



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale R440 F2  
(Intel Xeon E5502, 1.86 GHz)

SPECfp®2006 = 24.2

SPECfp\_base2006 = 22.6

CPU2006 license: 20

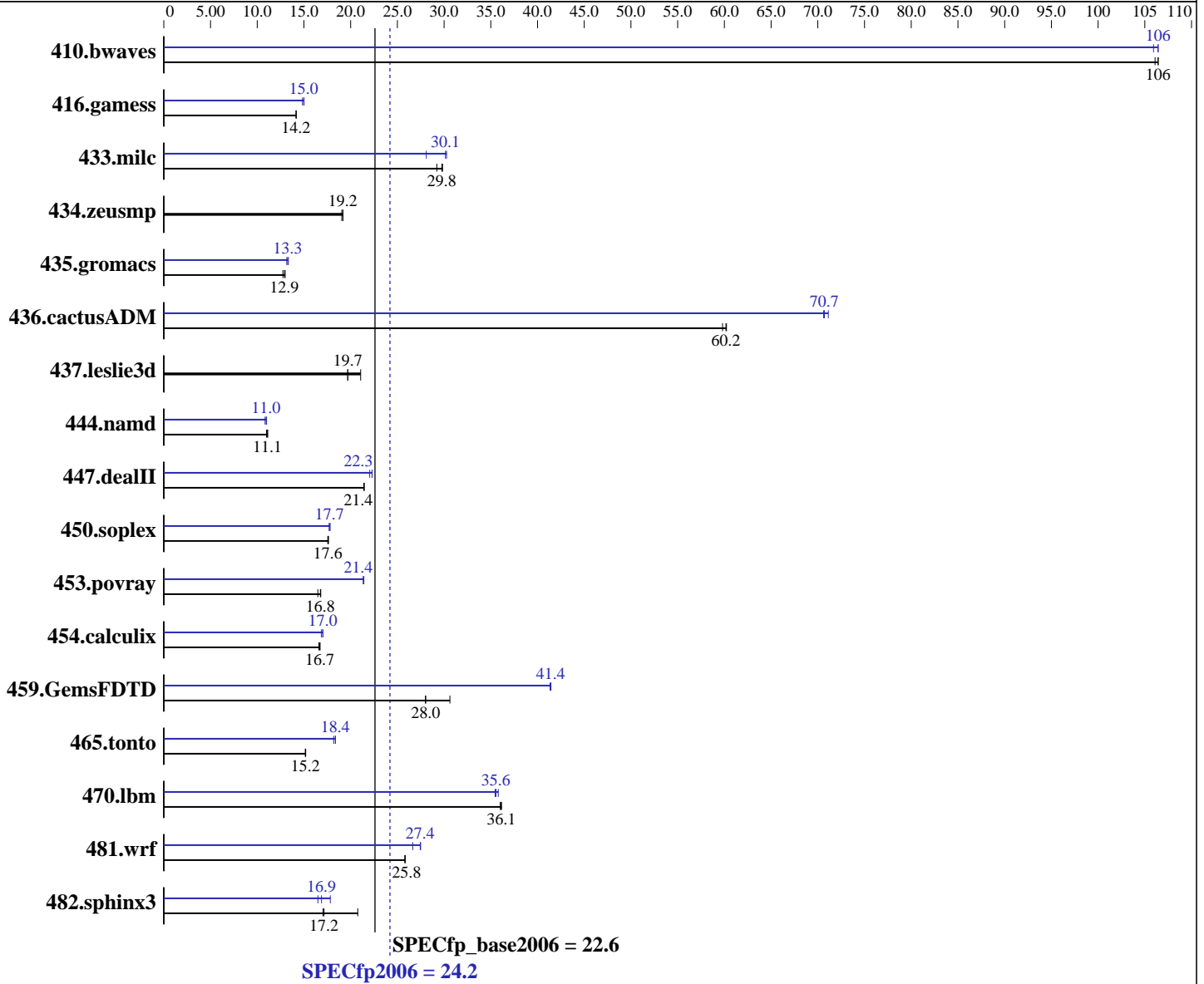
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: May-2010

Hardware Availability: Jan-2010

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon E5502  
 CPU Characteristics:  
 CPU MHz: 1867  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 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: 4 MB I+D on chip per chip  
Other Cache: None  
Memory: 48 GB (12 x 4 GB PC3-10600R, 2 Rank, CL9-9-9, ECC, running at 800 MHz)  
Disk Subsystem: 1 x 73 GB SAS, 10000 RPM  
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	128	106	<b><u>128</u></b>	<b><u>106</u></b>	128	106	128	106	<b><u>128</u></b>	<b><u>106</u></b>	128	106
416.gamess	1383	14.2	1382	14.2	<b><u>1382</u></b>	<b><u>14.2</u></b>	<b><u>1307</u></b>	<b><u>15.0</u></b>	1320	14.8	1305	15.0
433.milc	308	29.8	<b><u>308</u></b>	<b><u>29.8</u></b>	314	29.2	<b><u>305</u></b>	<b><u>30.1</u></b>	327	28.1	303	30.3
434.zeusmp	474	19.2	478	19.0	<b><u>475</u></b>	<b><u>19.2</u></b>	474	19.2	478	19.0	<b><u>475</u></b>	<b><u>19.2</u></b>
435.gromacs	560	12.7	550	13.0	<b><u>553</u></b>	<b><u>12.9</u></b>	<b><u>538</u></b>	<b><u>13.3</u></b>	543	13.2	536	13.3
436.cactusADM	<b><u>199</u></b>	<b><u>60.2</u></b>	200	59.8	198	60.2	169	70.6	168	71.1	<b><u>169</u></b>	<b><u>70.7</u></b>
437.leslie3d	<b><u>477</u></b>	<b><u>19.7</u></b>	478	19.7	446	21.1	<b><u>477</u></b>	<b><u>19.7</u></b>	478	19.7	446	21.1
444.namd	722	11.1	<b><u>722</u></b>	<b><u>11.1</u></b>	730	11.0	729	11.0	<b><u>732</u></b>	<b><u>11.0</u></b>	740	10.8
447.dealII	534	21.4	<b><u>534</u></b>	<b><u>21.4</u></b>	533	21.4	<b><u>513</u></b>	<b><u>22.3</u></b>	519	22.0	513	22.3
450.soplex	473	17.6	<b><u>475</u></b>	<b><u>17.6</u></b>	475	17.6	471	17.7	468	17.8	<b><u>470</u></b>	<b><u>17.7</u></b>
453.povray	<b><u>317</u></b>	<b><u>16.8</u></b>	317	16.8	323	16.5	<b><u>249</u></b>	<b><u>21.4</u></b>	249	21.3	248	21.4
454.calculix	<b><u>494</u></b>	<b><u>16.7</u></b>	497	16.6	494	16.7	<b><u>485</u></b>	<b><u>17.0</u></b>	484	17.0	489	16.9
459.GemsFDTD	346	30.6	<b><u>378</u></b>	<b><u>28.0</u></b>	379	28.0	<b><u>256</u></b>	<b><u>41.4</u></b>	256	41.4	257	41.3
465.tonto	648	15.2	<b><u>649</u></b>	<b><u>15.2</u></b>	650	15.1	541	18.2	536	18.4	<b><u>536</u></b>	<b><u>18.4</u></b>
470.lbm	<b><u>380</u></b>	<b><u>36.1</u></b>	382	36.0	380	36.1	384	35.8	<b><u>386</u></b>	<b><u>35.6</u></b>	387	35.5
481.wrf	<b><u>433</u></b>	<b><u>25.8</u></b>	433	25.8	433	25.8	419	26.6	<b><u>407</u></b>	<b><u>27.4</u></b>	406	27.5
482.sphinx3	1143	17.0	<b><u>1136</u></b>	<b><u>17.2</u></b>	939	20.8	1182	16.5	<b><u>1155</u></b>	<b><u>16.9</u></b>	1094	17.8

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

## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
KMP\_STACKSIZE set to 200M  
Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502  
The Dell PowerEdge R610 and  
the Bull NovaScale R440 F2 models are electronically equivalent.  
The results have been measured on a Bull NovaScale R440 F2 model.

## Base Compiler Invocation

C benchmarks:  
icc -m64

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## Base Compiler Invocation (Continued)

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-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.20100511.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.20100511.xml>



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