



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale B260+  
(Intel Xeon E5440, 2.83 GHz)

SPECfp<sup>®</sup>2006 = 22.5

SPECfp\_base2006 = 19.0

CPU2006 license: 20

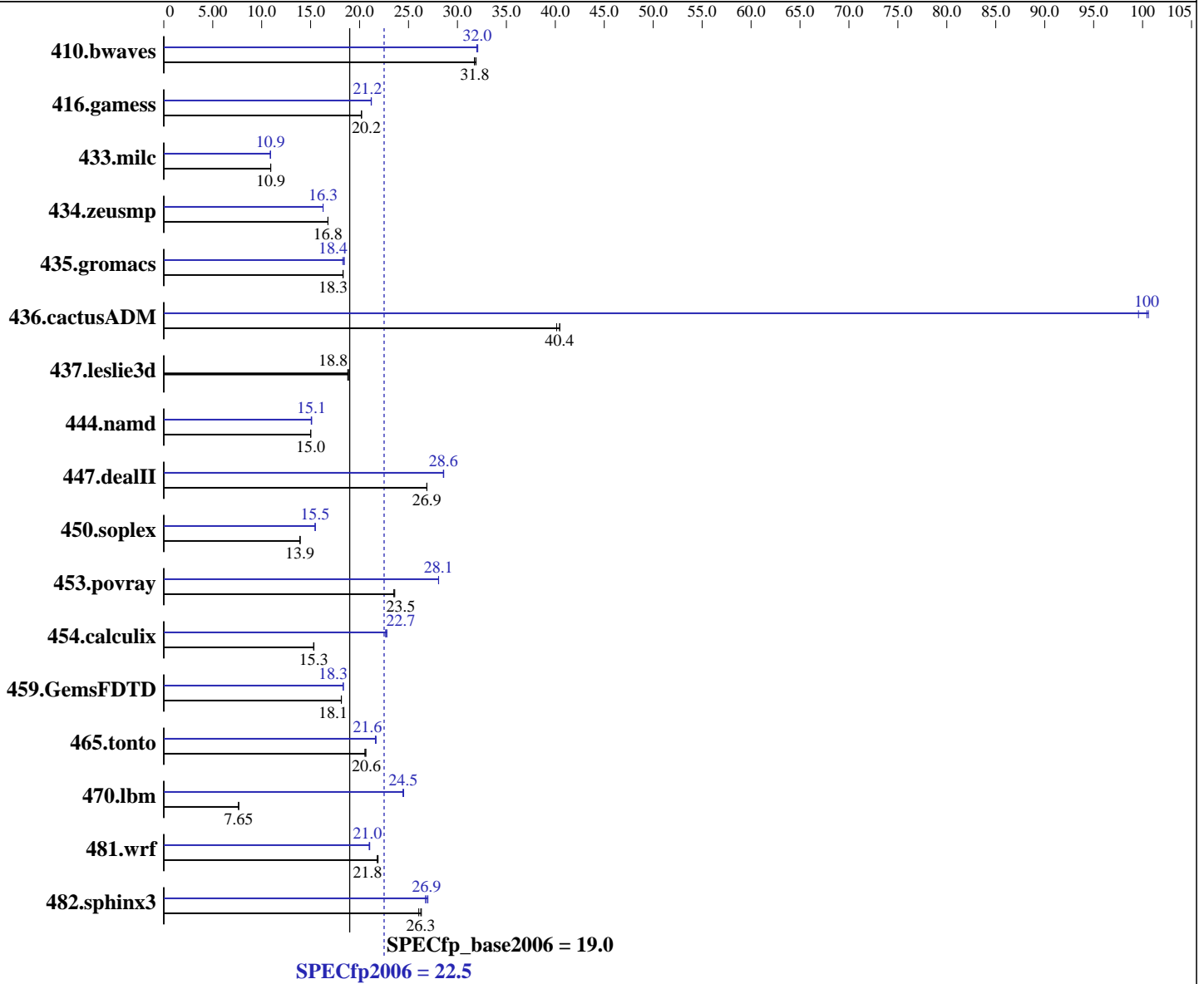
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jul-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5440  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2833  
 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

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### 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	<b>428</b>	<b>31.8</b>	428	31.7	426	31.9	<b>424</b>	<b>32.0</b>	425	32.0	424	32.1
416.gamess	969	20.2	970	20.2	<b>969</b>	<b>20.2</b>	<b>924</b>	<b>21.2</b>	924	21.2	923	21.2
433.milc	841	10.9	840	10.9	<b>840</b>	<b>10.9</b>	<b>843</b>	<b>10.9</b>	843	10.9	842	10.9
434.zeusmp	<b>542</b>	<b>16.8</b>	543	16.8	542	16.8	559	16.3	<b>559</b>	<b>16.3</b>	559	16.3
435.gromacs	<b>390</b>	<b>18.3</b>	390	18.3	390	18.3	<b>388</b>	<b>18.4</b>	391	18.3	387	18.4
436.cactusADM	<b>295</b>	<b>40.4</b>	298	40.1	295	40.4	120	99.6	<b>119</b>	<b>100</b>	119	101
437.leslie3d	498	18.9	<b>499</b>	<b>18.8</b>	500	18.8	498	18.9	<b>499</b>	<b>18.8</b>	500	18.8
444.namd	534	15.0	<b>534</b>	<b>15.0</b>	535	15.0	<b>531</b>	<b>15.1</b>	532	15.1	531	15.1
447.dealII	426	26.9	426	26.9	<b>426</b>	<b>26.9</b>	<b>400</b>	<b>28.6</b>	400	28.6	401	28.6
450.soplex	599	13.9	<b>599</b>	<b>13.9</b>	600	13.9	540	15.5	<b>539</b>	<b>15.5</b>	539	15.5
453.povray	226	23.5	225	23.6	<b>226</b>	<b>23.5</b>	189	28.1	190	28.1	<b>189</b>	<b>28.1</b>
454.calculix	<b>539</b>	<b>15.3</b>	539	15.3	538	15.3	362	22.8	364	22.7	<b>363</b>	<b>22.7</b>
459.GemsFDTD	585	18.1	<b>585</b>	<b>18.1</b>	585	18.1	579	18.3	<b>579</b>	<b>18.3</b>	579	18.3
465.tonto	<b>477</b>	<b>20.6</b>	477	20.6	479	20.5	454	21.7	455	21.6	<b>455</b>	<b>21.6</b>
470.lbm	<b>1797</b>	<b>7.65</b>	1796	7.65	1799	7.64	561	24.5	562	24.4	<b>562</b>	<b>24.5</b>
481.wrf	<b>511</b>	<b>21.8</b>	510	21.9	512	21.8	<b>532</b>	<b>21.0</b>	531	21.0	532	21.0
482.sphinx3	748	26.0	<b>742</b>	<b>26.3</b>	741	26.3	722	27.0	729	26.7	<b>726</b>	<b>26.9</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  
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.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:  
-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.20090713.00.html](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090713.00.html)

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

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel101\\_fp\\_flags.20090713.00.xml](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090713.00.xml)



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

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