



# SPEC® CFP2006 Result

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## IBM Corporation

SPECfp®2006 = 44.2

### IBM BladeCenter HS22 (Intel Xeon X5660)

SPECfp\_base2006 = 41.2

CPU2006 license: 11

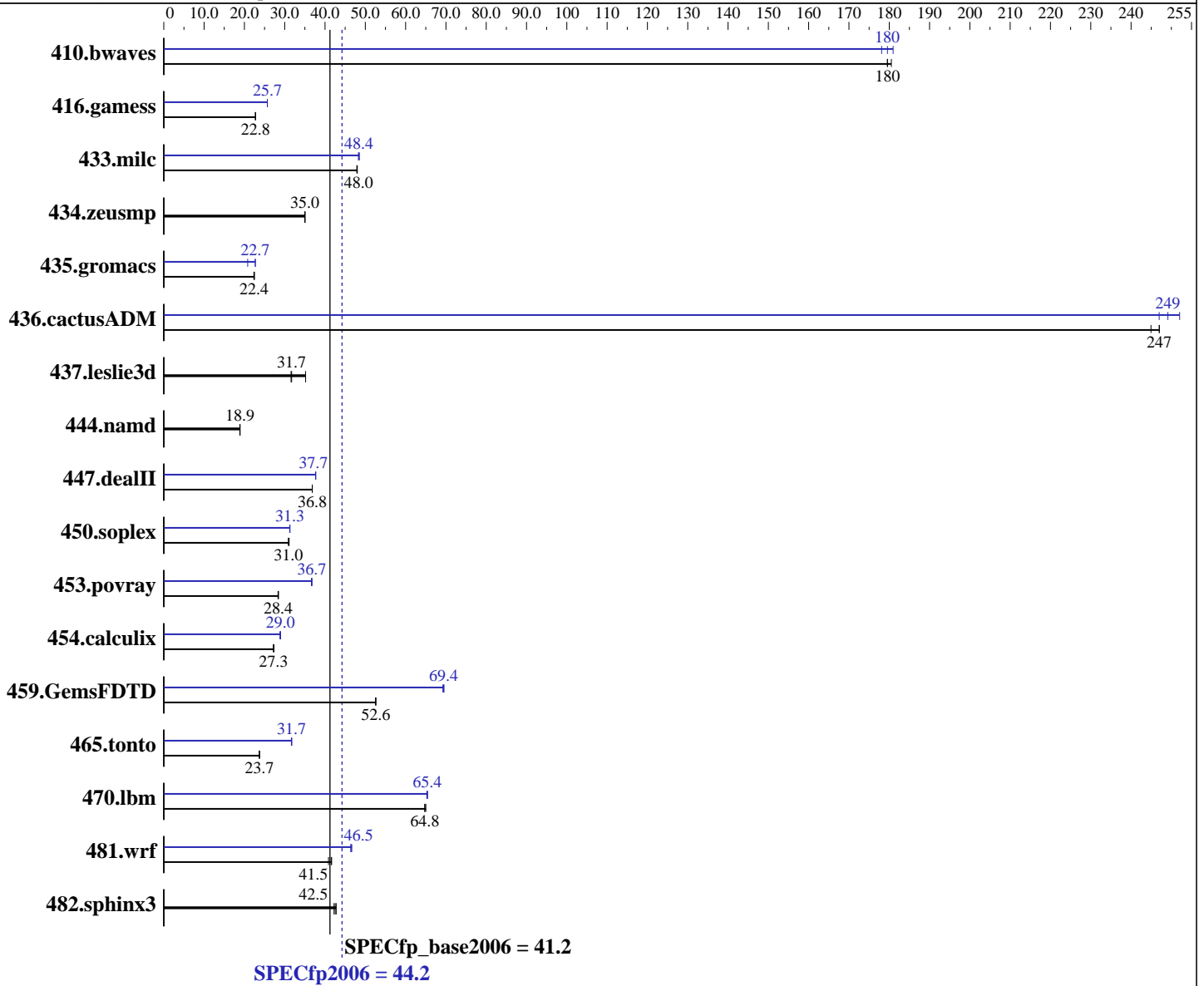
Test date: Mar-2010

Test sponsor: IBM Corporation

Hardware Availability: Mar-2010

Tested by: IBM Corporation

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon X5660  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 chips  
 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: 24 GB (12 x 2 GB PC3-10600R)  
Disk Subsystem: 1 x 73 GB SAS, 15000 RPM  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	75.7	180	<b><u>75.7</u></b>	<b><u>180</u></b>	75.3	181	75.1	181	76.3	178	<b><u>75.7</u></b>	<b><u>180</u></b>
416.gamess	862	22.7	<b><u>860</u></b>	<b><u>22.8</u></b>	860	22.8	762	25.7	762	25.7	<b><u>762</u></b>	<b><u>25.7</u></b>
433.milc	192	47.9	191	48.0	<b><u>191</u></b>	<b><u>48.0</u></b>	189	48.5	190	48.3	<b><u>190</u></b>	<b><u>48.4</u></b>
434.zeusmp	260	35.0	260	35.0	<b><u>260</u></b>	<b><u>35.0</u></b>	260	35.0	260	35.0	<b><u>260</u></b>	<b><u>35.0</u></b>
435.gromacs	319	22.4	318	22.5	<b><u>319</u></b>	<b><u>22.4</u></b>	314	22.7	<b><u>315</u></b>	<b><u>22.7</u></b>	343	20.8
436.cactusADM	48.4	247	48.8	245	<b><u>48.4</u></b>	<b><u>247</u></b>	48.4	247	<b><u>48.0</u></b>	<b><u>249</u></b>	47.4	252
437.leslie3d	267	35.2	<b><u>296</u></b>	<b><u>31.7</u></b>	298	31.6	267	35.2	<b><u>296</u></b>	<b><u>31.7</u></b>	298	31.6
444.namd	425	18.9	<b><u>424</u></b>	<b><u>18.9</u></b>	424	18.9	425	18.9	<b><u>424</u></b>	<b><u>18.9</u></b>	424	18.9
447.dealII	<b><u>311</u></b>	<b><u>36.8</u></b>	311	36.8	311	36.8	304	37.7	<b><u>304</u></b>	<b><u>37.7</u></b>	303	37.7
450.soplex	270	30.9	<b><u>269</u></b>	<b><u>31.0</u></b>	268	31.1	266	31.3	<b><u>267</u></b>	<b><u>31.3</u></b>	267	31.2
453.povray	<b><u>187</u></b>	<b><u>28.4</u></b>	188	28.3	187	28.4	<b><u>145</u></b>	<b><u>36.7</u></b>	145	36.6	145	36.7
454.calculix	302	27.3	<b><u>303</u></b>	<b><u>27.3</u></b>	303	27.2	<b><u>285</u></b>	<b><u>29.0</u></b>	285	29.0	286	28.8
459.GemsFDTD	202	52.6	202	52.6	<b><u>202</u></b>	<b><u>52.6</u></b>	<b><u>153</u></b>	<b><u>69.4</u></b>	153	69.5	153	69.3
465.tonto	<b><u>415</u></b>	<b><u>23.7</u></b>	414	23.7	415	23.7	310	31.8	311	31.7	<b><u>310</u></b>	<b><u>31.7</u></b>
470.lbm	211	65.0	<b><u>212</u></b>	<b><u>64.8</u></b>	212	64.7	211	65.3	210	65.4	<b><u>210</u></b>	<b><u>65.4</u></b>
481.wrf	268	41.6	<b><u>269</u></b>	<b><u>41.5</u></b>	273	40.9	<b><u>240</u></b>	<b><u>46.5</u></b>	241	46.4	239	46.6
482.sphinx3	456	42.8	<b><u>458</u></b>	<b><u>42.5</u></b>	461	42.2	456	42.8	<b><u>458</u></b>	<b><u>42.5</u></b>	461	42.2

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

## Platform Notes

Turbo Mode enabled  
Turbo Boost set to Traditional  
Power C-states enabled  
Demand Scrub disabled

## General Notes

'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: basepeak = yes

C++ benchmarks:

444.namd: basepeak = yes

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

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

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## Peak Optimization Flags (Continued)

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-alloc -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.20100330.03.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.20100330.03.xml>



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