SPEC® CFP2006 Result
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Sun Microsystems

Sun Fire X4170 (Intel Xeon E5540 2.53GHz)

$SPECfp®\_rate2006 =$ 164
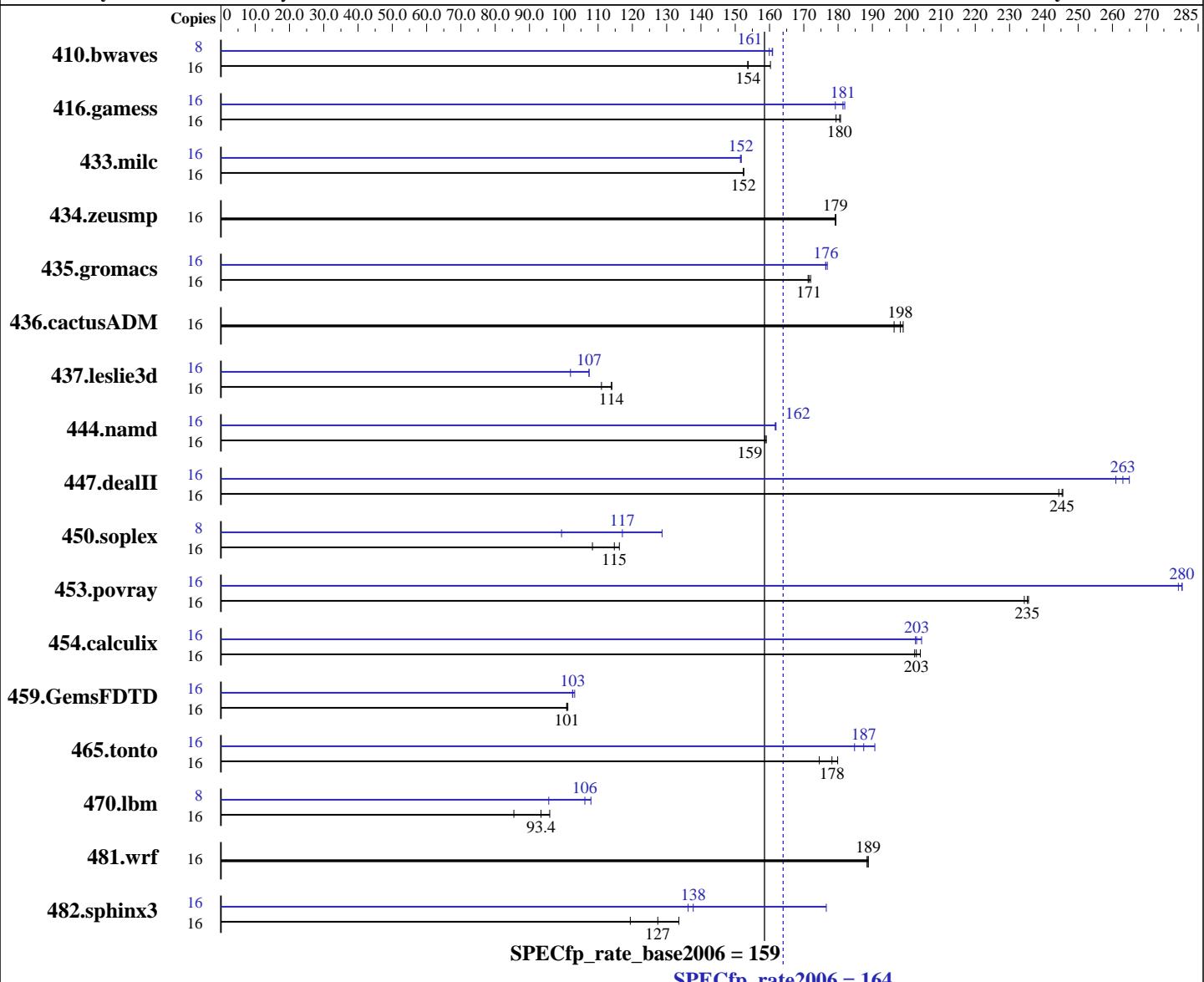
$SPECfp\_rate\_base2006 =$ 159

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Aug-2009
Hardware Availability: Apr-2009
Software Availability: Nov-2008

SPECfp_rate_base2006 = 159

SPECfp_rate2006 = 164

Hardware

CPU Name: Intel Xeon E5540
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2534
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1 or 2 chips
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: 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 20080930 Package ID: l_cproc_p_11.0.066, l_cprof_p_11.0.066
Auto Parallel: No
File System: ReiserFS
System State: Run level 3 (multi-user)
Base Pointers: 64-bit

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 24 GB (6 x 4 GB DDR3-1333 downclocked to 1066 MHz)
Disk Subsystem: 1 x 134 GB, SAS, 10 K RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	**_1414_**	**_154_**	1357	160	1415	154	8	680	160	676	161	**_676_**	**_161_**
416.gamess	16	**_1736_**	**_180_**	1734	181	1746	179	16	1722	182	1748	179	**_1727_**	**_181_**
433.milc	16	963	152	**_964_**	**_152_**	964	152	16	969	152	**_968_**	**_152_**	968	152
434.zeusmp	16	812	179	813	179	**_812_**	**_179_**	16	812	179	813	179	**_812_**	**_179_**
435.gromacs	16	667	171	664	172	**_666_**	**_171_**	16	**_648_**	**_176_**	648	176	646	177
436.cactusADM	16	**_965_**	**_198_**	961	199	974	196	16	**_965_**	**_198_**	961	199	974	196
437.leslie3d	16	1355	111	1319	114	**_1321_**	**_114_**	16	1475	102	**_1401_**	**_107_**	1401	107
444.namd	16	807	159	809	159	**_808_**	**_159_**	16	794	162	793	162	**_793_**	**_162_**
447.dealII	16	749	244	745	246	**_746_**	**_245_**	16	**_696_**	**_263_**	701	261	691	265
450.soplex	16	1232	108	**_1163_**	**_115_**	1148	116	8	672	99.3	**_570_**	**_117_**	519	129
453.povray	16	**_362_**	**_235_**	361	236	363	234	16	305	279	**_304_**	**_280_**	304	280
454.calculix	16	647	204	**_651_**	**_203_**	652	202	16	646	204	652	203	**_651_**	**_203_**
459.GemsFDTD	16	1678	101	**_1683_**	**_101_**	1683	101	16	1645	103	**_1654_**	**_103_**	1655	103
465.tonto	16	902	175	875	180	**_883_**	**_178_**	16	826	191	852	185	**_840_**	**_187_**
470.lbm	16	2573	85.4	2292	95.9	**_2355_**	**_93.4_**	8	1150	95.6	1019	108	**_1036_**	**_106_**
481.wrf	16	948	188	**_947_**	**_189_**	947	189	16	948	188	**_947_**	**_189_**	947	189
482.sphinx3	16	2612	119	2335	134	**_2448_**	**_127_**	16	2288	136	**_2264_**	**_138_**	1766	177

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

    Default BIOS settings used.

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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

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

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

Benchmarks using both Fortran and C:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

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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 (except as noted below):
    `ifort`

    437.leslie3d: `ifort -m32`

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`
         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: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
                `-auto-ilp32`

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Peak Optimization Flags (Continued)

```
  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-

   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: -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 -opt-prefetch

 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

    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: basepeak = yes
```

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Peak Optimization Flags (Continued)

454.calculix: `-xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32`

481.wrf: `basepeak = yes`

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.20090915.00.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.20090915.00.xml`

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

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