SPEC® CFP2006 Result
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Bull SAS

NovaScale R410 F2 (Intel Xeon X3450, 2.66 GHz)

$SPECfp^{®}2006 =$ 34.0

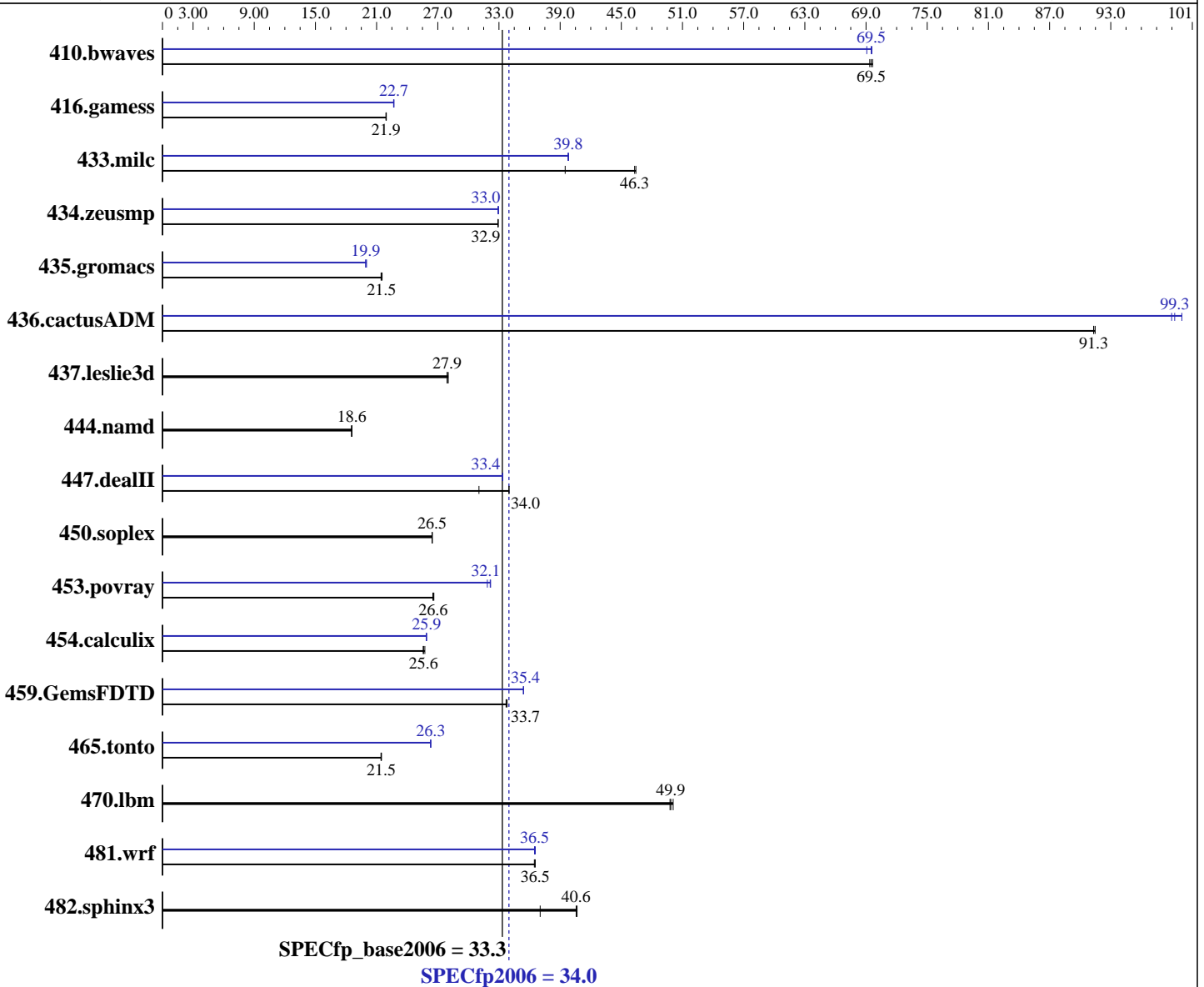$SPECfp\_base2006 =$ 33.3

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

Test date: Oct-2009
Hardware Availability: Dec-2009
Software Availability: Jul-2009

Benchmark	SPECfp2006	SPECfp_base2006
410.bwaves	69.5	69.5
416.gamess	22.7	21.9
433.milc	39.8	46.3
434.zeusmp	33.0	32.9
435.gromacs	19.9	21.5
436.cactusADM	99.3	91.3
437.leslie3d		27.9
444.namd		18.6
447.dealII	33.4	34.0
450.soplex		26.5
453.povray	32.1	26.6
454.calculix	25.9	25.6
459.GemsFDTD	35.4	33.7
465.tonto	26.3	21.5
470.lbm		49.9
481.wrf	36.5	36.5
482.sphinx3		40.6

SPECfp_base2006 = 33.3
SPECfp2006 = 34.0

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	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	64-bit
Memory:	8 GB (4 x 2 GB DDR3-1333 DR UDIMM)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1 x 160 GB 7200 RPM SATA		
Other Hardware:	None		

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	195	69.6	**196**	**69.5**	196	69.4	197	69.1	195	69.6	**196**	**69.5**
416.gamess	893	21.9	**892**	**21.9**	892	22.0	863	22.7	**863**	**22.7**	864	22.7
433.milc	198	46.4	232	39.5	**198**	**46.3**	230	39.8	231	39.8	**231**	**39.8**
434.zeusmp	276	32.9	**277**	**32.9**	277	32.9	**276**	**33.0**	276	33.0	277	32.9
435.gromacs	333	21.4	331	21.5	**332**	**21.5**	**358**	**19.9**	358	19.9	357	20.0
436.cactusADM	131	91.3	**131**	**91.3**	131	91.5	121	99.0	**120**	**99.3**	120	100
437.leslie3d	335	28.0	**337**	**27.9**	337	27.9	335	28.0	**337**	**27.9**	337	27.9
444.namd	433	18.5	432	18.6	**432**	**18.6**	433	18.5	432	18.6	**432**	**18.6**
447.dealII	337	34.0	369	31.0	**337**	**34.0**	343	33.4	**343**	**33.4**	343	33.4
450.soplex	315	26.4	**315**	**26.5**	315	26.5	315	26.4	**315**	**26.5**	315	26.5
453.povray	200	26.6	201	26.5	**200**	**26.6**	167	31.9	165	32.2	**166**	**32.1**
454.calculix	323	25.6	**322**	**25.6**	321	25.7	318	25.9	**319**	**25.9**	319	25.9
459.GemsFDTD	**315**	**33.7**	314	33.8	315	33.7	300	35.4	**300**	**35.4**	300	35.4
465.tonto	459	21.4	458	21.5	**458**	**21.5**	**374**	**26.3**	374	26.3	374	26.3
470.lbm	274	50.1	**276**	**49.9**	276	49.8	274	50.1	**276**	**49.9**	276	49.8
481.wrf	**306**	**36.5**	306	36.5	306	36.5	306	36.5	**306**	**36.5**	305	36.6
482.sphinx3	479	40.7	**480**	**40.6**	526	37.0	479	40.7	**480**	**40.6**	526	37.0

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)

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CPU2006 license: 20	**Test date:** Oct-2009
Test sponsor: Bull SAS	**Hardware Availability:** Dec-2009
Tested by: Dell Inc.	**Software Availability:** Jul-2009

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 R210 (Intel Xeon X3450, 2.66 GHz) and
the Bull NovaScale R410 F2 (Intel Xeon X3450, 2.66 GHz) models are electronically equivalent.
The results have been measured on a Dell PowerEdge R210 (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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Bull SAS

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$SPECfp2006 = $ 34.0

$SPECfp_base2006 = $ 33.3

CPU2006 license: 20
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Test date: Oct-2009
Hardware Availability: Dec-2009
Software Availability: Jul-2009

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

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$SPECfp2006 =$ 34.0

$SPECfp\_base2006 =$ 33.3

CPU2006 license:	20	**Test date:**	Oct-2009
Test sponsor:	Bull SAS	**Hardware Availability:**	Dec-2009
Tested by:	Dell Inc.	**Software Availability:**	Jul-2009

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 03:46:08 2014 by SPEC CPU2006 PS/PDF formatter v6932. Originally published on 22 December 2009.