



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale R460 F2  
(Intel Xeon X5560, 2.80 GHz)

SPECfp®2006 = 42.5

SPECfp\_base2006 = 39.8

CPU2006 license: 20

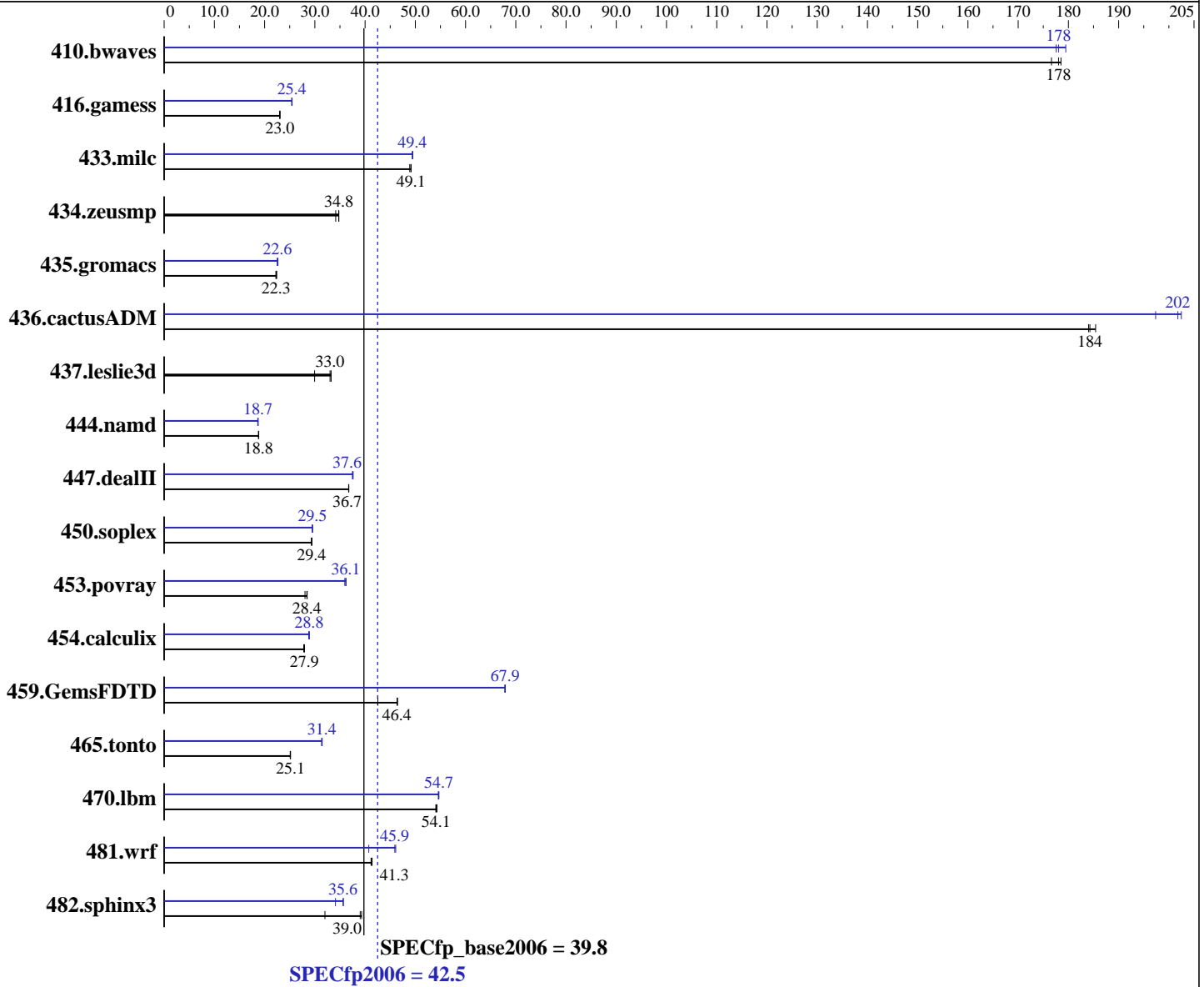
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Mar-2010

Hardware Availability: Jan-2010

Software Availability: Dec-2009



**Hardware**

CPU Name: Intel Xeon X5560  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2800  
 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	76.9	177	<b><u>76.3</u></b>	<b><u>178</u></b>	76.1	179	<b><u>76.3</u></b>	<b><u>178</u></b>	76.5	178	75.7	179
416.gamess	849	23.1	<b><u>850</u></b>	<b><u>23.0</u></b>	852	23.0	769	25.5	771	25.4	<b><u>770</u></b>	<b><u>25.4</u></b>
433.milc	188	48.9	187	49.1	<b><u>187</u></b>	<b><u>49.1</u></b>	185	49.5	186	49.4	<b><u>186</u></b>	<b><u>49.4</u></b>
434.zeusmp	266	34.2	262	34.8	<b><u>262</u></b>	<b><u>34.8</u></b>	266	34.2	262	34.8	<b><u>262</u></b>	<b><u>34.8</u></b>
435.gromacs	321	22.2	319	22.4	<b><u>320</u></b>	<b><u>22.3</u></b>	315	22.7	<b><u>316</u></b>	<b><u>22.6</u></b>	317	22.5
436.cactusADM	64.4	185	<b><u>64.8</u></b>	<b><u>184</u></b>	64.9	184	59.0	202	<b><u>59.2</u></b>	<b><u>202</u></b>	60.5	197
437.leslie3d	314	30.0	283	33.2	<b><u>285</u></b>	<b><u>33.0</u></b>	314	30.0	283	33.2	<b><u>285</u></b>	<b><u>33.0</u></b>
444.namd	426	18.8	427	18.8	<b><u>427</u></b>	<b><u>18.8</u></b>	430	18.6	<b><u>429</u></b>	<b><u>18.7</u></b>	429	18.7
447.dealII	311	36.8	312	36.7	<b><u>311</u></b>	<b><u>36.7</u></b>	305	37.5	<b><u>304</u></b>	<b><u>37.6</u></b>	304	37.6
450.soplex	<b><u>284</u></b>	<b><u>29.4</u></b>	284	29.3	284	29.4	<b><u>283</u></b>	<b><u>29.5</u></b>	283	29.5	282	29.6
453.povray	<b><u>187</u></b>	<b><u>28.4</u></b>	187	28.5	190	28.0	147	36.2	<b><u>147</u></b>	<b><u>36.1</u></b>	148	36.0
454.calculix	295	27.9	<b><u>296</u></b>	<b><u>27.9</u></b>	297	27.8	287	28.8	<b><u>286</u></b>	<b><u>28.8</u></b>	285	28.9
459.GemsFDTD	249	42.5	228	46.5	<b><u>229</u></b>	<b><u>46.4</u></b>	156	67.9	<b><u>156</u></b>	<b><u>67.9</u></b>	156	67.8
465.tonto	<b><u>391</u></b>	<b><u>25.1</u></b>	391	25.2	392	25.1	<b><u>314</u></b>	<b><u>31.4</u></b>	313	31.5	314	31.4
470.lbm	253	54.3	254	54.1	<b><u>254</u></b>	<b><u>54.1</u></b>	252	54.6	<b><u>251</u></b>	<b><u>54.7</u></b>	251	54.7
481.wrf	<b><u>270</u></b>	<b><u>41.3</u></b>	271	41.2	270	41.4	274	40.7	<b><u>243</u></b>	<b><u>45.9</u></b>	242	46.1
482.sphinx3	609	32.0	496	39.3	<b><u>499</u></b>	<b><u>39.0</u></b>	571	34.1	546	35.7	<b><u>547</u></b>	<b><u>35.6</u></b>

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

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