



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale T860 E1  
(Intel Xeon E5410, 2.33 GHz)

SPECfp<sup>®</sup>\_rate2006 = 37.8

SPECfp\_rate\_base2006 = 34.9

CPU2006 license: 20

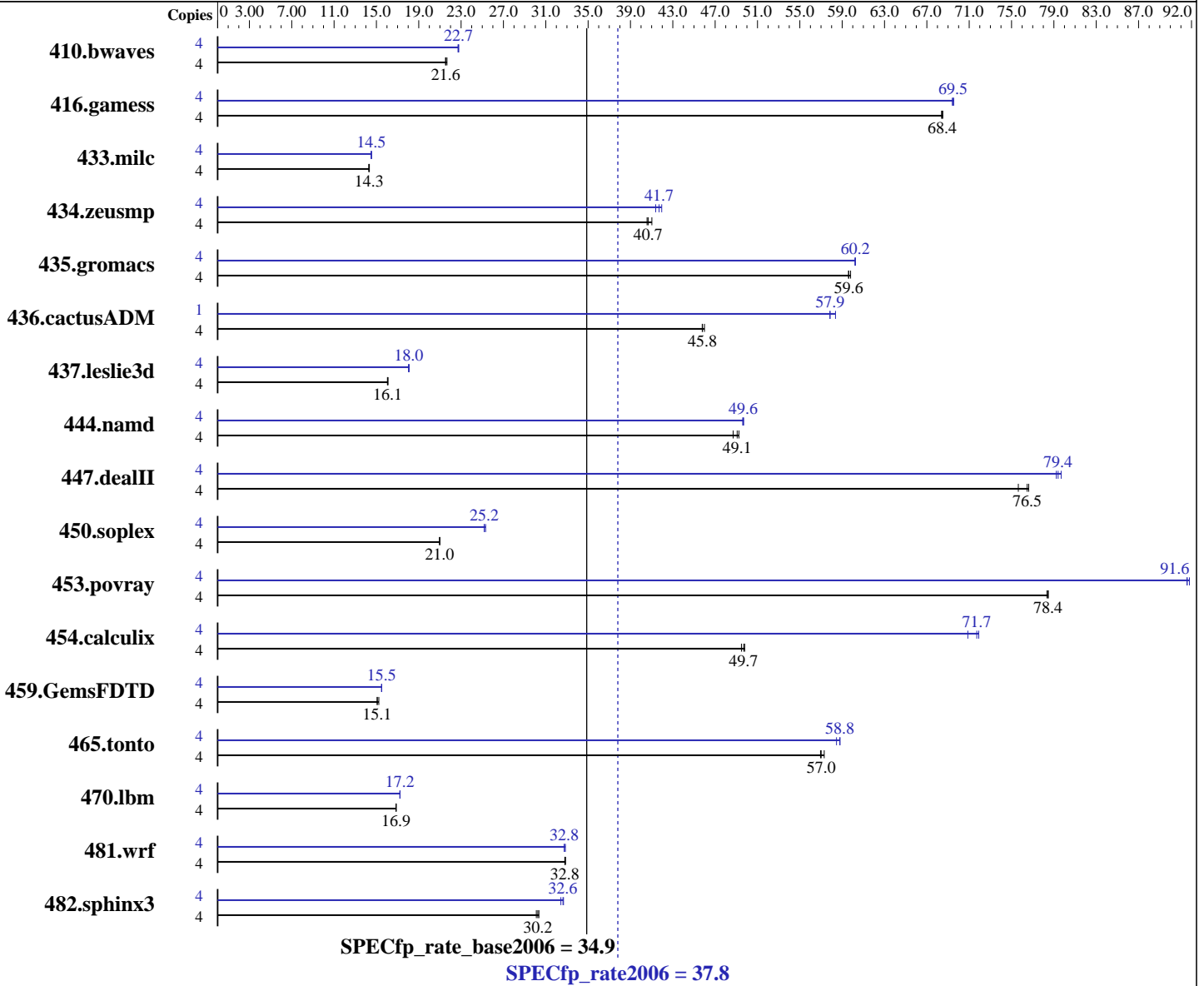
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jul-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5410  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2333  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 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, 15000 RPM  
Other Hardware: None

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	2509	21.7	<u>2522</u>	<u>21.6</u>	2525	21.5	4	<u>2390</u>	<u>22.7</u>	2394	22.7	2386	22.8
416.gamess	4	1143	68.5	1145	68.4	<u>1144</u>	<u>68.4</u>	4	1129	69.4	<u>1127</u>	<u>69.5</u>	1126	69.5
433.milc	4	<u>2567</u>	<u>14.3</u>	2572	14.3	2562	14.3	4	<u>2529</u>	<u>14.5</u>	2532	14.5	2525	14.5
434.zeusmp	4	887	41.0	<u>895</u>	<u>40.7</u>	897	40.6	4	<u>873</u>	<u>41.7</u>	868	42.0	880	41.4
435.gromacs	4	<u>479</u>	<u>59.6</u>	478	59.8	479	59.6	4	474	60.2	<u>474</u>	<u>60.2</u>	474	60.3
436.cactusADM	4	<u>1044</u>	<u>45.8</u>	1039	46.0	1044	45.8	1	207	57.8	205	58.4	<u>207</u>	<u>57.9</u>
437.leslie3d	4	2337	16.1	2344	16.0	<u>2338</u>	<u>16.1</u>	4	<u>2083</u>	<u>18.0</u>	2084	18.0	2078	18.1
444.namd	4	<u>654</u>	<u>49.1</u>	659	48.7	651	49.2	4	647	49.6	646	49.7	<u>646</u>	<u>49.6</u>
447.dealII	4	<u>598</u>	<u>76.5</u>	605	75.6	597	76.6	4	574	79.7	<u>576</u>	<u>79.4</u>	578	79.2
450.soplex	4	<u>1590</u>	<u>21.0</u>	1591	21.0	1590	21.0	4	<u>1324</u>	<u>25.2</u>	1318	25.3	1325	25.2
453.povray	4	271	78.5	<u>271</u>	<u>78.4</u>	272	78.3	4	232	91.6	<u>232</u>	<u>91.6</u>	232	91.8
454.calculix	4	<u>664</u>	<u>49.7</u>	667	49.5	663	49.8	4	466	70.9	459	71.9	<u>460</u>	<u>71.7</u>
459.GemsFDTD	4	2816	15.1	<u>2814</u>	<u>15.1</u>	2787	15.2	4	2738	15.5	2740	15.5	<u>2739</u>	<u>15.5</u>
465.tonto	4	687	57.3	<u>690</u>	<u>57.0</u>	691	57.0	4	669	58.8	<u>670</u>	<u>58.8</u>	673	58.5
470.lbm	4	3260	16.9	<u>3260</u>	<u>16.9</u>	3261	16.9	4	<u>3190</u>	<u>17.2</u>	3192	17.2	3190	17.2
481.wrf	4	<u>1362</u>	<u>32.8</u>	1362	32.8	1359	32.9	4	1360	32.9	<u>1364</u>	<u>32.8</u>	1364	32.7
482.sphinx3	4	2569	30.3	<u>2578</u>	<u>30.2</u>	2590	30.1	4	2404	32.4	<u>2390</u>	<u>32.6</u>	2386	32.7

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  
'/usr/bin/taskset' used to bind processes to CPUs  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 64M

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode



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**Test date:** Jul-2008  
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**Software Availability:** Nov-2007

## 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

C++ benchmarks:  
-fast

Fortran benchmarks:  
-fast

Benchmarks using both Fortran and C:  
-fast



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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 (except as noted below):

ifort

```
437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib  
-I/opt/intel/fc/10.1.008/include
```

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  
444.namd: -DSPEC_CPU_LP64  
447.deallI: -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

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

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

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 -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)



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

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