



# SPEC® CFP2006 Result

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## Bull SAS

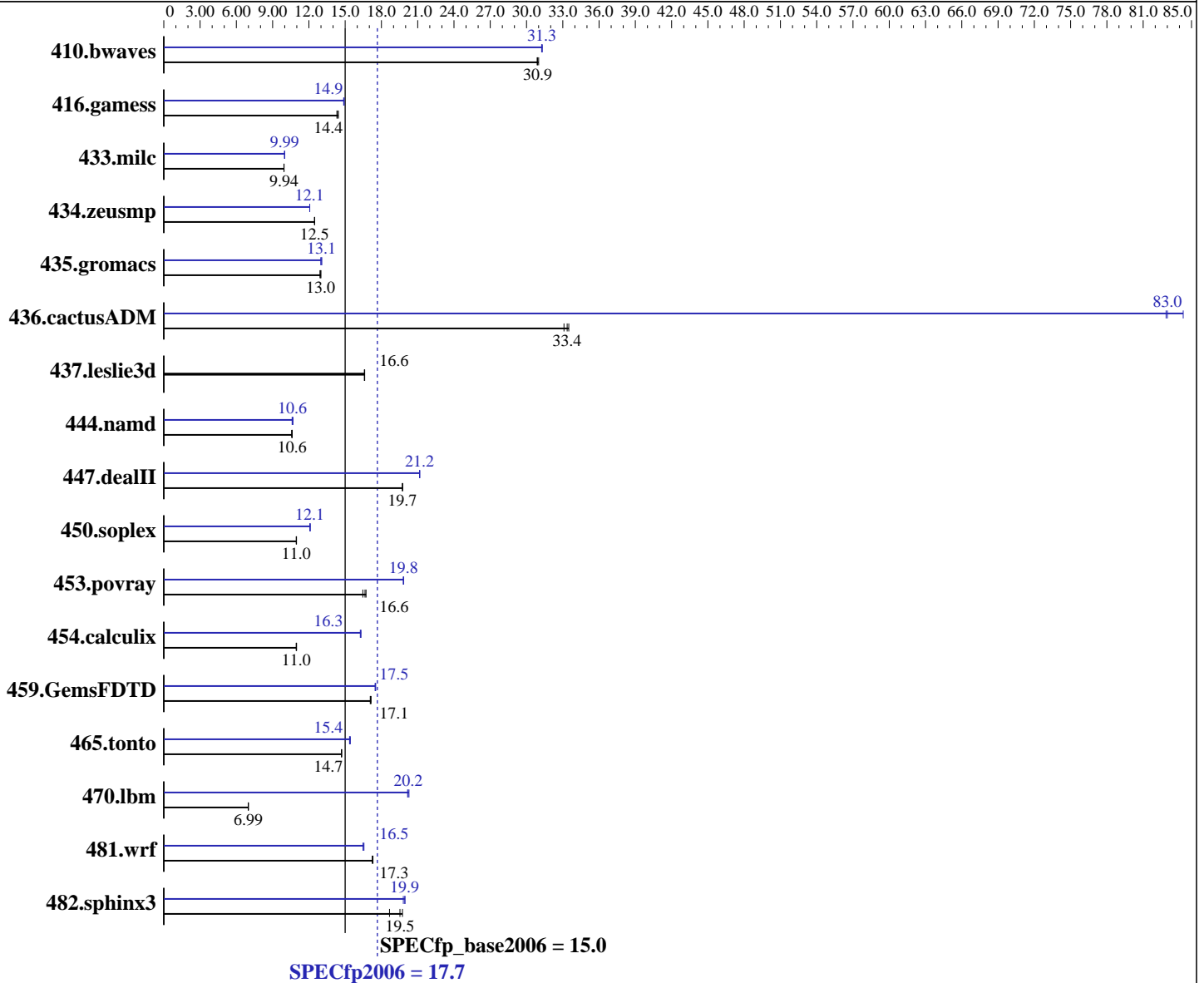
NovaScale R440 E1  
(Intel Xeon E5405,2.00GHz)

SPECfp®2006 = 17.7

SPECfp\_base2006 = 15.0

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 E5405  
CPU Characteristics: 2.00 GHz, 2x6 MB L2 shared, 1333 MHz 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

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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	438	31.0	440	30.9	<b>440</b>	<b>30.9</b>	434	31.3	<b>435</b>	<b>31.3</b>	435	31.2
416.gamess	1356	14.4	1368	14.3	<b>1363</b>	<b>14.4</b>	1313	14.9	<b>1314</b>	<b>14.9</b>	1316	14.9
433.milc	<b>923</b>	<b>9.94</b>	923	9.94	924	9.93	919	9.99	<b>919</b>	<b>9.99</b>	919	9.99
434.zeusmp	730	12.5	<b>730</b>	<b>12.5</b>	730	12.5	754	12.1	<b>754</b>	<b>12.1</b>	754	12.1
435.gromacs	<b>550</b>	<b>13.0</b>	553	12.9	550	13.0	550	13.0	547	13.1	<b>547</b>	<b>13.1</b>
436.cactusADM	<b>358</b>	<b>33.4</b>	361	33.1	357	33.5	144	82.9	142	84.3	<b>144</b>	<b>83.0</b>
437.leslie3d	567	16.6	566	16.6	<b>566</b>	<b>16.6</b>	567	16.6	566	16.6	<b>566</b>	<b>16.6</b>
444.namd	759	10.6	<b>755</b>	<b>10.6</b>	755	10.6	756	10.6	<b>754</b>	<b>10.6</b>	750	10.7
447.dealII	579	19.8	580	19.7	<b>580</b>	<b>19.7</b>	541	21.2	540	21.2	<b>541</b>	<b>21.2</b>
450.soplex	760	11.0	<b>760</b>	<b>11.0</b>	762	11.0	688	12.1	690	12.1	<b>690</b>	<b>12.1</b>
453.povray	<b>320</b>	<b>16.6</b>	323	16.5	318	16.7	269	19.8	268	19.8	<b>268</b>	<b>19.8</b>
454.calculix	751	11.0	753	11.0	<b>753</b>	<b>11.0</b>	508	16.3	<b>507</b>	<b>16.3</b>	506	16.3
459.GemsFDTD	621	17.1	<b>620</b>	<b>17.1</b>	619	17.1	606	17.5	<b>606</b>	<b>17.5</b>	607	17.5
465.tonto	670	14.7	669	14.7	<b>669</b>	<b>14.7</b>	641	15.4	638	15.4	<b>640</b>	<b>15.4</b>
470.lbm	<b>1965</b>	<b>6.99</b>	1964	7.00	1968	6.98	678	20.3	<b>680</b>	<b>20.2</b>	681	20.2
481.wrf	646	17.3	<b>647</b>	<b>17.3</b>	648	17.2	675	16.6	<b>677</b>	<b>16.5</b>	678	16.5
482.sphinx3	1044	18.7	<b>998</b>	<b>19.5</b>	987	19.7	984	19.8	<b>978</b>	<b>19.9</b>	977	20.0

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 E5405), the NEC Express5800/120Rj-2(Intel Xeon Processor E5405), the Bull NovaScale R440 E1 (Intel Xeon E5405,2.00GHz) and the Bull NovaScale R460 E1 (Intel Xeon E5405,2.00GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Processor E5405) 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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