



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale R460 F2  
(Intel Xeon X5550, 2.67 GHz)

SPECfp<sup>®</sup>2006 = 40.9

SPECfp\_base2006 = 38.2

CPU2006 license: 20

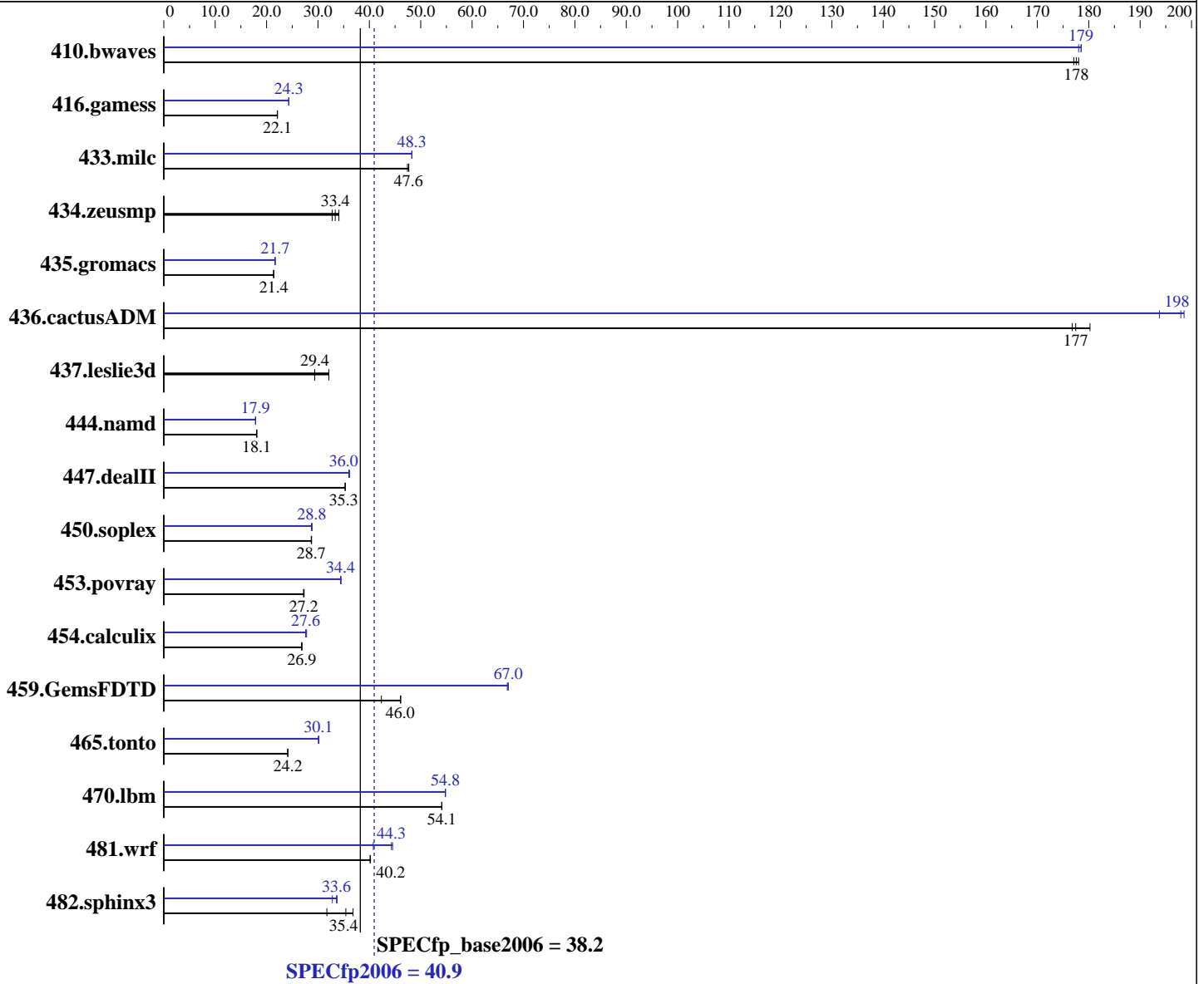
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Mar-2010

Hardware Availability: Jan-2010

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon X5550  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.06 GHz  
 CPU MHz: 2667  
 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, SP2 with patch Linux kernel 20090119, Kernel 2.6.16.60-0.34-smp  
 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: ReiserFS

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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, 2 Rank, CL9-9-9, ECC)  
Disk Subsystem: 1 x 73 GB SAS, 10000 RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
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	<b><u>76.5</u></b>	<b><u>178</u></b>	76.7	177	76.3	178	76.1	179	76.3	178	<b><u>76.1</u></b>	<b><u>179</u></b>
416.gamess	<b><u>886</u></b>	<b><u>22.1</u></b>	885	22.1	887	22.1	805	24.3	<b><u>805</u></b>	<b><u>24.3</u></b>	805	24.3
433.milc	194	47.4	193	47.7	<b><u>193</u></b>	<b><u>47.6</u></b>	190	48.3	190	48.3	<b><u>190</u></b>	<b><u>48.3</u></b>
434.zeusmp	<b><u>273</u></b>	<b><u>33.4</u></b>	267	34.1	278	32.8	<b><u>273</u></b>	<b><u>33.4</u></b>	267	34.1	278	32.8
435.gromacs	335	21.3	<b><u>334</u></b>	<b><u>21.4</u></b>	333	21.4	<b><u>330</u></b>	<b><u>21.7</u></b>	329	21.7	330	21.6
436.cactusADM	67.6	177	66.3	180	<b><u>67.3</u></b>	<b><u>177</u></b>	61.7	194	60.2	199	<b><u>60.4</u></b>	<b><u>198</u></b>
437.leslie3d	<b><u>320</u></b>	<b><u>29.4</u></b>	293	32.1	320	29.4	<b><u>320</u></b>	<b><u>29.4</u></b>	293	32.1	320	29.4
444.namd	444	18.1	<b><u>443</u></b>	<b><u>18.1</u></b>	443	18.1	449	17.9	449	17.9	<b><u>449</u></b>	<b><u>17.9</u></b>
447.dealII	<b><u>324</u></b>	<b><u>35.3</u></b>	324	35.3	324	35.3	316	36.2	<b><u>318</u></b>	<b><u>36.0</u></b>	318	36.0
450.soplex	<b><u>291</u></b>	<b><u>28.7</u></b>	291	28.7	290	28.8	290	28.7	289	28.9	<b><u>289</u></b>	<b><u>28.8</u></b>
453.povray	196	27.2	<b><u>195</u></b>	<b><u>27.2</u></b>	195	27.3	155	34.4	154	34.5	<b><u>155</u></b>	<b><u>34.4</u></b>
454.calculix	307	26.8	<b><u>307</u></b>	<b><u>26.9</u></b>	307	26.9	297	27.8	299	27.6	<b><u>298</u></b>	<b><u>27.6</u></b>
459.GemsFDTD	230	46.1	<b><u>230</u></b>	<b><u>46.0</u></b>	251	42.3	159	66.9	<b><u>158</u></b>	<b><u>67.0</u></b>	158	67.0
465.tonto	407	24.2	408	24.1	<b><u>407</u></b>	<b><u>24.2</u></b>	326	30.2	327	30.1	<b><u>327</u></b>	<b><u>30.1</u></b>
470.lbm	<b><u>254</u></b>	<b><u>54.1</u></b>	254	54.1	254	54.1	251	54.8	251	54.8	<b><u>251</u></b>	<b><u>54.8</u></b>
481.wrf	<b><u>278</u></b>	<b><u>40.2</u></b>	278	40.2	278	40.1	<b><u>252</u></b>	<b><u>44.3</u></b>	251	44.5	274	40.8
482.sphinx3	529	36.8	614	31.7	<b><u>550</u></b>	<b><u>35.4</u></b>	<b><u>580</u></b>	<b><u>33.6</u></b>	594	32.8	578	33.7

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

## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M  
The Dell PowerEdge R710 and  
the Bull NovaScale R460 F2 models are electronically equivalent.  
The results have been measured on a Bull NovaScale R460 F2 model.



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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.20100316.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.20100316.xml>



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