



# SPEC® CFP2006 Result

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## Bull SAS

SPECfp®\_rate2006 = 75.0

NovaScale R440 F2 (Intel Xeon E5503, 2.00 GHz)

SPECfp\_rate\_base2006 = 72.5

CPU2006 license: 20

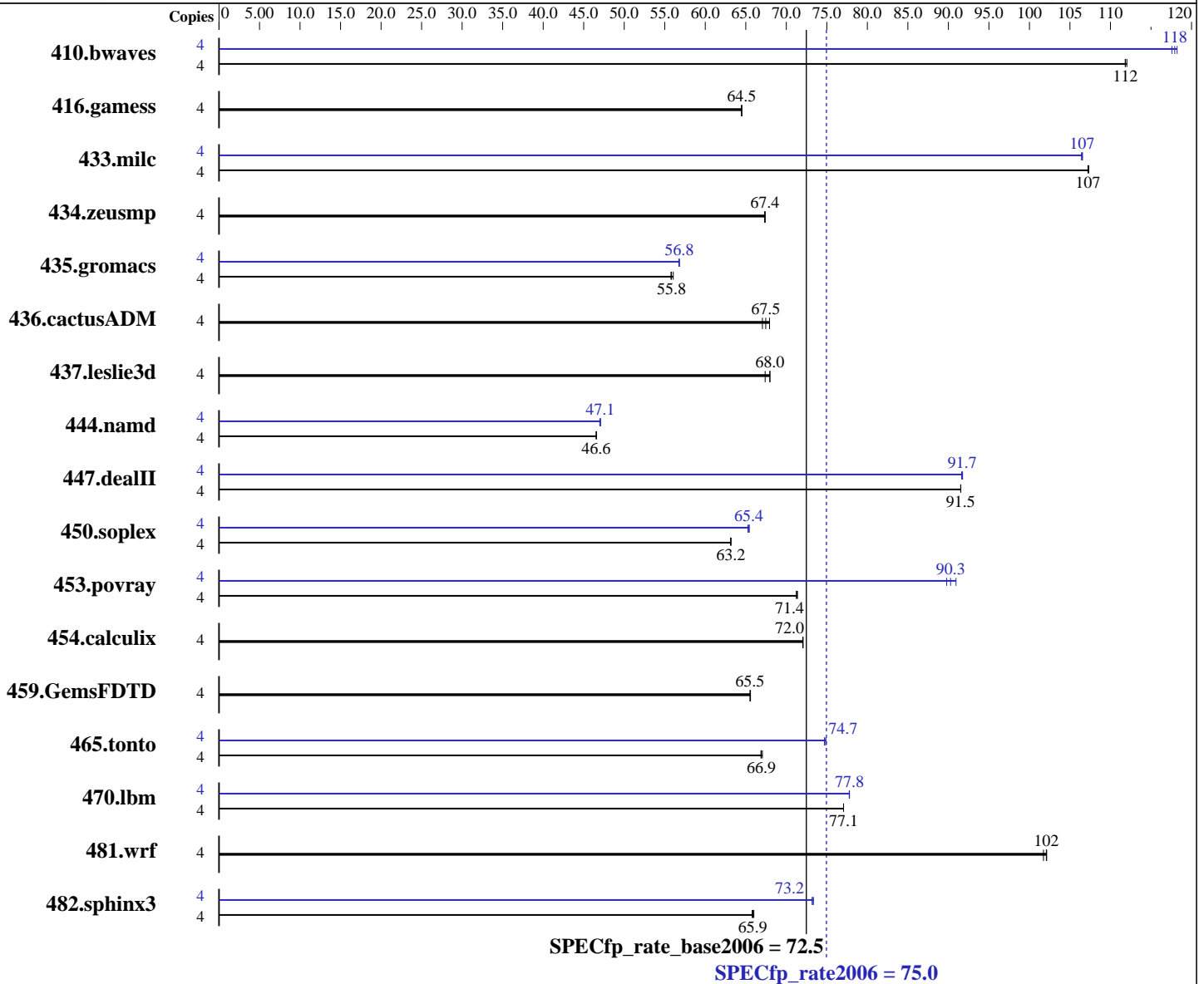
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: May-2010

Hardware Availability: Mar-2010

Software Availability: Dec-2009



### Hardware

CPU Name: Intel Xeon E5503  
 CPU Characteristics:  
 CPU MHz: 2000  
 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-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: No  
 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 DDR3-1333 DR RDIMM, CL9, ECC, downclocked to 800 MHz)  
Disk Subsystem: 1 x 146 GB 15000 RPM SAS  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	4	486	112	485	112	<b>486</b>	<b>112</b>	4	<b>461</b>	<b>118</b>	462	118	460	118		
416.gamess	4	1215	64.5	<b>1214</b>	<b>64.5</b>	1214	64.5	4	1215	64.5	<b>1214</b>	<b>64.5</b>	1214	64.5		
433.milc	4	<b>342</b>	<b>107</b>	342	107	342	107	4	345	106	345	107	<b>345</b>	<b>107</b>		
434.zeusmp	4	<b>540</b>	<b>67.4</b>	540	67.4	541	67.3	4	<b>540</b>	<b>67.4</b>	540	67.4	541	67.3		
435.gromacs	4	510	56.1	<b>512</b>	<b>55.8</b>	512	55.8	4	503	56.8	<b>503</b>	<b>56.8</b>	503	56.7		
436.cactusADM	4	713	67.1	704	67.9	<b>709</b>	<b>67.5</b>	4	713	67.1	704	67.9	<b>709</b>	<b>67.5</b>		
437.leslie3d	4	558	67.4	<b>553</b>	<b>68.0</b>	553	68.0	4	558	67.4	<b>553</b>	<b>68.0</b>	553	68.0		
444.namd	4	689	46.5	<b>689</b>	<b>46.6</b>	689	46.6	4	<b>682</b>	<b>47.1</b>	683	47.0	681	47.1		
447.dealII	4	500	91.5	<b>500</b>	<b>91.5</b>	500	91.5	4	499	91.8	499	91.6	<b>499</b>	<b>91.7</b>		
450.soplex	4	<b>528</b>	<b>63.2</b>	528	63.1	528	63.2	4	<b>510</b>	<b>65.4</b>	511	65.3	510	65.4		
453.povray	4	298	71.4	299	71.2	<b>298</b>	<b>71.4</b>	4	<b>236</b>	<b>90.3</b>	237	89.8	234	90.9		
454.calculix	4	458	72.1	<b>458</b>	<b>72.0</b>	458	72.0	4	458	72.1	<b>458</b>	<b>72.0</b>	458	72.0		
459.GemsFDTD	4	648	65.5	647	65.6	<b>648</b>	<b>65.5</b>	4	648	65.5	647	65.6	<b>648</b>	<b>65.5</b>		
465.tonto	4	587	67.1	<b>588</b>	<b>66.9</b>	589	66.9	4	<b>527</b>	<b>74.7</b>	526	74.9	527	74.7		
470.lbm	4	713	77.1	713	77.1	<b>713</b>	<b>77.1</b>	4	<b>707</b>	<b>77.8</b>	707	77.8	707	77.8		
481.wrf	4	437	102	439	102	<b>438</b>	<b>102</b>	4	437	102	439	102	<b>438</b>	<b>102</b>		
482.sphinx3	4	1185	65.8	<b>1183</b>	<b>65.9</b>	1181	66.0	4	<b>1065</b>	<b>73.2</b>	1065	73.2	1063	73.4		

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

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## Operating System Notes

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

## Platform Notes

BIOS Settings:  
Power Management = Maximum Performance (Default = Active Power Controller)



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## General Notes

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 Dell PowerEdge R610 model.

## 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

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

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## Base Optimization Flags (Continued)

Fortran benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):  
icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:  
ifort -m64

Benchmarks using both Fortran and C:  
icc -m64 ifort -m64

## 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



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## 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 -opt-prefetch

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)  
-opt-malloc-options=3 -ansi-alias -auto-ilp32

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

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

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

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 -inline-calloc -opt-malloc-options=3

### 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

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## Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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.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.xml>

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

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