



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale B260+  
(Intel Xeon E5405, 2.00 GHz)

SPECfp®2006 = 18.0

SPECfp\_base2006 = 15.3

CPU2006 license: 20

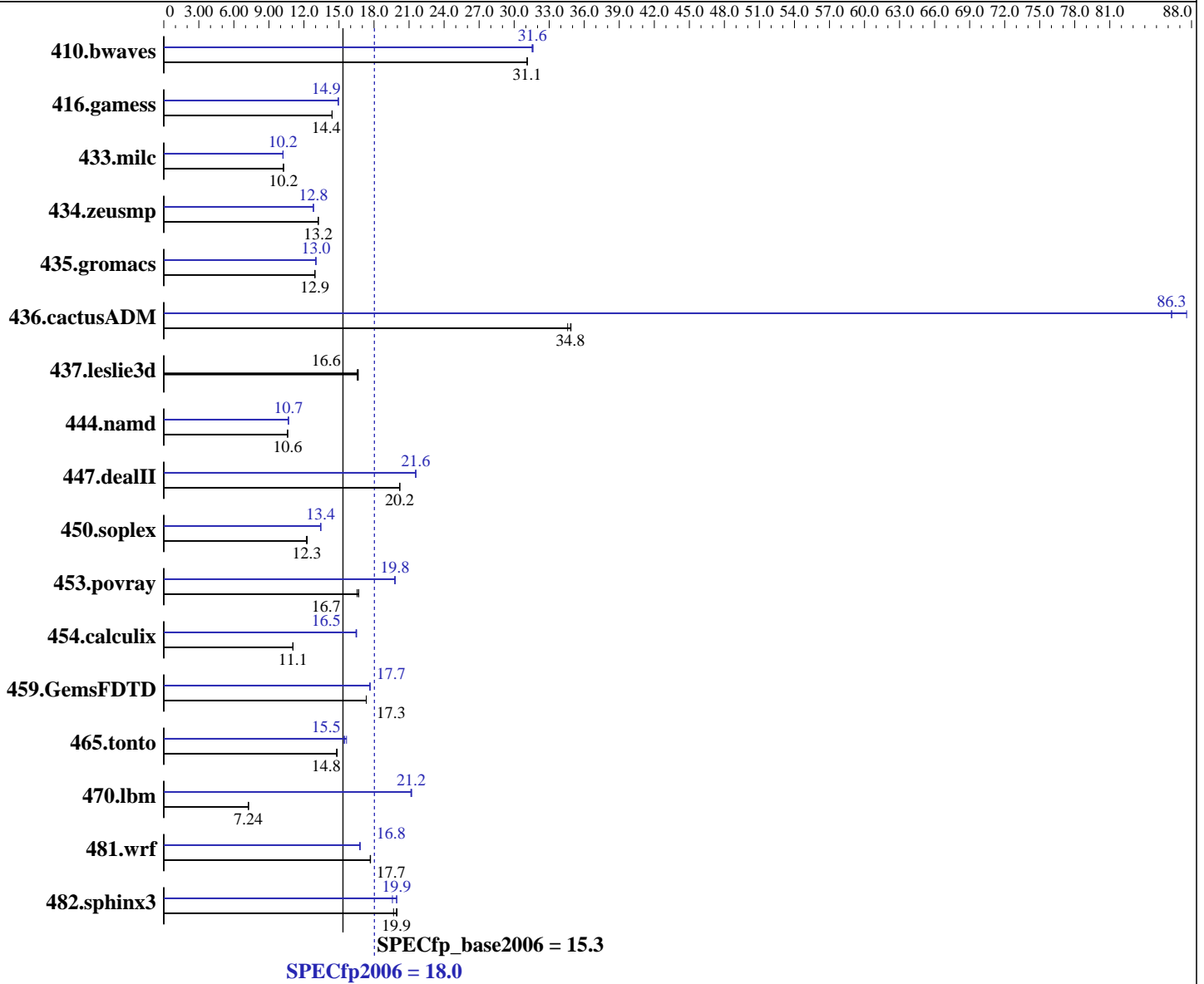
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Aug-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5405  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

Continued on next page

### Software

Operating System: SUSE LINUX Enterprise Server 10  
 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: Intel C++ and Fortran Compiler 10.1 for Linux  
 Build 20070913 Package ID: l\_cc\_p\_10.1.008,  
 l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 16 GB (8x2 GB) FB-DIMM PC2-5300F ECC CL5  
Disk Subsystem: 1x73 GB SAS, 10000 RPM  
Other Hardware: None

Peak Pointers: 32/64-bit  
Other Software: Binutils 2.17.50.0.15

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	437	31.1	437	31.1	<b>437</b>	<b>31.1</b>	430	31.6	431	31.5	<b>430</b>	<b>31.6</b>
416.gamess	<b>1359</b>	<b>14.4</b>	1360	14.4	1358	14.4	1311	14.9	<b>1310</b>	<b>14.9</b>	1310	14.9
433.milc	897	10.2	895	10.3	<b>896</b>	<b>10.2</b>	899	10.2	900	10.2	<b>899</b>	<b>10.2</b>
434.zeusmp	688	13.2	688	13.2	<b>688</b>	<b>13.2</b>	<b>710</b>	<b>12.8</b>	710	12.8	710	12.8
435.gromacs	<b>552</b>	<b>12.9</b>	552	12.9	552	12.9	549	13.0	<b>548</b>	<b>13.0</b>	548	13.0
436.cactusADM	<b>343</b>	<b>34.8</b>	346	34.6	343	34.9	136	87.6	138	86.3	<b>138</b>	<b>86.3</b>
437.leslie3d	<b>565</b>	<b>16.6</b>	565	16.7	568	16.6	<b>565</b>	<b>16.6</b>	565	16.7	568	16.6
444.namd	<b>757</b>	<b>10.6</b>	756	10.6	758	10.6	752	10.7	<b>752</b>	<b>10.7</b>	751	10.7
447.dealII	<b>566</b>	<b>20.2</b>	566	20.2	566	20.2	530	21.6	530	21.6	<b>530</b>	<b>21.6</b>
450.soplex	679	12.3	<b>680</b>	<b>12.3</b>	683	12.2	621	13.4	621	13.4	<b>621</b>	<b>13.4</b>
453.povray	<b>319</b>	<b>16.7</b>	319	16.7	322	16.5	<b>269</b>	<b>19.8</b>	269	19.8	269	19.8
454.calculix	746	11.1	<b>746</b>	<b>11.1</b>	747	11.0	500	16.5	501	16.5	<b>500</b>	<b>16.5</b>
459.GemsFDTD	612	17.3	<b>612</b>	<b>17.3</b>	612	17.3	<b>601</b>	<b>17.7</b>	601	17.7	601	17.6
465.tonto	<b>665</b>	<b>14.8</b>	665	14.8	663	14.9	629	15.6	<b>636</b>	<b>15.5</b>	637	15.4
470.lbm	1892	7.26	<b>1897</b>	<b>7.24</b>	1900	7.23	<b>648</b>	<b>21.2</b>	649	21.2	648	21.2
481.wrf	<b>632</b>	<b>17.7</b>	632	17.7	631	17.7	666	16.8	<b>665</b>	<b>16.8</b>	664	16.8
482.sphinx3	976	20.0	<b>979</b>	<b>19.9</b>	991	19.7	<b>978</b>	<b>19.9</b>	996	19.6	977	19.9

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  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 200M

## General Notes

All benchmarks compiled in 64-bit mode except 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode  
BIOS settings :  
Hardware Prefetcher : Enabled  
Adjacent Cache-Line Prefetch : Enabled



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## Base Compiler Invocation

C benchmarks:  
icc  
C++ benchmarks:  
icpc  
Fortran benchmarks:  
ifort  
Benchmarks using both Fortran and C:  
icc ifort

## 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:  
-fast -parallel  
C++ benchmarks:  
-fast -parallel  
Fortran benchmarks:  
-fast -parallel  
Benchmarks using both Fortran and C:  
-fast -parallel



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## Peak Compiler Invocation

C benchmarks (except as noted below):

```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

## 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  
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

## Peak Optimization Flags

C benchmarks:

```
433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32
```

```
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-scalar-rep- -prefetch -opt-malloc-options=3
```

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: -fast -prefetch -parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -parallel -prefetch -auto-ilp32

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel101\\_fp\\_flags.20090714.html](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090714.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel101\\_fp\\_flags.20090714.xml](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090714.xml)



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

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