



# SPEC® CFP2006 Result

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## Bull SAS

SPECfp®\_rate2006 = 73.9

NovaScale T810B F2 (Intel Core i3-2100, 3.10 GHz)

SPECfp\_rate\_base2006 = 73.5

CPU2006 license: 20

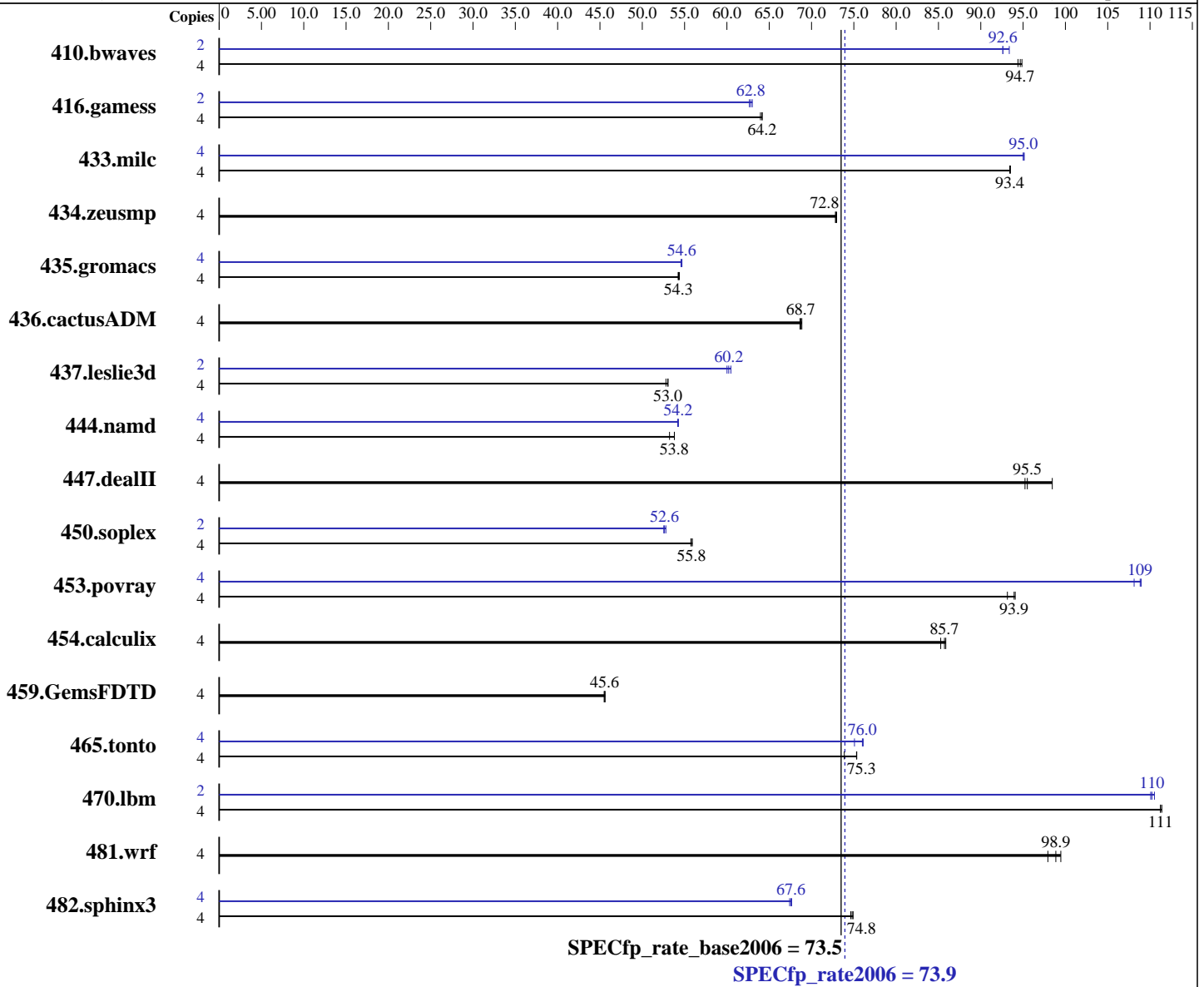
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: Mar-2011

Hardware Availability: May-2011

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Core i3-2100  
 CPU Characteristics:  
 CPU MHz: 3100  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 chip  
 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 SP1 (x86\_64), Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 3 MB I+D on chip per chip  
Other Cache: None  
Memory: 8 GB (4 x 2 GB 2Rx4 PC3-10600R-9, ECC)  
Disk Subsystem: 1 x 146 GB 15000 RPM SAS  
Other Hardware: None

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	576	94.4	573	94.9	<b>574</b>	<b>94.7</b>	2	291	93.4	<b>293</b>	<b>92.6</b>	294	92.6
416.gamess	4	<b>1221</b>	<b>64.2</b>	1224	64.0	1221	64.2	2	622	63.0	<b>623</b>	<b>62.8</b>	625	62.7
433.milc	4	393	93.5	<b>393</b>	<b>93.4</b>	393	93.4	4	386	95.0	386	95.1	<b>386</b>	<b>95.0</b>
434.zeusmp	4	<b>500</b>	<b>72.8</b>	499	73.0	500	72.8	4	<b>500</b>	<b>72.8</b>	499	73.0	500	72.8
435.gromacs	4	<b>526</b>	<b>54.3</b>	525	54.4	527	54.2	4	522	54.7	<b>523</b>	<b>54.6</b>	523	54.6
436.cactusADM	4	696	68.6	694	68.9	<b>695</b>	<b>68.7</b>	4	696	68.6	694	68.9	<b>695</b>	<b>68.7</b>
437.leslie3d	4	709	53.0	712	52.8	<b>709</b>	<b>53.0</b>	2	311	60.5	<b>312</b>	<b>60.2</b>	313	60.0
444.namd	4	<b>596</b>	<b>53.8</b>	596	53.8	603	53.2	4	<b>591</b>	<b>54.2</b>	591	54.3	592	54.2
447.dealII	4	<b>479</b>	<b>95.5</b>	465	98.4	481	95.2	4	<b>479</b>	<b>95.5</b>	465	98.4	481	95.2
450.soplex	4	<b>598</b>	<b>55.8</b>	598	55.7	597	55.9	2	317	52.5	<b>317</b>	<b>52.6</b>	316	52.8
453.povray	4	226	94.1	<b>227</b>	<b>93.9</b>	228	93.1	4	<b>196</b>	<b>109</b>	195	109	197	108
454.calculix	4	<b>385</b>	<b>85.7</b>	387	85.3	384	85.9	4	<b>385</b>	<b>85.7</b>	387	85.3	384	85.9
459.GemsFDTD	4	931	45.6	933	45.5	<b>932</b>	<b>45.6</b>	4	931	45.6	933	45.5	<b>932</b>	<b>45.6</b>
465.tonto	4	522	75.3	<b>523</b>	<b>75.3</b>	533	73.9	4	517	76.1	<b>518</b>	<b>76.0</b>	524	75.1
470.lbm	4	493	111	494	111	<b>494</b>	<b>111</b>	2	250	110	<b>249</b>	<b>110</b>	249	111
481.wrf	4	456	97.9	449	99.5	<b>452</b>	<b>98.9</b>	4	456	97.9	449	99.5	<b>452</b>	<b>98.9</b>
482.sphinx3	4	1041	74.9	<b>1042</b>	<b>74.8</b>	1045	74.6	4	1157	67.4	1152	67.7	<b>1154</b>	<b>67.6</b>

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
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900> /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```



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### Platform Notes

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

### General Notes

The Dell PowerEdge T110 II and the Bull NovaScale T810B F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge T110 II model. Binaries were compiled on RHEL5.5

### 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



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## Base Optimization Flags

C benchmarks:  
-xAVX -ipo -O3 -no-prec-div -static -ansi-alias

C++ benchmarks:  
-xAVX -ipo -O3 -no-prec-div -static -ansi-alias

Fortran benchmarks:  
-xAVX -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:  
-xAVX -ipo -O3 -no-prec-div -static -ansi-alias

## 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

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## Peak Portability Flags (Continued)

470.lbm: -DSPEC\_CPU\_LP64

481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32

470.lbm: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-ansi-alias -opt-prefetch -auto-ilp32

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2

C++ benchmarks:

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -static

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

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## Peak Optimization Flags (Continued)

```
465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -opt-malloc-options=3
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT
```

Benchmarks using both Fortran and C:

```
435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch
-static -auto-ilp32
```

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.xml>

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

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