



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale R460 E1  
(Intel Xeon E5420,2.50GHz)

SPECfp®2006 = 20.2

SPECfp\_base2006 = 17.0

CPU2006 license: 20

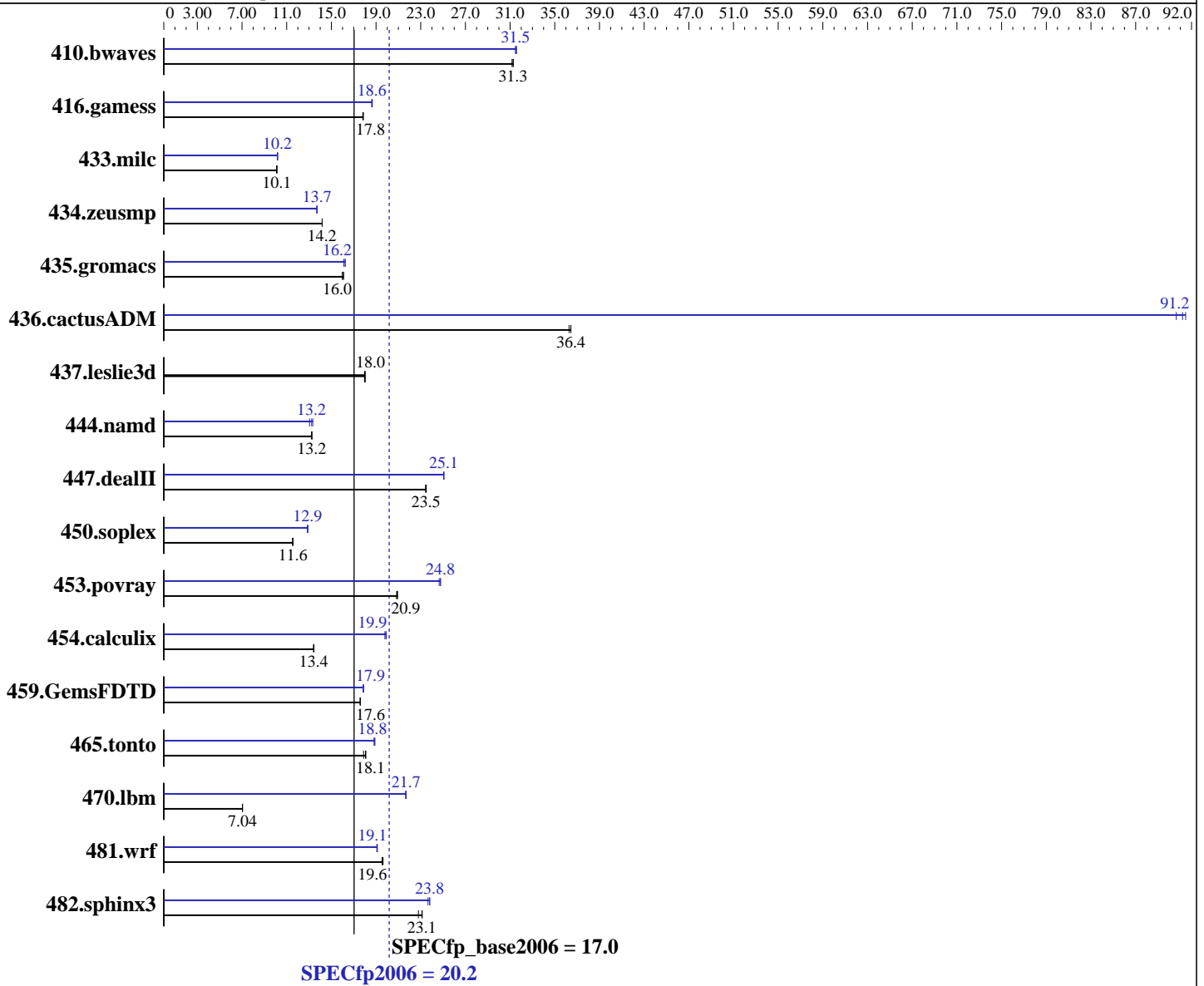
Test sponsor: Bull SAS

Tested by: NEC Corporation

Test date: Jan-2008

Hardware Availability: Dec-2007

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E5420  
 CPU Characteristics: 2.50 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 2500  
 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-smpp  
 Compiler: Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2

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L3 Cache: None  
Other Cache: None  
Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x73.2 GB SAS, 15000RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.tar.gz, Version 2.17

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	436	31.2	434	31.3	<b>435</b>	<b>31.3</b>	432	31.5	430	31.6	<b>432</b>	<b>31.5</b>
416.gamess	1099	17.8	1096	17.9	<b>1098</b>	<b>17.8</b>	1052	18.6	1049	18.7	<b>1051</b>	<b>18.6</b>
433.milc	<b>907</b>	<b>10.1</b>	908	10.1	907	10.1	<b>902</b>	<b>10.2</b>	903	10.2	901	10.2
434.zeusmp	<b>642</b>	<b>14.2</b>	642	14.2	642	14.2	665	13.7	<b>664</b>	<b>13.7</b>	663	13.7
435.gromacs	443	16.1	<b>446</b>	<b>16.0</b>	447	16.0	440	16.2	443	16.1	<b>440</b>	<b>16.2</b>
436.cactusADM	328	36.4	329	36.3	<b>328</b>	<b>36.4</b>	132	90.6	<b>131</b>	<b>91.2</b>	131	91.5
437.leslie3d	523	18.0	521	18.0	<b>522</b>	<b>18.0</b>	523	18.0	521	18.0	<b>522</b>	<b>18.0</b>
444.namd	605	13.2	<b>605</b>	<b>13.2</b>	605	13.2	<b>606</b>	<b>13.2</b>	601	13.3	615	13.0
447.dealII	<b>488</b>	<b>23.5</b>	487	23.5	488	23.4	<b>456</b>	<b>25.1</b>	457	25.1	456	25.1
450.soplex	<b>722</b>	<b>11.6</b>	721	11.6	724	11.5	646	12.9	648	12.9	<b>648</b>	<b>12.9</b>
453.povray	255	20.8	<b>255</b>	<b>20.9</b>	254	20.9	216	24.6	<b>215</b>	<b>24.8</b>	215	24.8
454.calculix	614	13.4	<b>614</b>	<b>13.4</b>	616	13.4	414	19.9	417	19.8	<b>415</b>	<b>19.9</b>
459.GemsFDTD	604	17.6	<b>603</b>	<b>17.6</b>	603	17.6	<b>594</b>	<b>17.9</b>	595	17.8	593	17.9
465.tonto	544	18.1	550	17.9	<b>545</b>	<b>18.1</b>	523	18.8	<b>522</b>	<b>18.8</b>	521	18.9
470.lbm	1949	7.05	<b>1952</b>	<b>7.04</b>	1954	7.03	<b>634</b>	<b>21.7</b>	634	21.7	635	21.6
481.wrf	569	19.6	<b>571</b>	<b>19.6</b>	572	19.5	586	19.1	<b>585</b>	<b>19.1</b>	584	19.1
482.sphinx3	855	22.8	<b>843</b>	<b>23.1</b>	843	23.1	<b>819</b>	<b>23.8</b>	819	23.8	824	23.6

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 (default).

## Platform Notes

Bios settings:  
Intel SpeedStep Technology: Disabled

## General Notes

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

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### General Notes (Continued)

The NEC Express5800/120Rh-1(Intel Xeon Processor E5420), the NEC Express5800/120Rj-2(Intel Xeon Processor E5420), the Bull NovaScale R440 E1 (Intel Xeon E5420,2.50GHz) and the Bull NovaScale R460 E1 (Intel Xeon E5420,2.50GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Processor E5420) model.

### 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.deall: -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

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## Base Optimization Flags (Continued)

C++ benchmarks:  
-fast -parallel

Fortran benchmarks:  
-fast -parallel

Benchmarks using both Fortran and C:  
-fast -parallel

## 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



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## 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

482.sphinx3: -fast -unroll2

### C++ benchmarks:

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

447.dealII: -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

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## Peak Optimization Flags (Continued)

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/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.html>

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

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.xml>

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