



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale T830 E1  
(Intel Xeon X3320, 2.50 GHz)

SPECfp®2006 = 20.1

SPECfp\_base2006 = 18.6

CPU2006 license: 20

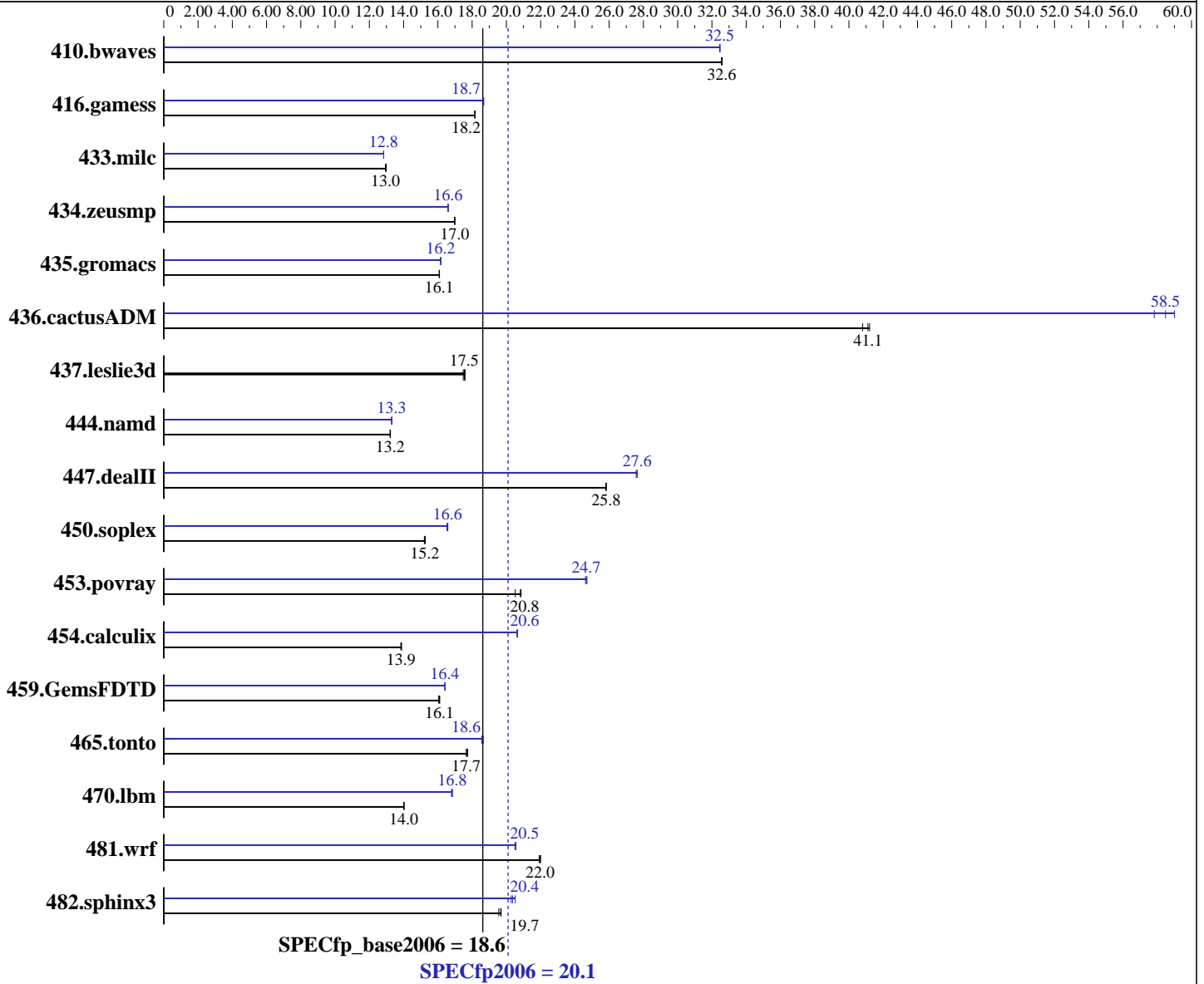
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jul-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X3320  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 CPU(s) orderable: 1 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 6 MB I+D on chip per chip, 3 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: 8 GB (4x2 GB) FB-DIMM PC2-6400E ECC CL6  
Disk Subsystem: 1x80 GB SATA, 7200 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	417	32.6	<b>417</b>	<b>32.6</b>	417	32.6	418	32.5	419	32.4	<b>419</b>	<b>32.5</b>
416.gamess	1079	18.2	1077	18.2	<b>1078</b>	<b>18.2</b>	<b>1049</b>	<b>18.7</b>	1048	18.7	1050	18.6
433.milc	707	13.0	709	12.9	<b>709</b>	<b>13.0</b>	715	12.8	715	12.8	<b>715</b>	<b>12.8</b>
434.zeusmp	536	17.0	<b>536</b>	<b>17.0</b>	536	17.0	548	16.6	<b>548</b>	<b>16.6</b>	549	16.6
435.gromacs	444	16.1	444	16.1	<b>444</b>	<b>16.1</b>	<b>442</b>	<b>16.2</b>	442	16.2	442	16.2
436.cactusADM	<b>291</b>	<b>41.1</b>	290	41.2	293	40.8	202	59.0	207	57.8	<b>204</b>	<b>58.5</b>
437.leslie3d	534	17.6	538	17.5	<b>536</b>	<b>17.5</b>	534	17.6	538	17.5	<b>536</b>	<b>17.5</b>
444.namd	<b>607</b>	<b>13.2</b>	607	13.2	606	13.2	<b>603</b>	<b>13.3</b>	603	13.3	602	13.3
447.dealII	443	25.8	<b>443</b>	<b>25.8</b>	443	25.8	414	27.6	415	27.6	<b>414</b>	<b>27.6</b>
450.soplex	546	15.3	548	15.2	<b>547</b>	<b>15.2</b>	503	16.6	<b>503</b>	<b>16.6</b>	505	16.5
453.povray	259	20.5	<b>256</b>	<b>20.8</b>	255	20.9	<b>216</b>	<b>24.7</b>	215	24.7	216	24.6
454.calculix	594	13.9	<b>596</b>	<b>13.9</b>	596	13.8	<b>400</b>	<b>20.6</b>	400	20.6	400	20.6
459.GemsFDTD	661	16.0	<b>659</b>	<b>16.1</b>	659	16.1	646	16.4	<b>647</b>	<b>16.4</b>	647	16.4
465.tonto	555	17.7	<b>557</b>	<b>17.7</b>	557	17.7	528	18.7	<b>530</b>	<b>18.6</b>	530	18.6
470.lbm	979	14.0	980	14.0	<b>980</b>	<b>14.0</b>	818	16.8	<b>816</b>	<b>16.8</b>	816	16.8
481.wrf	<b>508</b>	<b>22.0</b>	508	22.0	510	21.9	543	20.6	<b>544</b>	<b>20.5</b>	545	20.5
482.sphinx3	<b>991</b>	<b>19.7</b>	989	19.7	997	19.6	950	20.5	<b>957</b>	<b>20.4</b>	961	20.3

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  
The Bull NovaScale T810 E1(Intel Xeon X3320, 2.50 GHz), the Bull NovaScale T830 E1(Intel Xeon X3320, 2.50 GHz) and the Bull NovaScale R410 E1(Intel Xeon X3320, 2.50 GHz) models are electronically equivalent.  
The results have been measured on a Bull NovaScale R410 E1(Intel Xeon X3320, 2.50 GHz) model.



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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.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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