SPEC® CFP2006 Result

Dell Inc.

PowerEdge T300 (Intel Xeon X5460, 3.16 GHz)

$SPECfp^{®}2006 =$ 24.5

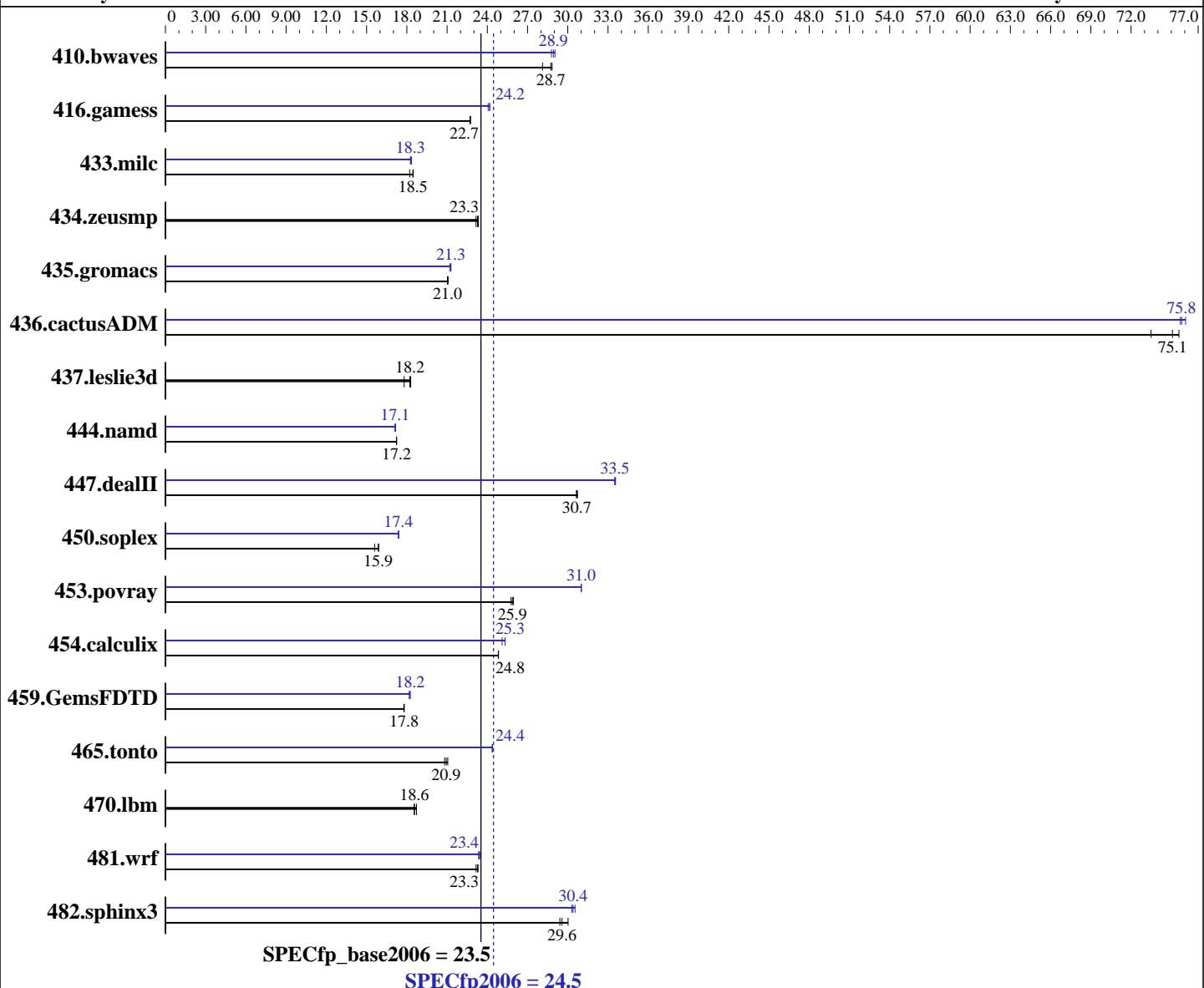$SPECfp\_base2006 =$ 23.5

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Nov-2008

Hardware Availability: Oct-2008

Software Availability: Nov-2008

Benchmark	blue	black
410.bwaves	28.9	28.7
416.gamess	24.2	22.7
433.milc	18.3	18.5
434.zeusmp		23.3
435.gromacs	21.3	21.0
436.cactusADM	75.8	75.1
437.leslie3d		18.2
444.namd	17.1	17.2
447.dealII	33.5	30.7
450.soplex	17.4	15.9
453.povray	31.0	25.9
454.calculix	25.3	24.8
459.GemsFDTD	18.2	17.8
465.tonto	24.4	20.9
470.lbm		18.6
481.wrf	23.4	23.3
482.sphinx3	30.4	29.6

SPECfp_base2006 = 23.5

SPECfp2006 = 24.5

Hardware

CPU Name:	Intel Xeon X5460
CPU Characteristics:	
CPU MHz:	3166
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
CPU(s) orderable:	1 chip
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 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler:	Intel C++ and Fortran Compiler 11.0 for Linux Build 20080730 Package ID: l_cproc_b_11.0.042, l_fproc_b_11.0.042
Auto Parallel:	Yes
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit

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L3 Cache:	None
Other Cache:	None
Memory:	16 GB (4 x 4 GB DDR2-667 FBDIMM)
Disk Subsystem:	1 x 300 GB SAS 15k RPM
Other Hardware:	None

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

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	483	28.1	471	28.8	**473**	**28.7**	472	28.8	468	29.0	**470**	**28.9**
416.gamess	862	22.7	**861**	**22.7**	861	22.7	814	24.1	**810**	**24.2**	810	24.2
433.milc	504	18.2	497	18.5	**498**	**18.5**	502	18.3	500	18.4	**502**	**18.3**
434.zeusmp	393	23.2	390	23.3	**391**	**23.3**	393	23.2	390	23.3	**391**	**23.3**
435.gromacs	339	21.0	339	21.1	**339**	**21.0**	335	21.3	**336**	**21.3**	336	21.2
436.cactusADM	163	73.5	158	75.6	**159**	**75.1**	158	75.7	157	76.1	**158**	**75.8**
437.leslie3d	528	17.8	**516**	**18.2**	514	18.3	528	17.8	**516**	**18.2**	514	18.3
444.namd	465	17.2	466	17.2	**466**	**17.2**	467	17.2	**468**	**17.1**	469	17.1
447.dealII	373	30.6	372	30.7	**373**	**30.7**	341	33.5	341	33.6	**341**	**33.5**
450.soplex	535	15.6	524	15.9	**525**	**15.9**	**480**	**17.4**	479	17.4	480	17.4
453.povray	**206**	**25.9**	205	25.9	206	25.8	172	31.0	**172**	**31.0**	172	31.0
454.calculix	**332**	**24.8**	332	24.8	332	24.8	329	25.1	**326**	**25.3**	326	25.3
459.GemsFDTD	596	17.8	597	17.8	**596**	**17.8**	584	18.2	**582**	**18.2**	582	18.2
465.tonto	467	21.1	473	20.8	**470**	**20.9**	403	24.4	404	24.4	**404**	**24.4**
470.lbm	734	18.7	741	18.6	**740**	**18.6**	734	18.7	741	18.6	**740**	**18.6**
481.wrf	482	23.2	479	23.3	**480**	**23.3**	478	23.4	**478**	**23.4**	477	23.4
482.sphinx3	649	30.0	**659**	**29.6**	663	29.4	**641**	**30.4**	638	30.5	643	30.3

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 stack size to unlimited prior to run

General Notes

OMP_NUM_THREADS set to number of processors
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 200M

Base Compiler Invocation

C benchmarks:
    icc

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Base Compiler Invocation (Continued)

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:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
    -xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: /opt/intel/Compiler/11.0/042/bin/ia32/icc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/include
```

C++ benchmarks (except as noted below):
```
icpc
```

```
450.soplex: /opt/intel/Compiler/11.0/042/bin/ia32/icpc
            -L/opt/intel/Compiler/11.0/042/ipp/ia32/lib
            -I/opt/intel/Compiler/11.0/042/ipp/ia32/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
     470.lbm: -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) -xSSE4.1 -ipo -O3
         -no-prec-div -static -fno-alias
```

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Peak Optimization Flags (Continued)

```
      470.lbm: basepeak = yes

   482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
```

C++ benchmarks:

```
     444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -fno-alias -auto-ilp32

    447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -ansi-alias -scalar-rep-
               -opt-prefetch

    450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -opt-malloc-options=3

    453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll4 -ansi-alias
```

Fortran benchmarks:

```
    410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
               -parallel

    416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -Ob0 -ansi-alias
               -scalar-rep-

    434.zeusmp: basepeak = yes

   437.leslie3d: basepeak = yes

   459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -Ob0 -opt-prefetch
               -parallel

     465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll4 -auto
```

Benchmarks using both Fortran and C:

```
   435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -opt-prefetch -auto-ilp32

  436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
               -no-prec-div -static -unroll2 -opt-prefetch -parallel
               -auto-ilp32

   454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32
```

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Peak Optimization Flags (Continued)

481.wrf: `-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel -auto-ilp32`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.05.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.02.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090713.05.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.02.xml

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

Tested with SPEC CPU2006 v1.1.
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