



SPEC[®] CFP2006 Result

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Bull SAS

SPECfp[®]_rate2006 = 86.0

NovaScale T820 F2 (Intel Xeon X3460, 2.80 GHz)

SPECfp_rate_base2006 = 82.2

CPU2006 license: 20

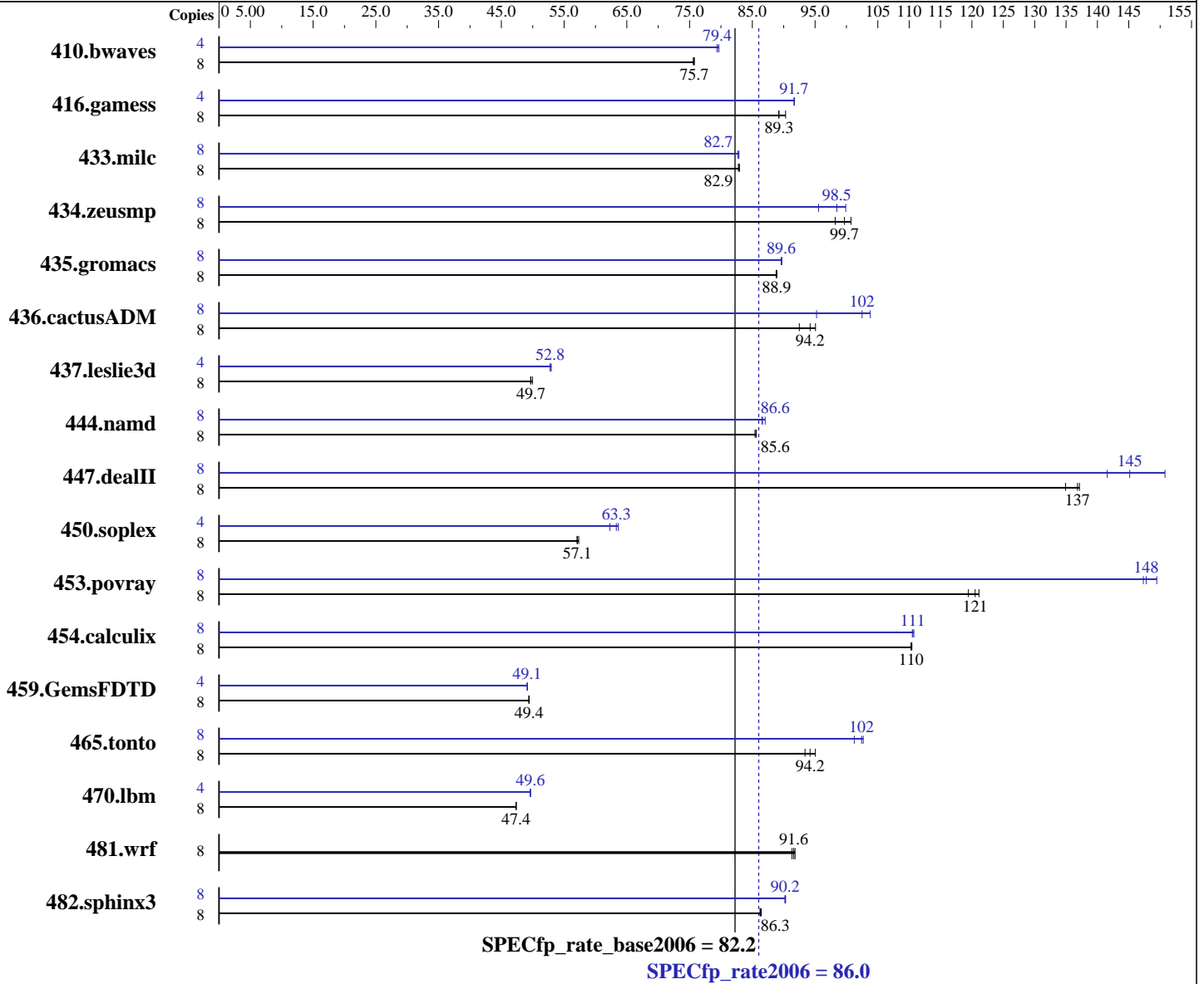
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: Nov-2009

Hardware Availability: Dec-2009

Software Availability: Jul-2009



Hardware

CPU Name: Intel Xeon X3460
 CPU Characteristics: Intel Turbo Boost Technology up to 3.46 GHz
 CPU MHz: 2800
 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: No
 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: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---------------|--------|-------------|-------------|-------------|-------------|-------------|-------------|--------|------------|-------------|-------------|-------------|-------------|-------------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 8 | 1438 | 75.6 | <u>1435</u> | <u>75.7</u> | 1435 | 75.7 | 4 | 685 | 79.4 | 682 | 79.7 | <u>684</u> | <u>79.4</u> |
| 416.gamess | 8 | 1756 | 89.2 | <u>1755</u> | <u>89.3</u> | 1735 | 90.3 | 4 | <u>854</u> | <u>91.7</u> | 854 | 91.7 | 854 | 91.7 |
| 433.milc | 8 | <u>886</u> | <u>82.9</u> | 886 | 82.9 | 887 | 82.8 | 8 | 886 | 82.9 | <u>888</u> | <u>82.7</u> | 888 | 82.7 |
| 434.zeusmp | 8 | 741 | 98.2 | <u>730</u> | <u>99.7</u> | 723 | 101 | 8 | 729 | 99.9 | 762 | 95.6 | <u>739</u> | <u>98.5</u> |
| 435.gromacs | 8 | <u>643</u> | <u>88.9</u> | 643 | 88.9 | 643 | 88.8 | 8 | 638 | 89.6 | 637 | 89.7 | <u>637</u> | <u>89.6</u> |
| 436.cactusADM | 8 | 1006 | 95.1 | 1034 | 92.5 | <u>1015</u> | <u>94.2</u> | 8 | 1004 | 95.2 | <u>933</u> | <u>102</u> | 921 | 104 |
| 437.leslie3d | 8 | 1514 | 49.7 | 1505 | 50.0 | <u>1513</u> | <u>49.7</u> | 4 | <u>712</u> | <u>52.8</u> | 712 | 52.8 | 710 | 53.0 |
| 444.namd | 8 | 751 | 85.4 | 749 | 85.6 | <u>750</u> | <u>85.6</u> | 8 | 741 | 86.5 | 737 | 87.0 | <u>741</u> | <u>86.6</u> |
| 447.dealII | 8 | 678 | 135 | 667 | 137 | <u>669</u> | <u>137</u> | 8 | <u>631</u> | <u>145</u> | 646 | 142 | 607 | 151 |
| 450.soplex | 8 | 1164 | 57.3 | <u>1168</u> | <u>57.1</u> | 1169 | 57.1 | 4 | 536 | 62.3 | <u>527</u> | <u>63.3</u> | 524 | 63.6 |
| 453.povray | 8 | 356 | 119 | 351 | 121 | <u>353</u> | <u>121</u> | 8 | <u>288</u> | <u>148</u> | 289 | 147 | 285 | 149 |
| 454.calculix | 8 | 598 | 110 | <u>598</u> | <u>110</u> | 598 | 110 | 8 | 596 | 111 | <u>597</u> | <u>111</u> | 597 | 110 |
| 459.GemsFDTD | 8 | 1719 | 49.4 | 1717 | 49.4 | <u>1718</u> | <u>49.4</u> | 4 | 864 | 49.1 | 863 | 49.2 | <u>864</u> | <u>49.1</u> |
| 465.tonto | 8 | <u>836</u> | <u>94.2</u> | 843 | 93.4 | 828 | 95.1 | 8 | 777 | 101 | 767 | 103 | <u>769</u> | <u>102</u> |
| 470.lbm | 8 | 2320 | 47.4 | <u>2321</u> | <u>47.4</u> | 2322 | 47.3 | 4 | 1108 | 49.6 | 1107 | 49.7 | <u>1107</u> | <u>49.6</u> |
| 481.wrf | 8 | 973 | 91.8 | <u>976</u> | <u>91.6</u> | 978 | 91.3 | 8 | 973 | 91.8 | <u>976</u> | <u>91.6</u> | 978 | 91.3 |
| 482.sphinx3 | 8 | <u>1807</u> | <u>86.3</u> | 1804 | 86.4 | 1808 | 86.2 | 8 | 1726 | 90.3 | <u>1728</u> | <u>90.2</u> | 1729 | 90.2 |

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.
numactl was used to bind copies to the cores

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)



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General Notes

The Dell PowerEdge T310 (Intel Xeon X3460, 2.80 GHz) and the Bull NovaScale T820 F2 (Intel Xeon X3460, 2.80 GHz) models are electronically equivalent. The results have been measured on a Dell PowerEdge T310 (Intel Xeon X3460, 2.80 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

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

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Base Optimization Flags (Continued)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m64`

482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):

`icpc -m64`

450.soplex: `icpc -m32`

Fortran benchmarks (except as noted below):

`ifort -m64`

437.leslie3d: `ifort -m32`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

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`
 465.tonto: `-DSPEC_CPU_LP64`
 470.lbm: `-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: -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: -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 -opt-malloc-options=3 -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -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 -auto-ilp32

447.dealIII: -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-

450.soplex: -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-malloc-options=3

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

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: -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)

437.leslie3d: -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-malloc-options=3 -opt-prefetch

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

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Peak Optimization Flags (Continued)

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 -auto-ilp32

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

481.wrf: basepeak = yes

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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For other inquiries, please contact webmaster@spec.org.

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