



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 42.6

## IBM System x3550 M3 (Intel Xeon X5650)

SPECfp\_base2006 = 40.0

CPU2006 license: 11

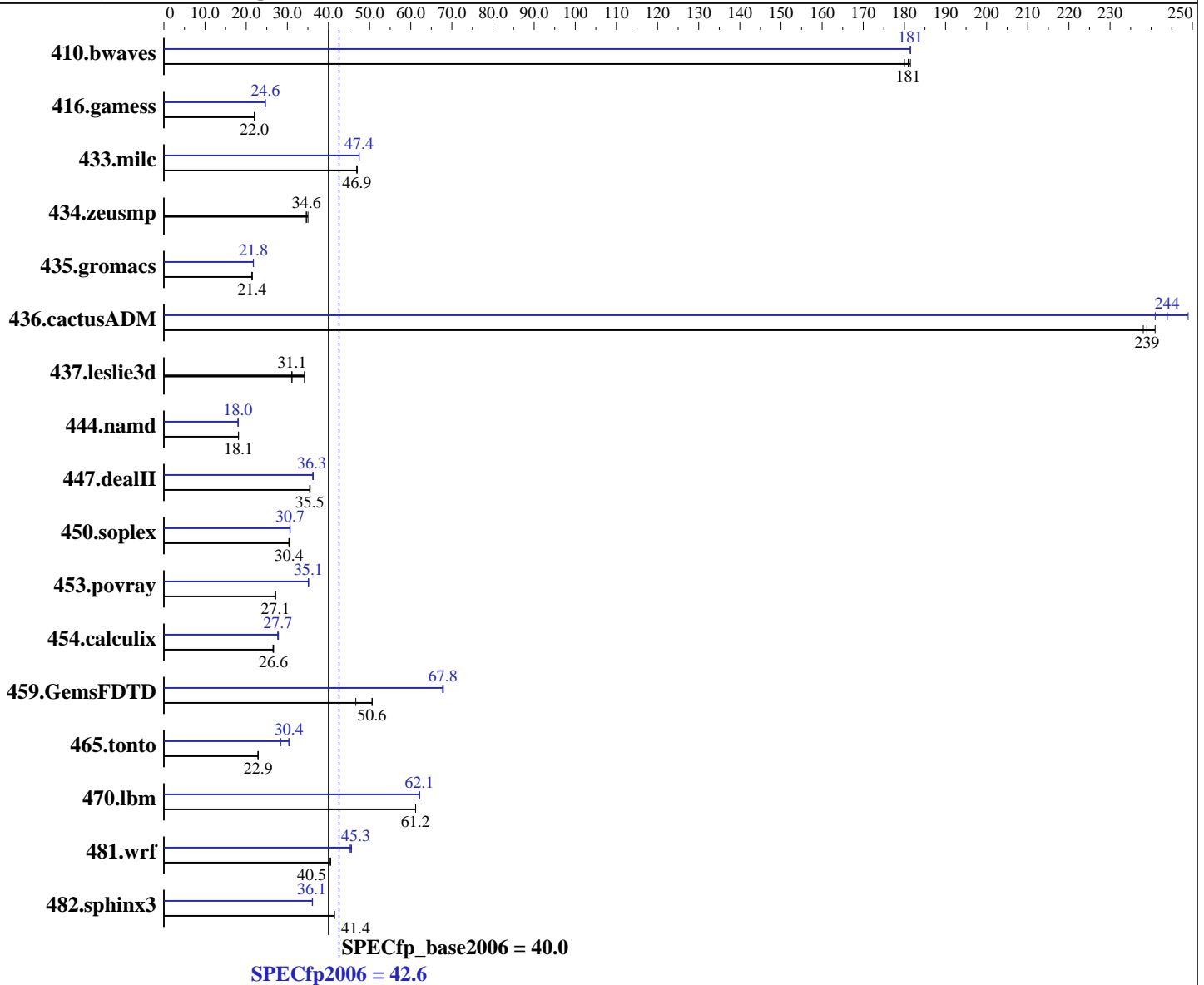
Test date: May-2010

Test sponsor: IBM Corporation

Hardware Availability: Jun-2010

Tested by: IBM Corporation

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon X5650  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.06 GHz  
 CPU MHz: 2667  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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 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: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)

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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 x 4 GB PC3-10600R-ECC, CL9)  
 Disk Subsystem: 1 x 73 GB SAS, 15000RPM  
 Other Hardware: None

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

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	75.5	180	<b><u>75.1</u></b>	<b><u>181</u></b>	74.9	181	<b><u>74.9</u></b>	<b><u>181</u></b>	74.9	181	74.9	181
416.gamess	892	21.9	<b><u>892</u></b>	<b><u>22.0</u></b>	891	22.0	794	24.7	796	24.6	<b><u>794</u></b>	<b><u>24.6</u></b>
433.milc	<b><u>196</u></b>	<b><u>46.9</u></b>	196	46.9	196	46.9	194	47.4	<b><u>193</u></b>	<b><u>47.4</u></b>	193	47.5
434.zeusmp	263	34.6	260	35.0	<b><u>263</u></b>	<b><u>34.6</u></b>	263	34.6	260	35.0	<b><u>263</u></b>	<b><u>34.6</u></b>
435.gromacs	334	21.4	332	21.5	<b><u>333</u></b>	<b><u>21.4</u></b>	329	21.7	<b><u>328</u></b>	<b><u>21.8</u></b>	328	21.8
436.cactusADM	49.6	241	<b><u>50.0</u></b>	<b><u>239</u></b>	50.2	238	48.0	249	<b><u>49.0</u></b>	<b><u>244</u></b>	49.6	241
437.leslie3d	275	34.1	302	31.1	<b><u>302</u></b>	<b><u>31.1</u></b>	275	34.1	302	31.1	<b><u>302</u></b>	<b><u>31.1</u></b>
444.namd	<b><u>443</u></b>	<b><u>18.1</u></b>	442	18.1	443	18.1	445	18.0	445	18.0	<b><u>445</u></b>	<b><u>18.0</u></b>
447.dealII	322	35.6	<b><u>323</u></b>	<b><u>35.5</u></b>	323	35.4	315	36.3	316	36.1	<b><u>315</u></b>	<b><u>36.3</u></b>
450.soplex	274	30.4	<b><u>274</u></b>	<b><u>30.4</u></b>	275	30.4	<b><u>272</u></b>	<b><u>30.7</u></b>	273	30.6	272	30.7
453.povray	<b><u>196</u></b>	<b><u>27.1</u></b>	196	27.2	197	27.0	152	35.1	151	35.2	<b><u>151</u></b>	<b><u>35.1</u></b>
454.calculix	311	26.5	<b><u>310</u></b>	<b><u>26.6</u></b>	309	26.7	296	27.8	<b><u>298</u></b>	<b><u>27.7</u></b>	298	27.7
459.GemsFDTD	227	46.7	210	50.6	<b><u>210</u></b>	<b><u>50.6</u></b>	157	67.7	156	67.9	<b><u>156</u></b>	<b><u>67.8</u></b>
465.tonto	430	22.9	430	22.9	<b><u>430</u></b>	<b><u>22.9</u></b>	346	28.4	324	30.4	<b><u>324</u></b>	<b><u>30.4</u></b>
470.lbm	225	61.2	<b><u>225</u></b>	<b><u>61.2</u></b>	225	61.2	221	62.2	222	62.0	<b><u>221</u></b>	<b><u>62.1</u></b>
481.wrf	277	40.3	<b><u>276</u></b>	<b><u>40.5</u></b>	275	40.5	247	45.3	<b><u>246</u></b>	<b><u>45.3</u></b>	245	45.6
482.sphinx3	471	41.4	<b><u>471</u></b>	<b><u>41.4</u></b>	470	41.4	<b><u>540</u></b>	<b><u>36.1</u></b>	540	36.1	539	36.1

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Platform Notes

Turbo Mode Enable  
 Turbo Boost set to Traditional  
 CPU C State Enable  
 Data Reuse Disable

## 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  
 OMP\_NUM\_THREADS set to number of cores  
 KMP\_AFFINITY set to granularity=fine,scatter  
 KMP\_STACKSIZE set to 200M



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## 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.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:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch



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## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags

## 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)  
-ansi-alias

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)  
-parallel -ansi-alias -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32  
-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- -auto-ilp32

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 -auto-ilp32

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## Peak Optimization Flags (Continued)

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  
-parallel

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: basepeak = yes

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 -parallel

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)  
-inline-calloc -opt-malloc-options=3 -auto -unroll4

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: -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 -parallel -auto-ilp32

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

481.wrf: Same as 454.calculix

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.20100601.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.20100601.xml>



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Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 07:55:44 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 1 June 2010.