# SPEC® CFP2006 Result

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## Bull SAS

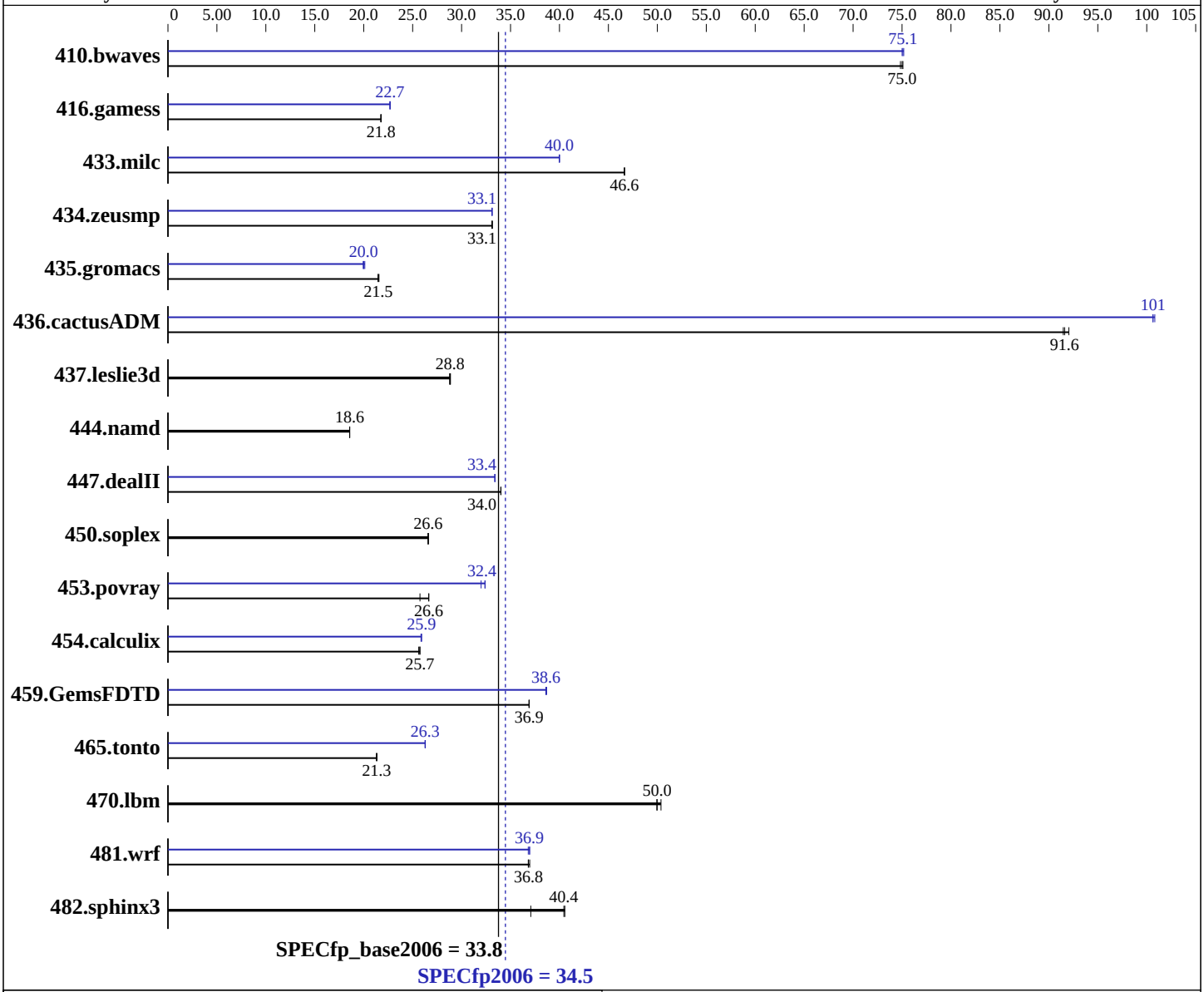
NovaScale T820 F2 (Intel Xeon X3450, 2.66 GHz)

SPECfp®2006 = 34.5

SPECfp_base2006 = 33.8

**CPU2006 license:** 20
**Test sponsor:** Bull SAS
**Tested by:** Dell Inc.

**Test date:** Nov-2009
**Hardware Availability:** Dec-2009
**Software Availability:** Jul-2009




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3450 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.20 GHz |
| CPU MHz: | 2667 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |

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## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 5.3, Kernel 2.6.18-128.el5 |
| Compiler: | Intel Fortran Compiler and Intel C++ Compiler Professional Edition 11.1 For Linux Build 20090511 Package ID: l_cproc_p_11.1.040, l_cprof_p_11.1.040 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (multi-user) |

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 8 GB (4 x 2 GB DDR3-1333 DR RDIMM)
Disk Subsystem: 1 x 160 GB 7200 RPM SATA
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 64-bit
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 181 | 75.1 | **181** | **75.0** | 182 | 74.8 | 181 | 75.0 | 181 | 75.2 | **181** | **75.1** |
| 416.gamess | 899 | 21.8 | 900 | 21.7 | **899** | **21.8** | **863** | **22.7** | 862 | 22.7 | 864 | 22.7 |
| 433.milc | 197 | 46.7 | **197** | **46.6** | 197 | 46.6 | 230 | 40.0 | **230** | **40.0** | 229 | 40.0 |
| 434.zeusmp | 275 | 33.1 | 275 | 33.1 | **275** | **33.1** | 275 | 33.1 | 275 | 33.1 | **275** | **33.1** |
| 435.gromacs | 333 | 21.5 | **332** | **21.5** | 331 | 21.6 | **357** | **20.0** | 355 | 20.1 | 358 | 19.9 |
| 436.cactusADM | 130 | 92.0 | 131 | 91.5 | **130** | **91.6** | **119** | **101** | 119 | 101 | 119 | 101 |
| 437.leslie3d | 326 | 28.9 | **326** | **28.8** | 327 | 28.8 | 326 | 28.9 | **326** | **28.8** | 327 | 28.8 |
| 444.namd | **432** | **18.6** | 432 | 18.6 | 432 | 18.6 | **432** | **18.6** | 432 | 18.6 | 432 | 18.6 |
| 447.dealII | 336 | 34.0 | **336** | **34.0** | 336 | 34.0 | **343** | **33.4** | 343 | 33.4 | 342 | 33.4 |
| 450.soplex | 313 | 26.6 | 314 | 26.6 | **314** | **26.6** | 313 | 26.6 | 314 | 26.6 | **314** | **26.6** |
| 453.povray | 200 | 26.6 | 207 | 25.7 | **200** | **26.6** | 166 | 32.0 | 164 | 32.4 | **164** | **32.4** |
| 454.calculix | 320 | 25.7 | **321** | **25.7** | 322 | 25.6 | 319 | 25.9 | 318 | 25.9 | **319** | **25.9** |
| 459.GemsFDTD | **288** | **36.9** | 287 | 36.9 | 288 | 36.9 | 275 | 38.6 | **275** | **38.6** | 274 | 38.7 |
| 465.tonto | 461 | 21.3 | **461** | **21.3** | 462 | 21.3 | 374 | 26.3 | **374** | **26.3** | 375 | 26.3 |
| 470.lbm | 273 | 50.4 | 275 | 49.9 | **275** | **50.0** | 273 | 50.4 | 275 | 49.9 | **275** | **50.0** |
| 481.wrf | 302 | 37.0 | 303 | 36.8 | **303** | **36.8** | 302 | 37.0 | **302** | **36.9** | 303 | 36.8 |
| 482.sphinx3 | 526 | 37.1 | 481 | 40.5 | **482** | **40.4** | 526 | 37.1 | 481 | 40.5 | **482** | **40.4** |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

```
The config file option 'submit' was used.
```

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
```

## Platform Notes

```
BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
```

## General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
The Dell PowerEdge T310 (Intel Xeon X3450, 2.66 GHz) and
the Bull NovaScale T820 F2 (Intel Xeon X3450, 2.66 GHz) models are electronically equivalent.
The results have been measured on a Dell PowerEdge T310 (Intel Xeon X3450, 2.66 GHz) model.
```

## Base Compiler Invocation

C benchmarks:
```
icc   -m64
```

C++ benchmarks:
```
icpc  -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

## 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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
```

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## Base Optimization Flags (Continued)

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`

Fortran benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

Benchmarks using both Fortran and C:
`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

## Peak Compiler Invocation

C benchmarks:
`icc -m64`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

## Peak Portability Flags

`Same as Base Portability Flags`

## Peak Optimization Flags

C benchmarks:

433.milc: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-fno-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `basepeak = yes`

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## Peak Optimization Flags (Continued)

447.dealII: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll2 -ansi-alias -scalar-rep- -opt-prefetch`

450.soplex: `basepeak = yes`

453.povray: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll4 -ansi-alias`

Fortran benchmarks:

410.bwaves: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

416.gamess: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll2 -Ob0 -ansi-alias -scalar-rep-`

434.zeusmp: `Same as 410.bwaves`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll2 -Ob0 -opt-prefetch -parallel`

465.tonto: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll4 -auto`

Benchmarks using both Fortran and C:

435.gromacs: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-opt-prefetch -auto-ilp32`

436.cactusADM: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2) `-unroll2 -opt-prefetch -parallel -auto-ilp32`

454.calculix: `-xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic11.1-fp-linux64-revA.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic11.1-fp-linux64-revA.xml`


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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 03:53:21 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 December 2009.