
447.dealII	4	<b><u>705</u></b>	<b><u>64.9</u></b>	690	66.3	742	61.7	4	<b><u>781</u></b>	<b><u>58.6</u></b>	720	63.5	793	57.7
450.soplex	4	1004	33.2	<b><u>1005</u></b>	<b><u>33.2</u></b>	1006	33.1	4	954	35.0	<b><u>953</u></b>	<b><u>35.0</u></b>	953	35.0
453.povray	4	388	54.9	390	54.5	<b><u>390</u></b>	<b><u>54.5</u></b>	4	<b><u>322</u></b>	<b><u>66.1</u></b>	321	66.3	329	64.6
454.calculix	4	695	47.5	<b><u>696</u></b>	<b><u>47.4</u></b>	696	47.4	4	695	47.5	<b><u>696</u></b>	<b><u>47.4</u></b>	696	47.4
459.GemsFDTD	4	1486	28.6	1488	28.5	<b><u>1488</u></b>	<b><u>28.5</u></b>	4	1520	27.9	<b><u>1518</u></b>	<b><u>28.0</u></b>	1517	28.0
465.tonto	4	860	45.8	850	46.3	<b><u>852</u></b>	<b><u>46.2</u></b>	4	795	49.5	<b><u>790</u></b>	<b><u>49.8</u></b>	789	49.9
470.lbm	4	1759	31.2	1760	31.2	<b><u>1760</u></b>	<b><u>31.2</u></b>	4	1732	31.7	<b><u>1733</u></b>	<b><u>31.7</u></b>	1733	31.7
481.wrf	4	<b><u>780</u></b>	<b><u>57.3</u></b>	774	57.8	791	56.5	4	<b><u>780</u></b>	<b><u>57.3</u></b>	774	57.8	791	56.5
482.sphinx3	4	<b><u>1980</u></b>	<b><u>39.4</u></b>	1981	39.4	1975	39.5	4	1830	42.6	<b><u>1830</u></b>	<b><u>42.6</u></b>	1836	42.5

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

## Platform Notes

BIOS Settings:  
 Turbo Mode Enable  
 CPU C State Enable



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CPU2006 license: 11

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## General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502  
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## 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

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## Base Optimization Flags (Continued)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## 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



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## 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 -opt-prefetch

470.lbm: -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 -ansi-alias -auto-ilp32

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.dealIII: -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: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

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

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 -inline-calloc -opt-malloc-options=3

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## Peak Optimization Flags (Continued)

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

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic11.1-linux64-revE.20100929.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100929.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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