SPEC® CFP2006 Result
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Fujitsu

CELSIUS M470, Intel Xeon W3550

$SPECfp^{®}2006 =$ 37.3

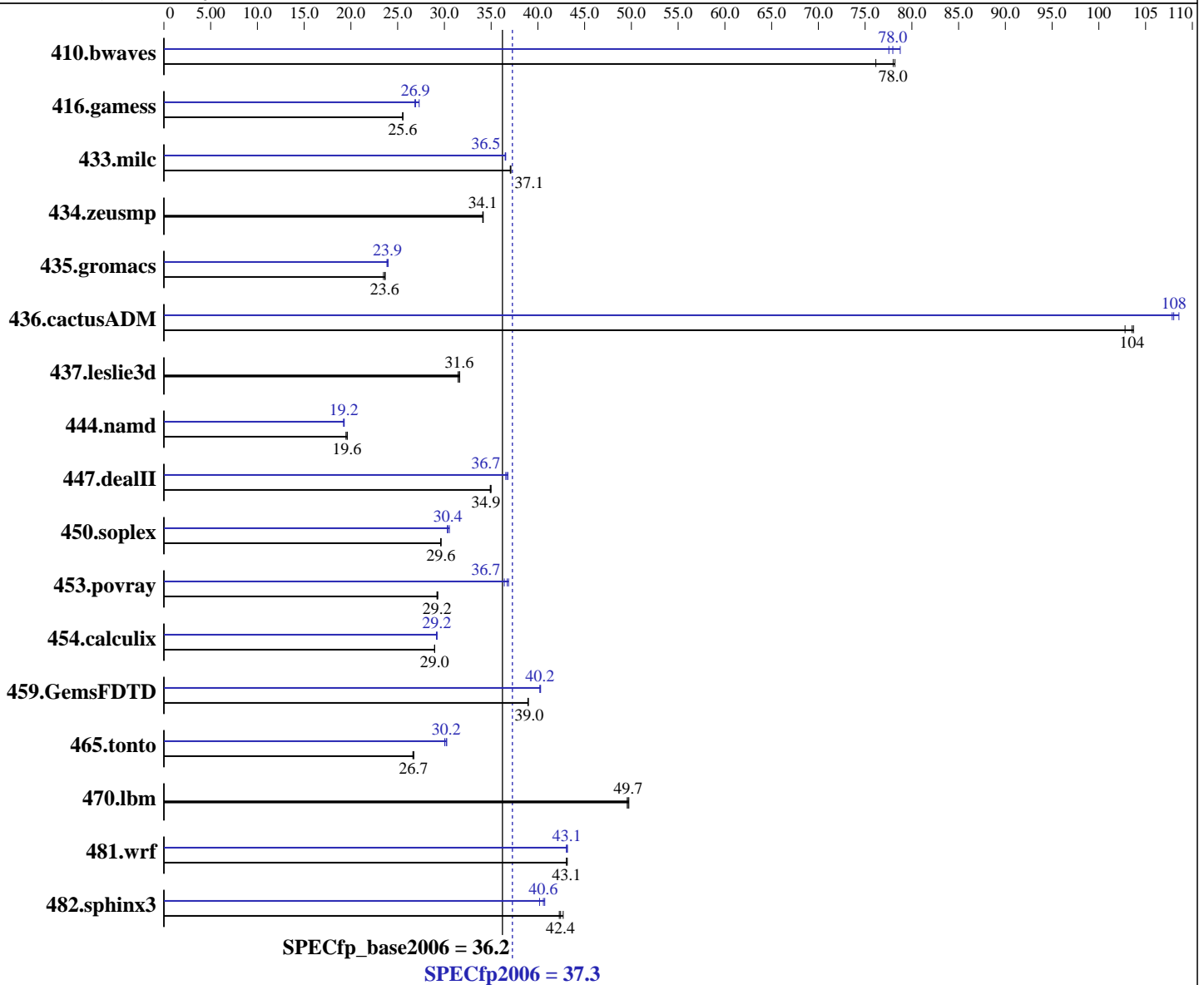$SPECfp\_base2006 =$ 36.2

CPU2006 license: 19

Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Aug-2009

Hardware Availability: Aug-2009

Software Availability: Feb-2009

Benchmark	Base	Peak
410.bwaves	78.0	78.0
416.gamess	25.6	26.9
433.milc	37.1	36.5
434.zeusmp	34.1	
435.gromacs	23.6	23.9
436.cactusADM	104	108
437.leslie3d	31.6	
444.namd	19.6	19.2
447.dealII	34.9	36.7
450.soplex	29.6	30.4
453.povray	29.2	36.7
454.calculix	29.0	29.2
459.GemsFDTD	39.0	40.2
465.tonto	26.7	30.2
470.lbm	49.7	
481.wrf	43.1	43.1
482.sphinx3	42.4	40.6

SPECfp_base2006 = 36.2

SPECfp2006 = 37.3

Hardware

CPU Name: Intel Xeon W3550

CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz

CPU MHz: 3067

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: 256 KB I+D on chip per core

Continued on next page

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 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080

Auto Parallel: Yes

File System: ext3

System State: Multi-User Run Level 3

Base Pointers: 64-bit

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L3 Cache:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	12 GB (6x2 GB PC3 10600E, 2 rank, CL9, ECC, running at 1066 MHz)
Disk Subsystem:	1 x SATA II, 400 GB, 7200 rpm
Other Hardware:	None

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	178	76.1	174	78.2	**174**	**78.0**	175	77.5	173	78.8	**174**	**78.0**
416.gamess	**766**	**25.6**	767	25.5	766	25.6	717	27.3	729	26.8	**727**	**26.9**
433.milc	248	37.0	247	37.1	**248**	**37.1**	251	36.5	251	36.6	**251**	**36.5**
434.zeusmp	**267**	**34.1**	266	34.2	267	34.1	**267**	**34.1**	266	34.2	267	34.1
435.gromacs	302	23.7	**302**	**23.6**	304	23.5	**298**	**23.9**	299	23.9	298	24.0
436.cactusADM	115	104	116	103	**115**	**104**	**111**	**108**	110	109	111	108
437.leslie3d	299	31.5	297	31.6	**297**	**31.6**	299	31.5	297	31.6	**297**	**31.6**
444.namd	412	19.5	409	19.6	**409**	**19.6**	**417**	**19.2**	417	19.2	416	19.3
447.dealII	328	34.9	327	35.0	**327**	**34.9**	313	36.6	**312**	**36.7**	311	36.8
450.soplex	282	29.6	281	29.6	**281**	**29.6**	**275**	**30.4**	275	30.3	273	30.5
453.povray	182	29.2	182	29.3	**182**	**29.2**	144	36.9	146	36.4	**145**	**36.7**
454.calculix	**285**	**29.0**	285	28.9	285	29.0	283	29.2	**283**	**29.2**	282	29.2
459.GemsFDTD	273	38.9	**272**	**39.0**	272	39.0	263	40.3	264	40.2	**264**	**40.2**
465.tonto	**369**	**26.7**	368	26.7	370	26.6	325	30.3	**326**	**30.2**	328	30.0
470.lbm	277	49.6	**277**	**49.7**	276	49.7	277	49.6	**277**	**49.7**	276	49.7
481.wrf	259	43.1	**259**	**43.1**	259	43.1	**259**	**43.1**	259	43.2	259	43.0
482.sphinx3	**459**	**42.4**	456	42.7	461	42.3	485	40.2	478	40.7	**480**	**40.6**

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 granularity=fine,scatter
KMP_STACKSIZE set to 200M
```

Platform Notes

```
BIOS configuration:
Hyper-Threading Technology = Disabled
Memory speed set to "Max Performance" (Switch in "Advanced Memory Options")
```

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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:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Fortran benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
    -xSSE4.2 -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: icc -m32
```

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

```
450.soplex: icpc -m32
```

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: -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: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2
```

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CPU2006 license: 19	**Test date:** Aug-2009
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Tested by: Fujitsu	**Software Availability:** Feb-2009

Peak Optimization Flags (Continued)

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- -opt-prefetch

  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
             -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: 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)
             -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
```

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Peak Optimization Flags (Continued)

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-ic11.0-fp-linux64-revA.20090915.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revA.20090915.xml`

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

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