



SPEC® CFP2006 Result

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Bull SAS

NovaScale R460 E1
(Intel Xeon E5410, 2.33 GHz)

SPECfp®2006 = 19.5

SPECfp_base2006 = 16.5

CPU2006 license: 20

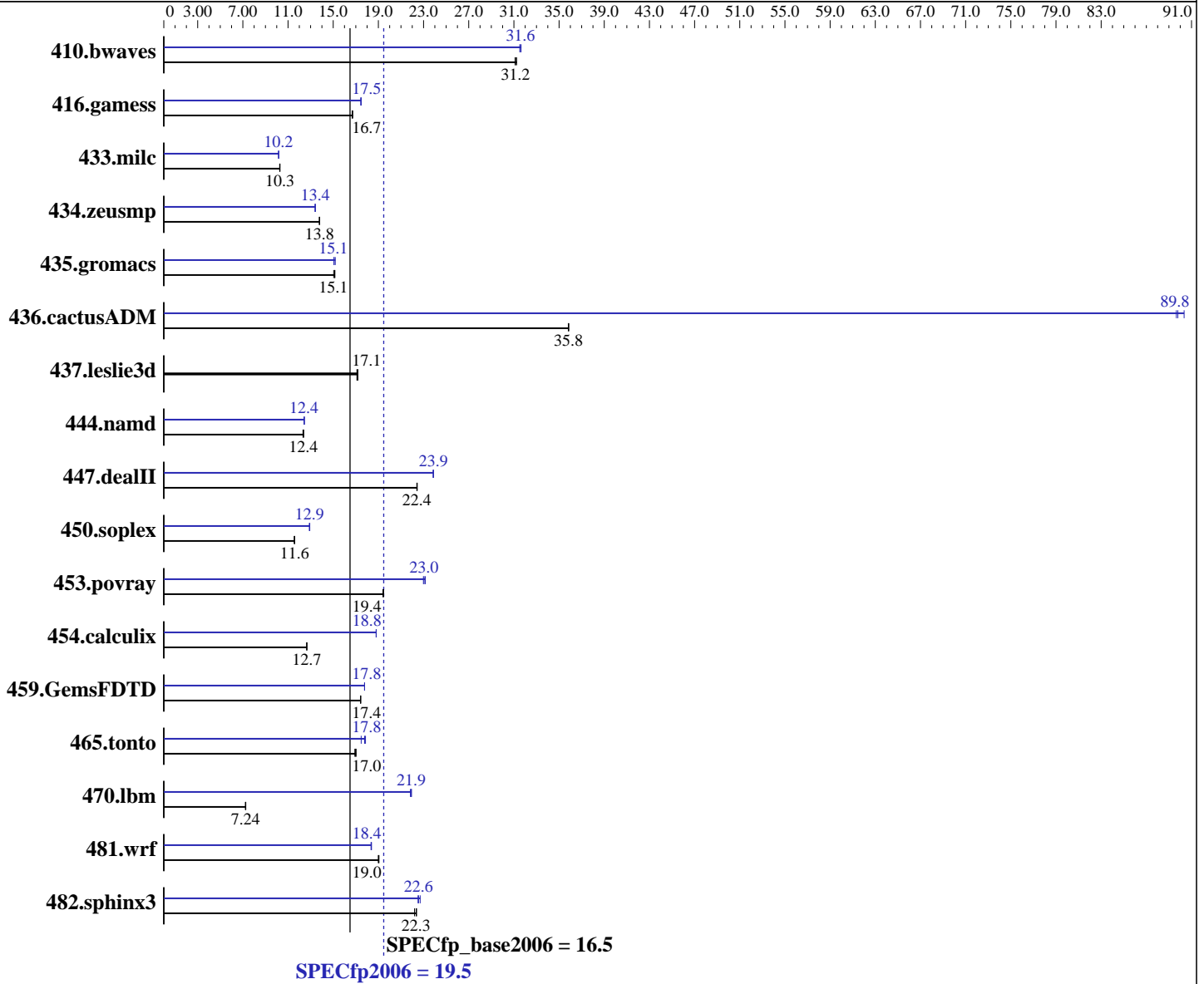
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jun-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



Hardware

CPU Name: Intel Xeon E5410
 CPU Characteristics: 1333 MHz system bus
 CPU MHz: 2333
 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 SP1
 Kernel 2.6.16.46-0.12-smp for x86_64
 Compiler: Intel C++ and Fortran Compiler 10.1 for Linux
 Build 20070913 Package ID: l_cc_p_10.1.008,
 l_fc_p_10.1.008
 Auto Parallel: Yes
 File System: ext2
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8x2 GB) FB-DIMM PC2-5300F ECC CL5
Disk Subsystem: 1x73 GB SAS, 15000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.17.50.0.15

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---------------|------------|-------------|-------------|-------------|------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 436 | 31.2 | 435 | 31.2 | 437 | 31.1 | 430 | 31.6 | 431 | 31.5 | 430 | 31.6 |
| 416.gamess | 1174 | 16.7 | 1173 | 16.7 | 1170 | 16.7 | 1122 | 17.4 | 1122 | 17.5 | 1120 | 17.5 |
| 433.milc | 893 | 10.3 | 893 | 10.3 | 895 | 10.3 | 902 | 10.2 | 903 | 10.2 | 903 | 10.2 |
| 434.zeusmp | 660 | 13.8 | 660 | 13.8 | 660 | 13.8 | 678 | 13.4 | 678 | 13.4 | 679 | 13.4 |
| 435.gromacs | 471 | 15.1 | 472 | 15.1 | 475 | 15.0 | 473 | 15.1 | 474 | 15.1 | 470 | 15.2 |
| 436.cactusADM | 333 | 35.8 | 334 | 35.8 | 333 | 35.9 | 133 | 89.7 | 132 | 90.3 | 133 | 89.8 |
| 437.leslie3d | 548 | 17.1 | 547 | 17.2 | 550 | 17.1 | 548 | 17.1 | 547 | 17.2 | 550 | 17.1 |
| 444.namd | 651 | 12.3 | 649 | 12.4 | 648 | 12.4 | 645 | 12.4 | 645 | 12.4 | 644 | 12.4 |
| 447.dealII | 510 | 22.4 | 510 | 22.4 | 511 | 22.4 | 479 | 23.9 | 480 | 23.8 | 479 | 23.9 |
| 450.soplex | 720 | 11.6 | 720 | 11.6 | 722 | 11.5 | 645 | 12.9 | 646 | 12.9 | 647 | 12.9 |
| 453.povray | 274 | 19.4 | 274 | 19.4 | 273 | 19.5 | 231 | 23.0 | 230 | 23.2 | 231 | 23.0 |
| 454.calculix | 651 | 12.7 | 652 | 12.7 | 651 | 12.7 | 439 | 18.8 | 439 | 18.8 | 439 | 18.8 |
| 459.GemsFDTD | 608 | 17.4 | 609 | 17.4 | 609 | 17.4 | 597 | 17.8 | 597 | 17.8 | 597 | 17.8 |
| 465.tonto | 580 | 17.0 | 578 | 17.0 | 582 | 16.9 | 553 | 17.8 | 551 | 17.9 | 563 | 17.5 |
| 470.lbm | 1892 | 7.26 | 1898 | 7.24 | 1901 | 7.23 | 627 | 21.9 | 627 | 21.9 | 629 | 21.8 |
| 481.wrf | 588 | 19.0 | 586 | 19.1 | 587 | 19.0 | 609 | 18.3 | 607 | 18.4 | 608 | 18.4 |
| 482.sphinx3 | 878 | 22.2 | 871 | 22.4 | 872 | 22.3 | 859 | 22.7 | 866 | 22.5 | 864 | 22.6 |

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
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to 200M

General Notes

All benchmarks compiled in 64-bit mode except 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode
The Bull NovaScale R440 E1 (Intel Xeon E5410, 2.33 GHz) and the Bull NovaScale R460 E1 (Intel Xeon E5410, 2.33 GHz) models are electronically equivalent.
The results have been measured on a Bull NovaScale R460 E1 (Intel Xeon E5410, 2.33 GHz) model.



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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 -parallel
C++ benchmarks:
-fast -parallel
Fortran benchmarks:
-fast -parallel
Benchmarks using both Fortran and C:
-fast -parallel



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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
```

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
```

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Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

C++ benchmarks:

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

447.dealIII: -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

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/EM64T_Intel101_fp_flags.20090713.00.html

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

http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090713.00.xml



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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 18:55:46 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 5 August 2008.