SPEC® CFP2006 Result

Bull SAS

NovaScale R460 E1
(Intel Xeon E5430, 2.66 GHz)

$SPECfp^®2006 =$ 21.3

$SPECfp\_base2006 =$ 17.9

CPU2006 license: 20	**Test date:** May-2008
Test sponsor: Bull SAS	**Hardware Availability:** Jan-2008
Tested by: Bull SAS	**Software Availability:** Nov-2007

Results per benchmark:

- **410.bwaves** 31.8 / 31.4
- **416.gamess** 19.9 / 19.0
- **433.milc** 10.6 / 10.7
- **434.zeusmp** 14.7 / 15.1
- **435.gromacs** 17.4 / 17.3
- **436.cactusADM** 94.9 / 38.0
- **437.leslie3d** 18.0
- **444.namd** 14.2 / 14.1
- **447.dealII** 26.6 / 25.0
- **450.soplex** 13.8 / 12.3
- **453.povray** 26.5 / 22.1
- **454.calculix** 21.3 / 14.3
- **459.GemsFDTD** 18.0 / 17.8
- **465.tonto** 20.3 / 19.2
- **470.lbm** 23.0 / 7.50
- **481.wrf** 20.0 / 20.6
- **482.sphinx3** 25.3 / 24.9

SPECfp_base2006 = 17.9

SPECfp2006 = 21.3

Hardware

CPU Name:	Intel Xeon E5430
CPU Characteristics:	1333 MHz system bus
CPU MHz:	2666
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

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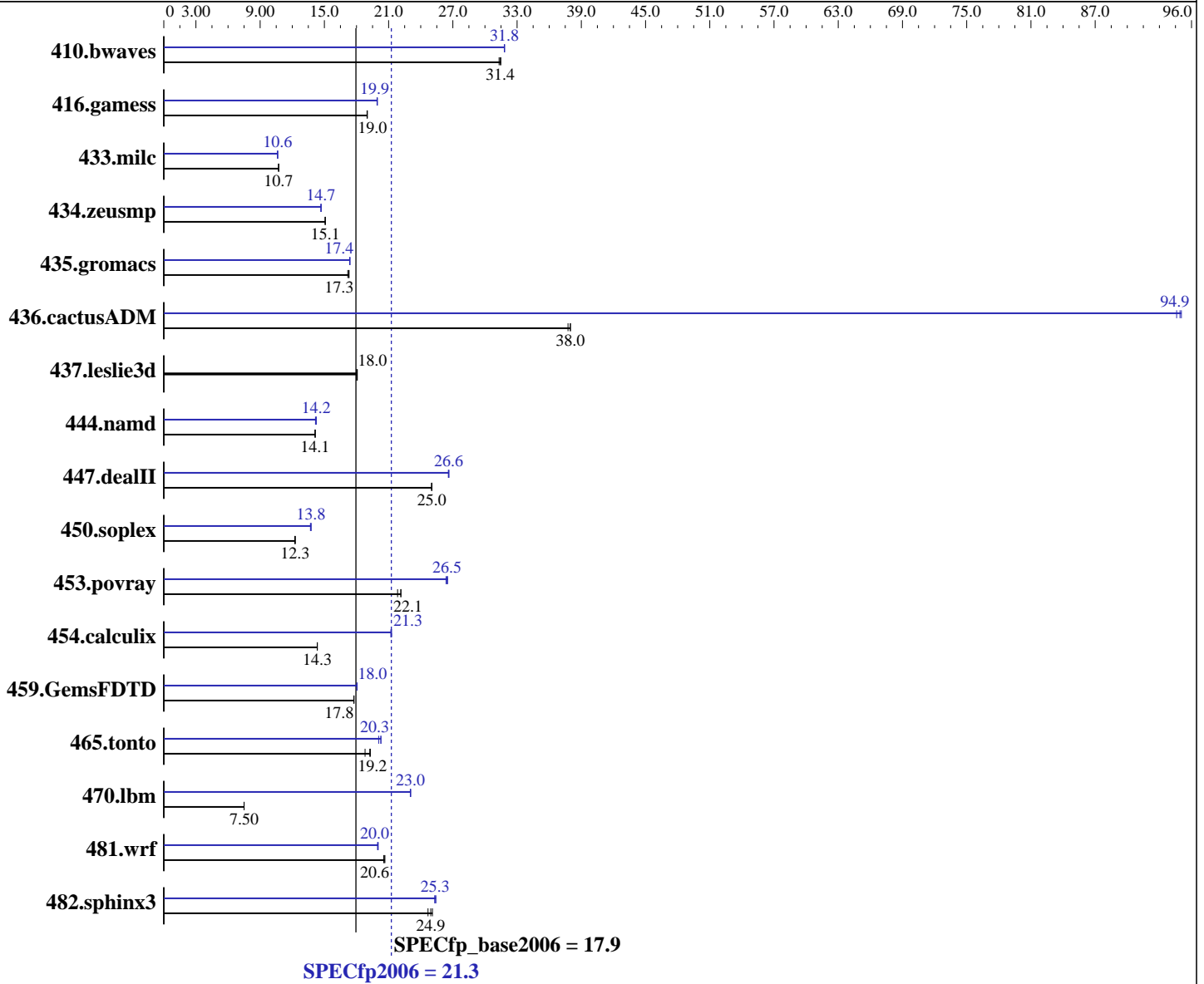**Test sponsor:** Bull SAS
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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8x2 GB) FB-DIMM PC2-5300F ECC CL5
Disk Subsystem:	1x73 GB SAS, 15000 RPM
Other Hardware:	None

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

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	434	31.3	432	31.5	**432**	**31.4**	427	31.8	**427**	**31.8**	427	31.8
416.gamess	1030	19.0	**1030**	**19.0**	1031	19.0	981	20.0	**983**	**19.9**	983	19.9
433.milc	856	10.7	856	10.7	**856**	**10.7**	**864**	**10.6**	864	10.6	863	10.6
434.zeusmp	604	15.1	603	15.1	**603**	**15.1**	619	14.7	**620**	**14.7**	620	14.7
435.gromacs	413	17.3	**413**	**17.3**	415	17.2	411	17.4	411	17.4	**411**	**17.4**
436.cactusADM	315	38.0	316	37.8	**315**	**38.0**	126	94.6	126	95.1	**126**	**94.9**
437.leslie3d	520	18.1	**521**	**18.0**	522	18.0	520	18.1	**521**	**18.0**	522	18.0
444.namd	567	14.1	**567**	**14.1**	568	14.1	563	14.2	**564**	**14.2**	566	14.2
447.dealII	457	25.1	457	25.0	**457**	**25.0**	430	26.6	**430**	**26.6**	430	26.6
450.soplex	679	12.3	**679**	**12.3**	682	12.2	**606**	**13.8**	606	13.8	609	13.7
453.povray	244	21.8	240	22.2	**240**	**22.1**	202	26.4	**201**	**26.5**	201	26.5
454.calculix	**575**	**14.3**	575	14.3	576	14.3	389	21.2	388	21.3	**388**	**21.3**
459.GemsFDTD	597	17.8	598	17.7	**597**	**17.8**	588	18.1	**588**	**18.0**	588	18.0
465.tonto	510	19.3	523	18.8	**511**	**19.2**	490	20.1	485	20.3	**485**	**20.3**
470.lbm	1833	7.49	**1832**	**7.50**	1832	7.50	595	23.1	**597**	**23.0**	597	23.0
481.wrf	544	20.5	**542**	**20.6**	541	20.7	**559**	**20.0**	559	20.0	558	20.0
482.sphinx3	777	25.1	790	24.7	**782**	**24.9**	**769**	**25.3**	770	25.3	767	25.4

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 E5430, 2.66 GHz) and
the Bull NovaScale R460 E1 (Intel Xeon E5430, 2.66 GHz) models are electronically equivalent.
The results have been measured on a Bull NovaScale R460 E1 (Intel Xeon E5430, 2.66 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.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`

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

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