



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

bullx B500  
(Intel Xeon X5570, 2.93 GHz)

SPECfp<sup>®</sup>2006 = 40.6

SPECfp\_base2006 = 38.0

CPU2006 license: 20

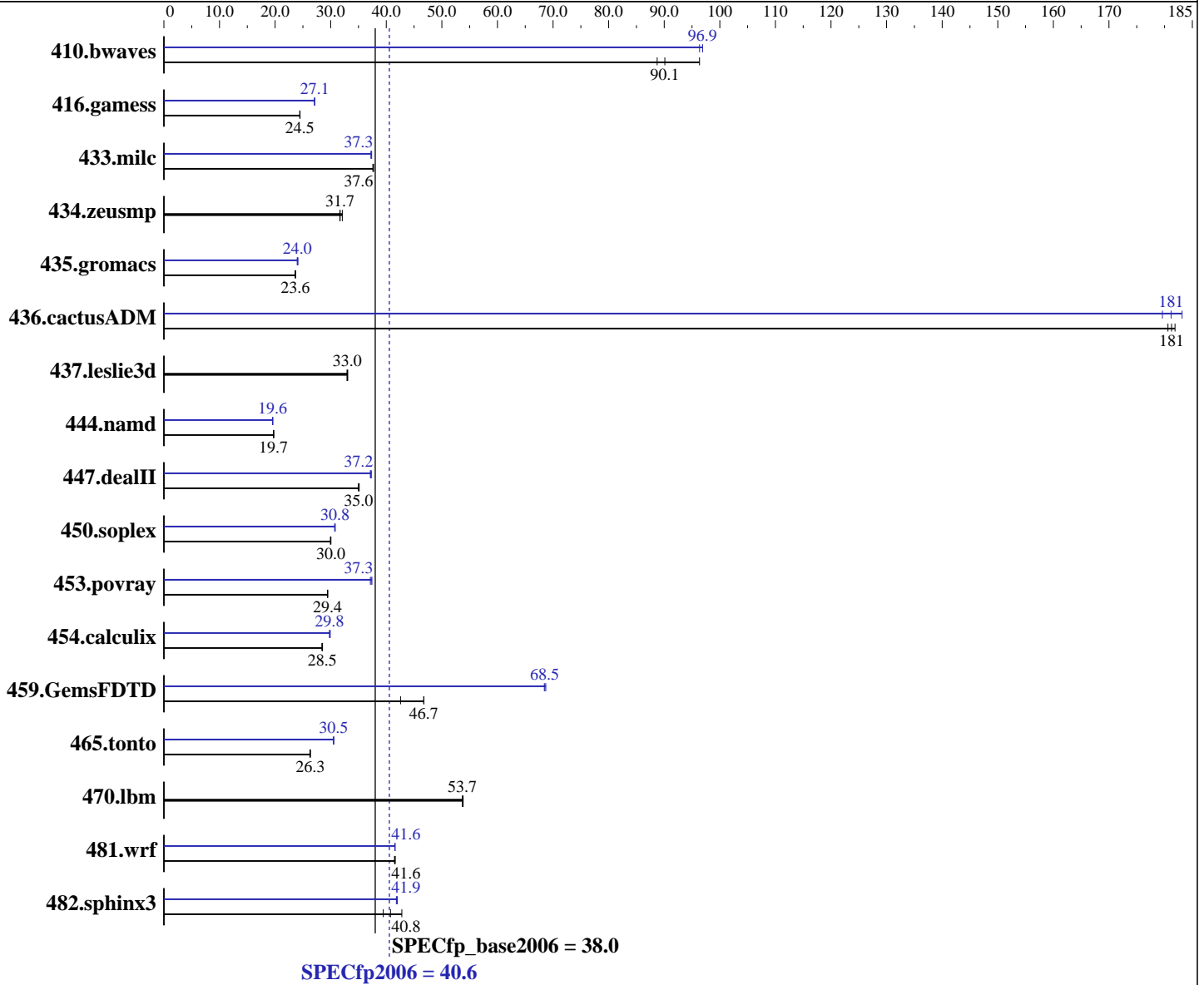
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: May-2009

Hardware Availability: Aug-2009

Software Availability: Feb-2009



### Hardware

CPU Name: Intel Xeon X5570  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 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 10 (x86\_64) SP2, Kernel 2.6.16.60-0.21-smpp  
 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: Yes  
 File System: ReiserFS  
 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: 24 GB (6 x 4 GB PC3-10600R, CL9, ECC)  
Disk Subsystem: 1x32 GB SATAII, SSD  
Other Hardware: None

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	153	88.7	<b><u>151</u></b>	<b><u>90.1</u></b>	141	96.4	<b><u>140</u></b>	<b><u>96.9</u></b>	140	96.9	141	96.4
416.gamess	801	24.4	<b><u>801</u></b>	<b><u>24.5</u></b>	799	24.5	<b><u>722</u></b>	<b><u>27.1</u></b>	721	27.1	723	27.1
433.milc	243	37.7	<b><u>244</u></b>	<b><u>37.6</u></b>	244	37.6	<b><u>246</u></b>	<b><u>37.3</u></b>	246	37.3	246	37.4
434.zeusmp	287	31.7	<b><u>287</u></b>	<b><u>31.7</u></b>	284	32.1	287	31.7	<b><u>287</u></b>	<b><u>31.7</u></b>	284	32.1
435.gromacs	301	23.7	302	23.6	<b><u>302</u></b>	<b><u>23.6</u></b>	296	24.1	<b><u>298</u></b>	<b><u>24.0</u></b>	298	24.0
436.cactusADM	65.7	182	66.2	181	<b><u>65.9</u></b>	<b><u>181</u></b>	65.2	183	<b><u>66.0</u></b>	<b><u>181</u></b>	66.5	180
437.leslie3d	<b><u>285</u></b>	<b><u>33.0</u></b>	284	33.1	285	32.9	<b><u>285</u></b>	<b><u>33.0</u></b>	284	33.1	285	32.9
444.namd	<b><u>407</u></b>	<b><u>19.7</u></b>	407	19.7	405	19.8	409	19.6	<b><u>410</u></b>	<b><u>19.6</u></b>	411	19.5
447.dealII	327	35.0	326	35.1	<b><u>327</u></b>	<b><u>35.0</u></b>	308	37.2	307	37.3	<b><u>308</u></b>	<b><u>37.2</u></b>
450.soplex	278	30.0	278	29.9	<b><u>278</u></b>	<b><u>30.0</u></b>	271	30.8	272	30.7	<b><u>271</u></b>	<b><u>30.8</u></b>
453.povray	<b><u>181</u></b>	<b><u>29.4</u></b>	181	29.5	181	29.4	<b><u>143</u></b>	<b><u>37.3</u></b>	143	37.1	142	37.4
454.calculix	290	28.4	289	28.5	<b><u>289</u></b>	<b><u>28.5</u></b>	276	29.9	277	29.8	<b><u>277</u></b>	<b><u>29.8</u></b>
459.GemsFDTD	249	42.6	227	46.8	<b><u>227</u></b>	<b><u>46.7</u></b>	154	68.7	155	68.4	<b><u>155</u></b>	<b><u>68.5</u></b>
465.tonto	373	26.4	375	26.3	<b><u>374</u></b>	<b><u>26.3</u></b>	<b><u>322</u></b>	<b><u>30.5</u></b>	323	30.5	322	30.6
470.lbm	255	53.8	<b><u>256</u></b>	<b><u>53.7</u></b>	256	53.7	255	53.8	<b><u>256</u></b>	<b><u>53.7</u></b>	256	53.7
481.wrf	269	41.5	<b><u>269</u></b>	<b><u>41.6</u></b>	268	41.6	269	41.6	<b><u>269</u></b>	<b><u>41.6</u></b>	269	41.6
482.sphinx3	455	42.8	<b><u>478</u></b>	<b><u>40.8</u></b>	494	39.5	464	42.0	<b><u>465</u></b>	<b><u>41.9</u></b>	466	41.8

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

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize 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

## Platform Notes

BIOS setting:  
NUMA configuration : Enabled



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CPU2006 license: 20  
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Test date: May-2009  
Hardware Availability: Aug-2009  
Software Availability: Feb-2009

## 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.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 (except as noted below):

icc

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc

450.soplex: icpc -m32

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: -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: basepeak = yes

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

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## Peak Optimization Flags (Continued)

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- -opt-prefetch

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  
-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)  
-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

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

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## Peak Optimization Flags (Continued)

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

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel -auto-ilp32

The flags files that were used to format this result can be browsed at

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

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090710.01.html>

You can also download the XML flags sources by saving the following links:

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

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090710.01.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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