SPEC® CFP2006 Result

Dell Inc.

PowerEdge T310 (Intel Core i3-530, 2.93 GHz)

$SPECfp^{®}2006 =$ 29.5

$SPECfp\_base2006 =$ 26.7

CPU2006 license: 55	**Test date:** Jan-2010
Test sponsor: Dell Inc.	**Hardware Availability:** Jan-2010
Tested by: Dell Inc.	**Software Availability:** Dec-2009

Scale: 0 2.00 4.00 6.00 8.00 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0 38.0 40.0 42.0 44.0 46.0 48.0 52.0

Benchmark	Peak	Base
410.bwaves	49.7	49.8
416.gamess	23.0	23.0
433.milc	40.0	39.7
434.zeusmp		22.2
435.gromacs	20.2	19.9
436.cactusADM	51.4	24.2
437.leslie3d		26.3
444.namd	17.1	17.1
447.dealII	33.1	31.7
450.soplex	20.4	20.0
453.povray	32.8	24.8
454.calculix	26.0	26.1
459.GemsFDTD	30.9	27.9
465.tonto	27.5	22.3
470.lbm	40.2	36.8
481.wrf	37.9	34.2
482.sphinx3	27.3	24.6

SPECfp_base2006 = 26.7
SPECfp2006 = 29.5

Hardware

CPU Name:	Intel Core i3-530
CPU Characteristics:	
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 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

Continued on next page

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 20091012 Package ID: l_cproc_p_11.1.059, l_cprof_p_11.1.059
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)

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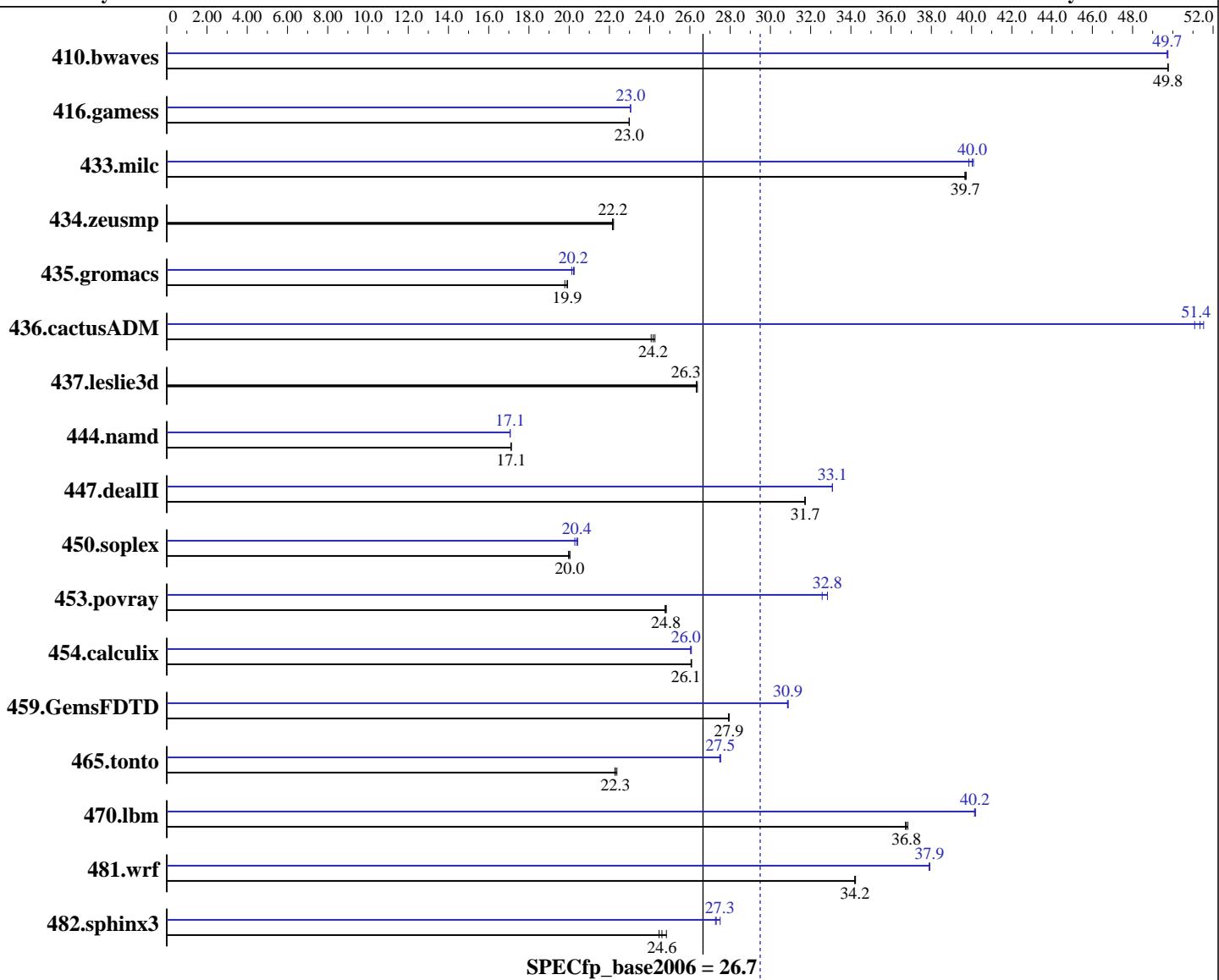**Test sponsor:** Dell Inc.
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L3 Cache:	4 MB I+D on chip per chip
Other Cache:	None
Memory:	8 GB (4 x 2 GB DDR3-1333 DR UDIMM)
Disk Subsystem:	1 x 160 GB 7200 RPM SATA
Other Hardware:	None

Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**273**	**49.8**	273	49.8	273	49.8	273	49.7	273	49.8	**273**	**49.7**
416.gamess	**852**	**23.0**	852	23.0	852	23.0	849	23.1	**849**	**23.0**	850	23.0
433.milc	**231**	**39.7**	231	39.7	231	39.7	230	39.9	**229**	**40.0**	229	40.1
434.zeusmp	410	22.2	**411**	**22.2**	411	22.1	410	22.2	**411**	**22.2**	411	22.1
435.gromacs	361	19.8	358	19.9	**359**	**19.9**	355	20.1	353	20.2	**353**	**20.2**
436.cactusADM	496	24.1	**494**	**24.2**	493	24.3	234	51.1	232	51.5	**233**	**51.4**
437.leslie3d	357	26.3	356	26.4	**357**	**26.3**	357	26.3	356	26.4	**357**	**26.3**
444.namd	**469**	**17.1**	469	17.1	468	17.1	470	17.1	**470**	**17.1**	470	17.1
447.dealII	361	31.7	**361**	**31.7**	361	31.7	346	33.1	**346**	**33.1**	346	33.1
450.soplex	**416**	**20.0**	416	20.0	418	20.0	411	20.3	408	20.4	**409**	**20.4**
453.povray	**214**	**24.8**	214	24.8	215	24.8	163	32.6	**162**	**32.8**	162	32.8
454.calculix	316	26.1	**317**	**26.1**	317	26.1	316	26.1	**317**	**26.0**	317	26.0
459.GemsFDTD	**380**	**27.9**	380	28.0	380	27.9	344	30.9	**344**	**30.9**	344	30.8
465.tonto	440	22.4	**441**	**22.3**	442	22.3	357	27.5	**358**	**27.5**	358	27.5
470.lbm	374	36.7	**374**	**36.8**	373	36.8	342	40.1	**342**	**40.2**	342	40.2
481.wrf	**327**	**34.2**	327	34.2	326	34.2	295	37.9	**295**	**37.9**	295	37.9
482.sphinx3	785	24.8	797	24.5	**792**	**24.6**	**714**	**27.3**	715	27.3	709	27.5

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

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
The Dell PowerEdge T310 and the Bull NovaScale T820 F2 models are electronically equivalent.
This result was measured on a Dell PowerEdge T310.
```

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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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
```

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:
```
ifort -m64
```

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
        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
           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)`
           `-ansi-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)`
           `-ansi-alias -parallel -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.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- -auto-ilp32`

    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: `basepeak = yes`

    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)`
           `-inline-calloc -opt-malloc-options=3 -auto -unroll4`

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Peak Optimization Flags (Continued)

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: Same as 454.calculix
```

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

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

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