# SPEC® CFP2006 Result

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## Bull SAS

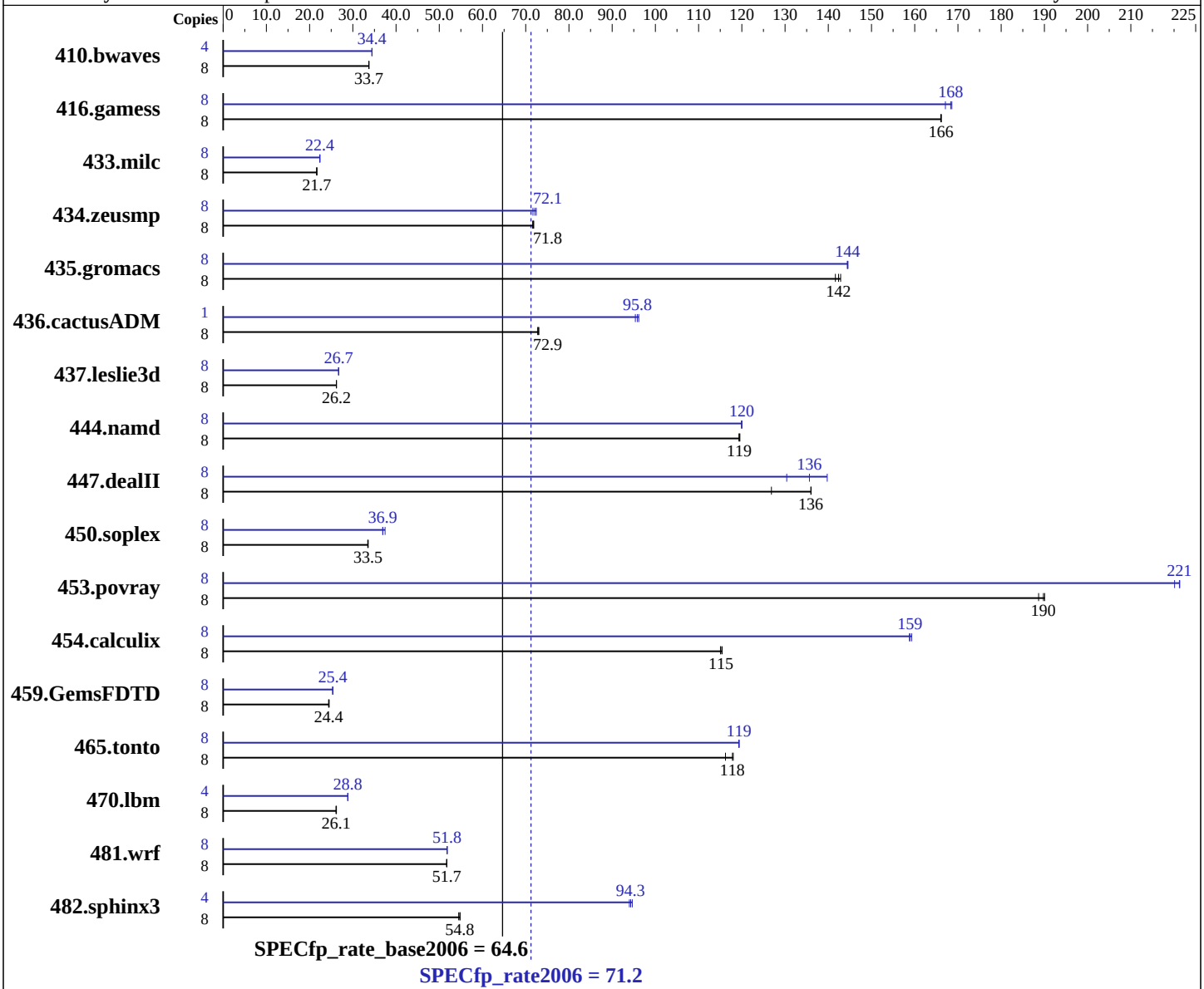
NovaScale T860 E1
(Intel Xeon E5440,2.83GHz)

SPECfp®_rate2006 = 71.2

SPECfp_rate_base2006 = 64.6

**CPU2006 license:** 20
**Test sponsor:** Bull SAS
**Tested by:** NEC Corporation

**Test date:** Apr-2008
**Hardware Availability:** Jan-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5440 |
| CPU Characteristics: | 2.83 GHz, 2x6 MB L2 shared, 1333 MHz bus |
| CPU MHz: | 2833 |
| 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-smp |
| 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 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 8 | 3224 | 33.7 | **3224** | **33.7** | 3225 | 33.7 | 4 | 1579 | 34.4 | 1579 | 34.4 | **1579** | **34.4** |
| 416.gamess | 8 | 943 | 166 | 943 | 166 | **943** | **166** | 8 | 937 | 167 | **931** | **168** | 929 | 169 |
| 433.milc | 8 | 3390 | 21.7 | 3391 | 21.7 | **3390** | **21.7** | 8 | **3283** | **22.4** | 3283 | 22.4 | 3281 | 22.4 |
| 434.zeusmp | 8 | 1017 | 71.6 | **1015** | **71.8** | 1013 | 71.9 | 8 | **1010** | **72.1** | 1005 | 72.4 | 1016 | 71.7 |
| 435.gromacs | 8 | **401** | **142** | 403 | 142 | 400 | 143 | 8 | 396 | 144 | **395** | **144** | 395 | 145 |
| 436.cactusADM | 8 | **1311** | **72.9** | 1314 | 72.8 | 1309 | 73.0 | 1 | 124 | 96.2 | 125 | 95.4 | **125** | **95.8** |
| 437.leslie3d | 8 | **2869** | **26.2** | 2871 | 26.2 | 2869 | 26.2 | 8 | 2815 | 26.7 | **2815** | **26.7** | 2814 | 26.7 |
| 444.namd | 8 | 537 | 120 | 538 | 119 | **537** | **119** | 8 | **535** | **120** | 535 | 120 | 535 | 120 |
| 447.dealII | 8 | 673 | 136 | 721 | 127 | **673** | **136** | 8 | 655 | 140 | 702 | 130 | **675** | **136** |
| 450.soplex | 8 | 1995 | 33.4 | **1990** | **33.5** | 1989 | 33.5 | 8 | 1807 | 36.9 | **1806** | **36.9** | 1781 | 37.5 |
| 453.povray | 8 | 224 | 190 | 226 | 189 | **224** | **190** | 8 | **192** | **221** | 192 | 221 | 193 | 220 |
| 454.calculix | 8 | **573** | **115** | 572 | 115 | 574 | 115 | 8 | 414 | 159 | 416 | 159 | **415** | **159** |
| 459.GemsFDTD | 8 | 3460 | 24.5 | **3475** | **24.4** | 3477 | 24.4 | 8 | 3345 | 25.4 | 3351 | 25.3 | **3345** | **25.4** |
| 465.tonto | 8 | **668** | **118** | 677 | 116 | 667 | 118 | 8 | **660** | **119** | 659 | 119 | 660 | 119 |
| 470.lbm | 8 | 4194 | 26.2 | **4205** | **26.1** | 4208 | 26.1 | 4 | 1906 | 28.8 | 1905 | 28.9 | **1905** | **28.8** |
| 481.wrf | 8 | **1727** | **51.7** | 1727 | 51.8 | 1728 | 51.7 | 8 | 1724 | 51.8 | 1725 | 51.8 | **1724** | **51.8** |
| 482.sphinx3 | 8 | **2847** | **54.8** | 2862 | 54.5 | 2845 | 54.8 | 4 | **827** | **94.3** | 824 | 94.7 | 830 | 94.0 |

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
'/usr/bin/taskset' used to bind processes to CPUs
 OMP_NUM_THREADS set to number of cores
```

## Platform Notes

```
Bios settings:
Intel SpeedStep Technology:   Disabled
```

## General Notes

```
All benchmarks compiled in 64-bit mode except 437.leslie3d,
450.soplex, 470.lbm and 482.sphinx3, for peak, are
compiled in 32-bit mode
 The NEC Express5800/120Lj(Intel Xeon E5440) and
 the Bull NovaScale T860 E1(Intel Xeon E5440,2.83GHz) models are electronically equivalent.
 The results have been measured on a NEC Express5800/120Lj(Intel Xeon E5440) 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.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`

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## Base Optimization Flags (Continued)

C++ benchmarks:
`-fast`

Fortran benchmarks:
`-fast`

Benchmarks using both Fortran and C:
`-fast`

## 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.dealII: `-DSPEC_CPU_LP64`
453.povray: `-DSPEC_CPU_LP64`
454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
459.GemsFDTD: `-DSPEC_CPU_LP64`

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## Peak Portability Flags (Continued)

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

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

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:

Continued on next page

## Peak Optimization Flags (Continued)

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/NEC-Intel-ic10.1-FP-intel64-linux-flags.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.xml`


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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 17:34:22 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 11 June 2008.